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Patterns and Consequences of Segregation: An Analysis of Ethnic Residential Patterns at Two Geographic Scales

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PATTERNS AND CONSEQUENCES OF SEGREGATION: AN ANALYSIS OF ETHNIC RESIDENTIAL SEGREGATION AT TWO GEOGRAPHIC SCALES

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PATTERNS AND CONSEQUENCES OF SEGREGATION:
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American cities are diverse, with people from various ethnic backgrounds calling the city their home. Instead of having numerous culturally mixed neighborhoods, many residential areas are segregated by ethnicity. Also, social opportunities, such as access to jobs and quality education, are not evenly distributed in urban space. In short, separate living spaces may not mean equal living spaces. What are the impacts of living in White or African American or Hispanic or Asian neighborhoods? Thus, it is worthwhile to investigate the patterns and consequences of ethnic residential segregation.

This dissertation employs several cartographic, geographic information system (GIS), and statistical techniques to analyze ethnic residential segregation at two geographic scales: nationally and locally. At the national scale, segregation levels (dissimilarity index) were mapped and statistically categorized into different regions. Cities in the Northeast are the most segregated, followed by cities in the South, and then by cities in the West. Multiple regression equations reveal regional differences in socioeconomic characteristics that explain segregation within each region. For example, what explains White-African American segregation in the Northeast is different than what explains White-African American segregation in the West.

Locally, a case study of Omaha, Nebraska investigates the patterns and consequences of segregation within a city. In 2000, African Americans predominantly reside in North Omaha, Hispanics in South Omaha, and Whites and Asians in the suburbs of western Omaha. A comparison of the characteristics of ethnically-concentrated neighborhoods reveals several social inequalities. Segregated African American and

Hispanic neighborhoods generally have lower socioeconomic characteristics, such as lower education and income, than segregated White and Asian places. A positive outgrowth of African American and Hispanic segregation is the development of ethnic businesses, community organizations, churches, and festivals. Nonetheless, ethnic residential segregation in Omaha benefited some groups over others. Overall, this dissertation finds that social inequality and spatial inequality appear to be linked in American urban society.

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One World!

PEACE!

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CHAPTER 1: INTRODUCTION

Introduction

Diversity characterizes American cities, with people from various ethnic backgrounds calling the city their home. Many Americans see the inclusion of all ethnic groups into one society as an ideal the nation should strive towards. Yet, the residential patterns found in our cities often do not reflect this goal of societal unity. Instead of having numerous culturally mixed neighborhoods, many residential areas are segregated by ethnicity. Social opportunities, such as access to jobs and quality education, are not evenly distributed in urban space. Some ethnically segregated neighborhoods are found in places that offer poor services, while other neighborhoods overlap with places that provide good services. Thus, where you live may limit your chances to succeed in America. In short, separate living spaces may not mean equal living spaces. An important social issue in America is the ethnic residential segregation found in many cities which has been described as "America Apartheid" (Massey and Denton, 1993). Therefore, it is worthwhile to investigate the patterns and consequences of ethnic residential segregation in urban America.

Three major sets of explanatory causal factors have been hypothesized to explain ethnic residential segregation in urban America (Kaplan and Woodhouse, 2004): housing discrimination, socioeconomic status (SES) differences, and ethnic group preferences. The first set of explanatory causal factors suggests that persistent segregation is due to discrimination in housing markets, such as through banks denying mortgage loan applications, or real estate agents steering prospective homebuyers to segregated neighborhoods. The second set of explanatory causal factors suggests that socioeconomic differences between ethnic groups are the underlying causes of ethnic segregation. This hypothesis implies that ethnic group differences in income level and educational attainment promote ethnic separation into ethnically homogeneous neighborhoods. The third set of explanatory causal factors suggests that ethnic residential segregation arises from the ethnic groups' own preferences for residential settings. This explanation asserts that ethnic residential segregation exists because people choose to live near others with the same ethnic background. Overall, an analysis at several geographic scales is needed to test the relative importance of these hypothesized explanatory causal factors in accounting for ethnic residential segregation in American cities.

The geographic distribution of people in an American city is important, for the "city must be seen as a reflection of the society that maintains it" (Knox and Pinch 2000, 2). If American metropolitan areas displayed residential inequalities, what does that say about our presumed egalitarian society? Ethnic residential segregation is a very complex issue that many scholars have used as an indicator of social equality in America. If American cities are experiencing a decline in segregation, with members of various ethnic groups moving away from ethnically clustered into ethnically mixed areas, then can social mobility be equated with spatial mobility (Knox and Pinch, 2000)? By understanding the reasons, meanings, and impacts of segregation, urban scholars can recommend policies that could alleviate many potential social injustices found in urban America.

Research in Urban Geography

Research activities in urban geography can be categorized by their geographic scales of analysis. At a broader scale, urban topics can be analyzed across entire metropolitan areas, while at another more local scale urban issues can be investigated within metropolitan areas. The former perspective treats cities as points, while the latter treats cities as areas. As Brain Berry (1964) summarized, research in urban geography investigates cities both as points and as areas, or in Berry's memorable title phrasing, "as systems within systems of cities." Thus, to more fully comprehend the complexity of ethnic residential segregation in urban America, it is useful to analyze segregation at both interurban and intra-urban geographic scales.

Segregation at both the national and local geographic scale are analyzed in this dissertation. The national scale investigation features analysis of metropolitan areas throughout the U.S. (cities as points) and the local scale case study features analysis of neighborhood level segregation within a particular city (city as an area). The national scale of analysis includes 331 metropolitan statistical areas (MSAs) in America, and the local scale of analysis focuses of the city of Omaha, Nebraska. Most previous local scale research on ethnic residential segregation has investigated patterns in larger cities with populations over one million, to the neglect of "smaller" cities with populations of less than one million. Omaha, Nebraska was chosen as the case study site because of its appropriate characteristics, and because of its spatial accessibility to the researcher which has facilitated the collection of in-depth information about the city and its neighborhoods.

Purpose of the Dissertation

The goal of this dissertation is to further understand the patterns and consequences of ethnic residential segregation, both for the nation and for a particular city. At a broader geographic level, ethnic residential segregation is analyzed across all metropolitan areas in the U.S. Are there differences between metropolitan areas in their levels of ethnic segregation? If so, are there regions in the U.S. where cities have relatively higher or lower segregation scores? Do segregation levels vary by ethnic group? What characteristics explain these geographic patterns? Overall, one major objective of this project is to analyze the variations in segregation levels among American cities. Meeting this objective will provide information on national trends in patterns of ethnic residential segregation.

At another geographic scale, ethnic residential segregation can be analyzed within a particular metropolitan area. At the local level, ethnic residential segregation is examined across all of the neighborhoods within a particular city. If different ethnic groups live in different sections of the city, what are the factors that influenced these geographic patterns? What are the impacts of living in ethnically segregated neighborhoods on their residents? Do these consequences benefit some groups more or less than others? Overall, a second major objective of this study is to answer such questions about ethnic residential segregation at the local level, which will aid in better understanding why people live where they do.

It is important for this dissertation to investigate ethnic residential segregation at two different geographic scales, for analysis at one scale can compliment analysis at the other scale. By only examining segregation levels between cities, little would be known about the positive and negative consequences of living in segregated neighborhoods at the local scale. Does a high city scale segregation score mean that ethnically concentrated neighborhoods have poorer services or quality of life? A case study of ethnically segregated neighborhoods within a city can overcome this shortcoming. But conversely, by investigating segregation patterns for one city only, nothing would be known on how that city compares to other cities. This comparative context is provided by also investigating segregation between metropolitan areas, which offers an overview of segregation trends throughout urban America. In general, the overall goal of this research project is to investigate the patterns and consequences of ethnic residential segregation. The analysis of ethnic residential patterns may show if the levels of ethnic residential segregation can be used as indicators of social equality in American cities.

Organization of the Research

To address the research questions posed above, this dissertation on the patterns and consequences of ethnic residential segregation at two geographic scales is divided into seven chapters. Following this introductory chapter, the second chapter provides a review of current ethnic residential segregation literature by focusing on historical and current causes of ethnic segregation in American cities. The third chapter examines the methods which have been used to measure ethnic residential segregation and addresses related issues dealing with quantitative geographic research. The fourth chapter formalizes the structure of the research design of the dissertation, including how the study areas are defined and how the research questions are analyzed. The next three chapters detail the results and analyses, starting with chapter five on the patterns of segregation among American metropolitan areas. The sixth chapter deals with the patterns of ethnic residential segregation that are observed for Omaha, Nebraska. Chapter seven provides an analysis of the consequences of segregation for residents living in ethnically concentrated neighborhoods in Omaha. The final chapter summarizes the significant findings and provides suggested policy recommendations arising from the results of this research. Overall, the goal of the analysis chapters is to analyze the patterns and consequences of ethnic residential segregation in American cities at both the national and local scales.

Summary

America reaching the population milestone of 300 million people (United States Census Bureau 2006) is a reminder of the changing demographics characterizing our society. An important component of this changing demography is an increase in ethnic diversity. This diversity predominantly affects urban America, especially the ethnic mosaic of residential areas. The purpose of this study is to analyze the patterns and consequences of ethnic residential segregation through a mixture of cartographic and statistical techniques. An analysis of ethnic segregation across metropolitan areas and within a particular city can illuminate whether American society is becoming more or less socially just. The results of this geographic research will have urban policy implications. By understanding the complexity of ethnic residential segregation, policy makers can more effectively construct strategies to alleviate the negative consequences and to enhance the positive impacts of living in segregated neighborhoods.

CHAPTER 2: RESEARCH ON ETHNIC RESIDENTIAL SEGREGATION

Introduction

A plethora of previous research on ethnic residential segregation research has come from various fields of study: urban geography, sociology, demography, psychology, and planning. Each discipline has provided unique insights into the patterns and consequences of segregation, and the goal of this chapter is to survey historic and current segregation research. The first section of this chapter summarizes the conceptual framework and theoretical implications of ethnic residential segregation. The second section investigates the strong points and drawbacks of the various proposed causes of segregation. The third section reviews the patterns of segregation in America at two geographic scales: national and local. The final section of the chapter summarizes the studies that emphasized the impacts of ethnic residential segregation. This brief literature review of previous segregation studies provides the foundation upon which this dissertation research hopes to build.

Conceptual Framework

What implications can be drawn if members of an ethnic group are residentially segregated or residentially dispersed in a city? Are there connections between residential location and social status? Four theoretical models have attempted to link social mobility with spatial mobility. The first two conceptualizations, called place stratification and spatial assimilation, analyzed the changes in the residential locations of certain ethnic groups over time as an indicator of social ranking. It is important to note that these "two theoretical models are not inherently antagonistic to one another" (Alba and Logan 1991, 434), in that both can be applicable at the same time. The third conceptualization, called heterolocalism, criticizes and builds upon the previous two concepts by providing a modern discourse for ethnic residential distributions. Another conceptualization has addressed the meanings of segregation, in reference to the formation of ethnic enclaves or ghettos, respectively. These conceptual frameworks provide the context within which to interpret statistical results that measure ethnic residential segregation levels for various ethnic groups in American urban settings.

Place Stratification

The place stratification construct indicates that social barriers have limited the suburbanization of ethnic groups, which has thus created an ethnically segregated city. For example, the lack of certain ethnic residents in suburbs contrasted with concentrations in the inner city would indicate that this group has not been socially integrated into the larger society. The place stratification process:

> "[E]nvisions that racial and ethnic minorities are sorted by place according to their group's relative standing in society, and this limits the ability of even the socially mobile members of these groups to reside in the same communities as comparable to whites." (Alba and Logan 1993, 1391)

It is asserted that this social inequality is apparent in the segregated spatial patterning of certain ethnic groups within American metropolitan areas.

If place stratification has occurred, "one would expect that members of some ethnic and racial groups may not be able to convert socioeconomic and assimilation gains into advantageous residential situations" (Alba and Logan 1991, 433). For example, no matter the increase in income levels for a certain ethnic group, there could remain barriers (e.g. housing discrimination) that did not allow members of this group to move to more expensive homes that they could afford financially. Due to this process, ethnic enclaves have persisted over time in which high-income members of the group lived next to low-income members of the group because most high-income members were not "allowed" to move out. It has been inferred that place stratification is "associated with more or less favorable life chances and quality of life" (Alba and Logan 1993, 1391), due to the difference between the resources available in the suburb and those in the central city, respectively. Thus, high segregation scores for a certain ethnic group indicate a place stratified ethnic group. This model accounted for the formation and continuance of ethnically concentrated neighborhood, but does not account for ethnic groups "making it" by "moving out" of ethnically clustered spaces.

Spatial Assimilation

The spatial assimilation construct indicates that some members of an ethnic group may be able to move into the suburbs, and thus spatially assimilate into the larger society. With spatial assimilation, fewer social barriers inhibit ethnic movement to the outer fringes of the city. Spatial assimilation asserts that:

> "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, by 'purchasing' residence in places with greater advantages and amenities. This process disperses minority-group members, opening the way for increased contact with members of the ethnic majority, and thus for desegregation" (Alba and Logan 1993, 1390).

There are two facets to the spatial assimilation model: residential mobility follows individual acculturation and social mobility; and residential mobility is a step towards complete assimilation (Alba and Logan 1991, 432). Therefore, the spatial distribution of ethnic group residential locations within an urban area can be regarded as an indicator of social equality.

Following spatial assimilation, an examination of residential patterns would indicate the ethnic diversity of the suburbs and no comparative residential concentration in the inner city. Thus, there would be low-to-no segregation between ethnic groups in the city and suburbs combined. For spatial assimilation to occur, "movement to the suburbs occupies a key position in the processes that connect residential assimilation with social mobility" (Alba and Logan 1991, 433). Historically, when ethnic-group members moved to the city from elsewhere, there were ethnic concentrations in the central city that fostered support and acculturation into the society. Under this model, upon achieving socioeconomic success, people would "forsake urban ethnic enclaves for more ethnically mixed suburbs" (Alba et al. 1999, 447). This movement over time to the suburbs indicates the assimilation of that group into American society.

In summary, the place stratification and spatial assimilation models have used the residential locations of certain ethnic groups as key indicators of the social acceptance of those groups. Also, the two conceptualizations have used residential space as a marker of social standing (Espino 2005, 147). However, these two models did not indicate that the residential location of ethnic groups, by itself, accounts for social equality. Residential location is just one of many facets of assimilation into the overall society. Generally, place stratification has occurred if various ethnic groups are concentrated in the inner cities of America. Spatial assimilation emerges if the inner city ethnic concentrations have disappeared over time, and the suburbs have diversified by including members of a variety of ethnic groups.

The spatial assimilation model followed the melting pot analogy of America, by describing an American society that has fused people with different ethnic heritages.

Thus, the goal is to have people of various ethnic backgrounds living in close proximity with one another without ethnic residential segregation. The place stratification model, with ethnic residential segregation taking place, can be interpreted through the lens of pluralism. The pluralistic viewpoint states that various ethnic groups should maintain their heritage and that these differences should be celebrated. A possible consequence of pluralism could be the development of some ethnically-concentrated urban spaces, in which segregation levels would increase or remain high over time.

Heterolocalism

One major drawback of the spatial assimilation and place stratification models is that residential location may not always indicate social integration or isolation for all ethnic groups. In other words, members of an ethnic group may not live in an ethnically concentrated area and yet not have assimilated into the larger society. Since residential location may not overlap with other ethnic meeting places (e.g. ethnic churches, shopping centers, and restaurants), relating spatial mobility to social mobility would not necessarily be applicable to all ethnic groups. Part of the shortcomings of the spatial assimilation and place stratification models involves advances of communications technology (e.g. internet, telecommunications, etc.) and transportation, as ethnic group members might stay "connected" while not residing near one another. The spatial assimilation (cultural assimilation) and place stratification (pluralistic) models may have been useful in describing ethnic residential patterns and their meaning in the past, but do they do well in describing the patterns found today?

A new conceptualization was needed that described recent ethnic residential spaces and their meanings, as more ethnic immigrant groups (many from Asia and Latin

America) were moving to the U.S. after 1965. Newer immigrants may have different ways to maintain ethnic cohesion (e.g. web sites and ethnic community organizations). Wilber Zelinsky and Barret Lee (1998) introduced a heterolocalism construct, which applied:

> "to recent populations of shared ethnic identity that enter a given area from distant sources, then promptly adopt a dispersed pattern of residential location, all the while maintaining strong social cohesion by various means, despite the lack of propinquity" (Zelinsky and Lee 1998, 293).

For example in Chicago, the lack of a South Asian Indian residential enclave did not mean a lack of social cohesion as there were several ethnic gathering places; including Hindu temples and South Asian businesses along Devon Avenue. Unlike the past, when residences and workplaces necessarily were proximate to each other, modern transportation has allowed people to live further away from where they work or shop. An outcome of heterolocalism could be a lack of ethnic residential segregation, but also a lack of assimilation into the larger American society. This countered the spatial assimilation model which indicated that mobility of ethnic groups into the suburbs necessarily related to social assimilation.

The concept of heterolocalism mainly focuses on the residential patterns of new ethnic immigrants, and as such, may not be applicable to the residential patterns of every ethnic group. For example, some ethnic groups were concentrated in residential space, with employment and ethnic community organizations still located geographically in these enclaves. The tenet of heterolocalism is that new immigrants are able to afford to live where they want and yet still keep connected with other ethnic group members in a city or region. If members of an ethnic group cannot afford or chose where they want to live, then living near members of the same ethnicity would be the best way to keep socially connected with your ethnic group. The result would be the formation, or continuance, of ethnically concentrated spaces in the urban landscape. Given that ethnic residential segregation may still exist for certain groups, there can be multiple interpretations of the impacts of the clustering of ethnic group members in urban space.

Ethnic Enclave vs. Ghetto

There are positive and negative implications of living in ethnically concentrated areas which are conceptualized in the dichotomy of the ethnic enclave-ghetto paradigm. As Ceri Peach (1996) has noted, there are "good" and "bad" segregation, where living in the former provides support for group members while living in the latter hinders future life chances for group members. The main difference between the ethnic enclave and ethnic ghetto is choice. If ethnic group members choose to live in segregated spaces, then this would be an ethnic enclave. But if ethnic group members did not choose to live in segregated spaces with their social and spatial mobility constrained, then this situation would be categorized as an ethnic ghetto.

Ethnic enclaves, or the "good" segregation, have been represented historically in the forms of Little Italy, Chinatown, and the like, where these urban places have provided community support for people with similar ethnic backgrounds. For immigrants, residential segregation created "ethnic enclaves that can provide social support and a semblance of the old world now lost to them" (Mayadas and Segal 2000, 208). The enclave generated social contacts, preserved ethnic culture, offered support to group members, and created ethnic businesses (Van Kempen and Özüekren 1998). In essence, the ethnic enclave was a "home away from home" for immigrants that made transitioning into another society easier. However, no matter the social support, the ethnic enclaves were mainly located in the poorer areas of the city and may not have had the highest quality of life. The more negative aspects of living in ethnic clusters revealed a "ghetto" pattern.

In general, the stigmatized ghetto was characterized as a place that had poorer quality of life outcomes (e.g. poor education, high poverty and unemployment rates, etc.) and where ethnic groups without choices lived. The ghetto was associated with high crime rates, areas of social vices, and places that housed the most down-trodden in American society. Living in the ghetto was detrimental for its residents, in that trying to make it by moving out was difficult due to the lack of social capital in these neighborhoods. Ghettos were seen to remain on the urban landscape over time, since it was too difficult to change the downward spiral of social ills.

Despite the usefulness of the ethnic enclave-ghetto dichotomy, it was overly simplistic in describing the residential segregation of all ethnic groups. Various ethnic groups residing in segregated space may be placed along a spectrum between an ethnic enclave and a ghetto. A spectrum, with the possibility of multiple outcomes, allows the researcher to note that segregated areas can have both positive and negative impacts. If there were more negative impacts than positive, then the ethnic concentration would be more "ghetto," and conversely if there were more positive than negative impacts this would indicate a more "ethnic enclave" pattern. In depicting the enclave-ghetto dichotomy as a continuum, Peach (2005) categorized five types of enclaves and ghettos:

1. <u>Transitional Assimilation-Diffusion</u>: This relates to neighborhoods where successive generations have moved out of over time (e.g. Germans from Russia in Lincoln, NE). This follows the spatial assimilation model.

2. American Ghetto: This involves involuntary reasons for segregation (e.g. many African American segregated neighborhoods). This follows the place stratification model.

3. Voluntary Plural-Persistent Enclave: This relates to a place where people want to live in an enclave which has prospered over time (e.g. Chinatown in San Francisco).

4. Voluntary Plural-Relocated: This involves movement from the inner city to the suburbs en masse (e.g. Jewish population suburbanizing over time).

5. Parachuted Suburb: This involves concentrated neighborhoods of affluent ethnic members, often transitory immigrants (e.g. Japanese in London).

An analysis of the geographic distribution of ethnic-related businesses and social institutions would be useful in differentiating between these types and in explaining segregation in urban America. Overall, there have been few studies on the positive consequences of ethnic residential segregation (Varady 2005). One goal of this dissertation is to examine the consequences of living in segregated settings for different ethnic groups in Omaha. After analyzing these patterns at the local geographic scale, ethnic groups perhaps could be placed more specifically along the ethnic enclave-ghetto spectrum.

Proposed Causes of Segregation

Many urban scholars have noted three prospective causes of ethnic residential segregation: housing discrimination, socioeconomic differences between ethnic groups, and ethnic-group preferences (Kaplan and Woodhouse 2004, Squires et al. 2005, and Zubrinsky-Charles 2006). Summarizing the proposed causes of ethnic residential segregation has aided the research design of this dissertation by informing the questions posited to understand the patterns and consequences of segregation. The following provides a look at historic and current research on the three main hypothesized causes of ethnic residential segregation.

Housing Discrimination

Housing has become an increasingly important issue over time, as the cost of housing for most American's has now taken the largest portion of a family's income. In the early 1960s, 24 percent of a family's budget was for food and 29 percent for housing. However, in 1999 food accounted for only 16 percent of a budget and housing had increased to 37 percent (Ehrenreich 2001, 200). With housing being an important social phenomenon, both in terms of shelter and as a source of wealth, any discrimination in rental or owner occupied housing could have disastrous effects for affected ethnic groups.

Housing discrimination, in both the public and private sectors, has been proposed to cause ethnically segregated living spaces in American cities. In the past, the federal government attached provisions to the home loans publically offered, which restricted the housing options of various groups of people. Local governments, via their zoning laws, tended to exclude certain groups from residing in the suburbs. In the private sector, limitations to housing for particular ethnic groups were facilitated by various practices. Such formal restrictions are now illegal, but informal practices of housing discrimination may still exist today.

