

# The Role of Suburbanization in Metropolitan Segregation After 1940

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**ABSTRACT** The three decades from 1940 through 1970 mark a turning point in the spatial scale of Black–White residential segregation in the United States compared with earlier years. We decompose metropolitan segregation into three components: segregation within the city, within the suburbs, and between the city and its suburbs. We then show that extreme levels of segregation were well established in most cities by 1940, and they changed only modestly by 1970. In this period, changes in segregation were greater at the metropolitan scale, driven by racially selective population growth in the suburbs. We also examine major sources of rising segregation, including region, metropolitan total, and Black population sizes, and indicators of redlining in the central cities based on risk maps prepared by the Home Owners Loan Corporation (HOLC) in the late 1930s. In addition to overall regional differences, segregation between the city and suburbs and within suburbia increased more in metropolitan areas with larger Black populations, but this relationship was found only in the North. In contrast to some recent theorizing, there is no association between preparation of an HOLC risk map or the share of city neighborhoods that were redlined and subsequent change in any component of segregation.

**KEYWORDS** Segregation • Suburbanization • Redlining

## Introduction

Residential segregation today operates on a metropolitan scale in the United States, and it is well understood that an important component of segregation is the divide between cities and their surrounding suburbs. This phenomenon was evident in the 1970s, when accelerated suburban growth and population loss in many older central cities signaled the start of the “urban crisis” (Sugrue 1996; see also Beauregard 2006). This restructuring of the metropolis reinforced a political economy perspective on urban development that highlighted the efforts of suburban municipalities to exclude “undesirable” populations and preserve control over local resources (Logan 1976). Farley et al. (1978) emphasized this phenomenon’s racial dimension by pointing to the growing divide between the “chocolate city and vanilla suburbs.” Here we

examine the origins of this divide in the three decades before 1970, and we show that suburbanization was already the main contributor to the segregated metropolis in the 1940–1970 period.

The impact of suburbanization did not go unnoticed at the time. Grodzins (1957:33) discussed the economic and political implications of the “new pattern of segregation” in the urban North that “threatens to transform the cities into slums, largely inhabited by Negroes, ringed about with predominantly white suburbs.” Kain (1968) reported on the racial disparities in suburban growth at a national level between 1940 and 1960, showing that these were associated with declining employment opportunities for African Americans in Chicago and Detroit. Taeuber and Taeuber (1965:55) argued that these changes required “taking the metropolitan area as the unit of analysis, and tracing the differing residential distribution of whites and Negroes among the component parts of the entire area.” Nevertheless, “the nature of available data forces us to ignore” this aspect of segregation and to limit attention mainly to central cities. Similarly, one of the earliest studies of segregation at a metropolitan scale (Van Valey et al. 1977:843) called for researchers to “turn our efforts away from a narrow concentration on the central city to the broader context of the entire metropolitan area.” However, neither they nor most subsequent studies of metropolitan segregation distinguished the city from the suburbs.

Since 1980, most studies of segregation have included both city and suburban areas (Farley and Frey 1994; Logan et al. 2004). More recently, researchers have turned to distinguishing these component parts, as urged by Taeuber and Taeuber (1965). As Parisi et al. (2011:830) pointed out, segregation since 1980 “has declined at some levels of geography (e.g., neighborhood racial segregation) but may have increased at larger spatial scales” (which they referred to as “macro-segregation”). Their spatial decomposition of segregation in 2000 showed that White–Black segregation within suburbia and the disparity between central cities and their suburbs accounted for nearly half of the total macro-segregation at a national level.

In this study, we carry out a similar decomposition of metropolitan segregation in 1940 and 1970 into micro-segregation (i.e., between neighborhoods in the central city and suburbs) and macro-segregation (i.e., between the city and its surrounding suburbs). We show that segregation within central cities changed modestly in these years, echoing previous findings that—having risen between 1940 and 1950 (Cowgill 1956; Taeuber and Taeuber 1965)—segregation was actually lower in 1970 than in 1940 in Northern cities, while barely changing in the South (Sørensen et al. 1975). But segregation between neighborhoods across the whole metropolitan area increased substantially in this period, especially as a result of the deepening disparity between cities and suburbs. These results extend to a longer time frame the findings by Fischer and Hout (2006), who showed that in the decade from 1960 to 1970, segregation within central cities declined while the city–suburb disparity was increasing.

This study also makes the more general point that segregation can take different spatial forms at different times that may have different sources and consequences for residents. We now know that segregation was already very high in cities in both the North and the South by the beginning of the twentieth century (Grigoryeva and Ruef 2015; Logan and Martinez 2018; Logan et al. 2015), but at that time it was organized at a fine geographic scale (especially by placing Blacks in alleys and side streets). By 1940, segregation had reached a very high level even at the scale of whole city wards

(Cutler et al. 1999). We show here that segregation remained very high between 1940 and 1970 in cities, but the deepening divide between cities and exclusionary suburbs became the main driver of increasing segregation.

This restructuring matters because many place-based resources are unequal between cities and suburbs. Separating people between declining cities and more advantaged suburbs can be more consequential for racial inequality than neighborhood divisions within a single city. This impact is at the heart of long-standing critiques of federal housing policy after the 1930s that subsidized racially restrictive suburban subdivisions while discouraging mortgage lending in cities (Gotham 2002; Jackson 1980; Long and Johnson 1947).

We also take initial steps toward examining the sources of change in segregation in this period. Here we draw on two theoretical traditions. The first emphasizes regional differences, especially between the South and North, and White reactions in both regions to the Great Migration and Black population growth. The second targets government-encouraged redlining, which is widely believed to have promoted segregation and whose effects can be studied by analyzing the mortgage risk maps developed by the federal government in the late 1930s. This study is the first to examine these theories for a comprehensive national sample of metropolitan areas in the 1940–1970 period, when segregation was rising to its all-time peak level.

