Are Whites Still Fleeing? Racial Patterns and Enrollment Shifts in Urban Public Schools, 1987–1996

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Abstract

The effect of interracial contact in public schools on the enrollment of whites has been an important concern in assessments of desegregation since the 1970s. It has been feared that "white flight"—meaning exit from or avoidance of racially mixed public schools—could undermine the racial contact that desegregation policy seeks to enhance. This study examines this question using recent data. It also expands coverage from large urban districts to entire metropolitan areas, paying attention to the spatial context within which enrollment decisions are made. To do so, it examines data for 1987 and 1996 on racial composition and enrollment in all schools and school districts in 238 metropolitan areas. The study finds that white losses appear to be spurred both by interracial contact in districts where their children attend school and by the opportunities available in metropolitan areas for reducing that contact. These findings apply with remarkable consistency to large and small districts in both large and small metropolitan areas. Implications for metropolitan segregation are examined. © 2001 by the Association for Public Policy Analysis and Management.

INTRODUCTION

In sharp contrast to the firestorm of controversy it generated into the 1970s, school desegregation has receded from prominence as a national policy issue in the last two decades. One reason for its virtual disappearance has been the Supreme Court's clear resolve to limit aggressive efforts to achieve and maintain racial balance in public schools.[1] Yet school desegregation survives as national policy, and most of the issues that surrounded its implementation in the 1960s remain important today. In particular, racial contact in schools may affect such things as the level and distribution of

[1] In particular, the Court in *Board of Education of Oklahoma City v. Dowell* (1991) and *Freeman v. Pitts* (1992) laid down conditions whereby districts that had been under court order could end affirmative efforts to desegregate their schools. For discussions of the legal issues, see Armor (1995, pp. 3-8, 17-58) and Orfield et al. (1997, pp. 6-7). Most recently, a federal district court ordered the end of busing for racial desegregation in Charlotte, North Carolina, since the effects of past discrimination were deemed to have been eliminated (*Capacchione v. Charlotte–Mecklenberg Schools*, Nos. 3:97-CV-482-P, 3:65-CV-1974-P, 1999 WL709975 (W.D.N.C. Sept. 9, 1999)).

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academic achievement in the population, racial attitudes, subsequent social and economic outcomes of students, and patterns of residential integration. (For a discussion of these effects, see Braddock, Crain, and McPartland [1984] or Clotfelter [1999].) The last of these became a prominent issue during the 1970s, when some observers warned that "white flight" from desegregating schools might resegregate schools over time by increasing the racial disparities among districts.

The aim of this paper is to examine recent changes in the racial composition and enrollment levels in urban public schools and, in particular, the factors associated with white losses. These white losses arise not only when white families move from one district to another or enroll in private schools, but also when they simply avoid moving into districts with high interracial contact. Using data that cover all public schools and districts in a sample of metropolitan areas, the study assesses trends over the period 1987 to 1996 for all major districts in these metropolitan areas, not just central city districts. It examines changes in white public school enrollments as well as changes in racial composition, level of interracial contact, and segregation. The data, which are taken from the Department of Education's Common Core of Data (NCES, 1999), include the enrollment by race and ethnic group of virtually every public school in 238 metropolitan areas in both 1987 and 1996.[2] In contrast, the comparable data used in most previous research were collected only for selected districts, making it necessary to restrict attention to large urban, mostly central city districts.[3] The data used in the current study cover all districts, thus making it feasible to obtain a complete picture of each metropolitan area's public schools and to examine patterns over time in those metropolitan areas. With these data it is possible to see if the kinds of patterns observed in the 1960s and 1970s are still evident, with the maturation of school desegregation as a policy. It is particularly interesting to trace the effects of recent demographic trends, including significant ethnic shifts arising from immigration, as well as public policies aimed at fostering integration. It will also be important to reflect insofar as possible the tremendous heterogeneity among metropolitan areas—by size, region, age, number of central cities, and number of school districts. One dimension of heterogeneity is the physical distance separating districts. Fortunately, the data set's complete coverage of districts allows one to take into account the geographic proximity of districts to which whites might consider moving in order to escape concentrations of non-whites.

The study addresses two sets of questions. First, it describes recent trends in enrollment and racial composition: Is the movement of whites out of central cities slowing or accelerating? Are interracial contact and segregation increasing or decreasing? Is there evidence that the South, whose previous patterns were deeply influenced by legal segregation in schools, is evincing patterns increasingly similar to those in the North? Second, it is important to raise again the perennial question of whether and how desegregation contributes to white enrollment losses: Is there

[2] The sample excludes special, vocational, or alternative schools, and districts operated by the state or federal government. In the terms defined in the Common Core of Data, the present sample includes type 1 (regular) schools and districts of types 1-4. Also excluded were two districts for which no enrollment data were reported for 1996: East Cleveland City (Ohio) and Hillsboro UHS (Oregon).

[3] The sample of districts employed in the Office for Civil Rights surveys changed over time and was based on several criteria, including whether districts were under court order, the coverage of minority enrollments, and the ability to project sample findings to national totals. For a description of the sampling criteria, see, for example, U.S. Office for Civil Rights (1974). Studies that have employed these data include Coleman, Kelley, and Moore (1975), Orfield (1983), and Welch and Light (1987).

evidence of tipping points in these losses, as previous research has suggested?[4] Do white reactions to interracial contact differ from those by non-white group?

BACKGROUND

Although the landmark *Brown v. Board of Education* was handed down in 1954, not until the late 1960s did many Southern school districts undertake substantial efforts to desegregate their schools. But when desegregation did take place, it typically produced dramatic changes in interracial contact. Between 1968 and 1972 the percentage of black students going to schools with 90-100 percent minority enrollments fell from 78 to 25 percent in the South, by far the biggest change in any region (Orfield, 1983, p. 4). Concomitantly, the exposure of whites to blacks increased, largely but not exclusively in the South.[5] In urban areas this desegregation often took the form of cross-district busing, a policy endorsed by the Supreme Court in its 1971 decision *Swann v. Charlotte–Mecklenberg Board of Education*.

Research on Desegregation and White Flight

One major concern that developed in the wake of this and other federal court decisions was whether these actions would cause white families to leave desegregating districts, thereby undercutting the potential for racial integration. To examine the question of whether school desegregation itself caused white flight,[6] James Coleman and two colleagues (Coleman, Kelley, and Moore, 1975) examined enrollments in a sample of district data over time, concluding that more of the decline in white enrollment was associated with decline in measured segregation and with higher proportions of black students. Although this conclusion met initial opposition, the bulk of subsequent empirical research has supported the main thrust of that study.

With a few exceptions, the empirical studies of the effect of desegregation on white enrollment have used school-level data on enrollment by race, which the Office for Civil Rights (OCR) has collected since 1967, and which allow the calculation of indices of interracial contact and segregation as well as changes in total enrollment. The unit of observation has generally been the school district, with most studies focusing on urban districts. In general, the studies have attempted to distinguish changes in white enrollment that are attributable to desegregation policies from those that would have occurred in their absence. That is, since whites have been declining as a percentage of all public school students in the country, and many central cities have witnessed the decline in white population for years, it would be incorrect to attribute all of those declines to desegregation policies. Two studies that sought to assess the Coleman–Kelley–Moore results were Clotfelter (1979) and Farley, Richards, and Wurdock (1980), the former reanalyzing the original data set and the latter using a sample of 104 urban school districts. Both studies supported the original findings.

[4] Jencks and Phillips (1998, p. 45) state, for example: "once black enrollment in a neighborhood school expands past something like 20%, most white parents become reluctant to move into the neighborhood." For references to earlier studies of this phenomenon, see Clotfelter (1976).

[5] For example, between 1968 and 1972, the percentage of black enrollment in the typical white child's school rose from 4 to 12 percent in Dallas, 9 to 14 percent in Little Rock, and 9 to 48 percent in Norfolk. Increases over the same period in cities outside the South were: 7 to 14 percent in Dayton, 6 to 14 percent in Denver, and 15 to 44 percent in Pasadena (Smock and Wilson, 1991, Table 3).

