Coloring Outside the Lines:
*Racial Segregation in Public Schools and their Attendance Boundaries**

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ABSTRACT

Coloring Outside the Lines: Racial Segregation in Public Schools and their Attendance Boundaries

In a series of scholarly articles James Coleman hypothesized that student enrollment in private schools does not change levels of racial segregation in public schools. We test this hypothesis directly by comparing the actual racial composition of schools and the racial composition of school-aged children living in their corresponding attendance areas. To make this comparison we link maps of school attendance boundaries with 2000 Census data, the Common Core of Data, and the Private School Survey for the 22 largest U.S. school districts. Results show that public schools would be less racially segregated if all children living in a school district attended their local, neighborhood schools. Similarly, we find that private, magnet, and charter schools contribute to overall racial segregation within school districts. The effects are particularly striking for segregation between white and Hispanic children. Finally, a few school districts with formal desegregation policies succeed in reducing racial segregation. Our analyses contribute to debates regarding recent proposals to expand "free market" educational reforms that promote student mobility across public, private, and charter schools.

For the past three decades scholars and educational policy makers have wondered how much the enrollment of children in private, charter, and magnet schools has impacted racial segregation in traditional public schools. Debates and speculation about the impact of family choices have taken place in the absence of data that can be used to explore how much additional segregation in local, neighborhood schools results from children attending schools other than those serving their residential areas. This issue is pressing given that the introduction and expansion of school voucher programs and other "free market" educational reforms may exacerbate segregation as it exists currently. Policies that aim to improve the delivery of educational services by subsidizing the movement of students into private and charter schools must be informed by accurate and comprehensive information describing the impact of student mobility on racial segregation across schools.

While researchers investigating residential racial segregation consistently find that race influences neighborhood choice (Alba and Logan 1993; South and Crowder 1998; Massey and Denton 1993), proponents of "school choice" continue to debate whether familial choices for schools are racially motivated. For example, choice advocates argue that the racial composition of a school has little bearing on the choices that families make: "Only for the most devout racists will the racial and ethnic makeup of the student body matter more than the school's program and pedagogical characteristics" (Merrifield 2001, p. 136). Others even argue that "Choice turns out to be entirely compatible with such traditional social policy objectives as integration–indeed to be a powerful catapult across the neighborhood, district, and even municipal borders that are now the primary barriers to greater racial and ethnic integration" (Finn, 1990: p. 7). Choice advocates are buttressed by researchers such as James Coleman (1992) who state that racial segregation in traditional, neighborhood-based public schools is not influenced by the movement of children into private schools. Coleman and his colleagues argued that private school enrollment does "not increase the level of segregation beyond that which statistical evidence indicates would exist in the public sector if private schools were absent." (Coleman, Hoffer and Kilgore, 1982b, p. 220).

This bold hypothesis led to an extensive exchange with Taeuber and James in *Sociology of Education* (see Coleman, Hoffer and Kilgore, 1982a, 1982b, 1983; Taeuber and James, 1982, 1983), that can be best summarized by the following passage:

> One of the policy questions Coleman, Hoffer, and Kilgore seek to analyze is the segregative effect of programs that would facilitate the movement of students from the public to the private sector...Coleman et al. suppose that in the very recent past private schools did not exist and their students were all in public schools. This would provide a ***base of comparison*** for assessing whether the current mixed public and private school system is more segregated than the hypothetical all-public school system...The hypothetical all-public school system is created by absorbing black and white private school students into its public schools in the exact proportion to the existing racial composition of each public school...The ultimate policy conclusion that an expansion of private schooling would not increase segregation in the public schools is thus a simple consequence of the initial assumptions (Taeuber and James, 1982 p. 138). [emphasis added.]

In contrast to Coleman, other scholars contend that allowing greater educational mobility will exacerbate racial segregation. These scholars theorize that white and wealthier students will take steps to maintain their social status by distancing themselves from groups they perceive to be of lower standing (Taeuber and James 1982; Wells and Crain 1992). A number of researchers make this argument in their assessment of various choice policies (Henig 1996; Lankford, Lee, and Wyckhoff 1995; Lankford and Wyckhoff 1999; Meyer and Glazerman 1997; Saporito and Lareau 1998; Saporito 2003; Smith and Meier 1995; Willms 1996; Wrinkle, Stewart and Polinard 1999; Witte 2000; Yancey and Saporito 1995a, 1995b). From this view, broadening the educational options of students will merely add another layer of stratification to an educational system already variegated by race and class (Astin 1992).

Even though many scholars have debated the merits of Coleman's hypothesis that increasing choice in private schools would not impact racial segregation in public schools, none of them have tested his arguments empirically. Specifically, no researchers have assessed how much the choices of families for private, magnet, and charter schools impacts racial segregation in neighborhood public schools. Similarly, no one has investigated how enrollment patterns across *all schools* within a district–including neighborhood, private, magnet, and charter schools–contribute to overall racial segregation within a school district.

These questions have been difficult to address because of the difficult task of acquiring original geographic data from multiple school districts and linking them with existing demographic data describing schools and residential areas. We overcome these constraints by collecting maps describing school attendance boundaries for the largest school districts in the country. We then use mapping software to link these maps with complete-count population data from the 2000 U.S. Census. This allows us to describe the racial characteristics of school-aged children living within school catchment areas. Assembling these data enables us, for the first time, to establish a ***baseline level*** of racial segregation in school neighborhoods. As suggested in the debates between Coleman, Hoffer and Kilgore (1982a, 1982b, 1983) and Taeuber and James, (1982, 1983) our baseline measure represents a hypothetical level of racial segregation across schools within a district if all children attended the public schools serving their neighborhoods.

We link data describing the racial composition of school catchment areas with the National Center for Educational Statistics' *Common Core of Data* (hereafter called the *CCD*). The *CCD* describe enrollment figures by race and grade-level for virtually every U.S. public school (including charter and magnet schools). Linking data describing the racial composition of schools with corresponding data on the racial characteristics of school-aged children within school attendance boundaries allows us to assess the extent to which school populations differ in racial composition from that of their official neighborhood attendance areas. Finally, we use data from the National Center for Educational Statistics *Private School Survey* and the *CCD* to determine racial enrollments for each private, charter, and magnet school that is located within the school districts included in this study.

Compiling these data allow us to answer three key questions. First, how does racial segregation differ between public neighborhood schools and the catchment areas they serve? Empirically investigating these differences allows us to assess the validity of Coleman's claim that the exodus of children from neighborhood schools to private schools has no impact on racial segregation in public schools. Second, how does racial segregation of students across ***all*** schools within a district compare with racial segregation of school-aged children living in school catchment areas? This allows us to assess how much the redistribution of some students from neighborhood schools to private, magnet, and charter schools affects overall segregation within a district. Third, how do desegregation policies in school districts affect the link between segregation in neighborhoods and schools? Examining school districts that have "controlled choice" desegregation policies enables us to determine whether their policies are effective.

Literature Review

Thomas Schelling was among the first scholars to argue that small differences in racial preferences among individuals belonging to different races could lead to socio-spatial patterns consisting of racially distinct areas (Schelling 1971). A number of *attitudinal studies* confirm that individuals from different racial groups do, in fact, base their residential preferences upon neighborhood racial composition. For example, white families are found to be less willing to live in a neighborhood as the number of their non-white, and particularly black, neighbors increases. By contrast, African Americans prefer neighborhoods that are more integrated (Charles-Zubrinsky 2000; Emerson, Yancey, and Chai 2001; Farley 1992; Farley and Schuman 1976; Farley et al. 1994; Timberlake 2000). Other attitudinal surveys of respondents within specific cities indicate that the cumulative result of white preferences for white neighborhoods may contribute to persisting racial segregation (Clark 1991, 1992). While these studies are compelling, they are limited because they rely upon survey questions that elicit responses from people regarding their *preferences* for hypothetical neighborhoods, rather than their actual behaviors.[1] As Harris (1999; 2001) argues, such questions may not accurately reflect how racial factors likely influence actual choice in real-world settings.

Research examining *actual* neighborhood choices suggest that white and non-white households make efforts to live in predominantly white neighborhoods, while non-white families show greater tolerance for integrated neighborhoods. For instance, Alba and Logan (1993) find that, even with limited economic resources, whites make efforts to avoid residential areas with high percentages of minorities; by contrast, even with sufficient economic resources, black families are not found in areas that are predominantly white. Similarly, South and Crowder (1998) find that white families are much more likely than black families to move away from racially-mixed census tracts to predominantly white tracts. White families are also less likely than black families to move away from predominantly white tracts to racially mixed tracts.

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[1] These studies rely upon the "Farley-Schuman show-card" method to measure preferences of African Americans and whites for neighborhoods that varied in their black-to-white ratios (Farley 1992; Farley and Schuman 1976; Farley et al. 1994). Respondents were shown cards that depicted houses occupied by whites and African Americans (or where shown cards of empty houses and asked to represent their ideal racial mix of neighbors).

Finally, Crowder (2000) finds that, among whites:

> The annual likelihood of leaving the neighborhood increases significantly with the size of the minority population in the neighborhood, and whites are especially likely to leave neighborhoods containing combinations of multiple minority groups. These neighborhood effects persist after controlling for a wide range of micro-level mobility predictors and do not appear to be rooted in the reaction to nonracial social and economic characteristics of the neighborhood.

As with studies of residential mobility, researchers studying private school enrollment have been able to describe the school choices of families who live in broad areas identified by zip codes or census areas (Fairlie and Resch 2002; Lankford and Wyckoff 2001; Saporito, Yancey, and Louis 2001). Theses studies typically find white children are more likely to attend a private school as the percent of non-whites in their neighborhoods increases and this is true even after controlling for other individual-level social and economic factors often associated with school choice (Lankford and Wyckoff 2002). Similar results are found among magnet school participants. Saporito (2003) uses data describing the movement of magnet school students into and out of high school attendance boundaries in one city; as with studies of private school enrollment, he finds white children are more likely to apply to and enroll in magnet schools as the percent of nonwhites in their school catchment areas increases. This study also demonstrated that the cumulative consequences of these individual choices led to higher levels of racial segregation than would exist if every child attended the school serving his or her residential area. Although the literature on school selection is not extensive, it uniformly suggests that the differential withdrawal of white and non-whites students from integrated public schools increases racial segregation within public school districts. Still, none of this research documents if and how much student mobility increases segregation in schools compared with racial segregation across residential areas in multiple school districts.

