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METROPOLITAN SUBURBANIZATION OF OCCUPATIONAL GROUPS
AMONG THE NON-HISPANIC WHITE POPULATION, 1990

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ABSTRACT

The end of the 20th century was marked by major changes in the spatial organization of U.S. metropolitan areas. Central cities became increasingly characterized by pockets of severe poverty while undergoing economic upgrading of other neighborhoods. Suburban rings were also characterized by diverse patterns of change. This paper explores the ramifications of these changes for understanding variations in the central city versus suburban concentration of high status non-Hispanic white occupational groups across 153 large metropolitan areas. On the whole, we find that the traditional developmental model, emphasizing status distributions as a reflection of metropolitan age and population size, is not especially useful for understanding the status distributions. Our best model is one that places an emphasis on the economic role or function of the metropolis. In addition, we find that regional patterns of racial concentration are important in understanding the strong regional effects on the location of high status workers.

This paper focuses on inter-metropolitan variations in suburbanization by occupation among the non-Hispanic white population. Our purpose is analyzing the variations in suburbanization as opposed to central city location across 153 U.S. metropolitan areas that have at least 250,000 population. We are interested in learning more about contemporary features of metropolitan areas that are affecting the location of high and low status workers.

The traditional conceptualization of urban space in which an impoverished central core is surrounded by a ring of affluent suburbs is rooted in Burgess' (1925) classic model of metropolitan structure¹. This model implicitly assumes that, as the metropolis grows, the residential form of the metropolis will conform to a distance decay gradient in which social status and distance from the central city are inversely correlated. Yet, this gradient is weak in many metropolitan areas (Guest 1970, 1974), and many core central cities of metropolitan areas have been shown to be characterized by higher status residents than their suburban rings (Schwirian 1990).

Research for earlier time periods (especially in 1950 and 1960) by Schnore (1962, 1963) emphasized the suburbanization of high status individuals as a function of the age and size of the metropolis, with the oldest and largest metropolitan areas having "evolved" from a relative centralization to a decentralization of high status individuals. This evolutionary perspective placed a strong emphasis on the idea that metropolitan areas developed in common land use patterns. It was consistent with the Burgess perspective in the sense that the highly variable pattern of high status suburbanization could be attributed to the fact that many metropolitan areas did not have the age, size, or growth to evoke the flight of high status residents from the central city.

This perspective may be less useful in recent years that have seen a great deal of restructuring of urban America, albeit highly variable in extent and nature across metropolitan areas. While some central cities are still characterized by massive housing abandonment and deterioration, others have witnessed massive capital reinvestment (Clark 1987, Ley, 1996). Additionally, the "shift" from a manufacturing to a service economy has been accompanied by a reorganization of the occupational and locational structure of employment. Furthermore, within many central cities, residential space has become balkanized in terms of separate communities for whites and blacks, and the role of racial factors in the distribution of high status workers is not well understood.

The contemporary phase of metropolitan growth is also marked by a significant degree of polarization within both central cities and their suburban rings (Sassen 1991; Massey 1996). That is to say, both cities and suburbs are becoming richer and poorer at the same time. As a result, the relationship between urban space and social status has become increasingly complex.

Our view is that the traditional differentiation between the central cities and suburban rings of old and new (and big and small) metropolitan areas is no longer especially viable for understanding the distribution of higher status workers. We view this paper as an initial attempt to explore which features of recent urban structure have assumed the most importance in understanding social status distributions.

A key concern in this paper is distinguishing the relationship of occupation to suburban location from the influence of race. As far as we know, this is the first analysis to investigate the patterns within the

¹ While this view of urban structure was dominant in urban studies through most of the twentieth century, Harris and Lewis (1998) maintain that scholars have placed much more emphasis on the political division between city and suburb than Burgess had originally intended.

non-Hispanic white population for a large number of metropolitan areas. The great majority of previous analyses of this general topic have investigated the occupational character of the total population in relationship to suburbanization (for instance, see Guest 1976; Olsen and Guest 1977), but it is possible that some of the patterns of distribution for high status workers reflect the fact that minority groups are more often in lower status occupations and concentrated residentially in central cities. In some metropolitan areas, especially in the traditional Northern heartland (sometimes known as the "Rust Belt"), segregation of blacks from other groups is quite high (Massey and Denton 1993), leading to a situation where the spatial concentration of minorities will have an almost logical relationship with occupational suburbanization.

PREVIOUS RESEARCH

Schnore's study of 1960 suburban-central city differentiation is quite valuable for demonstrating the lack of generalizability associated with the concept of city-suburban status differentials (Schnore 1963). His multivariate analysis clearly demonstrates that the age of the central city is the strongest predictor of status decentralization. Annexation, which is a measure of the percentage of the population residing in the central city, also proves to be significant, but less so than age. Schnore interprets the difference between newer and older cities to be a function of the age of the central city housing stock. He argues that the obsolete housing stock found in most older central cities "pushes" higher status residents into the suburbs. Conversely, the more recently built central city housing stock found in newer cities works to encourage middle class settlement.

This conceptualization is fairly consistent with some aspects of the political-economic perspective on the production of urban space. While scholars working in this tradition have eschewed the developmental process inherent in Schnore's approach, they have nonetheless emphasized the role of housing *supply* in the shaping of the urban landscape (Harvey 1973; Walker 1981; Smith 1996). In this scenario, the high land and redevelopment costs in the central city encourage industrial and residential capital to move beyond the city limits in search of cheap and profitable investment opportunities. As the central city housing stock deteriorates, it is not replaced or upgraded. Consequently, residents are "drawn"/"pushed" to suburban housing locations. Over time, this outflow of infrastructure and development capital results in the production of central city slums and ghettos, which further accelerates the departure of investment income and households. In this way, classic city-suburban disparities are created at the intra-metropolitan scale.

Recent work has confirmed the continued growth of the "spatial status gap". Schwirian et al. (1990) compared educational attainment levels of central cities and their suburban rings in 318 metropolitan areas in 1950, 1960, 1970, and 1980. They found clear evidence that suburban rings were increasingly high in status relative to their central cities. Hill and Wolman (1997) have found that city-suburban differences in per capita income grew 13% during the 1980-1990 time period.

