Suburban Advantage: Opportunity Hoarding and Secondary Attainment in the Postwar Metropolitan North

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This study examines urban/suburban differences in educational outcomes in light of Tilly's conception of "opportunity hoarding." Data from the U.S. Census reveal the changing circumstances of 17-year-olds in central city and suburban settings across the post–World War II period. Focusing on the metropolitan Northeast and Eastern Midwest, we consider a range of factors associated with differences in educational attainment. Using a multilevel analytic strategy, we find evidence that clear distinctions emerged in this period, marking the educational status of youth in central city and suburban settings. While there were signs of urban/suburban inequality in certain metropolitan contexts and for specific types of suburbs in 1940, 40 years later the urban-suburban divide was clearly evident across all metropolitan settings. A wide range of factors became associated with this form of spatial differentiation in school experiences during the postwar era, suggesting that a prolonged process of systematic exclusion characterized this dimension of metropolitan development. We close with a brief discussion of policy implications for addressing school-related factors that may contribute to these differences.

Introduction

Readily perceptible distinctions between central city and suburban communities have become a major manifestation of the spatial distribution of status, wealth, and power in metropolitan America (Gottdiener 1985). This was not always so. In the postwar era, as a rule, cities gained older housing stock, higher rates of crime, greater poverty, and more congestion than most sub-

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urban communities. The rapidly growing suburbs, on the other hand, exhibited higher income levels, less racial and ethnic diversity, and lower population density, and they acquired these characteristics by systematic exclusion. For most Americans, especially parents with children, the suburbs historically represented a more desirable standard of living, yielding advantages to those who could gain entry (Fox 1985; Hayden 2003; Jackson 1985).

Better schools have been among the reasons that families have left central cities for suburbs (Havighurst 1961, 1966; Marshall 1979; Miller 1995). In communities historically segregated by income, ethnicity, and other social characteristics, suburbanites have enjoyed access to better education and social networks for their children (Baxandall and Ewan 2000; Fogelson 2005; Haar 1996; Wise 1968). Recent scholarship has identified this as a form of "opportunity hoarding," whereby these children gain advantage over groups that have been excluded from suburban communities (Tilly 1998, 2003; Walters 2007). While there has been recognition of suburban advantage with respect to education (Roscigno et al. 2006), little attention has been devoted to how these patterns developed. In this article, we address these developments by examining intrametropolitan differences in educational attainment between 1940 and 1980. We also discuss some of the policy implications of this change, touching upon both the past and present.

Utilizing U.S. census data from 1940, 1960, and 1980, we assess education in central city and suburban settings. More specifically, we use 1 percent samples of 17-year-olds from the Integrated Public Use Microdata Samples (IPUMS) to analyze differences in educational attainment (Ruggles et al. 2010). Focusing on the metropolitan Northeast and Eastern Midwest, we consider a range of factors that shaped the lives of children. This is a large region containing a wide variety of community types, but clear distinctions came to mark the status of youth in central city and suburban settings. The analysis results are consistent with the proposition that suburban communities engaged in systematic "hoarding" of educational opportunities, resulting in a growing social, economic and educational divide. While such differences have been observed in studies of particular cities (Dougherty et al. 2009), we reveal the growing pervasiveness of these spatial divisions. It is a dimension of educational inequality that has been largely excluded from policy discourse.

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Research on Metropolitan Educational Inequality

There is a rich tradition of research dealing with metropolitan growth and change in the United States, examining the process of suburban development in particular (Brazer 1967; Fine et al. 1971; Gruenberg 1955; Marshall 1979). Contributors to the ecological tradition in urban sociology considered the appearance of suburban communities a step in metropolitan differentiation along lines of income, ethnicity, and status (Dye 1965; Frey and Speare 1988; Guest and Nelson 1978; Schnore 1956; Schnore and Alford 1963). Other scholars later examined distinctions within the suburbs and ways that communities evolved within the framework of metropolitan development (Dobriner 1964; Lake and Cutter 1980; Logan and Schneider 1981, 1984). Researchers recognized that expanding suburbs were tied to migration from the cities but that they were autonomous as well, a self-contained social and economic milieu (Baldassare 1992). While the broad features of this process have been made clear, related patterns of inequality in education have received little attention outside of desegregation research (Haar 1996; James 1989; Treacy and Harris 1974). Clotfelter (2004) has suggested that suburban development aggravated racial segregation across school districts.

Jeffrey Henig (2009) has pointed out that this form of spatial inequality is perhaps best conceived as a function of boundaries erected to exclude certain social groups and allow benefits to accrue to others. In particular, Henig (2009) notes the role of suburbs in these terms: "Once residents and businesses settle into place in suburban areas, for instance, they can use the legal authority of their local government to protect privilege: shaping zoning and code enforcement to raise barriers to entry by those with lower incomes, protecting taxing and spending regimes that allow them to afford well endowed schools, and limiting their exposure to redistributive policies" (654).

This is consistent with Charles Tilly's notion of opportunity hoarding. "Categories always produce difference," Tilly wrote (2003, 34), "but they do not necessarily produce inequality." The historical organization of suburban school districts, distinct from their urban counterparts, permitted exclusion of children without requisite social and economic resources, creating the conditions for educational inequality across community lines. As Tilly also noted, "in opportunity hoarding, the clique excludes people on the opposite side of the boundary from use of the value-producing resource, captures the returns, and devotes some of the returns to reproducing the boundary" (2003, 34). Central city residents are generally excluded from suburban schools unless they can gain entry to these communities. But in many suburbs the reproduction of restriction can be seen in housing prices associated with better schools, along with zoning requirements, "redlining," and other measures limiting access to community resources (Dougherty et al. 2009). While Tilly devoted little at-

tention to schooling as an example of hoarding, he was clear that the "scientific-technical knowledge" associated with such institutions became a critical point of social distinction in recent decades and that it was likely to become even more important in the future (2003, 36).

These themes have been touched upon by urban historians studying metropolitan change since the Second World War, even if the term "opportunity hoarding" was not employed (Fox 1985; Teaford 1990). In recent years, much work has focused on suburbs, highlighting their restrictive and exclusive origins and expansion in the postwar era (Baxandall and Ewen 2000; Fishman 1987; Hayden 2003; Jackson 1985; Kelly 1993; Teaford 2008). As Dougherty (2008) has noted, however, education has largely been overlooked in this growing literature. Much historical research has focused on the plight of urban schooling and race in the postwar years. Important case studies of Detroit (Mirel 1993), Chicago (Neckerman 2007), Newark (Anyon 1997), and Milwaukee (Dougherty 2004) have documented changes in larger northern cities. But as Dougherty (2008) has also observed, historical analyses of education tend "to stop at the city line" without considering larger metropolitan dynamics (251).

Another relevant line of research has considered the changing attainment status of African Americans and Hispanics, groups particularly important in metropolitan patterns of educational inequity. As Lieberson (1980) noted, African American attainment lagged behind that of white immigrant groups in the years following 1920, but Levitan et al. (1975) documented a narrowing postwar racial attainment gap, a finding echoed in other studies (Farley 1999; Rury 2007). Historical research on Hispanic attainment patterns is less extensive, but it also points to a trend toward improvement in attainment following 1960 (Arias 1986). The changing spatial orientation of educational inequality is an important theme, including the movement of some African Americans to suburbs (Bauman 1993; Lake and Cutter 1980), but it has received limited attention (Haar 1996; Logan and Alba 1993).

