

Racial Residential Segregation of School-Age Children and Adults: The Role of Schooling as a Segregating Force



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Neighborhoods are critical contexts for children's well-being, but differences in neighborhood inequality among children and adults are understudied. I document racial segregation between neighborhoods among school-age children and adults in 2000 and 2010 and find that though the racial composition of children's and adults' neighborhoods is similar, exposure to own-age neighbors varies. Compared with adults' exposure to other adults, children are exposed to fewer white and more minority, particularly Hispanic, children. This is due in part to compositional differences, but children are also more unevenly sorted across neighborhoods by race than adults. One explanation for higher segregation among children is that parents consider school options when making residential choices. Consistent with this hypothesis, I find that school district boundaries account for a larger proportion of neighborhood segregation among children than among adults. Future research on spatial inequality must consider the multiple contexts differentially contributing to inequality among children and adults.

Keywords: racial segregation, racial inequality, neighborhood segregation, school districts, household composition

Racial residential segregation remains a significant stratifying force in America's cities. Segregation creates vastly unequal neighborhoods, with white residents typically living in safer neighborhoods with more socioeconomic resources than minority (particularly African American and Hispanic) residents. Where one lives shapes a person's everyday activities, social interactions, educational, occupational, and recreational opportunities, and aspirations and expectations. Neighborhoods are particularly important contexts for children's development and well-being. A large neighborhood effects literature demonstrates that growing up in an impoverished neighborhood reduces educational performance and attainment, increases the odds of teen parenthood,

and may diminish cognitive and psychological well-being (for reviews, see Sharkey and Faber 2014; Leventhal and Brooks-Gunn 2000; Sampson, Morenoff, and Gannon-Rowley 2002; Jencks and Mayer 1990). Therefore, particular attention should be paid to whether children experience higher residential segregation, and thus more inequality in their neighborhood contexts, than adults.

When making residential choices, families with children may face different constraints and have different preferences than childless households. These different opportunities and priorities may interact with racial-ethnic inequalities to produce different levels of racial segregation for children than for adults. For example, racial inequality in economic re-

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© 2017 Russell Sage Foundation. Owens, Ann. 2017. "Racial Residential Segregation of School-Age Children and Adults: The Role of Schooling as a Segregating Force." *RSF: The Russell Sage Foundation Journal of the Social Sciences* 3(2): 63–80. DOI: 10.7758/RSF.2017.3.2.03. The author acknowledges the reviewers and editors for constructive and helpful feedback. Direct correspondence to: Ann Owens at annowens@usc.edu, 851 Downey Way, HSH 204, Los Angeles, CA 90089.

sources may be larger among families with children (where more white than minority families have two parents and thus two incomes) than among households without children. In terms of preferences, one important residential consideration more relevant to households with children is school options. Even as school choice policies weaken the link between neighborhood residence and school attendance, the majority of public school students—73 percent in 2007—attend their neighborhood school (Grady and Bielick 2010), so school options may contribute to parents' residential decision-making. Research indicates that white and higher-income parents are sensitive to living in minority neighborhoods or those that feed into minority schools because of schooling and child well-being concerns (Krysan 2002), whereas minority and lower-income parents view trade-offs between schools and neighborhoods differently and evaluate schools based on leadership, safety, and culture rather than on racial composition (Rhodes and DeLuca 2014). These different school-related preferences between white and minority parents may lead to racial residential segregation, higher than among childless individuals who do not take school-related concerns into account.

This article innovates on past research in two ways to advance the study of spatial inequality. First, I disaggregate segregation by household composition, examining racial residential segregation among children and adults in 2000 and 2010. I estimate both the *exposure* of children and adults to neighborhoods of varying racial-ethnic composition and the *evenness* with which children and adults are sorted across neighborhood by race-ethnicity. I consider segregation between whites and several nonwhite groups (blacks, Hispanics, and Asians), as well as between nonwhite groups and multiracial segregation among many racial-ethnic groups. Investigating segregation separately by household composition reveals different trends in segregation, implying different causes and processes. Second, I consider how school concerns contribute to residential segregation among chil-

dren and adults. I operationalize school concerns by examining how neighborhood racial segregation maps onto school district boundaries, comparing the proportion of children's and adults' segregation between neighborhoods that occurs within and between school districts.¹ This approach moves beyond research that considers only one administrative or political unit to examine how residential and school boundaries interact and overlap to produce segregation. Overall, results present a portrait of the racial residential inequality children and adults experienced from 2000 to 2010 and the role of schooling in shaping residential segregation, particularly for children.

RESIDENTIAL SEGREGATION AMONG CHILDREN AND ADULTS

A large body of research documents trends in racial residential segregation between neighborhoods (for a review, see Charles 2003). Segregation is typically measured with exposure indices that capture the degree of potential interaction between groups in neighborhoods, or with evenness indices that assess how similarly racial groups are distributed across neighborhoods of a larger area like the city or metropolitan area. From 1980 to 2000, black-white residential segregation declined in terms of both measures, though blacks remained hypersegregated from whites in many areas. Hispanics and Asians experienced declining exposure to whites as their populations grew, alongside small increases in segregation measured by evenness, though Hispanics and Asians remained less segregated from whites than blacks. From 2000 to 2010, these trends generally continued. Black and whites continued to be sorted more evenly across neighborhoods, while evenness between whites and other minority groups was more stable (Logan and Stults 2011). Hispanic and Asian residents continued to become more isolated (that is, exposed to more members of their own group) and exposed to fewer whites in the 2000s.

Few studies examine racial segregation separately among children and adults. John Logan and his colleagues (2001) estimate segregation

1. School attendance zone boundaries also likely affect residential decisions, but a lack of comprehensive data prevents a parallel analysis at the attendance zone, rather than district, level.

for children in 2000 using an exposure and an evenness index. The authors find that minority children are exposed to fewer white children than minority adults are to white adults. Children are also sorted by race more unevenly than adults across neighborhoods—compared with the larger metropolitan area context, children live in less diverse neighborhoods than adults. John Iceland and his colleagues (2010) conducted similar analyses at the household level, comparing households with and without children, and reach similar conclusions: households with children experienced higher levels of segregation and racial isolation than those without children in 2000. Paul Jargowsky (2014) documents residential segregation between neighborhoods in the late 2000s and finds that school-age children, particularly kindergarten- and pre-K children, are more racially segregated than all people using an evenness measure. Other research examines income segregation among adults and children and finds that economic segregation between neighborhoods both is higher among households with children than among those without and rose almost exclusively among households with children from 1990 to 2010 (Owens 2016). This article updates research on the unique residential segregation experiences of children by estimating racial segregation between neighborhoods with exposure and evenness indices for all racial groups among adults and school-age children in 2000 and 2010. I then move beyond past research to consider the role of school districts in contributing to residential segregation among children and adults.

