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### **Searching for the Advantages of Place: Minority Suburbanization, Immigration, and Suburban Income Segregation**

In *The Truly Disadvantaged*, William Julius Wilson famously argued that the out-migration of lower and middle-class blacks from central-city neighborhoods contributed to the precipitous rise of concentrated poverty in America's inner cities. Perhaps owing to the book's influence, subsequent research on economic segregation has associated suburban growth with a draining of economic and human capital resources from central cities. However, recent evidence suggests that minority suburbanization may have also contributed to economic segregation in the suburban regions into which minorities move. Not only have rates of suburban poverty increased since the early 1990s, but the number of high-poverty neighborhoods in the suburbs has gone up as well (Kneebone and Berube 2013; Jargowsky 2013). These trends raise the question of how the diversification of the suburbs has influenced the distribution of economic resources throughout the suburbs. Considering the importance of neighborhoods in shaping one's economic well-being in adulthood (Chetty and Hendren 2018), this question has significant implications for the inter-generational reproduction of inequality.

In recent years, social scientists have approached the subject of economic segregation through the concept of income segregation (Jargowsky 1996; Reardon and Bischoff 2011; Watson 2009). Scholars typically measure income segregation by calculating differences between neighborhoods' income distributions and aggregating these to the metropolitan level. Researchers generally agree that income segregation increased in U.S. metropolitan areas between 1970 and 2010, and many studies point to suburban growth as a key factor driving this

change (Yang and Jargowsky 2006). However, researchers often assume that suburbanization led to growing economic disparities between the city and the suburbs; rarely do they examine how suburban growth shaped neighborhood income differences within the suburbs (cf. Watson 2009). This is symptomatic of a broader limitation of many neighborhood-level segregation studies, which tend to offer a limited sense of how neighborhoods are spatially organized across the larger geographic regions in which they are situated (Reardon et al. 2008; Sharkey 2014).

This limitation is particularly concerning given the importance of place for understanding the rise of income segregation in the United States. Rising income inequality in the U.S. is often attributed to a transformation in the spatial organization of employment (Nielsen and Alderson 1997). One important feature of this process has been the disappearance of low-income job opportunities in the central cities and the rise of these opportunities in the suburbs (Kasarda 1989). This transition has led some minority residents to move out of central cities in search of job opportunities in the suburbs (Mouw 2000), a process that has increased socioeconomic inequality among suburban households (Jargowsky 2013). Given that the neighborhoods available to these groups are constrained by economic and institutional factors, these migration processes likely have had consequences for suburban economic segregation.

In this study, I evaluate the effects of minority suburbanization and immigrant incorporation on suburban income segregation between 1990 and 2010. To measure income segregation, I decompose estimates of metropolitan income inequality into city and suburban components. I then divide these regional inequality estimates into within and between-neighborhood components. I use Theil coefficients, which differ from other inequality measures in that they can be disaggregated to determine contributions from different categories of observations (Cowell 2011). This allows me to determine the relative impacts of city and

suburban income segregation on total metropolitan inequality. Throughout the paper, I frame my hypotheses and findings in terms of the place stratification model of spatial inequality, which I discuss further in the next section.

### **Status and the Spatial Distribution of Economic Resources**

Sociological theories of how group status is reflected in the spatial the distribution of inequality date back to the Chicago School. Most prominently, Burgess's concentric zone model represents social hierarchies as organized by large regions of the metropolitan area (Park and Burgess 1925). While higher-income whites live in the commuter zones at the suburban fringes of metropolitan areas, lower-income minorities settle in neighborhoods just outside the central business district in the central city. The concentric zone model and other ecological models of this period tend to emphasize structural factors such as land values and labor market access in shaping how social hierarchies are organized across the metropolitan area (Hoyt 1939; Wirth 1925).