## Regional Differences and Minority Group Threat

A major focus of past research has been on regional differences in segregation patterns. The urban South was distinctive in the period we study in both the share of African Americans in the population (many times larger than elsewhere) and in its Jim Crow regime. Scholars who reported that segregation in Southern cities was lower than in the North attributed this result to the South's strict controls on race relations (Massey and Denton 1993). This hypothesis is not supported by studies of central city segregation in the 1940–1970 period. Cutler et al. (1999:464) found almost no difference for their samples of matched cities in 1940 (.46 in the South, .45 in the Northeast, and .49 in the Midwest). Similarly, Taeuber and Taeuber (1965:44) reported that the average value of the block-level Dissimilarity Index ( $D$ ) in 1940 was 84.9 in Southern cities, compared to 83.2 in the Northeast, 88.4 in the North Central, and 82.7 in the West; it was 85.2 in all regions combined (see also Cowgill 1956). However, up to now there has been no evidence on regional differences in segregation within suburbia or between the city and suburbs in this period.

Another contextual factor that has been given much attention is the size of the Black population, which Blalock (1956) interpreted in terms of minority group threat. His theoretical reasoning is that racial prejudice stems in part from a dominant group's sense that their position is threatened by a subordinate group, and one possible response is to strengthen the spatial boundaries between groups. The plausibility of this hypothesis rests partly on a coincidence of timing. That is, "the racial group threat hypothesis is consistent with the finding that Black–White segregation increased in northern metropolitan areas in the first decades of the twentieth century as the Northern Black population swelled" (Iceland and Sharp 2013:666). Group threat is the core notion in Massey and Denton's (1993) account of rising segregation

at this time. In the North, “as the size of the urban black population rose steadily after 1900, white racial views hardened and the relatively fluid and open period of race relation in the North drew to a close” (Massey and Denton 1993:30). Even in the South, where many cities had Black population shares in the range of 30–40% after the Civil War, “whites similarly became alarmed at the influx of black migrants” (Massey and Denton 1993:41).

In the period that we study, the most relevant published evidence regarding group threat is the analysis of central city block data by Taeuber and Taeuber (1965). In both decades, they found that White population growth was *positively* related to increases in segregation, but the association with non-White population growth was *negative*. In a multivariate model including several other city characteristics, neither White nor non-White growth had significant effects in the 1940–1950 decade. In the 1950–1960 decade, the strongest predictor of changing segregation was the *negative* effect of Black population growth, a result that they note “is contrary to that usually assumed” (Taeuber and Taeuber 1965:77).

We emphasize that the research cited here is limited to segregation in central cities. The current study is the first to examine whether regional differences or Black population size influenced changes in overall metropolitan segregation, segregation in suburbia, or disparities between cities and suburbs. We will show that regional differences were diminishing in this period, but that Black population size—while unrelated to changes in central city segregation—influenced changes in city–suburb disparities and segregation within suburbia in Northern metropolitan areas.

## Institutional Drivers of Segregation and Suburbanization

Increasing attention is now being given to nonmarket factors that limit locational options for minority groups while expanding housing choices for Whites, especially legal support for exclusionary deed restrictions and federal encouragement of private market redlining in mortgage lending (Massey and Denton 1993; Rothstein 2017). The current study relies on information about redlining in the form of mortgage risk maps developed by the Home Owners Loan Corporation (HOLC) in the late 1930s. These redlining maps are pointed to by many scholars as evidence of federal intervention in the housing market to encourage racial discrimination. A better source would be the actual lending patterns of the Federal Housing Administration (FHA), which have been studied in a few specific cities by Xu (2021) and Fishback et al. (2021), or private lending data such as Hillier (2003) assembled for Philadelphia. Another limitation is that the HOLC data refer only to one point in time, and we have no information on how neighborhood risk assessments may have changed between 1940 and 1970. In the absence of longitudinal, nationwide data about mortgage lending and restrictive covenants, however, the HOLC maps provide a starting point for study.

Redlining could affect metropolitan segregation in two ways. First, if Black neighborhoods in central cities were especially targeted as “high risk,” the result would be to deprive them of credit, obstruct the upgrading of older housing, and limit new home construction for owner occupancy. The risk maps could reinforce private lending decisions that motivated White residents to desert disfavored neighborhoods in

favor of newer areas from which African Americans were excluded. While losing Whites, these neighborhoods would draw in Black households who were excluded from other areas. Redlining is the most common practice cited by social scientists to confirm the effect of public policy on creation of central city Black ghettos and exacerbating segregation in central cities (Dreier et al. 2005; Hirsch 1983; Massey and Denton 1993; Rothstein 2017; Sugrue 1996).

Second, redlining in cities had its counterpart in preferential treatment of mortgage applications in the suburbs. This is the factor emphasized by Jackson (1980), who first drew attention to the HOLC maps. In his view, federal housing policy implicitly destined inner-city neighborhoods to be the exclusive locale of growing minority populations, who paid artificially high rents for substandard housing. At the same time, federal policy encouraged racially restrictive suburban development. Hence, its main impact might not be on segregation *within the city*, but rather on *city-suburb racial disparities*.

One recent study has examined the relationship between HOLC mapping and segregation in cities, including both central cities and suburban municipalities. Faber (2020) reported that cities mapped by HOLC experienced more persistent segregation in subsequent decades than comparable cities that were not mapped. Yet he found no evidence that the actual distribution of grades assigned by HOLC in a city was related to subsequent changes in segregation. In other words, the content of the mapping did not matter, but “the institutional process of just being appraised is all that matters” (Faber 2020:8). If no maps had been prepared for any city, “average white–black dissimilarity among appraised cities would have peaked at .60 in 1960, rather than .68” (Faber 2020:24). Our analysis of redlining maps tests whether Faber’s conclusion can be replicated for central cities, suburbs, or racial segregation between cities and their suburbs in the three decades after HOLC maps were prepared. We compare metropolitan areas whose central cities were mapped and those whose central cities were not mapped, and we also measure the share of neighborhoods that were redlined in cities mapped by HOLC, asking whether segregation within the city or between city and suburbs was greater when a larger share of city neighborhoods was labeled as risky.

