Closing Ranks: Closure, Status Competition, and School Segregation

Abstract: The shift away from school desegregation policies toward market-based reforms necessitates a deeper understanding of the social and institutional forces driving contemporary school segregation. I conceptualize school segregation as a mode of monopolistic closure amid status competition, where racial/ethnic groups compete for school-based status and resources. I test the theory by analyzing primary and secondary school segregation throughout the U.S. from 1993-2010. Findings support the hypotheses that segregation increases with the salience of race/ethnicity and the decentralization of school systems, which fuels differentiation and provides incentives and opportunities to monopolize schools. Parallel findings for black-white, Hispanic-white, and black-Hispanic segregation suggest that a core set of processes drives school segregation as a general phenomenon.

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School segregation has been central to our efforts to understand and address racial/ethnic educational inequalities for decades. Evidence indicates that desegregation policies in the 1960s-1980s reduced racial inequality by improving blacks' academic and socioeconomic outcomes (Dawkins and Braddock 1994; Grissmer, Flanagan and Williamson 1998; Guryan 2004; Johnson 2011; Wells and Crain 1994). But desegregation policy has receded, and contemporary segregation remains linked to the emergence and persistence of racial/ethnic achievement disparities (Berends, Lucas and Peñaloza 2008; Condron 2009; Hanushek, Kain and Rivkin 2009; Mickelson, Bottia and Lambert 2013; Vigdor and Ludwig 2008). Consequently, many continue to view school segregation as a problem worth solving.

But why are schools segregated? For a question so fundamental to a topic so enduring in social science research, answers are remarkably superficial. Take the white flight model, our prime explanation. It predicts, and evidence affirms, that whites flee as minorities encroach into their schools (Clotfelter 2001; Coleman 1975). But this merely begs the question: why do whites flee? Such problems are given short shrift in a literature fueled by desegregation policy debates, where the reasons whites flee seem less important than the extent to which they do.

A deeper understanding becomes more important when we consider that desegregation was more successful, and white flight less pronounced, in some places than others. A few innovative studies apply racial competition theory to explore contextual factors that exacerbate white resistance to desegregation (Andrews 2002; Olzak, Shanahan and West 1994; Renzulli and Evans 2005). These efforts are promising, but they neglect competing axes of group formation and competition (e.g., class) and fail to explain policy's role as a regulator of competition.

Ironically, the policy debates that have spawned such valuable research on the effects of desegregation strategies (Clotfelter 2004; Logan, Oakley and Stowell 2008; Reardon et al. 2012)

have distracted us from a deeper theoretical understanding of how institutions influence segregation. They have also confined our attention to white-minority segregation despite vast population change. As desegregation policy recedes, it is crucial to understand the impact of new institutional arrangements. And as the minority population grows in size and diversity, it is crucial to understand segregation across an expanding range of groups. Both require greater theoretical attention to the basic social dynamics underlying segregation.

This study adopts a Weberian perspective, conceiving of racial/ethnic school segregation as a mode of closure arising from status group competition for school-based resources (Weber 1968). Segregation stems from social, demographic, and institutional factors that influence *the salience of race/ethnicity to group formation*, *the degree of status competition*, and *the extent to which this competition plays out across schools*. This framework better explains why whites flee minority students and why segregation varies across contexts. Furthermore, it generalizes these explanations to account for segregation among a broad range of groups and explains how various policies and institutional factors affect school segregation.

I test this theory with respect to black-white, Hispanic-white, and black-Hispanic segregation across primary and secondary schools in metropolitan areas and nonmetropolitan counties throughout the United States from 1993 to 2010. This period saw growing student diversity, a retrenchment of desegregation policies, and a move toward market-based educational reforms—a context demanding a deeper understanding of school segregation.

Status Competition Theory and School Segregation

Social Closure, Status Groups, and Ethnicity

Weber (1968) places all social relationships on a continuum between open relationships, which include anyone willing and able to participate, and closed relationships, which restrict the

participation of outsiders. Closure confers advantages on insiders by granting them access to resources and opportunities possessed by the group, such as esteem, access to desired social positions, or material resources. It often arises in competitive contexts when resources or desired ends become scarce, and when individuals recognize an opportunity to secure a monopoly by acting collectively (Weber 1968).

Status groups are particular manifestations of closure. They share common status situations, typically delineated by lifestyle, education, or lineage (Weber 1968). Closure maintains status differentiation between these groups, and the ensuing competition plays an important role in social conflict and inequality. Privileged groups exclude outsiders to monopolize status and resources, while disadvantaged groups challenge these monopolies. Absent a vertical hierarchy, closure can also arise between groups through efforts to gain an advantage and create vertical differentiation.

Most applications of closure and status competition focus on class (Parkin 1979), but Weber also applies them to ethnicity: "The belief in common ethnicity often delimits 'social circles'… Their similarity rests on the belief in a specific honor of their members, not shared by the outsiders" (Weber 1968: 390). He even makes the caste system, a status hierarchy based on ethnicity, a prototype of status group formation. Yet his definition is general enough to allow ethnic closure to occur without a clear hierarchy, as when ethnic groups seek to preserve their "ethnic honor" by excluding outsiders.

By rooting ethnicity in shared beliefs, Weber anticipates the modern view of race/ethnicity as subjective (Banton 2008). And by interpreting ethnicity as a type of status group, he initiates a tradition that explains prejudice, discrimination, and other aspects of

racial/ethnic relations from the group position and competition perspectives (Banton 1983; Blalock 1967; Blumer 1958; Olzak 1992).

Weber (1968) also highlights contingencies of group competition. Race and ethnicity compete with other axes of group formation such as religion and class—all social constructs of variable salience. Banton (2008) elaborates Weber's emphasis on rational action to explain this variability. Groups form when individuals perceive an advantage in identifying with and competing as members of particular collectivities. If they compete as individuals instead, group boundaries dissolve. So counter to theories that take racial/ethnic groups for granted, Weberian theory sees them as salient only to the extent that physical or cultural differences align with individuals' interests and identities. This often occurs when physically and culturally distinct groups encounter one another in competitive scenarios (Banton 2008; Olzak 1992).

Moreover, Weber recognizes that social structures regulate the form and intensity of status competition. They may do so in ways that exacerbate or moderate competition in a particular domain—Collins (1979), for instance, argues that decentralized governance fuels status differentiation and competition across culture-producing organizations (schools), while centralization does the opposite. They may also do so in ways that create, challenge, or reinforce particular monopolies—dominant groups use institutional power to regulate competition to their advantage, while minorities often mobilize to sway institutions in their own favor (Banton 1983).

Status competition theory reduces complex stratification processes to a core of basic components. In this vein, I view racial/ethnic school segregation as a product of three distinct factors: *the salience of race/ethnicity to group formation*, *the degree of competition for school-based resources*, and *the form of this competition in school systems*. I disentangle these factors and explain how they interact to affect school segregation, both in the past and present.

Historical Perspectives: Status Competition, Education, and Segregation

Historical accounts claim that the earliest schools emerged to teach particular status cultures and embodied the status of their pupils—status differentiation across schools was thus linked to ethnicity (Brown 1995; Collins 1979; Durkheim 1977). Over time, competition eroded ethnic differentiation across schools, which yielded to the pursuit of common educational credentials—these credentials became key positional goods and instruments of closure and competition in modern stratification systems (Collins 1979).

But by focusing on credentials, this argument highlights vertical stratification (i.e., amount of schooling) at the expense of horizontal stratification (i.e., quality of schooling), where ethnicity has been most salient. In doing so, it downplays the importance of persisting racial/ethnic boundaries to competition for school quality in horizontally differentiated educational systems—a driving force of school segregation.

Labaree (1997) casts many forms of horizontal differentiation as a compromise between ideals of democracy, efficiency, and mobility. The twentieth-century expansion of secondary education, for instance, incorporated immigrant and poor children into a single system aligned with democratic ideals (Tyack 1974). But education's role as sorter in a competitive mobility system required new methods to differentiate students. Hence, expansion prompted such reforms as tracking and community colleges, which hindered many students' mobility by providing a second-rate education (Labaree 1997). Similarly, decentralized governance permitted the differentiation, innovation, and competition between schools that fueled expansion, but this bred inequality between school systems (Collins 1979; Goldin and Katz 2008).

De jure school segregation was a particularly stark form of horizontal differentiation. Once slavery was abolished, southern whites faced the threat of competition from a massive

population of free blacks. To maintain blacks' subordinate position, whites reasserted their political power and established segregated schools with vastly unequal resources (Caliver 1956; Franklin 1956). Similarly, Hispanics were excluded from many white schools in the southwest amid waves of Hispanic immigration (Donato 1997). From the status competition perspective, segregated schooling helped whites monopolize school-based status and resources that were increasingly important to socioeconomic attainment.

It took a feat of centralized governance to dismantle this system. In 1954 the Supreme Court deemed segregated schools unconstitutional and, with the help of the Federal Government, eventually imposed desegregation on the South and on cities nationwide (Clotfelter 2004). In Weberian terms, new regulations barred racial exclusion and challenged whites' monopoly.

But the ensuing history of desegregation is complex. Despite widespread success in the 1970s and 1980s, desegregation stalled in the 1990s. Today, blacks and Hispanics still attend schools with relatively few whites—fewer, in fact, than they did in the late 1960s (Orfield and Lee 2007). Explanations and debate abound. Were the government's desegregation efforts futile or abandoned too soon? Have new policies exacerbated segregation? Or is this the inevitable result of birds of a feather flocking together? Social scientists have made admirable strides to answer specific questions of this sort, but have fallen short of a coherent model of the causes of contemporary segregation.

Causes of Contemporary Segregation

White Flight

White flight is the dominant explanation of school segregation. According to Coleman (1975), individual whites in the 1960s-1970s undermined desegregation and avoided contact with minorities by fleeing integrating school districts. This model links demographic and policy

changes to individual behaviors that drive segregation—whites flee when minority populations grow or encroach into whites' schools, as when desegregation policies attempt to integrate schools by force.

White flight theory receives substantial empirical support. Researchers consistently find that when whites' exposure to black students increases, they flee to whiter districts nearby (Clotfelter 2001; Farley, Richards and Wurdock 1980), private schools (Andrews 2002; Clotfelter 1976; Fairlie and Resch 2002), or other choice schools such as charter or magnet schools (Bifulco and Ladd 2007; Renzulli and Evans 2005; Saporito 2003). Similar processes may even occur within integrated schools, where racialized tracking systems lead to between-classroom segregation (Clotfelter, Ladd and Vigdor 2009; Mickelson 2001).

Yet white flight theory has significant flaws. It emerged from policy debates that led scholars to predict rather than explain white flight, with a singular focus on white-minority segregation. It is thus vague about why whites avoid minority students in the first place. It also fails to explain why desegregation policy was widely successful in spite of white resistance (Clotfelter 2004; Logan et al. 2008), and why some communities did not experience white flight from growing minority populations or desegregating schools (Pettigrew and Green 1976). Finally, it ignores forms of exclusion other than avoidance, negates minority agency, and fails to account for, or even attend to, segregation among minorities or other social groups.

Racial Competition: Why Whites Flee… Sometimes

White flight theory rests on individual whites' out-group avoidance, implicitly motivated by homophily, prejudice, fear, or self-interest. But group dynamics shape these individual attitudes and behaviors. Blumer (1958) argues that groups define themselves in relation to others, and the resultant sense of social position underlies prejudice. He further claims that dominant

groups feel a proprietary claim to areas of privilege, including "exclusive membership in given institutions such as schools…" (p. 4). Similar notions guide racial/ethnic competition theories—as the dominant group perceives a threat to its economic, political, or social standing, it increases its hostility toward and exclusion of the threatening group (Blalock 1967; Olzak 1992).