[6] As used by some researchers, this otherwise pejorative term does have a precise meaning. It is the loss of white students over and above that which would have been predicted on the basis of demographic factors alone.

Subsequent studies likewise suggested that white enrollments are sensitive to the presence of non-whites in the public schools. Wilson (1985) contended that racial contact, irrespective of the form of the policy, is the central cause of such losses. But a number of subsequent studies concluded that the form of the policy was important, with white losses being greater under mandatory desegregation plans than under voluntary plans. Rossell (1990, 1994), Rossell and Armor (1996), and Welch and Light (1987), all compared the effects of different desegregation techniques, and concluded that mandatory plans (such as pairing or clustering) lead to bigger white losses. Armor (1995, p. 179) offers evidence that further supports the hypothesis that whites are sensitive to changes in racial composition in schools attended by their children. Focusing on formerly minority schools to which whites were assigned as part of mandatory desegregation plans, Armor shows abnormally high proportions of "no-shows" among the whites. Similar sensitivity to racial composition is apparent in Lankford and Wyckoff's (1997) study using the school choices of individual families in metropolitan areas in New York state. All of this empirical work supports James' (1989, p. 966) working assumption: "white parents make decisions based on the actual or potential exposure of their children to blacks, not how equally students are assigned to schools by race."

Recent Patterns and Trends

Before analyzing recent data on school racial patterns and white enrollment changes, the broader patterns and trends in metropolitan areas should be considered. A basic fact is that public schools at the metropolitan level tend to be quite segregated, in that the observed patterns of enrollment by school depart markedly from racial balance. This divergence is greatest in the largest metropolitan areas. By region, metropolitan-level segregation tends to be most severe in the Northeast and Midwest, least in the West and South. The bulk of this observed segregation can be attributed to disparities in racial composition among the various school districts in metropolitan areas, as opposed to segregation within districts.[7] Thus a considerable portion of existing school segregation in metropolitan areas is associated with segregated housing patterns. Combined with the Supreme Court's decision in the 1974 *Milliken v. Bradley* case, this residential segregation virtually guarantees public school segregation in urban America for the foreseeable future. Although Cutler, Glaeser, and Vigdor (1999) find that neighborhood segregation declined after 1970 and Farley and Frey (1994) report some lessening of residential segregation in metropolitan areas during the 1980s (especially in younger, smaller areas), those residential patterns remain highly segregated. Moreover, Massey and Hajnal (1995) argue that segregation among jurisdictions has been increasing. Movements inside metropolitan areas continue to be dominated by middle class suburbanization, both white and non-white, leaving concentrations of poor people in parts of central cities.

Another set of trends with important implications are demographic. The racial and ethnic composition of the school-age population is changing. Owing to immigration and differences in birth rates, the black and Hispanic school-age population is growing faster than that of the white population. As shown in Table 1, between 1986 and 1996, while the number of whites in public elementary and secondary schools was increasing by 3 percent, the number of black students rose by 14 percent, and the number of Hispanic students rose by 45 percent. According to Frey (1995), the recent, ethnically diverse immigration that underlies some of these changes has profoundly influenced

[7] For a fuller description of current patterns of school segregation, see Clotfelter (1999).

Table 1. Public school racial and ethnic composition and growth by group: 238 metropolitan areas and all United States.

238 Metropolitan Areas	**1987**	**1996**	**Average growth rate**
	Racial Composition (%)		
White	67.1	60.3	0.5
Black	14.5	14.8	2.0
Hispanic	14.0	19.4	5.4
Other non-white	4.3	5.5	4.4
Total	100.0	100.0	1.7
Total enrollment	20,313,388	23,742,341	
United States	**1986**	**1996**	**Average growth rate**
	Racial Composition (%)		
White	70.4	64.0	0.6
Black	16.1	17.0	2.1
Hispanic	9.9	14.1	5.1
Other non-white	3.7	4.9	4.4
Total	100.0	100.0	1.6
Total enrollment	40,008,213	45,592,213	

Source: Common Core of Data, author's calculations; U.S. Department of Education, Digest of Education Statistics 1996, Table 39, p. 52 and Table 44, p. 60; U.S. Department of Education, National Center for Education Statistics, Statistics in Brief, October 1998, Tables 1 and 6.

patterns of internal migration, so that immigrants have come to supplant natives in some metropolitan areas. Combining these demographic trends with ongoing suburbanization, it should come as no surprise that the student population in the average public school is becoming increasingly non-white.[8] Beyond that, however, the implications for school segregation and white enrollment are by no means obvious.

Another set of changes, related to education policy rather than demography, arise from consolidation of school districts. Although the findings in the present study suggest that any movement in this regard is relatively minor, the temporal comparisons examined in this paper require consistency in the definition of districts over time. Thus it will be necessary to pay attention to consolidation and other changes in district boundaries.

A final trend with obvious relevance has to do with changes in attitude and race relations. Although changes in this area are nothing if not complex, it appears that,

[8] Following the common usage of the terms, in this paper "white" refers to non-Hispanic whites, and "non-white" refers to all others.

over the last two decades, interracial contact has slowly but steadily increased as white racial prejudice has declined.[9]

DATA AND METHODOLOGY

The principal source of data used in the present paper is the National Center for Education Statistics' Common Core of Data (NCES, 1999), which includes information on the racial composition of individual schools.[10] The research strategy for the current study was to collect information for similarly defined metropolitan areas at two points in time to assess changes over that period. Data were not available for all metropolitan areas, however. The data are supplied voluntarily by states, and, while the number of participating states has increased steadily, a significant number did not participate during the 1980s. Mindful of the advantages of a longer period, and the disadvantages of a smaller sample size, I used 1987 as the beginning year. The Common Core for the fall of that year lacked data for 17 states, compared with only two states that were missing in 1996.[11]

Calculations for metropolitan areas in both 1987 and 1996 were made using the component counties (or, in New England, towns and cities) for each defined by the 1990 census. Thus, while the definitions of metropolitan areas are periodically updated, the present paper uses the definitions as of 1990 in order to achieve comparability over time. Given these definitions and the states for which data were available, sufficient data were available for 238 metropolitan areas to make comparable calculations for both 1987 and 1996. In 1996 these 238 areas contained almost 4000 districts. As in the case of the metropolitan areas, it was desirable to have consistent definitions of the school districts over the period. However, this aim was frustrated by changes in district boundaries over time, most commonly consolidation of two or more 1987 districts into one 1996 district. Through careful accounting, comparable districts were formed, typically by combining the components of the consolidated

[9] These trends are illustrated by annual surveys of high school seniors done as part of the Monitoring the Future project. The percentage of white seniors who reported that they "do things (conversation, eating together, playing sports) with people of other races" increased from an average of 50 percent in 1976-1978 to 65 percent in 1993-1995. (The percentage for blacks stayed about the same.) The percentage of white seniors who felt it would be desirable for their "(future) children to go to schools where some of the children are of other races" increased over the period from an average of 28 percent to 31 percent. Interestingly, the comparable average percentage for blacks declined, from 37 to 31 percent over the period (Tuch, Sigelman, and MacDonald. 1999, pp. 126-126, 143-144).

[10] Specifically, the data were taken from Public Education Agency Universe and Public School Universe of the Common Core of Data (http:/nces.ed.gov/ccd/ and http./nces.ed.gov/surveys/SDDB/introd.html). Enrollment by racial group (American Indian, Asian or Pacific Islander, Hispanic, black, non-Hispanic, white, non-Hispanic) was available for all schools for the academic year 1996-1997. Virtually all districts reported consistent and clean data. A few did not; the sums for schools did not match the totals reported for districts. For those whose school-level data gave different sums, I based all calculations on the school-level data. Some districts reported no school-level data whatsoever; these had to be dropped. A handful (33) of state-wide schools (such as the N.C. School of Science and Math) are listed as districts. Since they should not be considered part of the metropolitan areas where they are located, they were dropped from the sample.