Ironically, the continuation and exacerbation of city-suburban status inequalities has been accompanied by the "complexification" of urban space. That is to say, the central city is not becoming uniformly impoverished while the suburbs are becoming uniformly affluent. Both urban and suburban space is becoming more polarized simultaneously (Bourne 1993; Massey 1996). While most cities have experienced an overwhelming increase in poverty and other social problems (Badcock 1997), they have also been subject to substantial reinvestment. As the land and redevelopment costs in the suburbs have risen and the property values in certain central city locations have declined to such an extent

as to make profitable redevelopment possible, devalorized central city neighborhoods have become the target of reinvestment (Smith 1996). Shifts in demographic structure, household composition, cultural norms, employment activity, labor force composition, life-style preferences, and public policy decisions have worked to create a large consumer demand for this rediscovered central city housing supply (Clark 1987; Frey and Speare 1988; Rose 1989; England 1991; Bourne 1995; Ley 1996). Consequently, new enclaves of affluence have been produced in the central city, as highly-educated and well paid professionals have begun to take up residence. Thus far, however, in most areas the extent of this gentrification has not been large enough to overcome the intra-metropolitan status differential.

While the social status of the city shows signs of improvement, some suburban areas have begun to decline. Many older suburbs have begun to experience substantial disinvestment as their housing and infrastructure become obsolete. A number of studies have shown that these suburbs have become more heterogeneous, more polarized and less affluent (Bourne 1993; Orfield 1996; Morrill and Falit-Baiamonte 1999). Poverty and other social problems have "spread" out of the core and into these mostly inner-ring suburbs. Additionally, given the relatively low housing costs in these areas and the rising cost of residential space in the city, many non-family, non-white and poor households have begun to settle in these locations. At the same time, the contemporary suburban fringe has begun to resemble the traditional post-war suburbs.

Guest's research has demonstrated that the processes associated with the metropolitan status differentiation have varied over time (Guest 1978; Guest and Nelson 1978). His analysis of city-suburban status inequality during two separate time periods, 1920-1950 and 1950-1970 reveals that during the first half of the century, status differences were primarily associated with older metropolitan areas, whereas over the next 20 years they become more pervasive. Suburban status evolution is primarily associated with the 1920-1950 time period. During this time technological and organizational advancements facilitated a large scale exodus from the central city in older metropolitan areas, but to a lesser degree in new metropolitan areas. During the 1950-1970 period, although the status of suburbs in both old and new cities experienced absolute gains in status, this process did not result in a large scale reorganization of suburban space. That is to say, absolute status gains were due to the population increase in the high status suburbs. The most important factor in this scenario is the growth rate of individual suburbs. The availability of new housing in or around affluent suburbs, regardless of the situation in the central city decline, resulted in the high status city-suburban migration.

In their study of central city-suburban status differences between 1950 and 1980, Schwirian et al. (1990, 1158) claim the opposite, that "...as places age, grow, decentralize, and industrialize, they will progressively experience a residential redistribution of their social status groups,...". However, their data (1990, 1155) show for all metropolitan areas that the age and population size of metropolitan areas had the weakest effects on high status suburbanization in 1980, compared with 1950, 1960, and 1970. Central city specialization in manufacturing employment, and regional location in the Northeast and Southwest were most strongly associated in 1980 with high status decentralization, independent of other factors. They do, however, show some tendency for suburban social status to particularly increase between 1950 and 1980 for older, larger metropolitan areas that showed high status centralization in 1950, but this was a limited sample of all metropolitan areas in their study.

During the past two decades, a vast amount of research has explored the relationship between large-scale restructuring and the accompanying change in the socio-spatial metropolitan organization (Sassen 1991;

Bourne 1995; Ley 1996; Van Kempen and Marcuse 1997; Wilson 1997; Dear and Flusty 1998). However, little attention has been given to the processes associated with inter-metropolitan variations in city-suburban status differentials. In general, the traditional conceptualization of this relationship in terms of the evolving Burgess-Schnore pattern have either been summarily dismissed without comment or unquestionably accepted.

We attempt to redress the problem by examining the predictive efficacy of four different models:

First, we assess the contemporary applicability of the traditional metropolitan development and housing models, which conceptualizes the suburbanization of high status individuals as a function of the age and size of the metropolis. According to this perspective, older and larger metropolitan areas should be clearly distinguishable from newer and smaller metropolitan areas in the suburbanization of high status workers.

Second, we consider the housing structure of central cities, with the hypothesis that older and multiple unit housing should drive out higher status workers. This model, in some respects, has a high overlap with the first in that, consistent with Schnore (1963), it may be the older central housing of the older and larger metropolitan areas that is the primary force in driving out high status residents from the center. However, some central cities have undergone extensive urban renewal, and it may be that housing characteristics do predict the location of high status groups, but these have become somewhat disassociated with the age and size of the metropolis.

Third, we analyze the importance of economic base. Metropolitan areas are frequently distinguished by whether they contribute to national and international production by production of tangible goods (manufacturing), central place-retailing activities, and special personal services. In particular, the production of goods is an unattractive activity and older goods producing industries in central cities (smoke-stack industries) may drive out higher status workers. In their research on 1960 patterns of status distribution, Schnore and Winsborough (1972) especially emphasize the role of a manufacturing functional base in driving high status workers into suburban residential location. Superficially, one might think that metropolitan areas with high concentrations of central place (wholesaling and retailing) activities would have little suburbanization of high status workers, since their central cities would be relatively clean and unpolluted. However, Schnore and Winsborough (1972) did not find the presence of these activities to be especially important in status suburbanization or centralization.

With the extraordinary development of a "service" economy, substantial interest has developed in its consequences for the spatial organization of socioeconomic groups. Many urban scholars attribute high status centralization to be a direct result of the employment growth in the corporate service sector (Sassen 1991). However, others have argued that this conceptualization is derived from the experience of "world class" cities, such as New York, London and Tokyo, which function as corporate controls centers and are dominated by private sector multinational firms (Rose 1989). This perspective ignores the situation of more regional oriented cities in which high status centralization is associated with the public, quasi-public, and cultural sectors: education, health, welfare and entertainment. Empirically, little is known about this topic. One might be skeptical of arguments that corporate strength in metropolitan areas retards the suburbanization of high status workers since some Rust Belt cities such as Newark and Hartford have strong concentrations of corporate service activity but are also well known for their flight to the suburbs by high status

workers. Indeed, many service activities may take little civic interest in their central cities.