Federal Housing Discrimination

Housing discrimination in federal housing programs historically created segregated spaces in American cities. In 1934, the Federal Housing Administration (FHA) was created after the passage of the National Housing Act. The FHA provided low interest mortgage loans, which were lower than the rates that were being charged by the private banking industry. Originally, the FHA loan officers were "prohibited from approving loans that would upset the racial composition of neighborhoods" (Williams 2000, 7). This perpetuated ethnically segregated cities. Also, the FHA created a loan risk ranking system that favored places in the suburbs over places in the central city, which had a profound effect on where certain groups were able to locate in the city. The FHA restrictions helped Whites to own homes in the suburbs, while intentionally restricting segregated ethnic minorities to the inner city. Federal housing discrimination did not stop until the passage of the Fair Housing Act in 1968, which "banned discrimination in the sale or rental of housing" (Massey and Denton 1993, 59).

Politics played a major role in the lack of integration of the suburbs by ethnic minorities. The Richard Nixon administration was blamed for not enforcing fair housing laws and for cutting funds for several federal housing programs (Lamb 2005 and Bonastia 2006). The rationale for the Nixon administration not integrating the suburbs was due to the influences of real estate lobbyists and the role of swing voters in the suburbs. The mainly White suburban voters were against federal housing programs that brought poor and/or ethnic minority groups into "their" neighborhoods. Promotion of policies that would upset the suburban voter (e.g. integrating the suburbs with ethnic minority groups) would hinder an incumbent candidate's prospect of being re-elected president.

Assisted or public housing, which was created from the Wagner-Steagall Housing Act in 1937, was another federal housing program that historically segregated people in urban space. Since 1965, public housing has been regulated by the Department of Housing and Urban Development (HUD). The purpose of assisted housing was to provide shelter for low-income residents. Compact, high-rise assisted housing units were constructed in the inner city. Even though the federal government intended public housing to help low-income residents find a home, an unintended consequence was to segregate many of the poor within the central city. Partly because of a lack of income diversity, “large low-income housing projects tend to degenerate into conglomerations of the most helpless of our society” (Newman 1976, 23). Public housing acquired the stigma of being “the biggest poverty trap in American Society” (Rusk 1999, 119). Instead of alleviating social inequalities, government provided public housing has been stigmatized as exacerbating them. Public housing became related to “[c]rime, socioeconomic disparity, deteriorating physical conditions, and the absence of any linkages to other communities” (Lane 1995, 867). Given that many of the poor in the inner city were ethnic minorities, issues of public housing also relate to issues of ethnic residential segregation.

Local housing authorities have faced many lawsuits in the placement of assisted housing units that segregated certain ethnic groups within the inner city. In Gautreaux v. Chicago Housing Authority (CHA) in 1969, a class action lawsuit challenged the location of proposed public housing. The CHA was planning to build more public housing units in the late 1960s within the already segregated-African American community. Many African American public housing tenants, such as Dorothy Gautreaux, wanted to live in less segregated neighborhoods and thus challenged the policy (Polikoff 2006, 33). The Supreme Court sided with the plaintiffs in the class action suit and ordered the de-concentration of CHA assisted housing units—known as Gautreaux housing program (de Souza Briggs et al. 1999, 28). Although this ruling has affected the location of public housing units, the matter is still clouded with controversy as many suburban residents oppose such units.

Due to legal pressures, HUD "adopted regulations that discouraged the location of assisted housing in areas with high percentages of minority households" (Rohe and Freeman 2001, 279). A new locational goal of HUD's housing policies is the de-concentration of assisted housing units from the inner city. Starting in the 1970s, HUD located some public housing sites away from areas with high concentrations of non-Whites, and by the 1980s, race and ethnicity played a modest role in locating new public housing (Rohe and Freeman 2001). Recent HUD policies, through the HOPE VI program, have issued vouchers that reduced the cost of rent (used for any rental unit in a city) and have torn down more assisted housing units in the inner city (Popkin 2002 and 2003). Yet, these vouchers did not cover the additional utility costs (e.g. electricity bill), which residents in government-run assisted housing units did not have to pay. Even with the dispersal of public housing units, Goering et al. (1997) concluded that African American public housing residents still lived in poor, racially isolated areas, while White public housing residents were located in less isolated neighborhoods. Also, the dispersal of units did not help those who were waiting for public housing. And these people were literally left behind.

With the failure to de-segregate publicly assisted housing, it is no wonder that several scholars have blamed the federal government for inequitably maintaining segregation. In an analysis of the outcomes of several federal housing policies, Marcuse (2005) asserted that the federal government purposefully promoted a segregated urban society. Along these lines, Meyer (2000) hypothesized that the federal government maintained segregation, mainly between Whites and African Americans, as a way to suppress the violence that had erupted during neighborhood integration efforts in the 1950s and 1960s.

In summary, federal housing policies had intended and unintended residential consequences. As Bonastia (2006, 64) noted, there was a dual federal housing system where the FHA mortgages were seen as popular middle-class entitlements, and assisted public housing projects were seen as providing stigmatized housing for the poor and ethnic minorities. Some "government housing programs perpetuated racial divisions by placing public housing in already poor urban areas and bankrolling white suburbanization through discriminatory housing subsidies" (Sugrue 1996, 9-10). Over time, however, reforms have made it illegal to deny federal mortgage loans on the basis of ethnicity and have dispersed public housing away from the inner city.

Local Governmental Housing Discrimination

Local governmental units have used zoning laws to control land uses in ways that have affected the residential patterns found in American metropolises. Zoning policies regulated the type of dwelling units which were constructed, as well as the densities at which homes were spatially distributed. The density at which most American suburbs have been traditionally zoned was not more than one dwelling unit per acre (Knox and Pinch 2000, 139). Residential suburbs typically were zoned for single-family housing, and not for multifamily units. Restrictive zoning excluded ethnic minority residents' access to housing opportunities in the suburbs "through its impact on housing prices and its strict limitation on the development of multifamily units" (Checkoway and Patton 1985, 161). In a study of the 25 largest U.S. metropolises, Pendall (2000) stated that low-density only zoning did not include rental housing and in turn, limited the number of African Americans and Hispanic residents.

Housing Discrimination in the Private Sector

Private institutions, such as banks and real estate agencies, have not always fostered equal access to housing for every resident in the city. Historically, there were four types of discriminatory practices in the private sector that ethnic group members faced in wanting to buy or rent a home. First, there was discrimination from mortgage lending and insurance institutions. Second, the practice of 'redlining' directed where loans were accepted or denied. Third, real estate agents have 'steered' prospective homeowners to certain areas of the city. Finally, homeowners' associations have in the past established restrictive covenants that denied access to housing on the basis of a person's or family's ethnic background. These private sector practices have affected the residential pattern of the metropolis by constricting housing options which helped to create ethnically segregated neighborhoods.

Mortgage lending institutions have shown prejudice towards non-White groups in not providing loans to prospective homeowners within these groups. Mortgage lending is important, since a mortgage is needed before a family can buy a home. In the past, "[b]anks and insurance companies have discriminated against minorities seeking mortgages and insurance and erected obstacles to housing transactions in minority neighborhoods" (Pendall 2000, 126). This changed in 1968 with the passage of the Civil Rights Act. The Fair Housing Act, or Title VIII of the Civil Rights Act, "explicitly outlaws discrimination in the sale or rental of housing on the basis of race, color, religion, or country of origin" (Yinger 1995, 188). The act also made it illegal to deny a mortgage loan on the basis of ethnicity. Informal discriminatory practices in providing mortgage loans may still occur, however, even though it would be illegal to deny loans strictly on the basis of where one lives or by one's ethnicity.

Even with the enforcement of the Fair Housing Act, members of minority ethnic groups tend to prefer government-backed loans to conventional loans (Bullard et al. 2000, 106). The denial rates have not been the same for all ethnic groups in America. In 1993, loan applications were denied for 15.3 percent of Whites, 25.1 percent of Hispanics, and 34.0 percent of African Americans (Yinger 1995, 69). In a study of denial rates of mortgage loans, Bond (2004) found that segregation for African Americans still existed due to disparities in mortgage lending practices. An investigation of mortgage lending patterns, especially in the location of the denials, could be worthwhile in seeking to understand current ethnic residential patterns.

Redlining was another housing practice utilized by private institutions to restrict certain ethnic groups to the inner city. In this process, an area on a city map was demarcated within which loans would not be provided (the lines usually were drawn in red ink, thus the name of the phenomenon). Redlining discriminated "against people trying to buy houses in minority neighborhoods" (Yinger 1995, 63). For example, if two families of equal social and economic status were to search for a home, redlining might exist if a loan was not provided to the family wanting to live in a non-White neighborhood. Just as the Federal Housing Authority did in the past, private lending institutions refused funds in neighborhoods of bad risk (Knox and Pinch 2000, 191). Redlining affected the residential pattern of the city by creating poorly funded areas, mainly in the inner city, and that housed ethnic minority groups. This practice was also found to be illegal under the Fair Housing Act in 1968 (Yinger 1995, 188), but may still be practiced covertly by private lending institutions. Analyzing the locations of the denials of mortgage loans within a city can provide evidence of current "redlining," especially if the areas of denials overlap places with higher proportions of certain ethnic groups.

Steering is the "behavior that directs a customer toward neighborhoods in which people of his or her racial or ethnic groups are concentrated" (Yinger 1995, 51-2). In the past, White home seekers usually were shown houses in predominantly White neighborhoods, which mainly meant in the suburbs. Non-Whites were not shown these homes, but were shown homes in inner city neighborhoods that had a lower status non-White population. Even with steering being outlawed, steering may possibly exist today and it would be difficult to capture. Turner and Ross (2005, 94) identified three types of steering:

1. Informative Steering: Whites receive information about a wide range of neighborhoods, while ethnic minorities are limited to a few neighborhoods.

2. Segregation Steering: Whites are encouraged to consider neighborhoods that are predominantly White, through positive and negative comments about the neighborhoods.

3. Class Steering: Whites are encouraged to consider more affluent areas than are economically comparable African American, Asian, or Hispanic house seekers.

Real estate agents perhaps have continued to discriminate against ethnic minority members looking to buy a home or rent an apartment. A HUD-funded study found that even though housing discrimination decreased from 1989 to 2000, African Americans and Hispanics were still not shown houses and apartments in certain neighborhoods (Turner et al. 2002). This pair-tested study sent both White and non-White clients, with the same socioeconomic background, to the same real estate agencies. The study found that geographic steering still existed, since Whites were significantly more likely than African Americans to be recommended homes in more White neighborhoods (Turner et al. 2002, 3-11). One real estate agent told prospective White homeowners that there were "no dark people" in a particular neighborhood as a selling point (Farley and Squires 2005, 36). The outcome of such steering practices was the creation and continuation of a residentially segregated society on the basis of ethnicity.

Real estate agents have historically used steering to their own economic advantage. In the process of 'blockbusting,' real estate agents "would go door to door warning white residents of the impending 'invasion' and offer to purchase or rent homes on generous terms" (Massey and Denton 1993, 38). A blockbusting tactic that used prejudice for profit was that real estate agents would hire an African American woman with a stroller to walk the streets of a White neighborhood (Sugrue 1996, 195). The fear that was generated meant that the White occupied homes were sold to a broker at prices under the market value and then resold to non-Whites at over market prices. Therefore, the agents would "profit by buying in the lower-price market and selling in the higher-price one" (Muth 1969, 110).

Homeowners associations were sometime created in an attempt to counter real estate practices of blockbusting by keeping neighborhoods ethnically homogeneous. Neighborhood organizations tried to control the type of people who would or would not be allowed into a neighborhood. In the past, these homeowners associations did not allow people into an area solely on their ethnic heritage. Housing restrictions were sometimes written in the form of covenants, which "were contractual agreements between property owners and neighborhood associations that prohibited the sale, occupancy or lease to certain racial groups" (Gotham 2000, 617). These racially restrictive covenants were found unconstitutional under the 1948 Supreme Court ruling in Shelly v. Kraemer. This ruling was important, for it was estimated that over half of all new subdivisions built up to 1948 had instituted racially restrictive covenants (Gotham 2000, 618).

In summary, housing restrictions in the past limited the residential choices for certain residents in the city. These "discriminatory acts were cultivated and disseminated through the organized efforts of housing reformers and real estate interests, community builders and homeowner associations" (Gotham 2000, 629). Many of the previous housing restriction practices are now illegal, except for local zoning polices that indirectly restricted ethnic residents on the basis of lot size and number of apartment complexes being built. However, there has been "widespread evidence that racial discrimination in the sale and renting of housing still abounds," which is "much less blatant… but continues to form a persistent barrier" (Rose 1981, 136). With this history, there remains a discrepancy in homeownership rates between various ethnic groups. By 1990, 69.1 percent of White households owned homes, compared with 43.3 percent of African Americans, and 42.4 percent of Hispanics (Yinger 1995, 106).

Instead of protests by Whites of not wanting African Americans moving into their neighborhoods in the 1950s and 1960s, more subtle forms of housing discrimination can be found today. Overall, HUD has estimated that there are over two million incidents of housing discrimination each year (Farley and Squires 2005, 33), many of which are not reported. Due to the advent of fair housing practices, the role of overt housing discrimination has hopefully diminished over time. This has led many urban scholars to look for other causes of the ethnic residential segregation found in urban America.

Socioeconomic Differences

Another prospective cause for ethnic residential segregation deals with differences in socioeconomic status (SES). The basis of the SES argument is that residential segregation might be related to class differences rather than to race or ethnic differences. But according to Wilson (1978), race has been declining in significance in America. Since housing discrimination by public and private institutions has become illegal, other factors must influence the perpetuation of ethnically segregated neighborhoods. Under this perspective, residential segregation is caused by differences in earnings among ethnic groups, which thus affects the housing choices and housing locations of the groups. In a study of 18 cities, Archer (1975) found through correlating occupational ranks and residential locations that social positions were manifested in spatial positions. Here, class issues were shown to underlie housing outcomes in determining where people lived in a city.

If economics was the only factor in determining where people choose to live, then the poor would live in the areas with older housing and the rich in the areas with newer housing, or in the inner city and the suburbs, respectively. Wassner (2005) applied Tiebout's theory to explain ethnic residential segregation, in that people "voted with their feet" in choosing to live in a neighborhood, with its bundle of goods and services, that best met their needs. Where people chose to live was an indication of what neighborhoods they preferred, and this was expected to be related to SES. Segregation occurred when people chose to live in better amenity areas (usually in the suburbs) and this process left people behind who could not afford to move into the suburbs. Historically in "White Flight," it was mainly Whites that fled to the suburbs leaving non-Whites in the inner city. In this situation, urban sprawl was a key factor in producing ethnically segregated areas (Banerjee and Verma 2005). An assumption of Tiebout's "voting with their feet" theory was that everyone has an economic choice in terms of determining where they want to live. However, some ethnic groups may be constrained by housing discrimination and thus not be able to "vote with their feet" strictly on the basis of ability to pay.

If the cause of segregation between ethnic groups is due to socioeconomic differences, then ethnic segregation would disappear as ethnic groups elevated their socioeconomic status and became economically eligible for areas matching their social standings. Following the spatial assimilation model, for example, Massey (1979) predicted that as the SES of Hispanics increased their levels of segregation would decrease over time. Due to the importance of class as a cause of residential segregation, Clark and Blue (2004, 667) believed that ethnic equality in income and education were key variables in creating higher levels of residential integration. However, not all studies have found that increased SES always lead to decreased segregation.

Iceland et al. (2005) found that African Americans with higher SES lived in more ethnically integrated neighborhoods than lower SES African Americans, though the strength of this relationship was moderate. Consequently, they concluded that ethnicity, and not class, continues to be the most significant variable in explaining residential outcomes. Also, urban scholars have noted that socioeconomic gains sometimes help only certain ethnic groups. Zubrinsky-Charles (2006) found that only Whites and Asians benefited from increased wealth and educational attainment, while African Americans and Latinos usually did not experience the same improved neighborhood outcomes with increased SES—concluding that class does not matter as much as ethnicity in explaining ethnic segregation.

In summary, previous research has provided mixed results on the effects of SES on the persistence of ethnic residential segregation over time. Equal economic access to housing might not mean that discrimination on the basis of ethnicity also would vanish, because differences in SES between ethnic groups might be caused by discrimination in other sectors of society, such as employment or education. Also, previous research has indicated that race and ethnicity may be more important than class in creating ethnically segregated areas.

Preferences of Ethnic Groups

Another hypothesized cause of residential segregation has relied on the preferences of ethnic group members. Under this assumed cause of segregation, ethnic groups differ in the type of neighborhoods they perceive as desirable (Zubrinsky-Charles 2001, 226). Ethnic residential segregation may signify social solidarity if ethnic members choose to live near each other. Or ethnic residential segregation may signify social avoidance, if people prefer not to live near a certain ethnic group. Research on ethnic group preferences was advanced by results from the Multi-City Study of Urban Inequality (MCSUI), which included a survey of residents in Atlanta, Boston, Los Angeles, and Detroit.

The MCSUI face-to-face survey, analyzed by many researchers, provided the respondents with five visual cards of neighborhoods that differed in their ethnic compositions. These compositions were between the respondents' ethnic group and another ethnic group. For example, an African American respondent would be asked to choose which neighborhood composition they would most prefer to live in (Figure 2.1). The dark houses would be owned by members of their own ethnic group, while the white houses would be owned by a different ethnic group. The other ethnic group in the neighborhood would be chosen at random in a split ballot approach, according to which one-third of all White respondents would be told that the neighbors were African American, another one-third would be told the neighbors were Hispanic, and the last third would be told their neighbors were Asian.

FIGURE 1: Neighborhood Cards Used to Measure African American Residential Preferences in the Multicity Study of Urban Inequality

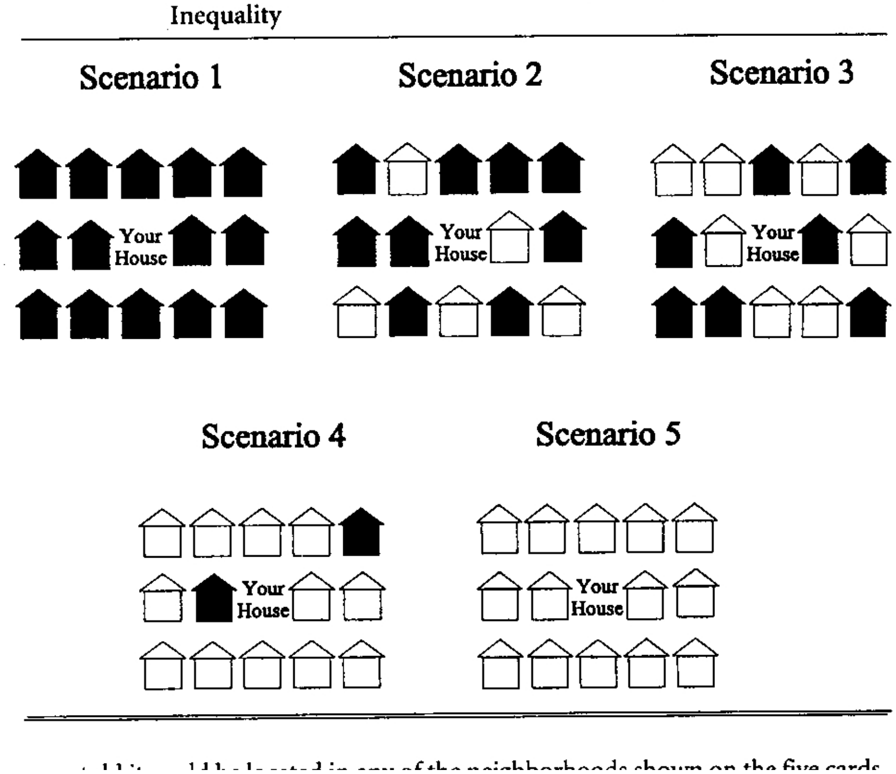


Figure 2.1. Example of cards used to determine ethnic neighborhood preferences. Source: Krysan, M. and Farley, R. 2002. The Residential Preferences of Blacks: Do They Explain Persistent Segregation? *Social Forces* 80, 945.

The findings from the MCSUI can be categorized into two types of residential preferences by ethnic groups: in-group and out-group. In-group preferences dealt with people wanting to live in neighborhoods with co-ethnics. From the MCSUI surveys, Clark (2002) found that African Americans preferred to live in neighborhoods that were 50 percent White and 50 percent African American. In addition, African Americans in this survey listed Whites as the most preferred neighbor. Similarly, this study also found that Hispanics preferred neighborhoods that are 50 percent White and 50 percent Hispanic. Using the same MCSUI surveys, Zubrinsky and Bobo (1996) analyzed ethnic preferences for Los Angeles residents (n = 4,025) and concluded that "[r]acial minorities are more open to sharing residential space with [W]hites than with other minorities" (p. 335). A drawback of using the MCSUI surveys was that it only investigated four highly populated metropolises. There have been few case studies dealing with residential segregation that have analyzed cities with populations under one million.

Out-group preferences related to a person or family not wanting to live in neighborhoods that were dominated by another ethnic groups. Farley et al. (1997), in studying the MCSUI data, found that "[W]hites' willingness to move into a neighborhood is inversely related to the density of blacks living there" (p. 763). In a national telephone survey of 1,663 Whites, Emerson et al. (2001) found differences in the preferences for living next to certain ethnic groups. They discovered that the Asian and Hispanic neighborhood composition did not matter to Whites, but that the African American neighborhood composition was a factor. Zubrinsky-Charles (2006, 165) noted that foreign-born Asians and Latinos learned that residential proximity near Whites was deemed to be a social success and that proximity near African Americans was deemed to be a social failure.

Some scholars feel that survey research involving ethnic group preferences on the ethnic composition of a neighborhood has been overrated and may be meaningless. They argue that no matter the verbally expressed preferences of each ethnic group, very few residential outcomes actually match these apparent preferences in reality (e.g. few actual neighborhoods are 50 percent African American and 50 White). Thus, a critique of ethnic preferences as the cause of segregation is that not all ethnic groups, especially non-Whites, are able to act on their preferences (Wilson and Hammer 2001). Aldelman (2005) found that middle-class African Americans lived in residentially segregated areas despite their expressed preference to reside in integrated neighborhoods. This would suggest that housing discrimination or socioeconomic differences are more likely the causes of ethnic residential segregation.

If people were less concerned about the ethnic make-up of a neighborhood when choosing a place to live, would other preferences or stereotypes still matter? Ellen (2000a) proposed a race-based neighborhood stereotype hypothesis to explain ethnic residential segregation. This hypothesis suggests that Whites associate African American neighborhoods with areas of high crime and poor school quality. Thus, Whites are unwilling to move into majority African American neighborhoods, but are willing for a few African Americans to move into their own neighborhoods. Here, ethnicity still matters but as a signal of neighborhood quality and not as overt racism toward a group (Ellen 2000a, 48). Previous studies on residential preferences have indicated that ethnic groups vary on the ethnic diversity of their preferred neighborhood, but these preferences seem only vaguely related to actual housing outcomes.

As reviewed, there have been three proposed predominant causes of ethnic residential segregation: housing discrimination, SES differences, and ethnic group preferences. All three have their strengths and weaknesses, and they all may act together in explaining why people live where they do. But no matter the relative importance of each prospective cause of segregation, there are distinctive patterns of ethnic residential segregation which can be found within metropolitan America.