Although the concentric zone model has had an enduring influence on how sociologists understand the spatial organization of inequality (Dear 2002), more recent studies of place inequality have moved away from the concentric zone model and its focus on regional (e.g. city-suburb) place disparities. These studies opt instead to examine place-based inequality at local and neighborhood levels within regions of the metropolis. An early exponent of this approach was sociologist John R. Logan, whose research on suburban economic segregation formed the basis of the place stratification model (Logan 1976; Logan 1978). The place stratification model deviates from earlier ecological models by arguing that place inequality occurs at the local level and results from municipal policy and community activities. Logan's model holds that disparities among local places are maintained and reinforced over time by the communities that

inhabit them (Logan and Molotch 1987). Many of the activities through which place stratification occurs function to consolidate resources within higher-status communities and exclude lower status groups from the places occupied by these communities. A result of this is that the migration of lower-status groups may spur the development of between-place inequality in the regions into which these groups migrate (Logan 1978, p. 411).

While the place stratification model was originally created to explain economic segregation, applications of the model usually appear in studies of racial segregation (Logan and Schneider 1984; Massey and Denton 1988; Alba et al. 2000). Scholars often invoke the model as a foil to spatial assimilation theory, which argues that minority suburbanization causes minority groups to integrate geographically and socially with whites (Massey and Denton 1985). Contrary to the expectations of spatial assimilation theory, many suburbanizing minorities, especially blacks, move into neighborhoods with average incomes that are lower than their own (Alba et al. 2000). This pattern has been attributed to mediating factors that filter minorities into lower-income suburban neighborhoods, such discriminatory zoning policies and the tendency of realtors to show different neighborhoods to people of different races (Logan and Alba 1993; Ross and Turner 2005; Rothwell and Massey 2009). Given that whites are less likely to move into neighborhoods with high proportions of black residents, black suburbanization may also affect black-white segregation by influencing the subsequent migration decisions of whites (Ellen 2000). Supporting this hypothesis, Logan et al. (2004) found that suburban regions with lower proportions of black residents tend to have lower levels of black-white segregation.

Although many place stratification studies emphasize the consequences of institutional barriers and white migration for suburban racial segregation, these practices may also shape neighborhood economic disparities. For example, if these factors are more prevalent among

affluent communities and residents, minority suburbanization will lead to the geographic isolation of affluent whites (Fischer 2003). This is supported by evidence that levels of concentrated affluence are higher in regions with higher proportions of black residents, suggesting that rates of white out-migration may vary by socioeconomic status (Dwyer 2010). Furthermore, many exclusionary local policies, including minimum-lot zoning laws, are only viable exclusionary strategies for more affluent white communities. As a result, these laws may have consequences for both race and class segregation (Rothwell and Massey 2009; Rothwell and Massey 2010).

In sum, most research on the effects of minority suburbanization focus on suburban racial segregation. However, the mediating factors identified in these studies may also have consequences for suburban economic segregation. Many policies that exclude minority residents do so by excluding lower income groups. Furthermore, higher-income whites are more likely to have the resources to move out of the neighborhoods to which minority residents migrate.

### **Immigration and Suburban Income Segregation**

Another phenomenon that has important implications for suburban income segregation is the increasing geographic dispersion of immigrants. Before the 1990s, the majority of immigrants to the United States settled in the center-city regions of traditional “gateway” cities, including New York, Chicago, Miami, and Los Angeles. Although these cities continue to attract immigrants today, their foreign-born populations have grown at slower rates than the immigrant populations of several “new destination” metropolitan areas, many of which are in the South and the West (Singer 2014). Furthermore, in both new destination regions and traditional gateways, growing proportions of immigrants are settling in the suburbs rather than migrating to the center cities. The dispersion of immigrants’ settlement patterns is even more prominent

among Hispanic immigrants (Tienda and Fuentes 2014), and some researchers have attributed this to the growth of the service and construction industries in the suburbs (Fischer and Tienda 2006).