While educational researchers have occasionally included variables to indicate urban or suburban location, they rarely draw comparisons or distinctions between these types of communities (Reardon and Yun 2001; Roscigno et al. 2006; Rumberger and Thomas 2000). Moreover, such efforts typically lack the historical and empirical grounding necessary for exploring spatial dimensions of inequality in depth, as noted by Gruenewald (2003).[1] Other researchers have considered spatial inequality but not metropolitan context in their analyses, which have focused on neighborhoods in urban areas (Ainsworth 2002; Brooks-Gun et al. 1997; Fischer and Kmec 2004; Magnuson et al. 2004; Roscigno 1999). Sampson et al. (2002) provide a useful summary of this literature but do not mention suburbs. Swanson (2008) recently produced a report about urban-suburban differences in graduation, but it is largely descriptive and does not consider historical conditions.

Building on this body of research, our analysis is guided by the idea of opportunity hoarding expressed in Henig's quote above. The urban-suburban divide was historically established with communities proximate to city limits by powers of exclusion in contradistinction to the urban core in sociocultural and political terms to varying degrees (Fogelson 2005; Jackson 1985). As Massey (2007) has recently suggested, this distinction can be considered a geographic point of dissimilarity and segregation, reflecting critical status demarcations. In short, a process of metropolitan development marked by socially differentiated civil jurisdictions created categories of community types that require an appropriate spatial analysis of inequality (Baldassare 1992; Teaford 2008). This manifestation of opportunity hoarding, we suggest, has important implications for educational policy.

Central City and Suburban Characteristics, 1940–80

In this study, we address the metropolitan educational divide by focusing on 17-year-old youth in the northern United States between 1940 and 1980.[2] This region, which includes the Eastern Midwest, Mid-Atlantic, and New England States, was the country's most highly urbanized area (Perloff et al. 1960). Stretching from Milwaukee and Chicago to Indianapolis and Cincinnati and east to the major cities of the Northeast, this region embraced some 33 metropolitan areas in 1940 and 62 by 1980.[3] By the latter date, fully 80 percent of its population lived in metropolitan settings, the highest level in the nation (Frey and Speare 1988). As such, the northern United States was an epicenter for forces of suburban development and spatial differentiation described above.

The census data used for this study distinguish only between individuals situated inside or outside of the central cities in metropolitan areas during each decennial census year. This represents a very broad measure of differences between communities labeled "urban" and "suburban." Cities, after all, were hardly uniform in social and economic terms, and even central cities varied in size, function, and prosperity. Similarly, suburban communities exhibited considerable variety (Logan and Schneider 1981; O'Connor 1985; Schnore 1956; Schnore and Alford 1963). However, the data limit our ability to identify differences in attainment and other facets of life in various types of communities. Consequently, we cannot consider specific cities and suburbs to represent ideal types that may have existed in the literature (Baldassare 1992; Miller 1995). Rather, our purpose is to capture large-scale processes of change that characterized metropolitan development across the entire region over 4 decades. This broad pattern of development, after all, shaped the character-

TABLE 1

Metropolitan Distribution of Northern 17-Year-Old Metro Population, 1940–80

Year/Metro Segment	Whites	Blacks	Total
1940:			
Central cities	386,224	26,116	412,340
Row %	.93	.07	1.00
Column %	.59	.74	.59
Suburbs	272,181	9,239	281,420
Row %	.97	.03	1.00
Column %	.41	.26	.41
1960:			
Central cities	350,328	64,967	415,295
Row %	.84	.16	1.00
Column %	.45	.84	.48
Suburbs	436,901	12,750	449,651
Row %	.97	.03	1.00
Column %	.55	.16	.52
1980:			
Central cities	233,389	144,778	378,167
Row %	.60	.40	1.00
Column %	.25	.76	.34
Suburbs	705,211	44,555	749,766
Row %	.94	.06	1.00
Column %	.75	.24	.66

SOURCE.—Integrated Public Use Microdata Samples (IPUMS) data.

NOTE.—These figures represent individuals identified as known to live inside or outside of the central city in each census year.

istics associated with the terms "urban" and "suburban" and the educational experiences associated with them.

The experiences of 17-year-olds reflected in these data appear to have mirrored the national trends discussed above. As indicated in table 1, at least 40 percent of these students lived in suburbs in 1940, and by 1960, the number had increased to more than 52 percent. In 1980, more than two out of three students lived in such communities, making it a norm for a large segment of the population. With fewer than 20 percent of youth living outside metro areas, suburbanites were the largest segment of the age group. Living in the suburbs had become the mainstream experience, even if these communities were hardly identical in many respects.

The suburbs attracted largely white, middle-class inhabitants, and this, too, was reflected in the characteristics of 17-year-olds. Table 1 indicates that the region's suburban youth were at least 93 percent white throughout this era, and research suggests that most had little regular contact with other races. Race is a widely cited dimension of exclusion historically associated with

TABLE 2

Social Characteristics of Northern 17-Year-Old Metro Population, 1940–80

Year/Metro Segment	Home Owned	Father Present	In Poverty
1940:			
Central cities	.34	.81	
Suburbs	.53	.84	
1960:			
Central cities	.51	.77	.16
Suburbs	.79	.87	.12
1980:			
Central cities	.54	.61	.24
Suburbs	.86	.83	.08

SOURCE.—Integrated Public Use Microdata Samples (IPUMS) data.
NOTE.—Data on income and poverty were not collected consistently in 1940.

suburban settlement (Massey and Denton 1993). Home possession was another important suburban attribute. As seen in table 2, suburban rates of owner-occupied housing substantially exceeded those of the central cities. Indeed, historical accounts suggest that home ownership was a raison raison-d'être of moving to suburbs, and by 1980, nearly 86 percent of sample families had achieved it (Baxandall and Ewen 2000; Jackson 1985). The suburban residential ownership was some 57 percent greater than in central cities, a historic high. This underscored the different lifestyles in these settings and a substantial accumulation of wealth. It was symptomatic of the affluence enjoyed in these "bourgeois utopias" and the barriers that excluded many urban residents (Fishman 1987; Fogelson 2005).

Data in table 2 point to other factors that distinguished the suburbs. Unsurprisingly, poverty rates were low and apparently diminished over time. This is especially striking in light of the increase in the proportion of 17-year-olds experiencing poverty in the region's central cities, nearly one in four by 1980. The poverty among suburban youth dropped while their numbers grew by about 50 percent, evidence of the processes of exclusion in metropolitan development. It suggests that poor families were not welcome in many suburbs, another theme in the historical literature (Fogelson 2005; Fox 1985). Equally striking was the substantial decline in the number of youth with a male household head (father or equivalent) in central cities. While their proportion nearly doubled between 1960 and 1980, in suburbs the increase was more modest despite the escalation of divorce in the intervening years (Furstenberg 1990).

All of this reflects a process of change described in the research literature on urban inequality, consistent with Tilly's conceptualization of opportunity hoarding (1998, 2003). Regarding central cities, themes articulated by Wilson (1987, 1996) and others about the concentration of poverty in the urban core

TABLE 3

Attainment/Enrollment Rates of Northern 17-Year-Old Metro Population, 1940–80

Year/Metro Segment	Grade 11 or Higher	Below Grade 11	Not in School
1940:			
Central cities	.38	.28	.34
Suburbs	.39	.30	.31
1960:			
Central cities	.65	.10	.26
Suburbs	.73	.08	.19
1980:			
Central cities	.70	.13	.18
Suburbs	.84	.06	.10

SOURCE.—Integrated Public Use Microdata Samples (IPUMS) data.