Patterns of Ethnic Residential Segregation

Ethnic residential segregation between ethnic groups perhaps has declined over time, but the levels for some groups may have remained high in many American metropolitan areas (Frey and Farley 1996, Logan and Alba 1995, and Iceland et al. 2002). Almost certainly, residential segregation levels vary by ethnic group. Glaeser and Vigdor (2001) noted that segregation levels between African Americans and Whites went down from 1990 to 2000 for 272 of the 291 metropolitan statistical areas (MSAs). However there were still 74 hypersegregated MSAs and 160 partially segregated MSAs. Apparently, African Americans have been less able than other ethnic groups to turn social mobility into spatial mobility. “[T]he preponderance of evidence suggests a continuation of limited black access to better-endowed, more desirable communities throughout the metropolis” (Schneider and Phelan 1993, 270).

Asians and Hispanics seem less segregated than African Americans in urban America. In analyzing 325 metropolitan areas from 1980 to 2000, Iceland (2004) found a growing ethnic diversity in American cities and a decrease in overall aggregate segregation. This study revealed relatively unchanging, but low-to-moderate Hispanic segregation levels and a slight increase in Asian segregation levels, which remained fairly low overall. In a study of segregation across multiple geographic scales (from metropolitan area to census block), Fischer et al. (2004) concluded that segregation levels for foreign-born people had increased from 1960 to 2000.

Previous research has suggested differences in residential segregation for various ethnic groups. Noting these likely differences leads to several geographic research questions: are there geographically systematic differences in the segregation levels between metropolitan areas in the U.S.? Where are the highest and lowest levels of segregation for each ethnic group pairing? To date, there have been no studies that have analyzed the geographic distribution of segregation levels for all major ethnic groups across all American metropolises.

Very few studies have tried to identify and explain differences in the levels of segregation between several ethnic groups among American cities. A key study was conducted by Logan et al. (2004), which related socioeconomic data (e.g. median income by ethnic group) to the levels of segregation for African Americans, Hispanics, and Asians from 1980 to 2000. Their methodology involved multiple regression models that related segregation levels to selected socioeconomic variables. They found for African Americans that higher levels of segregation seem to be associated with increased suburbanization, that larger cities tend to be more segregated than smaller cities, and that segregation seems lower where the incomes of African Americans are close to the income levels of Whites. In addition, Hispanic segregation appeared to increase over time in metros where Hispanics had declining incomes relative to Whites. Overall, they found that there is significant variability in the predictors relating to African American, Asian, and Hispanic segregation; and that "there is no one model that works for all three groups" (Logan et al. 2004, 16).

The Logan et al. (2004) study provided a useful operational research methodology to investigate segregation across metropolitan areas. However, there were some important variables which their study overlooked. There was only one housing variable included in the study: the percentage of housing units built since 1990. There was no mention of housing quality or housing occupancy status (either rented or owned). Thus important questions remain about whether occupancy status or percent of housing units rented or owned relate to the levels of ethnic residential segregation. The study included no variables dealing with education. So do educational attainment differences between ethnic minorities and Whites relate to ethnic segregation levels between American cities? Understanding what factors are systematically related to segregation across metropolitan areas can help to enhance understanding of ethnic residential segregation within urban areas.

Under the case study approach, some research has been conducted on ethnic residential segregation at the local scale. Studies within a metropolitan area have provided different perspectives on ethnic residential segregation that have revealed patterns which remained unnoticed when studying segregation among metro areas. Local studies have shown specific examples of housing discrimination via banking and real estate practices in Detroit (Sugrue 1996) and Kansas City (Gotham 1998 and 2000). In a study of Miami, it was "found that low-, middle-, and upper-class Blacks tend to live among other Blacks, regardless of their socioeconomic standing" (Boswell and Cruz-

Báez 1997, 481). Such findings give credence to the place stratification model. In Buffalo, New York, Trudeau (2006) found that low-income African Americans have lived in persistent segregation due to the spatial rootedness brought about by living in areas with existing social networks. This study implied that ethnic residential segregation can function as a survival strategy that utilizes social support (e.g. free daycare provided by a relative who lives close by) to overcome shallow economic resources.

In a study of Atlanta, Hwang and Murdock (1998) found that Hispanics are the most compatible (e.g. lowest segregation levels) in terms of residential proximity to all other groups. In another Atlanta study, Zhang (1998) found that the most established Asian group, the Chinese, are the most integrated residentially while the more recent arriving Vietnamese are the most segregated. Another key outcome of the study is the finding that "there is almost no discernable pan-Asian pattern in residential segregation" (Zhang 1998, 134). This has implications for future segregation research in that apparently groups within the broader Asian and Hispanic categories should be analyzed separately. Very few ethnic residential studies have compared the segregation patterns between ethnic minorities (e.g. segregation levels between African Americans and Hispanics). Consequently, patterns of minority-minority segregation warrant further study, since such patterns might differ from patterns of minority-majority segregation.

Impacts of Ethnic Residential Segregation

Ethnic residential segregation can be seen as "a process that victimizes some groups while liberating others" (Kaplan and Woodhouse, 2004: 583). There appear to be both positive and negative impacts of living in ethnically segregated neighborhoods, which may be related to economic, health, and other social characteristics. Segregated areas have a “spatial mismatch” (Kain 1968), in which job opportunities are not located near ethnically segregated areas. In another MCSUI study, Mouw (2002) found that African American spatial segregation and segregated job networks have led to ethnic employment segregation between African Americans and Whites. This lack of access to jobs (and good quality jobs) is likely a reason for the differences in socioeconomic status among ethnic groups (de Souza Briggs 2005, 34). However, ethnically segregated neighborhoods may have provided economic opportunities in the development and growth of ethnic businesses. For example, if ordinary restaurants do not provide certain ethnic dishes, then there would be the possibility of the establishment of an ethnic restaurant to satisfy an unmet demand. This restaurant might then serve both the local ethnic community and people in the wider metro area.

Urban scholars have related residential locations to health outcomes, in that where people live likely influences their physical well-being (Kawachi and Berkman 2003). In examining the effects of segregation on health, Ellen (2000b) found that greater residential segregation led to poorer birth outcomes for African Americans. Conversely, however, Yuan (2008) surveyed Illinois residents and discovered that living in ethnically concentrated neighborhoods improved the emotional well-being of African Americans and Hispanics. Evidently, segregation effects on health can vary, especially between apparent differences in influences on physical and mental health.

Ethnically segregated neighborhoods have been linked to the perpetuation of poverty in the inner city (Massey and Denton, 1993). In a longitudinal study of New York City, Friedman and Rosenbaum (2001) found that each successive White and Hispanic generation usually achieved greater SES resources and lived in more desirable areas than previous generations, but subsequent African American generations usually had deteriorating housing outcomes and lower SES resources. Bonastia (2006) found that segregated African Americans had negative financial consequences, constrained employment opportunities, and that segregation reinforced discrimination. Thus, the persistent segregation found in America created urban spaces that house the "truly disadvantaged," (Wilson 1987) which particularly affected African Americans.

Previous research has indicated both advantages and disadvantages to living in segregated neighborhoods. However, refined estimates of the actual impacts (e.g. disparities in income, educational attainment levels, etc.) usually have been missing from the literature. This dissertation tries to fill some of the remaining gaps by studying the consequences (e.g. by matching ethnic distributions with locations of employment, poverty, etc.) of ethnic residential segregation. By investigating the influences of segregation, researchers can better understand whether living in an ethnic neighborhood positively or negatively impacts its residents. This dissertation seeks to identify the consequences of living in ethnically concentrated areas for various ethnic groups.

CHAPTER 3: MEASURING SEGREGATION

Introduction

Research on ethnic residential segregation has not been without problems or concerns, such as whether how social scientists have defined and measured segregation has affected their results. Previous research has indicated that measuring residential segregation is important to evaluating the levels of segregation in U.S. metropolitan areas; especially in monitoring whether cities are becoming more or less segregated over time. Several segregation indices have been developed, and subsequently disputed over, by social scientists (especially by demographers and geographers). Urban geographers have added to the measurement debate by introducing spatial components into the quantification of segregation. Advances in geographic and statistical software have aided recent research on ethnic residential segregation.

The goal of this chapter is to outline the different quantitative aspects of measuring segregation and to indicate how geographers have added to the research on segregation measures. The first section of the chapter summarizes the dimensions, measurements, and limitations of ethnic residential segregation quantities. The second portion deals with how geographic measures of segregation, especially with the utilization of a GIS, have aided research on ethnic residential segregation. The final section reveiws the statistical concerns of analyzing data using enumeration units, matters which have plagued much quantitative geographic research.

Measures of Segregation

In terms of measuring the residential segregation between ethnic groups, James and Taeuber (1985, 2) concluded that "no consensus has emerged on how segregation should be measured". The various statistical measures of segregation have fostered debates on which measure is the "best" to measure ethnic residential segregation. Duncan and Duncan (1955) summarized several indices used to measure differences between African American and White residences. Over time, other researchers have added different measures to quantify segregation levels. The debate on the appropriate segregation index to use continues due to "the complexity and ambiguity of the concept of segregation," and the "reluctance on the part of those with substantive interests to articulate their concepts and justify their selection of measures" (James and Taeuber 1985, 24). All measures of segregation have their advantages and disadvantages, and none are without criticism. Some critics assert "that segregation should be measured not with one index, but with several" (Massey and Denton 1988, 283).

Dimensions of Segregation

In trying to end the debate on segregation measures, Massey and Denton (1988) analyzed twenty segregation indices and found that there appear to be five measured dimensions of segregation. The first dimension is evenness, which measures the differential distribution between two population groups in an area. The second dimension is exposure, which measures segregation in terms of the contact between groups. The third dimension deals with concentration, where segregation is measured in terms of the amount of space ethnic groups occupy. The fourth dimension involves centralization, which determines how close population groups are located to the city center. The fifth dimension is clustering, which determines whether a population is living in contiguous areas in the city. The following discussion addresses each dimension of segregation and reviews measures that have been argued to be the best to use for segregation analysis.

Evenness

The evenness "measures of segregation compare the spatial distributions of different groups" (Harrison and Weinberg 1992, 1). The measures of evenness include the Entropy Index, Gini Index, Atkinson Indices, and the Dissimilarity Index. Massey and Denton (1988) found that these segregation indices are highly correlated to one another. They concluded that the dissimilarity index is best since it is simple to calculate, has been used the most in empirical research, and thus future studies could be related to previous research. Even though the dissimilarity index has been popular among social scientists, James and Taeuber (1985) warned about the hazards of using a "measure that is currently more popular, thereby allowing the definition of segregation to flow from one's choice of a measure rather that the reverse" (1985, 2). Limitations of several segregation measures are discussed later in this chapter

As urban geographer Wong (1999) asserted, the dissimilarity index, or DI, "is still the best measure of segregation because it effectively captures the evenness dimension" (1999, 635). This evenness dimension "refers to the differential distribution of two social groups among areal units in a city" (Massey and Denton 1988, 283). The DI can be calculated with the following formula:

$$\text{Dissimilarity Index} = \sum_{i=1}^{n} \frac{|(x_i - y_i)|}{2} \times 100$$

In this formula, x_i is the percentage of the total x-group population in census tract i and y_i is the percentage of the total y-group population in census tract i. Here, the sum of the absolute values of the differences in percentages between group x and y values in census tract i is divided by two and multiplied by 100. The range of DI values goes from zero, indicating no segregation between the x and y groups, to 100, indicating complete segregation between the x and y groups. A DI below 30 designates low segregation, between 30 and 60 moderate segregation, and a DI of above 60 indicates high segregation (Zhang 1998, 130). The DI also can be interpreted as the percentage of group x members that would have to move to areas of group y members, or vice versa, for the two groups to have proportionately equal distributions throughout the city. For example, if the DI between African Americans and Whites were 65, then 65 percent of either Whites or African Americans would have to be redistributed to areas occupied by the other group in order to eliminate segregation.

Exposure

The exposure dimension of segregation depends "on the extent of which two groups share common residential areas, and hence on the degree to which the average minority group member 'experience' segregation" (Harrison and Weinberg 1992, 2). The measures of this dimension of segregation include the Interaction Index, Isolation Index, and Eta Square index. The first two are opposites of one another, in that the former measures how two groups are in spatial contact to one another, while the latter describes how ethnic groups are separated from each other. Massey and Denton (1988) stated that both of these measures should be used instead of the Eta Square index. The Isolation index can be calculated by:

$$\text{Isolation Index} = \sum_{i=1}^{n} [x_i/X][x_i/t_i]$$

In the equation, x_i is the number of x-group members in tract i, X the total number of x-group members in the city, t_i the total population residing in tract i. This index varies from 0 to 1, where it gives the probability that a randomly picked group X member shares a residential area with another member of group X. The closer the number is to one, the more likely that each ethnic group member lives near to others of the same ethnic group.

Concentration

This dimension indicates whether "groups of the same relative size occupying less space would be considered more concentrated and consequently more segregated" (Harrison and Weinberg 1992, 3). This dimension is measured with the Duncan Delta Index, Absolute Concentration Index, and Relative Concentration Index. Massey and Denton (1988) reviewed these indices and found that the Relative Concentration Index is best suited to measure the concentration dimension of segregation. However, Egan et al. (1998) found errors in the Relative Concentration Index, especially finding empirical instances in which the values are outside the posited bounds (i.e. between –1 and 1). It is calculated by:

$$\text{Relative Concentration} = \{[\sum_{i=1}^{n} (x_i a_i/X)]/[\sum_{i=1}^{n} (y_i a_i/Y)] - 1\} \; / \; \{[\sum_{i=1}^{n_1} (t_i a_i/T_1)]/[\sum_{i=n_2}^{n} (t_i a_i/T_2)] - 1\}$$

The tracts must be ordered by census tract size, from the smallest to largest in area, which can be done in a GIS. In the equation, x_i is the number of x-group members in tract i, X the total number of x-group members in the city, y_i is the number of y-group members in tract i, Y the total number of y-group members in the city, a_i is the land area of tract i. Since census tracts are arranged by areal size, n_1 is the rank of the neighborhood where the cumulative population of neighborhoods equals the city's X population, summing from the smallest neighborhood up, while n_2 is the rank of the neighborhood where the cumulative population of neighborhoods equals the study area's Y population, summing from the largest neighborhood down. The T_1 value is the total population from 1 to n_1, and T_2 is the total population from n_2 to n. Overall, the Relative Concentration Index ranges from –1 to 1, where a value of 0 indicates an even distribution, -1 indicates that Y's concentration is greater than X's, and +1 indicates the opposite.

Centralization

The centralization dimension of segregation measures how closely population groups are located to the city center. This can be measured in three ways, by dividing the central city population by the metropolitan area population, by the Relative Centralization Index, and by the Absolute Centralization Index. Massey and Denton (1988) found that the Absolute Centralization Index was the best measure of the centralization dimension of segregation. This index can be calculated by:

$$\text{Absolute Centralization Index} = \left(\sum_{i=1}^{n} X_{i-1}A_i\right) - \left(\sum_{i=1}^{n} X_iA_{i-1}\right)$$

Census tracts must be ordered by distance away from the central business district, starting with tracts closest to the city center. In the equation, X_i is the cumulative proportion of the X population through tract i. A_i is the cumulative proportion of land area through tract i. The values vary from negative one to plus one, with a value close to plus one indicating that it is more likely that group X members live near the city center and a value near negative one indicating that ethnic group members tend to reside further away from the central business district. A value near zero indicates an even distribution throughout the study area. By calculating centroids of the CBD and for each census tract, a GIS can aid in the calculation of the centralization index.

Clustering

The final dimension of segregation is clustering, which measures whether a population is living in contiguous areas in the city. The existence of clustering indicates if "a racial or ethnic enclave" (Harrison and Weinberg 1992, 4) is present in the study area. This dimension can be measured with the following indices: Absolute Clustering Index, Spatial Proximity Index, Relative Clustering Index, Distance Decay Interaction Index, and Distance Decay Isolation Index. The best index to measure clustering probably is the Spatial Proximity Index (Massey and Denton 1988), which is weighted measure:

$$\text{Spatial Proximity Index} = \frac{(XP_{xx} + YP_{yy})}{TP_{tt}}, \text{ where:}$$

$$P_{tt} = \sum_{i=1}^{n} \sum_{j=1}^{n} (t_i t_j c_y) / T^2$$

$$P_{xx} = \sum_{i=1}^{n} \sum_{j=1}^{n} (x_i x_j c_y) / X^2$$

$$P_{yy} = \sum_{i=1}^{n} \sum_{j=1}^{n} (y_i y_j c_y) / Y^2$$

In the equation, X is the city's total population of x-group members and Y is the city's population of y-group members, while T is the city's total population. The x_ii and x_j are the populations of x-group members in census tracts i and j, respectively. Similarly, y_i and y_j are the populations of y-group members and t_i and t_j are the total populations in census tracts i and j, respectively. The negative exponential of the distance (c_y) between two census tracts are measured from the centroids of census tracts i and j. A spatial proximity index value of 1 indicates that there is no differential clustering between x- and y-group members. Index values greater than one indicate that members of both groups are more clustered in urban space and not living near members of the other group.

In summary, there are several segregation dimensions and indices, and arguments on which segregation measure to operationalize continues. It is important to note, however, that a "[s]ociologist will learn… that there is no way to devise adequate indexes which avoids dealing with theoretical issues" (Duncan and Duncan 1955, 217). Therefore, new theories and paradigms may change segregation research and thus the indices used to measure segregation in the future. Geographers have identified a few disadvantages of segregation indices and have cautioned others about their limitations.

Criticisms

Johnston et al. (2007) recently reviewed the five proposed dimensions of segregation found by Massey and Denton (1988) and concluded that there are not five, but only two dimensions of segregation: separation and location. Separation is similar to the evenness dimension and the DI does well in measuring evenness. Thus, this dissertation uses the DI to measure residential segregation between each pair of ethnic groups studied. In terms of location, where the ethnic groups are located in urban space is an important dimension. This is addressed in the dissertation through the generation of several maps to depict the residential locations of various ethnic groups within the study areas.

Geographers have criticized segregation measures, especially the dissimilarity index, for lacking a spatial component in its calculation. The DI uses enumeration units for its computation, but the location of these units in space is not addressed in its calculation. A problem of the DI "from a spatial perspective" is "that it cannot solve the checker-board problem" (Wong 2005, 1). Thus, high levels of segregation can be calculated even though the enumeration units may or may not be contiguous to each other. If the enumeration units are not clustered together, then does this represent a truly segregated pattern?

There are two other limitations to using the DI as a measure of segregation that relate to the modifiable areal unit problem (MAUP). First, the delineation of subarea boundaries has an effect on the computation of the DI. This can be explained with the following diagram (Figure 3.1).

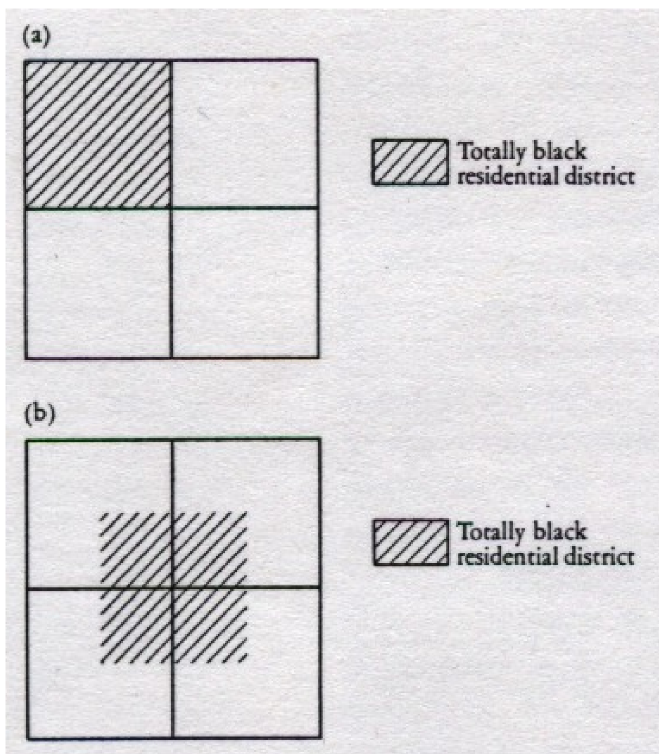


Figure 3.1. Effect of boundary delineation on the Dissimilarity Index. Source: Taylor, P. 1977. *Quantitative Methods in Geography: An Introduction to Spatial Analysis*. Boston: Houghton Mifflin Company, p. 184.

In the first boundary delineation (a) the DI would be 100, while for the second boundary delineation (b) the DI would be zero. These are two different DI values, but the population sizes are the same, just the boundaries delineating the enumeration units are different.

A second critique of the DI is that the DI value can change depending on the sizes of the subareas used in the analysis. As the enumeration unit size decreases, the DI value tends to increase. For example, the DI value calculated from data reported at the census block level will generally be higher than a DI value for data reported at the census tract level for the same city. The reason is that with larger area units, "there are less likely to be examples of areal units that have no or few members of one or the other group in them" (Taylor 1977, 184). Further implications of MAUP are discussed later in this chapter.

Overall, segregation measures are seen by geographers as lacking locational components in their calculations. A GIS can be useful in overcoming the limitations of traditional segregation measures by introducing spatial dimensions in the calculation of segregation indices. Enumeration units can be related to each other spatially by topology, and this would overcome the "checkerboard" problem. Also, attempts have been made to overcome the MAUP problem within a GIS framework (Wong 2003).

Implementing Segregation Measures in a GIS

In the last fifteen years, Geographic Information Systems (GIS) have become powerful tools for the spatial and statistical analysis of social phenomena. Even though Greene and Pick (2006, 16) have suggested that "[i]t is difficult to say when the first GIS was introduced," it can be noted that Ian McHarg first introduced overlay analysis with a computer in the late 1960s. As an automated system of computer hardware and software, a GIS can collect, store, organize, retrieve, analyze, and display spatial data (DeMers

2000, 9). A GIS can assign attribute data to a given location, such as assigning ethnic group population data for each census tract. After the creation of a geodatabase, analysis can be performed and various maps can be produced. The Environmental Systems Research Institute (ESRI) developed a suite of GIS software that are utilized in this study. As the most prominent GIS company in the world, ESRI has pushed the use of their software for geostatisitical analysis in several urban research endeavors (Lee and Wong 2001).

GIS has aided geographers in the past, and now this tool has become popular among other social scientists and non-academics. The uses of GIS range from marketing analysis to the redistricting of congressional districts. GIS has recently become a trendy tool for historians interested in studying past spatial phenomena (Knowles 2002). The main use of a GIS in the social sciences involves the creation of maps. However, the full application potential of GIS has not been achieved, as spatial and statistical analysis of geographic data in a GIS context has only recently been integrated into GIS software. In terms of segregation, a GIS can be used to map ethnic distributions in city as well as to calculate various segregation indices. A GIS can add to segregation studies by improving the utility of traditional measures of segregation.