## Research Design

### Population Data Sources

We rely on newly available population data to carry out this study. Population data for 1940 are from the Minnesota Population Center’s 100% microdata based on data from [Ancestry.com](https://www.ancestry.com) (Ruggles et al. 2021), which provide geographic identifiers for each household’s state, county, city, and enumeration district (ED), including all EDs in every county. In 1940, the census tabulated data for blocks (a smaller unit) and census tracts (a slightly larger area) for many large cities, but block data are not available in digital form and blocks and census tracts were defined only for larger central cities, excluding most urbanized areas outside of central cities. Hence the ED is the smallest 1940 neighborhood unit currently available for analyses of segregation at a metropolitan scale.

We aggregated population data for 1970 to EDs from the original, confidential population samples in a Federal Statistical Research Data Center (FSRDC). These ED-level counts were approved for public disclosure by the Census Bureau, along with their county and city/place location.

## Race and Ethnicity

In past research, racial groups in 1940 and 1970 have most often been categorized as White, Black, and “other race.” The “White” category poses a problem in urbanized areas with large Hispanic populations. We refine the White category to exclude Hispanics. This is a substantial correction, because Hispanics were a large share of the total enumerated White population in many large Western and Southwestern metropolitan areas even in 1940, larger than the Black population and above 10% of Whites in places like San Antonio, Anaheim, Austin, Tucson, and Tampa. By 1970, there was a wider range of metropolitan areas where the Hispanic share of the White population was above 10%, including more areas with large Black populations: Los Angeles–Long Beach, Jersey City, and New York. Because Black residents are generally less segregated from Hispanics than from non-Hispanic Whites, segregation measures using the White–Black dichotomy are biased downward, compared to what the values would be if Hispanics were removed from the White category (Sørensen et al. 1975; Taeuber and Taeuber 1958:64–68).

We estimated the non-Hispanic White population at the neighborhood level in the following ways. Using the 100% 1940 microdata, we adopted the coding of Hispanics developed by Gratton and Gutmann (2000), which considered several indicators such as whether they, their spouse, or parents were born in Latin America and whether they spoke Spanish at home during childhood. A non-Hispanic White, then, is a person of White race who is not Hispanic by these indicators. For 1970, we relied on the confidential, 20% sample data in the FSRDC to identify Hispanics as persons who spoke Spanish in their household during childhood. This measure identified Hispanics more comprehensively than the alternative of having been born in Latin America, the other available indicator. We used person weights to create ED-level population estimates. The non-Hispanic White count in an ED is the full-sample count of Whites less the weighted sample count of White Hispanics. In this way, we are able to measure segregation between non-Hispanic Whites and African Americans in both 1940 and 1970, as is done in contemporary studies.

## The Sample of Metropolitan Areas

Studies of segregation as early as 1940 were limited to the largest cities for which the census provided block or tract data. New 1940 microdata allow us to expand the geographic scope of analysis to whole metropolitan areas. We apply 1970 metropolitan definitions here (1) because the updated list reflects the urban development process through 1970 and (2) because areas are defined mainly by whole counties and central cities, so they can be adapted to the available 1940 census data. A special difficulty arises in dealing with New England metropolitan areas, which in 1970 were defined



by towns rather than counties, and sometimes a single county was divided into two different areas. We use the solution put forward by Bogue (1953), who combined New England metropolitan areas into whole-county designations.<sup>1</sup>

We begin with a potential sample of 219 cases for analysis, then reduce the sample in two ways. First, we omit metropolitan areas with fewer than 500 Black residents in 1940 (leaving a sample of 192 metropolitan areas), because segregation measures are unreliable when the minority population is very small. The results shown in Tables 1–3 are from this sample of 192 metropolitan areas. Second, in the multivariate analyses, we omit Cincinnati and 39 unmapped metropolitan areas whose central city had less than 40,000 residents in 1940. This omission is necessary because we wish to estimate the relationship between HOLC mortgage risk mapping and segregation, and HOLC intentionally mapped no central cities smaller than 40,000. Of the remaining 152 metropolitan areas, 136 were mapped and 16 were not mapped for unknown reasons, including several with very large central cities (Washington, D.C., Worcester, and Fall River, all more than 200,000 population), several in the range of 70,000 to 140,000, and others in the 40,000–70,000 range. By including controls in the multivariate analysis for some likely predictors of being mapped (population size, Black population size, and region), these unmapped cases allow us to test whether unmapped metropolitan areas had different segregation trajectories through 1970 than the comparable mapped metropolitan areas, testing Faber’s conclusion that mapping itself mattered to future segregation trends.

We also need a consistent sample of central cities to assess changes in macro-segregation and to analyze segregation trends within the city and suburbs separately. We accept the census identification of central cities in 1970 with the addition of three cities that had previously been recognized as central cities in 1940: Niagara Falls, New York; Council Bluffs, Iowa; and Elizabeth, New Jersey. The remainder of the metropolitan territory is classified as “suburban.”

### Metropolitan Areas With Redlining Maps

We rely on the Mapping Inequality project at the University of Richmond (<https://dsl.richmond.edu/panorama/redlining>) for HOLC risk maps. These are shapefiles that outline the boundaries of HOLC-designated neighborhoods and indicate their assigned risk grade (A, B, C, or D). In the grading schema, D-graded neighborhoods were assessed as the riskiest for mortgage lending, and A grades represent the least risky. In most cases, these maps include some suburban neighborhoods, while leaving out most suburban territory. An exceptional case is Cincinnati, where the only mapped area is in Covington, Kentucky. Because no central city neighborhood was mapped, we are unable to use this case to assess the effect of central city redlining on segregation trends, and we omit it from the multivariate analysis. However, Cincinnati is included in the descriptive tables and figures.

<sup>1</sup> The resulting New England metropolitan areas are Boston–Lowell–Lawrence, Bridgeport–Stamford–Norwalk, Brockton, Fall River–New Bedford, Hartford–New Britain–Bristol, Manchester, New Haven–Waterbury, Pittsfield, Portland, Providence, Springfield–Holyoke, and Worcester.