Fourth, we consider the role of racial factors in high status suburbanization. On the one hand, some scholars (Massey and Denton 1993) have argued that many metropolitan areas are characterized by American apartheid where racial groups are largely isolated residentially from each other. High status members of the dominant white group might especially seek suburban location since their command of economic resources makes it feasible for them to separate themselves from the rest of the population. Alternatively, it could be pointed out that many metropolitan areas, especially in the West, have been characterized by increasing levels of residential integration by race. In addition, Southern metropolitan areas have been characterized by some residential integration, due to the mutual tolerance of majority and minority racial communities for close spatial proximity but little actual social interaction.

To deal with these issues, we first focus on the question of whether major occupational groups even segregate themselves between suburbs and central cities on the basis of their social status position. It is possible that occupational segregation relates more to factors such as the type of industrial work or industrial product that individuals emphasize, rather than some status hierarchy. We then explore the degree to which American metropolitan areas are characterized regionally by similar or diverse patterns of suburbanization of occupational groups. The analysis then explores how structural characteristics of metropolitan areas may be related to variations in occupational suburbanization, and the degree to which regional differences may reflect structural differences in patterns of metropolitan organization.

DATA AND METHODS

This sample of 153 metropolitan areas was drawn from the 1990 Census of Population and Housing Summary Tape File 3C and the Equal Employment Opportunity File. Metropolitan areas were included in the sample if they had a 1990 population of at least 250,000 and at least one central city with a population of 50,000 or more. While there is obviously some selection on the basis of metropolitan population size, we decided to eliminate smaller metropolitan areas because their "suburban" counties often contain very low density and/or agricultural lands, which are not really feasible residential locations for most workers in the high density central city and closely related suburban ring. In metropolitan areas that contain multiple central cities only the largest city was included as "central", unless another city (or cities) had a population greater than 50% of the largest and contained at least 50,000 persons. For these cases, central city data was aggregated and treated as a single central city in the analysis.

PATTERNS OF SUBURBANIZATION

Research on the relationship of various measures (occupation, educational attainment, and income) to suburbanization across U.S. metropolitan areas has found highly intercorrelated patterns (Schnore and Winsborough 1972). Metropolitan areas with relatively high centralization of high status occupational groups also have relative centralization of high status educational and income groups, suggesting a general dimension of high versus low status suburbanization. At the same time, some measurement issues are still ambiguous. In most studies, the general assumption has been that the selected indicator has categories that form a status continuum from high to low so researchers have investigated arithmetic means or arbitrarily dichotomized variables on some value (such as being in a nonmanual versus manual occupation). However, it is also possible that groups may vary in their residential locations on other dimensions besides status or in complex ways. For instance, occupational groups may live near each other primarily because they are employed in the same nearby industries, regardless of status.

It is also possible that status forms a curvilinear pattern in regard to suburbanization. In research on 1960 census data, Schnore and Jones (1969) found that a substantial number of metropolitan areas were characterized by having disproportionate numbers of the very poorly and the very well educated living in the central city while individuals who were closer to mean levels of schooling tend to be found disproportionately in the suburbs.

We proceed by first describing the general patterns of suburbanization by specific occupational group that exist over the 153 metropolitan areas. We then use principle components analysis to cluster the metropolitan areas on the degree of centralization or suburbanization of non-Hispanic whites by type of occupation.

Our analysis focuses on 11 broad occupational groups from a list of 13 major groups that are used by the U.S. census. These groups are listed in Table 1. One of the 13 groups, "farming, forestry, and fishing occupations", is not included in the analysis because low proportions of urban residents are employed in those jobs. We combined household service workers with other service occupations, except protective services, due to the small numbers of workers who were typically employed in that occupational category.

TABLE 1 ABOUT HERE

In general, the first five occupations in the table are considered "nonmanual" and have higher social standing than the other six occupations that are typically considered manual. In particular, the first two occupations (Executive and Professional categories) are characterized by high average levels of education and income. While this characterization is in part supported by our empirical analysis, it is also important to qualify it. Much of the literature on the social impact of "deindustrialization" (Sassen 1991) emphasizes the situation whereby low paying, low skill nonmanual service jobs have replaced better paying, highly skilled manufacturing positions. Therefore, it is problematic to regard all nonmanual positions as necessarily high in status. In fact, it is questionable whether some of the less skilled nonmanual jobs are in fact higher in status than high-skilled manual jobs.

For each metropolitan area, we have determined the relative centralization of each occupational group compared with all non-Hispanic white residents in the metropolitan area. Our measure is essentially a location coefficient calculated in the following way: For each of the 11 occupational groups of non-Hispanic white workers, we calculated the percentage of all metropolitan workers who lived in the central city (as opposed to suburban ring). That percentage was then divided by the percentage of all white non-Hispanic residents who lived in the central city as opposed to suburban ring. This ratio produced a location coefficient that indicated the overrepresentation of the occupational group in the central city, with ratios above 100 (1.0) indicating relative concentration in the central city and ratios below 100 (1.00) indicating relative suburban concentration. In the sample of 153 metropolitan areas, each occupational group should be characterized by central city concentration in approximately half the cases if all occupational groups showed the same general tendency for residential location.

Superficially, Table 1 shows some surprising results in regard to Non-Hispanic white workers. The manual Service Workers are most often centralized (111 of 153 cases), but, in general, the nonmanual occupations are disproportionately found residentially in the central city while the manual occupations are underrepresented in the central city. The category with the second highest incidence of centralization is Professional Specialty, followed by Administrative Support and Technicians and Related Support. This seems to violate our common image that nonmanual workers live in the suburbs while manual workers reside

in central cities, or that high status workers are primarily suburban in residence while blue collar workers are primarily centralized.

