

## Variations on Two Themes: Racial and Ethnic Patterns in the Attainment of Suburban Residence\*

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To investigate racial and ethnic diversity in suburbanization, we draw on two complementary theoretical traditions, which we label "assimilation" and "stratification." Our analytic model is multilevel, and includes variables characterizing individuals, households, and metropolitan contexts. We use it to analyze the determinants of suburban versus central-city residence for 11 racial/ethnic groups. The analysis reveals that family status, socioeconomic, and assimilation variables influence the suburbanization process rather consistently. We take this finding as evidence in favor of the assimilation model. These effects display group variations, however, in a manner predicted by the stratification model. There are also suburbanization differences among metropolitan areas, particularly related to the relative economic status of cities and their suburbs, and between the northeast/north central regions and the south/west. Finally, we conclude that suburbanization is variable across the groups in a way that is not captured by broad categories such as "Asian" or "Hispanic."

Increasingly in the United States, racial and ethnic groups are working out their fortunes as much in suburban settings as in the central-city environments that predominate in the classical literature on urban ecology. As Massey and Denton (1987) document, the rate of growth of nonwhites and Hispanics in metropolitan areas is far outstripping that of non-Hispanic whites. Less appreciated is the fact that much of this growth is occurring in suburbs, not in central cities. During the 1970s, for example, the number of blacks in the noncentral-city parts of metropolitan areas increased by 70%, compared to only 16% in

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central cities; and the number of other nonwhites outside central cities rose by 150%, compared to approximately 70% in central cities (Bureau of the Census 1973, Table 48; 1983, Table 74). One reason for the rapidly increasing racial and ethnic diversity of suburbs may be that some new immigrant groups are bypassing central cities and settling directly in suburbs (Massey and Denton 1988; Waldinger 1990). Equally important is the increasing suburbanization of older racial and ethnic minorities, such as blacks (Frey and Speare 1988).

A long-standing research tradition in American sociology, dating back to the origins of the Chicago School, hypothesizes a link between the spatial and the social positions of minorities (Guest and Weed 1976; Lieberman 1963; Park, Burgess, and McKenzie 1925; Taeuber and Taeuber 1965; Wirth 1928; for a recent review, see Massey 1985). In recent years, researchers have begun to examine the phenomenon of suburbanization in this light. In keeping with classical ecological theory, suburbanization often has been portrayed broadly as a step toward assimilation into the mainstream society and as a sign of the erosion of social boundaries. For European immigrant groups after the turn of the century, residential decentralization appears to have been part of the general process of assimilation (Guest 1980). Today, in most metropolitan regions, suburban areas have higher socioeconomic status than their central cities (Logan and Schneider 1982). For both reasons, suburbanization may be an important indicator of the extent to which minorities are becoming integrated more fully into American society.

The increasing importance of suburban residence for minority groups makes imperative a closer examination of racial and ethnic patterns of suburbanization. The need is especially pressing for minority groups arising from new immigration, largely Asian and Hispanic, because much research has focused on black suburbanization. Moreover, research on Asian and Hispanic suburbanization often has been limited by the use of broad categories of race/ethnicity, and thus has neglected the possibly distinctive experiences of specific groups. Some of this research also has been limited to analysis of aggregate data; thus problems of ecological inference are involved.

In the current paper we attempt to improve on past research in both of these respects. Our effort is a first step in a larger program of research on racial and ethnic suburbanization; here we analyze the determinants of suburban (versus central-city) residence. Our analysis encompasses a variety of ethnic and racial groups, including specific groups of Asians—e.g., Chinese and Koreans—and of Hispanics—e.g., Cubans and Mexicans—as well as blacks and whites. By using data from the Public Use Microdata Sample of the 1980 census, we can conduct our analysis at the individual level, which results in findings that in some cases overturn those derived from aggregate data. The study of suburbanization must be sensitive also to features in metropolitan contexts that shape the suburbanization process. Our models therefore are multilevel or contextual, and incorporate variables from the metropolitan level as well as those characterizing individuals.

## Theoretical Background

The point of departure for our analysis is the *spatial assimilation* model, which represents a continuation of the ecological tradition (Guest 1980; Massey 1985; Powers 1968). The most fundamental tenets of the model are 1) that residential mobility follows from the acculturation and the social mobility of individuals, and 2) that residential mobility is an intermediate step on the way to more complete (i.e., structural) assimilation (Massey and Mullen 1984). As members of minority groups acculturate and establish themselves in American labor markets, they attempt to leave behind less successful members of their groups and to convert socioeconomic and assimilation progress into residential gain. They

do so by "purchasing" residence in places with greater advantages and amenities than are typically to be found in central-city ethnic enclaves. This process implies, on the one hand, a tendency toward dispersion of minority-group members, which opens the way for increased contact with members of the ethnic majority (of particular importance for the life chances of the next generation of a minority), and, on the other, greater resemblance in residential characteristics between successful minority-group members and their peers from the majority.

In the spatial assimilation model, movement to the suburbs occupies a key position in the processes that connect residential assimilation with social mobility and with other dimensions of assimilation, such as intermarriage. This movement is seen principally as the outcome of individual-level processes rather than of group membership: as individuals acquire human capital and acculturate, improving their ability to interact socially with members of the majority, their likelihood of achieving residence in the suburbs increases. Thus, the process of suburbanization should be described well by individual-level variables, such as income, education, and English-language ability. Moreover, these variables should work in much the same way for most groups (blacks, in this tradition, are considered as an "exception" [Farley, Schuman, Bianchi, Colasanto, and Hatchett 1978]). This statement implies that group variations in the process of suburbanization are small. Accordingly, racial and ethnic differences in suburbanization should be due principally to compositional differences among groups; once these are controlled, the differences should largely vanish.

Past studies offer support for the assimilation model, with the prominent exception of black patterns. For example, studies have found that suburbanization of Hispanics and Asians in a metropolitan area is associated strongly with each group's average income level (Massey and Denton 1987, pp. 819-20; see also Frey and Speare 1988, pp. 311-15). Again for Hispanics and Asians, Massey and Denton (1987, 1988) demonstrate that suburban residence is typically associated with lower levels of segregation and accordingly with higher probabilities of contact with the Anglo majority. These and other authors, however, report very different results for blacks. Black suburbanization is unrelated to the average income level of blacks in the metropolitan area, and suburbanization does not result in much higher intergroup contact for blacks. The suburbanization process for blacks appears largely to be one of continued ghettoization (Farley 1970), as suggested by high and (in some regions) increasing levels of segregation and by the concentration of suburban blacks in communities with a high incidence of social problems (e.g., high crime rates), high taxes, and underfunded social services (Logan and Schneider 1984; Schneider and Logan 1982).

These patterns for blacks indicate the need to supplement the assimilation model by what we will call a *stratification model*. Once appropriate ethnic distinctions are drawn within the broad Asian and Hispanic categories, aspects of the stratification model may be found to apply to other groups as well. The stratification model is supported by findings of racial segmentation in housing markets. These findings point to practices that impede the free mobility of minorities: steering by realtors, unequal access to mortgage credit, exclusionary zoning, and neighbors' hostility (Downs 1973; Foley 1973; Molotch 1972).

As a consequence, one would expect that the members of some ethnic and racial groups may not be able to convert socioeconomic and assimilation gains into advantageous residential situations on a par with the majority or with other groups. In other words, it may "cost" the members of some minorities more income to reach the suburbs than it costs others (Yinger, Galster, Smith, and Eggers 1978). For the same reason, some minorities may be less able to translate needs and preferences associated with family and household composition (e.g., the presence of children) into a suburban location. We would expect both disadvantages to hold especially for racially stigmatized groups, such as blacks and, among Hispanics, Puerto Ricans. Therefore one hypothesis stemming from the stratification model is that income and other socioeconomic variables will be more important determinants of

suburbanization for some minority groups than for majority group members, and that indicators of family and household composition will have a smaller association with suburbanization for these groups.