## Measures of Segregation

A key feature of this study is our effort to highlight both the high levels of segregation found in cities and the contribution of suburban development to segregation at a metropolitan scale. Here we follow the lead of researchers (Lichter et al. 2015; Parisi et al. 2011) who emphasized a distinction between micro-level segregation (uneven distribution across census tracts or blocks) and macro-segregation (the disparity between areas at larger scales).

Our main measure is the Theil Index ( $H$ ), an entropy-based index that reflects unevenness of the distribution of racial groups across neighborhoods. It compares the diversity of the metropolitan area as a whole to the diversity of individual neighborhoods, with 1 representing maximum segregation and 0 reflecting perfect integration.  $H$  is the standard measure in studies that seek to decompose total segregation into its component parts. First, one calculates entropy scores ( $E$ ), which represent the overall diversity of a given area, and are defined as

$$E = - \sum_{r=1}^n \pi_r \log(\pi_r),$$

where  $\pi_r$  is the proportion of racial group  $r$  in the area.  $H$  measures how closely the  $E$  of the subgeographies aligns with the  $E$  of the largest geography:

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

where  $T$  and  $t_i$  represent the total population of the largest geography and the subgeography, respectively.  $E$  and  $E_i$  similarly represent the entropy scores for the largest geography and the subgeography. All of our indices represent two-group segregation between Blacks and non-Hispanic Whites.

We report similar estimates for the Dissimilarity Index ( $D$ ) in online appendix B. Like  $H$ ,  $D$  is a measure of the unevenness of the distribution of groups across neighborhoods. It is the measure used in most past studies of segregation. Values of  $D$  are higher than values of  $H$  for the same area, but  $D$  and  $H$  are highly correlated. For example, in 1940 the correlation between  $D$  and  $H$  was .74 at the metropolitan scale and .81 for central cities.

We separately calculate segregation indices across (1) all EDs for the total metropolitan area, (2) all EDs within central cities, (3) all EDs within the suburbs, and (4) between the cities and suburbs. (In the latter case, we treat the metropolitan area as having only two subareas, city and suburb.) In addition, we conduct a decomposition to determine the relative contribution of each component of segregation to the total metropolitan segregation ( $H_{total}$ ). Following Reardon et al. (2000), the decomposition is

$$H_{total} = H_{between} + \frac{T_{cc}E_{cc}}{TE} H_{cc} + \frac{T_{sub}E_{sub}}{TE} H_{sub}.$$

The first term represents the share of the total segregation attributable to segregation *between* the cities and suburbs (which we will refer to as macro-segregation), and the second and third terms reflect the share that comes from segregation *within* the cities ( $cc$ ) and the suburbs ( $sub$ ), respectively. By dividing each term separately by  $H_{total}$ , we can assess the proportion of total segregation that is attributable to each component.



**Table 1** Descriptive statistics for metropolitan areas, 1940

		Metropolitan Population	Central City Population	Metropolitan Percentage Black	Percentage Mapped	Percentage Graded D (central city)
North	Mean	536,717	329,465	3.0	81.8	25.1
	SD	1,048,916	817,674	2.9		10.6
	<i>n</i>	110	110	110	110	90
South	Mean	188,524	110,006	23.6	57.3	27.6
	SD	196,200	140,762	14.6		8.8
	<i>n</i>	82	82	82	82	47
Total	Mean	388,010	235,738	11.8	71.4	26
	SD	820,988	633,878	14.1		10.1
	<i>N</i>	192	192	192	192	137

**Analytic Methods**

The analysis proceeds in steps that reflect our effort to move segregation research toward a metropolitan scale. In each step the primary axis of comparison is between Southern and non-Southern cities.<sup>2</sup> Given their strong sociopolitical similarities during this period, we simply refer to these latter cities as “Northern.” In models not shown here, we found no different results for Northeastern, Midwestern, and Western metropolitan areas. The situation in the urban South was distinctive throughout the late nineteenth and twentieth centuries in multiple ways, in addition to the prevailing Jim Crow regime of segregation. Table 1 shows that Southern cities on average had dramatically larger shares of African American residents (24%) than Northern cities (3%), with almost no overlap in their distributions. There are also substantial differences in total city and metropolitan population size in 1940, with Northern areas being more than twice as large. Related to this size difference, Northern cities were more likely to have been mapped by HOLC (82% vs. 57%), but if they were mapped, the distribution of neighborhood ratings was quite similar in cities of both regions. On average, 25% of neighborhood areas in Northern cities were rated in the lowest category (D), compared with 28% in Southern cities.

The multivariate ordinary least-squares models include a pooled model for all areas combined, as well as separate models for North and South. Black population size is included only in the separate regional models because of the extreme collinearity between it and region. Metropolitan population size in 1940 is transformed to its natural logarithm to reduce the impact of the outsized Northern areas such as New York and Philadelphia, and metropolitan Black population is also introduced in log form. Redlining is operationalized in two ways: as a dummy variable representing the

<sup>2</sup> We use the standard census definitions of regions. The South (35% of metropolitan areas in the multivariate sample) includes Alabama, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Virginia, West Virginia, and Texas. Metropolitan areas in other states in the Northeast (23%), Midwest (32%), and West (10%) are treated here as “North.”

16 unmapped metros, and as the percentage of city neighborhoods in mapped metros that were graded D (e.g., “redlined”). We estimate the effect of mapping in models using all 152 metropolitan areas, and the effect of the redlined share in models using only the 136 mapped metropolitan areas.

The outcome variables for these models are the difference between segregation in 1940 and in 1970 (1970 less 1940). Segregation is modeled for four different spatial scales: total metropolitan segregation, segregation in the central city, segregation in the suburban periphery, and macro-segregation (segregation between the city and its suburbs).