Because the child population has more non-white members than the adult population does, exposure to minorities could be higher among children than adults simply because of these compositional differences.² However, research finds that evenness measures of segregation are also higher among children than adults, suggesting that higher levels of child segregation are not due only to compositional differences but also to different residential selection and sorting processes for households

with children compared to those without. One reason racial sorting of households between neighborhoods may differ depending on whether they have children is inequality in economic resources with which to purchase housing. The disparity in economic resources between white and minority (black and Hispanic) households with children may be greater than the economic disparity between white and minority households without children (Iceland et al. 2010). White households with children are more likely than their minority counterparts to involve two parents, creating a large racial economic disparity given that two-parent households tend to have more economic resources. In contrast, white and minority households without children may have more similar economic resources. The gap in ability to pay for housing between whites and minorities may thus be larger among households with children than among those without children, leading to higher residential racial segregation among households with children. Kris Marsh and John Iceland (2010) find this interaction between household structure, economic resources, and racial inequality in their comparison of segregation among single adults living alone with married-couple households—racial segregation is lower among single adults living alone in part because income differences between black and white households are smaller among this group than among married-couple households.

A second reason segregation may vary depending on the presence of children in the household is residential preferences. Families with children, particularly white families, may be more sensitive than those without children to living in minority neighborhoods if they use minority composition as a proxy for high-quality neighborhoods or for social problems such as crime (Krysan 2002; Goyette, Iceland, and Weininger 2014; Harris 1999). Research provides mixed evidence on whether households with children are more sensitive to neighborhood racial composition. Two studies indicate that households with children are not more sensitive than those without children to the racial composition of both the origin and

2. In 2010, 54 percent of the child population and 67 percent of the adult population was non-Hispanic white (U.S. Census Bureau 2010).

destination neighborhood when deciding where to move (Crowder 2000; South and Crowder 1998). Other research, however, indicates that households with young children are more likely than those without children to move when the proportion of minority neighbors in their neighborhood increases (Goyette, Iceland, and Weininger 2014). Higher sensitivity to racial diversity among households with children than among those without may lead to higher segregation among children in terms of both evenness and exposure.

THE ROLE OF SCHOOLS IN RESIDENTIAL SEGREGATION

Although only a few studies document residential segregation separately among children and adults, a large body of literature documents the racial segregation of children in another context: schools (see Reardon and Owens 2014). Measured by evenness, school segregation between black and white students declined—blacks and whites were more evenly represented across schools—during the 1990s and 2000s, though less than residential segregation did: 4.4 percent in school segregation versus 10 percent in residential for people of all ages (Stroub and Richards 2013; Logan and Stults 2011). School segregation measured by evenness increased slightly between whites and Asians and, particularly, between whites and Hispanics during this time. Exposure indices indicate that the isolation of minority students in schools has increased as their exposure to white students has declined over the past three decades (Orfield and Frankenberg 2014). These changes in exposure are larger than what would be expected given the decline in sorting between blacks and whites and the small increases in sorting between whites and Hispanics or Asians. Therefore, the rise in isolation of minority students is due in large part to the growth in the minority, particularly Hispanic, population.

School segregation estimates provide some suggestive evidence for the trend in residential segregation among children, but neighborhood and school composition do not always correspond. Research shows that schools tend to have higher proportions of minority and low-income students than the neighborhoods

they draw from, suggesting that white and higher-income families select out of local neighborhood schools (Saporito and Sohoni 2007; Saporito 2003; Saporito and Hanley 2014). Choices among school sectors (public, private, charter, or magnet) and school choice policies within sectors mean that residential and school segregation patterns are related to one another but may not be perfectly aligned, and though they affect one another, both residential and school segregation have independent predictors as well.

When making residential choices, households consider a bundle of amenities, including location, transportation, housing unit characteristics, and—for households with children—school options. Parents face trade-offs across housing units, neighborhoods, and schools when making residential decisions. Some parents prioritize neighborhoods and do not send their children to the local schools. In other cases, parents avoid neighborhoods linked to unacceptable school options. In 2007, about a quarter of parents of public school students in neighborhood schools reported moving to a neighborhood for the school (Grady and Bielick 2010). School options contribute to residential segregation among households with children because white and higher-income parents weigh neighborhood and school options differently than minority and lower-income parents do when making residential choices. White and higher-income parents use race- and class-based assumptions to assess school desirability. White parents conflate minority racial composition with lower school quality (Krysan 2002) and use school and district racial composition in their residential, school sector (public or private), and school choice decisions (Holme 2002; Lareau 2014; Krysan 2002; Lankford and Wyckoff 2006; Saporito and Lareau 1999).

Minority and lower-income parents may consider schools differently than white parents. First, Anna Rhodes and Stefanie DeLuca's study (2014) of low-income African American parents suggests that, although parents care about their children's education, minority parents may not give schools the same weight in residential decisions that white families do. In addition to being priced out of some school

districts, minority parents may privilege safety, housing unit amenities, and proximity to child care and employment over considerations about schools when making residential moves. Second, when minority parents do consider school options, they make different assessments than white parents. Minority parents may prefer schools where their children are not the minority (Henig 1996), and minority parents and students often consider safety, school leadership, a sense of belonging, and school culture rather than test scores or school composition (Wells 1996). Taken together, whites' school considerations contribute to their decisions to live in whiter, less integrated neighborhoods, and minority parents' school considerations, coupled with their economic limitations, may contribute to their residence in neighborhoods with more minority residents.