As with minority suburbanization, immigrant suburbanization has inspired a large body of research examining how this trend has affected patterns of racial and ethnic segregation (Alba et al. 1999; Iceland and Nelson 2008; Hall and Crowder 2014; Mollenkopf and Pastor 2016; Frey 2018, Ch. 8). While these studies have produced mixed results, many of them indicate that rates of segregation from natives vary by language ability, country of origin, and skin color (Logan et al. 2002; Farrell 2016). Interestingly, Mexican-born immigrants, a group that made up about 63% of the country's Hispanic immigrant population and that was growing at almost twice the rate of other Latino immigrant groups in 2010 (Frey 2018, p. 66), tend to be *more* segregated from non-Hispanic whites in the suburban regions than in the urban regions of metropolitan areas. For many immigrant groups, including Mexicans, segregation from native-born whites appears to be heavily related to immigrants' socioeconomic status. Consistent with the expectations of spatial assimilation theory, Logan et al. (2002) found that higher incomes are associated with a greater likelihood of living in predominately white neighborhoods for most, but not all, Hispanic immigrant groups. This finding is further supported by evidence that suburban Hispanics are more likely than suburban blacks to reside in neighborhoods that reflect their own socioeconomic status (Logan and Alba 1993; Alba and Logan 1993).

The scholarship on immigrant suburbanization offers valuable clues regarding how the suburbanization of immigrants, particularly Hispanic immigrants, may have contributed to suburban income segregation. This much of this research supports the spatial assimilation model of immigrant incorporation. Although the original version of this model posits that immigrants

first move to the central city before resettling in the suburbs, immigrant suburbanization research still suggests that many immigrant groups move to better-off neighborhoods after attaining human capital in worse-off neighborhoods. The continued relevance of human capital measures for geographic location of immigrants within the suburbs suggests that low-income immigrants are moving to low-SES neighborhoods in the suburbs.

## **Hypotheses**

The literature on minority and immigrant suburbanization provides strong evidence that the migration of certain racial and ethnic groups into the suburbs has shaped segregation patterns between these groups and non-Hispanic whites. Minority suburbanization scholarship suggests that black suburbanization had a particularly large positive effect on black-white segregation in the suburbs. Immigrant suburbanization research, on the other hand, gives a more nuanced picture, with the effects of immigrant suburbanization on segregation varying by country of origin, language ability, and skin color. Each of these areas of research provides suggestive evidence that minority and immigrant suburbanization led to heightened suburban income segregation. For suburbanizing minorities, institutional factors and white outmigration may have contributed to increases in both racial and economic segregation levels. For suburbanizing immigrants, entrance into the suburbs likely shaped economic segregation by transforming the overall socioeconomic composition of the suburbs. I based the main hypotheses of this study on these considerations.

*H1: Increases in the proportions of black households in suburban areas will be positively associated with suburban income segregation, controlling for changes in black-white segregation in these regions.*

*H2: Increases in the proportions of foreign-born and Hispanic households in suburban areas will be positively associated with suburban income segregation, controlling for changes in Hispanic-white segregation in these regions.*

## **Methods**

### *Data and Geographic Units*

The data used for measuring and modeling suburban income segregation come from the 1990 Decennial Census, the 2000 Decennial Census, and pooled five-year data consisting of the 2008-2012 American Community Surveys. The income segregation variable was constructed using counts of household incomes at the tract level. For 1990 and 2000, these data come from the longform portion of the Census and constitute a 1-in-6 sample of the U.S. population. For 2010, the ACS data are from a sample encompassing approximately 8-12% of the population (Reardon et al. 2018). For confidentiality purposes, the Census releases income data to the public in categorical form, with households enumerated in income ranges. This presents challenges for estimating levels of income inequality, as inequality measures can vary widely depending on the shape of the upper tail of the income distribution (Cowell 2011). I account for this using Pareto interpolation, which fits households in each income category to their own Pareto distribution and estimates mean incomes for them (Nielsen and Alderson 1997).

Following research on income segregation, I only examine income segregation for the suburban regions of large metropolitan areas (Reardon and Bischoff 2011). My sample consists of metropolitan areas with suburban regions that had populations of at least 120,000 in 1990. I also exclude metropolitan areas that are either completely suburbanized – that is, they have no central city neighborhoods – or completely urban – they consist only of central city neighborhoods. I operationalize suburbs as census tracts that were located outside central city boundaries in 2010. To account for changes made by the Census to tract boundaries during the study period, I use the Longitudinal Tract Database to normalize 1990 and 2000 census tracts to 2010 boundary definitions (Logan et al. 2014). Finally, I only include in my sample