Other hypotheses based on the stratification model concern metropolitan (or contextual) differences. (Contextual variables also are compatible with the assimilation model, as Massey and Denton [1987, 1988] point out.) First, members of disadvantaged minorities will be less likely to attain suburban residence, net of their own individual characteristics, in metropolitan areas where suburban residence is particularly desirable. Most suburban rings are more affluent than their central cities, but suburban exclusivity varies (Guest and Nelson 1978; Schnore and Winsborough 1972). Second, members of disadvantaged minorities will be less likely to live in the suburban ring where the suburban housing stock is predominantly owner-occupied. This hypothesis seems to overlap with the first, but it refers particularly to a structural characteristic that affects the sustainability of a dual housing market for minorities (Stearns and Logan 1986). Third, members of disadvantaged minorities are less likely to be suburban in metropolitan areas where they form a larger proportion of the population. This situation occurs because suburbanization can be a means used by the majority group to preserve its social distance from minorities. (The third hypothesis is a specific version of a long-standing hypothesis that discrimination against a minority group increases where and when the size of the group increases [Blalock 1967; Lieberman 1980; Williams 1947].) Concomitantly, white suburbanization should increase where minorities are a larger part of the population.

Two further issues arise in the application of these models. One, already acknowledged, is that the models assume implicitly that the suburban ring has uniformly higher status than the central city, whereas the relationship between the two, in fact, is quite variable across metropolitan areas (Guest and Nelson 1978; Schnore 1972; Zimmer 1975). As Guest (1980) demonstrates, this variability can affect ethnic differences in suburbanization. We address this issue in two ways in our analysis. First, we introduce a control for the socioeconomic difference between a central city and its suburbs (the details are described in the next section). Second, following the lead of Guest (1980), we supplement a national analysis with separate analyses by region because region is associated with city/suburban status and with other differences likely to affect suburbanization patterns.

Another issue concerns groups that have grown through recent immigration. These groups are not homogeneous, and thus the models may differ in their relevance from group to group. Many of these groups are racially distinct; some—such as the Chinese, the Japanese, the Mexicans, and the Puerto Ricans—have endured a history of discrimination in the United States, a fact that would suggest the relevance of the stratification model. Yet as Portes and Rumbaut (1990) document, the newer immigrant groups differ in important ways in their “mode of incorporation,” of which settlement patterns constitute a salient part. Some, such as Mexicans, are composed largely of manual laborers who have taken jobs in the secondary sector. The stratification model is likely to be especially relevant for such groups. Others, typified by the Koreans, are composed disproportionately of entrepreneurs and professionals. The assimilation model may apply well to them—in fact, there is already suggestive evidence for the Koreans to indicate their rapid suburbanization in the Los Angeles area (Light and Bonacich 1988). The relevance of both models may be problematic for one group with many refugees whose settlement patterns have been affected by government policies, namely, the Vietnamese (Jasso and Rosenzweig 1990).

This discussion points up that the two theoretical models are not inherently antagonistic to one another. Both may be useful in accounting for the experience of different groups, in varying proportions. The purpose of this study is to examine this question by extending previous comparisons to a broader range of groups.

## Data and Method

Most research on suburbanization has used broad, though statistically convenient, categories—such as “Asian” and “Hispanic”—which are unlikely to capture adequately racial and ethnic diversity. This practice seems problematic in light of the numerous differences apparent among groups that belong to the same broad category of race/ethnicity (on Hispanics, see Bean and Tienda 1987; Portes and Truelove 1987). Massey and Bitterman’s (1985) comparison between residential patterns of Mexicans in Los Angeles and those of Puerto Ricans in New York shows clearly that “Hispanic” is a potentially misleading category.

Another difficulty with past research is that much of it has been conducted at an aggregate level, such as that of the census tract or even the metropolitan area, although the processes under study are located largely at the individual level. Typically, for example, the dependent variable has been the proportion of group members who live outside the central city (or some variant), predicted by average characteristics of group members in an area. Such research is susceptible to the difficulties and pitfalls inherent in inferring individual-level effects from aggregated data (i.e., the well-known ecological fallacy; but see Massey and Denton 1985).

Our research design remedies both of these problems. To analyze the determinants of suburban residence, we have drawn data from 1980 PUMS data for the nation for 11 different racial and ethnic groups. Our coverage in this analysis encompasses most of the major nonwhite and Hispanic groups, including six Asian groups (Asian Indians, Chinese, Filipinos, Japanese, Koreans, and Vietnamese) and three Hispanic groups (Cubans, Mexicans, and Puerto Ricans). Also included are non-Hispanic blacks and whites.<sup>1</sup> For all groups except the last, the analysis is based on the 5% PUMS in order to provide adequate numbers of cases. Because whites are a very large group, we employed the .1% PUMS A sample (which uses the same geography as the 5% sample) to estimate their models. In order to prevent a group’s sample size from exercising an undue influence on the statistical significance of the results, we limited to 10,000 the number of members of any group included in the analysis. Where necessary, we used random sampling from the PUMS files to meet this limit.

To be eligible for the analysis, a racial/ethnic group member had to reside in a metropolitan area and be the householder or the spouse of a householder. In households without a married couple, only the householder is included. In some married-couple households, however, where both the householder and the spouse belong to the same group, both are eligible for the same equation; in such cases, we selected one individual randomly, thus limiting each household’s sample contribution for a given group to one person.

An analysis using both householder and spouse characteristics is important for our purposes. In married-couple households, both individuals are likely to contribute to decisions about household location, and they may differ in such relevant individual characteristics as language ability and education. For groups in which systematic differences occur in, say, the assimilation characteristics of husbands and of wives (e.g., suburban husbands speak English better than their wives), the selection of only the householder (or, much less likely, the spouse) could lead to important biases in results. Allowing both to be eligible for the analysis also makes the analysis sensitive to the frequency of intermarriage for some groups; in other words, it does not lose sight of intermarried spouses.

Although the PUMS data are far better for our purposes than any other existing data set, their use has two problematic aspects that deserve to be noted. One is that the identification of suburban residence is open to challenge in some cases. Because of the geography of the data and, in particular, the Census Bureau’s requirement that a place have at least 100,000 residents in order to be identifiable in the data, there is no viable alternative

to labeling as "suburban" any metropolitan location outside central cities. As a result, our definition of suburbia must include rural areas that happen to be included within metropolitan counties as well as urban areas that happen not to be classified as central cities (e.g., Yonkers), because areas of either type usually cannot be identified separately. Nevertheless, we do not think this a very serious problem; the same distinction between the central-city and the noncentral-city portions of SMSAs has been employed frequently in the analysis of suburbanization (e.g., Frey and Speare 1988; Massey and Denton 1987, 1988). Accordingly our analysis is comparable to its predecessors.

A second respect in which the PUMS data are less than ideal occurs in the representation of metropolitan areas. Many metropolitan areas are not completely identifiable in the A sample, which (to reiterate) we must use to achieve adequate representation of most groups; typically these identification problems arise because of small counties that are grouped in the data in a way that crosses metropolitan boundaries. Further, the central city/suburb distinction is not available for many smaller metropolitan areas because the population of one part or the other is less than 100,000, and hence is not identifiable by Census Bureau rules.<sup>2</sup> Only 126 metropolitan areas (or, in some cases, parts of them) can be included in the analysis, and it is necessary to control for sample selection bias (Berk 1983).<sup>3</sup> We do so in a way that we explain below.

We have analyzed the determinants of suburbanization for each racial/ethnic group using logistic regression analysis<sup>4</sup> and a unified analytic model that incorporates important elements from both theoretical models described in the last section. This model predicts the logged odds of residence in a suburb (i.e., the noncentral-city portion of an SMSA) versus a central city. The independent variables include factors from different levels relevant to the process of suburbanization, bringing individual (or family and household) and metropolitan characteristics into the analytic framework.