School options contribute to higher levels of racial segregation among households with children than among those without children because membership in a particular school district or school attendance zone is likely of more concern to households with children than those without when making residential choices. School quality is capitalized into home prices, creating high-cost and low-cost areas that affect all households regardless of whether they have children (Black 1999; Bayer, Ferreira, and McMillan 2007; Nguyen-Hoang and Yinger 2011). Still, childless households may not be willing to pay the additional costs associated with living near a particular school or in a particular district, even if high-quality schools may be good for their property value. Given the economic disparities between racial

groups, racial segregation may be higher among households with children than those without if high-income white families with children use their resource advantage to purchase a home in an area linked to a particular school that is unaffordable to lower-income and minority families with children, and childless white and minority households both place less weight on school options.

In this study, I provide comprehensive evidence on racial segregation between neighborhoods among school-age children and adults in 2000 and 2010, considering segregation between non-Hispanic white, black, Asian, other race, and Hispanic residents. I examine the relationship between school options and racial segregation by identifying how much residential segregation occurs within and between school districts. This analysis provides evidence on the degree to which school options, operationalized here as residence in a particular school district, contributes to racial residential segregation.

DATA AND METHODS

Summary File 1 of the 2000 and 2010 U.S. Census provides full counts of residents by age and race by Hispanic ethnicity in each census tract (neighborhood).^{3,4} I define two age groups: school-age children (six to seventeen years old) and adults (eighteen and older).⁵ I distinguish between non-Hispanic whites, non-Hispanic blacks, non-Hispanic Asians (non-Hispanic people who identify as Asian, Native Hawaiian, or Pacific Islander), non-Hispanic other race individuals (non-Hispanic people who identify as other race, American Indian or Alaska Native, or multiracial), and Hispanic (any race).

3. Summary File 4 of the 1990 Census also provides this information, but estimates are based on the 1 in 6 sample rather than full population. As Logan and colleagues (2001) note in their technical documentation, when examining segregation by race-ethnicity by age group, segregation indices estimated from sample data differ nontrivially from full count data. I explored the 1990 data but could not produce credible segregation estimates compared to prior research. Therefore, I focus on 2000 and 2010 data.

4. Neighborhoods can be defined at a variety of geographic scales. I also estimated segregation between block groups among residents older and younger than eighteen (data on race by detailed age categories are not available at the block group level). Block group segregation results are consistent with those presented here, though segregation is higher overall between block groups than between tracts, consistent with past research (results available on request).

5. Results are substantively identical comparing adults with all children younger than eighteen.

For brevity throughout the rest of the article, I do not specify non-Hispanic when referring to racial groups and I use *child* or *children* to refer to school-age child or children. I examine racial-ethnic segregation between neighborhoods within metropolitan areas, using the 2003 definitions of Metropolitan Statistical Areas provided by the Office of Management and Budget. I limit analyses to the hundred largest (most populous) metropolitan areas as of 2010. Segregation indices can be biased if the population of a particular group is small. Following Iceland and his colleagues (2010), I aimed to analyze metropolitan areas with at least one thousand members in each racial-ethnic by age (adult or child) group. Among the hundred largest metropolitan areas, one—McAllen-Edinburg-Pharr, Texas—has slightly fewer than a thousand black and other race children. I retain all hundred largest metropolitan areas to have a consistent sample across comparisons and to follow other work on segregation examining the hundred largest metropolitan areas—excluding McAllen does not noticeably change results.

I measure segregation using both an exposure measure and an evenness measure. I estimate exposure using the interaction and the isolation indices. The two-group interaction index between members of racial group x and y within a metropolitan area is estimated as follows (Massey and Denton 1988):

$${}_x P_y^* = \sum_{i=1}^n \left[\frac{x_i}{X} \right] \left[\frac{y_i}{t_i} \right]$$

where x_i , y_i , and t_i are the counts of members in racial-ethnic group x , y , and the total population of tract i , respectively. X is the total population of racial-ethnic group x in the metropolitan area. The interaction index can be interpreted as the probability that a randomly drawn member of racial-ethnic group x shares a neighborhood with a member of racial-ethnic group y . I separately estimate the interaction of whites, blacks, Asians, and Hispanics with all other groups (including those of other race).

The isolation index estimates the exposure of members of racial group x to other members of racial group x (the probability that a randomly drawn member of racial-ethnic group x

shares a neighborhood with another member of x), and it is estimated as follows:

$${}_x P_x^* = \sum_{i=1}^n \left[\frac{x_i}{X} \right] \left[\frac{x_i}{t_i} \right].$$

In the results, I present isolation and interaction indices for white, black, Asian, and Hispanic residents averaged across the hundred largest metropolitan areas, weighting the average by the number of members of the racial group in the metropolitan area. Weighting provides the exposure of the average person in that racial group to all other racial groups, allowing me to ascertain the neighborhood racial composition of the average member of each racial group in the hundred largest metropolitan areas.

I estimate interaction and isolation indices by age in two ways. First, I estimate interaction and isolation indices within an age group, considering only, for example, white children's exposure to white, black, Hispanic, Asian, and other race children (or white adults' exposure to white, black, Hispanic, Asian, and other race adults). This provides an estimate of exposure to neighborhood peer groups of children or adults, following Logan and his colleagues (2001). However, children's contexts are shaped by the racial composition of the adults in their neighborhoods as well. Therefore, I also estimate the interaction and isolation of children or adults to all people—for example, white children's exposure to all white, black, Hispanic, Asian, and other race residents (I estimate exposure to all same-racial-group members by combining the same-racial-group child isolation index and the interaction of children with same-racial-group adults).

I measure evenness using the entropy index H (Theil 1972; Theil and Finezza 1971; Massey and Denton 1988). H compares the entropy, or the extent of racial diversity, of each tract with that of the larger metropolitan area; it can be estimated with regard to two groups or among many racial groups. H ranges from 0 to 1, 0 indicating no segregation—the racial diversity in each tract is the same as the racial diversity in the metropolitan area—and 1 indicating complete segregation—each tract consists of only one racial group and the tract therefore has no racial diversity. I estimate age-group-specific H

to identify whether children are more unevenly sorted across neighborhoods by race than adults. H is less sensitive to racial composition than the exposure indices.