Very few researchers have attempted to calculate segregation measures within a GIS. The "use of Geographic Information Systems in the study of residential segregation is not very common" (Cundiff 1999, 3). It is ironic that the best tool to analyze spatial patterns has not been utilized in measuring the spatial phenomenon of segregation. Since segregation measures "require certain types of spatial information, it is natural to incorporate these spatial measures in a GIS environment" (Wong 2005, 1). With the very recent advent of integrating segregation indices into a GIS, few example studies exist in the literature (Wong 2002, 2003, 2005, and Wong and Chong 1998). Dr. Wong was mainly interested in improving traditional measures of segregation, especially by including spatial components. For example, by including an adjacency component in the DI formula, he made an attempt to overcome the aspatial limitation of DI (Wong 2002). In terms of measuring segregation between more than two ethnic groups, a multi-group index was created (Wong 1998). By adding a locational aspect in measuring segregation, geographers have contributed to the segregation literature.

Previous researchers usually have used a GIS to map residential patterns and another statistical program to calculate the segregation measures. However, current GIS technology allows for the calculation of segregation indexes within the GIS. Using knowledge of writing scripts in ArcView (Lee and Wong 2001), Dr. Wong developed a GIS segregation function. This function was offered as a downloadable ArcView project file in which five segregation measures can be calculated (http://geog.gmu.edu/seg/contents.htm). This GIS functionality allowed the author to calculate the dissimilarity index between selected ethnic groups from a shapefile (a basic ESRI file). This project of integrating segregation measures in a GIS was funded by the National Institute of Child Health and Human Development (NICHD) in the National Institute of Health (NIH). However, this routine has not been distributed by ESRI and was only available from the website maintained by Dr. Wong.

Segregation Studies Using GIS

The incorporation of GIS technology by non-geography social scientists into research has been a recent phenomenon, and the utilization of GIS to measure ethnic residential segregation has mirrored this trend. Beveridge (2002) investigated segregated census tracts and wards in the New York City metropolitan area from 1900 to 2000 and found that the segregation levels were higher in 2000 than they were for various immigrant groups in 1910. In a study of Tel Aviv, Omer and Benenson (2002) used a GIS to investigate segregation between Jewish and Arab populations at multiple geographic scales (from neighborhoods to individual households). They found that the Arab and the Jewish populations were segregated in local ethnic neighborhoods, which were tied to the architectural style of the housing.

There is promise in the use of GIS in segregation research, but there are still limitations that a GIS cannot overcome. Even with the addition of spatial components to measuring segregation, there remain statistical concerns that are related to the spatial units used in every segregation calculation. These problems cannot be avoided and are causes for concern when interpreting statistical outputs from any geostatistical analysis.

Limitations of Quantitative Geographic Research

As discussed earlier in relation to the limitations of the DI measure of segregation, the modifiable areal unit problem (MAUP) is very difficult to resolve. Geostatistical analysis is sensitive to the sizes of the enumeration units used in its calculations, since spatial data can be enumerated for multiple spatial scales (e.g. county level to tract level to block level). The importance of MAUP is that "the size and configuration of spatial units may affect the analysis" (Rogerson 2001, 100). Thus, even using only a census tract scale of analysis would not be without problems since how the boundaries of the enumeration units are delineated can affect analysis results. As political geographers know with gerrymandering, the geographic shapes of the enumeration units (e.g. voting districts) can be modified to obtain results that favor one candidate over another. Given the same ethnic composition of a city, the various ways the city can be divided into enumeration units can affect the segregation levels which are measured. Thus, the same city could be found to have no segregation (DI value of 0) or be completely segregated (DI value of 100) depending in part on the areal demarcations of enumeration and reporting units.

The modifiable areal unit problem will more than likely never be completely resolved in quantitative geographic analysis. Geographers have accepted the existence of the MAUP, and when examining data enumerated at different spatial scales have noted that caution should be used when interpreting the results.

Discussion

There have been several proposed dimensions and measurements of ethnic residential segregation. The DI has been the most widely used measure of segregation. Recent use of GIS has provided a very useful and quick method to measure the relative distributions of ethnic groups in urban space. The "ease" of calculating segregation levels in a GIS is not problem free, however. Users may not understand the statistical underpinnings behind each segregation measure when they input numbers in a "box" and receive an output number.

The measurement of segregation with a GIS is only part of the investigation of segregation. Social scientists should also understand the theoretical framework, causal factors, meanings, and consequences of ethnic residential segregation. The goal of a geographer should be to identify spatial patterns and to provide the theoretical or empirical reasons for why these patterns exist. There is more to know than just the “where” question, as one must also answer the question: “why are things where they are?” The measurement of segregation in a GIS only satisfies the first part of a geographer’s goal. Only from combining segregation measures with a sound theoretical background and considering casual factors, can one suggest solutions (if needed) to ethnic residential segregation problems.

CHAPTER 4: RESEARCH DESIGN

Introduction

Based on a foundation of the aforementioned review of research, this project attempts to understand the complexity of the patterns and the consequences of ethnic residential segregation at two geographic scales. The first section of this chapter provides a background to the study areas, for both metropolitan areas and for the city of Omaha, Nebraska. The second portion of the chapter describes the research questions that this dissertation attempts to answer. The last section details the sources and limitations of the data used to analyze segregation at different geographic scales. The methodologies used in this dissertation are detailed in the subsequent results and analysis chapters.

Study Area: American Metropolitan Areas

The analysis of ethnic residential segregation at the national level includes metropolitan statistical areas (MSA) and principle metropolitan statistical areas (PMSA) in America (Figure 4.1). An MSA was defined by the U.S. Bureau of the Census for any city with a population over 50,000 people to include the county in which the central city is located, plus adjacent counties that meet various density and commuting criteria (U.S. Census 2005 and Hartshorn 1992, 4). There were 331 MSAs in the United States in 2000. A PMSA is an MSA with a population over one million people, in which the counties included have strong internal social and economic linkages (U.S. Census 2008). Since metropolitan areas can coalesce with one another, very large urban conglomerations are divided into the largest metro area (PMSA) and neighboring smaller metro areas (MSA). There were 73 PMSAs in the United States in the year 2000.

A drawback of the MSA and PMSA definitions is that not all land within the county boundaries of these areas is necessarily in urban uses. Some metro areas included counties that were predominantly rural, but had a high proportion of their residents commuting to a central city. This dissertation considers 258 MSAs and 73 PMSAs (for a total of 331 metropolitan areas) as defined by the U.S. Census in 2000. This dissertation analyzes data on ethnic residential segregation levels for all metropolitan areas considered from 1980 to 2000, using the 2000 MSA and PMSA definitions. Even though metropolitan areas grew over time and added more counties, the 2000 definitions were used as a base in the calculations of DI in both 1980 and 1990, as well as in 2000. This was one way of overcoming the MAUP problem.

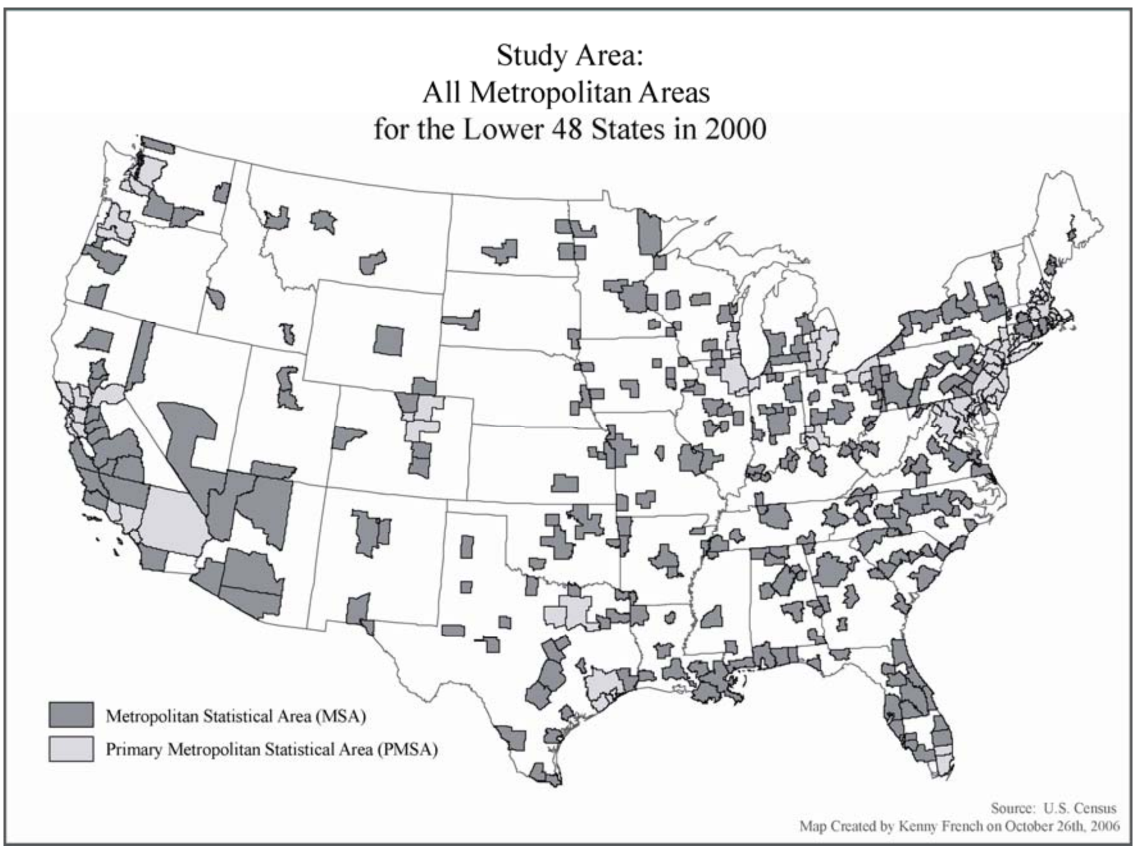


Figure 4.1. A map of MSAs and PMSAs in the Lower 48 United States.

Study Area: Omaha, Nebraska

At the local geographic scale, analysis within a city involves a case study of Omaha, Nebraska. The selection of Omaha, Nebraska as the case study site is due in part to the city's moderate to high levels of segregation in comparison to national segregation levels (Table 4.1). Also, previous segregation research rarely has analyzed cities under one million people and also typically has focused on metropolitan areas near the coasts. A logistical reason for selecting Omaha is the proximity of the city to the researcher, since it is easy to access and gather information about the neighborhoods of Omaha. As a case study, Omaha provides an intimate look at ethnic residential segregation at the local level.

Omaha, Nebraska has recently been known for its financial and telecommunication-based industries. Demographically, the city (using Douglas County as the proxy for the city) was in 2000 a medium-sized metro area with a population of 463,585 people. The ethnic composition of the city in 2000 was 80.9% White, 11.5% African American, 6.7% Hispanic, and 1.7% Asian. Even though Omaha was not as "diverse" as larger metro areas, this did not mean that the ethnic residential patterns within the city were unimportant.

Segregation Between Ethnic Groups	**Omaha, Nebraska MSA**	**Average Segregation for All Cities**	**Range in Segregation for All Cities**
Whites and African Americans	67.6	51.4	20.2 – 84.7
Whites and Hispanics	54.1	38.6	11.6 – 75.4
Whites and Asians	29.2	35.5	14.5 – 58.7

Table 4.1. Comparison of Segregation Levels (Dissimilarity Index) at the census tract scale between Omaha and all other cities in the United States, 2000.

Brief History of Omaha

Historically, the site of Omaha, Nebraska was resettled in the mid 1800s by Europeans. Mormons used a site in the modern day Florence neighborhood for winter quarters in 1846. Later on, transportation was key to the development of Omaha, as it's early history was tied to a ferry crossing over the Missouri River in 1854 and then to the eastern terminus of the Union Pacific transcontinental railroad that helped resettle the Great Plains after 1869 (Larsen and Cottrell 1997, preface). Omaha transitioned into a meat packing center to rival Chicago in importance by 1890. The establishment of the meat packing industry, just as with the railroad industry a few decades earlier, helped change the ethnic diversity of Omaha.

Many southern and eastern European immigrants came to Omaha, and the adjacent city of South Omaha (annexed to Omaha in 1915), to work in the meat packing industry. South Omaha grew from the efforts to create a livestock processing center in the greater Omaha area (Mead and Hunt, Inc. 2005, 2). In an historical geography of Omaha, Fimple (1989) used U.S. Census data to identify five European ethnic enclaves in 1880 and nine ethnic enclaves in 1900. These historic enclaves provided immigrants with social networks that aided their transition into American society. Today, these European ethnic enclaves have virtually disappeared, as what remain are a few churches and prominent buildings (e.g. the Sokol—on 13th and Dorcas—a Czech founded auditorium that recently served as a venue for music and weddings). By 1910, 53.7 percent of Omaha's residents and 64.2 percent of South Omaha's residents were foreign-born or had at least one parent born outside of America (Dalstrom 2004, 177).

The ethnic history of Omaha has included several violent episodes. Ethnic tensions grew in the early 1900s as southern and eastern European immigrants settled in Omaha. Immigrants from these areas were used as strikebreakers, which added to the tensions with older immigrants from northern and western Europe. Anti-Greek animosity turned into violence in February 1909, when a Greek man (John Masourides) was accused of killing a South Omaha police officer (Ed Lowery) (Bitzes 1970). Local newspapers had fueled the anti-Greek hysteria: "Greeks are a menace to the American laboring man-just as Japs, Italians, and other laborers are" (Larsen and Cottrell 1997, 164). A mob formed to lynch Mr. Masourides and then started a riot in South Omaha, where Greeks were attacked and their businesses destroyed. Thousands of Greeks left Omaha never to return. It was not uncommon to see anti-ethnic discrimination against groups that would be categorized as "White" today.

African Americans settled in Omaha primarily due to service employment tied to the railroad and hotel industries. By 1870, there were 446 African Americans, out of the city's total population of 16,083 people (Larsen and Cottrell 1997, 122). After World War I, there were tensions between African Americans and "Whites" in Omaha. African Americans helped the war effort by working in factories, but when the war was over, African Americans were expected to give up their jobs to the returning servicemen. As with the Greeks before, African Americans were strikebreakers which added to the tension between ethnic groups in Omaha. Tension flared up on September 26th, 1919, when it was falsely alleged that William Brown, an African American, had raped a White woman. A mob lynched Mr. Brown by beating him unconscious, castrated him, and stripped him naked before hanging and burning his dead body on a light post at 18th and Harney (Larsen and Cottrell 1997, 171).

This infamous history of Omaha shows an extreme case of the discrimination African Americans have faced. In terms of employment, African Americans usually were the "last hired and the first fired"—in 1931 one industrial firm had 1,800 African Americans in its total workforce of 10,000 workers, and in 1932 there were only 600 African Americans out of the 14,750 total workers (Larsen and Cottrell 1997, 222). As with the rest of America in the Civil Rights era, there were protests and riots in Omaha in the 1960s. More recent ethnic tensions emerged between African American teenagers and the Omaha police in 1966, and there were also three nights of rioting in 1970 (Larsen and Cottrell 1997, 273-277).

Although Omaha was not widely known for it's ethnic diversity, the history of Omaha has shown that "ethnic minorities" have faced adversities. Subtle forms of discrimination are perhaps more difficult to identify now than in the past. Instead of violent protests against certain ethnic groups, current forms of discrimination are more apt to be found in interactions between ethnic minorities and real estate agents that go unrecorded. However, the outcomes of these small instances of discrimination can form ethnically segregated areas which could be displayed on the residential landscape of Omaha.

Brief Geography of Omaha

Geographically, (Figure 5.2) Omaha, Nebraska is located in the "Heartland" of America. Omaha can be divided into four sections which are delineated by two of the city's main thoroughfares, 72nd Street and Dodge Street. The Missouri River marks the eastern edge of the city, except for a portion of Iowa (Carter Lake) that was left west of the river by a cut-off meander. The northern, western, and southern boundaries of Douglas County border the adjacent counties of Washington, Saunders, and Sarpy respectively, that form part of the overall Omaha MSA. However, these counties were excluded from the analysis because they house fewer people and because the city limits of Omaha are located entirely in Douglas County. The central business district of Omaha is located in the eastern portion of the city, straddling Dodge Street. The largest census tracts, in terms of area, are in the rural northern and western sections of the county. These will undoubtedly become more urban over time, as the suburbs will eventually overtake present farmland.

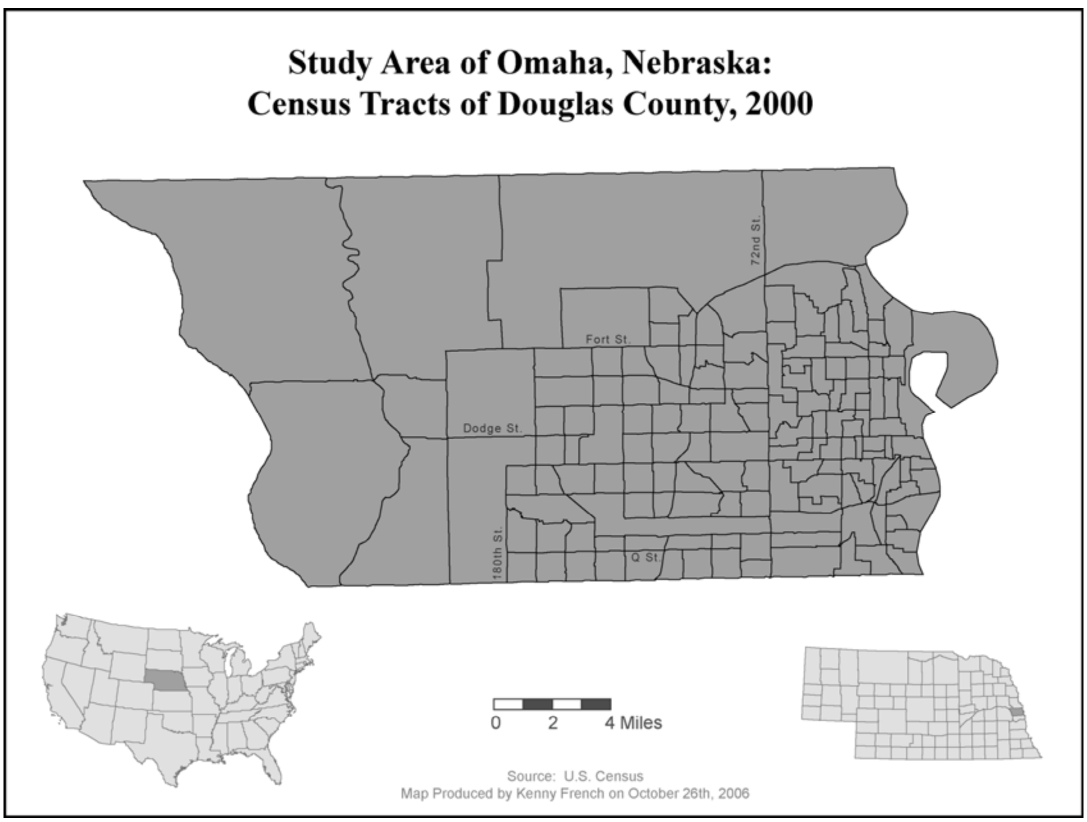


Figure 4.2. Census Tract map of Omaha, Nebraska.

Research Questions

The main research questions on ethnic residential segregation to be addressed are divided by the geographic scale of analysis. At the national scale of analysis, the main question relates to the issue of whether there are systematic geographic differences between American metropolitan areas in terms of their segregation levels; more specifically:

1. Where are the most and least segregated cities located?
2. Are there regions in the U.S. that are distinguishable by their levels of segregation?
3. What variables can be found to explain the differences in ethnic residential segregation for metropolitan areas within each region?
4. Do the variables best explaining segregation in one region match the variables best explaining segregation in another region?

Overall, the national scale analysis will detail whether there are differences between American metro areas in terms of their levels of ethnic residential segregation.

At the local geographic scale, the main goal is to understand the patterns and consequences of ethnic residential segregation within Omaha, Nebraska; more specifically:

1. Do various ethnic groups live in distinctively different sections of Omaha?
2. What are the levels of ethnic residential segregation between each possible pair of ethnic groups?
3. If segregation exists in Omaha, what are the variables that best explain the ethnically concentrated patterns?

After describing the patterns of segregation in Omaha, the next objective is to detail the consequences of living in segregation, if it exists in Omaha; more specifically:

1. What are the impacts of living in ethnically segregated neighborhoods?
2. Are there positive or negative quality of life characteristics in these areas? And do some ethnic groups benefit more than others?

Data

This dissertation tries to understand the patterns and consequences of ethnic residential segregation at two geographic scales, between metropolitan areas and within one metropolitan area. To pursue research on the analysis of segregation, various data were collected in order to meet the goals of answering the aforementioned questions. Data from a multitude of data sources were collected and georeferenced in a GIS. Research for this dissertation employs the GIS software of ArcView (by ESRI™) to manage the data and Adobe Illustrator™ to touch up and finalize the maps exported from ArcView. The data used in this research project were divided by geographic scale: between metropolitan areas and within a city.

Metropolitan Data

Measurements of ethnic residential segregation were needed for American metropolitan areas at the national scale. The segregation measures used in this study are the dissimilarity index (DI) between the ethnic group pairings of non-Hispanic Whites, non-Hispanic African Americans, non-Hispanic Asians, and Hispanics. These DI values are calculated for all 331 metro areas in the contiguous United States for 1980, 1990, and 2000 (Lewis Mumford Center 2006). A limitation of the data set was the exclusion of Native Americans. However, Native Americans constituted only 1.3% of the total U.S.

metropolitan population in 2000 (Logan et al. 2004, 5). The DI levels are calculated using census tracts as the enumeration units.

To explain the distribution of segregation levels across the United States, several socioeconomic variables have been gathered from the U.S. Census. Previous research has indicated that housing, employment, education, and income are key variables in explaining ethnic residential segregation. Thus, several socioeconomic variables (e.g. per capita income, percent graduating with a bachelor's degree, etc.) were collected for every metro area. These data were collected for the general population (e.g. per capita income) and for each specific ethnic group (e.g. Hispanic per capita income) in each metro area. The socioeconomic data are investigated using several statistical techniques in this dissertation.

Caution is needed when interpreting the statistical results of this dissertation for there are limitations dealing with U.S. Census data. First, the data were gathered via questionnaires directed towards heads of households, and there could be some errors in the responses for other household members. Second, many people were not counted by the Census. One group affected were the homeless, who have no address for a survey to be mailed to. Special canvasses of homeless persons were undertaken, but some people likely were missed by these canvasses. Also, there may be an under-representation of certain ethnic group members. This undercount "has meant that racial/ethnic minority groups (especially African-Americans) have been less likely to be included in the census count than have [W]hites" (Weeks 2002, 57). For example, in 1960 the undercount was estimated at 8.3 percent for African Americans and only 2.7 percent for Whites. In 2000, the undercount was reduced to an estimated 2.2 percent for African Americans and 0.7

for Whites (Weeks 2002, 58). Even with the limitations of the data, census data are the most complete available for providing demographic and spatial information on the U.S. population.

Omaha Data

The patterns and consequences of segregation in Omaha are investigated with the use of a multitude of data sources. Data were gathered at two enumeration unit scales: the census tract level and at individual point locations for entities within Douglas County. The 2000 U.S Census was used as a source for the number of ethnic group members by census tract. These data are used to calculate the DI values between each ethnic group pair and are mapped to show ethnic distributions within the city. As with the national scale dataset, the U.S. Census also was used as a source for other socioeconomic data that are employed in several statistical analyses.