At the individual level, the analysis turns largely on family, socioeconomic, and assimilation characteristics. These play a central role in what we call the assimilation model, but the first two also figure in the stratification model. The socioeconomic characteristics include household income and educational attainment (expressed in years completed). We include two measures of family status. These are formulated as dummy variables: one distinguishes between households headed by a married couple and all other household types; the other, between those which include children under the age of 18 and others.

We present results based on one assimilation measure, English-language proficiency (defined in terms of the categories: speaks English at home; speaks a non-English mother tongue at home but speaks English well or very well; does not speak English well). We have replicated our results, however, with two other measures: nativity/citizenship and nativity/year of immigration. We selected the language assimilation measure over the others after discovering that for some groups, the assimilation variables are intercorrelated too closely to be included in the analysis at the same time. If a selection among them must be made, our preliminary analyses showed that the language measure is to be preferred for nearly all groups, although for a few groups nativity/citizenship seems to have independent importance. We note this variation at the appropriate point in the text.

As a control variable at the individual level, we include age (in years). Even in a model including family status, age may be related to suburban residence because, after a certain age, individuals are likely to remain in suburbs or in cities, as the case may be, regardless of changes in their family (especially parental) status. This reasoning implies a nonlinear effect; thus age squared is also present in each equation.

Our independent variables further include a variety of metropolitan-area characteristics. These are necessary in part as controls—for instance, to take into account the differences in the opportunity to live in suburbs created by the unequal distributions of groups across metropolitan areas and regions. Thus, members of groups that happen to be concentrated in

predominantly suburban metropolitan areas are more likely to live in suburbs, other things being equal. Accordingly we include the percentage of each metropolitan area's population that resides in suburbs as a variable in each equation. The region of a metropolitan area is another control variable (based on a standard four-category division). The groups under consideration differ substantially in their regional concentrations, and past research on suburbanization shows some regional idiosyncrasies in settlement patterns. These are exemplified by some black southerners, who are "suburbanized" because historically they have lived in small towns near central cities (Farley 1970; Guest 1978). We also include a control for sample selection bias. Specifically, the control is the probability of a metropolitan area's exclusion from the sample, as predicted by a logistic regression function based on population size.<sup>5</sup>

Metropolitan area characteristics are also important contextual variables in their own right. In particular, they can express features that affect differentially the process of suburbanization for various groups, creating disadvantages for the members of some groups and relative advantages for others, in a manner predicted by the stratification model. To take account of such stratifying factors, our models include the index of net difference between the incomes of suburban and of central-city households in an area. As noted earlier, a measure of this type is necessary in order to take into account the variability across metropolitan areas in the status differential between central cities and their suburban rings. Moreover, we expect that barriers to suburban entry for minorities most likely to encounter discrimination (such as blacks and Puerto Ricans) are higher where suburbs have greater average socioeconomic status than central cities.

Two other variables correspond in obvious ways to hypotheses stated earlier. One is the percentage of an area's suburban housing that is owner-occupied, which we expect to lower the probability of suburban residence for some minorities. The other is the percentage that a racial/ethnic group constitutes in an area's population; we expect that the probability of suburban residence should decline for minorities as their proportion of the population increases, whereas that of whites should increase as the total minority proportion rises.<sup>6</sup>

### Aggregate Differences among Groups

Table 1 presents some basic data for the groups under examination, derived from the samples described earlier. Primary among the variables is the percentage of each group living in suburbs (calculated as the percentage of the group's metropolitan population that lives outside central cities). This figure shows the considerable variation of suburbanization across the groups, even among groups in the same broad racial/ethnic category. Non-Hispanic whites have the highest suburban concentration—almost two-thirds in metropolitan areas reside outside central cities—whereas Puerto Ricans, followed by blacks, have the lowest suburban proportions—between one-fifth and one-quarter of their metropolitan populations. Although the variation within racial/ethnic categories is less extreme, it is substantial. Among Asians, the greatest disparity lies between the Chinese, only 38% of whom live in suburbs, and Indians, 55% of whom are suburban residents. Except for the Vietnamese, the other Asian groups are closer to the Indian proportion than to the Chinese. The variation among Hispanic groups is greater: Puerto Ricans, at 21%, show the lowest suburbanization percentage among all the groups in the table, whereas Cubans, at 54%, show one of the highest. Mexicans fall between the two.

The data in the table also make clear that despite the hypothesized link of suburbanization to assimilation, there is no obvious connection at the aggregate level to a group's period of immigration. Groups whose members are mostly U.S.-born, such as non-Hispanic whites and blacks, include those with some of the highest and lowest rates of

Table 1. Selected Characteristics of Racial/Ethnic Groups in Metropolitan Areas

Group	% in Suburbs <sup>a</sup>	U.S.-born	Foreign-Born: Period of Immigration			Mean Household Income
			1970s	1960s	1970s or Before	
Whites, Non-Hispanic	65.1	93.0%	0.9%	1.0%	5.0%	\$22,566
Blacks, Non-Hispanic	26.7	95.0	2.3	1.5	1.2	15,037
Chinese	37.7	27.4	35.8	21.2	15.5	23,413
Japanese	49.8	64.0	15.2	8.7	12.1	26,694
Koreans	49.6	7.8	72.1	15.9	4.2	22,024
Filipinos	49.4	19.6	43.6	21.7	15.1	25,224
Asian Indians	55.2	18.1	58.7	17.3	5.9	24,424
Vietnamese	41.0	1.5	95.1	2.9	0.5	16,686
Mexicans	47.3	62.2	17.8	9.4	10.7	17,643
Puerto Ricans	21.3	96.2	1.5	1.2	1.1	13,462
Cubans	54.2	8.6	19.3	57.0	15.2	19,361

*Note:* We calculated the data from the same samples used for the logistic regressions, and thus include householders or their spouses residing in metropolitan areas. No more than one person was chosen from each household for a given group.

<sup>a</sup> Calculated as the percentage of a group's metropolitan population that lives outside central cities.

suburbanization.<sup>7</sup> At the same time, some groups whose members include many recent immigrants have relatively high suburban proportions. Cases in point are the Koreans and the Asian Indians: even though a majority of each group immigrated in the decade preceding the 1980 census, these groups rank among the more highly suburbanized minorities. Mean household income, on the other hand, appears to be related more clearly to group levels of suburbanization (Spearman rank-order correlation = .609,  $p < .05$  by one-tailed test). Yet even at the group level, it is obvious that other factors besides income must be at work because there are some conspicuous exceptions in the two rankings—for example, the very different suburban percentages of non-Hispanic whites and of Chinese, groups that have comparable mean incomes.

### Micro-Level Determinants of Suburbanization

We now turn to analyses that can help to explain how such aggregate differences in suburbanization arise. Table 2 presents results from logistic regression analysis applied separately to each group in the manner explained earlier. The models predict in each case the logged odds of residing in a suburb rather than a central city. The independent variables include individual, household, and metropolitan-area characteristics.

In view of the substantial number of independent variables in our equations, the discussion to follow will focus on the variables that are indicative for the assimilation and the stratification models, and will give relatively little attention to control variables (e.g., age). In terms of individual- and household-level variables, the groups display some impressive uniformities as well as some notable differences. The differences are less a matter of consistency of significance and direction than of variability in magnitude. Both theoretical models receive support in the results.