This counter-intuitive overall pattern may reflect to some degree the differential location of workplaces within metropolitan areas. In general, the centers of American metropolitan areas specialize in administrative and coordinating activities that serve the entire metropolis, and this may encourage nonmanual workers to maintain a central city residence (Guest 1977). Manufacturing activity, especially in large plants, tend to be concentrated more on the metropolitan periphery where space is more available.

Nevertheless, the ratios for specific occupations show substantial variation across the 153 metropolitan areas. As an example in regard to Professional Specialty Workers who frequently have high average levels of education and income, we find four metropolitan areas (Cleveland, Gary-Hammond, Hamilton, and Trenton) to have quite low central city representation, with location coefficients of less than .75. At the other extreme, the four areas with the highest ratios (over twice as large), above 1.64, are Washington, Pensacola, Oakland, and New Orleans.

To provide a broad framework for the paper, we have also provided in Table 1 the same locational quotients when they are computed for the Black and Hispanic populations. In these race specific quotients, the denominators are the numbers of persons in the relevant black or Hispanic population. In a few occupational comparisons, the number of metropolitan areas does not equal 153 because no workers in that occupational category were reported for the ethnic group.

Somewhat surprising to us, the occupational location ratios suggest, typically, more high status suburbanization of black and Hispanic nonmanual workers than non-Hispanic white workers. Note, for instance, that black Executives are relatively suburbanized in 114 metropolitan areas, while non-Hispanic white Executives are suburbanized in only 75 metropolitan areas. One reason for this pattern is that the ratios are computed relative to all workers in that racial/ethnic group. Black executives evidence high suburbanization only in relationship to all black workers, not all workers. Since all black workers are relatively concentrated in central cities, the actual suburbanization of black executives in relationship to ALL workers is greatly overstated. Nevertheless, the patterns do not necessarily fit stereotypical conceptions of high status minorities as concentrated in the same pattern as all black workers.

DIMENSIONS OF OCCUPATIONAL LOCATION

Rather than simply categorize some of the occupations, mainly nonmanual, as high in status, we try somewhat inductively to use principle components analysis to group the major clusters of occupations that seem to follow similar location patterns across metropolitan areas. For the 11 occupational groups among the non-Hispanic white population, we correlate their degree of centralization across the 153 metropolitan areas. The resulting correlation matrix of occupational groups by their degree of centralization will then be analyzed with principle components analysis to determine the major groupings.

While the general patterns of suburbanization for non-Hispanic white workers may seem surprising, it is still possible that patterns across metropolitan areas are differentiated by the social standing of the occupations. One possibility is that all high status occupational categories tend to be concentrated residentially in central cities when low status occupational categories are concentrated residentially in suburban rings. Alternatively, when the central city is disproportionately occupied by low status occupation groups, the high status groups may be concentrated in the suburbs. If true, this would suggest a general tendency for occupational groups to cluster in central cities (or suburbs) on the basis of their overall social standings.

The major patterns in the data are summarized well by two major dimensions, with the first dimension being especially important (summary identifications of the occupational groups are shown in Table 1). The initial dimension explains 56.2% of all the variance among the 11 occupational categories, and will be interpreted as a general status dimension. The second dimension explains an additional 12.7 percent of the variance, but its interpretation is less clear. The loadings (from -1.0 to +1.0) of the occupational groups on the two dimensions are shown graphically in Figure 1, with the first dimension indicated by the horizontal axis and the second by the vertical axis.

FIGURE 1 ABOUT HERE

In principal components analysis, as many components may be extracted as the number of variables, but, in this case, all the other components had Eigen values or summary loadings of less than 1.00, a common cutoff for considering the component to be important.

An interpretation of Component 1 in terms of status is suggested by a general ranking of the occupational groups from high (left side horizontal axis) to low (right side horizontal axis). This parallels a movement from nonmanual work (left) to manual work (right). As expected, at the extreme left, we find the "elite" occupational groups clustered together, Executives and Professionals. Two other nonmanual occupations, Technical and Sales workers, are less clearly distinguishable than the "elite" nonmanual occupations, but they tend to be located in some proximity. The other nonmanual category, Administrative workers (primarily clerical and office workers) is positioned much closer to the manual workers.

All six manual occupations appear on the right hand side of the figure, indicating the importance of the manual-nonmanual distinction. Of the manual position, Service and Protective (such as police, firepersons, and security guard) workers are closest to the nonmanuals. The other four manual positions are located in relatively equal spaces on the far right hand side of the figure. These tend to be traditional "industrial" types of jobs.

As noted above, the second dimension explains much less of the locational variation among the occupational groups, and appears conceptually less clear to us than the first dimension. The three occupations (all nonmanual) with the highest loadings, Technical, Sales, and Administrative, are disproportionately involved with office/commercial work, and this dimension may thus tap a separate tendency for these types of workers to locate in central cities and suburbs. To a large extent, this second dimension also indicates the clustered presence of nonmanual workers in central cities or suburban rings, but it is much less status based since the two elite nonmanual categories, Executives and Professionals, do not especially cluster on it.

In his study of friendship patterns in Detroit, Laumann (1973) also finds occupational groups select intimates along two dimensions. The occupational categories are not the same, since they are based on older (pre-1990) census criteria. While it is difficult to compare directly the results, there is evidence of a similar prime "status" dimension in which manual occupations are located away from nonmanual occupations. At the same time, Laumann's second less-clear dimension, "bureaucratic" versus "entrepreneurial" occupations, only bears a very rough resemblance to our second component.

Given the clarity of the first dimension, we focus the subsequent analysis on it. We have used the "regression" technique in SPSS to generate factor scores for each metropolitan area, indicating their tendency to score high or low on this dimension. The factor scores are forced by SPSS to have a mean value of .00 and a standard deviation of 1. Thus, the score for each metropolitan area provides some indication of how it stands relative to all other areas. In the subsequent

analysis, positive factor scores are suggestive of suburbanization for the high status collar groups.

A common measure of extreme values in a distribution is a standard deviation of 2.0. Using this standard, we find the following metropolitan areas with an unusual suburbanization of high status groups: Cleveland, Detroit, Joliet, Newark, and Paterson. All of these metropolitan areas are found in the so-called Rust Belt, and are characterized by large minority populations. In contrast, three areas have unusual centralization of high status groups, Atlanta, Pensacola, and Washington. All are located in the South, although interestingly enough, they too have large minority populations in their central cities. The data thus suggest some caution in interpreting the location of high status non-Hispanic white workers as a simple response to the clustering of minorities in central cities.