[11] Metropolitan areas covering counties in more than one state were included only if data for all constituent counties were available for both years. Because one of the missing states in 1996, New Jersey, was not missing for 1987, there were a total of 18 omitted states for the matched sample.

district into a "virtual" district in 1987. These virtual districts constituted only about 2 percent of the districts in the sample.[12]

Measures and Variables

The basic measure of white behavior is change in white public school enrollment. This measure is necessarily a net measure, reflecting the difference between departures and new enrollments. As such, the measure cannot measure the absolute number of departures, nor can it identify whether departures take the form of moving to another district, enrolling in a private school, or simply graduating. Nor can it reflect the choice not to move into a district in the first place, a decision having much the same effect as a departure. Where W_0 and W_t are white enrollments in years 0 and t, the change in white enrollment is expressed as the exponential growth rate g in the equation:

$$W_t = W_0 e^{gt}$$

Expressed as a percentage, the growth rate between 1987 and 1996 is:

$$100\ g = 100 \ln (W_{96}/W_{87})/9$$

Measures of composition and segregation are based entirely on racial and ethnic categories used in the survey. While it would be much preferable to examine economic as well as racial differences in measuring contact and segregation, the only measure of family income—the receipt of free or reduced-price lunches—is available in 1987 for only a small fraction of the districts in the sample.[13] The basic measure of interracial contact is the exposure rate of whites to non-whites. This is the percentage of non-white students in the average white student's school, which is defined as:

$$E = (1 / W) \sum_i W_i[N_i / (W_i + N_i)] \qquad (1)$$

where W_i and N_i are the number of whites and non-whites, respectively, in school i, and W and N are their totals for the district. If schools were racially balanced, each white child would attend a school whose racial composition was PCN = N / (W + N), the overall proportion of students who are non-white. The gap between this theoretical maximum and the actual rate of racial contact, expressed as a proportion of the

[12] Data from the Common Core data sets for 1987-1988 and 1996-1997 were matched by district, and organized by county and metropolitan area. In an effort to uncover errors in the data, printouts of schools by district were examined in detail. Growth in total enrollments by county was compared with growth in population. Where they deviated significantly or where district enrollments or numbers of schools differed greatly or where districts disappeared or appeared from the first to the second year, school names were used in matching to determine how the districts compared. In a few cases, schools in two districts were reorganized into two new districts, creating for the present sample two virtual districts, defined according to the schools each contained in 1996. Of the 875 districts with enrollments of 5000 or more, 18 virtual districts were created by consolidation. Those that underwent consolidation were, on average, smaller and had lower non-white percentages, but the change in their segregation indices was not significantly different.

[13] These data were available in 1987 for only 13 percent of the districts in the sample. Nevertheless, equations incorporating such income data were estimated for the reduced samples, and those results are briefly noted in footnote 24.

area's racial composition, represents one measure of the extent of segregation.[14] This gap-based index of segregation:

$$S = (PCN - E) / PCN \quad (2)$$

ranges from zero, signifying perfect racial balance among schools, to one, signifying total segregation. S is a measure of the evenness with which whites and non-whites are distributed among schools. While one would expect E to rise as a district's percentage of non-white students increases, no similar presumption applies to S. Since the measures of exposure and segregation are based on school-level enrollment data, they do not measure racial contact in classrooms or in school groups. Nor do these measures differentiate between mandatory desegregation orders and voluntary desegregation plans.[15]

To account for differences in overall growth among metropolitan areas, the population growth rate, expressed as a percentage, is included as an explanatory variable:

$$PG = 100 \ln (P_{90} / P_{80}) / 10 \quad (3)$$

Finally, to account for the differing legal history of school segregation and other, otherwise unmeasured regional differences, metropolitan areas were assigned to one of five regions: South, Border, Northeast, Midwest, and West.[16]

Patterns and Trends in the Data

Before discussing the last set of variables, it is useful to examine the entire sample of 238 metropolitan areas for patterns and trends. Table 1 compares total public school enrollment for the nation with the enrollment in the 238 metropolitan areas analyzed in the current study. Not only does it give a sense of overall demographic changes over time, but the table also allows an assessment of how representative the data used in the present analysis are. As indicated by the total enrollment figures, the present sample—although it omits all schools outside metropolitan areas as well as metropolitan areas for which complete data were not available—still covers more than half of all public school students. As expected, the racial composition of these metropolitan areas differs from that of the nation at large, featuring higher percentages of blacks, Hispanics, and other non-whites than the United States as a whole. It is clear also that the racial composition of the nation and metropolitan areas has been

[14] Coleman, Kelley, and Moore (1975) use this same measure, denoting it r. For a discussion of this measure and its relationship to measures of exposure, see Clotfelter (1978). It may be noted that the value of S is invariant with respect to which of two groups is used as the basis for calculating the exposure rate. That is, S can be calculated using the exposure of nonwhites to whites, where W, the overall percentage of students who are white, is the maximum for this exposure rate: $S = (W–E_{NW})/W$.

[15] Welch (1987) argues that the form of the desegregation policy employed should be taken into account in assessing the effect on white enrollment patterns. Unfortunately, the size of the current sample makes a full accounting of these details infeasible. The only recognition of judicial orders in the study is the use as instruments of dummy variables for appeals court circuits and district court decisions.

[16] My definitions of regions follow Orfield and Monfort (1992, p. 2)—*South*: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, Virginia; *Border*: Delaware, District of Columbia, Kentucky, Maryland, Missouri, Oklahoma, West Virginia; *Northeast*: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont; *Midwest*: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Nebraska, North Dakota, South Dakota, Ohio, Wisconsin; *West*: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming. In the 13 metropolitan areas (MSA or PMSA) that had components from two regions, I classified the area in the region containing the larger enrollment.

changing over time, with non-whites assuming a continually increasing share. The reason behind this changing composition is illustrated in the table's last column, which lists average annual growth rates for each racial and ethnic group. Enrollment of whites grew at 0.5 percent a year, slower than the rate for blacks (2.0 percent), and considerably slower than the rate for Hispanics (5.4 percent) and for other non-white students (4.4 percent).

Probably the most distinctive aspect of the data analyzed in the present study is the tremendous variety among the nation's metropolitan areas in size, racial composition, number of school districts, and differences among those districts. The 238 metropolitan areas in the sample include large and famous areas such as Los Angeles, with its 1.3 million students in 83 districts, and Detroit, with its 712,000 students and 109 districts (all as of 1987). In general, and in keeping with the findings of Clotfelter (1999), larger metropolitan areas, and those in the Northeast and Midwest, tended to have more districts than smaller areas and those in the South and West. But the data set also includes much smaller metropolitan areas, such as Providence, Rhode Island (86,000 students and 23 districts), and Tallahassee, Florida (32,000 students and two districts). Racial composition differed as well. While only 16 percent of the public school students in the Providence metropolitan area were non-white in 1987 (including Hispanic whites), the comparable percentages were 31 in Detroit, 50 in Tallahassee, and 71 in Los Angeles.

Racial segregation at the metropolitan level differed quite a bit among the metropolitan areas in the sample, although the calculated indices for individual metropolitan areas did not change greatly over the period. Clotfelter (1999) shows that segregation in the public schools in 1994 was most pronounced in the largest metropolitan areas, and the calculations for the current sample bear out that generalization; Detroit, in fact, was found to have the most segregated schools among all metropolitan areas studied in 1994. Among the four metropolitan areas noted above, Detroit showed much more severe segregation (S = 0.73) in 1987 than did the others, with metropolitan segregation being least severe in Tallahassee (S = 0.32). A few of the areas in the whole sample had indices less than 0.20, suggesting near racial balance throughout the public schools in each metropolitan area.