Table 2. Logistic Regression Analysis of Suburban (versus Central-City) Residence for Racial/Ethnic Groups

Variable	Non-Hispanic Whites	Non-Hispanic Blacks	Chinese	Japanese	Koreans	Filipinos	Asian Indians	Vietnamese	Mexicans	Puerto Ricans	Cubans
Individual and household characteristics:											
Age	.021*	-.027**	-.003	.016	.010	-.010	-.005	-.003	.000	.010	.005
Age <sup>2</sup> (/1,000)	-.219**	.265**	-.073	-.255*	-.167	.021	.187	.157	.027	-.067	-.137
Household type (1 = married couple; 0 = any other)	.534***	.463***	.458***	.479***	.539***	.464***	.442***	.302*	.296***	.373***	.462***
Children (1 = present; 0 = not present)	.371***	.223***	.379***	.476***	.546***	.294***	.462***	.343**	.166**	.150*	.311***
English language ability:	***	*	***	***	***	***	N.S.	N.S.	***	***	***
English spoken at home	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>
Non-English mother tongue at home:											
English spoken well or very well	-.468	-.268	-.347	-.195	-.310	-.285	-.079	.427	-.214	-.774	-.235
English not spoken well	-.849	-.961	-.845	-.219	-.740	-.302	-.164	.024	-.571	-.1022	-.533
Education	-.022**	.017*	.080***	-.020*	-.012	.003	.036***	.024	.009	.049***	.014*
Household income in \$1,000	.009***	.015***	.012***	.009***	.019***	.013***	.019***	.016***	.012***	.033***	.016***
Metropolitan area characteristics:											
Region:	***	***	***	***	***	***	N.S.	***	***	***	***
Northeast	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>
North central	.072	-.689	.290	-.203	-.506	.012	.213	.379	-.217	-.497	.068
South	-.034	-.443	.536	-.161	.300	.673	.162	.405	.135	.594	.031
West	-.447	-.083	-.144	-.793	-.648	-.174	.069	-.340	-.314	.494	-.735
% of metro population residing in suburbs	.059***	.056***	.053***	.046***	.067***	.044***	.063***	.056***	.045***	.066***	.061***
% of suburban houses owner-occupied	-.003	-.021***	-.034***	-.046***	-.003	.010*	-.015*	-.053***	-.059***	-.016**	-.085***
Net difference between suburban and urban incomes (x 100)	-.001	-.035***	-.011**	.001	.006	-.006	.007	.007	-.013***	-.035***	-.029***
Group % of metro population	-.016***	.029***	-.186***	-.024***	.051	.073***	-.015	-.191	.008**	.035	-.053***
P of sample exclusion (x 100)	-.003	.010***	-.008**	.000	.001	-.005	.001	.000	.017***	-.013**	-.004
Intercept/constant	-2.124***	-2.461***	-1.997***	.501	-4.153***	-3.559***	-4.315***	-1.585	1.020*	-3.902***	2.322***
N for analysis	10,000	10,000	10,000	10,000	4,195	9,620	5,280	2,083	10,000	10,000	10,000
Likelihood ratio chi-square	2039.4	1547.5	2826.1	1196.0	1148.8	1195.7	1717.3	310.5	1586.9	4155.5	2539.2
Degrees of freedom	16	16	16	16	16	16	16	16	16	16	16

Note: Each logistic regression equation is based on data from the 1980 Public Use Sample for the nation (A geography) and is restricted to members of the group in question who are householders or their spouses and who reside in metropolitan areas. Further, each group sample is limited to no more than one person per household and to a total number of cases no greater than 10,000. We used random sampling where necessary to meet these limits.

<sup>a</sup> Omitted category.

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

Consider family status as a compelling case in point. This is one of the most powerful determinants of suburban location: as one would expect, married couples and families with children typically are more likely to be in suburbs than other household types. This pattern is particularly strong for non-Hispanic whites and some of the Asian groups. Among the Japanese, for instance, married-couple households have a suburbanization advantage of about .5 in logit terms; families with children have an edge of similar magnitude. Either of these logit differences is equivalent to a 12-percentage-point increase for someone who already has a 50% chance of suburban residence; their combined effect thus is quite large.<sup>8</sup>

Although the effects of family status are universal among the groups analyzed here, they are weakest for some minority groups that have relatively low overall probabilities of suburbanization: Mexicans and Puerto Ricans, and also blacks to some extent. The differences among groups are most prominent for the effect of children in the household.<sup>9</sup> Among blacks, the presence of children adds about .2 to the logit, only half of its effect among the Japanese; among Mexicans and Puerto Ricans, the effect is even smaller. (For blacks, this logit increase translates into a 6-percentage-point rise for someone with a 50% chance of suburbanization.) In other words, families with children from these groups do not rise much above the relatively low suburbanization probabilities that hold for these minorities on average. Thus they are at a comparative disadvantage in their ability to attain suburban residence.

English-language ability, an acculturation measure, is a second powerful determinant of suburbanization for many groups. The strength of this effect supports the notion that suburbanization is linked to assimilation. Take non-Hispanic whites as paradigmatic for the effect. Members of this group who speak English at home are the most likely to be found in suburbs, whereas those who speak English poorly or not at all are the least likely. Those who speak a non-English mother tongue at home but can speak English well fall between these categories. This pattern is quite consistent with ecological/assimilation theory, particularly with its tenet that ethnic and racial groups leave central-city enclaves as they assimilate.

A number of other groups, including blacks, Chinese, Cubans, Koreans, Mexicans, and Puerto Ricans, also show the same pattern, albeit with varying magnitudes of effect.<sup>10</sup> Yet the pattern is not universal: for a few groups, it is faint or even missing. In such cases, English-language proficiency seems to offer little or no advantage in suburbanization. For two of these groups—the Japanese and the Filipinos—English-language ability has statistically significant effects, but they are quite small; for the Asian Indians and the Vietnamese, the effect is absent altogether. We must exercise caution in drawing any general conclusion about assimilation from these facts alone, because two of the groups (Asian Indians and Filipinos) come from societies where English is widespread. Thus they may be less disadvantaged by language than immigrants from other countries; in fact, an alternative assimilation variable, defined by nativity and citizenship status, has larger effects for both groups (as demonstrated in analyses that we do not present). This explanation, however, does not apply to the remaining two groups, the Japanese and the Vietnamese. In both, there are large numbers of individuals who do not speak only English at home, but they do not seem to be much less suburbanized than their co-ethnics who do so. Overall, then, the results for English-language ability suggest some racial and ethnic variability in the process of suburbanization. It is especially noteworthy that these findings reveal important differences among groups in the same broad category of race/ethnicity, as between Chinese and Japanese among the Asians.

The last set of theoretically indicative, micro-level variables—income and education—concerns socioeconomic status. One or both of these variables are significant in each model, but with the exception of a few groups, their effects are surprisingly modest on the whole. For household income in particular, our findings differ from those derived from

aggregate-level data. Massey and Denton (1987), for instance, find that the income of the *group* in the metropolitan area has important effects on the aggregate suburbanization of Asians and Hispanics, but has no discernible influence for blacks. In contrast, we find that the income of *individual households* influences suburbanization positively for members of all groups, but the effect is not very large for the most part. This pattern is seen easily in a comparison to the effects we discussed previously. Consider the impact of a \$15,000 increase in household income, about the size of a standard deviation in many groups and clearly a substantial change. Among blacks, for whom the effect of income is about average, this increase would produce a change of only .23 in the logit. This change is equivalent to adding 6 points to a 50% chance of suburban residence.

Nevertheless, there is statistically significant racial and ethnic variation in the effect of income. The effect is smallest for members of the non-Hispanic white majority and the Japanese. For these groups, a \$15,000 rise in household income would lift the logit of suburban residence by only .14—quite a small difference compared to the changes associated with family status and English-language ability.

Variation occurs also for the effect of educational attainment. In fact, education has an unexpectedly negative effect among non-Hispanic whites and the Japanese: the more highly educated are more likely to live in central cities, although the effect is small. For some other groups, education has the predicted positive effect on suburbanization. Yet the magnitude of this effect—as measured, say, by the logit difference made by a four-year increase in educational attainment—is appreciable for only two groups, the Chinese and the Puerto Ricans.