NOTE.—The "grade 11 or higher" category includes small numbers graduated but not enrolled.

and the decline of traditional family structures were clearly evident by 1980. Despite evidence of black suburbanization in table 1, most of the region's growing African American population remained in central city neighborhoods, and they exhibited a higher incidence of poverty and family instability. As Sampson et al. (2002) point out, "neighborhood predictors common to many child and adolescent outcomes include the concentration of poverty, racial isolation, single-parent families, and rates of home ownership and length of tenure" (446). These conditions were hardly suitable for maximizing the prospects of success in school. Suburban youth, protected by a range of exclusionary rules, customs, and expectations, were mainly white, relatively affluent, and usually lived in households with two parents (Baldassare 1992). These are, of course, characteristics associated with greater success in school (Duncan 1994; Garasky 1995; Hallinan 1988; Teachman 1987; Wilson and Portes 1976).

The association of these conditions with attainment is evident in table 3. The principal variable of interest is in the first column: the proportion of 17-year-olds enrolled in grade 11 or higher (including graduates). This variable represents both a measure of school participation and a level of attainment. Given the age-graded quality of almost all metropolitan schools, a typical 17-year-old would have had to be promoted regularly to reach this level. Thus, being enrolled as a junior or higher can be interpreted as having attained a record of success throughout a school career. Those failing to reach this level usually had repeated one or more grades or had dropped out of school (Temple and Polk 1986). In that case, it is fair to refer to 17-year-old juniors as proficient students or as at least proficient enough for regular promotion. In a time when graduation was not yet a universal expectation, this was noteworthy.

The right-hand column indicates the number of dropouts, a problem studied extensively in urban areas (Balfanz and Legters 2004; Ensminger et al. 1996; Finn 1989; Mayer 1991) but rarely among suburban youth (Rumberger and Thomas 2000).[4] In this regard, a telling facet of table 3 is the difference between city and suburban youth. In 1940, when most metropolitan youth lived in central cities, urban and suburban educational attainment was generally equivalent, with students in both near 40 percent proficient. Urban school systems often were better developed than their suburban counterparts, especially regarding secondary schooling (Kantor and Brenzel 1993). Afterward, a gap in attainment became evident. In 1960, suburban youth were 13 percent more likely to reach proficiency than youth in central cities, and by 1980 it was 19 percent. Looking at the proportion of students no longer enrolled or below grade 11, the numbers are even more striking. Urban youth were 29 percent more likely to be behind in school (and candidates to drop out) or out of school altogether in 1960; by 1980, their likelihood of falling behind was twice as high as that of suburbanites. In short, the suburbs became associated with higher chances of success in school—and central cities with greater rates of failure (Conant 1961; Havighurst 1966; Treacy and Harris 1974).

As noted earlier, the association of suburbs with educational accomplishment was a consistent theme in postwar America. The data presented in tables 1–3, however, suggest that differences in attainment did not become critical until the latter stages of metropolitan development and suburbanization when differentiation and opportunity hoarding were most clearly manifest. It is reasonable, after all, to conclude that lower attainment in central cities was influenced by such other factors as race, rising poverty, and changing family structures, factors also historically inhibiting movement to the suburbs (Brooks-Gunn et al. 1997; Hallinan 1988; Kantor and Brenzel 1993). Simultaneously, it appears the opposite was true as well. Advantages enjoyed by suburban youth—high levels of affluence and family stability—had become especially evident by 1980, when advantages in attainment were also most apparent. Well-documented forces of social and economic exclusion kept many poor and minority residents confined to central cities. This allowed suburbanites to "hoard" the positive effects of their schools, including higher levels of attainment.

Multilevel Analysis: Data and Method

Examining trends in tabular data is helpful, but to further consider just how these elements of metropolitan life developed, it is necessary to use a different form of analysis. We employ hierarchical logistic regression (Raudenbush and

Bryk 2002) to assess a wide range of variables related to the distribution of attainment across urban and suburban settings in 1940 and 1980.

Data

As indicated earlier, data used for this study were obtained from IPUMS, but for this phase of the study, only the years 1940 and 1980 will be considered. For 1960, key variables (particularly metro area of residence) are not available. Because of our interest in suburban effects, we have excluded individuals whose suburban (vs. central city) residential status was coded as unknown.[5] We also have excluded individuals living in such group quarters as college dormitories, jails, and mental health institutions. The resulting samples include 9,672 individuals aged 17 in 1940 and 15,459 in 1980.

With the multilevel approach, we constructed variables reflecting the characteristics of communities where these youth lived. For these factors concerning metropolitan area (contextual or ecological) effects, we used 1 percent samples of adults aged 30–50 in these settings, also obtained from IPUMS. This avoids possibly confounding the effects at different levels when using cases from the same sample, and it better reflects the adult-constructed settings within which youth made decisions about school. Using a range of ages permits us to capture the variety of adults who influenced the youth in our samples.

A full list of all the variables included in the study is provided in table A1 in the appendix. Our outcome variable is a dichotomous measure of whether the 17-year-old has achieved grade 11 or higher attainment. Our central independent variable is whether the individual resided in a suburb or a central city location. Since the focus of the study is metropolitan youth, those living in rural and other nonmetro locations were excluded. We selected a number of individual-level control variables with well-established effects on educational attainment. Basic demographic and ethnocultural factors include race, ethnicity (Hispanic), and gender. Socioeconomic controls represent the social and economic status (SES) of the student, including employment, family structure, and parental education and occupation levels. Including other factors did not materially affect the results of our analysis.

With respect to factors operating at the metropolitan level, we developed variables that represented the economic, occupational, and social characteristics of the metro areas in this region. Unfortunately, since information about communities within metro areas was not available, it was not possible to identify smaller geospatial units. For instance, suburban homeownership rates and average house value reflect the suburbs as a whole in a given metropolitan area but not particular communities. Likewise, the percentage of adults holding manufacturing jobs can be interpreted as reflecting the blue collar character

of the total suburban or central city workforce in a given metro area. Adult education level is a similarly global indicator of an area's educational heritage. We also included two separate population size measures. One is the overall metropolitan (city and suburbs) population, reflecting the differences between large metro areas, such as New York City, and smaller ones, such as Buffalo or Cleveland. The second is the ratio of the suburban population to the central city population. This is important not only because suburbanization in a given area is likely to change over 4 decades but also because it varies across areas at any given time. Finally, in order to account for potential variation in the role of "white flight" in the process of suburban differentiation, we included two specific metro-level variables—a desegregation indicator and the percentage of black 17-year-olds. The desegregation measure is used only for the 1980 cohort since busing plans—commonly associated with increased suburbanization—were not widely implemented until the 1970s (Clotfelter 2004). This measure indicates whether the metro area had a central city school system that came under a desegregation court order prior to 1980, potentially aggravating "white flight" and contributing to metropolitan racial exclusion. The metro percentage of black residents is relevant for both 1940 and 1980. It is instrumental in considering whether the proportion of black families may have been associated with greater segregation regardless of desegregation plans, potentially affecting "white flight" and attainment patterns (Logan and Schneider 1984; Marshall 1979; Massey and Denton 1993).