In the context of school segregation, whites monopolize access to high-status schools, and when competing groups threaten their monopoly, they resist or flee. This is exactly what Bobo (1983) argues when he finds that whites' opposition to busing was rooted in perceived threats to their lifestyle and relative social position rather than symbolic racism. Group position and competition motivate white flight.

Racial competition theory also explains variation in the salience of race with the concept of racial threat, typically related to levels of, or changes in, local racial composition. A minority group is hypothesized to become a more salient threat as its population share and visibility increase (Blalock 1967). Many studies link rising black populations and white-black exposure to whites' antipathy toward blacks, residential segregation, and racial socioeconomic disparities (Bobo and Zubrinsky 1996; Olzak, Shanahan and McEneaney 1996; Quillian 1996; Taylor 1998). Others find higher prejudice and ethnic conflict amid economic deprivation or contraction, arguing that dominant groups feel more threatened when economic resources are scarce (Olzak 1992; Quillian 1996). This parallels Weber's (1968) argument linking closure to situations of scarcity.

Certain conditions reduce the threat posed by a particular minority group. The concept of buffering has been posited to explain lower white-black residential segregation in multiethnic areas or places with greater Hispanic and Asian populations (Frey and Farley 1996; Iceland

2004; Logan and Zhang 2010). Buffer groups or diverse populations may reduce any particular group's visibility or generate competition along lines that cross racial/ethnic boundaries.

Of the theory's few applications to school segregation, most concern whites' collective resistance to mandatory desegregation. Olzak, Shanahan, and West (1994) find white antibusing activities (protests, riots) more common following increased exposure to blacks in schools and neighborhoods, presumably due to a heightened sense of threat. Similarly, Andrews (2002) attributes whites' coordinated efforts to undermine desegregation in Mississippi to racial threat. Whites were most likely to create private "segregation academies" where blacks displayed high levels of social movement mobilization and had large enough populations to pose a political threat. And Pettigrew (1957) finds that North-South border counties in the 1950s were less likely to adopt desegregation plans when they had large black populations and high poverty rates.

Weaknesses of Racial Competition Theory

Despite the contributions of racial competition theory, its applications to school segregation have shortcomings. Studies of collective resistance to desegregation policies are less relevant to contemporary segregation, which rests on individual choices in a new policy context. The focus on white-minority conflict also neglects segregation among minorities, and most studies ignore other axes of competition that could be confounded with race/ethnicity. Even in a "color-blind society," racial/ethnic segregation would persist as long as there were socioeconomic disparities between racial/ethnic groups and competition between socioeconomic groups. Although such disparities do not appear to explain contemporary racial/ethnic school segregation (Reardon, Yun and Kurlaender 2006), it is critical to account for competing dimensions of competition as stratification systems evolve (Wilson 1978).

The most thorough formulations of racial competition theory address these weaknesses. In a model similar to the one presented here, Olzak (1992) recognizes that certain factors shape the salience of race/ethnicity to group formation (e.g., group size or growth) and others heighten competition in general (e.g., resource scarcity). She also extends these principles to competition among minority groups. But Olzak's account focuses on conflict rather than exclusion; in fact, conflict occurs when exclusionary processes such as segregation break down. Furthermore, racial competition theory overlooks the way policies and institutions regulate the intensity and form of competition. Weberian theory is highly attuned to these processes.

Institutions and Contemporary School Segregation

Weber (1968) argues that closure arises when people recognize opportunities to monopolize status or resources, noting that social structures and institutions shape these opportunities. In addition to desegregation policies, the institutional factors most important to contemporary school segregation relate to the decentralization of school systems, including the drawing of school district and attendance zone boundaries, the presence of the private sector, and the expansion of school choice in the public sector. These factors shape the opportunities and incentives for segregation across schools. Although national policies and trends influence these factors, the local autonomy of America's educational system makes them variable across states, municipalities, and districts. This study focuses on institutional variation across schooling markets measured at the metropolitan or county level.

A status competition perspective goes beyond racial competition studies' focus on white resistance to desegregation policies to also explain their success. Desegregation policy was a centralized effort to reduce segregation by regulating the form of competition—that is, by assigning students to schools. In addition to the competitive dynamics and racial/ethnic

boundaries that fueled white resistance, desegregation's success depended on the costs and institutional barriers to this resistance. Though many whites fled to whiter districts or private schools, these choices were costly, and enough whites accommodated desegregation to make it fairly successful (Clotfelter 2004). Desegregation was most effective in sprawling districts with fewer avenues of flight, but was more easily circumvented in fragmented systems with accessible "white enclave" districts (Clotfelter 2001; Farley et al. 1980; James 1989). The recent retrenchment of desegregation policy is a form of decentralization that has led some districts to resegregate, especially where these policies were most effective (Reardon et al. 2012). In short, desegregation policies appear most consequential where racial/ethnic and competitive dynamics fuel segregation, and where local institutional arrangements make the costs of resistance high.

Status competition theory also clarifies the implications of recent market-based choice policies. Such policies aim to boost productivity by deregulating schools to promote differentiation and innovation, and by expanding choices to fuel competition for schools. This provides status groups opportunities to avoid out-groups and monopolize particular schools by sorting across organizational boundaries. Differentiation across schools also creates incentives for sorting and monopolizing, as some schools will inevitably be perceived as higher in status or quality than others. Hence, many fear that school choice will fuel white flight or allow advantaged groups to hoard higher-status schools (Renzulli and Evans 2005; Saporito and Sohoni 2006; Wells et al. 1999). But segregation is not an inevitable consequence of expanding choice or decentralization, as the white flight model implies. Instead, its impact depends on the salience of racial/ethnic boundaries.

Two qualitative studies highlight racial/ethnic closure's role in school choice and segregation. Sikkink and Emerson (2008) show that although both black and white parents

associated schools' minority composition with lower status, this was more pronounced among whites, whose segregated social networks were less aware of successful diverse schools. Similarly, Holme (2002) finds that middle-class whites who moved residences to attend more desirable schools believed schools serving others in their high-status (white middle-class) networks must be best. Most neither visited the schools they avoided or selected, nor sought information related to school quality or climate. Both studies indicate that racial/ethnic network closure drives racialized assessments and choices of schools. In settings with weaker racial/ethnic boundaries, choice need not promote racial segregation.

Status competition theory thus improves on prior models by recognizing how institutions influence competition and how they interact with group boundaries. This is critical to understanding and addressing school segregation, particularly in the current context of race-neutral, market-driven reforms. Just as they did in the past, current instances of decentralization and fragmentation—expanding choice and fading desegregation policies—promote differentiation across schools and fuel competition for school status. This will foster segregation where racial/ethnic boundaries are salient.

Competition and Segregation among Minorities

Most prior analyses are confined to white-black and, to a lesser extent, white-Hispanic segregation, but it is critical to examine segregation among minorities as well. Hispanic and Asian populations have grown so rapidly that whites will soon be a numerical minority in many areas (Frey 2011). To understand contemporary patterns of stratification, we must understand how minority groups relate to each other as well as to whites. Studying segregation among minorities is also essential to a more fundamental understanding of segregation as a general phenomenon that occurs across various social groups.

A challenge of generalizing a theory of segregation to minority groups is addressing the importance of hierarchical relationships. We could assume that any two minority groups are vertically differentiated just as whites and minorities are, although which minority group is advantaged may vary across contexts. This study goes a step further to argue that a vertical hierarchy is not necessary for closure to take place; even when one group is not clearly privileged relative to the other, each may exclude the other to preserve its subjective sense of ethnic honor or to differentiate itself in hopes of gaining an advantage. Nothing about group competition and closure requires dominant/subordinate relationships.

In an insightful extension of racial competition theory to minorities, Bobo and Hutchings (1996) find that substantial numbers of Asians, blacks, and Latinos perceive other minorities as competitive threats for social resources. Studies of school segregation among minorities are rare (Reardon, Yun and Eitle 2000), but there is evidence of "Latino flight" from black students into private schools (Fairlie 2002) and self-segregation of various minority groups into charter schools (Garcia 2008). Because the status competition model accounts for closure between status groups of any kind, it easily accommodates segregation between minority groups as well as between whites and minorities. In either case, conditions that foster competition for schools should promote school segregation when race and ethnicity are salient to group formation .

Hypotheses

I derive the following hypotheses from status competition theory.

Hypothesis 1: Racial/ethnic school segregation increases with the salience of racial/ethnic boundaries.

Hypothesis 2A: Racial/ethnic school segregation increases with the scarcity of valued resources and their link to schooling, which heightens educational competition.

Hypothesis 2B: The effect of resource scarcity on racial/ethnic school segregation increases with the salience of race/ethnicity.

Hypothesis 3A: Racial/ethnic school segregation increases with decentralization and differentiation in school systems, which provide opportunities and incentives to monopolize schools.

Hypothesis 3B: The effects of decentralization and differentiation on racial/ethnic school segregation increase with the salience of race/ethnicity.

Hypothesis 4: These hypotheses apply to segregation between minority groups as well as segregation between whites and minorities.

Competing models share some of these predictions, but each falls short in certain respects. White flight theory is consistent with Hypothesis 3A (because decentralization facilitates white flight), but it overlooks the variable salience of race/ethnicity and the competitive dynamics central to the remaining hypotheses. It also ignores segregation between minority groups. Racial competition theory is consistent with Hypotheses 1, 2A, and possibly 2B, which can all be extended to segregation between minorities. It does not, however, speak to the regulatory role of policies and institutions central to Hypotheses 3A and 3B.

Data and Measures

I test these hypotheses by analyzing relations between school segregation and measures that tap the salience of race/ethnicity, the scarcity of resources, and decentralization and differentiation in school systems throughout the United States from 1993 to 2010. This period is convenient because of the comprehensive school data available, but it is also a period of growing student diversity, fading desegregation policy, and flourishing market-based reforms—a context suited to the general framework offered by status competition theory.

Segregation arises from competition within local markets, which are the primary units of analysis. These markets must encompass avenues of segregation that extend beyond districts to capture private schools (Clotfelter 1976; Fairlie and Resch 2002) and city-suburb or between-district dynamics (James 1989; Reardon et al. 2000). I delineate markets as metropolitan areas or nonmetropolitan counties.[1] Segregation thus captures racial imbalance across all schools within these areas, encompassing imbalances between the public and private sectors, between public school districts, and between schools within each sector and district. I construct a panel of measures for each market across the 1993-1994, 1999-2000, and 2009-2010 school years.

School Segregation

Measuring school segregation requires school-level racial composition data, which come from the Public Elementary/Secondary School and Local Educational Agency Universe Surveys in the Common Core of Data (CCD), as well as the Private School Survey (PSS), all collected by the National Center for Education Statistics (NCES). I focus on segregation between the three largest racial/ethnic groups defined in the data: blacks, Hispanics, and whites. Specifically, I analyze (1) *black-white*, (2) *Hispanic-white*, and (3) *black-Hispanic* segregation. Analyses include areas where both focal groups comprise at least one percent of the student population.

These administrative categories are problematic in that they obscure within-group heterogeneity and assume these categories' salience to social behavior, when this salience is variable and contingent on many factors. This study aims to assess this variation and relate it to competitive dynamics that affect school segregation. Because these categories are crude, it is possible that particular subgroups drive my findings (e.g., immigrants, the poor).