The census tract was selected as the enumeration unit for analysis due to the plethora of data that are reported at this level. Smaller enumeration units, such as the census block group or census block, are limited in the information publicly available due to privacy issues. For example, data on the percentage of Asians with only a high school degree are provided at the census tract level but not at the census block level. Another reason for choosing the census tract is that it spatially approximates the neighborhood level (Massey and Denton 1993, 62). Census tracts:

> "usually have between 2,500 and 8,000 persons and, when first delineated, are designed to be homogeneous with respect to population characteristics, economic status, and living conditions. Census tracts do not cross county boundaries. The spatial size of census tracts varies widely depending on the density of settlement. Census tract boundaries are delineated with the intention of being maintained over a long time so that statistical comparisons can be made from census to census." (U.S. Census (http://www.census.gov/geo/www/cen_tract.html) 2002)

The classification of major ethnic groups by the U.S. Census Bureau has not been consistent over time. In 1980 and 1990, the categories include White, African American, American Indian-Eskimo-Aleut, Asian-Pacific Islander, Others as racial groups, and the ethnic group of Spanish Origin (later Hispanic). A person of Spanish origin could be of any race, i.e. White or African American. There was a change in categories for the 2000 census. Similar to the national scale data, the ethnic categories used for this dissertation from the 2000 U.S. census are: non-Hispanic White, non-Hispanic African American, non-Hispanic Asian, and Hispanic. The "non-Hispanic" terminology of each category was dropped for semantic reasons, so that "White" in this dissertation actually is "non-Hispanic White." The 2000 census was also different from the past censuses in that there was the option to choose more than one racial group. These multi-group data were not used in the analysis of the 2000 census in order to match the earlier categories through time. Overall, the "national census categories illustrate the fluidity of racial and ethnic identities as well as the shifting languages used in defining identity within national institutions" (Berry and Henderson 2002, 5). Unless specified, these categories were not altered when calculations were conducted.

Several non-U.S. Census data sources also are used in the analysis of ethnic residential segregation within Omaha. Due to the Housing Mortgage Disclosure Act (HMDA) passed in 1975, private lending institutions must provide the federal government with mortgage loan data. Since the mid-1990s, the number of mortgage loans that were accepted and denied for each census tract in every MSA was made available via the internet. The percentage of loans that were denied in each neighborhood was calculated and mapped for Omaha, NE in 2003. The 2000 HMDA data were still enumerated using the 1990 census tract definitions, and are not compatible with the other SES data using the 2000 census tract definitions. This limitation, of using both 2000 and 2003 data in the analysis, could not be resolved and will be noted when interpreting the results.

If there are disparities in loan denials across the city and this distribution is spatially correlated with ethnically dominated neighborhoods, then potential discrimination could be occurring. The results of this analysis may identify areas that were "redlined." Another housing characteristic, assisted housing units (all programs and Section 8 housing), may relate to the segregation of ethnic group members. Public housing data at the census tract level from 2000 were gathered from a HUD database to compare to HMDA and other SES data from the U.S. Census. It is important to maintain the same enumeration units, the 2000 census tract definitions for Douglas County, to avoid any problems of MAUP when comparing results.

Moving from polygon to point enumeration units, several spatial datasets were created that include information about schools, ethnic businesses, and ethnic social institutions. Data from the Department of Education in Nebraska in 2000 included information for each public school in Douglas County on student reading scores, teacher experience, and teacher salaries. Some impacts of living in segregated areas may be linked to school quality. A limitation of this data set is that it only contains information of public schools and not on private schools, due to a lack of available information for private schools.

The locations of ethnically-owned business have been used as a proxy of where ethnic group members work in Omaha. These 2005 data were obtained from the Greater

Omaha Chamber of Commerce, which provided a list of addresses of minority-owned businesses. The limitations of this dataset are that some ethnic businesses may have been excluded in this listing, and that it includes women of all ethnic backgrounds, White and non-White alike. Thus, the "minority" definition is not just for ethnic minorities. The last point data utilized in this dissertation relate to ethnic churches and social institutions. This 2006 dataset of addresses also came from the Greater Omaha Chamber of Commerce, enabling African American, Hispanic, and Asian social institutions to be mapped using a GIS. These locations are then compared to the residential locations of various ethnic groups to indicate whether ethnic social institutions are segregated in urban space.

Summary

This dissertation analyzes ethnic residential segregation at two geographic scales. At the national level, metropolitan areas (both MSAs and PMSAs) are analyzed to find whether any regional trends existed in 2000. At the local level, the city of Omaha, Nebraska is analyzed to understand the patterns and consequences of segregation within one metro area. There are several research questions presented that pertained to the patterns and consequences of ethnic residential segregation. To answer these questions, several data sets have been gathered and are analyzed for both geographic scales. Going from the general (national trends) to the specific (a case study analysis) provides a worthwhile composite investigation of ethnic residential segregation in U.S. urban residential space.

CHAPTER 5: SEGREGATION LEVELS IN AMERICAN METRO AREAS

Introduction

There were differences in ethnic residential segregation levels between metropolitan areas throughout America in 2000. As a geographer would query: where were the most and least segregated cities located? Were there differences in segregation levels between regions in the U.S.? What variables accounted for these differences? Thus, a goal of this chapter is to identify regions on the basis of metropolitan segregation levels. After identifying these regions, analysis involves explaining the differences in segregation scores within each region. For example, were the socioeconomic variables that account for segregation in the North comparable to the variables that account for segregation in the South? The results of analyzing segregation levels between American metro areas provide a basis for considering policy recommendations to deal with segregation.

Spatial Distribution of Segregation

The initial analysis of ethnic residential segregation is to map the differences in segregation for metropolitan areas throughout the United States. Cartographic analysis of segregation can indicate where the most and least segregated cities are located in America. The magnitude and spatial distribution of segregation might be dependent on the ethnic group and ethnic group pairing being analyzed. The following summarizes the spatial distribution of segregation between Whites, African Americans, Hispanics, and Asians.

The spatial distribution of African American and White segregation levels reveals that many metropolitan levels are very segregated between these two groups, with some metropolitan areas showing dissimilarity indices over 60.1 percent (Figure 5.1). In the Northeast, the Bost-Wash corridor is an area where many cities with high African American and White segregation are located. Overall, the most segregated White-African American metros were Detroit, Michigan (84.7), Gary, Indiana (84.1), Milwaukee-Waukesha, Wisconsin (82.2), New York, New York (81.8), Chicago, Illinois (80.8), and Newark, New Jersey (80.4). Generally, metropolitan areas in the manufacturing belt, now referred to as the rust belt, had the highest segregation scores in 2000. In fact, the cities of Detroit and Flint, Michigan; Gary, Indiana; Milwaukee, Wisconsin; Chicago, Illinois; Cleveland, Ohio; and Buffalo, New York were extremely segregated with dissimilarity indices over 75.0. Thus, at least 75.0% of African Americans or Whites in these cities would have to move to neighborhoods of the other group to have no segregation in those cities. Other areas with high segregation levels included cities in southern Florida, the Gulf Coast, and California (the Bay Area and Los Angeles). Very few American cities have low African American-White segregation levels, as shown by a dissimilarity index of 30.0 or less. The metro areas least segregated between Whites and African Americans were located in the Great Plains and Pacific Northwest; but few metros in these regions have large African American populations.

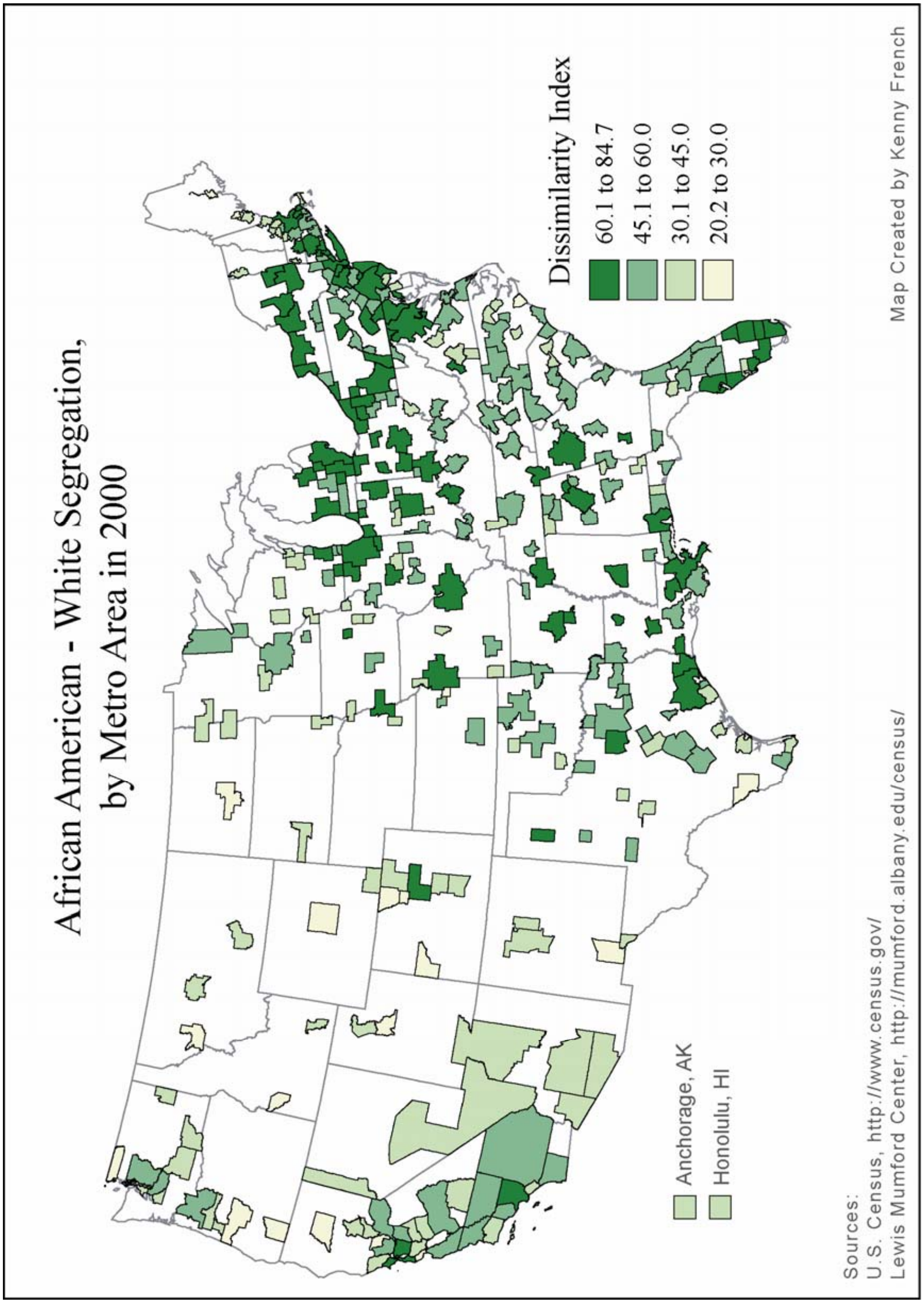


Figure 5.1. Levels of segregation between African Americans and Whites, for each American metropolitan area in 2000.

The geographic distribution of Hispanic-White segregation levels (Figure 5.2) reveals several highly segregated cities. However, the number of highly White-Hispanic segregated cities with DI values over 60.0 (16 metros) is less than the number of cities that are highly segregated between African Americans and Whites (96 metros). Similar to the White-African American patterns, cities in the Bost-Wash corridor have the highest White-Hispanic segregation levels. Examples of these cities include New York, New York (66.7); Newark, New Jersey (65.0); and Reading (71.8) and Philadelphia, Pennsylvania (60.2). Non-Northeast metros with high levels of segregation include Chicago (62.1), Los Angeles (63.2), and Tyler, Texas (60.3).

Low White-Hispanic segregated metros are located in various regions throughout the United States, with the least segregated metros including Redding, CA (11.6), Missoula, MT (14.2), Burlington, VT (16.2), Rochester, New Hampshire (17.8), and Lawrence, Kansas (18.5). Other than in Redding, California, there are few Hispanics living in these metro areas. For cities from California to Texas, where there are large Hispanic populations, the levels of segregation generally are intermediate (DI values from 30.0 to 60.0). Unlike for African Americans, higher Hispanic populations in the metro areas do not seem to spatially correlate with higher segregation levels.

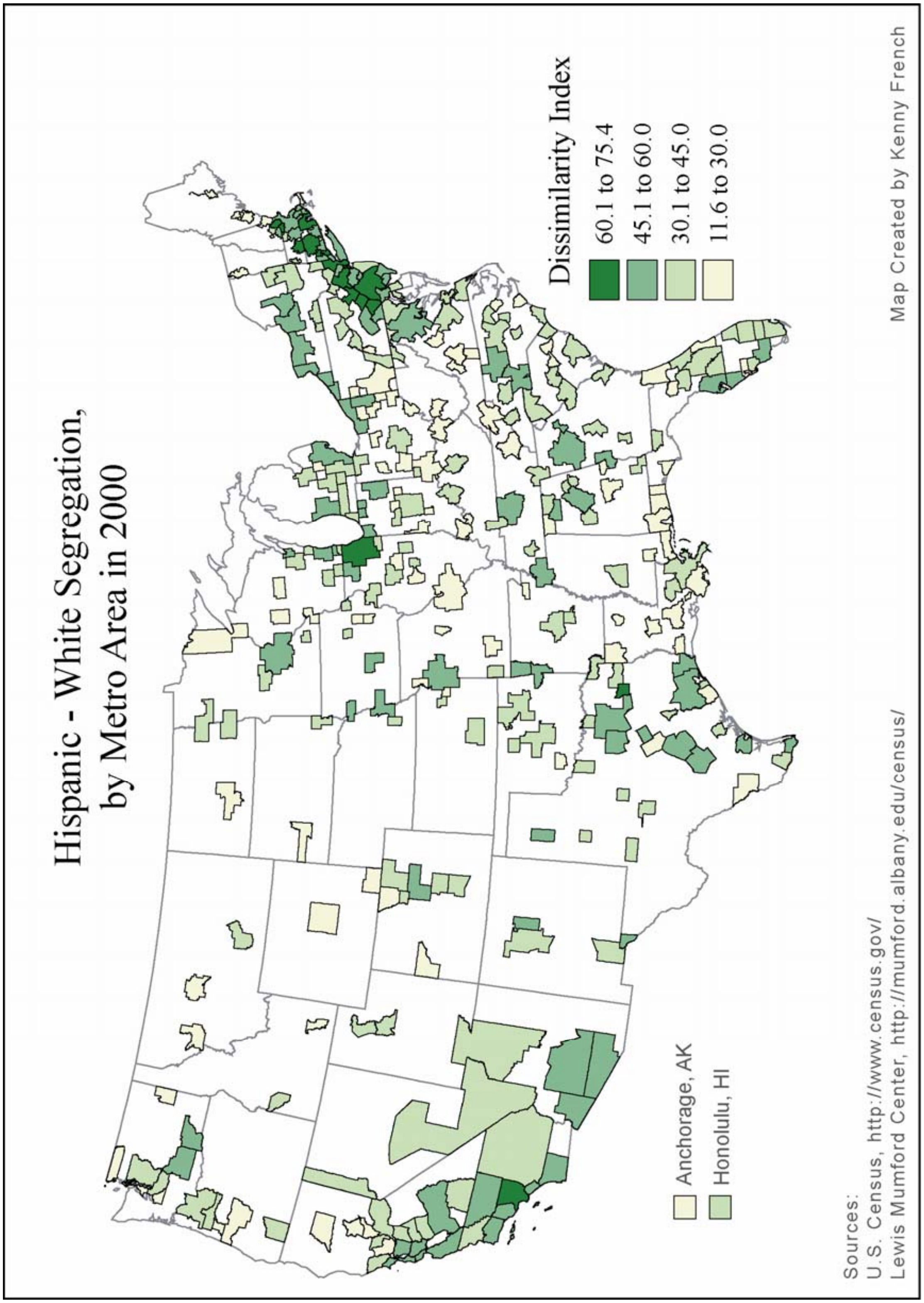


Figure 5.2. Levels of segregation between Hispanics and Whites, for each American metropolitan area in 2000.

A key finding from analyzing the spatial distribution of segregation between Asians and Whites (Figure 5.3) is that there are no highly segregated metro areas (with DI values over 60.1). The most segregated metros include Ann Arbor, Michigan (58.7), Lafayette, Indiana (56.4), Port Arthur, Texas (54.0), and Atlantic City, New Jersey (53.4). Cities with moderate levels of White-Asian segregation are scattered throughout America, and include smaller metro areas near Detroit, New York, Houston, New Orleans, and San Francisco.

The least White-Asian segregated cities are located in the upper Great Plains and Mountain West: Casper, Wyoming (24.0), Bismarck, North Dakota (23.6), Billings (14.5) and Missoula, Montana (21.9), and Boise City, Idaho (18.9). Similarly low White-Asians segregation levels are found in Florida: Sarasota (24.7), Punta Gorda (24.5), Daytona Beach (24.5), Fort Walton Beach (23.7), and Naples (22.8). All of these metros have fewer than 4.0% of their population constituting Asians. In comparing the segregation between ethnic minority groups with Whites, Asians are the least segregated, followed by Hispanics and then African Americans. These results corroborate with previous segregation research (Glaeser and Vigdor 2001) indicating that African Americans generally are the most segregated ethnic group, followed by Hispanics and then by Asians.

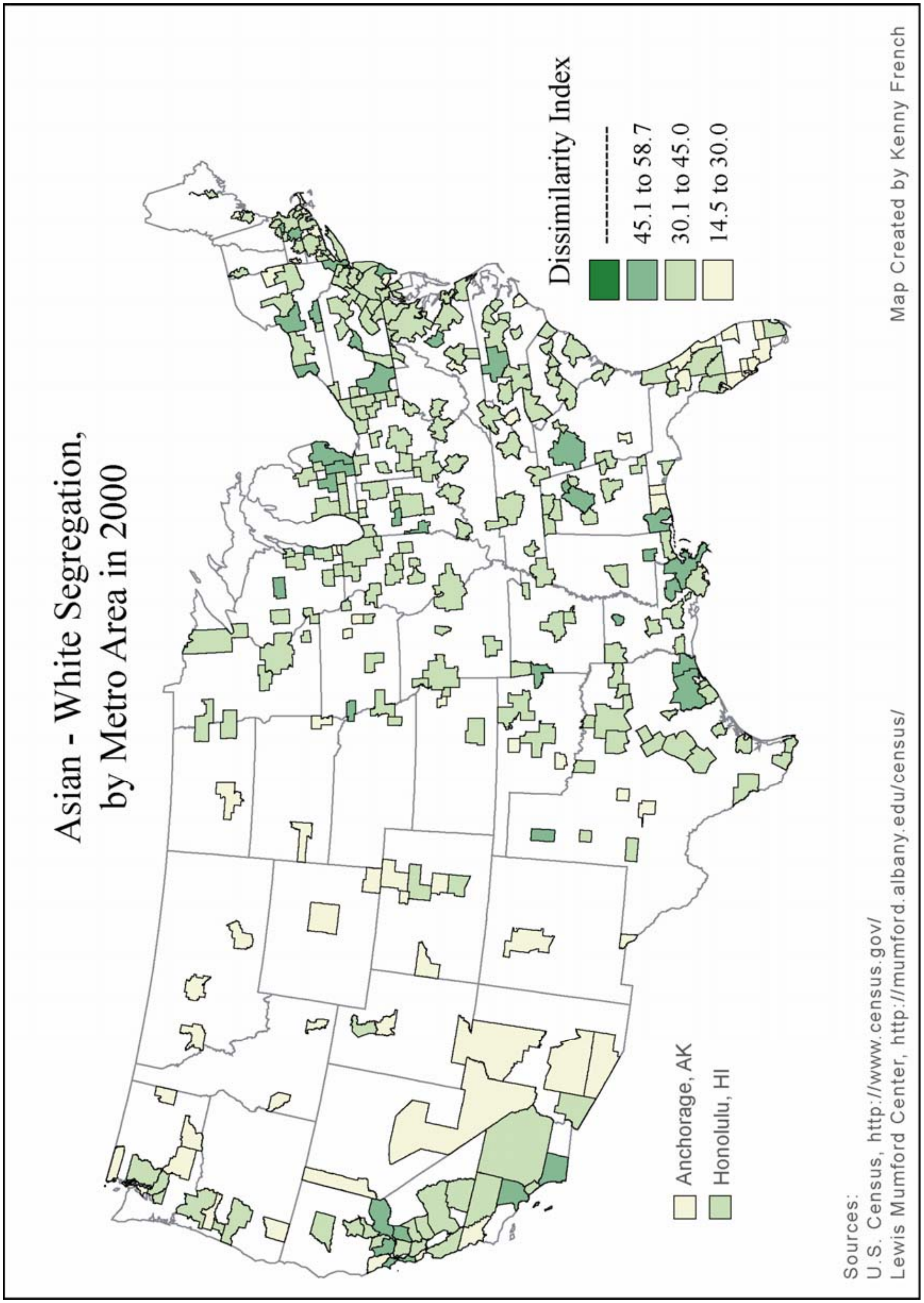


Figure 5.3. Levels of segregation between Asians and Whites, for each American metropolitan area in 2000.

Mapping segregation between ethnic minority groups, which has not been common in previous segregation studies, reveals interesting patterns. Metro areas with the highest African American and Hispanic segregation scores (Figure 5.4) include Detroit (78.3), Milwaukee (78.0), Chicago (77.4), Cleveland (75.0), and Miami (73.9). Highly segregated cities outside of the upper Midwest include Jersey City (66.6) and Newark (61.0), New Jersey, Fayetteville, Arkansas (65.5), Birmingham, Alabama (65.0), St. Louis, Missouri (63.4), Omaha, Nebraska (61.4), and Salinas, California (61.1). Other than Omaha and Fayetteville, these cities have at least 10.0% of their population either African American or Hispanic, or both.

The cities with the lowest Hispanic-African American segregation levels are scattered throughout America: Dubuque, Iowa (11.3), Brockton, Massachusetts (13.9), Missoula, Montana (14.7), Casper, Wyoming (14.8), and Lawrence, Kansas (14.9). An interesting pattern occurs in the Bost-Wash corridor. Here the moderately to highly segregated places (DI over 45.1) include several larger cities (e.g. Newark (61.0), New York (56.3), Philadelphia (59.2), and Washington D.C. (55.8)), while surrounding "suburban" cities (e.g. Reading (22.8), Lancaster (15.6), and York (15.9), Pennsylvania; Dutchess County, New York (29.7) and Danbury, Connecticut (22.2)) tend to be the least segregated (DI under 30.0). This suggests that suburban or commuter cities are less segregated between African Americans and Hispanics. This indicates that African Americans and Hispanics who can live in such suburban cities often live in the same neighborhoods and are not as segregated from one another as they are in the "central cities."