## Findings

### Trajectories of Segregation, 1940–1970

We begin by reporting the average levels of segregation in 1940 and 1970 across all 192 metropolitan regions. [Table 2](#) presents mean values of  $H$  weighted by the number of African American residents in the given geography in 1940. This weighted mean represents the level of segregation experienced by the average Black resident in a U.S. metropolitan area (in the region as a whole, in cities or suburbs, or between city and suburb). Comparable and similar results using the Dissimilarity Index are presented in online appendix Table B1. [Table 2](#) distinguishes between areas in the North ( $n = 110$ ) and the South ( $n = 82$ ). It also reports standard deviations, and these measures are important in showing that there was a general convergence in segregation patterns among metropolitan areas.

At the scale of whole metropolitan regions, segregation was already quite high ( $H = .53$ ) in 1940, and it increased to .70 by 1970. This increase occurred mainly in the South, which began at a much lower level than the North in 1940 (.46 vs. .64), but reached near-parity with the North by 1970. One consequence of the rising average level in the South was a convergence to a similarly high level of segregation across all metropolitan areas, as reflected in the declining standard deviation of  $H$ . There was a comparable reduction in variation also within each region. Recall that Van Valey et al. (1977) reported almost no change (actually a small decline) in average metropolitan segregation between 1960 and 1970. By going further back in time to 1940, we can see that segregation was increasing substantially, especially in the South.

Central city segregation had also reached a very high level nationally by 1940 ( $H = .61$ ). It had reached its peak in the North, but it continued increasing substantially in the South. By 1970, Southern central cities were more segregated than Northern ones. Again, we note that the variation across cities in both regions declined in this period.

While the national average increase in central city segregation was modest, segregation in their suburban peripheries—which was moderate in 1940—was increasing more. It rose from .31 in 1940 to .55 in 1970. Hence, one source of the increase in overall metropolitan segregation was the increase in suburbia. This increase occurred particularly in the South, where suburban segregation jumped by 27 points between 1940 and 1970. The North had much higher suburban segregation already in 1940,

**Table 2** Weighted means of segregation indices (*H*) by region, 1940–1970

	North		South		Total	
	1940	1970	1940	1970	1940	1970
Total	.64 (.14)	.71 (.10)	.46 (.12)	.70 (.09)	.53 (.16)	.70 (.10)
Central City	.68 (.15)	.68 (.11)	.56 (.14)	.73 (.09)	.61 (.16)	.70 (.11)
Suburbs	.40 (.12)	.58 (.14)	.24 (.08)	.51 (.13)	.31 (.13)	.55 (.14)
Macro-segregation	.03 (.02)	.14 (.07)	.02 (.02)	.10 (.11)	.02 (.02)	.13 (.09)

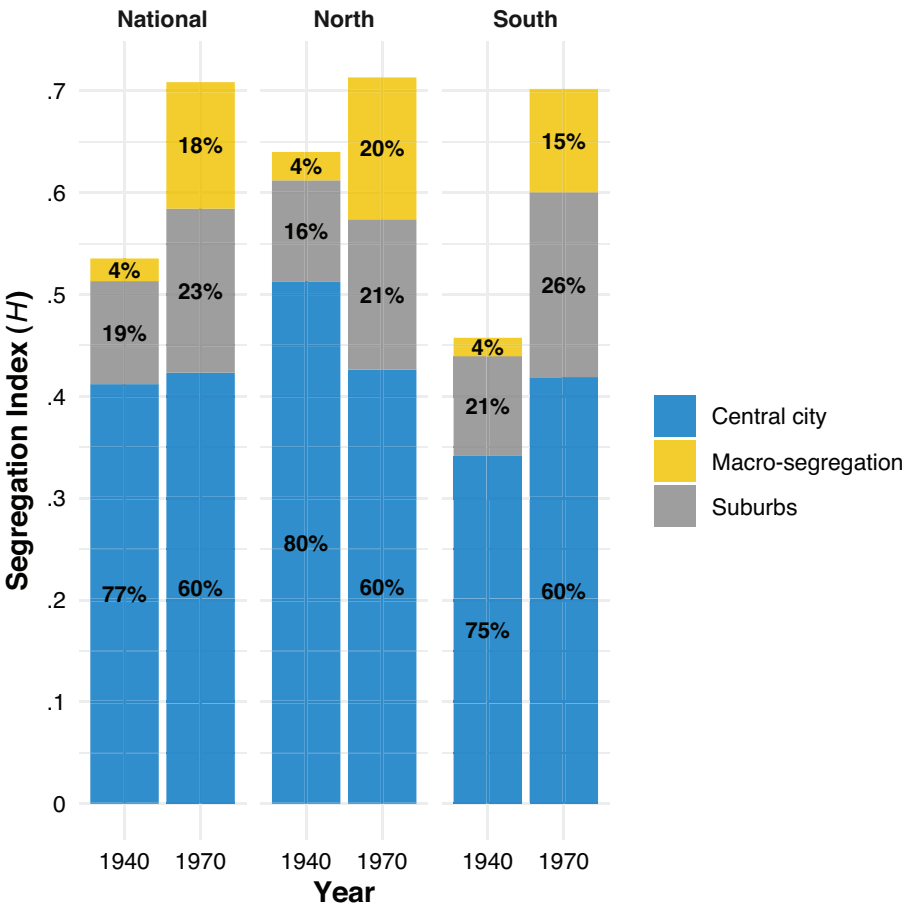
*Note:* Standard deviations are shown in parentheses.

but its average value still increased by 18 points. Although suburban segregation levels in the North and South were converging, there was a slight increase in the standard deviation of *H* within both regions.

One other contributor to change in metropolitan segregation was a growing racial disparity between cities and suburbs in both regions of the country—the “chocolate city and vanilla suburbs” phenomenon. The national average of *H* between city and suburb rose from only .02 to .13 in this period of rapid suburbanization. The 1940 average was similar in the North (*H* = .03) and South (*H* = .02), but the gap widened by 1970, reaching .14 in the North and .10 in the South. This difference reflects the fact that Blacks were not so thoroughly excluded from suburbs in the South as in the North, while the White population was still growing in Southern cities (as shown in the following).

In short, segregation had stabilized in central cities in the North. Meanwhile, suburban segregation was rapidly growing, and there was a very large increase in the city–suburb divide. In contrast, segregation increased considerably in the South among neighborhoods within the central city and in the suburbs, and at the same time macro-segregation was also growing. The net result was a larger metropolitan-level increase in the South.