In addition to the literature describing individual choices for schools (and the implications of these choices for educational inequality), there is a second body of literature that examines changes in school segregation over time. These studies are based on the *Common Core of Data* and consistently show that black/white racial segregation has increased over the last decade. This increase represents a reversal of the desegregation patterns observed between the 1960s and the 1990s (Frankenburg, Lee, and Orfield 2003; Reardon and Yun 2001; Reardon, Yun, and Eitle 2000; Logan and Oakley 2004; Logan 2002). For example, Logan's nation-wide report found that, on average, school districts experienced a two-point increase in school segregation (as measured by Dissimilarity) between the 1989-90 and 1999-00 school years. This shift is significant because residential segregation declined by four points during that same period. Reardon and Yun (2003) find a similar trend in southern states between 1990 and 2000 in which decreasing residential segregation was accompanied by increasing school segregation. Research also indicates that segregation observed between white and Hispanic students has risen steadily since the 1970s (Frankenburg, Lee, Orfield 2003). Many of these scholars argue that private schools and other choice options contribute to the growth of racial segregation in public schools.

In addition to the impact of school choice, scholars have identified several other factors that might explain the trends noted above. These include an increase in racial segregation *between* school districts (Reardon, Yun, and Eitle 2000; Reardon and Yun 2001), the limited ability of suburban and urban school districts to exchange racially diverse students,[2] and the retrenchment of court-ordered desegregation programs. For example, Logan concludes:

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[2] In 1974, the U.S. Supreme Court rendered the *Milliken v. Bradley* decision, which invalidated court-ordered city-suburban desegregation plans.

"Increased school segregation...did not result from changes in where children lived. It was caused by changes in policies that once worked effectively to reduce school segregation, but that were reversed in the 1990s" (2002, p.5). To be sure, researchers have used sophisticated techniques such as multiple segregation indices and complete-count school data from the *CCD* to document historical patterns in racial segregation.[3] Still, these studies have not been able to determine whether trends are due to increases in ethnic minority populations, population shifts across school districts, or changes in district desegregation efforts across time (Logan 2004). Because we link school enrollment data with data describing school-aged children in their corresponding attendance areas, we can begin to isolate the influence of school choice on racial segregation from other demographic changes.

Data and Methods

While it would be extremely difficult to address all the gaps in the literature assessing the links between school choice and racial segregation, our unique data and methods allow us to make a complimentary contribution to existing work by examining differences in racial segregation between schools and neighborhoods at one point in time for multiple schools districts. Our data allow us to examine the effects of student choices while "holding constant" district racial composition and residential segregation. This is because residential segregation serves as a "baseline" against which we compare rates of school segregation. Our data provide another advantage; because some of the school districts included in our study use voluntary desegregation programs, we are able to examine their success in reducing racial segregation

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[3] It should be noted that much of the research combines grade levels when constructing school district segregation indices. Most do not include private schools in their analyses and there are no distinctions made between magnet/charter and neighborhood schools. We disaggregate the *CCD* by grade-level and school type and marry school information with neighborhood composition to overcome the methodological shortcomings in this literature.

relative to our baseline measure of segregation across school attendance boundaries. Thus, compared with studies of national trends, we take a fine-grained look at the dynamics of segregation within school districts. Where other scholars speculate about private schooling patterns and desegregation policies, we gather data that allow us to examine their effects more precisely.

Collecting and Integrating Data Describing Schools and their Neighborhoods

In order to assess how current private school attendance affects the composition of local public schools, it is necessary to determine what the racial composition of public schools would be if every child attended their assigned neighborhood school. To do this, in 2000 we began contacting the largest public school districts in the United States to collect maps that depicted their school attendance boundaries. Over the course of four years, we were able to obtain and process maps for the 22 largest school districts in the U.S.[4] Table 1 shows the number of elementary-aged students in each district, the number of elementary school catchment areas in the district, the form of the original map (i.e., a paper map or computerized GIS map) and the school-year of the map. Some school districts had a department that worked with boundary maps; however, even these maps were maintained in a myriad of forms. Some maps were available in GIS form (typically as ArcView Shapefiles) but many districts maintained paper maps (some of which were drawn on commercially available fold-out street maps). We attempted to obtain and construct maps representing the 1999-00 or the 2000-01 school years for all districts. This was

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[4] Our original goal was to collect maps from the 100 school districts but this proved to be virtually impossible given limits of time and resources and the inability, reluctance, or refusal of some school districts to provide maps of their attendance boundaries. Still, we were able to collect maps of the 22 largest school districts (measured by total student enrollment in 1998-99 school year) and for 22 additional school districts ranked 27 through 92. Since the districts ranked 27 to 92 represent a convenience sample we do not include them in the main body of the paper but, instead, show results for these school districts in Appendix B.

possible for 20 of the 22 school districts.[5]

While these school districts represent less than .2% of the total number of school districts in the U.S., they include 11.4% of all public school children, and significantly for this study, these school districts are racially diverse, as shown in Table 2. Because of the complexity of

Table 1. Characteristics of 22 Largest School Districts in the Continental U.S.

School District	Public School Students Grades 1-4	School Boundaries	Type of Map	Year of Map
New York City	327,546	646	Paper	00–01
Los Angeles Unified	250,822	433	GIS	00-01
City of Chicago	156,154	407	GIS	00-01
Dade Cnty.	112,869	197	GIS	99-00
Broward Cnty.	76,507	124	GIS	99-00
Philadelphia City	66,065	173	GIS	99-00
Houston I.S.D.	74,507	177	Paper	00–01
Clark Cnty.	79,228	148	GIS	00–01
Detroit City	56,746	154	GIS	00–01
Dallas Independent	55,878	146	Paper	99-00
Hillsborough Cnty.	54,934	105	GIS	01-02
Fairfax Cnty.	45,925	132	GIS	99-00
Palm Beach Cnty.	47,977	84	GIS	00–01
San Diego City	48,842	117	Paper	99-00
Orange Cnty.	49,195	104	Paper	01-02
Prince Georges Cnty.	41,911	124	GIS	99-00
Duval Cnty.	42,073	100	Paper	99-00
Montgomery Cnty.	41,416	124	Paper	99-00
Pinellas Cnty.	34,711	75	Paper	99-00
Milwaukee	32,930	93	GIS	99-00
Baltimore City	32,135	112	GIS	99-00
Baltimore Cnty.	31,420	99	GIS	00-01
Total	**1,759,791**	**3,874**		

Notes: Numbers of public school students in grades one to four were derived from the *CCD*. School districts are ranked by the number of public school students in each district for the 1999-00 school year as reported by NCES. The data for Fairfax County includes attendance boundaries and schools for Manassas Park School district.

[5] Some school districts did not archive either their paper or digital maps and, where possible, we reconfigured the maps to represent either the 1999-00 or 2000-01 school years. In the few cases in which school district personnel were unable or to unwilling to produce information to reconfigure the maps, we combined the more recent maps with the corresponding year for of the Common Core of Data.

integrating data from maps with data from the census, we analyze elementary schools in this study (defined as any school containing a grade level from one to four). Our final data consist of 3,874 elementary school attendance boundaries.

Integrating School Attendance Boundaries with 2000 Census Data

We converted all 22 school district maps into computerized form using the same decimal degree coordinate system as the GIS maps available from the U.S. Census Bureau. This allowed us to integrate school attendance boundaries with existing geographic data available from the U.S. Census Bureau. Once all attendance boundaries were converted to GIS maps, we integrated elementary school attendance boundaries with block-level data from the census bureau. This was done by "overlaying" the digital maps of school catchment areas on top of maps of census blocks. These overlays allowed us to identify the school that served every block in each school district. Because the 2000 census data identify **all** persons by age and race at the block level, we were able to determine the number and race of children who lived in each school attendance area. Using this information, we tabulated the number of children in each school catchment area who were white, non-Hispanic and between the ages five to nine.

Integrating Census Counts of School Attendance Boundaries with the Common Core of Data

Our unique set of maps allow us to create a baseline measure of racial segregation across school attendance boundaries. The next step is to link these maps with information describing the racial composition of the elementary schools that actually serve these attendance boundaries. We do this by using information from *Common Core of Data* available from the U.S. Department of Education's National Center for Educational Statistics. The *CCD* describe the number of children by grade-level and race for virtually every public school in the country. This enables us

Table 2. Public and Private School Racial Composition by Race, 22 Largest School Districts

	Racial Composition of all Schools (Public and Private)			Racial Composition of Private Schools				% of White, Black, and Hispanic Students Enrolled in Private School		
School District	Pct. White	Pct. Black	Pct. Hispanic	Pct. Private	Pct. White	Pct. Black	Pct. Hispanic	Pct. White	Pct. Black	Pct. Hispanic
New York City	23.4	33.1	33.5	21.2	52.0	21.5	18.7	47.1	13.8	11.8
Los Angeles Unified	14.7	12.0	64.2	11.9	43.3	12.2	29.2	35.0	12.1	5.4
City of Chicago	16.1	46.7	32.7	18.6	44.0	28.2	22.5	50.8	11.2	12.8
Dade Cnty.	20.6	27.8	49.2	16.0	39.7	11.5	46.0	30.8	6.6	14.9
Broward Cnty.	45.2	30.2	19.0	18.0	66.1	14.8	14.5	26.3	8.8	13.8
Philadelphia City	29.3	53.3	11.7	23.5	64.7	24.1	5.8	52.0	10.6	11.7
Houston I.S.D.	17.1	29.2	49.8	12.4	60.0	15.7	18.4	43.4	6.7	4.6
Clark Cnty.	50.5	11.5	28.5	7.9	69.0	6.4	14.8	10.7	4.3	4.1
Detroit City	5.3	86.5	5.0	10.0	13.9	75.2	5.0	26.6	8.7	10.0
Dallas Independent	15.6	32.8	49.1	12.0	59.2	16.2	20.3	45.6	6.0	5.0
Hillsborough Cnty.	54.1	20.9	20.6	16.5	69.8	10.2	14.3	21.3	8.1	11.4
Fairfax Cnty.	60.5	9.7	11.8	13.3	73.3	5.5	7.1	16.1	7.5	8.0
Palm Beach Cnty.	56.5	23.9	15.6	19.1	79.9	7.4	8.9	27.0	5.9	10.9
San Diego City	29.6	12.6	37.1	9.2	63.3	5.0	17.9	19.8	3.7	4.5
Orange Cnty.	47.3	25.1	21.6	15.9	69.8	10.9	13.2	23.4	6.9	9.7
Prince Georges Cnty.	16.0	71.4	7.2	18.8	30.3	58.5	4.5	35.7	15.4	11.9
Duval Cnty.	53.9	36.7	4.4	18.4	76.0	14.9	4.0	26.0	7.5	16.9
Montgomery Cnty.	55.3	16.9	12.8	23.2	73.7	9.4	6.4	31.0	13.0	11.5
Pinellas Cnty.	72.5	16.2	6.0	19.6	84.5	6.4	5.1	22.9	7.7	16.8
Milwaukee	24.6	52.8	15.0	18.8	55.1	27.0	12.4	42.0	9.6	15.5
Baltimore City	19.3	76.6	1.5	17.0	53.4	40.1	1.8	47.0	8.9	21.1
Baltimore Cnty.	66.4	25.6	2.1	22.9	81.2	12.3	2.1	28.0	11.0	23.0
Total (top 22)	**29.4**	**32.2**	**30.9**	**17.0**	**55.9**	**19.8**	**17.2**	**32.2**	**10.5**	**9.4**

Source: 2000 School District Data Book

to link all 3,874 school attendance boundaries with the actual school information provided in the *CCD*.