Analysis Strategy

By accounting for the nesting of students within metro areas, the hierarchical approach not only limits prediction biases but also partitions variance components at different levels (DiPrete and Forristal 1994; Snijders and Bosker 1999). Our approach tested seven consecutive models, fitted separately on the 1940 and the 1980 cohorts.[6] In each, the outcome measure was the likelihood of grade 11 or higher educational attainment. The first three models were fitted to evaluate the basic variance components at different levels—student and metropolitan area. The first one (the "null model") involves no independent variables. It provides a baseline estimate of the extent of variance accounted for at the metro level. The second and third models predict the degree to which the baseline variance estimates are influenced by the introduction of student- and metro-level factors, respectively:

$$\text{logit}(Y_{ij}) = \beta_{0j} + R_{ij}, \tag{1a}$$

$$\beta_{0j} = \gamma_{00} + U_{0j}, \tag{1b}$$

$$\text{logit}(\Upsilon_{ij}) = \beta_{0j} + \beta_{1j}\text{SUBURB}_{ij} + \sum_{p=1}^{3}(\eta_p \times D_{pij}) + \sum_{q=1}^{6}(\zeta_q \times S_{qij}) + R_{ij}, \quad (2a)$$

$$\beta_{0j} = \gamma_{00} + U_{0j}, \quad (2b)$$

$$\text{logit}(\Upsilon_{ij}) = \beta_{0j} + R_{ij}, \quad (3a)$$

$$\beta_{0j} = \gamma_{00} + \sum_{r=1}^{8}(\gamma_{0r} \times M_{rj}) + U_{0j}, \quad (3b)$$

where i = student ID and j = metro ID, Υ_{ij} = grade 11 or higher attainment, β_{0j} = metro-specific average likelihood of grade 11 or higher attainment, γ_{00} = grand average likelihood of grade 11 or higher attainment, U_{0j} = metro-level variation around γ_{00},SUBURB = suburban residence, D = vector of student-level demographic covariates, S = vector of socioeconomic covariates, M = vector of metro-level factors for metro j, and R_{ij} = student-level random error.

The remaining steps in the analysis involved models that allowed both the intercept and the coefficient for the suburb effect to vary randomly across metro areas. Model 4 starts out with suburban residence as the only specified factor. Models 5–7 constitute a step-wise process of including student-level fixed covariates, followed by the introduction of metro-level covariates and cross-level interactions with the suburb variable:

$$\text{logit}(\Upsilon_{ij}) = \beta_{0j} + \beta_{1j}\text{SUBURB}_{ij} + R_{ij}, \quad (4a)$$

$$\beta_{0j} = \gamma_{00} + U_{0j}, \quad (4b)$$

$$\beta_{1j} = \gamma_{10} + U_{1j}, \quad (4c)$$

$$\text{logit}(\Upsilon_{ij}) = \beta_{0j} + \beta_{1j}\text{SUBURB}_{ij} + \sum_{p=1}^{3}(\eta_p \times D_{pij}) + R_{ij}, \quad (5a)$$

$$\beta_{0j} = \gamma_{00} + U_{0j}, \quad (5b)$$

$$\beta_{1j} = \gamma_{10} + U_{1j}, \quad (5c)$$

$$\text{logit}(\Upsilon_{ij}) = \beta_{0j} + \beta_{1j}\text{SUBURB}_{ij} \tag{6a}$$

$$+ \sum_{p=1}^{3}(\eta_p \times D_{pij}) + \sum_{q=1}^{6}(\zeta_q \times S_{qij}) + R_{ij}, \tag{6b}$$

$$\beta_{0j} = \gamma_{00} + U_{0j}, \tag{6c}$$

$$\text{logit}(\Upsilon_{ij}) = \beta_{0j} + \beta_{1j}\text{SUBURB}_{ij} \tag{7a}$$

$$+ \sum_{p=1}^{3}(\eta_p \times D_{pij}) + \sum_{q=1}^{6}(\zeta_q \times S_{qij}) + R_{ij}, \tag{7b}$$

$$\beta_{0j} = \gamma_{00} + \sum_{r=1}^{8}(\gamma_{0r} \times M_{rj}) + U_{0j}, \tag{7c}$$

$$\beta_{1j} = \gamma_{10} + \sum_{s=1}^{8}(\gamma_{1s} \times M_{sj}) + U_{1j},$$

where γ_{10} = grand average or main suburb effect and U_{1j} = metro-specific variation around γ_{10}.

The objective in model 4 is to obtain baseline estimates for the suburb main effect, as well as for the metro-level variance around it. The main effect provides a reference point to track changes as covariates are included in subsequent models. The estimate for the metro-level variance around the main effect is important to identify the contribution of metro-level factors to such variation. Models 5 and 6 test the robustness of the suburb effect to demographic and socioeconomic controls, along with potential changes in the effects of demographic covariates from one model to the next. Finally, model 7, which involves the cross-level interactions of metro-level covariates with the student-level suburb factor, tests (1) whether metro-level factors account for the random variation around the main suburb effect and (2) whether cross-level interactions are large and statistically significant, which would indicate that the suburb effect is contingent upon specific metropolitan area characteristics.

Findings

The results for model 1 for the 1940 cohort, shown in table 4, indicate a total between-metro (level 2) variance of 0.060. As for the within-metro (level 1) variance, there are two different approaches to consider in the context of hierarchical logistic regression. One of these approaches assumes a standard

TABLE 4

Results of Hierarchical Logistic Regression Models Estimating the Odds of Grade 11 or Higher Attainment for 17-Year-Olds in 1940

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Metro segment:							
Suburb		−.021		.037	.024	−.063	−.014
		(.048)		(.125)	(.122)	(.124)	(.125)
Demographic background:							
Black		−.460**			−.627**	−.443**	−.426**
		(.098)			(.093)	(.098)	(.098)
Hispanic		−.461*			−.691**	−.482*	−.481*
		(.225)			(.214)	(.226)	(.226)
Female		.071			.078+	.072	.075+
		(.045)			(.042)	(.045)	(.045)
Socioeconomic background:							
Student employed		−1.443**				−1.452**	−1.452**
		(.065)				(.066)	(.065)
Home ownership		.354**				.357**	.363**
		(.047)				(.048)	(.048)
Father missing		−.145**				−.142*	−.137*
		(.058)				(.059)	(.059)
Parent white collar occupation		.840**				.845**	.845**
		(.059)				(.060)	(.060)
Parent high school dropout		−1.511**				−1.516**	−1.502**
		(.147)				(.149)	(.149)
Poverty status		. . .				. . .	. . .
Metro-level predictors:							
Population			.154*				.043
			(.064)				(.148)
Suburban population relative to central city			.139**				−.045
			(.053)				(.117)
Percent of home owners in suburbs			.062				−.079
			(.063)				(.113)

Average house value in suburbs			.060				−.076
			(.064)				(.122)
Percent of manufacturing jobs in suburbs			−.019				−.051
			(.043)				(.083)
Average suburban adult education level			.087*				.052
			(.049)				(.086)
School desegregation			. . .				. . .
Percent of black residents			−.103**				−.197**
			(.026)				(.054)
Cross-level interactions:							
Suburb × population							.410*
							(.208)
Suburb × suburban population relative to central city							.438**
							(.161)
Suburb × percent of home owners in suburbs							.418**
							(.176)
Suburb × average house value in suburbs							.413**
							(.175)
Suburb × percent of manufacturing jobs in suburbs							.184+
							(.111)
Suburb × average suburban adult education level							.092
							(.112)
Suburb × school desegregation							. . .
Suburb × percent of black residents							.179**
							(.076)
Intercept	.379**	1.671**	.393**	.395**	.389**	1.735**	1.738**
	(.055)	(.160)	(.049)	(.083)	(.082)	(.174)	(.179)
Variances components:							
Level 2:							
Suburb				.325*	.304*	.300*	.098
Intercept	.060*	.049*	.003	.150*	.131*	.164*	.062
Total	.060	.055	.003	.474	.435	.464	.160