REGIONAL VARIATIONS

Before testing specific models of high status suburbanization, it is useful to investigate regional patterns of variation. Region has no inherent sociological meaning but may serve as a proxy for such characteristics as the age of housing, the economic base of the metropolis, and the ethnic composition. Typically, metropolitan areas in the Northeast have been characterized by a relative suburbanization of high status workers, while this pattern has been much less evident in the South and West (Schnore 1963). Northeastern metropolitan areas are older, larger, and more industrial than places in the rest of the country, and the regional relationship may therefore reflect the operation of these more proximate factors in understanding the distribution of high status persons.

In 1990, regional variation in status distributions is quite striking for what we have identified as the primary "status" dimension. Table 2 shows the distribution of metropolitan areas on the first component scores when divided by the nine major census regions. To emphasize some of the broad patterns in the data, we have further grouped these divisions into three major sections of the country, with the "Rust Belt" consisting of the East North Central, MidAtlantic, and Northeast; the South is comprised of East South Central, West South Central, and South Atlantic. The rest of the country essentially forms the trans-Mississippi region, the area proximate to and west of the Mississippi River.

Component scores are divided into three categories: those at least 0.5 standard deviations above the mean (strong high status suburbanization), those at least 0.5 standard deviations below the mean (high status centralization), and the great bulk of the metropolitan areas that have less extreme patterns.

TABLE 2 ABOUT HERE

Quite clearly, the pattern of high status suburbanization is found primarily in the Rust Belt. While this is not surprising, the strength of the relationship seems quite strong. Some 27 of the 35 metropolitan areas with strong high status suburbanization are found in this part of the country.). New England is most frequently characterized by high status suburbanization, as 6 of the 10 metropolitan areas have the highest positive scores. But the East North Central Region, mainly the industrial belt along the eastern Great Lakes, is also characterized by unusual high status suburbanization (14 of 29 metropolitan areas). In contrast, the metropolitan areas with unusual high status centralization are found in the South (30 of 40 metropolitan areas). Of the 55 Southern metropolitan areas, only two have high status suburbanization scores that are at least .5 standard deviations above the mean. The major regional differences thus seem to be between the Rust Belt and the South, with the trans-Mississippi region occupying a less clearcut position.

The second component of central city-suburban occupational distribution in Figure 1 has much less pronounced regional variation. There was a slight tendency for the "bureaucratic" occupations to be concentrated in central cities of the South, but most of the variation in this pattern was within region.

STRUCTURAL EFFECTS

To test the four different models that we sketched previously, we turn to multiple regression analysis. The dependent variable is the score of each metropolitan area on the first "status" factor component that we have identified. Our concern in this section is two-fold: First, which sets of variables jointly explain the most variance in the location of higher status workers? This will be primarily determined by inspecting the explained variance in each model. Second, which specific variables have the strongest effects on the suburbanization of high status groups? This will be primarily determined by inspecting the standardized partial regression effects within each model. The models are shown in Table 3.

TABLE 3 ABOUT HERE

The Schnore-Developmental model will be measured by the age of the metropolis (the first census year the central cities reached 50,000 population, the natural logarithm of metropolitan population size, and the percentage of the metropolitan population living in the central city. Small central cities will presumably have especially unattractive centers and thus drive out higher status workers. Results show that this model does not work very well, as only 5.3 percent of the variance in suburbanization of high status workers is explained, the least successful of the four models that we consider. While the results are consistent with an evolutionary model, the results suggest that other conceptualizations of central city-ring differentiation need greater attention. The only variable with a statistically significant partial effect is the age of the metropolitan area, with older areas being characterized by high status suburbanization. The other predictor variables have stronger zero-order correlations with the status distribution, but these effects are reduced when their interrelationship with metropolitan age is statistically controlled.

The Housing model emphasizes that central cities vary in their ability to provide suitable housing for elite workers. Central cities with high proportions of multiple unit and older housing will not be attractive to high status workers. To some extent, this model might be considered derivative of the Schnore-developmental model since the effects of variables such as metropolitan age presumably reflect the distribution of housing characteristics. At the same time, we may not expect strong effects of these variables since, due to urban renewal, a good amount of the less desirable older housing has been torn down in American cities. In addition, much older housing in central cities has been rehabilitated and upgraded.

To measure these variables, we have calculated for each metropolitan area the proportion of all central city units that have the characteristics (single family dwellings, built before 1940). We also considered taking the ratio of central city values to suburban values of these proportions, to determine the relative standing of each central city in relationship to its suburban ring. However, this more complicated ratio did not improve noticeably the prediction.

The absolute variance explained by this model (.143) is small but almost three times as great as the variance explained in Model 1. Both independent variables have the predicted effects, although age of housing is somewhat more important than the unit character of the housing.

We find the most supportive results for the Economic Base model. To date, researchers have emphasized the importance of a manufacturing economic base for driving high status individuals out of the central

city, presumably as a consequence of the smoke-stack industries there (Schnore and Winsborough 1972; Schwirian et al. 1990). We mentioned earlier the possible importance of corporate concentration in metropolitan areas to the location of high status workers. Superficially, one might think that metropolitan areas with high concentrations of central place (wholesaling and retailing) activities would have little suburbanization of high status workers, since their central cities would be relatively clean and unpolluted. However, Schnore and Winsborough (1972) did not find the presence of these activities to be especially important in status suburbanization or centralization.

For exploratory purposes, we have created indices of industrial employment concentration for the 153 metropolitan areas. These indices are location quotients that have been calculated by dividing the percentage of all workers in a specific industry in a metropolitan area by the percentage of all workers in the United States in that industry. These location quotients were calculated without consideration of central city and suburban boundaries, thus indicating the importance of the activity in the total metropolitan area.