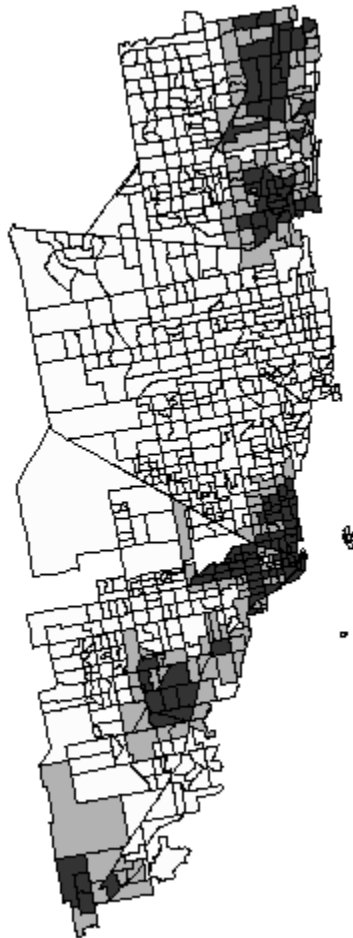
metropolitan areas with suburban regions that had at least 1,000 black, white, and Hispanic households each in 1990. The final sample consists of 87 metropolitan areas for a total of 261 region-year observations.

A common criticism of segregation studies is that they fail to account for macro-level patterns in the distribution of neighborhoods (Lichter et al. 2015; Sharkey 2014). For example, a city in which two groups are organized in a checkerboard pattern may have the same level of segregation as a city in which these groups are distributed in a concentric ring formation. This is a concern for this study because rising suburban income segregation may reflect the “spillover” of central-city poverty beyond city boundaries. I address this issue by distinguishing between central-city, inner-ring suburb, and outer suburb census tracts. Inner-ring tracts are defined as the suburban tracts that share a boundary with a central-city tract. Figure 1 shows the division of census tracts in the Miami metropolitan area into central-city, inner-ring, and outer suburb regions. Central-city tracts are the dark shaded tracts, inner-ring suburb tracts are the light shaded tracts, and suburban tracts are the white tracts. To determine whether income segregation increases were driven by a spillover effect, I check the sensitivity of my income segregation estimates to the removal of tracts located in the inner-ring suburbs.

### *Measuring Income Segregation*

Income segregation studies use a broad range of methods to measure income segregation. Some studies rely on measures that rank households by income (Watson 2009; Reardon and Bischoff 2011). By using measures that omit actual income levels, this approach controls for changes in income inequality, which can affect income segregation even in the absence of residential sorting. To understand the implications of income segregation for the allocation of economic resources across space, however, it makes more sense to use a segregation that

**Figure 1: Central-City, Inner-Ring, and Suburban Tracts for Miami-Fort Lauderdale**



incorporates information on income differences. Researchers have done this by computing ratios of between-neighborhood to total income inequality (Jargowsky 1996).

I employ a version of this approach in this study, measuring suburban income segregation using Theil indices. One advantage that Theil coefficients have over other inequality measures such as Gini coefficients is that they can be decomposed to determine contributions from different categories of observations. For example, one can use Theil coefficients to disaggregate metropolitan income inequality into city and suburban components, and then disaggregate each of these into between-neighborhood and within-neighborhood components. This allows one to

estimate how much of the income segregation in a metropolitan area comes from income differences between suburban and city neighborhoods, as concept that I refer to as the suburban and city contributions to metropolitan income segregation.

I measure suburban income segregation as the proportion of between-neighborhood inequality to the sum of between and within-neighborhood inequality in the suburban region. This formula and the equations for within-tract and between-tract inequality are presented below.

$$\text{Suburban Income Segregation} = \frac{\text{Between Tract Inequality}}{\text{Between Tract Inequality} + \text{Within Tract Inequality}} \quad (1)$$

$$\text{Within Tract Inequality} = \sum_{j=1}^N \frac{y_j}{\bar{y}} \ln \left( \frac{y_j}{\bar{y}} \right) \quad (2)$$

$$\text{Between Tract Inequality} = \sum_{j=1}^M \frac{n_j}{n_{tot}} \frac{\bar{y}}{\mu} \ln \left( \frac{\bar{y}}{\mu} \right) \quad (3)$$

In the above equations,  $y_i$  represents household income;  $\bar{y}$ ,  $n_j$ , and  $N$  are the mean income, population, and the total number of households in a census tract;  $\mu$ ,  $n_{tot}$ , and  $M$  are the mean income, population, and the number of census tracts in suburban region.