Examining exclusionary processes of segregation requires a measure of groups' uneven distribution across schools in local markets that is independent of local racial/ethnic composition.

[1] Metropolitan areas are linked consistently over time to 2010 combined statistical area (CSA) boundaries.

I use Theil's Information Theory Index (*H*). *H* has long been advocated as a measure of school segregation and is increasingly popular (Reardon and Firebaugh 2002; Reardon et al. 2000; Reardon and Yun 2001; Stroub and Richards 2013; Theil 1972; White 1986; Zoloth 1976). The Appendix details technical properties that make *H* preferable to the most common alternative, the Dissimilarity Index (*D*). In short, *H* is ideal here for two reasons.

First, *H* comes from a family of inequality indexes suited to measure other constructs in this study (diversity, racial/ethnic inequality, school inequality). Measures vary in their sensitivity to particular areas of the relevant distribution (Allison 1978; James and Taeuber 1985), so it makes sense to use similar measures when relating segregation to other forms of inequality. Second, *H* captures the variation in enrollment that underlies segregation more effectively than *D*, because *H* responds to enrollment changes throughout the distribution of schools. *D* only responds to enrollment changes between schools where a group is over- and underrepresented (James and Taeuber 1985; Zoloth 1976).

H ranges from 0, when all schools in an area have the same racial composition, to 1, when students of different groups attend separate, racially/ethnically homogeneous schools. It quantifies, as a proportion, how much less diverse schools are than their local market overall (Reardon and Firebaugh 2002). Diversity is measured with the Entropy index (*E*), calculated using Equation 1, where Q_m is group *m*'s proportional share of enrollment. *E* increases with the number of groups *M* and as group sizes become similar. First, *E* is calculated for each individual school and each market.[2] Then, *H* is calculated for each market using Equation 2, where t_i and E_i refer to the total enrollment and entropy of school *i*, respectively, and *T* and *E* refer to the total enrollment and entropy of the market, respectively.

[2] Entropy is actually calculated with the log base equal to the number of groups involved in the calculation. This is equivalent to normalizing the measure by dividing by ln(M), where M is the number of groups, as is customary with between-group entropy measures.

$$(1)\ E = \sum_{m=1}^{M} Q_m \ln\left(\frac{1}{Q_m}\right)$$

$$(2)\ H = \frac{\sum_{i=1}^{k} \frac{t_i}{T}(E - E_i)}{E}$$

Racial/Ethnic Salience

Three variables tap the salience of race/ethnicity to status group closure: between-group entropy, multigroup entropy, and intermarriage rates. Between-group entropy measures the relative enrollment shares of the two focal groups (e.g., black-white entropy for black-white segregation) and is calculated with Equation 1.[3] I assume that the salience of race/ethnicity increases with between-group entropy because of the heightened visibility of (or threat posed by) each focal group to the other. Between-group entropy has the desirable property of being in the same family of measures used for segregation and other forms of inequality and being a nonlinear function that peaks as groups approach similar sizes.[4]

Prior research often finds nonlinear relations between local racial composition and school segregation. Several studies report "tipping points," where white flight peaks in the range of 25-50% black enrollment (Clotfelter 1976; Giles 1978; Smock and Wilson 1991). Reardon and Yun (2001) also report nonlinear relations between suburban black-white and Hispanic-white segregation and black and Hispanic population shares, respectively. Figure 1 plots each minority-white entropy measure against the minority's share of enrollment in my data. Entropy peaks as each minority reaches about 40% of the population, in the range highlighted by prior studies.

[Figure 1. Entropy and Racial Composition.]

[3] Although E enters the numerator of H, dividing by E normalizes H and renders them mathematically independent.
[4] I also assess more flexible specifications of compositional measures, including discrete racial composition categories (see Note 9).

Multigroup entropy, also calculated with Equation 1, captures overall student diversity, measuring the relative presence of all groups in the data (American Indians, Asians, blacks, Hispanics, and whites). I assume that the salience of racial/ethnic boundaries between any two groups declines with increasing multigroup entropy because of the buffering effect of overall diversity. This is consistent with Reardon and Yun's (2001) finding that black-white and Hispanic-white suburban school segregation decline as other minorities' presence increases.

Compositional measures are the most common indicators of racial competition in the literature, and they are particularly useful because aggregate-level variation in racial composition is unlikely to be confounded with alternative explanations of segregation. It is problematic, however, to assume that racial/ethnic salience responds to compositional change without measuring it directly. To address this limitation, I use intermarriage as another proxy for the salience of race/ethnicity. Intermarriage rates are calculated as the proportion of all marriages involving individuals of two groups that are mixed. For example, the black-white intermarriage rate is the proportion of all marriages involving blacks or whites that occur between blacks and whites. Marriage data come from the Integrated Public Use Microdata Surveys (IPUMS) 5% samples for 1990, 2000, and 2010 (Ruggles et al. 2010).

Intermarriage is an imperfect proxy for salience because marital sorting is influenced by non-racial/ethnic factors. For example, given socioeconomic inequality between racial/ethnic groups, intermarriage rates may confound racial/ethnic closure with socioeconomic closure. Hence, some of my analyses control for measures of racial/ethnic socioeconomic inequality, described below. This is a conservative solution, as racial/ethnic inequality is likely caused by racial/ethnic closure and is thus a mechanism by which closure promotes segregation.

Nonetheless, net of socioeconomic differences, intermarriage should be less common where racial/ethnic boundaries are more salient.

Competition for Scarce Resources

Status competition and closure should increase with the scarcity of valued resources, and as these resources become more closely tied to education. This is the first school segregation study to assess this link. Two variables capture the local supply of socioeconomic resources: per capita income and the unemployment rate. A third, educational income inequality, captures the link between educational attainment and economic resources. It is calculated using Theil's between-group index (T_b), shown in Equation 3, where N_m and I_m refer to the population and income of people in educational category *m* (no high school diploma, high school diploma, some college, bachelor's degree, graduate degree), respectively, and N_T and I_T refer to total population and income, respectively.[5] Each is based on IPUMS data.

$$(3)\ T_b = \sum_m \left(\frac{I_m}{I_T}\right) \ln\left(\frac{I_m/I_T}{N_m/N_T}\right)$$

Competition for school-based resources may be more relevant to school segregation. I measure average pupil-teacher ratios using school-level data from the CCD and PSS, and average per-pupil expenditures in the public sector using district-level data from the U.S. Census Bureau. I assume competition for schools increases as teachers and expenditures become scarcer.

Decentralization and Differentiation

I employ several measures of decentralization, which I assume fuels differentiation across schools and provides opportunities to monopolize them: the number of public school districts in the area (excluding independent agencies that run charter schools), the average number of

[5] To be consistent over time, income data are top-coded at $400,000 for all years (the 1990 top-code), and all income measures are adjusted for inflation and presented in 2009 dollars. Top-coded incomes are multiplied by 1.4, which is customary in the income inequality literature.

traditional public schools within districts (weighted by district enrollment), and the proportion of all schools that are private or charter schools. These measures come from NCES data.

A few relevant comparisons in prior work examine public school district fragmentation in metropolitan areas. Reardon and Yun (2001) find no link between suburban minority-white school segregation and the number of districts, but Logan and colleagues (2008) find less black-white segregation in metropolitan areas where districts span city-suburb boundaries, and Bischoff (2008) links multiracial residential segregation to district fragmentation in metropolitan areas. I expand on these studies by examining multiple forms of decentralization in metropolitan and nonmetropolitan markets that include private schools.

The number of districts under active desegregation orders is a measure of centralization. These data were compiled by Reardon and colleagues (2012) for all medium to large school districts (at least 2,000 students) ever under court-ordered desegregation. They find that minority-white segregation increased when districts were released from desegregation. I relate these policies to segregation across all schools and districts in broader markets and also examine black-Hispanic segregation, given that these plans regulate minorities' choices as well.

I assess differentiation more directly with the unequal distribution of resources across schools.[6] Competition and segregation should increase with between-school resource inequality—the more unequal schools are, the greater the incentive to monopolize particular ones. I measure between-school inequality in teacher supply and between-district inequality in expenditures using T_b, where I refers to teachers or expenditures, N refers to enrollment, and m indexes schools or districts (Equation 3). Condron and Roscigno (2003) link similar resources to

[6] The unequal distribution of school-based resources is potentially an outcome of racial/ethnic competition rather than a cause of it. My findings for other variables are not sensitive to the omission of these measures.

school composition in one public school district, but this study relates segregation to resource inequality across all schools and districts in local markets nationwide.

Socioeconomic Inequality

Beyond race/ethnicity, socioeconomic status is likely the main axis of competition that drives school segregation. I include several measures of racial/ethnic socioeconomic inequality to assess the threat that school segregation is driven by class-based rather than race-based competition, but adjusting for these factors may control away the effects of racial competition. The same holds for residential segregation—residence may be a marker of socioeconomic attainment or assimilation, but is also an important aspect of choosing a school and a potential mechanism through which racial competition promotes school segregation (Holme 2002). I present results for specifications with and without these controls.

Racial/ethnic income inequality is measured with T_b (Equation 3), where m indexes racial/ethnic groups, and I refers to group income. Racial/ethnic educational inequality, unemployment inequality, occupational segregation, and residential segregation are measured by H, as for school segregation (Equation 2). Here, H captures the uneven distribution of racial/ethnic groups across educational categories, employment/unemployment, Standard Occupational Classification categories, and census block groups, respectively. Prior evidence links black-white income inequality and residential segregation to school segregation (Logan et al. 2008). The same is likely to hold for other groups. Residential segregation is calculated from decennial census data, and the other measures are calculated from IPUMS data.

Controls

I include several controls that could influence racial/ethnic boundaries, competitive dynamics, and institutional arrangements in ways that confound the relations of interest: the total

number of districts ever subject to mandatory desegregation (Reardon et al. 2012), total student enrollment (CCD/PSS), the percentage of the population living in urban areas (census), the percentage of the population who are immigrants (IPUMS), the percentage of adults with a bachelor's degree and without a high school diploma (IPUMS), a dummy indicator of whether the area is a census-defined CSA (metropolitan area), and indicators of the region in which the market is located (Northeast, Midwest, South, West). Evidence from metropolitan public schools during this period indicates that segregation between all groups increases with total enrollment (Stroub and Richards 2013), and that black-white segregation is highest in the Midwest and Northeast and lowest in the South and West (Logan et al. 2008).

Data Manipulation

Here I summarize additional steps needed to consolidate these data—details are provided in Appendix A. The first concern is linking IPUMS data, measured for Public Use Microdata Areas (PUMAs), to schooling markets (metropolitan areas and counties) over time. I match each market to consistent PUMA boundaries provided by IPUMS and either aggregate multiple PUMAs to their common market or adjust for the clustering of multiple markets within PUMAs. The second concern is linking 1990 IPUMS and census data with NCES school data, which are complete enough for analysis beginning in 1993. To do so, I use linear interpolation to predict IPUMS- and census-based measures in 1993.

I also log-transform all variables except region and metropolitan status indicators to make their distributions less skewed and facilitate interpretation. This permits regression coefficients to be interpreted as elasticities—approximately the percentage change in segregation associated with a one percent increase in the independent variable. Details on variable construction are provided in Appendix Table A1.