Taken together, the results for household income and education point to considerable racial and ethnic diversity in the correspondence between socioeconomic status and suburban residence. In the non-Hispanic white majority, suburbanization is determined less by socioeconomic status than by family status and language acculturation. With some allowance for shifts in relative weight between family status and acculturation, this conclusion holds more or less true for a number of other groups, such as the Japanese, the Koreans, and the Mexicans. A few groups, however, show a much stronger socioeconomic gradient in suburbanization. The extreme case is that of the Puerto Ricans, among whom a four-year rise in education and a \$15,000 increase in income would increase the logit by about .7. The combined effect of education and income is also sizable among the Chinese and the Asian Indians. In light of the low overall suburbanization probabilities of the Chinese and the Puerto Ricans, these results appear to suggest that suburbanization does, in fact, “cost” some groups more: specifically, their members must achieve a great deal of income and education to approach the suburbanization probability of the average white.

## Metropolitan-Level Determinants of Suburbanization

The story would be incomplete without an examination of the effects of metropolitan context. The racial/ethnic groups vary considerably as to the metropolitan contexts where they experience the greatest degree of suburbanizing, net of the individual characteristics of group members, which are controlled in the equations. The differences due to metropolitan context (in Table 2) add considerably to an understanding of racial and ethnic variations in suburbanization. They reveal patterns that are not apparent when one looks at the effects of individual and household variables alone.

In this light, consider the roles of owner occupation of suburban housing and the index of net difference between suburban and central-city incomes. Both of these variables exhibit substantial variation among the metropolitan areas under consideration. Among the 126 areas appearing in the analysis, the percentage of suburban housing that is owner occupied

varies from a low of 31% (in Jersey City, New Jersey) to a high of 85% (in Fort Wayne, Indiana), with a mean of 72%. Likewise, the index of net difference (multiplied here by 100) also varies widely among the sampled metropolitan areas, from a low value of -19 (in Huntsville, Alabama) to a high of 48 (in Newark, New Jersey); the mean is 19.<sup>11</sup>

One or both of these factors affect the suburbanization of blacks and some other minorities, but they have little impact on white suburbanization. As owner occupation of suburban housing increases (and thus as ownership becomes a requirement for suburban entry) and as the income difference between suburb and central city grows, blacks and the members of some other minorities tend to be kept out of suburbs. For blacks, for example, an increase of one standard deviation in the income-difference variable (about 13 points) reduces the logit by nearly .5; a similar calculation for owner occupation shows a reduction of about .15. The effect of the index of net difference is not only larger—it also may be more indicative for the group. The index is a measure of the socioeconomic difference between a central city and its suburban ring; where it is high, suburban residence is more clearly desirable. It is precisely in such metropolitan areas that blacks' probability of suburbanization is substantially depressed, according to the analysis.

These results, both the negligible effect for whites and the strong exclusionary effects for blacks, are in accord with the predictions of the stratification model. Some other minorities, especially those with low suburbanization prospects, show a similar pattern to that of blacks. Both exclusionary factors depress the suburbanization prospects of the Chinese, the Mexicans, the Puerto Ricans, and the Cubans, and one factor, level of suburban ownership, shows a sizable negative effect on the suburbanization of the Japanese and the Vietnamese. For the remaining three groups, however, all of which are Asian, little or no impact results from either factor.

The interpretation of the effect of group size, the last of the theoretically indicative variables, is more uncertain. Matters seem straightforward only for the majority group, non-Hispanic whites. Their negative coefficient shows that as their proportion of the population increases, their likelihood of residing in suburbs decreases. This relationship can be stated more insightfully as follows: as the relative size of the white group declines—that is, as the proportion of a metropolitan area's population made up of minorities increases—the probability that whites will live in suburbs rises. This effect is anticipated by the stratification model; and it indicates some degree of racial/ethnic segregation between city and suburb where the total minority population is large.

Nevertheless, we find no consistency in how this segregation is reflected in the patterns of specific minority groups. Despite the expectation that it would be more intense where a given minority group is large, about half of the statistically significant coefficients are positive. Such coefficients reveal a greater probability of suburban residence for some minorities in metropolitan areas where they make up a relatively large part of the population. Moreover, the coefficients are positive for groups that would seem most likely to call forth discriminatory barriers, such as blacks and Mexicans. The coefficient is negative, on the other hand, for the Chinese, who are no more than a small part of the population in any metropolitan area. Because the variation in the sign of the coefficients seems to be associated with group size, with larger minorities (such as blacks) drawing advantage from increased size, one could argue that increasing size is a disadvantage only up to a point. Where a minority group constitutes a majority or a near majority of the population (as for blacks and Mexicans in some areas), it gains advantages. To be sure, in some metropolitan areas these advantages simply may represent spillover from central-city neighborhoods into adjacent suburbs. In any event, this explanation is *ex post facto* and is not entirely consistent with the overall pattern of results (for example, the Japanese constitute a large part of Honolulu's population, but their suburbanization is influenced negatively by their size).

Two of the control variables also merit brief mention. The analysis demonstrates that the degree of suburbanization in a metropolitan area is an essential control. This variable has a statistically significant and rather powerful effect for all groups: its coefficient varies, for the most part, within a narrow band between .045 and .065. Because the degree of suburbanization varies widely across metropolitan areas—from 21% to 100% among the areas under examination—and because groups are distributed differently across these areas (to take an extreme comparison, the average non-Hispanic white lives in a metropolitan area that is 62% suburban, compared to 43% for the average Puerto Rican), a failure to take the degree of suburbanization into account is likely to confound an analysis of group variation.

Further, the control for sample selection bias is significant in four of the 11 equations, although its effect is not uniform and also not large (in comparison, say, with other contextual coefficients). We take these results as reassuring evidence that selection bias is not a major problem. In two cases (blacks and Mexicans), the effect is positive, an indication that the groups in question have a greater probability of suburban residence in excluded (i.e., smaller) metropolitan areas. In the other two cases (Chinese and Puerto Ricans), the probability of suburban residence is higher in included (and thus larger) metropolitan areas.

### Suburbanization in Different Regions

For the final portion of our analysis, we have replicated the models in Table 2 for two major regions of the country, combining the northeast and the north central census regions into one area (called “the north” below), and the south and west regions into another. Our goal is to assess the possible impact on our findings of heterogeneity in the relationship between central cities and their suburban ring. Following the lead of Guest (1980), we chose region as the means to examine this heterogeneity for several reasons.<sup>12</sup> Most important, the status differential between city and suburb varies between regions. In all of the sampled metropolitan areas in the north, the suburban ring has higher average socioeconomic status than the central city: the lowest value for the index of net difference in household income is 9, and the average value is 26. By contrast, the average status of the central city is higher in some metropolitan areas in the south/west region, and nearly four-tenths of the sampled areas have values of the index below the lowest value in the north. Accordingly the north offers a stronger test of the effect of socioeconomic status on suburban residence.

Two other factors lie behind our choice of region. First, the racial/ethnic groups under analysis have well-known regional concentrations and prominent residential enclaves in these regions. Insofar as such enclaves affect the residential locations of individual group members, suburbanization patterns could be expected to differ between regions. Second, there is evidence that white ethnic settlement patterns can influence those of minorities (Logan and Stearns 1981). White ethnic communities are far more prominent in the northeast and the north central regions than in the south and the west.

Table 3 presents basic aggregate data concerning minority suburbanization in the two regions. The left-hand column shows an expected pattern of regional concentration of the metropolitan residents of various racial/ethnic groups. Most Asian and Hispanic groups are concentrated more strongly in the south/west region than in the north. Blacks and whites are divided evenly between the two regions, while Asian Indians and Puerto Ricans are concentrated more strongly in the north.

Of greater interest, racial and ethnic disparities in suburban residence are considerably more pronounced in northern metropolitan areas than in southern/western areas; correlatively, most minority groups experience a lower probability of suburban residence in the north. In the north, 67% of non-Hispanic whites reside in suburbs, compared to 37% of

Table 3. Suburbanization, by Major Region

Group	% of Sample in		% Suburban in South/West
	Metropolitan North	% Suburban in North	
Whites, Non-Hispanic	51.7	67.2	63.0
Blacks, Non-Hispanic	52.0	20.8	33.2
Chinese	34.5	30.7	41.5
Japanese	13.9	54.8	49.0
Koreans	32.9	49.1	49.9
Filipinos	22.7	44.1	50.9
Asian Indians	60.3	52.4	59.4
Vietnamese	18.3	45.1	40.1
Mexicans	12.5	36.6	48.8
Puerto Ricans	84.7	14.1	61.3
Cubans	29.5	46.2	57.5

*Note:* For this part of the analysis, we divided the samples into two regions—the north (combining the northeastern and north central census regions) and the south/west (the remainder of the country).