Because most of the interest in white withdrawals from public schools has focused on individual school districts, especially central city districts, it is important that the data used in the present study also include detail regarding individual districts. In fact, as noted above, the data set includes information on every district in each of the 283 metropolitan areas. Like the metropolitan areas themselves, the districts differed in size, racial composition, and relative importance. As a share of total metropolitan enrollment, for example, the Los Angeles Unified School District had 45 percent of all students, whereas the largest district's share was 22 percent in Providence, 25 percent in Detroit, and 74 percent in Tallahassee. In most cases, the largest district in each metropolitan area had both a higher non-white percentage and a slower growth rate of white students than the metropolitan area as a whole. Revealing their generally low levels of segregation, exposure rates were quite close to their overall non-white proportions.

Table 2 presents weighted mean values by the size and region of each district's metropolitan area, presenting a more representative picture of racial composition and white enrollment growth in districts. The table shows clearly that the non-white percentage tended to rise with metropolitan area size: while non-white enrollments in the smallest metropolitan areas averaged 25 percent, those in the largest metropolitan areas averaged 54 percent. By region, the components of the non-white percentage differed markedly, with blacks being most numerous in Midwest districts, and Hispanics and other non-whites most numerous in the West. Overall, white

Table 2. Sample descriptions and weighted means of variables for districts.

Sample	A	B	C	D
Description[a]	Major districts in larger metro areas	Major districts in smaller metro areas	Minor districts 5,000 or more in larger metro areas	Small districts (under 5,000)
N	187	187	501	3,058
Growth rate of white enrollment, 1987-1996[b]	–0.0154	0.0012	–0.0090	0.0056
1987 exposure rate of whites to:				
Non-whites	0.41	0.23	0.28	0.14
Blacks	0.19	0.12	0.07	0.05
Hispanics	0.17	0.08	0.14	0.07
Other non-whites	0.05	0.03	0.06	0.02
Accessibility to other districts with lower exposure rates (*Access*)	0.40	0.24	0.72	0.55
Segregation (S) in 1987	0.167	0.085	0.050	0.016
Metropolitan area growth rate, 1980-1990	1.59	1.27	1.74	0.79
Region				
South	0.38	0.41	0.20	0.12
West	0.33	0.18	0.49	0.20
Midwest	0.21	0.31	0.24	0.43
Border	0.03	0.01	0.02	0.02
Northeast (excluded category)	0.05	0.01	0.02	0.23

[a]For the purpose of defining the samples, major districts are those which enroll 10 percent or more of a metropolitan area's total public school enrollment; minor districts enroll less than 10 percent. Larger metropolitan areas are those with total public school enrollment of 50,000 or more; smaller ones have less than 50,000. All districts in Samples A, B, and C had at least 5,000 students in 1987; those in Sample D had fewer than 5000. [b]Expressed as proportion. *Note:* Means are weighted by district enrollment.

enrollments were declining over the nine-year period. They declined most rapidly in districts contained in the largest metropolitan areas, and they grew slightly in districts within the smallest metropolitan areas.

The Spatial Context of Enrollment Choices

An important aspect of enrollment shifts in metropolitan areas lies in their spacial context. White residents who, for whatever reason, desire to enroll their children in

public schools with a smaller proportion of non-whites than their current school usually can bring this about by moving to another district. Whites who are moving into a metropolitan area can simply avoid districts in which non-white enrollments are concentrated. But locating in predominantly white districts may entail longer commutes to work. Thus the desirability of moving from or avoiding a given urban district will likely depend on the existence of alternative public school districts with lower non-white percentages, the extent of the difference in racial compositions, and the distance from that given district to the alternative districts.

A few examples readily demonstrate the kinds of choices and trade-offs available in most metropolitan areas, and how those alternatives differ from district to district. A white family whose children attended the Detroit City Schools in 1987, where the average white attended a school that was 67 percent non-white, could have moved 11 miles away to the Warren Consolidated School District, where the exposure rate of whites to non-whites was only 4 percent. A similar white family in Anaheim, California, whose children faced a 73 percent exposure rate in Santa Ana, could move to one of several school districts within 10 miles that offered lower exposure rates: Orange U.S. District (USD) (28 percent) was less than 3 miles away, while Irvine USD (23 percent) was 5 miles away. By contrast, white families in Raleigh, North Carolina, where the exposure rate was 28 percent in 1987, would have had to move almost 25 miles away, to Chapel Hill, to attend schools with a lower exposure rate.

As these three examples illustrate, the ease with which white families can lower their exposure to non-whites by avoiding or leaving a district differs greatly among districts. In some metropolitan areas such opportunities simply do not exist. A 1987 tabulation showed that more than a third of white students in the 975 largest districts in the current sample could have lowered their exposure rate by at least 0.10 by moving to a district within 10 miles.[17] To model white enrollment shifts, it is important to take such alternatives into account. While a few studies of school segregation and white flight have included variables designed to reflect the opportunities for avoidance on a very aggregated level within metro areas,[18] none to my knowledge has incorporated distance between districts in a metropolitan area. In the present paper a measure of accessibility is used to characterize the options facing white families in metropolitan areas. It is designed to account for three spatially related factors that would impinge on any white family's decision to move to another district, to avoid moving into a district in the first place, or to enroll in a private school: a) the existence and size of other districts in the same metropolitan area; b) the distance to those other districts; and c) the degree to which interracial exposure could be reduced by locating in one of them.[19] Among the many measures that could be devised to reflect these aspects, the one used here is relatively simple. Taking all the districts that are within 10 miles of a given "home" district as feasible alternatives, this measure focuses on the districts in this group that feature exposure rates to non-whites at least 10 percentage points (0.10) lower than those in the home district. To account for the

[17] Tabulation based on the 975 largest districts in the current sample showed that 77 percent of whites could have moved to a district with an exposure rate to non-whites of 0.20 or less.

[18] Coleman, Kelley, and Moore (1975) include a measure of inter-district segregation to reflect racial disparities, and Clotfelter (1979) includes the percentage of the metropolitan area in the central city district.

[19] Rather than regarding as alternative school districts those closest to a given "home" district, one might instead look at those with similar accessibility to employment, measured by the distance to a metropolitan area's central business district (CBD), reasoning that those districts are the best substitutes. This reasoning is weakened, of course, to the extent that employment is decentralized, or concentrated in more than one location. When equations were estimated substituting such a variable (looking at districts whose distance to the CBD differed by 5 miles or less from that of the home district rather than districts within 10 miles of the home district), the qualitative results were unchanged, but the overall explanatory power of the model was slightly reduced.

relative size of these possible destination districts, this measure of accessibility is based on the ratio of the enrollment of such districts to that of the origin district. Where district j is the origin, or home, district, from whose perspective the calculations are made, districts k are possible alternative districts, D_{jk} is the distance between districts j and k, E_j is the average exposure rate of whites to non-whites in district j, T_j is the enrollment in district j, and E_k and T_k are defined similarly, the measure is the ratio of the enrollments of these substantially whiter districts to that of the home district:[20]

$$Access = \sum_j (T_j / T_i) \text{ for all j, s.t. } E_i - E_j \geq 0.10 \text{ and } D_{ij} \leq 10 \text{ miles} \quad (4)$$

To approximate distances between pairs of districts, the distance between the centroids of the zip codes in which the district offices are located was measured.[21]

Two examples will serve to illustrate some values for *Access*. For the Detroit city school district, close to which were numerous districts offering significantly lower exposure rates to non-whites than its 67 percent, the value was 0.63, whereas the second largest district in that same metropolitan area, Utica County, with an exposure rate of only 2 percent, had a value of zero for *Access*. Providence, with an exposure rate of 0.48 and nearby districts with much lower rates, had an index of 1.37, while Warwick (exposure rate of 0.02), had an index of zero.