Our selection of "service" industries is especially tentative since there is little agreement on how to categorize them. Nevertheless, as Table 3 shows, we have divided them into four major groups, roughly indicating the dominance of the financial corporate sector, personal services, health care, and public administration. The data show that metropolitan concentration in manufacturing and the financial corporate sector are the two strongest predictors of the suburbanization of high status workers in the table. Consistent with previous research (Schnore and Winsborough 1972), manufacturing metropolitan areas are especially characterized by a suburbanization of high status workers, but, perhaps surprisingly, we find that "corporate" metropolitan areas are also disproportionately characterized by high status workers residing in the suburban ring. While some of the other variables are statistically significant, their regression coefficients tend to be low in absolute size. Nevertheless, the coefficients of the other three service industries are all consistent with higher status suburbanization.

While this model explains the most variance it might reasonably be claimed that its efficacy is heavily a reflection of the number of variables in the equation. However, if only the corporate financial and manufacturing variables are used as predictors, this model still fares best in explained variance (.159). In addition, substituting durable manufacturing (generally heavy and polluting) for all manufacturing increases the explained variance.

The Ethnic Composition model emphasizes that desire for social distance may lead non-Hispanic white workers to live away from high concentrations of minority groups. This is consistent with the examples we provide above of metropolitan areas in the Rust Belt that are characterized by a high suburbanization of high status workers. These places tend to have unusually large minority population, especially concentrated in the central city. However, it is not consistent with the examples of high status centralization we found in the South which also have large minority populations.

To test this model, we have calculated, separately for the black and Hispanic populations, the proportion minority population in the central city. The data provide some support for the ethnic composition argument, as metropolitan areas with high central city concentrations of the minority group are characterized by the disproportionate suburbanization of high status workers. This is especially true for the Hispanic population, but, surprisingly, not for the black population. Furthermore, among the four models, this one explains the least proportion of variance (.041), suggesting that, overall, ethnic

composition has not been especially important in the suburbanization of high status non-Hispanic white workers.

Another possible model would include all the variables in all four models. This would allow us to assess the partial effects of each variable when all other variables were controlled. We are reluctant, however, at this point to emphasize such a model since many of the variables probably have complicated causal relationships. Some variables may mutually cause each other, and other variables may work indirectly through each other. Our concern here is more with identifying the types of metropolitan characteristics that are associated with high status suburbanization rather than working out all the causal relationships among the variables. Nevertheless, the joint explained variance of the variables in all four models was .350, with the three key variables being Manufacturing and Corporate finance economic bases and the age of central city housing.

GAUGING THE REGIONAL EFFECT

The strong regional differences in location of higher status groups may reflect the influence of the structural variables we have identified. For instance, the Rust Belt may be characterized by high status decentralization because some of the nation's oldest metropolitan areas are found there. This is also an important section of the country for manufacturing activity, and housing in the central city will tend to be older.

One way of gauging the regional effect is to run regression equations in which dummy variables are included for the three major regions with various structural characteristics. To the degree that the regional differences decline with control for the other characteristics, we may conclude that they help explain the regional differences.

As expected, Table 4 shows a substantial difference among the three major regional groupings in average level of high status suburbanization. Remember that the dependent component scores for the analysis have a mean of 0 and a standard deviation of 1.0 Thus, the regional mean for the Rust Belt of +.649 is quite high, and the regional mean of -.643 for the South is quite low. The strength of the regional effects are also indicated by the explained variance .311, which is greater than that obtained for any of the four above models and only slightly lower than the explained variance (.350) when all the variables in the four models are used to predict.

TABLE 4 ABOUT HERE

Each subsequent column in Table 4 shows the adjusted mean on the dependent variable when various sets of predictors are included in the equation. The four columns represent separate controls for the four sets of predictors in the above models. The adjusted regional means indicate the levels of high status suburbanization if differences in other characteristics such as housing age and economic base were eliminated. Thus, the regional means in the second column indicate the average degree of high status suburbanization for metropolitan areas in different regions with the same patterns of age, metropolitan size, and central city inclusiveness.

Somewhat surprising to us, the differences in regional means are quite resilient in the face of controls for numerous characteristics that might affect the suburbanization of high status workers. Indeed, some of the adjusted regional differences are greater than the unadjusted. Clearly, there is a regional "clustering" effect that we cannot identify with our regressions in Tables 3 and 4. In other words, the Rust Belt still stands out for its pattern of high status suburbanization, even after adjusting for such characteristics as the older metropolitan age, older central city housing, and economic base. It is possible, of course, that we have omitted other factors from other models (correlated with regional location) that would explain away the geographic effects. Yet, while other researchers have considered other

factors, no literature suggests that these would be important enough to account for the strong regional influence.

The patterns here may, nevertheless, be complicated by the varying nature of race relations in various parts of the United States. In the Rust Belt, there have been high racial tensions, partly due to fear of changing neighborhoods. Blacks have, for some time, been assertive in forwarding their social, economic, and residential interests. This is partly indicated by the generally high to extremely high levels of residential segregation by race (Massey and Denton 1993). Given the competitive nature of race relations, we might expect racial composition to matter there in the location of high status non-Hispanic white workers. In the South, however, there is a stronger tradition of minorities and non-minorities each knowing their "own place" and not directly posing a threat to each other (Schnore and Evenson 1966). They may live in close physical but not social proximity. In such a circumstance, the physical proximity of minority groups may not matter much in the choice of residential location for Non-Hispanic white high status workers. This viewpoint might help explain our earlier discovery that some of the strongest suburbanization of high status non-Hispanic white workers was found in Rust Belt metropolitan areas with large central city minority population, while some of the lowest suburbanization of high status groups was found in Southern metropolitan areas with large central city concentrations of minorities.

This type of argument suggests that racial composition statistically interacts with region in affecting the suburbanization of high status workers. Within the Rust Belt sample of metropolitan areas, racial composition of the minority population in the central city would especially matter in predicting the location of high status non-Hispanic white workers. However, within the South, it might have very little effect on a similar variable. If the data support this argument, they indicate that an interpretation of the regional differences in high status suburbanization must be a little more complicated than just arguing that the Rust Belt has older metropolitan areas, certain housing characteristics, and economic bases with a focus on manufacturing and financial corporate.