After tracing changes in suburban income segregation, I evaluate the relative contributions of urban and suburban neighborhoods to overall metropolitan income inequality. Specifically, I decompose metropolitan inequality into five components: within-city tract inequality, within-suburban tract inequality, between-city tract inequality, between-suburban tract inequality, and between city and suburb inequality. The following formulas represent each region's contribution to metropolitan inequality:

$$\text{Suburban I.S. Contribution to Metro Inequality} = \frac{\text{Between Suburban Tract Inequality}}{\text{Metropolitan Inequality}} \quad (4)$$

$$\text{City I.S. Contribution to Metro Inequality} = \frac{\text{Between City Tract Inequality}}{\text{Metropolitan Inequality}} \quad (5)$$

These measures weight regional contributions by their relative population sizes. Thus, changes in regional contributions to metropolitan inequality reflect changes in both regional income segregation and regions' relative population sizes.

Logan and co-authors (2018) recently pointed out that the findings from income segregation studies may be biased due to the small samples on which income segregation measures are based. Variance estimates based on small samples tend to be downwardly biased. Because estimates of within-neighborhood variance suffer more from small sample problems than estimates of metropolitan variance, this downward bias is greater for neighborhood variance estimates than for metropolitan variance estimates (Reardon et al. 2018). Ultimately, this results in segregation estimates being *upwardly* biased. This is concerning for income segregation studies that consider changes after 2000 because in this year the census went from collecting income data from the longform portion of the decennial census to gathering this data in the ACS. Even using pooled five-year ACS estimates, this data is based on a sample that makes up about 8% of the U.S. population. This represents a substantial drop from 18% sample on which decennial census estimates are based and may present problems for tract-level estimation.

To understand how the small sample problem affects the Theil-based income segregation measure used in this study, I ran a series of simulations. They show that while this measure is biased when estimated from small samples, the size of this bias is small enough that the results from an 8% (ACS) sample do not vary substantially from the results from an 18% (Decennial longform) sample. In other words, while income segregation estimates may be slightly biased

overall, this bias is not significantly larger for 2010. The results of these simulations are discussed in more detail in Appendix A.

### *Modeling Income Segregation*

I model suburban income segregation with a series of fixed-effects models, where suburban regions are grouped by year. Using a fixed-effects specification controls for unchanging characteristics of suburbs that are associated with both income segregation and the covariates included in these models. The first few models focus on the effects of factors emphasized in ecological studies of economic stratification, including regional population, mean household income, and the proportion of residents that have a bachelor's degree or higher. These models also include two measures that describe the available housing in suburban regions: the proportion of households that are owner-occupied and the average age of residential housing.

The next set of models includes several measures emphasized in place-stratification research. These models test the hypotheses developed in the previous section. To evaluate the effects of minority migration on income segregation, I include measures of the proportions of blacks, Hispanics, and foreign-born residents, along with dissimilarity measures for segregation between blacks and non-Hispanic whites and Hispanics and non-Hispanic whites. To assess the effect of suburban poverty, I include a measure for the proportion of residents that received public assistance income (cash payments through programs such as Temporary Assistance to Needy Families). Finally, to account for occupational changes in suburban regions, I include two controls: one for the proportion of the employed residents that work in the manufacturing industry, and one for the proportion of workers in the construction industry. Following evidence that rising income segregation has resulted from the disappearance of jobs in these industries (Jargowsky 1996), I expect these measures to be negatively associated with income segregation.

## Results

### *Trends in Regional Income Segregation and Contributions to Metropolitan Income Distributions*

Table 1 shows average levels of income inequality, along with levels of city, suburb, and between-region contributions to income inequality, for all 87 metropolitan areas in the sample. Given the decomposability of Theil coefficients, the city, suburb, and between-region inequality components sum to total metropolitan inequality, which is displayed in the Total column at the right side of the table. Consistent with existing research, income inequality increased between 1990 and 2010. City and suburb contributions to metropolitan inequality moved in opposite directions during this time, with the city component dropping by .013 and the suburb component rising by .04 between 1990 and 2010. Given that regional contributions are weighted by how incomes are distributed between the city and the suburbs, these countervailing trends could reflect an increase in the proportion of metropolitan residents that live in the suburbs. Surprisingly, income inequality between cities and suburbs makes up a negligible component of metropolitan income inequality, moving from .004 to .006 between 1990 and 2010.