ANALYSIS OF WHITE ENROLLMENT CHANGES BY DISTRICT

To examine whether white enrollment trends are influenced both by the "push" of interracial contact and the "pull" of nearby whiter school districts, equations explaining districts' growth rate in white enrollment between 1987 and 1996 were estimated. Previous analysis of white losses from urban school districts focused almost entirely on large, central city districts, most of which were in large metropolitan areas. Indeed, Coleman, Kelley, and Moore (1975, p. 11) stated: "The flight from integration appears to be principally a large-city phenomenon." Because of the continuing significance of

[20] More generally, one could devise a variety of indices of accessibility using a form such as:

$$Access2 = [\Sigma_k (T_k / T_j)^{-r} (1 / D_{jk})^{-a} (E_j - E_k)]^{-s}, \text{ for } (E_j - E_k) > 0,$$

where r is a factor reflecting the importance of alternative enrollments, a is a constant indicating the effect of distance on the attractiveness of a particular alternative district, and s is another constant. If r = 1, the accessibility proxy rises in proportion to the enrollment of neighboring districts, as in the equation for *Access* in the text; if r = 0.5, it rises with the square root. Neither this variable nor *Access* has an exact interpretation. Their values are arbitrary, depending on the parameters a, r, and s. All that can be said about these proxy variables is that a given district will have large values for them the more a district is surrounded by close, relatively large, and predominantly white districts. In alternative regressions, not reported here, *Access2* was defined with values of 0.5 for a and s and r = 1. *Access2* is highly correlated to *Access*: the districts in which white families have the best opportunities to lessen their exposure to non-whites tend to have higher values of both indices, although the differences are less stark with *Access2*, owing to the continuity built into it. The correlation between *Access* and *Access2* in the four samples ranges from 0.83 to 0.87. Between the two, *Access* is used because it is the simpler of the two measures, but the qualitative results are not affected by which measure is used.

[21] Where L1 and L2 are the latitudes of the centroids of the ZIP codes corresponding to districts 1 and 2 and DL is the difference in longitude between those centroids, the distance between district 1 and 2, measured in degrees of arc distance, is D in the equation:

$$\text{Cos D} = (\text{Sin L1})(\text{Sin L2}) + (\text{Cos L1})(\text{Cos L2})(\text{Cos DL})$$

(Fitzpatrick and Modlin 1986, p.XI). The distance in miles is 69.16 D. The use of centroids for ZIP codes of the district offices generally yields locations that are quite central to the population center of each district, but not always. An example where this approach does not work as well is Chapel Hill, North Carolina, for which the centroid of the district office's ZIP code (27516) lies altogether outside the district boundaries.

their enrollment patterns, these big urban districts should obviously remain a major focus of research. However, it is important to explore whether other types of urban districts in metropolitan areas exhibit similar patterns. For example, small metropolitan areas, owing to the comparative ease of traversing them, may evince different residential and enrollment patterns than large metropolitan areas. Another possibility worth examining is that enrollment patterns for districts that are small relative to their metropolitan areas might be easier to avoid or be otherwise different from dominant districts. Given the large number of metropolitan areas and districts encompassed by the current sample, districts can be analyzed separately according to metropolitan area size. It is also possible to distinguish between districts that account for a significant share of their metropolitan area's total enrollment and those that are small in relation to the whole.

Accordingly, the 3933 districts in the sample were divided into four samples. The first three samples were restricted to districts of at least 5000 students. Not only are these the most important districts to study, but measured enrollment growth for them is less subject to error or undetected changes in district definitions. Sample A includes those sorts of districts that have traditionally received the bulk of attention in studies of white enrollment losses: major districts (those with at least 10 percent of the total enrollment of their respective metropolitan area) in metropolitan areas with public school enrollments of 50,000 or more. Sample B includes major districts in metropolitan areas with enrollments smaller than 50,000. Sample C includes districts with less than 10 percent of their metropolitan enrollment; given the 5000 minimum size, these districts were thus all in metropolitan areas of 50,000 or more. The remaining districts, those smaller than 5000, comprise Sample D; this sample contains more than three quarters of all the districts studied.

Previous econometric studies of white enrollment losses have sought to explain white losses, usually measured by percentage changes, as a function of variables describing racial composition, segregation, and other factors thought to be important in the decisions of white families. One early and influential study, by Coleman , Kelley, and Moore (1975), noted above, used panel data on a set of large urban districts to estimate the equation:

$$\%\Delta W = a + b_1 \Delta S_b + b_2 P_b + b_3 \ln T + \lambda Z + u \qquad (5)$$

where $\%\Delta W$ is the percentage change in white enrollment, ΔS_b is the change in the segregation index (using blacks in place of non-whites), P_b is the proportion of blacks in the district, T is district enrollment, Z is a vector of other variables, a, the b_i's, and the vector λ are coefficients, and u is an error term. As noted above, Coleman, Kelley, and Moore found that more white losses were associated with higher proportions of black students and decreases in segregation, leading to their conclusion that school desegregation was causing white flight, and was therefore contributing to the resegregation of schools.[22] Noting that the percentage form of the segregation measure ΔS_b leaves it relatively uncorrelated to changes in overall racial composition, Coleman, Kelley, and Moore (1975, p. 57) argue that this variable is "approximately independent" of contemporaneous white losses and thus they used ordinary least squares (OLS) to estimate Equation (5). This assumption is relaxed in some of the regressions presented below.

The present study employs a similar model, but with a wider variety of school districts and with a single cross-section of growth rates in white enrollments over a

[22] The estimates of Coleman et al. (1975). See also footnote 29.

single nine-year period in place of the pooled annual changes analyzed by Coleman, Kelley, and Moore. Change in white enrollment is measured by the exponential annual growth rate. In place of the district percentage of black students, the exposure rate of whites to non-whites was used (in the beginning year of 1987), because exposure, not overall district racial composition, affects the experience of whites, and also reflects the large and growing significance of Latinos and Asian-Americans in urban school systems. Accessibility to whiter alternative districts is measured by *Access*, as described above. The growth rate of the metropolitan area population from 1980 to 1990 is included to account for overall metropolitan growth. It seems reasonable to treat this growth as an exogenous variable. Finally, a set of dummy variables is included to reflect regional differences in the growth of white enrollments.

Table 2 presents for each of the samples of districts the mean values for the basic variables used in estimation. Among the four samples, the growth rate of white enrollment, the exposure rate, and the accessibility measure all differ noticeably. The two samples of districts in the largest metropolitan areas, A and C, show declines in white enrollments on average, whereas white enrollments in the average district in sample B remained steady over the period and those in the smallest districts grew. The sample A districts had much higher rates of exposure of whites to non-whites than those in B and C, fitting the common image of large central city districts, while the smallest districts displayed the lowest exposure rates. Accessibility to districts with lower exposure rates also differed, with the smaller districts in C and D having indices that indicate easiest access to white enclaves. Measured racial segregation in 1987 was greatest in the major districts in the largest metropolitan areas, but in none of the samples was segregation as pronounced as it tends to be in metropolitan areas.[23] And it changed very little over this period, signifying the extent to which desegregation policy in most districts had more or less done its work by 1987. Similar patterns and trends were evident for segregation by income class.[24] Finally, it is also worth noting that sample D has relatively fewer districts in the South, owing to the large average size of districts in that region.

Table 3 presents the basic model explaining growth in white enrollments estimated for each of the four samples of school districts. The first four equations use ordinary least squares estimation, and the second four use instrumental variables. The similarity of the estimates across the four samples is quite striking, undercutting any notion that big urban districts are somehow unique with regard to the mechanisms driving white enrollment losses. Three variables are consistently important in explaining white growth rates in this basic model, regardless of the sample or estimation technique employed: the exposure rate in 1987 (the "push"), the accessibility to whiter districts (the "pull"), and the overall metropolitan growth rate.