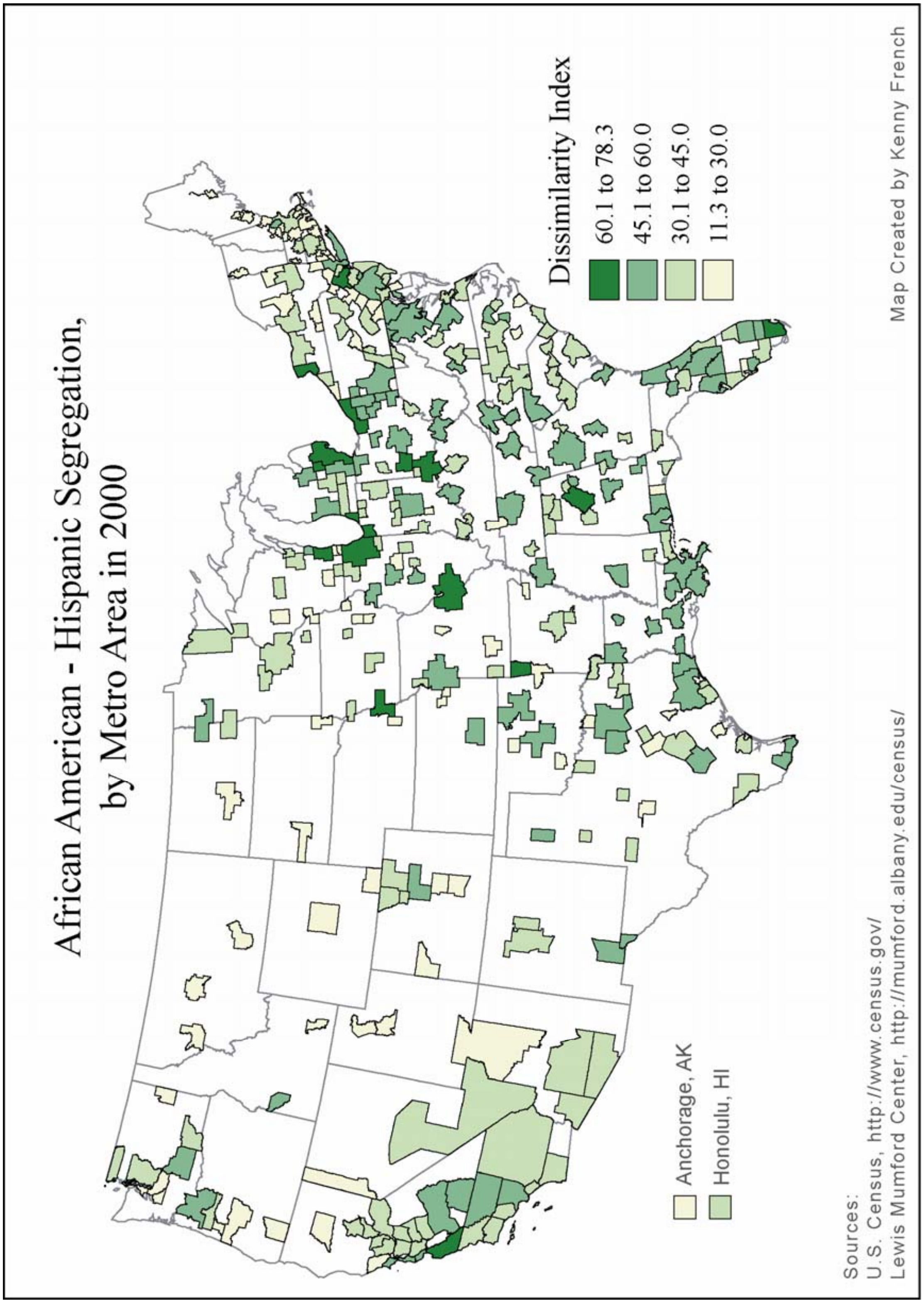


Figure 5.4. Levels of segregation between African Americans and Hispanics, for each American metropolitan area in 2000.

Similar to the African American-White patterns, the spatial distribution of African American-Asian segregation levels by metro area (Figure 5.5) indicates high segregation levels in the Northeast, the rust belt of the Midwest, and the South. The highest Asian-African American segregation levels are for Gary, Indiana (81.6), Chicago, Illinois (81.6), Detroit, Michigan (80.9), New York City (77.8), and Flint, Michigan (76.5). The similar areal association with White-African American segregation levels makes sense, since Asians and Whites do not have high residential segregation levels. Thus, if Whites and Asians can live near each other, then African Americans are probably more segregated from both groups. The least segregated metros, according to their African American and Asian scores, are found in the upper Great Plains, Mountain West, and Northwest. The five least segregated African American-Asian metros are Bellingham, Washington (16.0), Rapid City, South Dakota (16.4), Fitchburg, Massachusetts (17.1), Lawton, Oklahoma (17.5), and Boulder, Colorado (17.9).

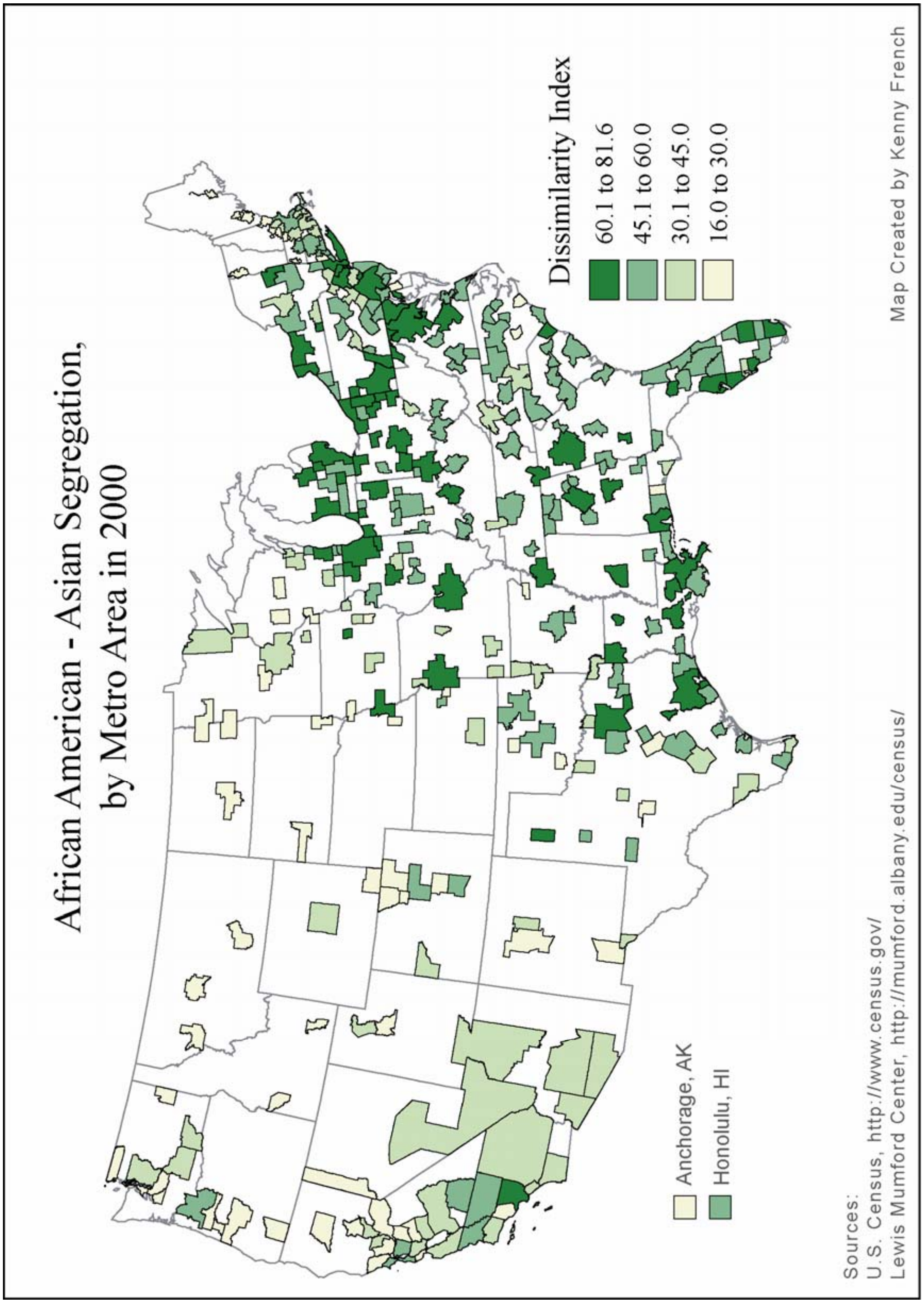


Figure 5.5. Levels of segregation between African Americans and Asians, for each American metropolitan area in 2000.

The spatial distribution of Hispanic-Asian segregation by metropolitan area (Figure 5.6) reveals moderate-to-high levels are scattered in the Northeast, Midwest, and Texas. Unlike with African Americans, the spatial association between the Hispanic-White and Hispanic-Asian patterns is less obvious. There are 11 metro areas that are severely segregated with DI values over 60.1: Lafayette, Indiana (67.5); Tyler (65.3) McAllen (65.1), Dallas (60.6), and Bryan (60.4), Texas; Chicago, Illinois (63.4); Lawrence (62.9) and Springfield, Massachusetts (61.6); Cleveland, Ohio (61.3); and Trenton (62.0) and Newark, New Jersey (60.1). Most metro areas in the western United States have low-to-moderate levels of Asian-Hispanic segregation, with DI values under 60.0. Just as with the most segregated cities, the least segregated metro areas are scattered throughout America. The least Hispanic-Asian segregated cities include Anchorage, Alaska (16.4), Fort Walton Beach, Florida (16.6), Great Falls, Montana (17.3), Lawton, Oklahoma (17.8), Rapid City, South Dakota (18.3), and Fayetteville, North Carolina (18.5).

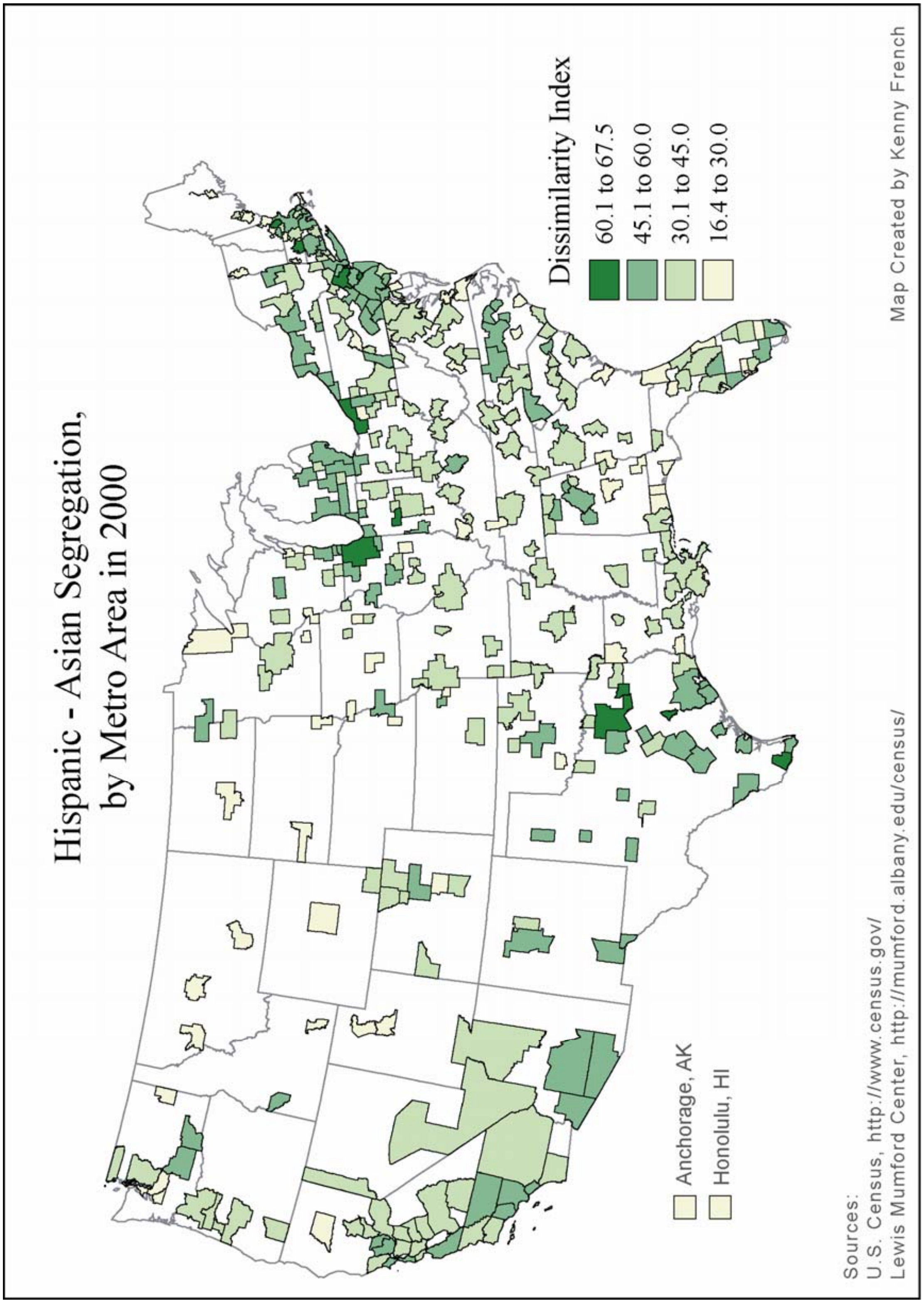


Figure 5.6. Levels of segregation between Hispanics and Asians, for each American metropolitan area in 2000.

The spatial distributions of segregation between ethnic group pairs for the 331 metropolitan areas exhibit interesting patterns. Cartographically investigating the spatial distribution of residential segregation by metropolitan area indicates that there appear to be clusters of cities with high and low segregation scores. In more formally analyzing differences in segregation nationwide, can regions be identified statistically based on the levels of segregation at the metropolitan scale? Are cities in one region statistically more or less segregated than cities in another region? If so, what are the characteristics of the cities that have high or low segregation scores in each region?

Creating Regions

As geographers know, the creation of regions can be a difficult and contested endeavor that involves the use of selected criteria to define these areas. Due to the variety of characteristics which can be used to define a region, there is no "perfect" or consensually defined regionalization of the United States in that there are bound to be exceptions to any regional rule. An example of various regionalizations can be drawn from the cartographic research by Sonja Rossum and Stephen Lavin (2000), where 50 maps regionalized "The Great Plains" in 50 different ways. In investigating the vernacular region of the "Midwest," James Shortridge (1985) noted that the various mental conceptions of the region are partly dependent on the location of a respondent. Thus, the "Midwest" region for someone in New York would be different than for someone in Michigan or Nebraska. In writing about the construction and commonalities between regions and periods, David Wishart (2004, 305) noted:

> "Reflection on the nature of period and region reveals many similarities, including their basis in the material world but also the subjectivity of their recognition, the selective nature of their content and boundaries, their tendency to

> emphasize differences rather than commonalities, and their limited scope as generalizations."

Suffice it to say, the creation of a set of regions is dependent on the criteria a researcher deems important, and thus regions often are contested in geography.

The importance of the process of generating regions is that their selection can affect the results of analyses, since alternative regionalizations group different sets of places together. Once again the MAUP rears it's ugly head in terms of analysis. As political and quantitative geographers know, the type of a regionalization employed or enumeration unit used can affect the output of an analysis. Outcomes from statistical analysis vary when using different regionalizations or different enumeration units. Even with these drawbacks, the usefulness of creating regions is that these devices can be used to understand and generalize complex spatial phenomena. In terms of ethnic residential segregation in America, regions can be helpful in comprehending and comparing all 331 metropolitan areas in the U.S. with each other, as the cities can be categorized into smaller sets of regions that can be compared with each other. Regions are the geographer's way of reducing various spatial phenomena into manageable units of analysis. Analyzing a few regions over time is easier than analyzing 331 distinct cities over time. However the question arises: what regionalization is best suited to analyze urban ethnic segregation in America?

In social science research, the regions defined by the U.S. Census (Figure 5.7) are often used to add a spatial component to analyses. Political scientists, sociologists, demographers, and other social scientists typically have taken the U.S. Census defined regions for granted. Yet, the usefulness or validation of these defined regions has not been researched for many applications. It would be likely that a regionalization depicting population settlement patterns may not match the regionalization of ethnic residential segregation in the U.S., for example, and these may not match the Census defined regionalization. The map in Figure 5.7 depicts the U.S. Census defined four main geographic regions in America (Northeast, Midwest, South, and West). These four main regions are subdivided by the Census into nine sub-regions (New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain, and Pacific).

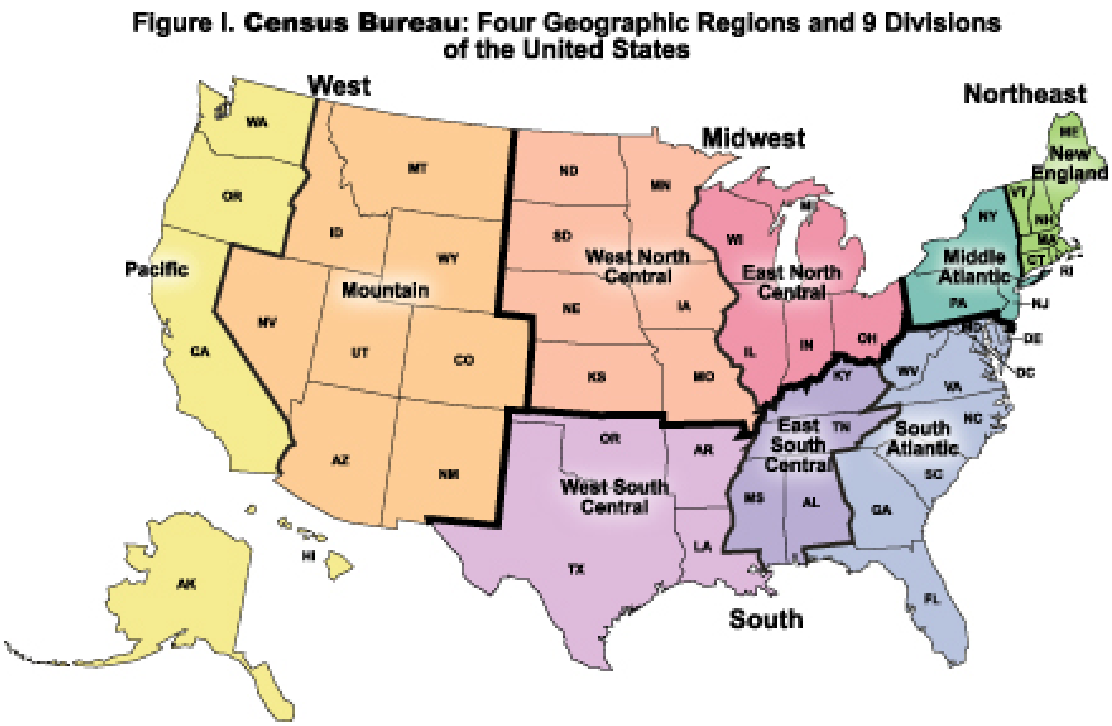


Figure 5.7. The U.S. Census Four Regions and Nine Divisions. (Source: Center for Disease Control, http://www.cdc.gov/nchs/images/nchsdefs/Census-map.jpg)

The U.S. Census first used these regions in 1910, yet the criteria for their creation was not clearly stated, as these classifications were mainly used just to present data between the national and state scales (U.S. Census 2007). Many social scientists have unquestioningly utilized these Census-defined regions in their own analyses, often as dummy variables in regression models to account for the effect of geography on various phenomena. In terms of segregation research, John Logan, Brian Stults, and Reynolds Farley (2004) used the four Census regions as part of a multiple regression equation to indicate where segregation levels are higher or lower. However, the U.S. Census probably did not consider differences in urban segregation levels as a criterion for defining their regions, so that their relevance is not clearly apparent, a priori.

Despite the widespread use of the U.S. Census-defined regions in social science research, issues can be raised about the assignment of certain states to a particular region. For example, do Maryland and Delaware "fit" better with the South (as they were defined by the Census) or the Northeast? Historic, ethnic, and political characteristics should be included in the defining of regions for the U.S. Overall, there is a need to statistically test different possible regionalizations of America for particular purposes, such as study of metropolitan levels of ethnic residential segregation. The goal of this section of the chapter is to see if there are alternative sets of regions, other than those defined by the U.S. Census, which can better explain the differences in segregation levels between metropolitan areas in the United States.

Regionalization Methodology

Regions of cities were compared with each other to see if there are distinctive areas with higher or lower segregation levels. This involved a three step process: creating different regionalizations, statistically comparing these regionalizations with each other to select the "best" regionalization, and then comparing regions within the optimal regionalization. The first step involved the development of new regionalizations by using the U.S. Census regional divisions as a building block. Since the Census regionalization categorized cities by the state they were located in, so do the newly created regionalizations. Historic settlement patterns and current ethnic group distributions are key variables to be considered when developing regions of cities that vary on their patterns of ethnic residential segregation. The data used for this analysis consist of the measurements of segregation by the dissimilarity index for each ethnic group pair (e.g. White-African American), for all 331 metros from 1980, 1990, and 2000.

The second step involved the selection of the optimal regionalization of cities based on their ethnic residential segregation scores. To test these regionalizations statistically, metropolitan areas were first classified into regions with the use of dummy variables. For example, cities located in the Northeast region would be assigned the dummy variable of one, while all the other cities in the nation would be assigned a value of zero. After assigning the dummy variables for all of the regions, a statistical procedure can be performed to correlate the dissimilarity index for an ethnic group pair with each regional dummy variable. If the correlation coefficient is positive, then the cities in that region have higher segregation scores than cities not located in that region. Conversely, if the correlation coefficient is negative, then the cities in that region have lower segregation levels than cities located in the rest of the U.S. For both cases, the further the correlation is away from zero the stronger the relationship. This analysis indicates which regions in the U.S. typically have higher or lower segregation levels. Previous research (Krupka 2007) has reveled that population size of a city is positively correlated with the ethnic residential segregation scores (dissimilarity index), and thus, dummy variables relating to population size have been included. Here, the three population classes of metro areas used are: cities with a population up to 249,999, cities with a population of 250,000 to 999,999, and cities with a population of over one million.

One way to compare one set of regions to another set of regions is by averaging the absolute values of the correlation coefficients between the dissimilarity indices for ethnic group pairs and regions, over time. Absolute values are utilized since there can be strong negative correlations between segregation levels and cities in a region, indicating lower segregation levels. The average of the absolute value of the correlation coefficients indicates how well that regionalization does in relating segregation scores to the created regions. The higher the average the better that regionalization does in distinguishing different regions based on their levels of segregation. Thus, when comparing one regionalization to another, the one with the highest average of the absolute value of the correlation coefficient signified the “best” regionalization.