TABLE 4 (*Continued*)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Level 1:							
Individual (assuming logit distribution)	3.286	3.286	3.286	3.286	3.286	3.286	3.286
Individual (assuming probit distribution)	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Intraclass correlation coefficient:							
Assuming logit distribution for level 1 residuals	.018	.016	.001				
Assuming probit distribution for level 1 residuals	.057	.052	.003				
Log-likelihood	−6,502.295	−5,858.945	−6,489.354	−6,490.526	−6,460.935	−5,850.374	−5,830.303
Wald χ^2		972.550**	51.390**	.090	58.590**	966.910**	1,015.130**

NOTE.—N = 9,672. Number of metro areas = 33. Standard errors are in parentheses. Metro-level variables were standardized. Level 1 residual variance in hierarchical logistic regression is fixed. It has a value of 3.286 ($\pi 2/3$) when a standard logit distribution is assumed or a value of 1.000 when a probit distribution is assumed (Snijders and Bosker 1999). The ICC is reported only for the random intercept models. In random coefficient models, the ICC is difficult to interpret because it is not only heteroskedastic but is unduly influenced by the scale differences among the independent variables (Snijders and Bosker 1999).

+Statistically significant at the 10% level.

* Statistically significant at the 5% level.

** Statistically significant at the 1% level.

logistic distribution underlying the residual variance at the student level, in which case the level 1 variance has a fixed value of 3.286 ($\pi^2/3$). The other assumes a probit distribution, which implies a fixed value of 1.000 (Snijders and Bosker 1999). Under the first option, the total variance for model 1 is 3.886 (0.060 + 3.286); under the second option, it is 1.060 (0.060 + 1.000). The resulting alternative values of the intraclass correlation coefficient (ICC) for model 1 are 0.018 and 0.057, indicating that metro-level dynamics account for 2–6 percent of the total variation in the dependent variable in 1940. The variance components results for 1980, shown under model 1 in table 5, are similar to those for 1940. A key difference is that the average 17-year-old was nearly 50 percent more likely ($\beta = 0.379$, $e^{\beta} = 1.461$, $p < .010$) than not to achieve grade 11 or higher attainment in terms of the odds ratio in 1940 but about 4.5 times more likely than not in 1980 ($\beta = 1.542$, $e^{\beta} = 4.664$, $p < .010$). This reflects the growth of high school attendance as a pervasive norm across the United States during postwar decades.

Model 2 includes individual-level characteristics to determine if they affect the variance components observed in the previous model. The extent to which these factors reduce variance at the metro level is of particular interest. Since individual students are nested within metro areas, individual-level covariates may account for some contextual variation at the metro level. As seen in tables 4 and 5, however, the between-metro variance reduces to .049 ($p < .050$) for the 1940 cohort and to 0.048 ($p < .050$) for the 1980 cohort. Therefore, the risk of cross-level confounding in variance decomposition is small. By contrast, the results for model 3 indicate that metro-level factors substantially reduce the observed variation at the metro level—to 0.003 ($p > .100$) for 1940 and to 0.009 ($p > .100$) for 1980, indicating that these factors account for considerable variation across metro areas.

The baseline estimate for the suburb main effect is introduced in model 4. In 1940, the average effect of living in a suburb was small and statistically nonsignificant. In 1980, it was twice as large and significant. Living in a suburb doubled the odds of grade 11 or higher attainment for the average 17-year-old in 1980 ($\beta = 0.695$, $e^{\beta} = 2.004$, $p < .010$). Although the baseline estimate for the main suburb effect is substantially different for the 1940 and 1980 cohorts, there is statistically significant metro-level variance around it for both periods (0.325 in 1940; 0.278 in 1980). It is, therefore, possible that, while the suburb main effect was nonsignificant in 1940, the suburban contribution to educational attainment may have been contingent upon various metro-level characteristics (this, as indicated below in model 7, was indeed true in 1940).

Student-level demographic and socioeconomic covariates were introduced in models 5 and 6. The suburb main effect remained nonsignificant for the 1940 cohort. The results indicate that being black or Hispanic reduced the

TABLE 5

Results of Hierarchical Logistic Regression Models Estimating the Odds of Grade 11 or Higher Attainment for 17-Year-Olds in 1960

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Metro segment:							
Suburb		.199**		.695**	.470**	.173*	.226*
		(.056)		(.102)	(.088)	(.078)	(.103)
Demographic background:							
Black		.024			−.655**	.028	.025
		(.064)			(.058)	(.065)	(.068)
Hispanic		−.429**			−1.182**	−.428**	−.451**
		(.084)			(.078)	(.085)	(.087)
Female		.485**			.347**	.485**	.482**
		(.046)			(.043)	(.046)	(.048)
Socioeconomic background:							
Student employed		.313**				.312**	.326**
		(.051)				(.052)	(.055)
Home ownership		.728**				.737**	.769**
		(.056)				(.056)	(.059)
Father missing		−.142**				−.142*	−.136*
		(.056)				(.056)	(.059)
Parent white collar occupation		.691**				.696**	.667**
		(.052)				(.052)	(.056)
Parent high school dropout		−.879**				−.878**	−.860**
		(.063)				(.064)	(.068)
Poverty status		−.356**				−.351**	−.356**
		(.062)				(.063)	(.065)
Metro-level predictors:							
Population			−.002				−.063
			(.071)				(.126)
Suburban population relative to central city			.098*				−.034
			(.038)				(.072)

Percent of home owners in suburbs			.092				.066
			(.111)				(.205)
Average house value in suburbs			.038				.113
			(.105)				(.194)
Percent of manufacturing jobs in suburbs			.125+				.109
			(.063)				(.112)
Average suburban adult education level			.115+				.165
			(.058)				(.106)
School desegregation			−.003				−.104
			(.067)				(.131)
Percent of black residents			−.073				.063
			(.045)				(.087)
Cross-level interactions:							
Suburb × population							.186
							(.147)
Suburb × suburban population relative to central city							.069
							(.081)
Subrub × percent of home owners in suburbs							−.042
							(.240)
Suburb × average house value in suburbs							−.059
							(.226)
Suburb × percent of manufacturing jobs in suburbs							−.022
							(.136)
Suburb × average suburban adult education level							−.157
							(.123)
Suburb × school desegregation							−.005
							(.148)
Suburb × percent of black residents							−.033
							(.097)
Intercept	1.542**	.912**	1.461**	1.086**	1.227**	.925**	.974**
	(.045)	(.097)	(.046)	(.081)	(.074)	(.104)	(.123)

TABLE 5 (*Continued*)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Variances components:							
Level 2:							
Suburb				.278**	.151*	.072^{+}	.026^{+}
Intercept	.062**	.048*	.003^{+}	.152**	.075*	.070*	.040
Total	.062	.048	.003	.430	.226	.142	
Level 1:							
Individual (assuming logit distribution)	3.286	3.286	3.286	3.286	3.286	3.286	3.286
Individual (assuming probit distribution)	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Intraclass correlation coefficient:							
Assuming logit distribution for level 1 residuals	.019	.014	.001				
Assuming probit distribution for level 1 residuals	.058	.046	.003				
Log-likelihood	−7,439.118	−6,366.736	−6,728.985	−7,239.056	−707.963	−6,363.431	−5,744.309
Wald χ^2		1,747.170**	36.430**	.090**	58.590**	966.910**	1,495.990**

NOTE.—N = 15,459. Number of metro areas = 59. Standard errors are in parentheses. Metro-level variables were standardized. Level 1 residual variance in hierarchical logistic regression is fixed. It has a value of 3.286 ($\pi 2/3$) when a standard logit distribution is assumed or a value of 1.000 when a probit distribution is assumed (Snijders and Bosker 1999). The ICC is reported only for the random intercept models. In random coefficient models, the ICC is difficult to interpret because it is not only heteroskedastic but is unduly influenced by the scale differences among the independent variables (Snijders and Bosker 1999).