**Table 1: Income Inequality and Regional Contributions to Income Inequality: Full Sample (N=261)**

Year	City	Suburbs	Between Region	Total
1990	0.169	0.142	0.004	0.316
2000	0.165	0.163	0.004	0.333
2010	0.156	0.182	0.006	0.339

Table 2 shows trends in regional income segregation and contributions to metropolitan income inequality. These numbers are based on three regions: the central city, which consists of tracts located inside central-city boundaries, the inner-ring suburbs, which is comprised of tracts

outside the central-city that share a boundary with a central-city tract, and outer suburbs, which is made up of tracts outside the central-city that do not share a boundary with a central-city tract.

**Table 2: Regional Income Segregation and Contributions to Metropolitan Income Inequality: Full Sample (N=261)**

Year	Income Segregation			Between- Tract Contribution to Income Inequality		
	Central City	Inner-Ring Suburbs	Outer Suburbs	Central City	Inner-Ring Suburbs	Outer Suburbs
1990	0.194	0.171	0.125	0.086	0.041	0.042
2000	0.176	0.161	0.131	0.070	0.039	0.049
2010	0.192	0.177	0.148	0.063	0.044	0.059

Unlike the estimates for regional contributions to income inequality, these estimates are *not* influenced by the relative population sizes of each region. Following Equations 2 and 3, each income segregation measure was produced by decomposing the income inequality in a region into between-tract and within-tract components. Levels of income segregation increased in the outer suburbs from .125 in 1990 to .148 in 2010. Meanwhile, income segregation in the central city dipped from .194 to .176 between 1990 and 2000. Surprisingly, central city income segregation increased between 2000 to 2010, albeit to a lower level (.192). Furthermore, the gap between outer suburb and city income segregation narrowed from .069 to .044, a 36% decrease, during this time. In sum, income segregation levels in the suburbs nearly caught up with income segregation in the central city between 1990 and 2010.

The right-hand columns in Table 2 show regional contributions to metropolitan income inequality. As shown in Equations 4 and 5, the contribution of each region's income segregation to metropolitan inequality is defined as the fraction of metropolitan inequality that comes from

the between-neighborhood inequality in that region. Unlike regions' income segregation levels, these numbers are weighted by the relative population sizes in the regions of the metropolitan area. Overall, these results mirror income segregation trends, showing an increase in the contribution of suburban income segregation and a decrease in the contribution of city income segregation over the study period. Central-city contributions to metropolitan inequality remain greater than outer suburb contributions, despite the narrowing gap between these regions' contributions.

While more metropolitan income inequality comes from central-city income segregation than outer suburb income segregation, total suburban contributions to metropolitan income inequality surpassed central-city contributions between 1990 and 2000. We can see this by summing the Inner-Ring Suburbs and Outer Suburbs columns on the right side of Table 2. In 1990, about 49% of metropolitan income segregation was due to inequality differences between suburban tracts. By 2010, this figure increased to about 62%. This increase was partly a consequence of an increase in the proportion of metropolitan residents that live in suburban neighborhoods. Between 1990 and 2010, the proportion of households in the sample that lived in a suburban neighborhood increased from 52 to 59%. However, population shifts do not entirely account for the growing importance of suburban neighborhoods to metropolitan income segregation. As shown in Appendix B, suburban contributions in many metropolitan areas increased despite *declines* in the relative population size of suburban neighborhoods.

To review the main findings from this section, between 1990 and 2010 the contributions of suburbs to metropolitan inequality increased, while the contributions of central cities declined. This change was partly due to a reshuffling of incomes between the cities and suburbs and the migration of many former central-city residents to suburban areas. Income segregation in the



outer suburbs also increased during the study period. Conversely, central-city income segregation declined between 1990 and 2000 but almost returned to 1990 levels by 2010. Finally, the income segregation contributions of each region to metropolitan income inequality underwent similar changes, although central-city contributions to income segregation steadily decreased from 1990 and 2010.