In the third step, the regions in the optimal regionalization can be compared to one another in terms of their segregation levels. This is done by comparing the mean segregation score for each ethnic group pair for cities in one region to that of cities in another region. Histograms were generated indicating the statistical distribution of segregation among metro areas for each ethnic group pair for the nation as a whole, and for each particular region. The shape of the histogram for cities in a particular region can then be compared with the histograms from other regions, as well as with the histogram for the nation as a whole. If the peak (or mean) of the histogram for region A was shifted to the left, when compared to the histogram of region B, then cities in region A would generally have a lower average segregation scores than cities in region B. Also, histograms of city segregation scores are created for each population class size. This indicates if there are differences in segregation between low to medium to highly populated places. Are less populated places more or less segregated than highly populated places? Analyzing regions by city size was done through histograms, in that metro areas that were under 249,999 for the South were compared to metro areas that were under 249,999 in the West for example. These histograms provide a quick visual overview of the regional and city-size patterns of segregation across America, which then leads to the testing of whether there are statistically significant differences by region and city-size.

Assessing regional differences in ethnic residential segregation by cities entails a comparison of means. To test if the average segregation score in one region is statistically different than the average score in another region requires the calculation of a series of independent-samples t-tests. These tests are useful when "a sample mean is compared with another sample mean, rather than with some known population value" (Rogerson 2001, 49). Even though the data set was not a random sample, this test of means procedure is a good exploratory tool to compare segregation differences between regions. The procedure analyzes the mean segregation of an ethnic group pair in one region with another region. For example, the average White-Hispanic segregation level in the West can be compared to the average White-Hispanic level in the South. Next, the West region can be statistically compared to the Northeast, and so forth. The results of these analyses indicate if there are differences in ethnic residential segregation between cities in one region versus cities in another region. Some regions may have cities with higher White-African American segregation levels than others. The longitudinal aspect of this analysis indicates if regions are becoming more or less similar to one another in terms of their segregation scores.

Regionalization Results and Analyses

In terms of the distribution of cities on the basis of their segregation levels, is there a better regionalization than then one defined by the U.S. Census? The "optimal" regionalization scheme is selected by comparing the Census defined regionalizations (both the four and nine region classifications) to the other regionalizations. Three other regionalizations were generated, and then statistically tested, to determine which regionalization "best" relates to residential segregation in the United States. One criterion for grouping states into regions was a contiguity factor, in that each region should not include states that do not share a border with the other states in that region. The only exceptions were for Alaska and Hawaii, since both were not contiguous to the lower 48 states.

The first non-Census defined regionalization (Figure 5.8) defined here posits six regions: Northeast, Midwest, South, Plains and Rockies, Texas and Neighbors, and the West. The number of regions selected, six, was chosen to come in between both Census regionalizations, the four and nine region categorizations. Unlike the Census defined regions, cities in Maryland and Delaware seemed more suited for the Northeast region than the South. The second regionalization (Figure 5.9) includes seven regions of segregated cities in the America: Northeast, Midwest, South, Texas and Neighbors, Plains, Northwest, and Southwest. Unlike the first regionalization, Pennsylvania was included in the Midwest and not in the Northeast, favoring a Pittsburg over Philadelphia pull toward the now rustbelt. Another distinction is that cities in the Western states are divided into the Northwest and Southwest. The rationale for the third regionalization (Figure 5.10) is to see if fewer regions (compared to the four Census regions) did just as well in distinguishing patterns of segregation throughout America. Here, one region includes cities in the old manufacturing belt (Midwest) that are linked to cities, and their markets, in the Northeast. The cities in the Southern states are matched with cities in the Texas area, indicating a large section of Slave-holding states. The last region, the West, is the last re-settled region in the U.S. (first to the West Coast and then filling in the Great Plains).

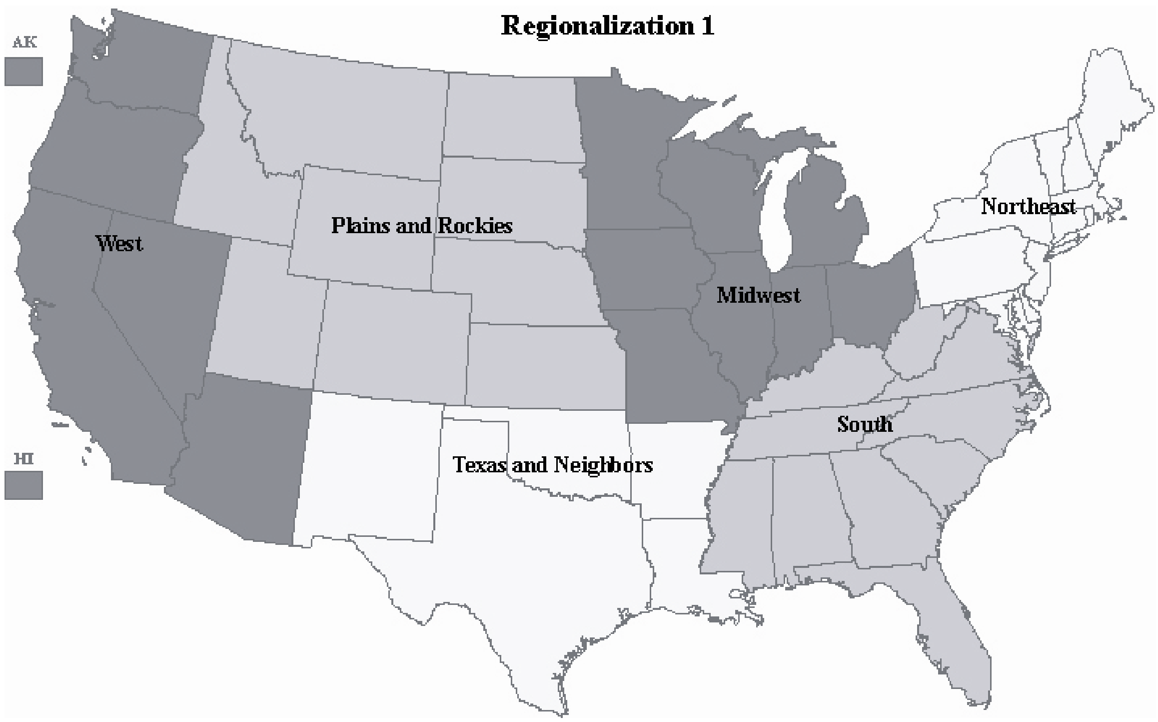


Figure 5.8. Regions in Regionalization One.

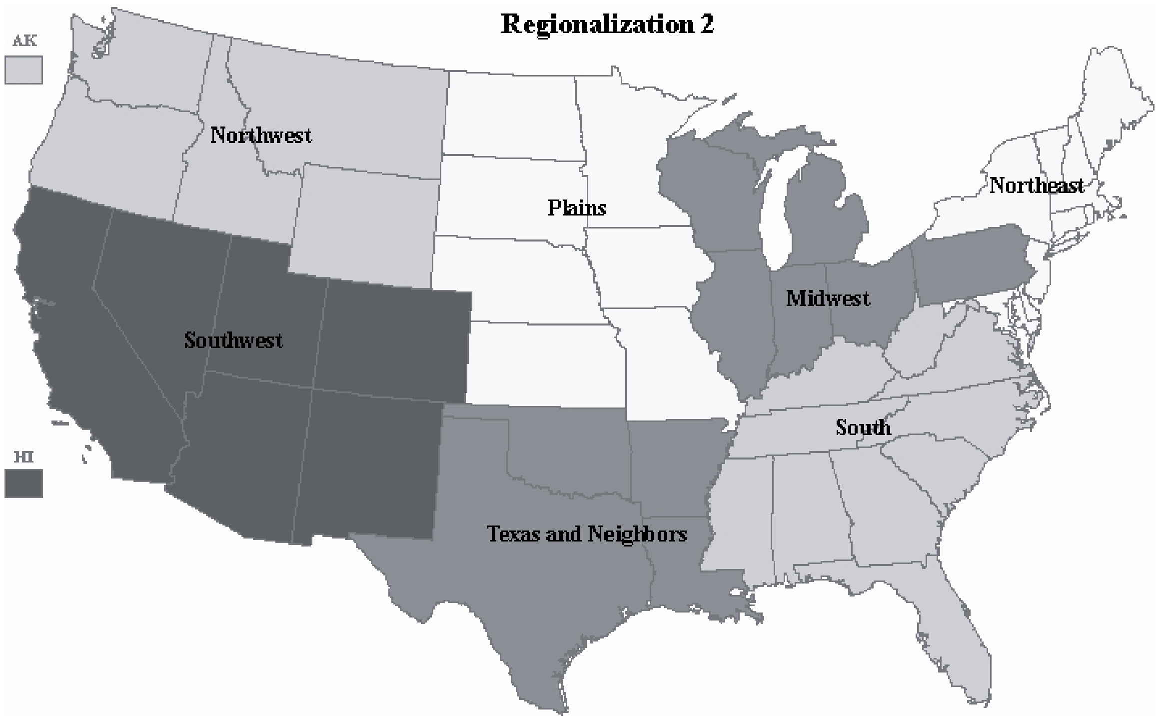


Figure 5.9. Regions in Regionalization Two.

Figure 5.10. Regions in Regionalization Three.

Selecting the Optimal Regionalization

Which of the five regionalizations "best" differentiate American cities in terms of their segregation values? The calculation and comparison of correlation coefficients between the regionalizations and segregation scores provides an answer. To statistically compare regions as qualitative variables, the regions are represented as dummy variables with binary values (Kachigan 1991, 17). This was done by attaching dummy variables to each region, in which a "1" was assigned to cities in that region and a "0" was assigned to cities that were outside that region. For example, the dummy variables for cities in the Northeast had cities such as Boston, New York, and Philadelphia assigned the value of "1," while every other city outside the region, say Los Angeles, Atlanta, Dallas, etc., received a "0." Thus, the output of the correlation between a regional dummy variable and segregation levels indicates if cities in that particular region are more or less segregated than cities in all of the other remaining regions combined. For example, the correlation coefficient between African American-White segregation levels and the Northeast in 2000 was 0.187. This indicates that cities in the Northeast are moderately related with higher levels of segregation, when compared to all other metro areas outside the Northeast.

The correlation coefficients for the U.S. Census Regionalization (Table 5.1) indicate a moderate association between segregation and regions; and the correlations with the regions became stronger over time. In 1980, only the correlation coefficient (-0.146) between African Americans and Hispanic segregation in the Northeast dummy variable is statistically significant at the 0.01 level. The -0.146 correlation indicates that segregation between African Americans and Hispanics was lower for cities in the

Northeast than for cities in other areas of the country. Over time, the West had relatively higher and more negative correlations among various ethnic group pairs, indicating lower segregation levels in the cities in this region. In 2000, White-African American segregation levels are high in the Northeast and South, and low in the West. White-Hispanic segregation levels were higher in cities in the Northeast and lower in cities in the South. White-Asian segregation was higher in the Midwest and lower in the West. The highest correlations are between African Americans and Asians in the West for 1990 and 2000, with values of -0.521 and -0.491 respectively; indicating that cities in the West had substantially lower segregation scores between African Americans and Asians compared to cities in the rest of the U.S. Overall, the average absolute value correlation coefficient was 0.141556 for all cities and regions.

Ethnic Group Pair	Northeast	Midwest	South	West
White-African American, 1980	-0.105	0.073	0.068	0.059
White-Hispanic, 1980	-0.043	0.009	0.017	0.011
White-Asian, 1980	*-0.119*	0.042	0.071	-0.017
African American-Hispanic, 1980	**-0.146**	0.063	0.069	-0.01
African American-Asian, 1980	*-0.113*	0.058	*0.123*	-0.104
Hispanic-Asian, 1980	-0.059	0.033	0.035	-0.021
White-African American, 1990	*0.134*	**0.217**	0.042	**-0.413**
White-Hispanic, 1990	**0.444**	*-0.114*	**-0.195**	-0.07
White-Asian, 1990	-0.071	**0.212**	0.103	**-0.284**
African American-Hispanic, 1990	**-0.258**	**0.148**	**0.266**	**-0.234**
African American-Asian, 1990	-0.004	**0.163**	**0.286**	**-0.521**
Hispanic-Asian, 1990	0.193	0.068	-0.086	**-0.154**
White-African American, 2000	**0.187**	**0.163**	0.079	**-0.453**
White-Hispanic, 2000	**0.373**	*-0.123*	**-0.148**	-0.049
White-Asian, 2000	0.043	**0.142**	0.065	**-0.273**
African American-Hispanic, 2000	**-0.215**	0.098	**0.24**	**-0.19**
African American-Asian, 2000	0.039	*0.124*	**0.261**	**-0.491**
Hispanic-Asian, 2000	**0.148**	-0.02	-0.006	**-0.114**
n =	60	78	128	65

Average Absolute Value Correlation Coefficient: **0.141556**

Table 5.1. Correlation Coefficients between Segregation Level (Dissimilarity Index) and 4-Region U.S. Census Regionalization. **Bold** indicates a statistical significance at the 0.01 level and *Italics* indicates a statistical significance at the 0.05 level.

The correlation coefficients for the nine U.S. Census divisions (Table 5.2) shows regional variations in segregation levels, as correlations become more commonly statistically significant over time. Cities in New England tended to have falling segregation levels for most ethnic group pairs over time, except for White-Hispanic segregation, which was higher here than in the rest of the U.S. The low proportion of Hispanics in this region may be the reason why these metro areas had low White-Hispanic segregation levels. Other regions where cities tended to have lower segregation levels over time were the West North Central (e.g. Iowa), Mountain West (e.g. Idaho), and Pacific West (e.g. Oregon). In dividing the West into Mountain and Pacific sections, the correlation coefficients were stronger in the Mountain West. In 2000, the regions that tended to have higher segregation levels were the Mid Atlantic (e.g. New York) and East North Central (e.g. Ohio). White-African American segregation levels in 2000 have positive correlations with cities in the Mid Atlantic (0.275) and East North Central (0.276), but negative correlations in the Mountain West (-0.359). White-Hispanic segregation tended to be higher in New England and Mid Atlantic, while lower in the South Atlantic and West North Central regions. White-Asian segregation was relatively higher in East South Central (0.158) and East North Central (0.212), and lower in the Mountain West (-0.373). In 1990 and 2000, only the West South Central region did not have a statistically significant correlation with African American-Asian segregation levels. This indicates that this ethnic group pairing became regionally distinctive in terms of segregation scores. Overall, the average absolute value correlation coefficient was 0.119265. This value was lower than the average correlation for the U.S. Census regionalization using four regions. Therefore, the four region U.S. Census regionalization did better at relating segregation levels to regional divisions than did the U.S. Census defined nine region regionalization.

Ethnic Group Pair	New England	Mid Atlantic	South Atlantic	East South Central	West South Central	East North Central	West North Central	Mountain West	Pacific West
White-African American, 1980	**-0.223**	0.060	0.036	0.027	0.036	0.088	-0.004	-0.049	-0.031
White-Hispanic, 1980	**-0.150**	0.075	0.004	-0.009	0.027	0.025	-0.019	0.002	0.012
White-Asian, 1980	**-0.207**	0.030	0.031	0.043	0.035	0.041	0.011	-0.033	0.006
African American-Hispanic, 1980	**-0.238**	0.022	0.043	0.014	0.040	0.073	0.001	-0.020	0.003
African American-Asian, 1980	**-0.232**	0.058	0.087	0.051	0.040	0.085	-0.023	-0.078	-0.063
Hispanic-Asian, 1980	**-0.171**	0.073	0.001	0.009	0.042	0.045	-0.009	-0.016	-0.012
White-African American, 1990	*-0.109*	**0.261**	0.013	0.068	-0.006	**0.310**	-0.076	**-0.309**	**-0.253**
White-Hispanic, 1990	**0.240**	**0.350**	*-0.140*	*-0.137*	-0.015	-0.02	**-0.153**	-0.071	-0.027
White-Asian, 1990	**-0.155**	0.043	-0.078	**0.194**	0.088	**0.248**	-0.001	**-0.359**	-0.055
African American-Hispanic, 1990	**-0.318**	-0.051	**0.161**	**0.180**	0.060	**0.231**	-0.078	**-0.194**	*-0.128*
African American-Asian, 1990	**-0.219**	**0.183**	**0.198**	**0.188**	0.042	**0.303**	**-0.153**	**0.367**	**0.337**
Hispanic-Asian, 1990	-0.047	**0.283**	**-0.223**	-0.086	**0.195**	**0.167**	**-0.119**	**-0.104**	**-0.104**
White-African American, 2000	-0.046	**0.275**	0.023	0.096	0.014	**0.276**	*-0.117*	**-0.359**	**-0.26**
White-Hispanic, 2000	**0.232**	**0.268**	**-0.142**	-0.098	0.024	-0.060	**-0.114**	-0.079	0.005
White-Asian, 2000	-0.075	*0.118*	*-0.120*	**0.158**	0.103	**0.212**	-0.063	**-0.373**	-0.031
African American-Hispanic, 2000	**-0.269**	-0.039	**0.143**	*0.140*	0.075	**0.201**	*-0.118*	**-0.200**	-0.07
African American-Asian, 2000	**-0.192**	**0.213**	**0.173**	**0.166**	0.052	**0.283**	**-0.186**	**-0.334**	**-0.328**
Hispanic-Asian, 2000	-0.034	**0.214**	**-0.150**	-0.027	**0.181**	0.106	**-0.175**	-0.082	-0.072
n =	25	35	60	24	44	52	26	25	40

Average Absolute Value Correlation Coefficient: **0.119265**

Table 5.2. Correlation Coefficients between Segregation Level (Dissimilarity Index) and 9-Region U.S. Census Division Regionalization. **Bold** indicates a statistical significance at the 0.01 level and *Italics* indicates a statistical significance at the 0.05 level.

Moving away from the U.S. Census defined regionalization, the correlation coefficients in Regionalization 1 (Table 5.3) showed that the association between segregation and region varied across space and time. Since 1990, cities in the Plains and Rockies region had significantly lower segregation levels for all ethnic group pairs than cities in the rest of America (with significant, negative correlations). In 2000, the regions that had the highest segregation levels were the cities in the Midwest and Northeast, with the exception of low African American-Hispanic levels. The South was a mix, with lower White-Hispanic and Hispanic-Asian segregation levels and higher African American-Hispanic and African American-Asian segregation scores. The only statistically significant correlation for the Texas and Neighbors region was for Hispanic-Asian segregation levels (0.214 in 1990 and 0.194 in 2000), this indicates that this region did not have significant differences in segregation levels when compared to the metro areas in the rest of the U.S. The highest correlation between segregation and regions was White-Hispanic segregation and the Northeast in 1990, at 0.430.

Overall, Regionalization 1 had an average absolute value correlation coefficient of 0.122861. This value was higher than for the nine division regionalization of the U.S. Census (0.119265), but lower than the four region U.S. Census regionalization (0.141556). Therefore, Regionalization 1 did not divide the U.S. as well as the Census four region schema in terms of segregation scores by metropolitan areas.

Ethnic Group Pair	North-East	Mid-West	South	Texas and Neighbors	Plains and Rockies	West
White-African American, 1980	-0.100	0.083	0.047	0.028	-0.040	-0.036
White-Hispanic, 1980	-0.042	0.013	-0.002	0.030	-0.008	0.012
White-Asian, 1980	*-0.110*	0.040	0.049	0.032	-0.013	-0.003
African American-Hispanic, 1980	*-0.139*	0.071	0.046	0.038	-0.022	0.001
African American-Asian, 1980	-0.105	0.074	0.105	0.029	-0.071	-0.069
Hispanic-Asian, 1980	-0.057	0.036	0.007	0.047	-0.020	-0.016
White-African American, 1990	*0.135*	**0.273**	0.048	-0.047	**-0.260**	**-0.283**
White-Hispanic, 1990	**0.430**	-0.093	**-0.210**	-0.005	**-0.147**	-0.007
White-Asian, 1990	-0.059	**0.246**	0.039	0.055	**-0.269**	-0.114
African American-Hispanic, 1990	**-0.255**	**0.193**	**0.260**	0.051	**-0.177**	**-0.165**
African American-Asian, 1990	0.004	**0.238**	**0.286**	0.007	**-0.349**	**-0.371**
Hispanic-Asian, 1990	**0.172**	0.090	**-0.239**	**0.214**	**-0.153**	-0.105
White-African American, 2000	**0.193**	**0.230**	0.069	-0.026	**-0.333**	**-0.290**
White-Hispanic, 2000	**0.350**	-0.105	**-0.177**	0.030	**-0.160**	0.032
White-Asian, 2000	0.050	**0.191**	-0.015	0.075	**-0.328**	-0.081
African American-Hispanic, 2000	**-0.203**	**0.144**	**0.209**	0.069	**-0.214**	-0.096
African American-Asian, 2000	0.056	**0.201**	**0.240**	0.019	**-0.329**	**-0.357**
Hispanic-Asian, 2000	*0.134*	0.012	**-0.143**	**0.194**	**-0.169**	-0.055
n =	65	68	79	47	26	46

Average Absolute Value Correlation Coefficient: **0.122861**

Table 5.3. Correlation Coefficients between Segregation Level (Dissimilarity Index) and Region for Regionalization 1. **Bold** indicates a statistical significance at the 0.01 level and *Italics* indicates a statistical significance at the 0.05 level.

The next attempt to divide the U.S. in order to differentiate distinctive regions via segregation levels was Regionalization 2. The correlation coefficients (Table 5.4) indicate that the Midwest typically had higher segregation levels and the Northwest had lower segregation levels for all ethnic group pairings. Also, the Northwest shows statistically significant negative correlations for all of the group pairs since 1990. Comparison of the Northeast in Regionalization 2 (without Pennsylvania) with Regionalization 1 (with Pennsylvania) reveals that the correlations are less strong in the former regionalization. This indicates how slight differences in regionalizations can lead to different results, and that in terms of segregation Pennsylvania should probably be included in the Northeast region. The differences in correlations between the Northwest and Southwest, with the former having stronger negative correlations than the latter, shows that many cities with lower segregation levels are in the northern portions of the "West." In 2000, African American-Asian segregation scores positively correlates with the Midwest (0.309) and South (0.240), and negatively correlates with the Plains (-0.186), Northwest (-0.341), and Southwest (-0.329). The overall average absolute value correlation coefficient (0.12254) is higher only than the 9-division U.S. Census average.