Entropy is estimated with the following equation (Reardon, Yun, and Eitle 2000):

$$E = \sum_{r=1}^n Q_r \ln \frac{1}{Q_r},$$

where Q_r is the proportion of the population comprised of racial-ethnic group r and entropy is estimated by summing over each racial-ethnic group (either two or many). Entropy is estimated for each tract and for the metropolitan area. H measures the overall departure of tracts' entropy from the metropolitan area's entropy, using the equation

$$H = \frac{\sum_{i=1}^k \frac{t_i}{T} (E - E_i)}{E},$$

where T is total metropolitan area population, t_i is tract i 's total population, E is metropolitan area entropy, and E_i is entropy in tract i . I estimate binary H between whites and each minority group (blacks, Asians, and Hispanics) separately, as well as between whites and all nonwhites. I also estimate binary H between blacks and Asians, blacks and Hispanics, and Asians and Hispanics. Finally, I estimate multiracial H to measure segregation among all groups: whites, blacks, Asians, those of other race, and Hispanics.

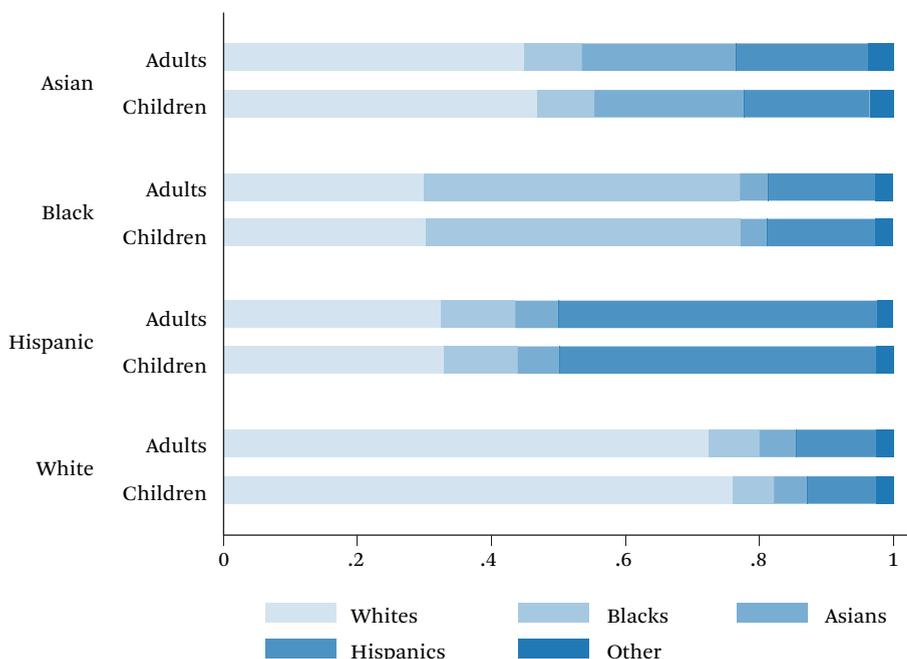
H can be decomposed to clarify the geographic source of segregation. Most metropolitan areas (ninety-five of the largest hundred) consist of more than one school district, so residential segregation can occur between neighborhoods within school districts or between neighborhoods in different school districts. Research measuring school segregation within metropolitan areas has decomposed H into its between- and within-district components, determining what proportions of school segregation in a metropolitan area are due to segregation between schools within the same district and to segregation between districts (Reardon, Yun, and Eitle 2000; Stroub and Richards 2013). Here, I decompose residential segregation into its between- and within-school district components—identifying what

proportions of neighborhood segregation are due to segregation between neighborhoods within the same district and to segregation between districts—to explore the role of school districts in contributing to children's and adults' racial residential segregation.

I link tracts to school districts using the MABLE/Geocorr Geographic Correspondence Tool for 2000 and 2010 elementary and unified district boundaries (Missouri Census Data Center 2012). MABLE/Geocorr provides a crosswalk between tracts and school districts based on the proportion of each tract weighted by population that lies within a school district, if the tract is divided. About half the tracts are completely within a school district, but the other half are divided by two or more districts, creating partial tracts within districts. For divided tracts, I multiply the number of residents or households in each racial-ethnic group for each age group by the population proportion of the tract in the district. The decomposition assumes that the smaller geographic unit (neighborhoods) lies within the larger unit (districts), so I treat both tracts and partial tracts as neighborhoods and reestimate residential segregation within metropolitan areas. Then I sum population counts by racial-ethnic group and age among tracts and partial tracts to the district level. Based on these counts, I estimate residential racial segregation between districts within metropolitan areas. The decomposability properties of H allow me to ascertain the proportion of residential segregation that occurs between districts by dividing residential segregation between neighborhoods by residential segregation between districts (Theil 1972). If school district boundaries contribute more to the residential decisions of families with children than those without, a larger proportion of children's than adults' residential racial segregation will occur between districts.

RACIAL INTERACTION AND ISOLATION

Figure 1 presents the neighborhood racial composition (exposure) experienced by adults or school-age children of four racial-ethnic groups in 2010: Asian, black, Hispanic, and white. I present the average neighborhood composition across the one hundred largest

Figure 1. 2010 Neighborhood Racial Composition, All Residents

Source: Author's calculations based on U.S. Census Bureau 2010.