The exposure of whites to non-whites in 1987 has large and statistically significant estimated coefficients in all four samples. Equation (1), for example, implies that in the most important districts in the large metropolitan areas an increase in exposure of 0.10—say from 0.15 to 0.25—in 1987 would have been associated with an acceleration of white losses, in the form of a decrease in the growth rate of white enrollment of –0.7 percent a year. The estimated effect is somewhat smaller in sample

[23] The average segregation index in the public schools of 331 metropolitan areas in 1994 was 0.33 (Clotfelter 1999, Table 6, p. 498).

[24] Based on the much smaller sample for which the necessary data were available, segregation between students receiving free and reduced-price lunches from those not receiving them was similar in magnitude and likewise did not change appreciably over this period. For example, the segregation indices calculated for these smaller samples for the white/non-white and the no/free and reduced lunch divisions, respectively, for 1987 were: A: 0.17 and 0.17; B: 0.08 and 0.11; C: 0.03 and 0.06; D: 0.01 and 0.03.

Table 3. Estimated equations explaining growth rate in white enrollment, 1987-1996.

Sample Equation Estimation	**A** (1) OLS	**B** (2) OLS	**C** (3) OLS	**D** (4) OLS	**A** (5) I.V.	**B** (6) I.V.	**C** (7) I.V.	**D** (8) I.V.
Variable								
Intercept	**1.59**	**0.91**	**1.15**	**1.25**	**1.45**	**0.93**	**1.39**	**1.23**
	0.55	*0.31*	*0.45*	*0.11*	*0.57*	*0.31*	*0.49*	*0.12*
Exposure rate of whites to non-whites	**–6.99**	**–5.60**	**–9.67**	**–9.59**	**–7.10**	**–5.64**	**–10.67**	**–9.81**
	0.62	*0.65*	*0.79*	*0.37*	*0.64*	*0.65*	*1.01*	*0.40*
Accessibility (*Access*)	**–0.94**	**–0.95**	**–0.58**	**–0.12**	**–0.97**	**–0.96**	**–0.57**	**–0.13**
	0.29	*0.26*	*0.13*	*0.04*	*0.30*	*0.26*	*0.14*	*0.04*
Change in segregation (S)	**8.31**	3.13	–2.55	–1.54	2.04	1.12	–21.93	–33.30
	2.04	*1.83*	*2.46*	*2.00*	*5.56*	*3.82*	*11.37*	*18.13*
Metropolitan area growth rate, 1980-1990	**0.38**	**0.79**	**0.30**	**0.81**	**0.41**	**0.80**	**0.29**	**0.85**
	0.14	*0.08*	*0.12*	*0.06*	*0.14*	*0.09*	*0.13*	*0.07*
Region								
South	0.10	–0.28	**1.72**	**1.17**	0.18	–0.31	**2.20**	**1.13**
	0.60	*0.37*	*0.57*	*0.22*	*0.62*	*0.38*	*0.67*	*0.23*
West	–1.03	–0.52	0.60	0.31	–0.78	–0.54	0.95	0.46
	0.59	*0.37*	*0.55*	*0.22*	*0.64*	*0.38*	*0.62*	*0.24*
Midwest	–0.66	–0.29	0.05	–0.05	–0.35	–0.30	0.02	–0.01
	0.54	*0.31*	*0.49*	*0.14*	*0.61*	*0.31*	*0.52*	*0.14*
Border	–0.94	–0.31	0.30	0.09	–0.80	–0.32	0.47	–0.22
	0.77	*0.75*	*0.82*	*0.32*	*0.79*	*0.76*	*0.88*	*0.38*
Adjusted R^2	0.63	0.64	0.55	0.31	0.63	0.65	0.53	0.29

Note: Numbers below coefficients are standard errors. Bold signifies coefficients that are significantly different from zero at the 95 percent level. Regressions are weighted by the square root of 1987 district enrollment. For definition of samples, see Table 2. For a list of instruments, see text.

B, but it is considerably larger in samples C and D, implying a responsiveness half again as big in the "minor" and smallest districts. The strong effect of exposure in all four samples is very much in line with Coleman, Kelley, and Moore's results for the district's proportion of blacks and with James' (1989) assumption that whites respond to interracial contact, not segregation per se.[25]

Before turning to the other explanatory variables, it is worth considering the possibility that the coefficients for interracial exposure are overstated in these regressions. Bias of this sort could occur if whites tended to leave some districts at

[25] Although the necessary data were available for only a small fraction of the districts, similar equations were estimated with an additional variable indicating the white exposure rate to students receiving free and reduced-price lunches. In these equations, the coefficients for interracial exposure remain negative but are generally smaller in absolute value than the comparable equations using the specification of Table 3 and are statistically significant in two of the four samples. The estimated coefficient for the exposure rate to students with free and reduced-lunch was negative in three of the samples and significantly so in sample D, where it was larger in absolute value than that of the racial contact variable.

faster rates than other districts, a tendency unrelated to the racial composition of the public schools and one affecting whites but not non-whites. Over time, such a tendency would tend to increase the percentage of non-whites in these districts, other things equal, and could lead to an increase in the exposure rate of whites to non-whites, resulting in a statistical correlation between rates of white loss and high exposure rates. Omission of a measure of this persistent tendency from the regression would therefore bias the estimated coefficient of the exposure rate. While this scenario is a possibility, it appears unlikely. Certainly persistent forces have affected the movement of whites and non-whites from central cities, such as income trends and housing discrimination, but it is difficult to discern systematic variation in them from one urban area to another.[26] Even if such an omitted effect were at work, the strong and consistent association evident in these estimates would remain, showing that the rate of white loss is greatest from districts with the highest exposure rates to non-whites.

In addition to the exposure rate, a variable with consistently significant coefficients is the accessibility measure *Access*. White losses were greater where there were more opportunities in the metropolitan area for whites to find districts with lower rates of exposure. This finding is, in effect, the complement to the first, the avoidance of high exposure rates. The third consistent finding is that white enrollment trends were—not surprisingly—influenced by overall metropolitan growth. Where the metropolitan population was growing, white enrollments in large districts tended to grow rather than shrink; but where the metropolis was stagnant, white enrollments did not grow. This correspondence is much higher in the smaller metropolitan areas of sample B and the small districts in sample D.

For the most part, the equations reveal little regional variation in white enrollment growth apart from that which is explained by the other included regressors. Only in samples C and D is there a statistically significant regional effect: in those relatively small districts, whites were less likely to leave or avoid districts in the South.

The major policy variable in the equations is the change in the segregation index. Holding constant interracial exposure in 1987, an increase in segregation would be expected to hold whites and thus increase the white enrollment growth rate (or decrease the rate of loss). This is what Coleman, Kelley, and Moore (1975) found in their study of larger urban districts. And it is also what Equation (1) in Table 3 implies, the OLS equation that covers the sample most similar to the ones Coleman, Kelley, and Moore analyzed. The estimated coefficient in that equation implies that an increase in the segregation index S of 0.10 would have decreased the rate of white enrollment decline by 0.83, say from its mean of –1.55 to –0.72 percent a year. However, the corresponding coefficients in the other equations are not statistically significant.

Changes in measured segregation may not be exogenous. Since the segregation index largely depends on a district's desegregation policy—which could be influenced by white enrollment trends—enrollment trends could affect measured segregation. For this reason, the basic model was reestimated using instrumental variables. Among

[26] Wright, Ellis, and Reibel (1997) make a similar argument in their study of the effect of immigration on the emigration of the native population from metropolitan areas, pointing to metropolitan area population as an omitted variable. It seems unlikely that the omission of district or metropolitan size exerts appreciable bias in the current application. Not only does exposure have a strong and consistent estimated effect in all four samples, but in reestimates of the Coleman et al. (1997) model for Sample A, the estimated coefficient of the logarithm of district enrollment was insignificant, while the variable used for exposure was negative and significant. As a rough test of omitted effects in the current samples, data on an intermediate year, 1991, was used to regress the change in growth rates on the change in exposure rates. These equations explained little of the variance in these changes and yielded no statistically significant coefficients, a result that would be consistent with a high noise-to-signal ratio in both variables or lags in behavioral responses or both.

the instruments employed to explain the change in measured segregation were dichotomous variables indicating the federal circuit in which the school district was located and whether the school district had been named in a federal district court decision between 1987 and 1995.[27] The estimated effect of the change in segregation in the instrumental variables equations loses its statistical significance in Equation (5), and it is not significant in the remainder of the equations. The first-stage equations in all these equations are fairly poor predictors of the change in segregation, with the result that estimated coefficients are generally small relative to their standard errors, though with little change in the other coefficients of interest.