$^{+}$Statistically significant at the 10% level.

* Statistically significant at the 5% level.

** Statistically significant at the 1% level.

likelihood of grade 11 or higher attainment by about 40 percent. Being female had a slightly positive but nonsignificant effect. These racial and gender influences were robust to socioeconomic factors since they changed only slightly from model 5 to model 6. As such, demographic and socioeconomic background factors appear to have had distinct effects in 1940. Being employed, not having a father at home, and having at least one parent who had dropped out of high school adversely influenced educational attainment.[7] However, homeownership and having at least one parent in white collar employment were considerable advantages.

Another important finding for 1940 is the stability of the metro-level variance around the suburb main effect. The introduction of student-level covariates had little impact upon metro-level variance around the suburb main effect. This suggests that demographic and socioeconomic factors overlapped minimally with metro-level dynamics, which is consistent with the notion that suburbanization was not widely exclusionary at this stage of its development. The introduction of student-level covariates revealed markedly different results for the 1980 cohort. First, the odds ratio for the suburb main effect in model 4 ($e^{\beta} = 2.004$) is reduced to 1.599 in model 5 and to 1.189 in model 6, though it remained statistically significant. In other words, a considerable portion of the influence of suburban residence on educational attainment was strongly associated with race, ethnicity, class, and gender. This is consistent with the findings of research describing systematic exclusion by predominantly white middle-class suburbanites over multiple decades, a process that increasingly concentrated disadvantaged groups in the region's central cities (Massey and Denton 1993).

Second, the coefficients for demographic and socioeconomic covariates in 1980 are not similar to those in 1940. Gender, which did not matter much in 1940, had a large and positive effect in 1980. Moreover, the effect sizes of demographic and socioeconomic covariates were not as pronounced in 1980 as they were in 1940. Specifically, the impact of being black practically disappears, while that of being Hispanic doubles when socioeconomic covariates are introduced. This suggests that racial, ethnic, and SES effects had become more interconnected over time, with the latter retaining salience regarding educational attainment.[8] This is consistent with a large literature on the impact of the Civil Rights Movement and other historical developments that made race and ethnicity less formally sanctioned as forms of exclusion in many spheres of American life, most notably education and housing (Skrentny 2002).

There are also notable differences in the influence of certain socioeconomic factors. For example, a subject being employed—an important barrier to attainment in 1940—was an advantage in 1980. It is likely that the function or meaning of student employment had changed, as most youth jobs had shifted from full-time (more than 30 hours per week) to part-time status. As

teen employment became more casual, it competed less directly with school and may have even represented an inducement to academic success (Buchmann 1989; Mare et al. 1984; Mare and Winship 1984; Warren et al. 2000). Furthermore, the positive effect of homeownership doubled from 1940 to 1980, suggesting that family wealth had become more important. Finally, the negative influence of low parental education (dropout) was smaller in 1980. This is likely because high school graduation had become a more widespread expectation.[9]

Perhaps the most important difference between the two cohorts, however, was the instability of the metro-level variance around the suburb main effect in 1980. While this variance remains largely the same across models 4–6 for the 1940 cohort (around 0.300), it drops for the 1980 cohort from 0.278 in model 4 to 0.072 in model 6 (losing statistical significance). This suggests that the between-metro variation in the general suburb effect was linked to individual demographic and socioeconomic background factors in 1980, a finding that is also consistent with the exclusionary quality of suburbanization at that time (Fox 1985).

Differences from one period to the next in suburban advantage are further illustrated by the results for model 7. For the 1940 cohort, metro-level factors by themselves did not have significant effects on educational attainment, except for the percentage of black 17-year-olds. As noted earlier, this factor was included to account for segregation related to white flight, which could contribute to differences in educational attainment. In terms of its independent effect, the percentage of black youth simply reflects metro-level racial disadvantage net of other variables at both levels of analysis. In 1940, it appears that a 1 percent increase in the percentage of black residents in a metro area decreased the odds of attainment by 18 percent ($e^{\beta} = 0.821$). None of the other metro-level factors had significant effects; they did not change student-level covariates much either.

On the other hand, most cross-level interactions between metro-level factors and individual suburban residence feature large and statistically significant effects for 1940. This suggests that a given suburb may have been influential, depending on the metro area, even if a general suburban effect was not evident. For example, living in a suburb situated in a large metropolitan area (such as New York, Chicago, Boston, Cleveland, or Philadelphia) considerably increased the odds of grade 11 or higher attainment—by about 50 percent.[10] So did living in a suburb where more families owned homes, where houses were more valuable, or where a greater number of adults held manufacturing jobs. Finally, living in a suburb located in a metro area with a greater percentage of black residents increased the odds of attainment, a finding consistent with "white flight," or greater numbers of middle-class whites relocating to the suburbs. The metro-level variation around the suburb main effect was not

significant in model 7, suggesting that such variance was captured mostly by the metro-level factors. Altogether, the significant interaction effects offer clues about the primary dimensions of opportunity hoarding at the dawn of the suburbanization era, which would eventually come to characterize the city-suburb divide more generally. Since suburbanization was in its early stages in 1940, suburban residence did not have a substantial main effect. Instead, the type of suburb a teenager lived in and the metro characteristics associated with it appear to have been important regarding educational attainment.

The situation was notably different 40 years later. The 1980 results for model 7 indicate that metro-level characteristics were largely inconsequential, both in terms of independent effects and interactions with suburban location. Metro-level variance around the suburb main effect, which was not statistically significant in model 6, remained so in model 7. Moreover, there was little change in the size of the suburb main effect due to the introduction of metro-level covariates and the cross-level interactions. This includes variables representing the implementation of desegregation plans and the size of each metro area's black population, factors often linked conceptually to suburban growth, particularly in the 1960s and 1970s (Fox 1985). Factors representing these elements of metropolitan areas were insignificant in models 3 and 7. Instead, it appears that the effect of suburbanization upon attainment was far more ubiquitous in 1980, a pattern that suggests that the processes of exclusion and differentiation associated with it had become practically universal (Teaford 2008). It is telling that the suburban odds ratio changed modestly from model 6 ($e^{\beta} = 1.189$) to model 7 ($e^{\beta} = 1.252$) and remained statistically significant. Living in a suburb in 1980 improved the odds of grade 11 or higher attainment for the average 17-year-old by about 20 percent, net of all student- and metro-level controls in the model.

This finding is consistent with Tilly's theory of opportunity hoarding, applied in this case to the process of suburbanization in the postwar era, identifying suburban residence as a key advantage in educational attainment regardless of the metropolitan setting. As noted in discussion of the results for models 4–6 for the 1980 cohort, suburban advantage in education had become entwined with the race, class, and family background of students. In other words, as the city-suburb divide became entrenched, and defined by patterns of exclusion along these lines, it also reflected much of the educational attainment gap associated with these characteristics.