In addition to neighborhood-based schools, the *CCD* also reported on 342 schools that did not serve a specific attendance area. These were either whole-dedicated magnet schools (n=145), charter schools (n=64), or special education schools (n=133). (District totals are shown in Table 3.) Although charter and magnet schools were supposed to be identified by variables in the *CCD*, this information was unavailable or unreliable for many school districts and we determined a school's magnet/charter status through web searches or telephone interviews of school district staff.

During the process of identifying non-neighborhood schools, we discovered 794 schools with fixed attendance zones that also drew children from outside their catchment areas. Almost all of these neighborhood-based specialty schools contained charter or magnet programs (e.g., they focused on language immersion, performing arts, or math and science). For each school we constructed a variable noting if it had a "specialty" program. Our study includes four school districts that made extensive use of specialty schools for the purpose of reducing racial segregation. Other school districts (most notably Chicago and Fairfax County) also had many specialty schools but such schools were not instituted expressly for the purpose of racial integration. By collecting information on specialty schools, we are able to determine if schools that draw students from outside their official school attendance zones disrupted the relationship between the racial composition of schools and their neighborhoods. As noted in the literature (Smrekar 1999), some districts made extensive use of magnet schools for the purposes of racial integration. For example, Rossell (1990) demonstrated that magnet school plans achieved more

Table 3. Number of Schools and Student Enrollment by School Type for the 22 Largest School Districts

School District	Neighborhood				Magnet				Charter				Private				Total	
	Schools		Students*		Schools		Students		Schools		Students		Schools		Students		Schools	Students
	n	pct.	n	pct.	n	pct.	n	pct.	n	pct.	n	pct.	n	pct.	n	pct.	N	N
New York	646	50.5	320,562	78.8	22	1.7	4,304	1.1	0	0.0	0	0.0	612	47.8	82,193	20.2	1,280	407,059
Los Angeles	433	51.8	246,065	86.5	9	1.1	2,604	0.9	6	0.7	807	0.3	388	46.4	35,094	12.3	836	284,570
Chicago	407	55.9	143,882	78.0	47	6.5	9,791	5.3	5	0.7	1,815	1.0	269	37.0	29,042	15.7	728	184,530
Dade	197	51.4	110,854	87.0	1	0.3	222	0.2	6	1.6	761	0.6	179	46.7	15,522	12.2	383	127,359
Broward	124	52.3	73,296	86.3	0	0.0	0	0.0	5	2.1	1,168	1.4	108	45.6	10,511	12.4	237	84,975
Philadelphia	173	50.0	65,590	74.9	3	0.9	475	0.5	0	0.0	0	0.0	170	49.1	21,476	24.5	346	87,541
Houston	177	63.2	71,294	89.4	3	1.1	1,010	1.3	7	2.5	1,213	1.5	93	33.2	6,256	7.8	280	79,773
Clark	148	81.3	77,420	96.3	0	0.0	0	0.0	1	0.5	105	0.1	33	18.1	2,848	3.5	182	80,373
Detroit	154	67.0	52,347	84.6	19	8.3	4,396	7.1	0	0.0	0	0.0	57	24.8	5,143	8.3	230	61,886
Dallas	146	69.2	54,927	88.5	0	0.0	0	0.0	0	0.0	0	0.0	65	30.8	7,165	11.5	211	62,092
Hillsborough	105	51.7	51,914	86.8	0	0.0	0	0.0	13	6.4	1,125	1.9	85	41.9	6,746	11.3	203	59,785
Fairfax**	132	69.5	45,920	87.7	0	0.0	0	0.0	0	0.0	0	0.0	58	30.5	6,433	12.3	190	52,353
Palm Beach	84	48.6	46,101	83.8	0	0.0	0	0.0	5	2.9	209	0.4	84	48.6	8,694	15.8	173	55,004
San Diego	117	59.4	47,767	86.3	2	1.0	401	0.7	4	2.0	487	0.9	74	37.6	6,684	12.1	197	55,339
Orange, FL.	104	55.6	48,535	85.6	0	0.0	0	0.0	8	4.3	525	0.9	75	40.1	7,638	13.5	187	56,698
Prince Georges	124	65.3	41,562	86.6	0	0.0	0	0.0	0	0.0	0	0.0	66	34.7	6,416	13.4	190	47,978
Duval	100	59.2	40,964	86.2	0	0.0	0	0.0	1	0.6	88	0.2	68	40.2	6,495	13.7	169	47,547
Montgomery	124	59.6	41,314	82.7	0	0.0	0	0.0	0	0.0	0	0.0	84	40.4	8,644	17.3	208	49,958
Pinellas	75	48.1	33,177	81.7	7	4.5	1,459	3.6	1	0.6	47	0.1	73	46.8	5,928	14.6	156	40,611
Milwaukee	93	44.1	27,127	67.2	22	10.4	5,550	13.8	2	0.9	200	0.5	94	44.5	7,481	18.5	211	40,358
Baltimore City	112	64.4	31,848	87.3	5	2.9	190	0.5	0	0.0	0	0.0	57	32.8	4,443	12.2	174	36,481
Baltimore Cnty	99	60.0	30,416	76.8	5	3.0	772	1.9	0	0.0	0	0.0	61	37.0	8,405	21.2	165	39,593
Total	3,874	55.9	1,702,882	83.4	145	2.1	31,174	1.5	64	0.9	8,550	0.4	2,853	41.1	299,257	14.7	6,936	2,041,863

Notes: Although we include special education schools and students in our analyses, for the sake of space we do not include these statistics in this table as they represent less than one percent of the student population in these school districts.

* Students populations are based on enrollments in grades one through four.

** Data for Fairfax County include attendance boundaries and schools for the school districts of Manassas and Manassas Park.

racial integration than mandatory busing policies. While this is an important finding, a better assessment of the impact of magnet school programs on racial segregation is to determine whether they achieve racial integration across schools relative to existing segregation across residential areas.

After linking the census-based school catchment data with the *CCD*, we constructed racial variables for both data sets. Although the census' block-level data and the *CCD* are both censuses, their racial classification systems differ slightly. Fortunately, both data sets count the number of whites who are not Hispanic and, in this respect, the two data sets are comparable (for simplicity, we refer to children who are white, non-Hispanics as "white"). We use the *CCD* to determine the percentage of white children enrolled in grades one to four in each school and match this with the number of white children aged five to nine living in each school's attendance boundary.[6]

Data on Private Schools

With the exception of Reardon and Yun's (2002) metropolitan-level analyses of racial segregation in schools, most studies of school segregation rely exclusively on public school enrollment information derived from the *CCD*. To overcome this shortcoming in existing research we locate private schools within schools districts; this allows us to explore racial segregation across public ***and*** private schools simultaneously. We use data from the *1999 Private*

[6] Of concern is the inclusion of a multiracial children (e.g., children whose parents and/or grandparents are of two or more different races) in the 2000 census. Roughly five percent of the children in our data are classified as multiracial and, in about four percent of school attendance boundaries, more than 10 percent of the children are multiracial. This presents a challenge because the *CCD* assign every child to a single race. Some children who are classified as multiracial in the census are likely "white" in the *CCD*. Unfortunately, we cannot systematically assign multiracial children in the 2000 Census to a single race because we do not know the racial backgrounds of their parents and/or grandparents. Because we cannot assign multiracial children to a single race (in a reliable way) we assume that all multiracial children are non-white. This is the most conservative approach as it underestimates the percent of children in each school catchment area who classify themselves as "white" in the Common Core of Data.

School Survey (hereafter called the *PSS*) which contains information on virtually every private school in the country, including their addresses, racial enrollments, and the number of students in each grade. The availability of private school addresses allowed us to use the address-matching features in ArcView GIS to "pinpoint" the location of every private school. Pinpointing private schools enables us to determine the public school district in which every private school is situated. We located 2,853 private, elementary schools within the 22 largest school districts in the county (as shown in Table 3). Pinpointing private school locations also allowed us to determine the public school attendance zone in which each private school was found. Counting the number of private schools within each public school attendance area allows us to explore how much nearby private schools influence the racial balance within public schools.[7]

Analyses and Findings

We conduct four interrelated analyses. First, we create a simple scatterplot that allows us to visually compare the percent of white students enrolled in traditional public schools with the percent of white students living in each school's catchment area. (We do so for all 3,785 schools with catchment areas.) Comparing schools with their neighborhoods allows us to determine if there are lower percentages of whites students in schools than in their corresponding residential catchment areas. Second, we conduct regression analyses to determine whether the proportion of white children in schools is influenced more by the proportion of black children or Hispanic children in their attendance areas. Regression also allows us to determine whether neighborhood public schools with higher numbers of private, magnet, and charter schools within their

[7] We also pinpointed the locations of magnet and charter schools using the address fields in the *CCD*. Knowing the number private, charter, and magnet schools within public school attendance zones will show how proximal schooling alternatives may influence its racial enrollment.

attendance zones have lower proportions of white students. Third, *within each school district* we calculate levels of racial segregation of children living in school attendance areas and compare this with levels of racial segregation in their corresponding schools. These analyses allow us to observe, for each district, whether racial segregation in schools is greater than in their corresponding catchment areas. Finally, we compare racial segregation across ***all*** schools within a school district's boundaries (i.e., magnet, charter, private, and traditional neighborhood schools). This allows us to determine if the distribution of racial groups across these "choice options" reduces or increases segregation in a district across all schools and compares this total school segregation to segregation in school attendance zones.

Comparing Racial Enrollment in Schools and Their Attendance Boundaries

If all children residing in school catchment areas attended their local neighborhood schools then the racial composition of schools and their neighborhoods would be identical. It is also true that if equal proportions of white, black, and Hispanic children within specific school attendance boundaries attended private, magnet, and charter schools then the racial mix of students within a traditional neighborhood school would also be the same. Indeed, Coleman et al. (1982) make this latter claim.