### *Models of Regional Income Segregation Trends*

Table 3 presents results from fixed-effects models of suburban income segregation. These models are based on census tracts in the outer suburb regions of metropolitan areas. Model I displays at the effect of suburb population, which is measured in the hundred-thousands, on suburban income segregation. The coefficient on this term is large and positive, meaning that regions that grew in population tended to experience increases in income segregation. Model II adds measures theorized by concentric-zone theory to influence the spatial distribution of metropolitan inequality. Two of these measures, mean income and education, capture regional economic growth, and the other two, mean home age and tenure, capture features of a region's housing stock. None of the coefficients in this model are large or statistically significant at the .05 level. Contrary to some ecological models of metropolitan growth, these findings suggest that economic segregation is not a necessary consequence of metropolitan economic growth, at least within suburban regions. It is worth noting that the coefficient on education is large and reaches significance in the final model. This provides suggestive evidence that economic growth may spur suburban income segregation through its effects on metropolitan occupational structures (Nielsen and Alderson 1997; Domina 2006).

**Table 3: Models of Changes in Outer Suburb Income Segregation: U.S. Metropolitan Areas, 1990-2000 and 2000-2010**

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	<i>Dependent variable:</i>				
	Income Segregation				
	(1)	(2)	(3)	(4)	(5)
Population	0.003*** (0.000)	0.001 (0.000)	-0.001 (0.000)	-0.001 (0.000)	-0.001 (0.000)
Mean Income		0.002 (0.00000)			-0.005 (0.00000)
Prop. higher ed.		0.162* (0.091)			0.298*** (0.109)
Prop. own homes		-0.053 (0.069)			0.166* (0.085)
Home age		0.0001 (0.0002)			0.0001 (0.0002)
Prop. black			0.122 (0.104)	0.117 (0.104)	0.161 (0.104)
Prop. Hispanic			0.171** (0.077)	0.176** (0.078)	0.345*** (0.091)
Prop. foreign			0.128 (0.141)	0.136 (0.150)	-0.126 (0.161)
Prop. public ast.			0.215** (0.107)	0.190* (0.108)	0.304*** (0.116)
Manufacturing			-0.144** (0.056)	-0.148*** (0.057)	0.001 (0.083)
Construction			0.060 (0.188)	0.041 (0.189)	0.007 (0.202)
B-W seg				0.048 (0.033)	0.074** (0.032)
H-W seg				0.011 (0.033)	0.024 (0.032)
Observations	261	261	261	261	261
R <sup>2</sup>	0.135	0.296	0.342	0.353	0.417
Adjusted R <sup>2</sup>	-0.301	-0.084	-0.024	-0.019	0.059
F Statistic	26.907*** (df = 1; 173)	14.182*** (df = 5; 169)	12.416*** (df = 7; 167)	10.010*** (df = 9; 165)	8.861*** (df = 13; 161)

*Note:*

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

Model III removes ecological terms and adds a set of measures hypothesized by place-stratification research to matter for the spatial distribution of inequality. These include measures of race distributions, occupational structure, and the proportion of residents receiving some form of public financial assistance. Among these terms, the coefficients on manufacturing, public financial assistance, and Hispanic suburbanization are large and statistically significant. Suburbs that lost manufacturing jobs experienced increases in income segregation. This relationship may reflect the disappearance of middle-class households, a phenomenon that has been linked to the decline of the manufacturing sector (Kasarda 1989). Although the coefficient on black suburbanization is positive as hypothesized, the size of this effect is small and non-significant.

The most important finding from these models is that suburbs with growing proportions of Hispanic residents witnessed large increases in income segregation. The coefficient on Hispanic suburbanization is significant at the .001 level in all the models in which it was included. Model IV introduces dissimilarity measures for black-white and Hispanic-white segregation. Notably, including these measures did not attenuate the effect of Hispanic suburbanization. I had hypothesized that racial segregation would account for some of the association between race and suburban income segregation. These results suggest that, at least in the case of Hispanic suburbanization, this has not occurred. Hispanic suburbanization drove large increases in suburban income segregation, even after controlling for Hispanic-white segregation.