Mexicans, 21% of blacks, and only 14% of Puerto Ricans. In the south/west, the extremes are less far apart: 63% among non-Hispanic whites, compared to 33% among blacks. Moreover, two minorities—Asian Indians and, surprisingly, Puerto Ricans (who are, to be sure, few in number outside the north)—show virtually the same proportions as whites. In the north, by comparison, no group approaches the suburban proportion found in the white majority.

To pursue further the potential ramifications of such regional differences for patterns of suburbanization, Tables 4 and 5 present the logistic regression model estimated separately for each group in each major region (the results in Table 4 are for the north, those in Table 5 for the south/west). The only difference between the model presented in these tables and that in Table 2 occurs, of necessity, in the region variable itself, which is reduced to two categories in each major region (distinguishing in the north, for instance, between the northeast and the north central regions). Despite the varying concentrations of groups in the two regions, in general there are ample numbers of cases for the analysis. The number of cases falls below 1,000 only for the Vietnamese in the north.

For the family status and assimilation variables, which play a prominent role in national patterns, the findings in the two regions are broadly similar to those in Table 2, although the effects show some degree of regional specification. The greatest similarity is observed for the family status variables. In general, these have sizable effects on the probability of suburban residence in both regions, as in the nation. As in the nation, too, these effects display racial and ethnic variations; three minorities (blacks, Mexicans, and Puerto Ricans) are conspicuous for the small benefit their members derive from marriage and/or children in one or both regions. In the north, for instance, the effect of children in the household is significantly smaller for blacks than for whites, and is not discernible for Puerto Ricans; in the south/west, this effect is significantly smaller for Mexicans than for the majority. For Puerto Ricans and for Mexicans, the differences from the majority are more pronounced in the regions where the groups are highly concentrated.

The effect of English-language proficiency, the assimilation variable, varies more widely by region. It appears that this effect tends to be prominent in the region where sizable residential enclaves of a group are found and to be smaller or absent in the other

Table 4. Logistic Regression Analysis of Suburban Residence in the North

Variable	Non-Hispanic Whites	Non-Hispanic Blacks	Chinese	Japanese	Koreans	Filipinos	Asian Indians	Vietnamese	Mexicans	Puerto Ricans	Cubans
Individual and household characteristics:											
Age	.027*	-.027*	.011	-.020	.030	.016	-.018	-.040	-.081**	.025	-.020
Age <sup>2</sup> (/1,000)	-.246*	.313*	-.113	.045	-.478	-.274	.336	.630	.863**	-.279	.143
Household type											
(1 = married couple; 0 = any other)	.407***	.271**	.441**	.527**	.279	.465**	.435***	.250	.103	.443***	.265*
Children (1 = present; 0 = not present)	.414***	.207*	.507***	.695***	.920***	.512***	.408***	.312	.343*	.055	.357**
English language ability:	***	N.S.	***	N.S.	N.S.	N.S.	N.S.	*	***	***	**
English spoken at home	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>
Non-English mother tongue at home:											
English spoken well or very well	-.717	-.228	-.117	.305	-.235	-.274	-.055	.477	-.323	-.144	-.528
English not spoken well	-.1.173	-.510	-.729	.082	-.596	-.801	-.289	-.356	-.1.284	-.1.238	-.467
Education	-.002	.051***	.105***	.009	-.011	.019	.041**	-.023	.011	.057***	.052***
Household income in \$1,000	.023***	.020***	.036***	.029***	.035***	.030***	.032***	.041***	.042***	.037***	.026***
Metropolitan area characteristics:											
Region (1 = north central; 0 = northeast)	-.112	-.666***	-.420**	-.180	-.522**	.057	-.050	.378	-.459	-.516***	-.272
% of metro population residing in suburbs	.071***	.056***	.048***	.049***	.060***	.048***	.066***	.071***	.075***	.078***	.046***
% of suburban houses owner-occupied	.024**	-.019**	-.009	-.035	.011	.007	.028*	-.052*	-.044	.019**	.054***
Net difference between suburban and urban incomes (x 100)											
Group % of metro population	-.031***	-.007	.031**	.040*	-.005	.018	-.009	-.003	-.015	-.069***	-.000
P of sample exclusion (x 100)	-.050***	.030**	-.1.136***	-.3.380*	-.1.554	-.1.492***	1.277**	-.095	.044	.142***	.797***
Intercept/constant	-.003	.010*	-.000	-.005	-.014	.001	-.004	-.001	.001	-.041***	-.028**
N for analysis	5,174	5,197	3,453	1,388	1,380	2,187	3,186	381	1,250	8,474	2,952
Likelihood ratio chi-square	1430.7	811.9	1895.5	433.9	601.6	794.4	1374.0	109.1	267.2	2653.4	1882.5
Degrees of freedom	14	14	14	14	14	14	14	14	14	14	14

Note: The equations are estimated for the northern portion of the same samples used in Table 2.

<sup>a</sup> Omitted category

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

Table 5. Logistic Regression Analysis of Suburban Residence in the South/West

Variable	Non-Hispanic Whites	Non-Hispanic Blacks	Chinese	Japanese	Koreans	Filipinos	Asian Indians	Vietnamese	Mexicans	Puerto Ricans	Cubans
Individual and household characteristics:											
Age	.014	-.029*	-.005	.021*	.008	-.009	.009	.001	.008	-.003	.010
Age <sup>2</sup> (/1,000)	-.176	.255*	-.104	-.312**	-.149	.011	.027	.091	-.058	.059	-.195*
Household type											
(1 = married couple; 0 = any other)	.639***	.581***	.497***	.484***	.639***	.486***	.526***	.321*	.312***	.182	.494***
Children (1 = present; 0 = not present)	.327***	.237**	.313***	.433***	.414***	.249***	.484***	.344*	.140*	.369**	.311***
English language ability:	N.S.	*	***	***	***	***	N.S.	*	***	***	***
English spoken at home	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>
Non-English mother tongue at home:											
English spoken well or very well	-.051	-.288	-.380	-.272	-.347	-.293	-.141	.503	-.187	-.307	-.098
English not spoken well	.250	-1.467	-.865	-.263	-.776	-.320	-.087	.179	-.477	-.827	-.492
Education	-.038***	-.004	.061***	-.023**	-.014	-.004	.031*	.032*	.011	.014	.005
Household income in \$1,000	-.001	.011***	.005**	.006***	.012***	.007***	.003	.011*	.008***	.025***	.012***
Metropolitan area characteristics:											
Region (1 = west; 0 = south)	-.574***	-.127	-.937***	-.642***	-.987***	-1.234***	-.577***	-.723***	-.437***	-.151	-.940***
% of metro population residing in suburbs	.051***	.051***	.033***	.037***	.069***	.044***	.064***	.050***	.037***	.040***	.049***
% of suburban houses owner-occupied	-.031***	-.046***	-.073***	-.054***	-.014	-.036***	-.058***	-.058***	-.066***	-.032**	-.090***
Net difference between suburban and urban incomes (x 100)											
Group % of metro population	.006	-.045***	.002	.007	.008	-.008	.000	.012	-.009*	.010	-.024***
P of sample exclusion (x 100)	-.001	.015*	-.190***	-.027***	.021	.054***	-.237	-.209	.002	.064	-.054***
Intercept/constant	-.003	.014***	-.008	.009*	.008	-.002	.005	.001	.024***	.026**	-.007
N for analysis	-.383	-.025	2.745***	1.289**	-3.083***	.584	-.785	-.806	1.956***	-.889	3.331***
Likelihood ratio chi-square	4,826	4,803	6,547	8,612	2,815	7,433	2,094	1,702	8,750	1,526	7,048
Degrees of freedom	725.4	625.6	1100.5	839.3	587.2	583.7	406.7	214.9	1344.4	209.9	681.8
	14	14	14	14	14	14	14	14	14	14	14

Note: The equations are estimated for the southern/western portions of the same samples used in Table 2.