Discussion

Our results provide a clear expression of the growing differences in the educational experiences of youth in urban and suburban settings. As the pro-

portion of youth living in suburbs increased to two out of three, the social and economic consequences of living in cities and the surrounding suburbs became quite different. This analysis has demonstrated that educational attainment was a critical manifestation of this distinction and was tied to other factors that came to characterize these settings. We suggest that these differences are consistent with Tilly's notion of opportunity hoarding and that they appear to reflect a process of systematic exclusion and advantage-seeking on the part of suburbanites.

The results of our analysis indicate that suburban youth in certain settings held an educational edge in 1940 but that 40 years later a more general pattern of advantage was evident, one linked to forms of social exclusion that developed in the intervening decades. The socioeconomic factors we considered, including family structure, had the statistical effect of controlling for many of the exclusive attributes that gave suburban youth a distinct advantage with respect to social and economic status. Thus, it is hardly a surprise that these factors diminished the main effect of suburban advantage regarding educational attainment in the analysis. Spatial distinctions in this respect were clearly linked to individual and household characteristics, which is evidence of social segregation.

This analysis reveals a statistically robust suburban main effect in 1980, accounting for nearly half of the individual-level variance in educational attainment with controls for student characteristics and contextual factors. Further research is clearly needed to understand this, as we lack an exhaustive set of possible elements, such as financial and organizational or institutional advantages of suburban schools (Arum 2000; Roscigno 1999) and other factors we were unable to consider. It is likely, in fact, that many observed and unobserved advantages of suburban residence interact to create higher-order spatial benefits that can, in various ways, be considered a form of "concentrated advantage," parallel to the "concentration effects" linked to poor urban areas in recent decades (Massey and Denton 1993; Wilson 1987, 1996). As Sampson et al. (2002) note, "concentrated affluence" is an understudied phenomenon, although they also suggest that "the ecological concentration of poverty appears to have increased significantly during recent decades, as has the concentration of affluence at the upper end of the income scale" (446–47). Our results, therefore, highlight the need to further examine the constituent elements of the advantages related to affluence and the manifold ways that opportunity hoarding has been manifest historically in suburban communities.

These findings, however, are consistent with Henig's suggestion that spatial inequality was decisively linked to a political process of omission at the community level. As suburban residential patterns became more closely linked to social status and key demographic characteristics, they also became associated

with different educational experiences. This suggests that the power of exclusion almost certainly contributed to the development of such distinctions and that the rise of suburban dominance in education was directly linked to the decline of urban education."

From the standpoint of educational policy, the emergence of this general spatial pattern of inequality points to the limitations of federal measures designed to ameliorate the impact of poverty and related factors on schooling. In particular, Title 1 of the 1965 Elementary and Secondary Education Act (ESEA) was the principal national program to provide funding to compensate for such factors. As a number of studies have noted, however, resources made available were so widely distributed that they had little effect on areas of concentrated poverty, such as major cities (Cohen and Moffitt 2009; Kantor 1990). As Vinovskis (1999) has pointed out, "this often meant that some of the poorest and most disadvantaged students in high poverty areas did not get any federal assistance while already successful students who did not really need that help received it in more affluent school districts" (189).

Such inconsistencies were a consequence of political compromises deemed necessary to pass ESEA in the mid-1960s with support from a range of interests. This legislation was finalized, moreover, before the process of suburban development had reached the level evident in 1980. While there was recognition of urban-suburban distinctions in education and affluence in the sixties, such differences were not as pronounced as they became later. Consequently, there was little interest in making federal aid geographically specific to address poverty and related factors in education, at least below the state level. Furthermore, there was scant oversight regarding the expenditure of funds, so resources intended to address urban problems were underutilized (Kantor 1990). In short, just as the problems of the cities were becoming more pronounced, national policy initiatives aimed at addressing inequality in education were poorly adapted to addressing them. Indeed, distributing federal aid to schools in this manner may have contributed to metropolitan differences in outcomes noted above.

We maintain that the continuing existence of such spatial distinctions in educational outcomes clearly calls for a systematic policy response. While larger numbers of low-income and minority families have moved to so-called inner-ring suburbs in recent years (Kodras 1997; Logan and Schneider 1981, 1984; Strait 2001), Swanson (2008) has shown that today substantial urban-suburban differences in graduation rates still characterize the nation's largest metropolitan areas, and Roscigno et al. (2006) have documented systematic differences along these lines in achievement as well. Furthermore, as the analysis above has suggested, these patterns of educational inequality were pervasive enough be linked to a process of systematic exclusion in metropolitan development lasting more than 50 years.

Given this, we suggest that it is necessary to consider a spatially directive policy of federal aid to education that is historically similar to Title 1 but focused on the cities at the core of the nation's metropolitan areas. As Cohen and Moffitt (2009) have demonstrated in a recent analysis of this problem, poor children living in affluent school districts are nearly as likely to receive Title 1 support as those living in the nation's most distressed areas, a pattern of federal assistance that has failed to stem the development of the urban-suburban divide in educational outcomes. To be effective, of course, such a program also would have to be informed by research on urban education and aimed at instructional practice. It must also address the many other problems facing children in such settings, along with dramatically improving the quality of teachers in urban schools (Cohen and Moffitt 2009; Rothstein 2004). But it is an open question whether steps such as this would be sufficient to overcome the advantages that suburban residents appear to enjoy, as decades of Title I funding appear have done little to close urban/suburban gaps in school performance.

As suggested above, superior school resources may well contribute to the suburban advantage evident in table 5. If so, then the question of equity hinges in part on determining levels of funding that could address related geo-spatial inequities in educational outcomes. Duncombe and Yinger (1997, 2005), among others, have argued that central city schools require additional resources extending far beyond parity with other districts to achieve equivalent results in educational attainment and achievement. Addressing the advantages of suburban institutions, in that case, would entail substantial reallocation of resources from the suburbs to major cities. To undertake such drastic redistributive policies, significant political opposition must be overcome at the local and state level. As one former state legislative leader recently declared, "we don't play Robin Hood. We're not going to take [money] away from you just because you're rich" (Yaffe 2008). For this reason, we suggest that the best chances for undertaking changes on this scale probably exist at the federal level, perhaps as a modification or enhancement of Title I. This is clearly a question that calls for additional investigation and for discussion among policy makers.

It is also possible that school compositional effects may play an important role in defining the advantages enjoyed by suburban schools evident in our analysis. This, too, was not a factor that we were able to include in our analysis, but racially balanced schools appear to have positive effects on the performance of urban minority students, albeit to varying degrees (Hanushek et al. 2008; Mickelson 2009). Likewise, there is emerging evidence on the potential benefits of socioeconomically integrated schools for poor students, particularly when combined with greater opportunities for interracial contact and additional curricular and social supports (Crosnoe 2009). Simply put, there appears

to be an educational premium gained from exposure to students from high SES backgrounds. Given this, it may be also important to consider policies that promote social and economic integration of schools and communities that span metropolitan areas, such as Moving to Opportunity (MTO) and similar initiatives (Clampet-Lundquist and Massey 2008). Programs such as this, permitting urbanites the opportunity to benefit from the advantages of suburban residence, can also be critical for mitigating the effects of suburban opportunity hoarding on metropolitan inequity so evident in the latter twentieth century. With the national scale of the problem, these sorts of initiatives probably should be undertaken at the federal level as well, as is the case with MTO. This, too, is an issue that requires more inquiry and consideration from policy makers.