TABLE 5 ABOUT HERE

To test this argument in a simple way, we have run the Race Model separately by the three broad regions. The results in Table 5 indicate strong support for the general argument that minority concentrations are interpreted differently in the various regions. In the Rust Belt, Hispanic and Black central city concentration are strongly related to the suburbanization of high status workers. In the South, the Hispanic proportion has only a very weak effect on status distributions, but a high Black central city concentration is actually associated with disproportionate centralization of high status workers among the non-Hispanic whites. The Trans-Mississippi seems to be an intermediate case. Central city racial composition is not a strong predictor of the dependent variable, although the effects of Hispanic proportion are consistent with expectations.

These results thus clarify why the Rust Belt has so much suburbanization of high status workers. Metropolitan areas in this region with substantial minority populations in the central city are characterized by a flight of high status non-Hispanic white workers, but other Rust Belt metropolitan areas do not show this tendency. Another way of putting this is that regional differences in the location of high status workers are much more evident among those with large central city minority populations. Differences are much less pronounced among those with low minority populations.

Another paper analyzes the location of high status minority workers, but it is worth noting that the Rust Belt pattern of high status suburbanization among nonHispanic white workers in metropolitan

areas with high central city minority concentrations is not replicated when we investigate the location of black and Hispanic professional and executive workers. It thus appears that there is a distinct racial component to the Rust Belt pattern that we have identified.

Somewhat inductively, we explored how the role of other characteristics such as economic base and age of housing might affect suburban propensity differently by region among nonHispanic white workers, but we found few differences so evident as those discussed for race.

CONCLUSION

Among non-Hispanic whites, occupational groups seem to locate differentially in central cities and suburbs by a social status dimension. Consistent with other research, we have found that the status of suburban rings relative to their central cities is quite variable across metropolitan areas. There is, in fact, little evidence of a strong modal pattern of high status suburbs and low status central cities. Somewhat surprisingly to us, high status Professional and Executive workers, in particular, are more often concentrated in central cities than workers in a number of manual occupations that are lower in social status.

A major conclusion of our study is that evolutionary developmental models of high status location seem to have little usefulness in understanding recent variations across metropolitan areas. Older metropolitan areas are more likely than newer metropolitan areas to be characterized by the suburbanization of high status workers. However, there are great variations in the pattern within both old and new metropolitan areas. The "natural hand" of urban development as suggested by the Burgess zonal hypothesis is not especially evident in the 1990 data.

An important factor in the distribution of status groups is the nature of metropolitan economic base. As anticipated, manufacturing metropolises are disproportionately likely to be characterized by the suburbanization of high status workers. Less anticipated was the finding that metropolitan areas with a specialization in corporate finance were also distinguished by the suburbanization of high status workers. At this point, we can only speculate on why this might be so since the corporate sector might be viewed as eager to maintain the "quality of life" in the centers of metropolitan areas with which it is associated.

Perhaps the strongest correlate of status location among non-Hispanic whites across metropolitan areas is regional location with metropolitan areas in the Rust Belt being quite disproportionately characterized by high status decentralization while metropolitan areas in the South are much more likely to have high status workers concentrated in the central city. Superficially, one might think that the regional patterns simply represent differences in metropolitan developmental stage, with Rust Belt areas having had a greater time for the decentralization of high status groups to develop. However, this turns out to be a weak explanation of the regional pattern.

Our best explanation of the regional effect is in terms of racial composition. In what may seem to some as a paradox, minority racial compositions in Southern central cities seem to have little impact on the suburbanization of high status non-Hispanic workers. However, minority concentrations in the Rust Belt are strong predictors of the suburbanization of high status non-Hispanic white workers. Much of the strong tendency of some Rust Belt metropolitan areas to have suburbanization of high status workers seems correlated with their racial compositions in the central city. While the South has a more notorious history of bad race relations, we have suggested that the movement in the past few decades of minority populations to Northern metropolitan areas may have set up a competitive model of race

relations, in which high status non-Hispanic whites use their economic and social power to escape race mixing.

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Table 1
Relative City-Suburb Concentration of Occupational Categories by Race

<i>Occupational Category by Race</i>	<i>Central City Concentration</i>	<i>Suburban Concentration</i>
<i>Executive, Administrative, and Managerial</i>		
Non-Hispanic White	78	75
Black	39	114
Hispanic	47	106
<i>Professional Specialty</i>		
Non-Hispanic White	110	43
Black	52	101
Hispanic	73	80
<i>Technicians and Related Support</i>		
Non-Hispanic White	100	53
Black	50	102
Hispanic	65	88
<i>Sales Occupations</i>		
Non-Hispanic White	81	72
Black	50	83
Hispanic	53	100
<i>Administrative Support, including clerical</i>		
Non-Hispanic White	109	44
Black	83	70
Hispanic	77	76
<i>Protective Service</i>		
Non-Hispanic White	83	73
Black	71	80
Hispanic	76	74
<i>Service, including household</i>		
Non-Hispanic White	111	42
Black	133	20
Hispanic	116	37
<i>Precision production, craft and repair</i>		
Non-Hispanic White	22	131
Black	54	98
Hispanic	63	90
<i>Machine operators, assemblers, and inspectors</i>		
Non-Hispanic White	47	106
Black	69	82
Hispanic	85	67
<i>Transportation and material moving</i>		
Non-Hispanic White	32	121
Black	79	71
Hispanic	70	82
<i>Handlers, equipment cleaners, helpers and laborers</i>		
Non-Hispanic White	61	85
Black	113	39
Hispanic	104	49

N=153 metropolitan areas, but total is less where no persons are in the occupational group.

Table 2
High-Status Suburbanization of Non-Hispanic Whites by Region

<i>Region</i>	<i>Less than -.5</i>	<i>Other score</i>	<i>Greater than +.5</i>	<i>Total</i>
<i>Rust Belt</i>	2	29	27	58
ENCen	2	13	14	29
MidAtl	0	12	7	19
NE		4	6	10
<i>Trans-Mississippi</i>	8	26	6	40
WNCen	0	5	2	7
Mount	0	9	0	9
Pacf	8	12	4	24
<i>South</i>	30	23	2	55
ESCen	5	5	0	10
WSCen	9	18	0	17
SAtl	16	10	2	28
<i>Total</i>	40	78	35	153

Note: Metropolitan areas are divided by their component score. A score greater than +1 indicates the metropolitan area is at least 1 standard deviation above the mean in the suburbanization of high status workers. A score less than -1 indicates the metropolitan area is at least 1 standard deviation below the mean in the suburbanization of high status workers.