Contrary to these expectations, we find lower percentages of white students in public schools than in their school attendance boundaries, as shown in Figure 1. To highlight this, the scatterplot in Figure 1 shows a hypothetical regression line (which is dashed) that runs along a perfect diagonal. This reference line shows the hypothetical proportion of white students who would be enrolled in traditional neighborhood schools if all students attended their neighborhood school or white and non-white children left neighborhood schools in the same proportions.

When we compare the actual regression line (i.e., the solid line in Figure 1) with the hypothetical reference line, three distinct patterns emerge.[8] First, the average percent of white students enrolled in schools is five percentage points lower than the hypothetical regression line. This difference is due to white children attending schools of choice, including private, magnet, and charter schools at higher rates than non-white children. The second pattern we find is the curvilinear relationship between schools and their neighborhoods. The curvilinear regression line indicates that the exodus of white children from traditional neighborhood schools is the greatest in areas that have substantial proportions of non-white students. Indeed, the point on the x axis at which the curve is the furthest from the expected line (i.e., the inflection point) is 54 percent.[9] At this point on the x axis there are, on average, almost 10 percentage points fewer white children enrolled in schools than living in their corresponding catchment areas. Thus, where we would expect schools to contain nearly equal proportions of white and non-white students is precisely where white children are the most under-represented in schools relative to their neighborhoods. In addition to the difference between the hypothetical and actual regression curves, the R^2 coefficient for the observed regression line in Figure 1 is .885. Inspection of the scatterplot

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[8] This regression is based upon schools that serve only children living in the catchment area and excludes neighborhood-based specialty schools that draw some children from outside the borders of their attendance boundaries.

[9] The inflection point is calculated using the formula below:

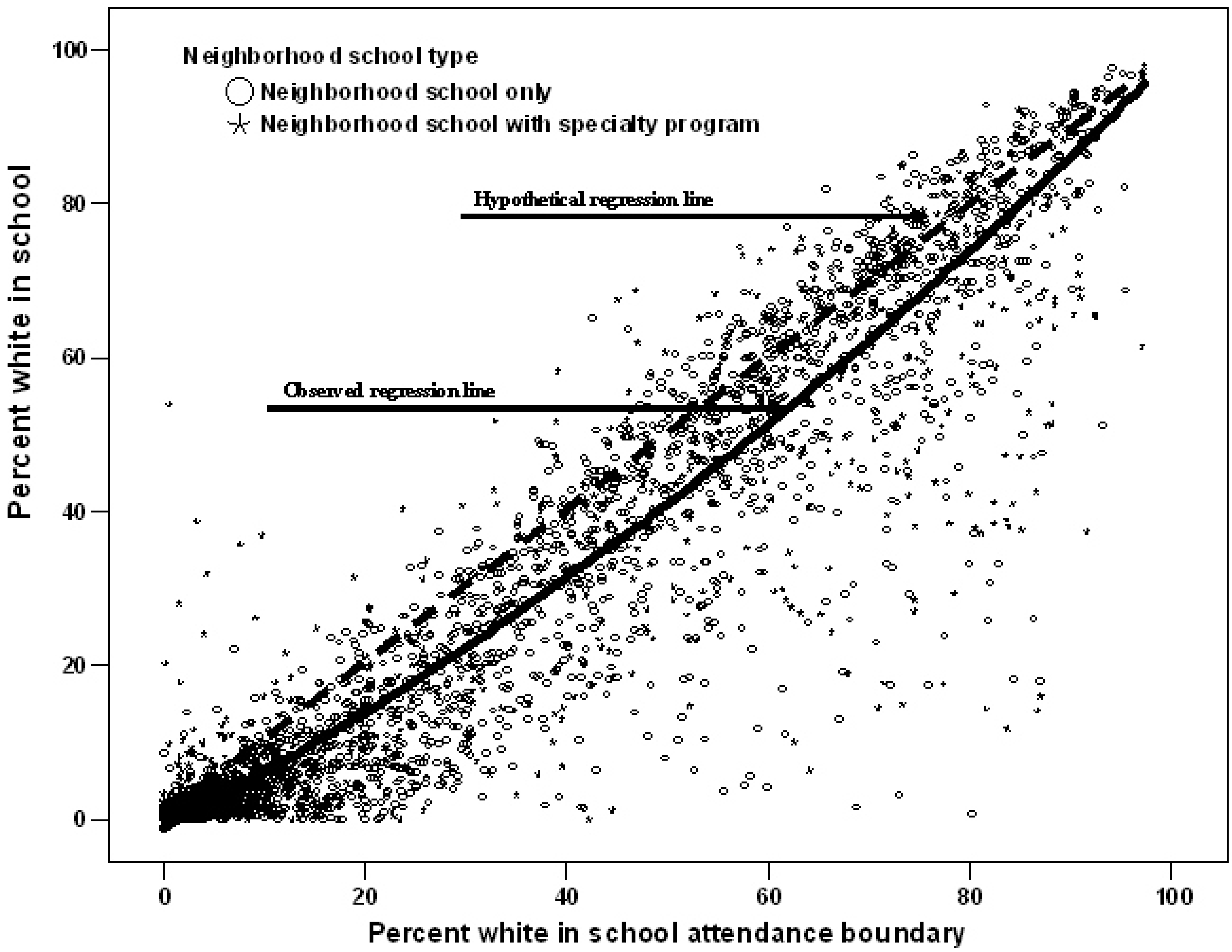
$$I = \frac{1 - b_1}{2b_2}$$

where *I* is the inflection point and b_1 and b_2 are the regression coefficients in the following quadratic equation:

$$y = a + b_1 x + b_2 x^2$$

The regression coefficients of b_1 and b_2 are .701 and .002, respectively.

Figure 1. Percent of white children in schools by the percent of white children residing in school attendance boundaries



reveals that a fair number of schools are outliers. Many outliers are neighborhood-based schools that draw children from outside their catchment areas using specialty programs.[10] When we exclude the 794 specialty schools from the analysis we find that R^2 is .909. By contrast, when we examine only specialty schools we find that the R^2 is .815. These results show that specialty

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[10] We define an outlier as a case in which there is a 20 point difference between the percent of white children in a school and its corresponding neighborhood. By this criterion 308 schools are outliers (7.9 percent of all schools), and 297 of the 308 outliers lie below the hypothetical regression line. Upon closer inspection, we find that 40 percent of the outliers are specialty programs.

schools disrupt the relationship between racial populations in schools and their attendance zones. In subsequent analyses we show how the widespread use of specialty schools within some school districts reduces racial segregation, particularly when these programs are to designed reduce racial segregation.

Regression Analysis of School Racial Composition

The above analyses show that the percent of white children enrolled in neighborhood schools is lower than the percent of white children living in their corresponding neighborhoods. We explore this relationship further by determining whether these differences are affected by the racial composition of the school attendance zones; specifically, we use regression as an analytical tool that can reveal whether the percent of black children in an attendance zone has a stronger or weaker effect on the percent of white children in a school than does the percent of Hispanic students in the area. We also determine whether the impact of nearby private, magnet, and charter schools impacts the percent of white students in neighborhood public schools. To do this, we count the number of private schools within a school attendance zone and create a three dummy variables: whether a catchment area has a) one private schools; b) two or three private schools or; c) more than three private schools. Our expectation is that white students are more apt than non-white students to attend private, charter, and magnet schools when they are proximal to their local public school. Our regression results are shown in Table 4.

The first model of the table presents the basic relationship between the percent of white children in schools given two variables: the percent of white children in a catchment area and the square of this variable to capture the curvilinear nature of this relationship. Explained variance for this model is .885, suggesting (as one would expect) that racial populations in schools is

Table 4. Regression of Percent White Students Enrolled in School by the Racial and Composition and other Characteristics of it School Catchment Area.

Catchment Area Characteristics	Model (1) *b*	Model (1) SE *b*	Model (1) *Beta*	Model (2) *b*	Model (2) SE *b*	Model (2) *Beta*	Model (3) *b*	Model (3) SE *b*	Model (3) *Beta*
Pct. white	.701	.019	.738	.627	.032	.660	.656	.032	.690
Pct. white squared	.002	.000	.209	.003	.000	.221	.003	.000	.212
Percent Hispanic				-.071	.018	-.073	-.063	.017	-.065
Percent Black				-.052	.017	-.066	-.044	.017	-.055
Specialty Sch. (=1)*							-1.412	.375	-.020
1 Private (=1)*							-1.394	.354	-.022
2 Private (=1)*							-3.805	.449	-.048
GT 3 Private (=1)*							-7.443	.947	-.043
Magnet (=1)*							-1.484	.844	-.009
Charter (=1)*							.013	1.234	.000
Constant	-.643	.245		5.137	1.717		5.431	1.691	
R^2	.885			.886			.890		

Notes: asterisks denote dummy variables; The variable label "1 Private Sch," indicates the presence of only one private school in a catchment area. The label "2 Private Sch" designates the presence of two or three private schools while the label "GT 3 Private Schs." indicates the presence of four or more private schools. Similarly, the variables "Magnet Sch." and "Charter Sch." denote whether a school attendance zone has one or more magnet or charter schools. Although we show the standard errors we opt not to present significance levels. Our data consist of the population of neighborhood schools for the 22 largest school districts in the U.S.

largely determined by the racial composition in a neighborhood. A noteworthy finding is the relative importance of the quadratic term (which has a standardized regression coefficient of .209) to the model indicating that the relationship between the percent of white children in schools and neighborhoods is curvilinear. As shown earlier in Figure 1, there are fewer whites in public schools serving the most racially balanced neighborhoods.

This finding raises an important question: Does the presence of black children and Hispanic children in a catchment area have equal effects with regard to the under representation of whites in schools, or do the two groups have different effects? To answer this question we compare the relative influence of the presence of black and Hispanic children in a neighborhood, as shown in Model 2.[11] We find that the presence of Hispanic children has a slightly greater influence than the percent of black children as indicated by the standardized regression coefficients of -.073 for Hispanics versus -.066 for blacks. The relative weight of these coefficients shows that the presence of these two groups has roughly the same impact on reducing the expected percent of white students in schools.