Our analysis indicates that urban/suburban differences in educational attainment had become a pervasive and deeply rooted phenomenon by the latter twentieth century. Only with dramatic, sweeping policy measures, such as greater spending for urban schools and efforts to enable at least some central city children to enjoy the benefits of concentrated affluence in suburban schools, may it finally be possible to begin addressing such systematic geospatial manifestations of educational inequity. Policy initiatives of this sort can be seen as redressing the systematic "hoarding" of opportunity and advantage that shaped metropolitan development in the United States across the postwar era. Short of this, the historical record suggests that metropolitan patterns of exclusion and inequity will continue to shape educational outcomes for the foreseeable future.

Appendix

TABLE A1

Names and Descriptions of Variables Included in the Analysis

Variable Name	Description
Attainment	1 = The student is enrolled in grade 11 or higher, or has graduated from high school 0 = The student has dropped out of school or is enrolled below grade 11
Suburban residence	1 = The student resides in a metropolitan area outside of the central city (rural areas excluded) 0 = Residence in the central city
Black	1 = African American 0 = Other race
Hispanic	1 = Latio background 0 = Other ethnicity
Gender	1 = Female 0 = Male
Student employed	1 = The student is employed (full or part time) 0 = Not employed
Homeownership	1 = The student's household head owns the domicile 0 = The student's household head does not own the domicile
Poverty status	1 = Living in a household with below poverty-level income 0 = Household income is above the poverty level
Father missing	1 = Living in a household without a resident adult male 0 = Living in a household with resident adult male
Parent white collar occupation	1 = One or both parents hold a white collar occupation 0 = Neither parent holds a white collar occupation
Parent high school dropout	1 = The student has one or both parents who did not complete high school 0 = Both parents have completed high school
Metro population (adult)	Number of adults (ages 30–50) in the metropolitan area

TABLE A1 (*Continued*)

Variable Name	Description
Suburban population relative to central city (adult)	Ratio of population outside the central city (ages 30–50) to population in the central city
Percent of homeowners in suburbs (adult)	Percent of metropolitan area adult population (ages 30–50) living outside the central city who own their domiciles
Average house value in suburbs (adult)	Average value of domiciles owned by metropolitan area adults (ages 30–50) living outside the central city
Percent of manufacturing jobs in suburbs (adult)	Percent of metropolitan area adult population (ages 30–50) living outside the central city employed in manufacturing
Average suburban adult education level (adult)	Average level of education (IPUMS scale) attained by metropolitan area adults (ages 30–50) living outside the central city
School desegregation	1 = Court-ordered desegregation program in the central city schools of the metro area 0 = Either no desegregation program, or a locally initiated voluntary one
Percentage of black residents	Proportion of black households in the metro area

NOTE.—Poverty status information was unavailable for the 1980 cohort.

Notes

We would like to thank the editors and several anonymous reviewers for their many suggestions for improving this article. Ahmed Logan helped to prepare it for publication. We are responsible, of course, for its shortcomings.

1. A major exception to this generalization, of course, is the study by Roscigno et al. (2006), which contrasts both attainment and achievement patterns in central city (or urban), suburban, and rural communities. Utilizing different data sets (NELS [National Educational Longitudinal Study] and CCD [Common Core of Data]) and a somewhat different analytical strategy, their findings are quite consistent with ours. They do not, however, examine historical antecedents or the process of change leading to the existence of these patterns. Another exception is a recent study by Christy Lleras (2008), which examines the correlates of mathematics achievement in urban and suburban high schools, noting the effects of these locational variables and other factors. Using NELS data from 1988 and 1990, her findings also are broadly consistent with ours in that certain urban schools appear to have represented a markedly difficult environment for achieving academic success.

2. We have decided to focus on 17-year-olds and not high school graduates for a variety of reasons. The most important is the fact that more than 90 percent of these youth were still living with their parents in these years, and parental information could be obtained through the IPUMS census data. Many high school graduates in the

IPUMS samples, even at age 18, had left home and may even have moved to different communities for postsecondary education or employment. We have settled on this measure of secondary attainment, in that case, to make our analysis of background and residential (spatial) factors as extensive as possible. When compared across metro areas in both 1940 and 1980, the correlation of this measure of attainment with 19-year-old secondary graduation rates exceeds 0.90. Finally, analyzing 17-year-olds also reduces the likelihood of inflation of self-reported attainment and confounding GED with high school graduation. On these points, see Rury et al. (2010). Information on the IPUMS data utilized in this study can be found at http://usa.ipums.org/usa/index.shtml. We are grateful to the University of Minnesota Population Center for making these data available.

3. These are the numbers of metropolitan areas fully contained within the region for which information was available for this study. Metro areas only partially situated within the region, such as St. Louis, Louisville, Cincinnati, Minneapolis-St. Paul, and others were excluded.

4. The other columns in table 3 represent the alternative educational possibilities for 17-year-olds at various points in time. If they had not made it to at least the eleventh grade, they either were enrolled in a lower grade or had dropped out of school. Enrollment in lower grades was relatively high in 1940 but dropped significantly during the postwar era. At the same time, the numbers of successful students increased sharply, especially by 1960. At that time the numbers of 17-year-olds reaching the eleventh grade or higher approached 70 percent in the metropolitan North, a figure that closely approximated the secondary graduation rate. Two decades later it reached as high as 80 percent, a figure that some suggest may have approximated the nation's highest overall secondary graduation rate ever (Goldin and Katz 2008; Heckman and La-Fontaine 2007; Warren and Halpern-Manners 2007).

5. Individuals were listed in this way by IPUMS to avoid the possibility of identification, an issue of great concern to the Census Bureau. This was fewer than 10 percent of the overall sample in 1940, and fewer than 15 percent in 1980. We conducted a series of tests and were unable to discern any systematic patterns in the excluded population, and their overall characteristics closely match the metropolitan sample as a whole. We therefore believe that limiting the study to youth known to live either in a central city setting or a suburban one does not introduce any applicable bias to the sample.

6. Pooling the data for the two cohorts to test for period effects, along with relevant period interaction effects with other factors, proved computationally infeasible, given the large sample size, the dichotomous outcome measure, and the hierarchical modeling approach. It also posed comparability problems in terms of both the change in metro boundaries and the growth in the number of distinct metro areas from 1940 to 1980.

7. As noted in table 4, poverty status information was unavailable for the 1940 cohort.

8. This undoubtedly reflected vast improvements in black secondary attainment across the period in question. It also mirrors the findings of a number of other studies (Bauman 1993; Hallinan 1988; Portes and Wilson 1976). Of course, overall black attainment remained low, but the results in table 5 indicate that this was due to a range of socioeconomic factors as well as possible locational effects (Duncan 1994). Other factors in the analysis were rather consistent in their association with attainment, reflecting research on this era (Mare 1981). Although the incidence of fatherless households increased dramatically across the period in question, the effect of this variable was practically the same for both cohorts. Similar observations can be made regarding parental occupational status and educational background, at least as reflected in the variables constructed to measure such factors for this study. The Hispanic ethnicity

variable was negative and significant in both years, but the effect was somewhat greater in 1980, undoubtedly reflecting the growing immigrant population in the years following 1965 (Arias 1986).

9. In a separate analysis not shown here, we tested whether the results for model 5 in 1980 would be different if poverty status was excluded from modeling. No significant changes were observed.

10. This odds ratio is based on the exponentiated sum of the interaction effect ($\beta = 0.410$) and the suburb main effect ($\beta = -0.014$): $e^{(0.410-0.014)} = 1.487$. All other significant interaction terms can be interpreted in the same fashion.

11. On this point, see Rury and Mirel (1997).

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