Using a standard decomposition approach, we can calculate how much each component of segregation contributed to the overall level. Figure 1 illustrates the total segregation in 1940 and 1970 (the height of the bar) and the portion of *H* attributable to each spatial component (the relative size of the component within the bar). At a national level (the first two bars), there was little change in central city segregation and so its share of the total dropped from 77% to 60% as total metropolitan segregation increased. Macro-segregation’s share of the total increased from 4% to 18%. In the North (the middle two bars), the main contributor to metropolitan segregation in 1940 was within the central cities (80%), a share that dropped to 60% by 1970. Again, the main increase was in macro-segregation (up from 4% to 20% of the total). The direction of changes in relative contribution was similar in the South (the last two bars), though with a smaller decline in the central city share and smaller increase in the contribution of macro-segregation.



**Fig. 1** Total values of metropolitan segregation ( $H$ ) and the decomposed shares attributable to macro-segregation and neighborhood segregation within central cities and within suburbs. Results are reported separately for the full metropolitan sample ( $N=192$ ), the North ( $n=110$ ), and the South ( $n=82$ ). Mean values are weighted by the metropolitan Black population in a given year.

**Population Shifts Resulting in Rising City–Suburb Segregation**

These results underline the importance of macro-segregation between city and suburb. The growing importance of suburbanization to metropolitan segregation results from two aspects of population shifts in the metropolis: (1) the rapid growth of the suburban population in the face of the relatively stagnant central city population and (2) the racially selective nature of changes in each zone. [Table 3](#) summarizes these trends by aggregating the White and Black population counts in cities and suburbs across all metropolitan areas to show the overall flows of population.

The table shows some well-known features of urban change in this period. First, summing across all 192 metropolitan areas in our sample, the total city population increased by about a third from 45.3 million to 59.2 million. At the same time, the total suburban population more than doubled from 29.2 million to 73.3 million.

**Table 3** Total population of central cities and suburbs, by region, 1940–1970

	North ( <i>n</i> = 110)		South ( <i>n</i> = 82)		Total ( <i>N</i> = 192)	
	1940	1970	1940	1970	1940	1970
Central Cities						
Total	36,241,124	41,848,198	9,020,487	17,335,293	45,261,611	59,183,491
White	33,424,836	30,410,084	6,459,571	11,217,191	39,884,407	41,627,275
Black	2,112,386	8,144,785	2,237,982	4,782,205	4,350,368	12,926,990
Suburbs						
Total	22,797,799	56,423,355	6,438,461	16,901,985	29,236,260	73,325,340
White	21,899,928	52,536,010	4,994,451	14,486,992	26,894,379	67,023,002
Black	484,664	1,851,321	1,253,776	1,796,493	1,738,440	3,647,814

Between 1940 and 1970, the composition of metropolitan areas shifted from most people living in central cities to most people living in suburbs. In the North, central city populations increased modestly, while the vast majority of the population growth was in the suburbs. In the South, central city and suburban populations grew more in parallel.

We are mainly interested in the changes by race. In Northern central cities, the White population actually declined while the Northern suburbs experienced a dramatic gain of nearly 31 million Whites. At the same time, the number of central city Black residents grew by a factor of nearly 4. The Black suburban population in the North also increased at a very rapid rate, but the absolute volume of Black growth in cities (increasing by more than 6 million) was much greater than in the suburbs (1.4 million). This very large disparity in the location of growth by Whites and Blacks is summarized in the increasing city–suburb segregation score.

Urban areas in the South followed a somewhat different trajectory. Southern cities were experiencing both White and Black population growth in this period, so the balance between these groups in cities was not changing as dramatically as in the North. Also, although White suburban growth greatly outpaced Black suburbanization in the South, Southern suburbs were still averaging 12.4% Black in 1970, a much higher share than in the North. Hence although city–suburb segregation was increasing in this period in the South, it increased less and remained at a lower level than in the North.

A concern in interpreting these data is that many cities in this period were growing partly by annexation of adjacent suburbs. Researchers in the 1940s and 1950s (e.g., Bogue 1953) were careful to measure changes within constant city boundaries, noticing that the observed population counts for cities could be affected by including people who lived within the newly annexed areas. We can quantify the effect of annexation on city–suburb racial disparity for a subsample of 64 larger metropolitan areas for which GIS maps of the cities in 1940 can be overlaid on a 1970 city map. We document the result in more detail in online appendix A. In general, accounting for annexation does not change the direction of changes in population or segregation trends, but it does affect the magnitude. The one exception is the central city White population in the South. Without accounting for annexation, this population seems to increase, while using consistent geographic boundaries shows a decrease. This

suggests that the areas in the South that were annexed were inner-ring suburbs that were predominantly White. Because accounting for annexation does not change the directions of segregation trends, we proceed in the remainder of the analysis with our subsample of 152 metropolitan areas. Future research with more complete GIS mapped data should replicate this analysis with controls for annexation.

## Predictors of Segregation

Plots of the average values of segregation in 1940 against those in 1970 show much variability in both the initial levels of segregation and in the changes over time (not shown). This variation offers an opportunity to begin to assess the predictors of segregation. As a first step, we estimate the change between 1940 and 1970 for all four geographies analyzed above. [Table 4](#) predicts change in  $H$  in a model where redlining is operationalized (following Faber 2020) by whether the metropolitan area was mapped by HOLC. [Table 5](#) predicts change in  $H$  for the smaller set of 136 mapped metropolitan areas, and it reports models that include the share of city neighborhoods that were redlined.

In these analyses, every case is counted equally, with no weighting. One predictor is the North–South dichotomy. Because Northern urban areas were larger and size may be associated with greater segregation, we include the natural logarithm of 1940 metropolitan population as a second predictor. Additionally, in each of the separate models for North and South, we include a measure of the total Black population (logged) in 1940 to test whether urban areas with a larger Black presence had higher levels of segregation or greater increases over time.<sup>3</sup> This variable cannot be included in the pooled model because there is almost no overlap in Black population size between Northern and Southern cases. There are many other area characteristics that could be associated with segregation. We intend these models as a starting point for understanding relationships with a few theoretically key variables.