Model 3 of Table 4 introduces the key question raised in the debates between Coleman et al. (1982a, 1982b, 1983) and James and Taeuber (1982, 1983): Do private schools increase segregation in public schools by disproportionately siphoning white students from the public school sector? Our results provide rather strong evidence that private and magnet schools located within the attendance boundaries of a public school have a strong and negative impact on the percent of white students in those public schools. Indeed, the greater the number of private schools in a zone the greater the impact they have on the percentages of white students in neighborhood public schools. If one private school is within the catchment area of a public school that public school has 1.4 percentage points fewer white students than zones without a private school; if two or three private schools are in a zone, public schools have nearly four percentage points fewer white students. When there are three or more private schools in an area, public schools have 7.4 percentage points fewer white children than expected. Thus, the

[11] Some reviewers worried whether the relationships between the independent variables were so highly correlated that they would make the regression results meaningless. Fortunately, the correlations between the racial variables (i.e., the percent of white, black and Hispanic children in a school catchment area) are not collinear; the highest bivariate correlation is between the percent of white and the percent of black children in a neighborhood and the coefficient is -.549. The correlation between black and Hispanic children is -.481.

availability of private school choices has a direct impact on reducing the percentage of white students in public schools. What makes this finding even more powerful is that our data indicate that ***half*** of the school attendance boundaries that are racially balanced (i.e., between 40 and 60 percent of the children in them are white) have private schools within their borders. Thus, it is very likely that half of all schools serving racially balanced areas lose a substantial number of white children to nearby private schools. We find similar effects for magnet schools. Attendance boundaries containing at least one magnet school have nearly two percentage points fewer white children than those without magnet schools. In contrast, we do not find a substantial effect for the presence of charter schools.

Measuring Segregation in Schools and School Attendance Boundaries

How much do these patterns impact segregation between whites and various non-white groups across various school districts? To answer this question, we use the Dissimilarity Index (of "D") to assess the degree to which racial groups are distributed evenly across schools and school attendance boundaries within a school district. If two racial groups are distributed evenly, each school within a district would have the same racial balance as that of all children enrolled in the entire school district. Dissimilarity values range from zero to one with a value of zero reflecting perfect integration and a value of one reflecting complete segregation. The value of D can be interpreted as the proportion of students from a single racial group that would have to enroll in a different school in order for each school within a district to reflect the racial composition of the entire district. The formula for D is:

$$D = \frac{\sum_{i=1}^{n}[t_i|(p_i - P)|]}{[2(TP(1-P)]}$$

where t_i is the total population in school i (and T is the total population in all schools.) In these analyses, the value of T should be interpreted as the sum of the two racial groups under comparison. Similarly, p_i is the proportion of school i that is of a given racial group and P is the proportion of a given racial group in all schools within a district.

Dissimilarity is considered the "work-horse" of segregation measures. Although it is used widely because it is interpreted easily, our use of D is driven by its suitability for our research question.We argue that greater levels of segregation in schools than school catchment areas results from the disproportionate loss of white students from school-neighborhoods that are racially balanced (i.e., attendance areas in which roughly half of the students are white). Dissimilarity captures the evenness with which racial groups are distributed across schools and *thus D captures differences in segregation between schools and their catchment areas that result directly from the uneven loss of white students from integrated school attendance zones*. This latter issue is a central theoretical concern and, in Appendix A, we show why D specifically captures the influence of losing white children from schools that are racially heterogeneous.[12]

In Table 5, we show how much the disproportionate loss of white students from racially heterogenous schools impacts segregation in the 22 largest school districts in the U.S. To do this, we first calculate white/black and white/Hispanic Dissimilarity for schools and neighborhoods. We then subtract D scores for neighborhoods from D scores for schools. These differences show whether racial groups are more unevenly spread in schools than neighborhoods.

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[12] In Appendix A we also show why D is more appropriate for this study than other measures such as Exposure (X) and the Theil Information Theory Index (H). Segregation results based upon X and H are available upon request. We find that the substantive results based upon D, X, and H are very similar.

As expected, we find that white/black D is higher in schools than their catchment areas for 16 of the 22 school districts and the average difference between white/black D in schools and neighborhoods across all districts is .008 points. Why is this difference small, particularly given the expectation that schools would have higher levels of segregation than their neighborhoods? Because, in four school districts that implement formal desegregation policies through the use of "specialty schools," white/black D is between .076 and .111 points ***lower*** in schools than in neighborhoods (these four white/black Dissimilarity scores are highlighted in column four of Table 5). These policies have a positive effect on integrating white and black children in schools relative to existing segregation in neighborhoods.

To demonstrate the effect of "specialty" schools on segregation, we remove all specialty schools from the data and recalculate white/black D scores *for non-specialty schools only*. When we examine differences in white/black segregation between schools and neighborhoods for non-specialty schools, we find that D is, on average, .032 points higher in schools than their corresponding neighborhoods. In the absence of district policies aimed at increasing white/black integration, the loss of white students from racially mixed schools leads to greater white/black segregation.

When we look at white and Hispanic students we find that the average difference in D scores between schools and their corresponding catchment areas .054 points and, in 19 of the 22 school districts, white/Hispanic D is higher in schools than their neighborhoods. A noteworthy example is Dade County, FL, where white/Hispanic D scores across schools is .204 points higher than in neighborhoods. There is only one school district–San Diego–in which white/Hispanic D

Table 5. Dissimilarity Indices of Racial Groups in Neighborhood Schools and their Corresponding Attendance Boundaries.

	White / Black Dissimilarity				**White / Hispanic Dissimilarity**				
School District	Boundaries	Neighb. Schools	Difference	Difference w/o Specialty Schools*	Boundaries	Neighb. Schools	Difference	Difference w/o Specialty Schools*	Percent Specialty
New York City	.824	.842	.018	.024	.696	.720	.024	.029	1.1
Los Angeles Unified	.754	.764	.009	.008	.675	.743	.068	.069	18.7
City of Chicago	.883	.905	.022	.032	.610	.603	-.007	.019	55.5
Dade Cnty.	.707	.741	.034	.038	.276	.480	.204	.206	1.7
Broward Cnty.	.591	.645	.054	.039	.268	.298	.264	.029	12.1
Philadelphia City	.782	.777	-.004	.010	.686	.717	.031	.041	2.9
Houston I.S.D.	.722	.760	.038	.099	.614	.674	.060	.039	33.3
Clark Cnty.	.444	.411	-.033	-.025	.465	.489	.024	.027	2.7
Detroit City	.667	.775	.108	.083	.482	.508	.026	-.013	13.6
Dallas Independent	.686	.712	.026	.022	.591	.604	.013	.019	2.7
Hillsborough Cnty.	.392	.467	.075	.070	.351	.407	.056	.056	1.9
Fairfax Cnty.	.443	.456	.012	.023	.434	.507	.073	.071	4.2
Palm Beach Cnty.	.556	.626	.070	.062	.406	.450	.044	.044	14.3
San Diego City	.648	.539	**-.110**	-.050	.651	.582	**-.069**	-.031	**29.1**
Orange Cnty.	.543	.565	.023	.025	.351	.392	.041	.046	7.7
Prince Georges Cnty.	.549	.572	.023	.077	.584	.719	.135	.168	21
Duval Cnty.	.518	.442	**-.076**	-.024	.223	.293	.070	.046	**40**
Montgomery Cnty.	.441	.447	.005	.009	.438	.490	.052	.062	19.4
Pinellas Cnty.	.424	.309	**-.116**	.n/a	.206	.302	.096	.n/a	**100**
Milwaukee	.699	.599	**-.100**	.n/a	.593	.607	.014	.n/a	**100**
Baltimore City	.716	.795	.080	.080	.425	.536	.111	.111	0
Baltimore Cnty.	.629	.642	.013	.009	.306	.392	.085	.088	4.0
Column Averages	**.619**	**.627**	**.008**	**.032**	**.469**	**.523**	**.054**	**.058**	**20.5**

* This column is calculated by taking the difference between D in schools and school catchment areas after excluding specialty schools that enroll children from outside their catchment areas.

is substantially lower (-.069 points) in schools than neighborhoods. San Diego is the one district in this study that focuses upon the integration of multiple ethnic groups–including integration of Hispanics and whites.

We also investigate the impact of specialty programs on white/Hispanic segregation in schools. When we remove specialty schools from our analyses we find that the average difference in segregation levels between schools and catchment areas changes little from when specialty schools were included in the analyses. Specifically, differences in white/Hispanic D scores are .054 when we include specialty schools and .058 when they are excluded. It is instructive that specialty schools impact white/black D but make little difference for white/Hispanic D. Although somewhat speculative, we argue that traditional integration programs that rely on speciality schools have been aimed at reducing the impact of segregation between white and black students. As a result even those school districts with racial desegregation policies show little movement toward the integration of white and Hispanic children.

Multiple Choice: Racial Segregation in Public, Private, Magnet, and Charter Schools

The loss of white students from neighborhood schools contributes to greater white/black and white/Hispanic dissimilarity–particularly if there are no desegregation programs in place to allow for the even spread of racial groups across the educational landscape. But these findings raise an important question: is racial segregation across **all** schools within a district (including private schools, charter schools, and whole dedicated magnet schools)[13] greater than racial

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[13] The term "whole dedicated" magnet school are those schools without an attendance area and in which every student is a part of the school's magnet focus. Thus, these schools are distinct from "specialty schools" that have attendance boundaries but that also have magnet programs that draw some children from outside their boundaries.

segregation across school attendance zones? If racial segregation across all schools within a district is less than across public school attendance areas, the availability of private, charter, and magnet schools contributes to a *more integrated* school system. Such an expectation would conform with the notion that private/charter/magnet schools draw children from segregated neighborhoods and integrate them in “schools of choice.”

We examine this hypothesis by comparing Dissimilarity within school districts under three scenarios, as show in Table 6. The first scenario provides our baseline level of segregation within districts when we assume that all children attend public schools serving their neighborhoods (Column A). The second scenario measures D among students who actually attend the public schools serving their neighborhoods (Column B). The third scenario shows segregation levels across **all schools** within a school district, including private, magnet, charter and neighborhood-based public schools (Column C).

The column labeled (B-A) in Table 6 represent the difference in D between what we expect based on our baseline measure of D in attendance boundaries and D among children who actually attend the school serving those boundaries (this was shown in Table 5 and is repeated here for the convenience of the reader). Similarly, the column labeled (C-A) in Table 6 represents the difference in D between what we expect based on our baseline measure and actual levels of D across ***all schools*** in the district. This difference demonstrates the impact of mobility processes on the overall segregation across all schools relative to segregation due to residential patterns.

We find that private, magnet and charter schools exacerbate segregation across school districts and the evidence suggests that this is the result of two processes. The first process has been detailed throughout this paper: when white children leave integrated neighborhood schools these schools become more segregated. The second (and related) process that contributes to increased segregation results from the ways in which children choose "schools of choice." We focus on how much racial segregation increases as a result of these two processes.