<sup>a</sup> Omitted category

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



region. Among non-Hispanic whites, for example, language acculturation has a powerful impact on suburban residence in the north, where many European-ethnic neighborhoods still exist, but no significant effect in the south/west. For Asian groups, the effects of language are significant mainly in the south/west, where the bulk of Asian immigrants groups live. Moreover, one of the two Asian groups with effects in both regions, the Chinese, has residential enclaves on both coasts (the pattern for the Vietnamese, the other of these groups, remains anomalous, however). For the Spanish-speaking groups, the effects are significant in both regions, although the language coefficients tend to be larger in the north than in the south/west.

For socioeconomic status, regional variation is delineated sharply. Nevertheless, there is an important degree of consistency between the regions and with findings from the national level: household income has significant, positive effects on suburbanization for virtually all groups in both regions; only non-Hispanic whites and Asian Indians in the south/west region are exceptions. As expected, however, the effects are uniformly stronger in the north, where the suburban ring has consistently higher status than the central city. Education has more limited effects, but significant and positive effects occur more frequently in the north than in the south/west. Moreover, where positive effects of education are found for the same group in both regions—among the Chinese, for instance—the effect in the north has greater magnitude.<sup>13</sup>

Also consistent with our findings at the national level is the lower impact of socioeconomic status for the non-Hispanic white majority. The pattern of a steeper socioeconomic gradient in suburbanization for most minorities holds true, despite the strong regional disparity in socioeconomic effects. In both regions, household income has a smaller influence on suburban residence for whites than for virtually any other group. In the north, for example, where a positive effect is found for whites (in contrast to the national results), the white coefficient is nevertheless smaller than that of any other group except blacks. A difference still exists between whites and blacks in the north, however: education has a positive effect for blacks but none for whites. In the south/west, the white income coefficient is not significant, in contrast to all other groups except Asian Indians. In this case, too, the effect of education creates a distinction: it is negative for whites but positive for Asian Indians.

So far we have found a great deal of consistency between the regional and the national results, but in one important respect the conclusions drawn from national patterns need to be modified. In particular, the conclusion that for a number of groups, socioeconomic effects are secondary to those of family status and assimilation apparently holds in the south/west, but not in the north. If we apply the same standard as before—namely, changes of \$15,000 in household income and four years of educational attainment, close to the standard deviations of these variables—it is clear that the combined effects of the socioeconomic variables are quite substantial for most groups in the north and rise to a great height among the Chinese and the Puerto Ricans. The weight of these effects might be disputed only for the whites and the Japanese.

As for the contextual variables, the picture is mixed: we observe greater inconsistency between the regional and the national results. Much of this inconsistency concerns the role of index of net difference between suburban and central-city household incomes. Although this index affects negatively the suburbanization of many minority groups in national results, it has few significant negative effects in Tables 4 and 5. Even more perplexing in the light of previous findings is that in the north, this index affects white suburbanization negatively while affecting that of the Chinese and the Japanese positively.

Caution is required, however, in drawing conclusions from the regional results because the range and the variance of the index are restricted in these results. As we have noted already, we are controlling the index to some extent by estimating the suburbanization

model separately in each region. In fact, the greater racial and ethnic disparity in northern suburbanization (in Table 3) is consistent with the national effects of the index because index values are uniformly positive in the north, thus tending to depress the suburbanization of some minorities and to yield relative advantages for whites. Nevertheless, the results in Table 4 suggest that whites may be disadvantaged in some of the highest-status northern suburban rings. This finding is at odds with national patterns as well as with our theoretically derived expectations.

We also observe changes in the findings for the influence of suburban home ownership. In national results, this variable, too, has numerous negative effects on the suburbanization of minorities, but has no influence on that of whites. According to the regional analyses, these negative effects are concentrated in the south/west. The findings for the south/west also show a negative impact on the suburbanization of whites, although the effect has a smaller magnitude for whites than for other groups, except the Koreans.

Finally, regional variation is present in the operation of the group size variable. Among non-Hispanic whites in the national data, this variable indicates greater white suburbanization where the total minority proportion is large. The regional analyses demonstrate that this effect holds only for the north, but is very pronounced there. Nevertheless, it is still the case in the north that some minorities, such as blacks and Puerto Ricans, are more likely to be suburbanized where they constitute a large part of the population, in contradiction to our hypothesis. Other minorities, namely Asian groups, show very large negative coefficients in the north, but these are counterbalanced by their typically small proportions in this region. Overall, the group-size results remain inconclusive for minority groups.

## Conclusion

Both theoretical models, assimilation and stratification, receive support from our analysis, especially in regard to individual- and household-level effects. Favoring the assimilation model are the broad consistency and the frequently sizable magnitude of some of these effects. Among all the racial and ethnic groups analyzed here, the process of suburbanization is influenced by family and socioeconomic status; among nearly all, it is influenced by assimilation. More specifically, married couples and families with children are favored consistently in suburbanization, typically by large margins at both national and regional levels. Household income also has a rather consistent positive effect on the probability of suburban residence, although this effect is considerably larger in the metropolitan areas of the northeast and the north central regions, where the suburban ring generally has higher average status than the central city, than in the south and the west. The effects of education, however, are far more variable and occasionally are negative.

Of particular relevance for the assimilation model are the effects of English-language proficiency. For most groups, this variable has a powerful effect on suburbanization, at least in the region where the group is concentrated. Thus there is a fairly general suburbanization gradient by level of language acculturation: the most acculturated are generally the most likely to be found in suburbs, whereas the least acculturated are the least likely. For two of the groups where language effects are not important, namely Filipinos and Asian Indians, an alternative assimilation variable, defined by nativity and citizenship, has more substantial effects. Assimilation is evidently a major part of the suburbanization process for most groups.

Nevertheless, elements of a stratification pattern also can be detected in the models for some groups. Two elements stand out. Few groups show both—perhaps only Puerto Ricans

can be said to do so. A number of minorities, however, including blacks, Chinese, Asian Indians, and Mexicans, possess one of the two.

The first element is the unusually small effect of family status among some groups—notably, blacks, Mexicans, and Puerto Ricans. Even in these groups, married couples and families with young children are more likely than others to be found in suburbs. Yet the small difference made by family type, especially for families with children, indicates a relative disadvantage in suburbanization for families from the lowest-status minorities, at least by comparison with families from other groups.

A second element is the sizable socioeconomic gradient in suburbanization found for some minorities, such as the Chinese and the Puerto Ricans. This finding is in strong contrast to the non-Hispanic white majority, for whose members socioeconomic variables tend to have small effects. This gradient, which is consistent even in the north, where socioeconomic effects are generally stronger, suggests that suburban residence, in fact, “costs” members of some minorities more than it costs members of the majority.

The impact of contextual factors is mixed, but provides suggestive evidence in favor of the stratification model. The income differential between suburb and city has a negative impact on the suburbanization of a number of minorities at the national level. This finding suggests that it is difficult for their members to attain suburban residence in precisely those metropolitan areas where it is most desirable. Likewise, the overall suburban home ownership level, a measure of the degree to which home ownership is a requirement for suburban entry, has a negative influence on the suburbanization of most minorities at the national level and in the south and west. Both variables, however, also have unanticipated negative effects on the suburbanization of non-Hispanic whites in a regional equation. The final contextual variable of interest, a group’s proportion of the population, shows theoretically consistent results mainly for whites. Coefficients for whites, especially in the north, show that majority suburbanization increases in tandem with the total size of the minority population, thus supporting the notion that suburbanization can be a mechanism for preserving social distance.