We include the most commonly studied predictors: region, metropolitan size, and Black population size. The pooled models in [Tables 4](#) and [5](#) (columns 1–4) show that metropolitan areas in the South were likely to have greater increases in segregation in the city, total metropolitan area, and suburbs. In contrast, change in macro-segregation was smaller in the South. These results are consistent with the descriptive findings in [Table 2](#).

Associations with population size are reported in both the pooled and the region-specific models. These are consistent between [Tables 4](#) and [5](#), though with some variation in significance level. In the pooled national models, larger metropolitan size is associated with smaller increases in segregation in the city and the total metropolitan area. One reason for this relationship, we believe, is that larger metropolitan areas already had higher levels of segregation in 1940, and to some extent the smaller areas converged toward their level by 1970. The opposite relationship is found with

<sup>3</sup> Black presence as an indicator of “minority threat” could be operationalized in several ways. We present results here for the Black population total. We replicated these models with two alternatives: the share of the population that is Black and change in Black population between 1940 and 1970. We found no more consistent results with these other measures.



Table 4 Ordinary least-squares models predicting change in the Theil Index (*H*), pooled and by region: Full sample

	Pooled				North				South			
	Total	Central City	Suburbs	Macro-segregation	Total	Central City	Suburbs	Macro-segregation	Total	Central City	Suburbs	Macro-segregation
South	0.078*** (0.016)	0.058*** (0.018)	0.135*** (0.021)	-0.022* (0.011)	-0.034* (0.013)	-0.038** (0.014)	-0.054** (0.017)	0.006 (0.009)	-0.038 (0.026)	-0.074* (0.031)	-0.031 (0.034)	0.056*** (0.015)
Population (ln)	-0.024** (0.008)	-0.044*** (0.009)	0.001 (0.011)	0.034*** (0.006)	0.005 (0.008)	-0.004 (0.009)	0.046*** (0.011)	0.018** (0.006)	0.024 (0.016)	0.024 (0.019)	0.035 (0.021)	0.005 (0.009)
Black Population (ln)												
Unmapped	-0.008 (0.024)	-0.011 (0.027)	0.006 (0.032)	-0.008 (0.016)	-0.051 (0.028)	-0.075* (0.029)	0.005 (0.036)	-0.019 (0.020)	0.082 (0.045)	0.108* (0.053)	0.059 (0.058)	0.028 (0.027)
Constant	0.430*** (0.105)	0.644*** (0.118)	0.089 (0.140)	-0.349*** (0.071)	0.512*** (0.118)	0.617*** (0.125)	0.394* (0.155)	-0.145 (0.085)	0.413 (0.251)	0.810*** (0.296)	0.239 (0.321)	-0.691*** (0.147)
<i>n</i>	152	152	152	152	99	99	99	99	53	53	53	53
<i>R</i> <sup>2</sup>	.219	.223	.222	.256	.128	.229	.156	.256	.098	.172	.065	.352

Notes: Models used a dichotomous indicator for mapped status. Standard errors are shown in parentheses.

\**p* < .05; \*\**p* < .01; \*\*\**p* < .001

Table 5 Ordinary least-squares models predicting change in the Theil Index (*H*), pooled and by region: Mapped metros only

	Pooled				North				South			
	Total	Central City	Suburbs	Macro-segregation	Total	Central City	Suburbs	Macro-segregation	Total	Central City	Suburbs	Macro-segregation
South	0.067*** (0.017)	0.043* (0.018)	0.129*** (0.023)	−0.028* (0.011)	−0.020 (0.014)	−0.028 (0.015)	−0.055** (0.019)	0.009 (0.010)	−0.040 (0.029)	−0.065 (0.033)	−0.042 (0.034)	0.045** (0.015)
Population (ln)	−0.021* (0.008)	−0.039*** (0.009)	0.007 (0.012)	0.031*** (0.006)	−0.003 (0.009)	−0.008 (0.010)	0.048*** (0.013)	0.016* (0.007)	0.036 (0.019)	0.026 (0.022)	0.073** (0.023)	0.000 (0.010)
Black Population (ln)												
% Redlined	−0.014 (0.076)	−0.029 (0.082)	0.094 (0.106)	0.016 (0.050)	0.002 (0.081)	−0.004 (0.085)	0.015 (0.112)	−0.048 (0.061)	−0.031 (0.179)	−0.053 (0.203)	−0.019 (0.220)	0.117 (0.091)
Constant	0.393*** (0.111)	0.592*** (0.120)	−0.010 (0.153)	−0.308*** (0.073)	0.408** (0.128)	0.526*** (0.134)	0.383* (0.177)	−0.152 (0.096)	0.317 (0.300)	0.681 (0.339)	−0.015 (0.349)	−0.539*** (0.152)
<i>n</i>	136	136	136	136	89	89	89	89	47	47	47	47
<i>R</i> <sup>2</sup>	.176	.185	.207	.259	.091	.192	.154	.229	.075	.081	.212	.256

Note: Standard errors are shown in parentheses.

\**p* < .05; \*\**p* < .01; \*\*\**p* < .001

macro-segregation, which increased more in larger metropolitan areas. We suspect that here size represents the effect of suburbanization in metropolitan areas that were generally not only larger but also older and with more fully developed suburban rings. There are some differences in the models for North and South that we cannot interpret.

According to the minority threat model, larger Black populations are expected to be associated with greater segregation. As noted earlier, we test this hypothesis only in the region-specific models because of the extreme difference in racial composition between regions. Results are mixed. Because this theory was developed at a time when segregation was perceived mainly as a central city phenomenon, one might have expected the clearest evidence to be for changing city segregation. However, there is no significant coefficient for city segregation or for total metropolitan segregation in either the North or the South. On the contrary, some positive effects are found for suburban segregation and for macro-segregation, but only in the North. These results contradict the minority threat hypothesis for the central cities where it was most expected. However, they indicate a need for further research on how Black population size may have been a motivator of White flight and for exclusion of Blacks from suburbs in the North.