Central to these estimates is the reaction of white parents to the presence of non-whites in the schools their children attend. It is especially germane to ask at least two questions related to that reaction. First, are whites more sensitive to one group of non-whites than to others? To examine this question the first four equations in Table 4 split the exposure rate of whites to non-whites into three components, corresponding to blacks, Hispanics, and other non-whites. For all but sample B, an F-test rejects at the 99 percent level the hypothesis that all the coefficients are the same. In each of those cases, the estimates suggest that whites respond most sharply to exposure to blacks.[28]

The other exposure-related question addressed in Table 4 is whether the reaction of whites to non-white exposure in the schools is nonlinear, specifically whether there is a "tipping point," or a threshold exposure rate beyond which white departures and avoidance accelerate. To allow for such nonlinearities, both cubic and spline functions were estimated, with much the same result. Plots of the former are shown in the table and illustrated in Figure 1, which gives the predicted rate of growth of whites, calculated at mean values, as a function of exposure to non-whites in 1987. They are remarkably similar, implying growth in white enrollments where exposure rates are below about 0.25 and losses beyond that point. Over most of the range of exposure rates the rate of loss is approximately linear. There is no evidence of a threshold beyond which losses accelerate. In fact, losses are reversed somewhat at very high exposure rates in samples A and C.

The conclusion that arises from these regressions is that the phenomenon of "white flight," the loss of whites from school districts featuring significant interracial exposure, first identified and studied in the 1970s, was still at work in the 1990s. To be sure, white enrollment losses are made more likely by a slowing growth rate among the white population nationally and in metropolitan areas that are not growing, but they continue to be stimulated by exposure to non-whites in the public schools, especially where those rates become large. Such white losses are moderated by configurations of school districts that minimize the opportunities for avoidance, such

[27] Since none of the districts in sample C were named in a federal district court decision over this period, the corresponding dummy variable does not appear in the instrument list for that sample. In addition to these dummy variables and the included exogenous variables, the remaining instruments used in the first-stage equations explaining the change in segregation were: total metropolitan enrollment, total district enrollment, each of these interacted with the regional dummy variables, and the district's share in total metropolitan enrollment share, using the 1987 values for all of these enrollment figures. The R^2 in these first-stage regressions corresponding to the four samples and equations (5) to (8) were: 0.21, 0.26, 0.11, and 0.03, respectively.

[28] The calculated test statistics based on the sum of squared residuals were 5.2, 0.3, 6.3, and 45.1 in the four equations. The corresponding critical value for two restrictions at the 99 percent level of confidence ranges from 4.60 to 4.75.

Table 4. Estimated coefficients for selected variables.

Equation Sample	(1) A	(2) B	(3) C	(4) D	(5) A	(6) B	(7) C	(8) D
Variable								
1987 exposure rate of whites to:								
Blacks	**–8.34**	**–5.92**	**–10.39**	**–14.19**				
	1.00	*0.93*	*1.31*	*0.58*				
Hispanics	**–6.48**	**–5.35**	**–9.43**	**–8.20**				
	0.70	*0.72*	*0.85*	*0.40*				
Other non-whites	**–6.98**	**–9.38**	**–10.19**	**–3.58**				
	2.32	*3.55*	*2.12*	*1.20*				
Exposure rate to non-whites					–2.94	–4.95	–3.68	–3.07
					4.83	*3.77*	*3.95*	*1.75*
Exposure rate squared					–17.17	0.29	**–23.22**	**–19.25**
					11.73	*10.44*	*10.28*	*5.10*
Exposure rate cubed					16.12	–1.43	**20.55**	**13.86**
					8.28	*7.82*	*7.52*	*3.90*
Adjusted R^2	0.64	0.63	0.55	0.33	0.65	0.63	0.56	0.31

Note: Coefficients taken from regressions explaining growth rate in white enrollment. Other explanatory variables included were: the intercept, metropolitan growth rate, accessibility (*Access*), change in segregation, and regional dummy variables. Numbers below coefficients are standard errors. Bold type signifies coefficients that are significantly different from zero at the 95 percent level. Regressions are weighted by the square root of 1987 district enrollment. For definition of samples, see Table 2.

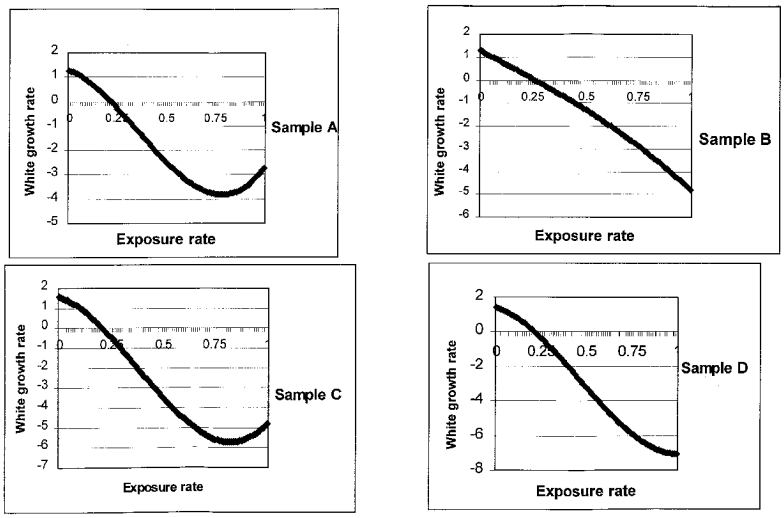
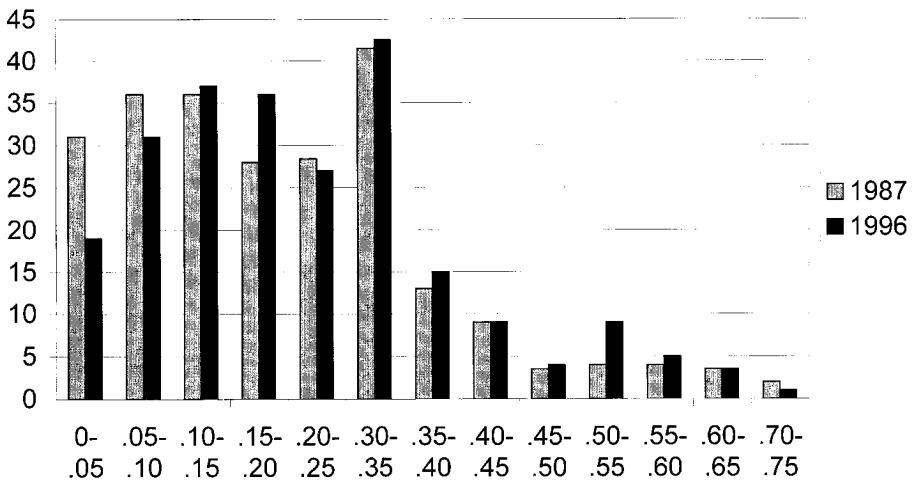


Figure 1. Predicted response of white enrollment to exposure rate (predicted rate by exposure rate, calculated at mean values of other variables).



Note: Data ranges exclude lower bound, i.e., .10–.15 is greater than .10 and less than.15.
Source: Common Core of Data; author's calculations.