Most of the minority groups analyzed here provide evidence for assimilation and stratification models. In addition, a few groups display unique features that set them apart even from groups in the same broad racial/ethnic category. This is the case for assimilation status among the Japanese, for instance. Although English-language proficiency has a statistically significant effect in this group, it is small by comparison with other groups, despite considerable language variation. Only half of metropolitan Japanese speak English at home, and one-tenth say they speak it poorly or not at all.

As a well-established minority, then, the Japanese seem to be an anomaly in terms of suburbanization. Possibly this is the case because this group contains a sizable number of high-status temporary workers—the employees of Japanese companies—many of whom may reside in suburbs but do not speak English well. To date, however, there is little systematic evidence for any definitive interpretation of this anomaly; further research is needed. Such a case reveals a degree of variability in the process of suburbanization—a variability that is not captured by such aggregate categories as “Asian” and “Hispanic.”

In this paper we have broken new ground in studying suburbanization with individual-level data and in comparing causal processes across numerous distinct ethnic and racial groups. In closing, we want to acknowledge that our research raises at least as many questions as it answers. Among the most important is the heterogeneity within suburbia. Suburban communities are not all of a piece: they differ in numerous ways that affect their residents’ quality of life and life chances—such as their crime rate, their tax base, and their stage in the life cycle of community development. If diversity exists in the process of attaining residence in the suburbs, there is also good reason to suspect diversity in the kinds of suburbs that different minorities are likely to enter. Until researchers begin to explore this

latter diversity, they will not be able to comprehend the long-run implications of the growing minority presence in America's suburbs.

## Notes

We do not consider American Indians here because of the likelihood that their suburbanization pattern is quite distinctive, influenced by the presence of reservations in some metropolitan areas (particularly in the west). We also do not consider ethnic differences within the non-Hispanic white population (but see Guest 1980). One reason is that the analysis is already complex, with 11 groups under consideration. Further, our preliminary analysis showed that overall suburbanization levels differ little among the major European-ancestry groups: thus their patterns are less interesting than those we consider.

<sup>2</sup> In four cases, the central city/suburb distinction is not available as a matter of definition because a metropolitan area consists only of a central city or has no such city. These cases are Anchorage, Alaska and Meriden, Connecticut, which have no suburbs, and Nassau-Suffolk, New York and Northeast Pennsylvania, which have no central cities. We dropped three of these areas from the analysis, but in the case of Nassau-Suffolk, a large metropolitan area containing many suburbs of New York City, exclusion seemed undesirable. Hence, we retained it and viewed New York City as its central city for the generation of the one variable in the analysis (the index of net difference between suburban and central-city incomes) that requires reference to central-city characteristics.

<sup>3</sup> Only for non-Hispanic whites, however, do all of the 126 eligible metropolitan areas appear in the analysis. For other groups, a few metropolitan areas generally must be dropped because of sparse representation by those groups. Typically the number of metropolitan areas included lies between 100 and 120; no group is represented by fewer than 100.

<sup>4</sup> We used the LOGIST procedure in SAS for the analysis.

<sup>5</sup> Such a function corresponds with one of the three methods described by Berk (1983) for correcting selection bias. In our case, it is based on logged population size because this variable is strongly predictive of appearance of a metropolitan area in the analysis (the two are correlated at the .8 level across all metropolitan areas in the nation).

<sup>6</sup> These are not the only contextual factors that might be hypothesized to affect the suburbanization process. For example, Massey and Denton (1987) include such variables as the employment growth rate and the median age of housing in the aggregate-level analyses of suburbanization. For the most part, however, these contextual variables are not statistically significant in their models. Moreover, we encountered problems of multicollinearity in preliminary analyses drawing upon a larger set of contextual variables, and thus decided to keep the number small.

<sup>7</sup> For blacks and Puerto Ricans, the period of immigration data could be regarded as potentially misleading. For the Puerto Ricans in particular, U.S. birth is not indicative of migration status because it includes birth in Puerto Rico. Both groups contain many relatively recent migrants to metropolitan areas. Nevertheless, our basic point still holds because in general these two groups are less recently arrived in U.S. metropolitan areas than predominantly immigrant groups such as the Koreans and the Asian Indians, which have substantially higher suburban proportions.

<sup>8</sup> The representative percentage difference in the text is calculated as follows (see Alba 1987 for further details). Because the suburban proportions of many groups are close to .5, this value is assumed as a convenient reference probability for someone in the omitted category of either family status variable; accordingly the odds of suburban residence for this person are 1. (The values of other independent variables are assumed to be fixed, but are otherwise irrelevant for the calculation.) Among the Japanese, then, having children in the household multiplies the odds by 1.61 (i.e.,  $e^{.476}$ ), implying 1.61 (i.e.,  $1.61 \times 1$ ) as the new odds produced by a difference in the variable. These odds correspond to a probability of .617 (based on the formula,  $p = \text{odds} / [1 + \text{odds}]$ ), and yield the difference cited in the text.

<sup>9</sup> A test for differences between regression coefficients reveals a number of statistically significant differences, especially for the children-in-household variable. To assess such differences, here and elsewhere in the paper, we used the following t-statistic:

$$t = (b_1 - b_2) / \sqrt{(s.e._1^2 + s.e._2^2)}$$

where  $s.e._1$  and  $s.e._2$  are the standard errors of the two logistic regression coefficients. This is the same statistic normally employed to test for differences in coefficients across equations estimated by ordinary least squares. We are grateful to Clifford Clogg for pointing out that it can be applied in a logistic regression context.

According to the test, a number of statistically significant differences exist for the household-type variable involving Mexicans—for instance, their coefficient is significantly lower than that for the Japanese ( $t=2.40$ ,  $p<.01$ , one-tailed test). Significant differences are more common for the coefficients associated with children in the household. For instance, the black coefficient is significantly lower than the white ( $t=1.80$ ,  $p<.05$ , one-tailed test) and the Japanese ( $t=3.31$ ,  $p<.001$ , two-tailed test). The Mexican and the Puerto Rican coefficients also are significantly lower than those of most other groups.

For the remainder of the paper, we will not provide the statistical details of similar coefficient comparisons, although we carried out the appropriate test in all cases. For the reader who wishes to pursue such comparisons, the standard errors of the variables in Table 2 can be obtained from the first author.

<sup>10</sup> Our findings appear to clear up one mystery in results from aggregate data, but to raise another. Massey and Denton (1987, p. 819) report the anomaly that English-language ability is related negatively to suburbanization among Hispanics, and acknowledge that this finding “is difficult to interpret.” At the individual level, this anomaly disappears, suggesting that it is an ecological artifact.

We harbor some suspicion, however, about the apparent effect of language among non-Hispanic blacks. The variable has little variance in this group, few of whose members use a language other than English, and it proved insignificant in other analyses we conducted (with somewhat different samples). It is barely significant here.

<sup>11</sup> The index of net difference has been constructed so that positive values indicate that suburban incomes tend to be higher than central-city incomes (the usual case), and negative values indicate the reverse. In addition, the ownership and the income measures are quite distinct; multicollinearity is not an issue here. The correlation of these measures over the metropolitan areas in the analysis is only .14.

<sup>12</sup> For practical reasons, we limited ourselves to dividing the sample into two regions rather than the conventional four. One constraint originates from our contextual variables: it is desirable to retain as many metropolitan areas as possible for each regional equation because these areas ultimately provide the degrees of freedom for the estimation of the contextual variables. The two-region division, in fact, generates two approximately equal groups of metropolitan areas. A second constraint originates in the varying regional concentrations of groups. If the national samples are divided among several regions, some regional equations for some groups will be based on fairly small numbers of cases.

<sup>13</sup> The Vietnamese are an exception to the general pattern because education has a positive effect on their suburbanization in the south/west but none in the north. The northern equation, however, is based on a very small number of cases, which leaves room for doubt about the impact of education in the north.

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