Missing data are rare in the sources used here and are assumed to be missing at random, conditional on the model, in my primary analyses. Only 27 counties (1.2%) and 1 metropolitan area (0.8%) lack the school data needed to compute segregation in one or more years (but never all three)—most are in Idaho in 1993 and 1999. The only covariates with missing data are those based on per-pupil expenditures and pupil-teacher ratios. Expenditures data are missing for districts enrolling 10% of students in 1993 but less than 1% in other years. Teacher data are missing for schools enrolling 7% of students in 1999, but less than 1% in other years. When possible, I still calculate average levels of and between-school inequality for both resources from available data in the market. Overall, at least 95% of cases are included in analyses, and specification checks suggest my findings are not sensitive to the treatment of missing data.[7]

Methods

This panel of data permits the analysis of variation both across markets and within markets over time. I assume that segregation is a manifestation of contemporaneous competitive processes. Within places, changes in the key constructs—the salience of race/ethnicity, resource scarcity, and decentralization/differentiation—should generate changes in exclusionary processes of segregation (Olzak 1992). Between places at any given time, differences in these constructs should maintain differences in segregation. The key obstacle is removing the influence of confounders that influence the key constructs as well as school segregation.

I rely primarily on random-effects (RE) growth models (Singer and Willett 2003), which exploit between- and within-market variation. Each market has its own starting point (segregation in 1993-1994) and trajectory between 1993-1994 and 2009-2010. The starting points and trajectories are allowed to vary randomly across markets, and covariates are

[7] Findings were replicated in models controlling for the percent of missing teacher/expenditure data, as well as interactions between the teacher/expenditure measures and indicators of high missingness (>10%).

introduced to explain this variation. The key assumption is that, net of all controls, unobserved place- and time-specific influences on segregation are uncorrelated with the key constructs.

I use fixed-effects (FE) and lagged outcome (LO) models as specification checks (Allison 2009; Halaby 2004). By focusing solely on changes within places over time, FE models allow covariates to be correlated with unobserved time-invariant, place-specific attributes. The cost is reduced statistical power from eliminating between-unit variation, which comprises most of the variation in segregation. FE estimates are also based on relatively small within-place changes in covariates that may not extrapolate to larger between-place differences in the presence of nonlinearities.

LO models differ from RE and FE models by permitting segregation in one period to affect segregation in the next. This could occur if segregated schooling affects racial/ethnic boundaries, competition, or local educational policies in ways not captured by the data. I estimate separate LO models for segregation in 1999-2000 and 2009-2010, and also control for lagged predictor variables. Equations for each modeling strategy are shown in the Appendix. All models adjust standard errors for clustering within PUMAs.

In each case, I estimate a series of specifications. To test Hypotheses 1, 2A, and 3A, the first includes main effects of the key constructs along with controls. To assess socioeconomic competition as an alternative explanation, the second adds racial/ethnic inequality and residential segregation measures. Again, this likely controls away some of the racial/ethnic closure of interest and provides conservative estimates (biased toward zero). To test Hypotheses 2B and 3B, the third adds interactions between racial/ethnic salience and both scarcity and decentralization/differentiation. Comparing results for black-white, Hispanic-white, and black-Hispanic segregation speaks to Hypothesis 4.

Results

[Table 1. Descriptive Statistics]

Table 1 summarizes the untransformed measures for the 1993-1994, 1999-2000, and 2009-2010 school years, averaged across metropolitan areas and nonmetropolitan counties.[8] Black-white school segregation increased slightly in the 1990s but declined in the 2000s, while Hispanic-white and black-Hispanic segregation declined in both decades. This parallels prior findings over the same period (Fiel 2013; Stroub and Richards 2013).

Trends of most constructs are mixed. Increasing between-group entropy suggests heightened salience of race/ethnicity, but increasing multigroup entropy and intermarriage suggest the opposite. Similarly, declining per capita income and increasing unemployment and educational income inequality suggest heightened competition, but increasing teacher supply and expenditures suggest the opposite. And while a growing number of public schools per district, a growing share of charter schools, and a shrinking number of active desegregation plans suggest decentralization, declines in the number of districts and the share of private schools suggest centralization. Growing between-school inequality in teachers and between-district inequality in expenditures indicate heightened differentiation. Meanwhile, all socioeconomic disparities between racial/ethnic groups increased, although residential segregation decreased.

Main Effects Results

[Table 2. Main Effects Models Predicting School Segregation: Random Effects]

Table 2 summarizes results from the random effects models for black-white, Hispanic-white, and black-Hispanic segregation. Columns 1a, 2a, and 3a display the estimated effects of the racial/ethnic salience, resource scarcity, and decentralization/differentiation measures net of

[8] These unweighted averages represent the typical metropolitan area/nonmetropolitan county, not the overall population.

controls—these are the preferred estimates. Columns 1b, 2b, and 3b display these estimates net of racial/ethnic socioeconomic inequality and residential segregation—these estimates are expected to be biased toward zero but guard against misattributing socioeconomic competition to racial/ethnic competition. Residual variance components appear at the bottom of the table.

Hypothesis 1A receives strong support, with most racial/ethnic salience coefficients in the expected direction for most groups. Positive and significant between-group entropy coefficients are consistent with the hypothesis that as groups approach each other in size, they become more visible competitors, making race/ethnicity more salient to competition and increasing segregation.[9] Negative and significant multigroup entropy coefficients are consistent with the hypothesis that overall diversity reduces the visibility of any particular group, mitigating the salience of race/ethnicity to competition and reducing segregation.

Multiplying each coefficient by 10 approximates the percentage change in segregation corresponding to a 10% increase in the independent variable.[10] A 10% increase in between-group entropy corresponds to a 3.0% increase in black-white segregation, a 0.6% increase in Hispanic-white segregation, and a 0.6% increase in black-Hispanic segregation. The stronger effects on black-white segregation suggest that these measures may be better proxies for black-white salience than Hispanic-white or black-Hispanic salience. Multigroup entropy effects are similar in magnitude but in the opposite direction.

Intermarriage coefficients only support the salience hypothesis for Hispanic-white segregation. These coefficients are also inconsistent across alternative specifications, as discussed below. Intermarriage differs from compositional measures (entropy) as a proxy for

[9] Alternative specifications find that black-white and Hispanic-white segregation peak when blacks and Hispanics comprise 20-40% of the student population, respectively, and decline beyond this point. Black-Hispanic segregation peaks when Hispanics comprise 0-20% of the student population and blacks comprise 20-40% of the population.
[10] This is actually calculated as $100\% \times [\exp[\beta \times \ln(1.1)]-1]$.

closure. Whereas compositional changes are assumed to affect closure, intermarriage is assumed to be affected by closure. This makes intermarriage more susceptible to bias from other factors that affect both intermarriage and segregation. This may contribute to the unexpected findings.

Hypothesis 2A receives little support. A 10% increase in per capita income corresponds to a statistically significant 3.9% decline in black-white segregation, consistent with the notion that competition for schools intensifies as income becomes scarce. But this is the only significant coefficient in the expected direction. Overall there is scant evidence that scarce socioeconomic or school-based educational resources heighten segregation. Perhaps these measures are poor proxies for the intensity of competition for schools. Segregation could be driven by competition for symbolic resources (school status), or people's perceptions of scarcity may be more important than objective measures. Or perhaps scarcity effects depend on the salience of race/ethnicity, as Hypothesis 2B predicts. I test interactions in a subsequent section.

Hypothesis 3A is overwhelmingly supported. All 7 decentralization and differentiation coefficients are in the expected direction for all groups, and most are statistically significant. With respect to decentralization, school segregation increases with the number of districts in the area, the number of public schools per district, and the proportion of private and charter schools. And segregation is lower when and where there are more active desegregation orders—this is even true, though not significantly so, for black-Hispanic segregation. The strongest effects are for between-district and within-district (schools per district) fragmentation in the public sector—a 10% increase in each corresponds to a 2-4% increase in segregation for all groups.

With respect to differentiation, segregation increases with between-school inequality in teacher supply and, to a lesser extent, between-district inequality in expenditures. A 10% increase in pupil-teacher ratio inequality corresponds to a 0.8-0.9% increase in segregation

across groups. A comparable increase in per-pupil expenditure inequality corresponds to a 0.2-0.5% increase in segregation. Presumably, such disparities provide an incentive to monopolize particular schools. It is also possible that dominant groups first monopolize schools and then use their power to attract more resources to their schools, creating between-school inequality. Both are consistent with Weberian theory, but more elaborate designs would be required to determine their relative importance.

Together, these findings support the notion that decentralized governance, a proliferation of choices, and differentiation across schools heighten competition for schools and promote segregation. Furthermore, desegregation policies are effective at regulating the form of competition to prevent racial/ethnic exclusion. These patterns apply to segregation between minorities as well as between whites and minorities. Where there are differences across groups, effects tend to be larger for black-white and black-Hispanic segregation than for Hispanic-white segregation. If effects vary with the salience of race/ethnicity (Hypothesis 3B), this may stem from weaker boundaries between whites and Hispanics than between either of them and blacks.

Columns 1b, 2b, and 3b show that most of these inferences are robust to controls for racial/ethnic socioeconomic inequality and residential segregation. The coefficients that are attenuated by these controls are the compositional (entropy) measures of Hispanic-white and black-Hispanic salience. There are two possible explanations: either school segregation between these groups is actually driven by competition between socioeconomic groups, or racial/ethnic competition affects segregation between these groups largely by fueling measured forms of inequality. These alternatives could be better assessed with more thorough data on schools' socioeconomic composition.

Coefficients for the control and racial/ethnic inequality variables should be interpreted cautiously, as the key constructs are presumed endogenous to them. Nonetheless, net of the other covariates, school segregation is positively associated with racial/ethnic income inequality and residential segregation, but negatively associated with educational and unemployment inequality. Segregation tends to be higher in metropolitan areas and areas with fewer immigrants, more high school dropouts, and more desegregation orders in their history—the latter could be due to the high rates of segregation in these areas that induced mandatory desegregation in the past (Logan et al. 2008). Black-white segregation is highest in the Midwest, Hispanic-white segregation is highest in the Northeast, and black-Hispanic segregation is highest outside the Northeast.

Specification Checks

[Table 3. Summary of Findings for Alternative Specifications]

Table 3 summarizes the key findings across alternative specifications. These include fixed-effects (FE) models that control for unobservable fixed market-level variables and lagged outcome (LO) models for 1999 and 2009 that control for school segregation and predictors in the prior period. The table denotes whether each coefficient is in the expected direction (Y/N) and statistically significant. Detailed results are provided online in Appendix B (Tables B1-B3). Hausman tests comparing RE and FE estimates reject the random effects assumption that unobserved place-specific factors are uncorrelated with covariates in all cases. Nonetheless, the key findings reported above are robust across FE and LO models. The coefficients for entropy-based salience measures are consistently in the expected direction and usually significant, as are all of the decentralization/differentiation coefficients. But the intermarriage and resource scarcity coefficients are rarely significant, inconsistent across models, and often in the wrong direction.

To summarize, results largely accord with the hypothesis that school segregation increases with the salience of race/ethnicity to group formation, do not accord with the hypothesis that segregation increases with valued resources' scarcity or link to schooling, and overwhelmingly accord with the hypothesis that segregation increases with decentralization and differentiation in schooling markets. The parallels between black-white, Hispanic-white, and black-Hispanic segregation also support the hypothesis that similar processes underlie segregation across racial/ethnic groups.