As Table 6 shows, the average difference between white/black D among **all schools** and school attendance boundaries is .037, as shown in the column labeled "C-A." Indeed, white/black D is greater across all schools than across catchment areas for 17 of the 22 districts in this study. Only in Milwaukee was there a substantial reduction (-.110 points) in white/black D even when private, magnet, and charter schools were included in the analyses. This is due to the district's aggressive desegregation policy.

These findings have two important implications for white/black segregation across school districts. First, the way in which white children leave traditional public schools that serve specific neighborhoods and then select "schools of choice" has a noteworthy impact on segregation. For the average school district, white/black D increases from .619 in school attendance zones to .656 across **all** schools (a .037 difference). Second, the ameliorative influence of "controlled choice" programs in some school districts is weakened by the re-segregation of white and black students in private/magnet/charter schools. For example, when we take the difference between white/black D scores in Pinellas County's school catchment areas and neighborhood schools we see a .116 point drop in D. Yet, when we examine D across every school in Pinellas County, the difference is only .039 D points. Thus, much of the effectiveness of this school district's desegregation policy is weakened when children re-segregate themselves in private, charter, and magnet schools.

Table 6. Dissimilarity Indices of Racial Groups in Attendance Boundaries, Neighborhood Schools, and All Schools.

	White / Black Dissimilarity					White / Hispanic Dissimilarity				
	(A)	(B)	(C)	(B-A)	(C-A)	(A)	(B)	(C)	(B-A)	(C-A)
School District	Boundaries	Neighb. Schools	All Schools			Boundaries	Neighb. Schools	All Schools		
New York City	.824	.842	.861	.018	.038	.696	.720	.766	.024	.071
Los Angeles Unified	.754	.764	.762	.009	.008	.675	.743	.790	.068	.116
City of Chicago	.883	.905	.897	.022	.014	.610	.603	.685	-.007	.075
Dade Cnty.	.707	.741	.761	.034	.054	.276	.480	.518	.204	.242
Broward Cnty.	.591	.645	.638	.054	.048	.268	.298	.316	.030	.048
Philadelphia City	.782	.777	.827	-.004	.045	.686	.717	.766	.031	.081
Houston I.S.D.	.722	.760	.780	.038	.058	.614	.674	.732	.060	.118
Clark Cnty.	.444	.411	.415	-.033	-.029	.465	.489	.495	.024	.030
Detroit City	.667	.775	.784	.108	.117	.482	.508	.563	.026	.081
Dallas Independent	.686	.712	.774	.026	.088	.591	.604	.709	.013	.118
Hillsborough Cnty.	.392	.467	.549	.075	.158	.351	.407	.452	.056	.102
Fairfax Cnty.	.443	.456	.474	.012	.031	.434	.507	.504	.073	.069
Palm Beach Cnty.	.556	.626	.628	.070	.072	.406	.450	.451	.044	.045
San Diego City	.648	.539	.587	**-.110**	-.061	.651	.582	.595	**-.069**	-.056
Orange Cnty.	.543	.565	.594	.023	.051	.351	.392	.429	.041	.078
Prince Georges Cnty.	.549	.572	.626	.023	.078	.584	.719	.711	.135	.127
Duval Cnty.	.518	.442	.488	**-.076**	-.031	.223	.293	.313	.070	.090
Montgomery Cnty.	.441	.447	.498	.005	.056	.438	.490	.520	.052	.082
Pinellas Cnty.	.424	.309	.386	**-.116**	-.039	.206	.302	.312	.096	.106
Milwaukee	.699	.599	.590	**-.100**	-.110	.593	.607	.625	.014	.033
Baltimore City	.716	.795	.813	.080	.097	.425	.536	.579	.111	.154
Baltimore Cnty.	.629	.642	.626	.013	.037	.306	.392	.426	.085	.120
Column Averages	.619	.627	.656	**.008**	**.037**	.470	.523	.558	**.054**	**.088**

* The percent of specialty schools are based only upon neighborhood schools.

In contrast to white/black D, the average increase in segregation of white and Hispanic students is much larger. Whereas D between white and black students increases .037 points (from attendance areas to all schools) this same rise is .088 points between Hispanic and white students. And, as we observed already, the average difference between white/Hispanic D scores in school attendance zones and their corresponding schools is .054 points. These two trends suggest that the combined effect of white students leaving neighborhood schools with higher percentages of Hispanic students and re-segregating themselves from Hispanic students in private/charter/magnet school has the undesirable impact of increasing segregation between white and Hispanic students substantially.

Conclusion

In this paper we develop a new way to assess whether public schools are more segregated than they would be if private, charter, and magnet schools did not exist. This allows us to provide an empirical answer to an important policy question raised by James Coleman and his co-authors: if all children attended the public school serving their neighborhoods would racial segregation change in public schools? Our answer is straightforward: racial segregation in traditional neighborhood-based public schools is greater than segregation across school catchment areas because white children disproportionately leave public schools serving more racially integrated neighborhoods. Moreover, public schools that have private and/or magnet schools within their catchment areas have fewer white children than those schools that do not have nearby private or magnet schools. All of this evidence is contrary to Coleman's hypothesis. We find that there are differences in racial segregation between a hypothetical all public school system (based on children living in school attendance areas) and actual levels of racial segregation in neighborhood-based public schools. Indeed, when we consider the racial distribution of all children in all schools–including public, private, magnet, and charter schools–we find that racial segregation is even higher than in the actual public schools.

These findings have direct implications for school choice policies–particularly private school vouchers–that might exacerbate racial segregation in public schools. In so far as Coleman's hypothesis is disconfirmed by our evidence, it appears that an expansion of "free market" choice policies would likely exacerbate racial segregation within large, urban school districts. At the same time, we also find that some school districts with racial desegregation policies (in the form of magnet school programs and other controlled choice options) achieved substantial success in reducing racial segregation between black and white students. This suggests that school choice need not be a barrier to racial integration if student mobility is restricted in ways that limit the ability of white children to isolate themselves from non-whites.

Despite the positive evidence regarding choice programs designed to achieve integration between white and black students, existing desegregation programs included in our study do little to reduce white/Hispanic segregation. On average, school districts would have to move *nine percent* of their white students across schools (both public and private) to achieve the same level of white/Hispanic segregation found in school catchment areas. In some school districts, white/Hispanic segregation is significantly more segregated than across their school attendance zones. For instance, Miami-Dade County school district would have to move over 24 percent of its white students to achieve the same white/Hispanic racial balance that exists across school catchment areas! Five other districts (Baltimore City, Baltimore County, Dallas, Houston and Prince Georges Counties) all have to move at least 12 percent of their white students across schools to reduce segregation to that due to residential patterns. Clearly, districts must consider white avoidance of Hispanic children when they design their policies.

Our analyses contributes to debates regarding recent proposals to expand "free market" educational reforms that promote student mobility across public, private, and charter schools. We do this by gathering unique designed to address specific hypotheses proffered by Coleman. Our evidence is clear: children would be less segregated in a hypothetical all-public school system given the current distribution of children across residential areas. This suggests, contrary to the arguments of many school choice advocates, that expanding the current private school market without proper consideration of existing racial dynamics will exacerbate racial inequality.

Appendix A

This appendix shows how Dissimilarity (D) captures the effect of losing white children from racially heterogenous schools. We demonstrate this using a simulation as shown in Table A1. To highlight the applicability of D, our simulation compares it with two other commonly used indices: the Exposure Index (X) and the Theil Information Theory Index (H).

Calculating and simulating the uses of D, X, and H.

Dissimilarity captures the extent to which the under-representation of white students in schools serving racially balanced neighborhoods results in higher D scores within a district. Table A1 presents a simulation of eleven hypothetical neighborhood schools; we present three scenarios to demonstrate changes in D scores. In the first scenario, 550 black and 550 white children are distributed across eleven schools attendance boundaries and here D is equal to .545. The second scenario simulates the effect of having 110 fewer white and 55 fewer black children in schools than their attendance boundaries. In this scenario, every school loses the same proportion of white students (20 percent) and D in schools remains .545 as it was in the first scenario. In the third scenario the loss of all 110 white students occurs in racially balanced schools "d" through "h." The result is an .082 increase in D (from .545 to .627), indicating that D is sensitive to the loss of white children from schools that have roughly equal proportions of white and non-white children.

Comparing Dissimilarity with Exposure

In the simulation shown in Table A1, we calculate the Exposure of blacks with whites (${}_bX_w$) as follows:

$${}_bX_w = \sum_{i=1}^{k} [b_i / B][w_i / t_i]$$

Where "w_i" is the number of whites in a subunit i, "b_i" is the number of blacks in subunit i, "t_i" is the total population in subunit i, and B is the total black population. Here, ${}_bX_w$ can be interpreted as the probability that a randomly drawn black student will share an attendance boundary or school with a white student (Reardon and O'Sullivan 2004). Calculating segregation this way has an important quality: as the overall percent of white children in a school district

Table A1. Simulation of Shifts in D based Upon Even and Uneven Loss of White Students from Schools.

	Scenario 1: School Boundaries		***Scenario 2:*** Even Loss of Students		***Scenario 3:*** Uneven Loss of Students	
	White	Black	White	Black	White	Black
School (a)	100	0	80	0	100	0
School (b)	90	10	72	9	90	9
School (c)	80	20	64	18	80	18
School (d)	70	30	56	27	48	27
School (e)	60	40	48	36	38	36
School (f)	50	50	40	45	28	45
School (g)	40	60	32	54	18	54
School (h)	30	70	24	63	8	63
School (i)	20	80	16	72	20	72
School (j)	10	90	8	81	10	81
School (k)	0	100	0	90	0	90
Total	550	550	440	495	440	495
Percent	50%	50%	47%	53%	47%	53%
D		**.546**		**.546**		**.627**
${}_b\mathbf{X}_w$		**.300**		**.285**		**.246**
H		**.356**		**.356**		**.426**

decreases, the *random probability* that a black child will be exposed to a white child also decreases. Thus, in contrast to D, the Exposure Index ***is sensitive*** to overall shares of minority/majority groups in a school district and not just to the distribution of children across schools or neighborhoods. The consequence of this property can be seen by subtracting white students from each school proportionally (as in scenario 2) and then calculating ${}_bX_w$. When we do this the exposure of blacks with whites is slightly lower across schools than school attendance boundaries; this is the case even though we subtracted white students from each school proportionally. Thus, while *D remains unchanged in scenarios 1 and 2, the exposure index changes due to a drop in the percent of white students in schools.*

Comparing Dissimilarity with the Theil Information Theory Index

Thiel's Information Theory Index (H) has a number of useful properties. It can assess the segregation of multiple racial groups simultaneously and it has mathematical properties that allow it to be decomposed. In Thiel's index, one must calculate the "entropy" (E) of a population. E is defined as:

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

where Q_r is the proportion of the population comprised of racial group r. To calculate *H* we first calculate the diversity of each school and the diversity E of the district as a whole. The entropy index of segregation is then defined as:

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

where *T* and t_i are, respectively, the enrollment of the district as a whole and of school *i*.