Figure 2. Number of metropolitan areas by segregation index (S).

as the large county-wide districts common in parts of the South and West.[29] It is noteworthy that these results apply to both large and small districts and to those in both larger and smaller metropolitan areas. The estimates have less to say about the effect of policies that change the degree of segregation in schools. Perhaps because the period of study witnessed few significant changes in segregation, or perhaps because segregation per se is of less importance than racial contact, the coefficients on this variable were largely insignificant.[30]

IMPLICATIONS FOR SEGREGATION IN SCHOOLS

The estimates presented above make clear that white losses from urban public schools are not evenly distributed, but rather are systematically related to interracial contact and the ease of avoiding that contact. The kind of systematic avoidance these losses imply was documented in research done in the 1970s. The present paper shows that systematic avoidance remained an important phenomenon in the 1990s. Since a principal concern about white enrollment losses has been that they would lead to resegregation, the impact of these white enrollment trends on measured segregation should be considered. Overall, public schools in metropolitan areas became more segregated between 1987 and 1996. Figure 2 shows the distribution of metropolitan areas by segregation index S. It reveals a perceptible shift to the right, with a decline

[29] To compare present patterns of white withdrawal with those observed by Coleman, Kelley, and Moore two decades earlier, a specification based as closely as possible to those employed by Coleman, Kelley, and Moore (1975) was estimated for sample A, the sample most similar to the group of large districts analyzed in the earlier study. The racial composition and segregation variables were redefined using blacks instead of nonwhites, to conform to Coleman, Kelley, and Moore. For both change in segregation and exposure, the responses implied using the recent data in sample A are considerably smaller than those implied by the sample of largest districts in 1968-1973. Those based on the sample of 46 smaller central city districts are much closer in magnitude to the estimates obtained by Coleman, Kelley, and Moore.

[30] Similarly, Smock and Wilson (1991, p. 291) conclude that the loss of whites from urban districts owes more to the presence of nonwhites than to any particular events associated with desegregation.

in the number of metropolitan areas in the lowest two categories and increases in most of the higher categories.

Table 5 presents a more detailed summary of changes in metropolitan-level school segregation. The entries give the weighted average of the segregation index S for the 238 metropolitan areas in the present sample, broken down by size and region. In addition, the segregation indices are decomposed into two components: the portion that is attributable to segregation between districts and that which is attributable to segregation within districts.[31] The table's top row shows that, for the entire sample of 238 metropolitan areas, school segregation increased over the nine-year period; the average value of S increased from 0.302 to 0.317. As there was actually a decline in within-district segregation, this overall increase was entirely attributable to an increase in between-district segregation. In other words, the racial compositions of school districts tended to diverge over this period, a change that would have been aided by systematic white losses from racially mixed school districts. Table 5 makes plain the tendency noted in Clotfelter (1999) for segregation to rise with the size of the metropolitan area; this relationship is clear for both 1987 and 1996. The last set of columns shows, however, that segregation grew in all but the largest metropolitan areas over this period. When the data are classified by region, the effect of the balkanization of metropolitan areas of the Northeast and Midwest is evident: not only do those regions feature the highest rates of segregation, they also have the biggest increases in segregation—again attributable to growing disparities between districts. The South had the highest level of within-district segregation in both years. Overall, the picture that arises is one of entrenched segregation, caused mainly by racial disparities among districts rather than segregation within school districts, and steady increases in that segregation. This picture is very much in line with Coleman, Kelley, and Moore's (1975, p. 80) statement: "The emerging problem of school segregation in large cities is a problem of metropolitan area residential segregation, black central cities and white suburbs, brought about by a loss of whites from the central cities." Barring any change in the legal status of metropolitan desegregation, the only prospect for a reduction in school segregation is a lessening of residential segregation, a possibility raised by Farley and Frey (1994).

CONCLUSION

This paper uses recent data to examine an old question: What factors are associated with white losses from urban public schools? Not surprisingly, the paper leaves some important questions unanswered. For example, the models used do not distinguish between residential location and private school enrollment as alternative avenues for white avoidance of racial exposure. The relative cost of these options surely affects their use; the measures used here to reflect accessibility to white enclaves are only a crude proxy of this relative cost. Nor does the paper examine the effects of contact

[31] As shown in Clotfelter (1999), the segregation measure S can be decomposed in the following way. Consider the hypothetical exposure rate for the metropolitan area that would occur if each district were to racially balance its schools. Just as any district's racial composition (measured by the percentage of non-whites, N) represents the maximum attainable exposure rate of whites to non-whites, the maximum exposure rate for the metropolitan area that could be achieved within the constraints imposed by the existing racial compositions of school districts is this hypothetical rate. Where this hypothetical exposure rate is E*, the gap that is due to inter-district disparities between districts is $S_1 = (N - E^*)/N$. The gap due to segregation within districts is $S_2 = S - S_1 = (E^* - E)/N$, that is, the difference between the exposure rate if all districts were racially balanced and the actual exposure rate, as a proportion of the overall nonwhite proportion.

Table 5. Segregation in metropolitan areas, 1987 and 1996, by size and region.

	N	1987 segregation			1996 segregation			Change in segregation		
		total	between districts	within districts	total	between districts	within districts	total	within districts	between districts
All	238	0.302	0.222	0.080	0.317	0.240	0.077	0.014	0.017	–0.003
By size of metropolitan area enrollment										
50,000 or less	139	0.149	0.083	0.065	0.173	0.107	0.066	0.024	0.024	0.001
50,001-150,000	66	0.283	0.179	0.104	0.293	0.200	0.093	0.010	0.022	–0.012
150,001-350,000	25	0.311	0.243	0.068	0.335	0.261	0.074	0.024	0.019	0.006
over 350,000	8	0.427	0.350	0.077	0.428	0.357	0.071	0.000	0.007	–0.006
By region										
Border	7	0.187	0.113	0.073	0.184	0.121	0.063	–0.003	0.007	–0.010
Midwest	76	0.403	0.340	0.062	0.426	0.367	0.059	0.023	0.026	–0.003
Northeast	36	0.349	0.303	0.046	0.375	0.341	0.034	0.026	0.038	–0.011
South	70	0.259	0.135	0.124	0.260	0.144	0.116	0.001	0.009	–0.008
West	49	0.242	0.172	0.070	0.257	0.183	0.075	0.015	0.011	0.005

Note: Segregation is measured by S. See text.
Source: U.S. Department of Education, Common Core of Data, 1987 and 1996; author's calculations.

across socioeconomic groups, as opposed to the racial and ethnic groupings used here and elsewhere. In addition, the data used in the paper contain no information on racial contact within schools, which is affected by the extent of academic tracking. Nor do the measures used here distinguish between mandatory desegregation plans and the various alternative policies that have been used to desegregate schools. Factors such as these are likely to be important considerations for parents—both white and non-white—deciding where to send their children to school.

To address the question of white losses, the paper uses data covering all public schools in 238 metropolitan areas in 1987 and 1996. The findings suggest that much the same set of forces were at work in the 1990s as in the 1970s. The rate of white loss is affected by the push of exposure to non-whites as well as the attraction of more predominantly white districts elsewhere in the same metropolitan area. Since segregation within districts by 1996 was rather mild in most districts, the key element in predicting whether whites would rapidly abandon central city districts is the size and homogeneity of all the districts in a metropolitan area. In particular, where the dominant districts are large, the prospects for avoiding large white losses are good. Furthermore, these forces appear to work similarly both inside and outside the South, without regard to the size of the district or the metropolitan area. To be sure, the world of urban public schools did change over the two decades. The proportion of non-whites grew, in significant part because of immigration. In addition, the relative affluence of those at the upper end of the income distribution rose at the same time that Catholic parochial schools were in decline, probably increasing the socioeconomic gap between public and private schools. Given the implications of the decisions of households for the racial composition and segregation of the public schools, research on this topic remains as important today as it was two decades ago.

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