Interactions

The status competition model also predicts that the effects of resource scarcity (Hypothesis 2B) and decentralization and differentiation (Hypothesis 3B) increase with the salience of race/ethnicity. I test these hypotheses by adding interactions between racial/ethnic salience measures and all resource scarcity and decentralization/differentiation measures to the main effects models summarized previously.[11] Tables 4 and 5 display interaction coefficients from the random effects models for the resource scarcity and decentralization/differentiation interactions, respectively. The expected sign of each coefficient is the product of the hypothesized sign of the row and column variables.

[Table 4. Racial/Ethnic Salience × Resource Scarcity Interactions: Random Effects]

[Table 5. Racial/Ethnic Salience × Decentralization/Differentiation Interactions: Random Effects]

For each case, the 3 salience variables and 5 resource scarcity variables yield 15 interactions relevant to Hypothesis 2B. Of these, 11 are in the expected direction for black-white

[11] I estimate entropy- and intermarriage-based salience interactions separately to conserve statistical power and reduce collinearity.

segregation, and 6 are significant ($p < 0.10$).[12] The pattern is similar but weaker for Hispanic-white segregation, with 8 interactions in the expected direction and 4 significant ($p < 0.10$). Hence, despite limited evidence of scarcity effects in the main effects models, resource scarcity appears to increase segregation in areas where race/ethnicity is suspected to be most salient, at least for minority-white segregation. But this hypothesis is rejected for black-Hispanic segregation, as only half the interactions are in the expected direction and none are significant.

Of the 21 interactions relevant to Hypothesis 3B, 17 are in the expected direction for black-white segregation (7 $p < .10$), as are 15 for Hispanic-white segregation (11 $p < .10$) and 11 for black-Hispanic segregation (4 $p < .10$). This is strongly consistent with the notion that racial/ethnic salience heightens the effects of decentralization and differentiation on black-white and Hispanic-white segregation, and fairly consistent with the same hypothesis for black-Hispanic segregation.

[Table 6. Summary of Racial/Ethnic Salience × Resource Scarcity Interactions]

[Table 7. Summary of Racial/Ethnic Salience × Decentralization/Differentiation Interactions]

Tables 6 and 7 assess the robustness of these interactions across fixed effects and lagged outcome models. Detailed results are presented online in Appendix B (Tables B4-B9). Patterns generally reinforce the random effects results. There is strong evidence of salience-by-resource scarcity interactions (Hypothesis 2B) for black-white segregation, moderate evidence for Hispanic-white segregation, and little evidence for black-Hispanic segregation (Table 6). The most consistent interactions involve entropy-based salience measures, per capita income, and per-pupil expenditures. The salience-by-decentralization/differentiation interactions are also robust (Table 7). Evidence for Hypothesis 3B is strongest for black-white and Hispanic-white segregation and moderate for black-Hispanic segregation. The most consistent interactions

[12] I use the $p < .10$ level here given the limited statistical power to detect interactions (McClelland and Judd 1993).

involve between-group entropy and between-school resource inequality. These results highlight the interactive effects of racial/ethnic salience and competition for school-based resources.

Discussion

As efforts to desegregate schools stall and the deleterious consequences persist, segregation continues to trouble educational stratification researchers (Reardon and Owens 2014; Vigdor and Ludwig 2008). We typically attribute contemporary school segregation to a handful of culprits, including white flight and the abandonment of desegregation policies (Clotfelter 2004; Orfield and Lee 2007). Although useful, these are shallow explanations that leave critical questions unanswered. Why do whites flee, and why do they flee more in some contexts than others? Why are minority groups segregated from each other? How do processes of segregation operate in the absence of desegregation policies, and how do these processes interact with other demographic, social, and institutional factors? As the population grows more diverse, the political will to desegregate schools fades, and new policies flourish, these questions must be answered, and they demand a deeper understanding of school segregation.

I conceptualize school segregation as a mode of status competition along the horizontal dimension of educational inequality—specifically, across different types of primary and secondary schools. This basic and general theory helps explain what we already know about school segregation, but it has important implications for what we do not know as well. In short, the theory claims that racial/ethnic school segregation results from social closure along racial/ethnic lines when there is competition for schools. I find support for several hypotheses derived from this theory with respect to segregation between blacks and whites, Hispanics and whites, and blacks and Hispanics from 1993 to 2010.

First, school segregation between any two groups increases as they comprise more equal

shares of the local student population and presumably become more visible competitors. It decreases as the local population becomes more diverse overall, which is thought to buffer competition by reducing the visibility of any one group to another. Interpreting these as indicators of racial/ethnic salience, the findings support the hypothesis that school segregation is higher when and where race/ethnicity is more salient to group formation. The exception involves measures of intermarriage, which are not consistently associated with segregation.

Second, school segregation may be linked to resource scarcity. The strongest evidence comes from interaction effects linking the scarcity of income and educational expenditures to segregation in contexts where race/ethnicity is suspected to be most salient. These findings, however, are largely limited to minority-white segregation. Moreover, the expected main effects of resource scarcity are lacking. I attribute this to the contingent nature of competition—where race/ethnicity is less salient, resource scarcity may heighten competition enough within groups or between groups that cross racial/ethnic lines to offset racial/ethnic competition.

Third, there is overwhelming evidence that school segregation increases with the decentralization of local schooling markets, which is thought to fuel differentiation and provide opportunities and incentives to monopolize particular schools. Segregation between all groups examined increases substantially as local markets are fragmented into more districts, as districts are divided into more schools, and as there are more private and charter schools to choose from in the area. Desegregation policies reduce segregation not only between whites and minorities, but possibly between minorities as well, presumably by regulating competition and constraining choices. And segregation between all groups increases with the unequal allocation of resources—especially teachers—to schools. Furthermore, many of these effects are strongest in areas where race/ethnicity is suspected to be more salient.

These findings suggest that institutions affect segregation by regulating the form of competition, and they highlight the importance of social context. While many tout market-based reforms involving decentralization and choice as ways to increase educational productivity through competition (Hoxby 2000), others fear the consequences on school segregation (Saporito and Sohoni 2006; Wells et al. 1999). My results substantiate these fears but show that the consequences depend on the salience of racial/ethnic boundaries in the area. Efforts to promote decentralization, choice, and competition are likely to exacerbate segregation in areas with strong racial boundaries, while efforts to centralize school systems may be especially effective at reducing segregation in such contexts. Thus, it may be especially important to preserve desegregation policies in areas where racial boundaries remain very salient.

The findings also suggest new avenues to reduce segregation, such as limiting differentiation and inequality across schoools, especially where race/ethnicity is most salient. That is, reducing between-school resource disparities might not only mitigate the consequences of segregation, but also reduce the incentives to segregate in the first place. But it is important to recognize that institutional power is subject to competition and monopoly as well, so such efforts will likely evoke resistance from dominant groups seeking to maintain their advantage. And these efforts may not be possible with less tangible resources such as symbolic status.

Finally, the evidence supporting these conclusions is strikingly similar across groups, even between minorities. The main exceptions are the weaker salience effects involving Hispanics and fewer interactions for black-Hispanic segregation, which could result from poorer proxies of racial/ethnic salience between these groups. Specifically, the measures of relative group size do not account for absolute size, which may also be important and is generally lower for minority groups. It is also possible that processes of segregation among minority groups are

unique given their ambiguous hierarchical relationships to one another or their segregation from whites.[13] Nonetheless, the broad similarities support the argument that a core set of processes drives school segregation as a general phenomenon.

Prior models fail to account for these findings. The white flight model ignores the role of differentiation across schools and segregation between minority groups. And racial competition models fail to account for the regulatory role of institutions. Status competition theory offers a more general, flexible, and powerful account. This model could be extended to segregation between other racial/ethnic groups, between other types of social groups (e.g., social classes), or at other organizational levels (e.g., between classrooms). It could also reconcile theories of residential segregation. Place stratification models emphasize the salience of race/ethnicity to residential choices and housing discrimination (Alba and Logan 1993); spatial assimilation models highlight socioeconomic inequality and mobility as a competing cause (South, Crowder and Pais 2008); and ecological models stress institutional structures that shape opportunities for segregation (Farley and Frey 1994). Status competition theory could link these models together, relate them to resource monopolization, and generalize them to a diverse range of groups.

Furthermore, this theory provides a coherent framework to organize and advance literature on the consequences of school segregation, which gives scant attention to causal mechanisms. Most research focuses on school composition rather than distributional aspects of segregation, conflating peer effects and school inequality—two candidates with distinct policy implications (Reardon and Owens 2014). Yet many advances of the desegregation era are linked to improvements in the quality of black students' schools (Johnson 2011), and such assets as local funds and highly qualified teachers remain unequally distributed according to schools'

[13] To address this issue, I performed additional analyses of black-Hispanic segregation controlling for black-white and Hispanic-white segregation. These analyses provided similar results to those reported here.

racial composition (Clotfelter, Ladd and Vigdor 2005; Condron and Roscigno 2003; Jackson 2009). In short, this theory suggests that school segregation helps members of privileged groups maintain their advantage by monopolizing school-based resources, improving their prospects and perpetuating racial/ethnic inequality.

This study has several limitations. First, it would be useful to measure the scarcity or unequal distribution of school quality rather than raw resources, whose effects on educational outcomes are debatable (Hanushek 2006). This will be more feasible in small-scale studies with thorough assessments of schools. Second, although composition-based indicators of racial/ethnic salience are common, we need to develop more concrete measures. Using intermarriage as a supplementary indicator is an imperfect solution, and it is unclear why the estimates fail to support the hypotheses. Third, my focus on aggregate patterns of school-based inequality fails to assess the extent to which particular groups are winning or losing this competition—student- and school-level studies could better explore segregation's effects on particular groups' access to resources. Fourth, studying the many causes of segregation does not support strong causal interpretations of any particular policy change, which would require more focused research designs. Finally, I have not explained differences in the degree of salience between particular groups or how vertical status hierarchies may complicate the theory. That will require further theoretical development and deeper historical and contextual analyses.

To conclude, methodological and policy-oriented studies have been and will continue to be crucial to our understanding of school segregation, but general sociological theory has much to contribute as well. As we create and respond to new policies and population change, it becomes critical to understand the fundamental processes that drive segregation across various groups and how these processes interact with institutional and social factors. Status competition

theory emphasizes competition between closed groups for school-based resources. With this basic framework, we can anticipate and test the consequences of a variety of social, demographic, and institutional changes on an important aspect of educational inequality.