The remaining predictors are intended to reflect the possible causal effect of HOLC risk mapping in the late 1930s on subsequent changes in segregation. Here the results are heavily against this hypothesis. With only 16 unmapped metropolitan areas, the results for the pooled national models in [Table 4](#) are likely more reliable than those for the region-specific models. Mapping has no effect on change in any component of segregation in the pooled models. The region-specific models show small effects in opposite directions: lower central city segregation for unmapped metropolitan areas in the North, and higher central city segregation for unmapped metropolitan areas in the South. Similar models using the Dissimilarity Index as the dependent variable find no association (see online appendix Table B3). The share of redlined (grade D) neighborhoods in the city has no effect of change in any component of segregation in any model.

## Conclusion

The main purpose of this study is to provide new and more detailed information on the restructuring of the metropolis due to the massive and racially selective process of suburbanization in the three decades after 1940. This phenomenon is the main theme of important works such as Jackson's *Crabgrass Frontier* (1985). With newly available microdata from the censuses conducted in 1940 and 1970, we are able to analyze the trends systematically. This is the first pre-1970 study that measures segregation specifically for non-Hispanic Whites and African Americans, avoiding the ambiguity of the White-non-White or White-Black measures in previous studies. It is also the first to decompose segregation into its central city, suburban, and city-suburb components for this period. Despite these improvements, the analysis has important limitations. First, segregation at the ED level is measured only in 1940 and 1970. With comparable data for 1950 and 1960, it would be possible to study changes more closely, decade by decade. Second, the redlining indicator refers only to the

late 1930s, and our models must assume that lending guidance as it stood in 1940 remained approximately the same throughout the 1940–1970 period.

The key findings highlight the impact of suburbanization and also the differences between metropolitan areas in the North and South. In the North, segregation within the central city was stable or declining in this period, and segregation at a metropolitan scale increased only because of growing divisions between the city and its suburbs and among suburban neighborhoods. In the South, in contrast, segregation was initially lower than in the North, but it increased at every scale—at the metropolitan level, within cities and within suburbia, and at the macro level of city versus suburbs. Most striking and previously unnoticed is the change in relative shares of total segregation that we revealed by spatially decomposing total metropolitan segregation. In both regions, there was a substantial fall in the share contributed by segregation within central cities, matched by large increases in the share contributed by macro-segregation.

This shift reflects the profound reorganization of the metropolitan population that took place in these years, which others have also called attention to. While the total central city population in the North grew only slightly, there was a net loss of more than three million non-Hispanic Whites and an increase of six million African Americans. At the same time, the suburbs grew by nearly 34 million, of which only a little more than one million were African American. In the South, White and Black populations both grew in cities. Cities doubled in size, but suburbs grew faster, and with a disproportionate increase in the White population. We found that much central city growth in the South was due to annexation, with formerly suburban areas adjacent to the city—both White and Black—incorporated within the new borders. Yet the net result was still a shift toward macro-segregation.

Although there was a convergence between North and South toward high levels of segregation, as well as within each region, there was also much variation in the changes in different metropolitan areas. This variation provides a basis for asking what metropolitan characteristics were associated with higher or lower increases. The key predictors based on current theory are minority threat (operationalized as the size of the Black population, while controlling for total population size) and redlining (operationalized using the HOLC maps).

Results for Black population size on central city segregation do not show the negative effect reported by Taeuber and Taeuber (1965) in 1950–1960. All coefficients for the Black population predicting central city segregation (North and South, for  $D$  and  $H$ ) are nonsignificant. In light of the substantial literature on White flight from racially mixed neighborhoods in Northern cities earlier in the century (recently, Shertzer and Walsh 2019), one might have expected this phenomenon to extend into the post-1940 period when Black population growth rose sharply. Instead what we find in the North is that a larger Black population is significantly associated with higher *suburban segregation* and *macro-segregation*. One interpretation considers the growing Black presence in the North in this period, when Whites were leaving the cities, to be a further stimulus for White flight. That is the conclusion of Boustan (2010), who estimated that each Black arrival from the South resulted in an exodus of 2.7 Whites from a Northern city. To the extent that “Black avoidance” became a motive for living in the suburbs, it could also translate into increasing segregation of those African Americans who did live in the suburban ring.

The other major predictor evaluated here is HOLC redlining. If the redlining maps contributed to segregation, as many urbanists have argued, its effect could have been seen in higher segregation increases in metropolitan areas whose central city had been mapped by HOLC (as reported by Faber 2020) or in those where a higher share of city neighborhoods had been graded as most risky (for which Faber found no evidence). Our analyses (with modest levels of explained variance and a paucity of significant regression coefficients) show little support for either of these expectations for total metropolitan segregation or for any of its components. If the redlining maps discouraged mortgage credit in city neighborhoods, it is reasonable to anticipate that this would especially incentivize Whites (who had more housing options) to locate outside the city, hence causing an increase specifically in macro-segregation. We find no evidence of this in predicting  $H$ , and there is a hint of an effect *in the opposite direction* for Northern metropolitan areas in predicting  $D$  (see online appendix Table B4).

Another interpretation is that both redlining (which we measured) and restrictive covenants and other exclusionary devices in the suburbs (which we did not measure) actually did affect segregation, but that their impact was not specific to any particular cities. The declining variation in segregation measures is consistent with this interpretation. We put this proposition forward cautiously. Much more needs to be known to build a case for it. Was private-market redlining already so effective that the impetus given by HOLC (or by FHA in its loan approvals) was inconsequential, or did private lenders develop different standards for appraisals? Was racial prejudice already so entrenched that it did not vary with the size of the Black population? If so, the key lesson from our analyses is that the mechanisms responsible for the restructuring of the metropolis after 1940 were so widespread at a national level that they affected all metropolitan areas, and this global effect overwhelmed whatever variations there were between them. ■

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