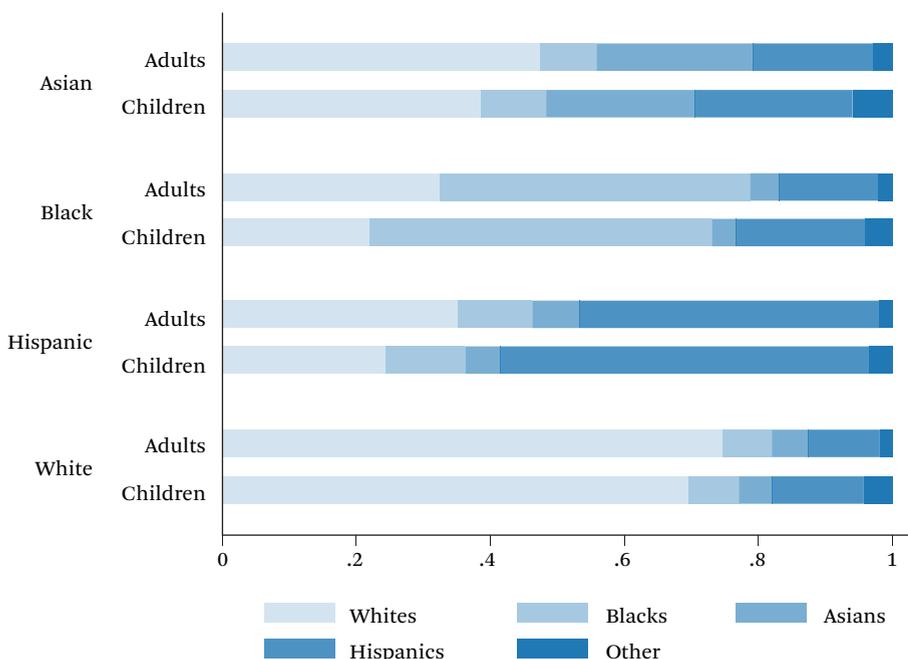
Note: Children denotes residents six to seventeen years old. All racial categories are non-Hispanic.

metropolitan areas. Estimates of neighborhood composition are derived from interaction and isolation indices, weighted by the population of the racial group. Figure 1 presents adults' and children's exposure to all residents of the neighborhood, not only to one's own age group, and differences between children and adults are minimal.⁶ In 2010, across the hundred largest metropolitan areas, the average white child lived in a neighborhood that was 76 percent white, 6 percent black, 5 percent Asian, 10 percent Hispanic, and 3 percent other race; the average white adult lived in a neighborhood that was 72 percent white, 8 percent black, 6 percent Asian, 12 percent Hispanic, and 3 percent other race. Differences between adults' and children's neighborhood composition are smaller among other racial-ethnic groups—the proportion of one's own racial group in the neighborhood for the average black, Hispanic, and Asian child is within 1 per-

centage point of the proportion of own racial group exposure for adults. Asian children are exposed to slightly more whites than Asian adults—47 percent in a child's neighborhood versus 45 percent for adults. The difference between adults' and children's neighborhood racial exposure changed little from 2000 to 2010—no gap between children and adults in exposure to neighbors of any particular race grew more than 1.5 percentage points for any racial group during this decade (see table 1). The most notable change from 2000 to 2010 is growing exposure to Hispanic and, to a lesser extent, Asian neighbors among all groups and declining exposure to white neighbors among all groups except blacks.

In contrast, figure 2 presents neighborhood racial composition of (exposure to) one's age group peers (adult or children) in 2010. Here, larger differences in exposure emerge, particularly for minority children compared to minor-

6. I do not report statistical significance when discussing differences because the estimates draw from data on the full population of residents in the hundred largest metropolitan statistical area (for further discussion, see Sharkey 2014).

Figure 2. 2010 Neighborhood Racial Composition, Own Age Group

Source: Author's calculations based U.S. Census Bureau 2010.

Note: Children denotes residents six to seventeen years old. All racial categories are non-Hispanic.

ity adults. In the hundred largest metropolitan areas in 2010, the average black child lived in a neighborhood where 22 percent of children were white, 51 percent were black, 4 percent were Asian, 19 percent were Hispanic, and 4 percent were other race; the average black adult lived in one where 33 percent of adults were white, 46 percent were black, 4 percent were Asian, 15 percent were Hispanic, and 2 percent were other race. The average Hispanic child lived in a neighborhood where 55 percent of children were Hispanic and 25 percent of children were white; the average Hispanic adult lived in one where 45 percent of adults were Hispanic and 35 percent of adults were white. The average Asian child lived in a neighborhood where 39 percent of children were white, 22 percent were Asian, and 24 percent were Hispanic; the average Asian adult lived in one where 48 percent of adults were white, 23

percent were Asian, and 18 percent were Hispanic. Minority children are exposed to more minority children, in particular Hispanic, than minority adults are to minority adults. White children are also exposed to more Hispanic children (and live among fewer white children) than white adults are to Hispanic adults, but the difference in exposure to Hispanics between adults and children (3 percentage points) is smallest among whites.

From 2000 to 2010, exposure to Hispanics of one's own age group increased for all racial-ethnic and age groups, but the increase for children was greater than that for adults. Greater and growing exposure to Hispanic same-age peers among children than adults is due in part to the larger Hispanic child population than Hispanic adult population.⁷ Same-age-group isolation indices (exposure to own racial group) declined for whites and blacks,

7. Rather than compositional differences (that Hispanic children are more numerous than Hispanic adults), an alternative explanation for greater exposure to Hispanics among children is differential residential patterns among households with and without children. To test this, I estimated the exposure of adults to children of dif-

Table 1. Average Neighborhood Racial Composition

		2000					2010				
		White	Black	Asian	Hispanic	Other	White	Black	Asian	Hispanic	Other
All neighbors											
White	Adult	0.777	0.068	0.043	0.091	0.022	0.723	0.077	0.055	0.120	0.026
	Children	0.805	0.056	0.037	0.081	0.021	0.760	0.062	0.050	0.103	0.025
Black	Adult	0.297	0.524	0.031	0.122	0.025	0.300	0.470	0.042	0.161	0.026
	Children	0.290	0.529	0.030	0.126	0.025	0.304	0.468	0.040	0.162	0.026
Asian	Adult	0.492	0.081	0.210	0.177	0.040	0.450	0.085	0.230	0.198	0.038
	Children	0.494	0.083	0.204	0.180	0.039	0.470	0.083	0.224	0.187	0.036
Hispanic	Adult	0.350	0.107	0.059	0.459	0.026	0.324	0.111	0.066	0.475	0.024
	Children	0.340	0.107	0.056	0.471	0.026	0.330	0.109	0.063	0.474	0.024
Own age group											
White	Adult	0.795	0.063	0.042	0.081	0.018	0.747	0.073	0.055	0.106	0.019
	Children	0.763	0.069	0.037	0.100	0.031	0.696	0.075	0.049	0.137	0.043
Black	Adult	0.321	0.511	0.032	0.114	0.022	0.325	0.463	0.043	0.148	0.021
	Children	0.222	0.579	0.028	0.140	0.031	0.220	0.511	0.036	0.193	0.040
Asian	Adult	0.516	0.077	0.212	0.162	0.033	0.475	0.083	0.233	0.180	0.029
	Children	0.423	0.098	0.209	0.214	0.056	0.388	0.095	0.222	0.236	0.059
Hispanic	Adult	0.377	0.104	0.061	0.435	0.023	0.352	0.111	0.070	0.447	0.020
	Children	0.271	0.119	0.051	0.527	0.032	0.245	0.117	0.053	0.550	0.035

Source: Author's calculations based on U.S. Census Bureau 2000, 2010.