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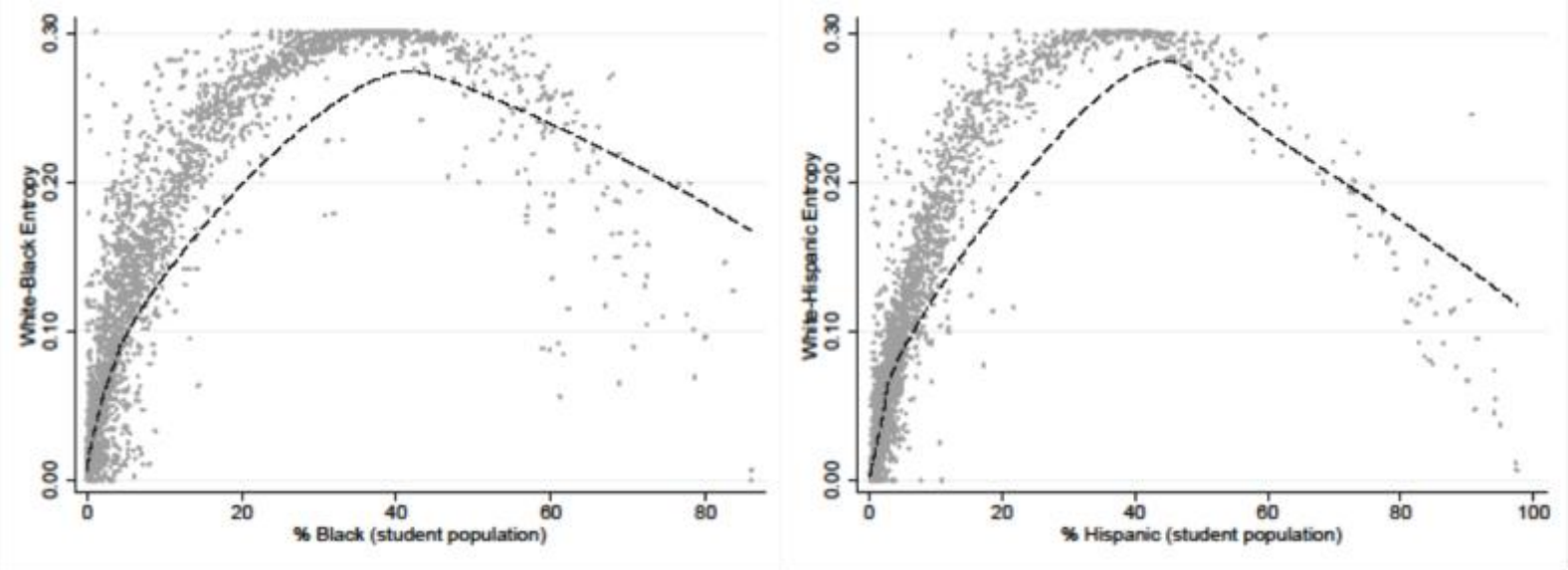

Figure 1. Entropy and Racial Composition. The left figure plots white-black entropy against the percentage of blacks in the student population for all metropolitan areas (CSAs) and nonmetropolitan counties, 1993-2010. The right figure plots white-Hispanic entropy against the percentage of Hispanics in the student population. The dashed lines are from nonparametric locally weighted regressions.

Table 1. Descriptive Statistics

	1993-1994		1999-2000		2009-2010	
Variable	Mean	SD	Mean	SD	Mean	SD
School Segregation						
Black-white	0.147	(0.140)	0.150	(0.141)	0.135	(0.135)
Hispanic-white	0.122	(0.107)	0.114	(0.099)	0.100	(0.099)
Black-Hispanic	0.264	(0.247)	0.238	(0.223)	0.177	(0.167)
Racial/Ethnic Salience						
Black-white entropy	0.298	(0.348)	0.308	(0.342)	0.329	(0.328)
Black-white intermarriage (%)	0.309	(0.210)	0.418	(0.272)	0.651	(0.441)
Hispanic-white entropy	0.195	(0.270)	0.245	(0.281)	0.362	(0.299)
Hispanic-white intermarriage (%)	1.825	(1.740)	2.116	(1.903)	2.969	(2.282)
Black-Hispanic entropy	0.473	(0.362)	0.532	(0.350)	0.613	(0.322)
Black-Hispanic intermarriage (%)	0.633	(0.948)	0.753	(1.491)	1.149	(1.640)
Multigroup entropy	0.178	(0.128)	0.195	(0.131)	0.237	(0.133)
Resource Scarcity						
Per capita income ($1,000s)	26.201	(2.683)	23.057	(3.096)	22.955	(3.197)
% Unemployment	6.064	(1.780)	5.664	(1.640)	9.606	(2.764)
Educational earnings inequality	0.040	(0.021)	0.047	(0.047)	0.054	(0.024)
Avg. pupil-teacher ratio	17.923	(7.470)	17.553	(9.095)	14.427	(3.082)
Avg. per-pupil expenditures ($1,000s)	8.104	(2.590)	9.342	(2.560)	12.205	(5.670)
Decentralization/Differentiation						
# Districts	6.191	(22.092)	6.075	(22.653)	5.862	(22.324)
# Schools per district	8.795	(17.019)	9.150	(18.324)	9.054	(17.625)
% Private schools	13.224	(14.898)	13.447	(14.894)	12.476	(12.210)
% Charter schools	0.000	(0.000)	0.510	(2.755)	1.533	(4.973)
Active desegregation orders	0.273	(1.112)	0.246	(0.991)	0.160	(0.700)
Pupil-teacher ratio inequality	0.030	(0.045)	0.033	(0.052)	0.056	(0.119)
Per-pupil expenditures inequality	0.009	(0.019)	0.011	(0.034)	0.013	(0.033)
Racial/Ethnic Inequality						
Black-white income	0.006	(0.008)	0.009	(0.014)	0.010	(0.013)
Black-white education	0.023	(0.013)	0.022	(0.013)	0.038	(0.043)
Black-white occupation	0.051	(0.034)	0.128	(0.085)	0.213	(0.154)

Black-white unemployment	0.011	(0.010)	0.012	(0.014)	0.017	(0.022)
Black-white residential seg.	0.191	(0.117)	0.170	(0.118)	0.144	(0.111)
Hispanic-white income	0.006	(0.009)	0.011	(0.017)	0.017	(0.018)
Hispanic-white education	0.042	(0.027)	0.053	(0.032)	0.074	(0.037)
Hispanic-white occupation	0.046	(0.020)	0.115	(0.051)	0.187	(0.091)
Hispanic-white residential seg.	0.006	(0.005)	0.006	(0.006)	0.007	(0.012)
Hispanic-white unemployment	0.090	(0.061)	0.081	(0.069)	0.078	(0.071)
Black-Hispanic income	0.014	(0.038)	0.009	(0.020)	0.018	(0.043)
Black-Hispanic education	0.037	(0.033)	0.039	(0.036)	0.078	(0.098)
Black-Hispanic occupation	0.083	(0.057)	0.208	(0.143)	0.302	(0.190)
Black-Hispanic residential seg.	0.012	(0.018)	0.011	(0.019)	0.025	(0.046)
Black-Hispanic unemployment	0.259	(0.153)	0.206	(0.137)	0.157	(0.110)
Controls						
Total enrollment (1,000s)	19.850	(119.307)	21.408	(132.532)	21.898	(136.712)
% Immigrants	3.971	(3.935)	5.003	(4.508)	6.344	(5.041)
% Without high school degree	24.838	(7.091)	20.599	(6.324)	14.583	(5.010)
% Bachelor's degree	16.749	(4.367)	18.742	(4.835)	22.252	(5.622)
Desegregation orders (ever)	0.314	(1.223)	0.314	(1.223)	0.314	(1.223)
% Urban (avg.)	33.947	(28.238)	33.947	(28.238)	33.947	(28.238)
Region: Northeast	0.048		0.048		0.048	
Region: Midwest	0.349		0.349		0.349	
Region: South	0.442		0.442		0.442	
Region: West	0.160		0.161		0.161	
Metropolitan (CSA)	0.948		0.948		0.948	

Statistics apply to all metropolitan areas and nonmetropolitan counties prior to sample restrictions.

Table 2. Main Effects Models Predicting School Segregation: Random Effects

		Black-White		Hispanic-White		Black-Hispanic	
		1a	1b	2a	2b	3a	3b
Observations		3878	3878	4517	4513	2810	2810
Markets		1355	1355	1587	1587	976	976
PUMAs		304	304	295	295	275	275
Racial/Ethnic Salience	*Hyp.*						
Between-group entropy	+	0.306*	0.249*	0.066*	-0.026	0.066*	0.002
		(0.029)	(0.029)	(0.021)	(0.021)	(0.022)	(0.021)
Mixed marriage	–	0.114†	0.054	-0.088†	-0.099*	-0.006	-0.020
		(0.061)	(0.062)	(0.050)	(0.049)	(0.033)	(0.033)
Multigroup entropy	–	-0.306*	-0.249*	-0.074*	-0.064*	-0.461*	-0.324*
		(0.048)	(0.048)	(0.031)	(0.029)	(0.044)	(0.041)
Resource Scarcity							
Per capita income	–	-0.413*	-0.359*	-0.075	-0.326*	0.253	-0.005
		(0.127)	(0.153)	(0.120)	(0.131)	(0.173)	(0.186)
Unemployment	+	0.030	-0.018	0.022	-0.042	-0.006	-0.065
		(0.037)	(0.045)	(0.037)	(0.043)	(0.051)	(0.056)
Educational earnings inequality	+	-0.085†	-0.082	-0.076†	-0.050	0.062	0.006
		(0.050)	(0.050)	(0.043)	(0.041)	(0.066)	(0.064)
Avg. pupil-teacher ratio	+	-0.123*	-0.126*	-0.197*	-0.188*	-0.095†	-0.116*
		(0.037)	(0.037)	(0.044)	(0.043)	(0.054)	(0.052)
Avg. per-pupil expenditures	–	0.211*	0.174*	-0.048	-0.032	-0.016	0.013
		(0.056)	(0.056)	(0.050)	(0.048)	(0.074)	(0.071)
Decentralization/Differentiation							
# Districts	+	0.393*	0.370*	0.288*	0.298*	0.319*	0.275*
		(0.045)	(0.044)	(0.035)	(0.032)	(0.046)	(0.042)
# Schools per district	+	0.319*	0.319*	0.243*	0.274*	0.248*	0.264*
		(0.047)	(0.046)	(0.040)	(0.037)	(0.053)	(0.048)
% Private schools	+	0.160*	0.160*	0.063*	0.071*	0.038*	0.040*
		(0.011)	(0.011)	(0.010)	(0.009)	(0.015)	(0.014)
% Charter schools	+	0.034*	0.037*	0.044*	0.040*	0.052*	0.035†
		(0.015)	(0.015)	(0.014)	(0.014)	(0.019)	(0.019)
# Districts under active desegregation order	–	-0.091†	-0.067	-0.143*	-0.111*	-0.085	-0.060
		(0.048)	(0.048)	(0.060)	(0.057)	(0.064)	(0.061)
Pupil-teacher ratio inequality	+	0.078*	0.077*	0.083*	0.063*	0.096*	0.102*