Table 3
Standardized Regression Effects of Metropolitan Characteristics
On High Status Suburbanization

<i>Model</i>	<i>Standardized Regression Coefficients</i>
<i>Model 1:</i>	
<i>“Schnore-Developmental” Model</i>	
Age	-.249*
Size	-.050
Percent in Central City	-.021
R-squared	.053*
<i>Model 2:</i>	
<i>Housing Model</i>	
1 Family Homes	-.151
Age of Housing	-.288*
R-squared	.143*
<i>Model 3:</i>	
<i>Economic Base Model</i>	
TCU	-.167*
Trade	.042
Corp	.464*
PEED	.101
Manuf	.526*
Health	.142*
Pub	.129
R-squared	.217*
<i>Model 4:</i>	
<i>“Race” Model</i>	
Hispanic	.213*
Black	.069
R-squared	.041*

* indicates that coefficient is significant at the .05 level.

variable definitions:

Model 1 - Age: age of metro area, Size: ln (size of metro. area), Percent in Central City: percent of metro population in central city.

Model 2 - All variables represent the ratio of the percent of the housing characteristic in the central city to the percent of the housing characteristic in the suburban ring.

Model 3 - All variables represent location quotients, which indicate the relative concentration of each industrial sector in the metro. area. TCU: transportation and communications, Trade: wholesale and retail trade, Corp: finance, insurance and real estate (FIRE) and business services, PEED: personal services, education, and entertainment, Manuf: durable and non-durable manufacturing, Health: health services, Pub: public administration.

Model 4 - All variables represent the ratio of the “racial” group population percent in the central city to the ratio of the “racial” group population percent in the suburban ring.

Table 4
Regional Means of High Status Suburbanization

<i>Regions</i>	<i>No Controls</i>	<i>Development Controls</i>	<i>Housing Controls</i>	<i>Economic-Base Controls</i>	<i>“Race” Controls</i>
Trans-Mississippi	-.055	-.112	-.057	-0.039	.008
Rust Belt	.649	.704	.666	0.624	.686
South	-0.643	-.661	-.661	-0.630	-.730
R-squared	.311*	.324*	.324*	.385*	.395*

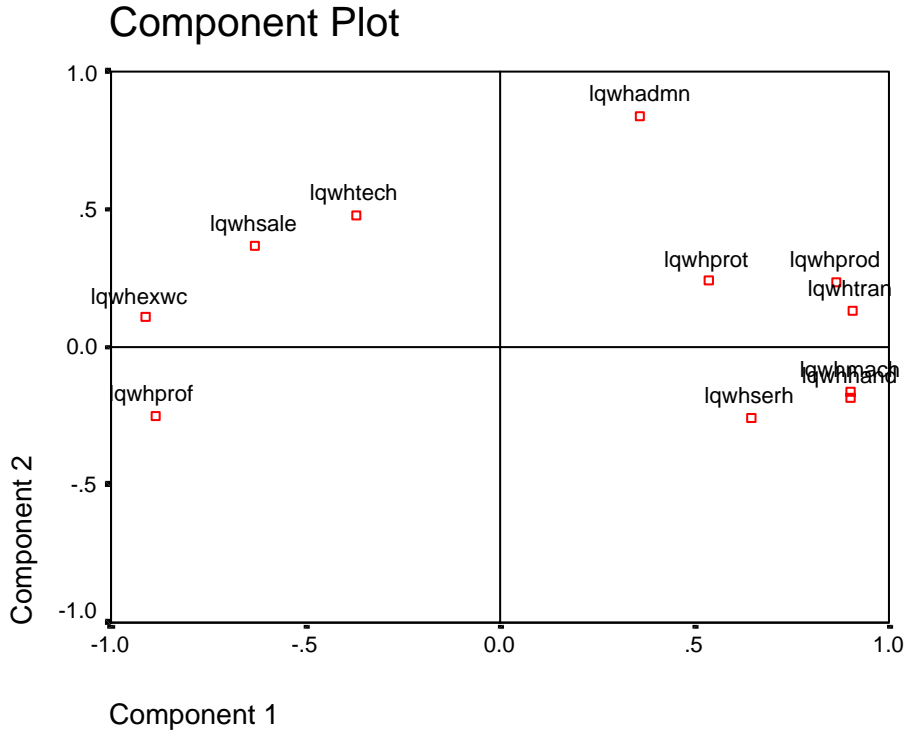
* indicates that coefficient is significant at the .05 level. In all case Trans-Mississippi was the omitted category and the other regions proved to be significantly different.

Table 5
Standardized Regression Effects of "Race" Characteristics
On High Status Suburbanization, by Major Region

<i>Model</i>	<i>Standardized Regression Coefficients</i>
<i>Rust Belt</i>	
Hispanic	.413*
Black	.448*
R-squared	.431*
<i>South</i>	
Hispanic	.075
Black	-.282
R-squared	.073
<i>Trans-Mississippi</i>	
Hispanic	.277
Black	-.028
R-squared	.081

* indicates that coefficient is significant at the .05 level.

Figure 1
 Two Component Description of Location Quotients for Occupational Groups,
 Non-Hispanic white Workers, 153 Metropolitan Areas, 1990



Key:

- Executive, administrative, and managerial occupations (LQWHEXWC)
- Professional specialty occupations (LQWHPROF)
- Technicians and related support occupations (LQWHTECH)
- Sales occupations (LQWHSALE)
- Administrative support occupations, including clerical (LQWHADMN)
- Protective service occupations (LQWHPROT)
- Service occupations, including household (LQWHSERH)
- Precision production, craft, and repair occupations (LQWHPROD)
- Machine operators, assemblers, and inspectors (LQWHMACH)
- Transportation and material moving occupations (LQWHTRAN)
- Handlers, equipment cleaners, helpers, and laborers (LQWHHAND)