E reaches its maximum value of ln(n) when each group is represented equally in the population, and its minimum value of 0 when only one racial group is present. When we compare the results of D and H in table A1, we see that they produce comparable results (see Reardon and O'Sulivan 2004 for further examples). Despite the many desirable qualities of H, D is more easily interpreted. This makes D more appropriate when the complex qualities of H are not needed.

Appendix B

Table B1. Characteristics of 44 Large School Districts

School District	Rank*	Public Sch. Students Total	Students Grades 1-4	# of Boundaries	Type of Map	Year of Map
New York City	1	1,071,853	327,546	646	Paper Map	00-01
Los Angeles	2	680,430	250,822	433	GIS	00-01
City of Chicago	3	477,610	156,154	407	GIS	00-01
Dade Cnty.	4	345,958	112,869	197	GIS	99-00
Broward Cnty.	5	224,799	76,507	124	GIS	99-00
Philadelphia	6	212,865	66,065	173	GIS	99-00
Houston ISD	7	210,988	74,507	177	Paper Map	00-01
Clark Cnty.	8	190,822	79,228	148	GIS	00-01
Detroit City	9	174,730	56,746	154	Paper Map	00-01
Dallas Indep.	10	157,622	55,878	146	Paper Map	99-00
Hillsborough Cnty.	11	152,781	54,934	105	GIS	01-02
Fairfax Cnty.	12	145,722	45,925	132	GIS	99-00
Palm Beach Cnty.	13	142,724	47,977	84	GIS	00-01
San Diego City	14	136,283	48,842	117	Paper Map	99-00
Orange Cnty.	15	133,826	49,195	104	Paper Map	01-02
Prince Georges Cnty.	16	128,347	41,911	124	GIS	99-00
Duval Cnty.	17	126,979	42,073	100	Paper Map	99-00
Montgomery Cnty.	18	125,023	41,416	124	Paper Map	99-00
Pinellas Cnty.	19	109,309	34,711	75	Paper Map	99-00
Milwaukee	20	101,253	32,930	93	GIS	99-00
Baltimore City	21	107,416	32,135	112	GIS	99-00
Baltimore County	22	104,708	31,420	99	GIS	00-01
22 Additional School Districts**						
Gwinnett Cnty.	26	93,509	33,775	52	Paper Map	99-00
Wake Cnty.	28	89,772	32,643	71	GIS	00-01
Jefferson Cnty.	30	88,006	26,769	90	GIS	99-00
Albuquerque	31	87,274	26,867	79	Paper Map	00-01
Long Beach Unified	32	85,908	31,942	59	Verbal	00-01
Austin Indep.	38	76,606	25,168	70	GIS	00-01
Anne Arundel Cnty.	42	73,363	22,554	77	Paper Map	00-01
Jordan	43	73,181	21,416	53	Paper Map	99-00
Mesa Unified	44	69,764	23,557	51	GIS	00-01
Denver Cnty.	46	67,858	24,268	80	Paper Map	99-00
Tucson Unified	53	62,480	21,087	72	GIS	99-00
San Antonio	54	61,112	18,899	63	GIS	99-00
Northside Indep.	56	60,083	19,352	42	Paper Map	99-00
Portland	65	55,321	16,906	63	GIS	99-00
Arlington	66	54,591	18,762	45	Paper Map	00-01
Santa Ana Unified	68	53,805	22,692	30	Paper Map	99-00
Oakland Unified	70	53,564	20,423	59	GIS	00-01
Prince William	77	49,905	19,711	49	GIS	99-00
Fort Bend Indep.	79	49,093	15,542	34	Paper Map	00-01
San Juan Unified	84	47,837	14,317	46	Paper Map	00-01
North East Indep.	90	46,550	15,723	35	GIS	00-01
St . Louis City	91	46,235	15,832	52	Paper Map	00-01
Total, top 22		5,262,048	1,759,791	3,874		
TOTAL		6,707,865	2,247,996	5,146		

Notes: Numbers of public school students in grades one to four were derived from the *CCD*. School districts are ranked by the number of public school students in each district for the 1999-00 school year as reported by NCES.

Table B2. Dissimilarity Indices for School Attendance Boundaries, Neighborhood Schools, and all Schools. 44 Large School Districts

	White / Black Dissimilarity					White / Hispanic Dissimilarity					
	(A)	(B)	(C)	(B-A)	(C-A)	(A)	(B)	(C)	(B-A)	(C-A)	
School District	Boundaries	Neighb. Schools	All Schools			Boundaries	Neighb. Schools	All Schools			Percent Specialty
New York City	.824	.842	.861	.018	.038	.696	.720	.766	.024	.071	.011
Los Angeles Unified	.754	.764	.762	.009	.008	.675	.743	.790	.068	.116	.187
City of Chicago	.883	.905	.897	.022	.014	.610	.603	.685	-.007	.075	.555
Dade Cnty.	.707	.741	.761	.034	.054	.276	.480	.518	.204	.242	.107
Broward Cnty.	.722	.760	.652	.038	.062	.614	.674	.316	.060	.047	.121
Philadelphia City	.782	.777	.827	-.004	.045	.686	.717	.766	.031	.081	.029
Houston I.S.D.	.722	.760	.780	.038	.058	.614	.674	.732	.060	.118	.333
Clark Cnty.	.444	.411	.415	-.033	-.029	.465	.489	.495	.024	.030	.027
Detroit City	.667	.775	.784	.108	.117	.482	.508	.563	.026	.081	.000
Dallas Independent	.686	.712	.774	.026	.088	.591	.604	.709	.013	.118	.027
Hillsborough Cnty.	.392	.467	.549	.075	.158	.351	.407	.452	.056	.102	.019
Fairfax Cnty.	.443	.456	.474	.012	.031	.434	.507	.504	.073	.069	.402
Palm Beach Cnty.	.556	.626	.628	.070	.072	.406	.450	.451	.044	.045	.143
San Diego City	.648	.539	.587	**-.110**	**-.061**	.651	.582	.595	**-.069**	**-.056**	.291
Orange Cnty.	.543	.565	.594	.023	.051	.351	.392	.429	.041	.078	.077
Prince Georges Cnty.	.549	.572	.626	.023	.078	.584	.719	.711	.135	.127	.210
Duval Cnty.	.518	.442	.488	**-.076**	-.031	.223	.293	.313	.070	.090	**.400**
Montgomery Cnty.	.441	.447	.498	.005	.056	.438	.490	.520	.052	.082	.194
Pinellas Cnty.	.424	.309	.386	**-.116**	-.039	.206	.302	.312	.096	.106	**1.000**
Milwaukee	.699	.599	.590	**-.100**	**-.110**	.593	.607	.625	.014	.033	**1.000**
Baltimore City	.716	.795	.813	.080	.097	.425	.536	.579	.111	.154	.000
Baltimore Cnty.	.629	.642	.626	.013	.037	.306	.392	.426	.085	.120	.040
Gwinnett Cnty.	.444	.480	.486	.037	.043	.497	.551	.552	.054	.054	.000
Wake Cnty.	.300	.265	.343	-.035	.043	.268	.379	.431	.111	.163	.352
Jefferson Cnty.	.397	.361	.361	-.037	-.036	.330	.376	.375	.045	.045	.000
Albuquerque	.361	.351	.373	-.010	.012	.448	.527	.526	.079	.078	.000
Long Beach Unified	.657	.528	.547	**-.129**	**-.110**	.665	.610	.624	**-.055**	**-.042**	**.475**

Austin Indep.	.667	.701	.712	.035	.045	.571	.636	.649	.065	.078	.000
Anne Arundel Cnty.	.510	.527	.554	.017	.044	.331	.458	.449	.127	.118	.000
Jordan	.318	.440	.454	.122	.137	.335	.494	.487	.160	.152	.000
Mesa Unified	.314	.372	.382	.057	.068	.361	.458	.466	.096	.104	.020
Denver Cnty.	.633	.643	.679	.011	.047	.589	.584	.643	-.005	.053	.025
Tucson Unified	.303	.268	.305	-.036	.001	.508	.500	.508	-.008	.000	.125
San Antonio	.662	.690	.721	.028	.059	.357	.395	.487	.038	.130	.159
Northside Indep.	.318	.354	.377	.036	.059	.341	.371	.368	.030	.027	.000
Portland	.614	.629	.635	.015	.021	.347	.401	.438	.054	.091	.079
Arlington	.351	.385	.412	.034	.062	.468	.519	.537	.051	.070	.000
Santa Ana Unified	.358	.359	.455	.000	.096	.526	.636	.755	.109	.228	.000
Oakland Unified	.640	.706	.735	.067	.096	.737	.809	.836	.072	.099	.000
Prince William	.310	.335	.351	.024	.040	.309	.372	.381	.063	.072	.163
Fort Bend Indep.	.634	.643	.650	.009	.016	.512	.601	.603	.089	.091	.000
San Juan Unified	.352	.375	.406	.023	.054	.200	.304	.300	.104	.101	.022
North East Indep.	.457	.489	.520	.032	.062	.373	.400	.401	.027	.029	.000
St . Louis City	.663	.659	.697	-.004	.034	.362	.327	.553	-.035	.192	.000
Average (top 22)	**.619**	**.626**	**.655**	**.008**	**.036**	**.477**	**.529**	**.563**	**.054**	**.089**	**20.5%**
Total Average	**.543**	**.553**	**.582**	**.011**	**.039**	**.449**	**.505**	**.537**	**.056**	**.088**	**17.1%**

Notes: The percent of specialty schools are based only upon neighborhood schools.