		(0.014)	(0.014)	(0.014)	(0.013)	(0.018)	(0.018)
Per-pupil expenditures inequality	+	0.023	0.035†	0.054*	0.057*	0.054*	0.047†
		(0.020)	(0.019)	(0.017)	(0.016)	(0.026)	(0.024)
Racial/Ethnic Inequality							
Income inequality			0.191*		0.096†		0.063*
			(0.047)		(0.052)		(0.031)
Educational inequality			-0.023		-0.079†		-0.043
			(0.033)		(0.041)		(0.033)
Occupational segregation			-0.036		-0.027		-0.008
			(0.043)		(0.040)		(0.044)
Unemployment inequality			-0.071*		-0.074†		0.005
			(0.034)		(0.040)		(0.032)
Residential segregation			0.279*		0.404*		0.465*
			(0.027)		(0.018)		(0.026)
Controls							
Total enrollment		-0.037	-0.078*	0.034	-0.066*	-0.034	-0.082*
		(0.040)	(0.039)	(0.031)	(0.029)	(0.044)	(0.040)
% Immigrants		-0.086†	-0.141*	-0.141*	-0.165*	-0.343*	-0.302*
		(0.051)	(0.050)	(0.048)	(0.051)	(0.052)	(0.046)
% Without high school degree		0.202†	0.240*	0.511*	0.222*	0.330*	0.308*
		(0.120)	(0.119)	(0.104)	(0.099)	(0.142)	(0.131)
% Bachelor's degree		0.075	0.124	0.280*	0.252*	0.105	0.254†
		(0.142)	(0.139)	(0.121)	(0.110)	(0.157)	(0.141)
# Desegregation orders (ever)		0.058	-0.027	0.136*	0.107†	0.123†	0.038
		(0.066)	(0.064)	(0.065)	(0.058)	(0.071)	(0.064)
% Urban (avg.)		0.002	-0.008	-0.017*	-0.023*	-0.012	-0.015*
		(0.007)	(0.007)	(0.005)	(0.005)	(0.008)	(0.007)
Region: Midwest		0.138	0.118	-0.263*	-0.167*	0.355*	0.166†
		(0.115)	(0.108)	(0.093)	(0.083)	(0.107)	(0.094)
Region: South		-0.012	-0.165	-0.427*	-0.295*	0.294*	0.045
		(0.123)	(0.119)	(0.099)	(0.089)	(0.115)	(0.102)
Region: West		-0.121	0.001	-0.441*	-0.213*	0.332*	0.206†
		(0.133)	(0.127)	(0.102)	(0.093)	(0.120)	(0.106)
Metropolitan (CSA)		0.000	0.000	0.000*	0.000*	0.000†	0.000
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Year-1993		-0.009†	0.001	0.002	0.003	-0.006	0.002

	(0.005)	(0.005)	(0.004)	(0.005)	(0.006)	(0.006)
Intercept	2.928†	2.395	1.126	4.799*	-0.239	1.082
	(1.513)	(1.799)	(1.354)	(1.496)	(1.983)	(2.124)
Variance components						
Between PUMAs						
Intercept	0.0734	0.0592	0.0221	0.0125	0.0200	0.0105
Between MAs/Counties						
Intercept	0.3926	0.3587	0.2303	0.1933	0.2567	0.2031
Year-1993	0.0004	0.0004	0.0007	0.0006	0.0003	0.0003
Cov(Intercept, Year-1993)	-0.0029	-0.0029	-0.0039	-0.0047	-0.0029	-0.0044
Within-MAs/Counties	0.1126	0.1150	0.1497	0.1552	0.2096	0.2085

*p<.05; †p<.10. Standard errors in parentheses. Outcome and all covariates except region, metropolitan status, and year are ln-transformed; coefficients represent elasticities. Intercept represents segregation in 1993, and Year-1993 represents the yearly linear trend between 1993 and 2010.

Table 3. Summary of Main Effects for Alternative Specifications

		Black-White				Hispanic-White				Black-Hispanic			
		RE	FE	LO '99	LO '09	RE	FE	LO '99	LO '09	RE	FE	LO '99	LO '09
Racial/Ethnic Salience	*Hyp.*												
Between-group entropy	+	Y*	Y*	Y*	Y*	Y*	Y	Y*	Y*	Y*	Y	Y†	Y†
Mixed marriage	–	N†	N†	Y	N	Y†	N	N	Y	Y	N	Y	N
Multigroup entropy	–	Y*	Y*	Y	Y*	Y*	Y	Y	Y	Y*	Y†	N	Y*
Resource Scarcity													
Per capita income	–	Y*	Y	N	N	Y	Y	Y	N	N	N	Y	N
Unemployment	+	Y	Y	Y*	Y	Y	N	Y	N	N	N	N	Y
Educational earnings inequality	+	N†	N	N	N	N†	N	N	N†	Y	Y	N	N
Avg. pupil-teacher ratio	+	N*	N	N	N	N*	N	N	N*	N†	Y	Y†	N†
Avg. per-pupil expenditures	–	N*	N*	N	N	Y	N*	Y	N	Y	N	Y	Y
Decentralization/Differentiation													
# Districts	+	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y†	Y*	Y*	Y	Y*
# Schools per district	+	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*
% Private schools	+	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y	N	Y*
% Charter schools	+	Y*	Y	Y	Y	Y*	Y*	Y	Y	Y*	Y*	Y	Y
Active desegregation orders	–	Y†	Y*	Y	Y	Y*	Y*	Y	Y†	Y	Y†	Y	Y*
Pupil-teacher ratio inequality	+	Y*	Y†	Y	Y	Y*	Y*	Y	Y*	Y*	Y†	Y*	N†
Per-pupil expenditures inequality	+	Y	N	N	Y	Y*	Y	Y†	N	Y*	Y	Y	Y

Y/N denotes whether coefficient is in expected direction. *p<.05; †p<.10. RE = random effects, FE = fixed effects, LO = lagged outcome/predictors. All specifications mirror those of 1a, 2a, and 3a in Table 2.

Table 4. Racial/Ethnic Salience × Resource Scarcity Interactions: Random Effects

		Per capita income	Unemploy-ment	Educational earnings inequality	Avg. pupil-teacher ratio	Avg. per-pupil expenditures
Black-white	*Hyp.*	–	+	+	+	–
Between-group entropy	+	-0.312*	0.226*	0.091†	-0.105	0.005
		(0.135)	(0.050)	(0.052)	(0.078)	(0.057)
Multigroup entropy	–	-0.132	-0.221*	-0.144†	-0.033	0.216*
		(0.193)	(0.074)	(0.082)	(0.100)	(0.087)
Intermarriage	–	0.081	0.081	-0.091	-0.254	0.294
		(0.349)	(0.141)	(0.138)	(0.171)	(0.189)
Hispanic-white						
Between-group entropy	+	-0.110	-0.014	0.102*	-0.150*	0.160*
		(0.122)	(0.049)	(0.044)	(0.050)	(0.048)
Multigroup entropy	–	0.464*	0.206*	-0.036	0.188*	0.019
		(0.181)	(0.067)	(0.064)	(0.073)	(0.079)
Intermarriage	–	0.082	0.043	0.090	-0.176†	0.142*
		(0.167)	(0.060)	(0.065)	(0.093)	(0.072)
Black-Hispanic						
Between-group entropy	+	-0.173	-0.086	-0.057	-0.227*	-0.030
		(0.143)	(0.064)	(0.060)	(0.058)	(0.058)
Multigroup entropy	–	-0.464*	0.002	0.028	0.075	0.132
		(0.235)	(0.085)	(0.087)	(0.099)	(0.109)
Intermarriage	–	-0.014	-0.004	0.184*	-0.076	0.128
		(0.272)	(0.094)	(0.081)	(0.130)	(0.135)

*p<.05, †p<.10. Standard errors in parentheses. Main effects not shown. Interactions are added to models in columns 1a, 2a, and 3a in Table 2. Entropy interactions are estimated separately from intermarriage interactions.

Table 5. Racial/Ethnic Salience × Decentralization/Differentiation Interactions: Random Effects

		# Districts	# Schools per district	% Private schools	% Charter schools	Active desegregation orders	Pupil-teacher ratio inequality	Per-pupil expenditures inequality
Black-white	*Hyp.*	+	+	+	+	–	+	+
Between-group entropy	+	-0.024	0.032	0.117*	0.047*	-0.005	0.019	0.089*
		(0.037)	(0.038)	(0.015)	(0.022)	(0.126)	(0.018)	(0.025)
Multigroup entropy	–	0.031	-0.141*	-0.047*	-0.011	0.090	-0.026	-0.082*
		(0.050)	(0.053)	(0.023)	(0.042)	(0.125)	(0.028)	(0.040)
Intermarriage	–	-0.060	0.018	0.010	-0.081	0.338*	-0.080	-0.048
		(0.069)	(0.063)	(0.037)	(0.062)	(0.128)	(0.056)	(0.088)
Hispanic-white								
Between-group entropy	+	0.136*	0.123*	0.034*	0.005	-0.115*	0.073*	0.071*
		(0.026)	(0.024)	(0.011)	(0.026)	(0.045)	(0.017)	(0.028)
Multigroup entropy	–	-0.162*	-0.136*	-0.013	0.042	0.288*	-0.143*	-0.052
		(0.043)	(0.045)	(0.017)	(0.041)	(0.132)	(0.028)	(0.040)
Intermarriage	–	0.152*	0.102*	0.016	-0.039	-0.027	-0.060*	0.011
		(0.034)	(0.035)	(0.017)	(0.025)	(0.079)	(0.024)	(0.028)
Black-Hispanic								
Between-group entropy	+	0.021	-0.082*	-0.033*	-0.065†	-0.084†	0.084*	0.052†
		(0.034)	(0.027)	(0.014)	(0.034)	(0.047)	(0.021)	(0.030)
Multigroup entropy	–	0.097*	0.041	0.044†	0.003	-0.065	-0.100*	-0.045
		(0.047)	(0.053)	(0.024)	(0.049)	(0.142)	(0.039)	(0.053)
Intermarriage	–	-0.008	-0.003	-0.002	0.009	-0.141	-0.001	-0.003
		(0.043)	(0.044)	(0.028)	(0.038)	(0.101)	(0.036)	(0.061)

*p<.05, †p<.10. Standard errors in parentheses. Main effects not shown. Interactions are added to models in columns 1a, 2a, and 3a in Table 2. Entropy interactions are estimated separately from intermarriage interactions.

Table 6. Summary of Racial/Ethnic Salience × Resource Scarcity Interactions

		Black-White				Hispanic-White				Black-Hispanic			
		RE	FE	LO '99	LO '09	RE	FE	LO '99	LO '09	RE	FE	LO '99	LO '09
Between-group entropy ×	*Hyp.*												
Per capita income	–	Y*	Y†	Y	Y	Y	Y†	N*	N	Y	Y	Y	Y
Unemployment	+	Y*	Y*	Y	Y	N	Y	Y*	N	N	N	Y	Y
Educational earnings inequality	+	Y†	Y	Y	Y*	Y*	Y	N	N	N	Y	Y	N
Avg. pupil-teacher ratio	+	N	N	N	N	N*	N*	N	N	N*	N*	N*	N*
Avg. per-pupil expenditures	–	N	Y	Y	Y	N*	N*	Y	Y*	Y	Y	Y	Y*
Multigroup entropy ×													
Per capita income	+	N	N	Y	Y	Y*	Y*	Y	Y	N*	N†	N	Y*
Unemployment	–	Y*	Y*	Y	Y	N*	N*	Y	Y	N	N	N	N*
Educational earnings inequality	–	Y†	Y	Y	Y*	Y	Y	N	N	N	N	N	Y
Avg. pupil-teacher ratio	–	Y	Y	Y	N	N*	N†	Y	N	N	N	N	Y†
Avg. per-pupil expenditures	+	Y*	Y†	Y*	N	Y	Y	N	Y*	Y	Y	Y*	N*
Intermarriage ×													
Per capita income	+	Y	N	N†	N	Y	N	Y	N	N	N	Y	N
Unemployment	–	N	N	Y†	N	N	N†	N	Y	Y	N	N	N
Educational earnings inequality	–	Y	Y	N	Y*	N	N	Y	N†	N*	N†	N	N
Avg. pupil-teacher ratio	–	Y	Y	Y	Y	Y†	Y†	Y	Y	Y	Y	Y*	N
Avg. per-pupil expenditures	+	Y	Y	Y	N	Y*	Y*	N	N	Y	Y	Y	Y

Y/N denotes whether coefficient is in expected direction. *p<.05; †p<.10. RE = random effects, FE = fixed effects, LO = lagged outcome/predictors. Entropy interactions and intermarriage interactions added separately to models in columns 1a, 2a, and 3a.