Note: Children denotes residents six to seventeen years old. All racial categories are non-Hispanic. Racial composition for the average group member is estimated from isolation and interaction indices weighted by number of own group members in the MSA, averaged across the hundred largest MSAs.

more among children than adults, but increased for Asians and Hispanics. Table 1 presents a summary of the results described here, showing the average racial composition of children's and adults' neighborhoods with regard to all neighbors (the first panel, corresponding to figure 1) and own age group (the second panel, corresponding to figure 2) in 2000 and 2010.

Research draws on own-age-group exposure to conclude that segregation is higher among children than adults (Logan et al. 2001). Considering exposure to both own-age group and the entire neighborhood population, however, paints a more complex picture—racial composition of all of adults' and children's neighbors

is fairly similar. Both types of neighborhood exposure—to all neighbors and to own-age neighbors—are important in creating social contexts that affect children's well-being. The racial composition of all neighbors may be associated with social and economic resources available in the neighborhood, including adult socialization and supervision and the tax base that funds schools and public goods. Exposure to own-age group may have consequences when children interact—for example, in neighborhood schools or adolescent peer groups. The high level of neighborhood isolation among Hispanic children (0.55 in 2010), for example, is consistent with the fact that the average Latino student attended school where 57

ferent racial groups, and I find that adults are also exposed to more Hispanic children than Hispanic adults (Hispanics make up 25 percent of the child population and 17 percent of the adult population to which the average adult is exposed). Therefore, compositional differences account for some of the greater exposure of children to Hispanic children, though as I discuss, children are also sorted more unevenly by race than adults (and households with children are sorted more unevenly than those without) across neighborhoods.

Table 2. Residential Segregation Measured by Evenness Between Neighborhoods

	2000			2010		
	Adults	Children	Difference	Adults	Children	Difference
White-black	0.354	0.435	0.081	0.316	0.401	0.085
White-Asian	0.126	0.168	0.042	0.134	0.174	0.040
White-Hispanic	0.197	0.245	0.048	0.197	0.250	0.053
White-nonwhite	0.252	0.313	0.061	0.225	0.271	0.046
Black-Asian	0.297	0.342	0.045	0.273	0.323	0.050
Black-Hispanic	0.233	0.246	0.013	0.195	0.205	0.010
Asian-Hispanic	0.206	0.243	0.037	0.209	0.243	0.034
Multiracial	0.238	0.280	0.042	0.211	0.239	0.028

Source: Author's calculations based on U.S. Census Bureau 2000, 2010.

Note: Children denotes residents six to seventeen years old. All racial categories are non-Hispanic. Multiracial segregation is estimated among non-Hispanic whites, non-Hispanic Asians, non-Hispanic blacks, non-Hispanic individuals of other race, and Hispanics.

percent of his peers were Latino in 2011 (Orfield and Frankenberg 2014).

Children's exposure to their age group provides insight into what neighborhood racial composition will look like in the coming decades, given ongoing demographic changes. Whites are projected to be a minority nationwide by 2044 (Frey 2014), though a majority-minority metropolitan population will likely occur even sooner. Total neighborhood racial composition will gradually become more similar to children's current same-age contexts than adults' due solely to population change. Whether individuals will sort by race between neighborhoods differently as the minority population grows is unclear, though white-Hispanic and white-Asian evenness indicators among all residents have been generally stable over the past several decades, indicating stalled integration amid demographic change (Logan and Stults 2011). The next section explores this second aspect of segregation: whether evenness indices vary between children and adults in 2000 and 2010.

Racial Evenness Across Neighborhoods

Table 2 presents estimates of segregation in terms of the evenness with which racial-ethnic groups are spread across neighborhoods among adults and children (H). Segregation between whites and each minority group (blacks, Asians, Hispanics, and all nonwhites) as well as between minority

groups is higher among children than adults in both 2000 and 2010. The largest difference between children's and adults' segregation is in white-black segregation, for which H is more than 8 points higher among children than adults in 2000 and 2010.

Table 2 also indicates that whites and blacks became more evenly represented across neighborhoods (H declined) from 2000 to 2010 among both adults and children, consistent with research documenting declining black-white segregation. The adult-child gap, however, increased slightly, indicating that children experienced less integration than adults. Segregation measured by H between white and Asian adults and children increased, more among adults than children. White and Hispanic children became more unevenly distributed across neighborhoods over time, and the child-adult gap grew slightly because white-Hispanic adult segregation was stable. The increasing exposure of white children to Hispanic children documented in figure 2 and table 1 is thus due both to demographic changes and increased residential sorting between white and Hispanic children (though these estimates combine adults who live with and without children, as discussed below, complicating conclusions about sorting). In contrast, H between Hispanic children and black and Asian children declined or was stable, so the growing Hispanic child population, rather than increased sorting, accounts for the rising

Table 3. Proportion of Neighborhood Racial Segregation Occurring Between School Districts, Children and Adults

	2000			2010		
	Adults	Children	Difference	Adults	Children	Difference
White-black	0.457	0.536	0.079	0.490	0.561	0.071
White-Asian	0.472	0.480	0.008	0.486	0.496	0.010
White-Hispanic	0.438	0.497	0.059	0.462	0.524	0.062
White-nonwhite	0.477	0.560	0.083	0.505	0.576	0.071
Black-Asian	0.423	0.455	0.032	0.439	0.481	0.042
Black-Hispanic	0.361	0.400	0.039	0.385	0.427	0.042
Asian-Hispanic	0.406	0.429	0.023	0.419	0.456	0.037
Multiracial	0.458	0.528	0.070	0.484	0.544	0.060

Source: Author's calculations based on U.S. Census Bureau 2000, 2010.