Finally, Model V displays coefficients for the full model. The coefficient on the proportion of households receiving public financial assistance remains large and significant. A comparison of each model's Akaike Information Criterion (AIC), a model comparison measure

that penalizes the inclusion of additional parameters, reveals that the full model is the best fit of the data. In the final model, changes in proportions of college-educated households, Hispanic households, and households receiving government assistance had the largest effects on suburban income segregation. The coefficients on each of these terms range from .284 to .301, indicating that 10% increases in these groups were associated with a roughly 3 percent increase in the proportion of suburban income inequality due to between-neighborhood income differences. To put this effect into perspective, the difference in 1990 between the central cities and outer suburbs – regions seen in previous income segregation to have had starkly different income segregation levels at this time – in terms of the segregation measure I use here was 6.9 percent.

### **Discussion/Conclusion**

In this study, I examined the relationship between the racial and ethnic composition of the suburbs and suburban income segregation. Using Theil coefficients to estimate the proportion of between-neighborhood inequality to total suburban inequality, I traced changes in suburban income segregation and suburban contributions to metropolitan income segregation from 1990 and 2010. I then modeled changes in suburban income segregation as a function of the sociodemographic features of suburban areas. I found large and positive effects of Hispanic suburbanization on income segregation in all the models in which this measure was included.

This study has implications for theoretical models of how incomes are distributed spatially across metropolitan areas. Demonstrating the relevance of the neighborhood for analyses of economic inequality, these findings support the contention of place-stratification research that economically advantaged local communities build on their advantage over time. Moreover, that most income segregation in metropolitan areas exists within suburbs and cities

rather than between them indicates that the concentric zone model bears little resemblance to the economic realities of many U.S. metropolitan areas.

Further research is needed to elucidate the mechanisms through which the suburbanization of different social groups fuels suburban place inequality. Given the increasing demand for low-income service sector jobs in the suburbs and the disappearance of middle-class manufacturing and construction jobs in these areas, the relationships identified here may simply reflect a growth in the number of low-income residents in the suburbs and the constraints that the housing market places on where in the suburbs these residents can settle. However, research in the place-stratification tradition suggests that cultural and institutional factors may play a role as well. Individual-level panel data could clarify how moving into a suburban neighborhood affects the subsequent out-migration of the residents from that neighborhood, the political activities of surrounding areas, and how these effects interact with racial and socioeconomic differences among suburbanizing groups.

Finally, more research is needed on how income segregation operates at different geographic levels, both above and below the neighborhood level emphasized for this study. As Logan (1978) pointed out in his theoretical essay on the place stratification perspective, place hierarchies exist simultaneously at multiple levels. My choice to work at the neighborhood level was based on convention and convenience, but other income segregation studies have uncovered important patterns at other levels. Owens (2016), for example, found that between-school district income segregation is almost entirely a consequence of the migration patterns of families with children. Below the neighborhood level, research is needed on how economic stratification processes operate at the block level. Grannis (1998) found that patterns of racial segregation can be explained by looking at differences among walkable communities, which tend to be much

smaller than census tracts. Economic segregation patterns may also be organized around walkable communities, especially if people prefer to live near neighbors of similar socioeconomic status. Given that many important resources distribute through neighborly networks, block-level place differences may have significant implications for economic stratification.

Since the publication of Wilson's study of the consequences of black suburbanization for inner-city poverty, economic segregation has been viewed as a uniquely urban problem. Moreover, the notion that suburbanization represents upward mobility has persisted in the modern sociological imagination despite the increasing inapplicability of the concentric zone model to how incomes are distributed across metropolitan areas. The result of this is that a mounting social problem – suburban income segregation – has been largely ignored in research on minority suburbanization and metropolitan income segregation. Although this study concentrated on inequality between suburban neighborhoods, the changing sociodemographic features of suburbs has broader implications for America's economy and society. Ultimately, as businesses and jobs continue to relocate to areas beyond the boundaries of the central city, the need for research on the economic and social implications of suburbanization will only continue to grow.

## References

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