Table 7. Summary of Racial/Ethnic Salience × Decentralization/Differentiation Interactions

		Black-White				Hispanic-White				Black-Hispanic			
		RE	FE	LO '99	LO '09	RE	FE	LO '99	LO '09	RE	FE	LO '99	LO '09
Between-group entropy ×	*Hyp.*												
# Districts	+	N	Y	Y	N	Y*	Y*	N	Y†	Y	Y	Y*	N
# Schools per district	+	Y	N	Y	Y†	Y*	Y*	Y	N	N*	N	N†	Y
% Private schools	+	Y*	Y*	Y	Y*	Y*	Y*	Y*	Y	N*	N	N	N
% Charter schools	+	Y*	Y	Y	N	Y	Y	N	Y	N†	N	N*	Y
Active desegregation orders	–	Y	N	Y	N	Y*	Y*	N	Y*	Y†	Y*	Y	Y
Pupil-teacher ratio inequality	+	Y	Y	N	Y	Y*	Y*	Y	N	Y*	Y*	Y*	Y
Per-pupil expenditures inequality	+	Y*	Y*	Y	Y†	Y*	Y	Y	Y*	Y†	Y*	N*	Y*
Multigroup entropy ×													
# Districts	–	N	N	Y	N	Y*	Y	Y	Y*	N*	N*	N	N
# Schools per district	–	Y*	Y	N	Y	Y*	Y*	N	Y	N	Y	N*	N
% Private schools	–	Y*	Y	N	Y	Y	Y	Y	Y	N†	N	N	Y
% Charter schools	–	Y	N	Y	N	N	N	N	Y	N	N	Y*	N
Active desegregation orders	+	Y	Y	N†	N	Y*	Y*	N*	Y	N	N	N	Y
Pupil-teacher ratio inequality	–	Y	Y	Y	Y	Y*	Y*	Y	N	Y*	Y†	Y	Y
Per-pupil expenditures inequality	–	Y*	Y*	N†	Y	Y	Y	Y	Y	Y	Y	Y	N
Intermarriage ×													
# Districts	–	Y	Y	N	Y	N*	N*	N	N	Y	N	Y	N
# Schools per district	–	N	Y	N†	N	N*	N	N	Y*	Y	Y	N	Y
% Private schools	–	N	N	N	N	N	N*	N	Y	Y	Y	N	N
% Charter schools	–	Y	Y	Y*	N*	Y	Y*	Y	N	N	N	Y	N
Active desegregation orders	+	Y*	Y	N†	N	N	Y	N	N	N	N	N	Y
Pupil-teacher ratio inequality	–	Y	Y*	Y	Y	Y*	Y*	Y	Y†	Y	Y	N	Y
Per-pupil expenditures inequality	–	Y	Y	N	N	N	Y	Y	N	Y	Y	Y	N

Y/N denotes whether coefficient is in expected direction. *p<.05; †p<.10. RE = random effects, FE = fixed effects, LO = lagged outcome/predictors. Entropy interactions and intermarriage interactions added separately to models in columns 1a, 2a, and 3a.

Appendix A

Segregation Measures

The most common unevenness school segregation measures are the Dissimilarity Index (*D*) and Theil's Information Theory Index (*H*). Both measure schools' deviations from the local racial composition and aggregate them into a weighted average, and they are highly correlated in empirical studies (James and Taeuber 1985; White 1986). *D* is often preferred because of its longer history, computational simplicity, and concrete interpretation—it represents the proportion of minority students who would have to move from schools where they are underrepresented to schools where they are overrepresented to achieve racial balance.

But *H* has many advocates (Reardon and Firebaugh 2002; Theil 1972; White 1986; Zoloth 1976), and is preferred here for several reasons. First, *H* belongs to a family of measures suited to measure other constructs in the study. Just as *H* measures the imbalance of groups across schools, it can measure their imbalance across neighborhoods, occupations, and educational categories; the imbalance of income across groups; or the imbalance of resources across schools. Measures differ in their sensitivity to imbalances or inequality at particular parts of the distribution. Compared to *D*, *H* is more sensitive to units (e.g., schools) that deviate most from the average (James and Taeuber 1985). When relating segregation to other constructs such as diversity and inequality, it is beneficial to use measures that treat distributions similarly.

Second, *H* satisfies the principle of transfers in segregation analysis, but *D* does not (James and Taeuber 1985; Zoloth 1976). *H* changes any time students move to a school where their group is more or less concentrated than their prior school, but *D* only responds to shifts between schools where the group is over- and underrepresented. In an area that is 40% black, for instance, moving black students from a 100% black school to a 50% black school would reduce

H but not *D*, because the students remain in disproportionately black schools. For similar reasons, *H* incorporates the notion of diminishing returns to desegregation (Zoloth 1976). Whereas *D* weights schools equally with respect to their deviations from local composition, *H* places more weight on schools with extreme deviations (James and Taeuber 1985). *H* thus captures more of the variation in enrollments underlying segregation, particularly among the most racially homogeneous schools.

Finally, *H*'s shortcomings are not as damning as once thought. Although its interpretation is less concrete than *D*'s, it is intuitive—it quantifies, as a proportion, how much less diverse schools are than their local market (Reardon and Firebaugh 2002). And its sensitivity to compositional changes has been found unimportant in empirical analyses and justifiable if one considers that changes in groups' relative representation alters social situations in ways that change the understanding of segregation (White 1986). Compositional invariance is more problematic when trying to isolate particular components of segregation in decomposition analysis (Mora and Ruiz-Castillo 2011). Nonetheless, when I replicate the main effects analyses for *D* rather than *H*, I find patterns and coefficients similar to those reported for *H*.

Data Manipulation

Linking IPUMS data to the markets in which I measure segregation is a challenge because PUMAs change over time and do not have a clear nesting relationship with metropolitan areas or counties. I link markets to consistent PUMA boundaries provided by IPUMS. In markets with multiple PUMAs, I aggregate PUMA-level variables to the market level by averaging across PUMAs and weighting each by its share of the population. In some cases multiple CSAs and nonmetropolitan counties are clustered in larger PUMAs, in which case PUMA-level variables cannot be disaggregated. My analysis thus adjusts for clustering within PUMAs.

Another issue is that census/IPUMS data are provided for 1990 but segregation measures begin with the 1993-1994 school year. This is because private school racial composition data are unavailable for earlier years and public school data alone provide an incomplete picture of school segregation. I link 2000 census/IPUMS data with the 1999-2000 school year and 2010 census/IPUMS data with the 2009-2010 school year, so I use linear interpolation to predict 1994 census/IPUMS measures and link them to the 1993-1994 school segregation data. Specifically, I calculate the total change in each variable between 1990 and 2000, multiply by 0.4 to capture four-tenths of the change across the decade, and add this to the 1990 value.

Equations

H = school segregation; R = racial/ethnic salience; S = resource scarcity; D = decentralization/differentiation; X = controls; *i* = market, *p* = PUMA, *t* = year.

Random Effects: estimated via maximum likelihood, allowing market starting points (u_{0ip}) and linear trends (u_{1ip}) to be correlated.

$$H_{ipt} = \alpha + \beta_1 R_{ipt} + \beta_2 S_{ipt} + \beta_3 D_{ipt} + \beta_4 X_{ipt} + \beta_5 (Year_t - 1993) + v_p + u_{0ip} + u_{1ip}(Year_t - 1993) + \varepsilon_{ipt}$$

Fixed Effects: estimated via OLS, with year fixed effects and standard errors adjusted for clustering within PUMAs.

$$H_{it} - \bar{H}_i = \alpha + \beta_1 (R_{it} - \bar{R}_i) + \beta_2 (S_{it} - \bar{S}_i) + \beta_3 (D_{it} - \bar{D}_i) + \beta_4 (X_{it} - \bar{X}_i) + \beta_5 1999 + \beta_6 2009 + +(\varepsilon_{it} - \bar{\varepsilon}_i)$$

Lagged Outcomes: estimated via OLS, with lagged predictors and standard errors adjusted for clustering within PUMAs.

$$H_{i99} = \alpha + \beta_0 H_{i93} + \beta_1 R_{i99} + \beta_2 R_{i93} + \beta_3 S_{i99} + \beta_4 S_{i93} + \beta_5 D_{i99} + \beta_6 D_{i93} + \beta_7 X_{i99} + \beta_8 X_{i93} + \varepsilon_{i99}$$

$$H_{i09} = \alpha + \beta_0 H_{i90} + \beta_1 R_{i09} + \beta_2 R_{i99} + \beta_3 S_{i09} + \beta_4 S_{i99} + \beta_5 D_{i09} + \beta_6 D_{i99} + \beta_7 X_{i09} + \beta_8 X_{i99} + \varepsilon_{i09}$$

Table A1. Description of Data

Variable	Source	Measure	Transformation
School Segregation	CCD/PSS	Theil's H, between schools	ln(1+100*X)
Racial/Ethnic Salience			
Between-group intermarriage	IPUMS	A-B marriages/all marriages of A and B	ln(1+100*X)
Between-group entropy	CCD/PSS	A-B entropy	ln(1+100*X)
Multigroup entropy	CCD/PSS	American Indian-Asian-black-Hispanic-white entropy	ln(1+100*X)
Resource Scarcity			
Per capita income	IPUMS	Total income/total pop. (2009 $)	ln(X)
Unemployment	IPUMS	Unemployed/Labor force	ln(100*X)
Educational earnings inequality	IPUMS	Theil's T, between education levels (2009 $)	ln(1+100*X)
Avg. per-pupil expenditures	Census	Total expenditures/total enrollment (2009 $)	ln(X)
Avg. pupil-teacher ratio	CCD/PSS	Total enrollment/total teachers	ln(X)
Decentralization/Differentiation			
# Districts	CCD/PSS	Count	ln(X)
# Schools per district	CCD/PSS	Public schools per district, weighted avg. across districts	ln(X)
% Private schools	CCD/PSS	100%*private schools/total schools	ln(X)
% Charter schools	CCD/PSS	100%*charter schools/total schools	ln(X)
Active desegregation orders	Reardon et al. (2012)	Count	ln(1+X)
Per-pupil expenditures inequality	Census	Theil's T, between districts (2009 $)	ln(1+100*X)
Pupil-teacher ratio inequality	CCD/PSS	Theil's T, between schools	ln(1+100*X)
Racial/Ethnic Inequality			
Between-group income ineq.	IPUMS	Theil's T, between-group income (2009 $)	ln(1+100*X)
Between-group educational ineq.	IPUMS	Theil's H, between education levels	ln(1+100*X)
Between-group occupational seg.	IPUMS	Theil's H, between occupations	ln(1+100*X)
Between-group unemployment ineq.	IPUMS	Theil's H, between employment/unemployment	ln(1+100*X)
Between-group residential seg.	Census	Theil's H, between block groups	ln(1+100*X)
Controls			
# Desegregation orders (ever)	Reardon et al. (2012)	Count	ln(1+X)
Total enrollment	CCD/PSS	Total enrolled (public + private)	ln(X)
% Urban	Census	100%*urban pop/total pop., avg. (1990 and 2000)	ln(1+X)
% Immigrants	IPUMS	100%*immigrant pop/total pop.	ln(1+X)
% Bachelor's degree	IPUMS	100%*bachelor's/pop. 25+	ln(X)
% Without high school degree	IPUMS	100%*no diploma/pop. 25+	ln(X)
Region	Census	4 main regions	--
Metropolitan (CSA)	Census	Combined Statistical Area (2010)	--