Note: Children denotes residents six to seventeen years old. All racial categories are non-Hispanic. Multiracial segregation is estimated among non-Hispanic whites, non-Hispanic Asians, non-Hispanic blacks, non-Hispanic individuals of other race, and Hispanics. N=95 largest MSAs with more than one school district.

exposure to Hispanic children among minority children.

Overall, results indicate that white children are segregated from minority children more than white adults are segregated from minority adults. This suggests that white parents may be particularly sensitive to mixed-race neighborhood contexts and avoid neighborhoods with minority residents more than childless white households do. These analyses are at the individual level, but adults live in the same home, and thus same neighborhood, as their coresident children. Due to adult-child coresidence, estimating the evenness index separately for adults and children splits some households and does not place households into mutually exclusive groups. Therefore, children's segregation does not capture sorting preferences of future generations because adults are making the residential choices. This clouds future prediction and provides little insight into whether future generations will sort more or less by race. In the next section's exploration of the role of school districts in residential segregation, I consider evenness at the household level as well as the individual child or adult level to more clearly distinguish between households with and without children. Generally, the evenness index for adults estimated at the individual level as in table 2 provides an upwardly biased estimate of the evenness index for

households without children, because adults who live with children (included in individual-level estimates) are more segregated than those who do not. The difference in evenness between households with and without children is therefore larger than the difference in adult and child evenness presented here.

Racial Evenness Across Neighborhoods Within and Between School Districts

School considerations may be one reason that children are more unevenly sorted by race across neighborhoods than adults. Parents may make residential choices with school options in mind, so school concerns are a sorting mechanism shaping the neighborhood outcomes of children more than childless adults. The decomposability properties of H allow me to estimate the proportion of neighborhood segregation in terms of evenness that occurs between districts, the remainder occurring between neighborhoods within school districts. I hypothesize that more neighborhood segregation occurs between school districts among children than among adults—residential sorting of children between districts is likely higher because the boundaries are more relevant to them and their families, so segregation between school districts accounts for more of the total residential sorting between neighborhoods. Table 3 presents the results.

Table 4. Proportion of Neighborhood Racial Segregation Occurring Between School Districts, Households with and Without Children

	2000			2010		
	Without Children	With Children	Difference	Without Children	With Children	Difference
White-black	0.425	0.528	0.104	0.464	0.546	0.082
White-Asian	0.431	0.484	0.053	0.461	0.488	0.027
Non-Hispanic			0.082			0.068
White-Hispanic	0.407	0.489		0.445	0.513	
White-nonwhite	0.439	0.549	0.110	0.478	0.561	0.083
Black-Asian	0.384	0.463	0.079	0.404	0.490	0.086
Multiracial	0.427	0.524	0.097	0.463	0.536	0.073

Source: Author's calculations based on U.S. Census Bureau 2000, 2010.

Note: Children denotes residents six to seventeen years old. All racial categories include Hispanic and non-Hispanic householders except the non-Hispanic white-Hispanic segregation estimate. Multiracial segregation is estimated among whites, Asians, blacks, and other race, regardless of Hispanic ethnicity. N=95 largest MSAs with more than one school district.

In 2000, about 54 percent of the residential segregation (in terms of evenness) between black and white children occurred between school districts on average across metropolitan areas (segregation between neighborhoods within districts accounts for the rest). About 46 percent of residential segregation between black and white adults occurred between districts. This large proportion among adults, for whom school district boundaries are less relevant, underscores that district boundaries often map onto municipality boundaries or geographic areas with other amenities attractive to adults without children that influence residential choices. Further, childless homeowners may pay attention to school district boundaries when buying a home because of the capitalization of school quality into home prices, and some currently childless households are empty-nesters who made residential choices when they did have children in the household or young householders planning to have children. However, more residential segregation occurred between school districts for children than for adults, and results are similar for segregation between other racial-ethnic groups. The proportion of neighborhood segregation attributable to between-district segregation is up to 8 percentage points greater among children, depending on the racial groups of interest. The greatest differences be-

tween children and adults in the proportion of neighborhood segregation attributable to segregation between districts are for white-black, white-nonwhite, and multiracial segregation. This suggests that school district boundaries play the biggest role in shaping the residential outcomes of white children, contributing to their segregation from minorities. In 2010, residential segregation between districts again accounts for a greater proportion of total residential segregation among children than among adults.

Of course, children do not live in households by themselves, so I also estimated residential segregation (evenness) between neighborhoods and the proportion attributable to between-district segregation at the household level, comparing households with and without school-age children. Table 4 presents these results.

Consistent with table 3, more residential segregation occurs between districts among households with children than among those without. The proportion of residential segregation occurring between districts for childless households is lower than the proportion for adults in table 3, as the individual-level analysis included adults who live in households with children. The difference in the proportion of residential segregation attributable to between-district segregation is thus larger between

households with and without children than between adults and children—up to 11 percentage points. I prefer the individual-level results and present them throughout this article because, although the Census Bureau provides household counts by the presence of children age six to seventeen by householder race, the racial groups include both Hispanic and non-Hispanic householders. The only available race-by-ethnicity category is for non-Hispanic whites, so I can estimate segregation between non-Hispanic whites and Hispanics. Given the importance of the residential patterns of Hispanics throughout the results presented, I prefer the individual-level results where Hispanic ethnicity is identified.

The proportion of neighborhood racial unevenness due to sorting between districts grew from 2000 to 2010 among both adults and children for all racial group comparisons, in both individual- (table 3) and household-level (table 4) estimates. This growth could be due to changes in either between-neighborhood or between-district evenness. Table A1 presents estimates of average residential segregation between districts in these years: among most racial-ethnic groups, for both adults and children, it declined (exceptions are white-Asian, white-Hispanic, and Asian-Hispanic). Table 2 shows that residential segregation between neighborhoods also declined between most racial groups, so the growing proportion of neighborhood segregation between districts indicates that residential segregation declined less than between-district segregation. The adult-child gap in the proportion of residential segregation between districts increased for some racial-ethnic groups but declined for others during this time. Therefore, during the 2000s, school district boundaries have not necessarily become a stronger influence on the residential decision-making of parents than on that of childless adults. School districts may coincide with municipalities or clusters of neighborhoods comprising a section of a city or metropolitan area; recent research notes the importance of considering multiple geographic scales of segregation, finding that Hispanic-white and Asian-white macro-scale segregation grew in the 1990s (Reardon et al. 2009). Macro-scale segregation

could correspond to school districts, and future research should investigate whether the geographic scale of segregation also varies by age group.