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Upon Request Table
Theil Information Theory Index across School Attendance Boundaries, Neighborhood Schools, and all Schools: 44 Large School Districts

	Black / White H					Hispanic / White H					
	(A)	(B)	(C)	(B-A)	(C-A)	(A)	(B)	(C)	(B-A)	(C-A)	
School District	Boundaries	Neighb. Schools	All Schools			Boundaries	Neighb. Schools	All Schools			Percent Specialty
New York City	.674	.678	.733	.003	.058	.470	.501	.597	.031	.127	.011
Los Angeles Unified	.580	.584	.620	.004	.041	.447	.495	.584	.048	.137	.187
City of Chicago	.760	.761	.785	.001	.025	.378	.364	.474	-.015	.096	.555
Dade Cnty.	.497	.518	.563	.021	.065	.086	.214	.274	.128	.188	.107
Broward Cnty.	.390	.450	.455	.060	.065	.078	.100	.112	.023	.035	.121
Philadelphia City	.600	.552	.691	-.048	.091	.473	.512	.595	.039	.123	.029
Houston I.S.D.	.538	.533	.595	-.005	.057	.387	.428	.504	.041	.117	.333
Clark Cnty.	.225	.204	.212	-.021	-.013	.221	.246	.250	.024	.029	.027
Detroit City	.394	.539	.574	.145	.179	.236	.286	.369	.050	.133	.000
Dallas Independent	.457	.463	.591	.006	.134	.321	.315	.504	-.006	.182	.027
Hillsborough Cnty.	.167	.246	.296	.079	.129	.124	.172	.188	.048	.064	.019
Fairfax Cnty.	.180	.201	.215	.021	.035	.180	.237	.235	.056	.055	.402
Palm Beach Cnty.	.345	.413	.452	.068	.108	.159	.205	.225	.046	.066	.143
San Diego City	.424	.305	.368	**-.119**	**-.055**	.396	.321	.361	-.074	-.035	.291
Orange Cnty.	.331	.357	.400	.026	.069	.126	.164	.199	.038	.073	.077
Prince Georges Cnty.	.278	.296	.381	.018	.103	.337	.517	.518	.180	.180	.210
Duval Cnty.	.317	.241	.298	**-.076**	**-.019**	.049	.074	.083	.025	.034	.400
Montgomery Cnty.	.193	.206	.257	.014	.065	.193	.247	.270	.054	.077	.194
Pinellas Cnty.	.153	.093	.143	-.060	-.010	.041	.071	.081	.030	.040	1.000
Milwaukee	.523	.327	.441	**-.196**	**-.081**	.327	.354	.452	.027	.126	1.000
Baltimore City	.493	.581	.642	.088	.148	.192	.266	.315	.074	.123	.000
Baltimore Cnty.	.412	.441	.479	.030	.068	.078	.131	.157	.053	.079	.040
Gwinnett Cnty.	.190	.226	.235	.036	.045	.228	.277	.278	.049	.050	.000
Wake Cnty.	.114	.084	.130	-.030	.016	.070	.112	.140	.042	.070	.352
Jefferson Cnty.	.091	.088	.097	-.003	.006	.107	.140	.138	.033	.032	.000
Albuquerque	.122	.122	.133	.000	.011	.198	.269	.279	.071	.081	.000

Long Beach Unified	.419	.282	.319	**-.137**	**-.100**	.389	.338	.369	-.050	-.019	.475
Austin Indep.	.434	.488	.495	.054	.060	.317	.394	.412	.077	.095	.000
Anne Arundel Cnty.	.247	.278	.297	.031	.050	.083	.180	.178	.097	.095	.000
Jordan	.056	.100	.110	.044	.053	.113	.225	.221	.112	.108	.000
Mesa Unified	.073	.106	.113	.033	.040	.127	.212	.218	.085	.091	.020
Denver Cnty.	.409	.426	.476	.017	.066	.325	.328	.410	.003	.085	.025
Tucson Unified	.091	.085	.106	-.007	.014	.245	.265	.281	.020	.035	.125
San Antonio	.411	.433	.512	.023	.101	.097	.121	.270	.023	.173	.159
Northside Indep.	.100	.108	.131	.008	.032	.125	.147	.147	.022	.022	.000
Portland	.323	.370	.381	.047	.059	.113	.158	.187	.045	.075	.079
Arlington	.129	.155	.172	.026	.044	.217	.267	.284	.049	.067	.000
Santa Ana Unified	.134	.185	.243	.051	.108	.187	.257	.485	.071	.299	.000
Oakland Unified	.416	.454	.515	.039	.099	.503	.621	.657	.118	.154	.000
Prince William	.101	.112	.126	.012	.025	.097	.135	.139	.038	.042	.163
Fort Bend Indep.	.456	.469	.477	.013	.022	.281	.367	.372	.086	.091	.000
San Juan Unified	.099	.127	.139	.028	.040	.043	.100	.102	.057	.059	.022
North East Indep.	.195	.234	.257	.038	.062	.146	.175	.174	.029	.028	.000
St . Louis City	.446	.379	.563	**-.067**	.116	.119	.099	.228	-.019	.110	.000
Average (top 22)	**.406**	**.409**	**.463**	**.003**	**.057**	**.241**	**.283**	**.334**	**.042**	**.093**	**20.5%**
Total Average	**.318**	**.325**	**.369**	**.007**	**.051**	**.303**	**.259**	**.303**	**.045**	**.088**	**17.1%**

Upon Request Table

Exposure Indices across School Attendance Boundaries, Neighborhood Schools, and all Schools: 44 Large School Districts

	Black / White Exposure					Hispanic / White Exposure					
	(A)	(B)	(C)	(B-A)	(C-A)	(A)	(B)	(C)	(B-A)	(C-A)	
School District	Boundaries	Neighb. Schools	All Schools			Boundaries	Neighb. Schools	All Schools			Percent Specialty
New York City	.108	.083	.090	-.026	-.018	.177	.123	.134	-.054	-.043	.011
Los Angeles Unified	.196	.158	.170	-.038	-.026	.092	.056	.065	-.036	-.026	.187
City of Chicago	.052	.035	.046	-.017	-.006	.171	.120	.145	-.051	-.027	.555
Dade Cnty.	.194	.118	.128	-.076	-.066	.277	.133	.143	-.144	-.134	.107
Broward Cnty.	.330	.272	.289	-.059	-.041	.632	.618	.631	-.014	-.001	.121
Philadelphia City	.116	.084	.089	-.032	-.027	.307	.220	.244	-.087	-.063	.029
Houston I.S.D.	.147	.104	.110	-.042	-.037	.131	.080	.089	-.051	-.042	.333
Clark Cnty.	.593	.585	.589	-.008	-.004	.425	.411	.418	-.014	-.007	.027
Detroit City	.039	.022	.024	-.018	-.015	.354	.303	.290	-.051	-.064	.000
Dallas Independent	.161	.098	.112	-.063	-.049	.136	.087	.101	-.049	-.035	.027
Hillsborough Cnty.	.569	.479	.456	-.090	-.112	.601	.529	.540	-.073	-.062	.019
Fairfax Cnty.	.715	.686	.690	-.030	-.025	.667	.633	.645	-.035	-.022	.402
Palm Beach Cnty.	.428	.322	.330	-.105	-.098	.624	.540	.565	-.084	-.059	.143
San Diego City	.362	.396	.389	**.034**	**.027**	.219	.238	.256	.019	**.037**	.291
Orange Cnty.	.396	.340	.342	-.057	-.055	.568	.493	.510	-.075	-.058	.077
Prince Georges Cnty.	.128	.100	.111	-.029	-.017	.382	.250	.288	-.133	-.094	.210
Duval Cnty.	.375	.389	.387	**.014**	**.013**	.887	.901	.904	**.015**	**.017**	.400
Montgomery Cnty.	.601	.539	.526	-.062	-.075	.627	.550	.563	-.077	-.064	.194
Pinellas Cnty.	.763	.709	.701	-.054	-.062	.890	.896	.898	**.006**	**.007**	1.000
Milwaukee	.127	.136	.152	**.009**	**.025**	.351	.297	.305	-.055	-.046	1.000
Baltimore City	.099	.048	.056	-.051	-.043	.747	.702	.688	-.045	-.059	.000
Baltimore Cnty.	.376	.307	.311	-.069	-.065	.932	.895	.885	-.037	-.047	.040
Gwinnett Cnty.	.630	.604	.600	-.026	-.030	.637	.627	.630	-.010	-.006	.000
Wake Cnty.	.633	.584	.592	-.049	-.041	.867	.841	.847	-.026	-.021	.352
Jefferson Cnty.	.972	.961	.955	-.011	-.018	.767	.751	.758	-.016	-.009	.000
Albuquerque	.832	.816	.820	-.017	-.012	.302	.286	.294	-.017	-.008	.000

Long Beach Unified	.267	.315	.322	**.048**	**.055**	.150	.158	.169	**.009**	**.019**	.475
Austin Indep.	.359	.301	.321	-.058	-.038	.251	.208	.227	-.043	-.024	.000
Anne Arundel Cnty.	.614	.544	.551	-.071	-.063	.919	.858	.864	-.061	-.055	.000
Jordan	.987	.989	.987	.003	.000	.837	.800	.803	-.038	-.035	.000
Mesa Unified	.921	.889	.891	-.031	-.030	.572	.507	.519	-.065	-.053	.020
Denver Cnty.	.337	.267	.265	-.070	-.072	.217	.175	.185	-.043	-.032	.025
Tucson Unified	.815	.784	.791	-.031	-.024	.312	.309	.322	-.003	.010	.125
San Antonio	.209	.161	.173	-.048	-.036	.061	.046	.053	-.015	-.008	.159
Northside Indep.	.748	.774	.754	.026	.006	.310	.336	.342	.026	.032	.000
Portland	.563	.461	.475	-.101	-.088	.754	.749	.748	-.005	-.006	.079
Arlington	.604	.548	.560	-.056	-.044	.470	.416	.429	-.053	-.041	.000
Santa Ana Unified	.649	.619	.674	-.030	.025	.043	.017	.031	-.026	-.012	.000
Oakland Unified	.107	.067	.080	-.040	-.027	.105	.055	.067	-.050	-.038	.000
Prince William	.657	.631	.632	-.025	-.025	.739	.751	.755	**.012**	**.016**	.163
Fort Bend Indep.	.287	.271	.277	-.016	-.010	.439	.370	.379	-.069	-.060	.000
San Juan Unified	.867	.808	.822	-.058	-.045	.793	.758	.777	-.036	-.016	.022
North East Indep.	.685	.626	.621	-.059	-.064	.434	.421	.431	-.013	-.003	.000
St . Louis City	.137	.066	.114	-.071	-.023	.828	.824	.831	-.004	.004	.000
Average (top 22)	**.312**	**.273**	**.277**	**-.039**	**-.035**	**.463**	**.412**	**.423**	**-.051**	**-.041**	**20.5%**
Total Average	**.449**	**.411**	**.418**	**-.038**	**-.031**	**.477**	**.439**	**.449**	**-.038**	**-.028**	**17.1%**

* The percent of specialty schools are based only upon neighborhood schools.