Among all racial-ethnic group comparisons, about half of children's residential segregation is due to children living in neighborhoods in different school districts. A higher proportion, about 60 percent, of children's school segregation is due to children attending schools in different school districts (Stroub and Richards 2013). This suggests that the residential population of school districts is more diverse than the student population of schools in the district. This disparity is consistent with the work of Saporito and his colleagues (Saporito and Sohoni 2007; Saporito 2003; Saporito and Hanley 2014) showing that public schools have a student body that is poorer and more minority than the child population in the school's attendance area. In part, this is due to white and higher-income parents opting out of the neighborhood school, sending their children to private or choice schools. White and higher-SES parents may be more willing to live in diverse residential settings than to send their children to diverse schools.

DISCUSSION

Children are exposed to higher racial residential segregation, and therefore face greater neighborhood inequality, than adults. Exposure to neighbors of all ages shapes children's outcomes through neighborhood effects on local institutional resources like schools and other public spaces, neighboring networks and social support, and adult supervision and socialization of children. In terms of exposure to all neighbors, children and adults experience fairly similar contexts. However, other neighborhood mechanisms including adolescent peer groups and neighborhood school composition depend on exposure to one's age group, and in this regard children face more segregation. Children of each racial-ethnic group are exposed to fewer whites and more minority children, particularly Hispanic, than adults are to adults of other racial groups. This difference is driven in part by the larger (and growing) ratio of Hispanic children to Hispanic adults. Examining the exposure of children to peers

also emphasizes the rapidly changing demographic context that future generations will experience. Even if residential sorting processes do not change in ways that create more segregation, majority white neighborhoods may be obsolete for these subjects' children or grandchildren.

In terms of how evenly members of different racial-ethnic groups are represented across neighborhoods, children are also more segregated than adults, suggesting that children experience more homogeneous, less diverse neighborhoods than adults. Research on the importance of neighborhoods for children's well-being generally takes two approaches. First, most neighborhood effects research identifies an impact associated with living in a neighborhood of a certain composition. Higher segregation among children than adults suggests that more minority children than minority adults are exposed to neighborhoods of concentrated disadvantage, for example. Therefore, neighborhoods are a more critical context for the population of children than adults. Second, a smaller body of research takes an aggregate-level approach, identifying negative effects of neighborhood segregation, rather than composition, on children's outcomes (Quillian 2014). This research suggests that the degree of inequality between neighborhoods—not just the composition of immediate neighborhood—matters. My findings suggest that children's contexts are more unequal than adults', and that children thus bear the negative consequences. Future research should continue to investigate the absolute versus relative impact of neighborhood disadvantage.

One factor that contributes to higher segregation among children is the link between neighborhood residence and school attendance. Neighborhood residence is often pointed to as an explanation for school segregation, but concerns about schooling also contribute to neighborhood segregation. Parents consider trade-offs across school districts, neighborhoods, schools, and housing units when making residential decisions, and segregation between neighborhoods occurs both between and within school districts. Consistent with the hypothesis that school options are

one driver of residential choices among families with children, I find that about half of children's racial residential segregation occurs between school district boundaries, a greater proportion than for adults' racial residential segregation. Concerns about school options may have aggregated into macro-scale patterns of inequality and spatial segregation. In particular, white parents seem to avoid living in school districts where black and Hispanic children live, perhaps because they use racial composition as a proxy for neighborhood—and local neighborhood school—quality (Harris 1999; Krysan 2002). Although school choice policies, charter schools, and magnet schools offer some families choice within districts, only a handful of voluntary interdistrict public school choice programs exist. As long as neighborhoods are demarcated by school district boundaries limiting enrollment options, parents will take these boundaries into account when making residential choices, which may contribute to segregation between white and minority children. School concerns also shape residential patterning within districts, and future research should investigate the role of school attendance zones and policies in contributing to residential segregation.

This study emphasizes the importance of jointly considering two critical social contexts for children's development: schools and neighborhoods. Considerable research documents school segregation, but less is known about the residential experiences of children versus those of adults. To design effective policies aimed at equalizing both neighborhood and school contexts, policymakers must understand the degrees to which neighborhood composition contributes to school segregation and to which school concerns contribute to neighborhood residential decisions and segregation. The two contexts are intertwined, and a policy that breaks the link between school attendance and neighborhood residence—beyond intra-district school choice plans—is necessary to break the cyclical relationship and reduce inequality among both contexts. Understanding segregation in terms of multiple contexts is critical in identifying the degree to which children experience multiple disadvantages as they navigate their social worlds.

Table A1. Residential Segregation Between School Districts

	2000			2010		
	Adults	Children	Difference	Adults	Children	Difference
White-black	0.171	0.249	0.078	0.163	0.240	0.077
White-Asian	0.062	0.085	0.023	0.068	0.090	0.022
White-Hispanic	0.097	0.140	0.043	0.099	0.145	0.046
White-nonwhite	0.129	0.188	0.059	0.122	0.167	0.045
Black-Asian	0.135	0.171	0.036	0.129	0.170	0.041
Black-Hispanic	0.082	0.097	0.015	0.073	0.086	0.013
Asian-Hispanic	0.166	0.114	-0.052	0.168	0.120	-0.048
Multiracial	0.115	0.156	0.041	0.108	0.137	0.029

Source: Author's calculations based on U.S. Census Bureau 2000, 2010.

Note: Children denotes residents six to seventeen years old. All racial categories are non-Hispanic. Multiracial segregation is estimated among non-Hispanic whites, non-Hispanic Asians, non-Hispanic blacks, non-Hispanic individuals of other race, and Hispanics. Estimates in table 3 do not equal these estimates divided by those in table 2 because table 3 presents the average proportion, not the proportion of averages, and N for table 3 and this table is the ninety-five largest MSAs with more than one school district, not the hundred largest MSAs.

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