Ethnic Group Pair	North-East	Mid-West	South	Texas and Neighbors	Plains	North-West	South-West
White-African American, 1980	*-0.131*	0.099	0.047	0.036	-0.004	-0.044	-0.037
White-Hispanic, 1980	-0.066	0.041	-0.002	0.027	-0.019	-0.022	0.028
White-Asian, 1980	*-0.132*	0.046	0.049	0.035	0.011	-0.020	-0.005
African American-Hispanic, 1980	**-0.158**	0.071	0.046	0.040	0.001	-0.027	0.007
African American-Asian, 1980	*-0.133*	0.092	0.105	0.040	-0.023	-0.073	-0.069
Hispanic-Asian, 1980	-0.083	0.059	0.007	0.042	-0.009	-0.031	-0.003
White-African American, 1990	0.061	**0.361**	0.048	-0.006	-0.076	**-0.261**	**-0.296**
White-Hispanic, 1990	**0.366**	0.079	**-0.210**	-0.015	**-0.153**	**-0.199**	0.061
White-Asian, 1990	-0.095	**0.253**	0.039	0.088	-0.001	**-0.283**	*-0.129*
African American-Hispanic, 1990	**-0.250**	**0.183**	**0.260**	0.060	-0.078	**-0.202**	*-0.128*
African American-Asian, 1990	-0.050	**0.325**	**0.286**	0.042	**-0.153**	**-0.327**	**-0.374**
Hispanic-Asian, 1990	*0.111*	**0.223**	**-0.239**	**0.195**	*-0.119*	**-0.198**	-0.039
White-African American, 2000	*0.126*	**0.330**	0.069	0.014	*-0.117*	**-0.322**	**-0.298**
White-Hispanic, 2000	**0.306**	0.018	**-0.177**	0.024	*-0.114*	**-0.199**	0.086
White-Asian, 2000	0.027	**0.218**	-0.015	0.103	-0.063	**-0.325**	-0.086
African American-Hispanic, 2000	**-0.187**	**0.151**	**0.209**	0.075	*-0.118*	**-0.224**	-0.062
African American-Asian, 2000	0.004	**0.309**	**0.240**	0.052	**-0.186**	**-0.341**	**-0.329**
Hispanic-Asian, 2000	0.099	*0.140*	**-0.143**	**0.181**	**-0.175**	**-0.215**	0.021
n =	51	66	79	44	26	21	44

Average Absolute Value Correlation Coefficient: **0.12254**

Table 5.4. Correlation Coefficients between Segregation Level (Dissimilarity Index) and Region for Regionalization 2. **Bold** indicates a statistical significance at the 0.01 level and *Italics* indicates a statistical significance at the 0.05 level.

The final regionalization, Regionalization 3, was created to see if fewer regions might better summarize regional differences in segregation levels. If fewer regions can statistically "explain" patterns better than more regions, than the fewer region schema would be better. The correlations for Regionalization 3 (Table 5.5) indicate that segregation levels typically have positive associations with the Northeast and negative associations with the West. From 1990 to 2000, the correlation between White-African American segregation and the Northeast and West increased in strength, going from 0.339 to 0.351 and from -0.435 to -0.487, respectively. This indicates that these regional differentiations of White-African American segregation levels are becoming stronger. White-Hispanic segregation levels are higher in the Northeast (0.202 in 2000) and lower in the South (-0.145 in 2000). White-Asian segregation levels are lower in the West (-0.300) and higher in the Northeast (0.200), when each were compared to cities outside each respective region. African American-Asian segregation is the only ethnic group pair to have all three regions statistically significant for both 1990 and 2000. African American-Asian segregation levels are higher for cities in the Northeast (0.216 in 2000) and South (0.243 in 2000), but lower for cities in the West (-0.533 in 2000).

Overall, Regionalization 3 had an average absolute value correlation coefficient of 0.154981, which surpassed the previous high value of 0.141556 for the U.S. Census schema of four regions. Regionalization 3 is therefore deemed to be the best or "optimal" regionalization due to the fact that a system of fewer regions still produced the highest average absolute value correlation coefficient. On this basis, this regionalization is utilized to compare regional differences in ethnic residential segregation levels across the U.S. The next step involves the comparisons of segregation levels for each ethnic group pair for each region to others over time using Regionalization 3.

Ethnic Group Pair	Northeast	South	West
White-African American, 1980	-0.011	0.065	-0.062
White-Hispanic, 1980	-0.023	0.017	0.008
White-Asian, 1980	-0.056	0.068	-0.013
African American-Hispanic, 1980	-0.053	0.066	-0.014
African American-Asian, 1980	-0.023	*0.119*	*-0.101*
Hispanic-Asian, 1980	-0.018	0.037	-0.022
White-African American, 1990	**0.339**	0.033	**-0.435**
White-Hispanic, 1990	**0.275**	**-0.200**	-0.092
White-Asian, 1990	**0.153**	0.098	**-0.292**
African American-Hispanic, 1990	-0.042	**0.266**	**-0.257**
African American-Asian, 1990	**0.204**	**0.278**	**-0.559**
Hispanic-Asian, 1990	**0.209**	-0.070	**-0.165**
White-African American, 2000	**0.351**	0.065	**-0.487**
White-Hispanic, 2000	**0.202**	**-0.145**	-0.070
White-Asian, 2000	**0.200**	0.056	**-0.300**
African American-Hispanic, 2000	-0.038	**0.230**	**-0.221**
African American-Asian, 2000	**0.216**	**0.243**	**-0.533**
Hispanic-Asian, 2000	*0.116*	0.003	*-0.140*
n =	134	122	75

Average Absolute Value Correlation Coefficient: **0.154981**

Table 5.5. Correlation Coefficients between Segregation Level (Dissimilarity Index) and Region for Regionalization 3. **Bold** indicates a statistical significance at the 0.01 level and *Italics* indicates a statistical significance at the 0.05 level.

Comparing Regions by Segregation Levels

Are the segregation levels in one region significantly different, statistically, than segregation levels in another region? Are these levels more distinctive now than in the past? After the selection of Regionalization 3, these questions can be answered by comparing the segregation means for each of the regions. As mentioned in the methodology, the first step is to construct histograms of the segregation levels for metro areas divided by region and by population size, from 1980 to 2000 (Appendix A). On each page of histograms, a 3 by 3 matrix of histograms is divided by regions over columns and by population size over rows. Here region 1 indicates the Northeast, region 2 the South, and region 3 the West, while population class 1 is for cities between 50,000 and 249,999 people, class 2 for cities with populations of 250,000 to 999,999, and class 3 for cities over 1 million people. The first column of histograms in the 3 by 3 matrix represents the cities in the Northeast divided by population classes. The first row of histograms in the 3 by 3 matrix illustrates the cities that are over 1 million people in all three regions. Thus, the histogram in the bottom right corner of the matrix represents the segregation between an ethnic group pair for cities in the West that have between 50,000 and 249,999 people. The column of histograms on the far right shows the total histogram for each population class size (adding all regions together), and the row of histograms at the bottom indicates the total histogram for each region (adding all population classes together). The histogram at the right, bottom corner is the overall histogram of segregation scores for a particular ethnic pairing for all cities in the U.S.

A pattern noticed when analyzing the histograms is that cities with more people usually have higher average segregation scores, as the histograms for cities over 1 million are shifted more to the right than the histograms for cities under 250,000. When dividing the regions by population size, there also is a difference between the less and more populated places. To keep the verbal results at a minimum, the following is only a summary of histograms for 2000 (although the histograms for 1980 and 1990 were calculated and also are presented in Appendix A).

The overall White-African American segregation histogram (Table A13) has a shape close to that of a normal distribution, but there are regional differences in segregation levels. The distribution of scores in the West is positively skewed, and the peak of the distribution is lower than the peaks for the Northeast and South. This indicates that the segregation between African Americans and Whites usually is higher in cities in the Northeast and South than in cities in the West.

The distribution of cities on the basis of their White-Hispanic segregation levels (Table A14) also indicates a close to normal distribution. There is a difference in peaks between lower populated cities and higher populated cities in the Northeast, where the least populated metros have segregation levels that are lower than those of the most populated metros. When comparing the most populated class across all three regions, the peaks are all similar (near a DI score of 50). This would indicate that for larger cities, the segregation levels between Whites and Hispanics are similar throughout the U.S. (no regional variations).

The overall White-Asian histogram is normally distributed (Table A15). For the Northeast (first column of the 3 by 3 matrix) and South (second column of the 3 by 3 matrix), population class size does not differentiate between the peaks. The center of these peaks is around a DI value of 40. The histogram in the West is positively skewed and its peak (or mean segregation score) is to the left of the peaks for the Northeast and South. Thus cities in the West experience less White-Hispanic segregation than do cities in the Northeast or South.

The histogram of African American-Hispanic segregation for all metro areas (Table A16) also echoes a normal distribution, with a peak around a DI score of 40. The distribution of cities in the Northeast and West is "flatter" than the distribution for the South, which indicates that cities in the Northeast and West have a wide range of segregation scores with a similar frequency of cities.

The overall histogram of African American-Asian segregation (Table A17) is bi-modal, with one peak near a DI score of 60 and another peak near a DI of 30. As seen from the histograms divided by population size, the bi-modal peaks are more pronounced in the cities under 250,000 people (bottom row of the 3 by 3 matrix). Of the cities under 250,000 people, the bi-modal distribution is found in the Northeast, while the high peak (around a DI score of 60) is seen in the South and the low peak (around DI score of 30) observed in the West. The regional histograms indicate that the African American-Asian distribution in the West is positively skewed and the cities less segregated than in the other regions, whereas the distribution is negatively skewed in the South.

The Hispanic-Asian histogram for all the cities (Table A18) is normally distributed. Other than the Northeast region, there is not a big difference between population sizes for the mean segregation scores in the histograms. Also, the most variability in the distributions is for cities under 250,000 in the Northeast. Regionally, all regions tend to show normally distributed DI values (the possible exception of the West) and to have peak DI scores around 40.

The next step is to compare the actual mean segregation scores for each ethnic group pairing in all three regions from 1980 to 2000. For all of the metro areas in the dataset (Table 5.6), there were significant declines in the levels of segregation over time for ethnic group pairs that included African Americans. From 1980 to 2000, the average segregation level between Whites and African Americans declined from 60.5 to 51.4, for African Americans and Hispanics the decline was from 49.9 to 39.3, and for African Americans and Asians the decline was from 59.4 to 47.4. Whites and Hispanics was the only ethnic group pair for which the average segregation levels increased over time, from 35.8 in 1980 to 38.6 in 2000. In 2000, the highest average segregation score was for Whites and African Americans (51.4) and the lowest was for Whites and Asians (35.5).

There were similar trends when dividing the national data into the three regions of the Northeast (Table 5.7), South (Table 5.8), and West (Table 5.9). For cities in the Northeast, the average White-African American segregation levels are the highest for all ethnic group pairs, yet these declined over time. For cities in the South, the largest average segregation decrease was for the scores between African Americans and Asians (a decline of 13.2 points from 1980 to 2000). For Western cities in 2000, the average segregation values were low and all under a DI value of 40.

Ethnic Group Pair	1980	1990	2000
White-African American	60.5	55.7	51.4
White-Hispanic	35.8	36.1	38.6
White-Asian	36.6	38.4	35.5
African American-Hispanic	49.9	46.2	39.3
African American-Asian	59.4	53.7	47.4
Hispanic-Asian	42.1	40.7	40.2

Table 5.6. Average segregation scores (DI) over time for cities in the United States.

Ethnic Group Pair	1980	1990	2000
White-African American	64.4	61.3	57.3
White-Hispanic	38.8	40.1	41.5
White-Asian	37.3	40.0	37.4
African American-Hispanic	50.8	45.5	38.7
African American-Asian	62.4	57.8	51.5
Hispanic-Asian	45.5	43.4	41.7

Table 5.7. Average segregation scores (DI) over time for cities in the Northeast region.

Ethnic Group Pair	1980	1990	2000
White-African American	62.4	56.3	52.6
White-Hispanic	34.0	33.0	36.3
White-Asian	38.5	39.5	36.1
African American-Hispanic	51.8	50.9	43.2
African American-Asian	65.6	59.7	52.4
Hispanic-Asian	41.8	39.7	40.3

Table 5.8. Average segregation scores (DI) over time for cities in the South region.

Ethnic Group Pair	1980	1990	2000
White-African American	50.5	44.7	39.1
White-Hispanic	33.5	34.1	37.0
White-Asian	32.1	33.8	31.1
African American-Hispanic	45.2	39.7	34.0
African American-Asian	43.9	36.9	32.0
Hispanic-Asian	36.6	37.4	37.4

Table 5.9. Average segregation scores (DI) over time for cities in the West region.

Graphing the average segregation scores by region over time for each ethnic group pair indicates if there are regional differentiations in segregation levels for that pair. The following graphs include the national segregation averages and have standardized data ranges (y-axis going from a DI of 30 to a DI of 70). The standardized graph ranges allow for the visual comparison of one ethnic group pair to another ethnic group pair. The regional average segregation scores for Whites and African Americans (Figure 5.11) show a decline in levels from 1980 to 2000. The highest averages were for cities in the Northeast and the lowest for cities in the West. The cities in the South have averages that were closer to, yet slightly higher, than the National averages.

The regional White-Hispanic segregation averages (Figure 5.12) indicate low, but very slightly increasing levels for all regions from 1980 to 2000. The highest averages were for cities in the Northeast, while the lowest averages were found for the South. The cities in the South and West experienced the largest increase in segregation scores from 1990 to 2000.

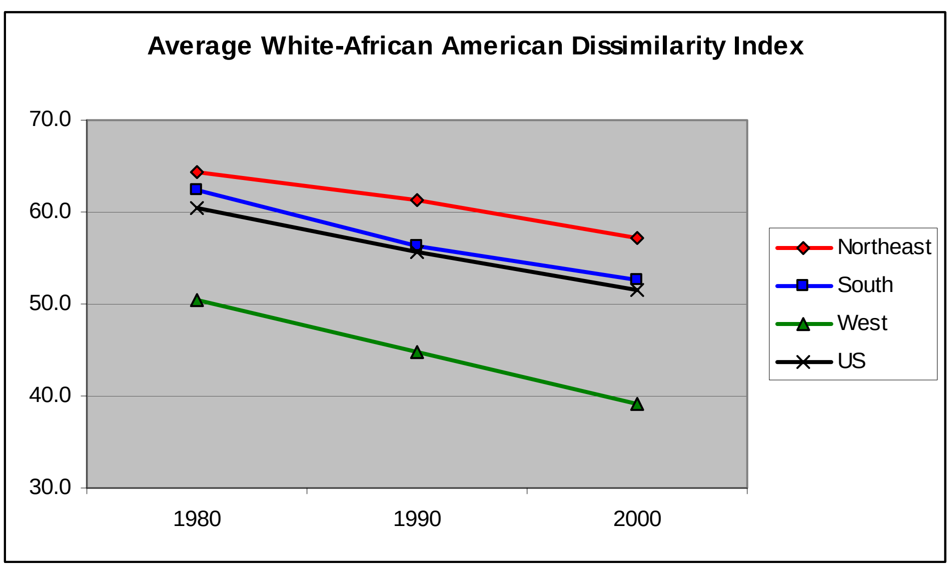


Figure 5.11. Graph of the average White-African American Dissimilarity Index by region, from 1980 to 2000.

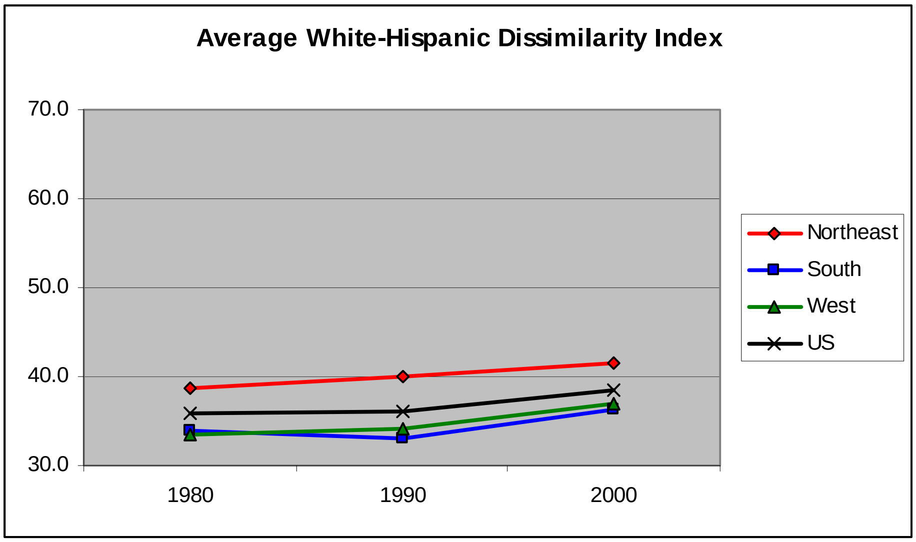


Figure 5.12. Graph of the average White-Hispanic Dissimilarity Index by region, from 1980 to 2000.

The White-Asian segregation averages (Figure 5.13) indicate very low segregation levels, with DI values equal to or lower than 40. A trend seen in each region is a peak of White-Asian segregation levels in 1990. The average segregation levels in the Northeast and South were similar, both above the national averages, while cities in the West were the least segregated for this ethnic group pair.

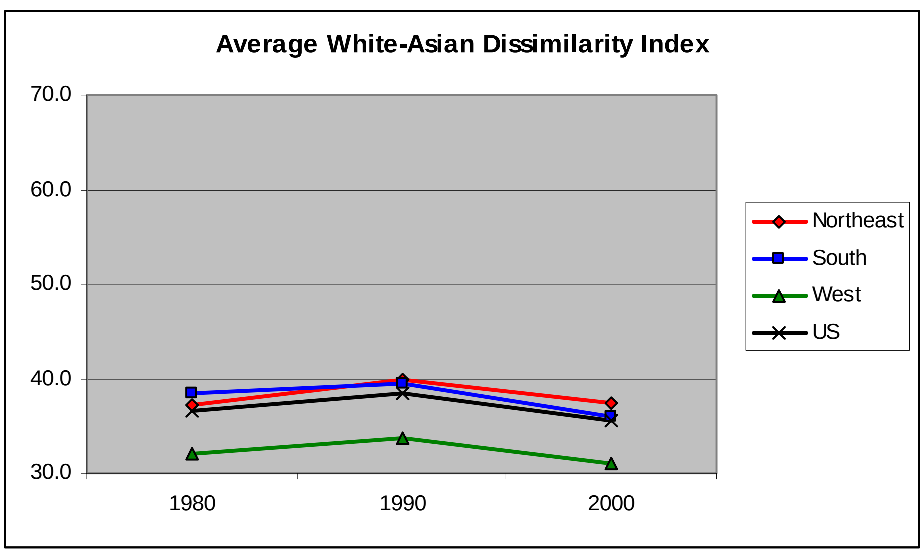


Figure 5.13. Graph of the average White-Asian Dissimilarity Index by region, from 1980 to 2000.

The regional segregation averages for African Americans and Hispanics (Figure 5.14) show a large decline over time. The segregation scores for cities in the Northeast mirrored national averages, while cities in the South have the highest segregation scores and cities in the West have the lowest segregation averages. Unlike the other regions, most of the decline of African American-Hispanic segregation for the South occurred from 1990 to 2000.

The average segregation levels for African Americans and Asians (Figure 5.15) for each region demonstrates a decline of DI scores over time. The steepness of these lines indicates a high rate of decline, as all other ethnic group pairs have declines that were more gradual (less steep). This ethnic group pair had the greatest difference in DI values among the regions, as the lines are more separated from each other than for any other ethnic group pairing. Cities in the South and Northeast are much more segregated for this ethnic pair than cities in the West. In 2000, the average African American-Asian segregation level in the South (52.4) was 20.4 points more than in the West (32.0).

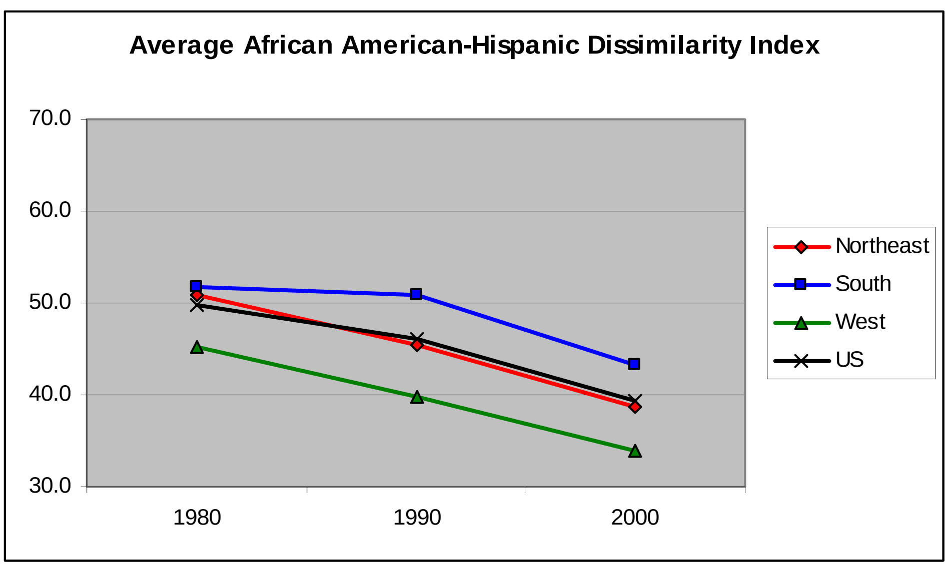


Figure 5.14. Graph of the average African American-Hispanic Dissimilarity Index by region, from 1980 to 2000.

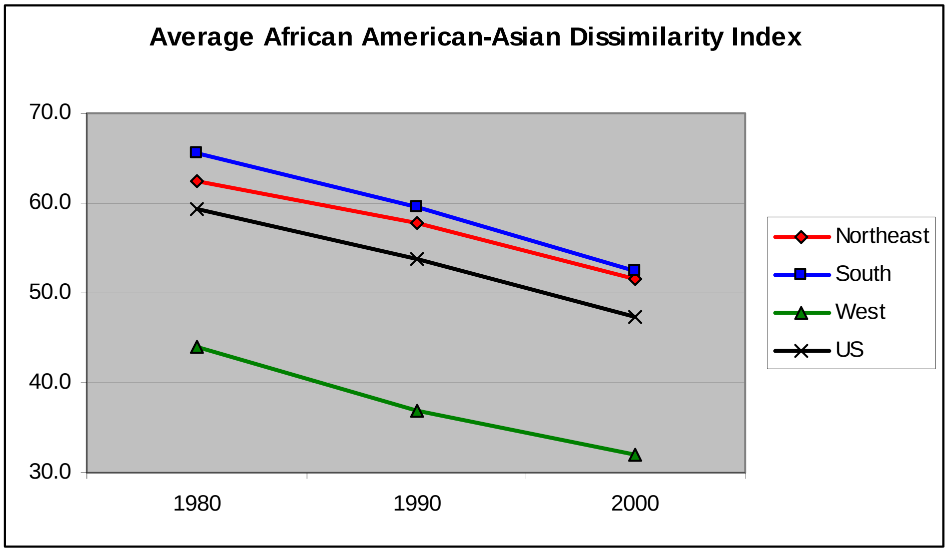


Figure 5.15. Graph of the average African American-Asian Dissimilarity Index by region, from 1980 to 2000.

The average scores between Hispanics and Asians (Figure 5.16) indicates low levels of segregation for this pairing. Regionally, the Northeast has the highest segregation averages, while the West has the lowest segregation averages. Unlike the other ethnic group pairs, the segregation levels between Hispanics and Asians seem to be converging to a DI value of about 40. Overall, this exploration of average segregation levels divided by regions indicates visual differences between the regions. Yet, further statistical analysis is needed to determine if these seeming differences in segregation by region are statistically significant.

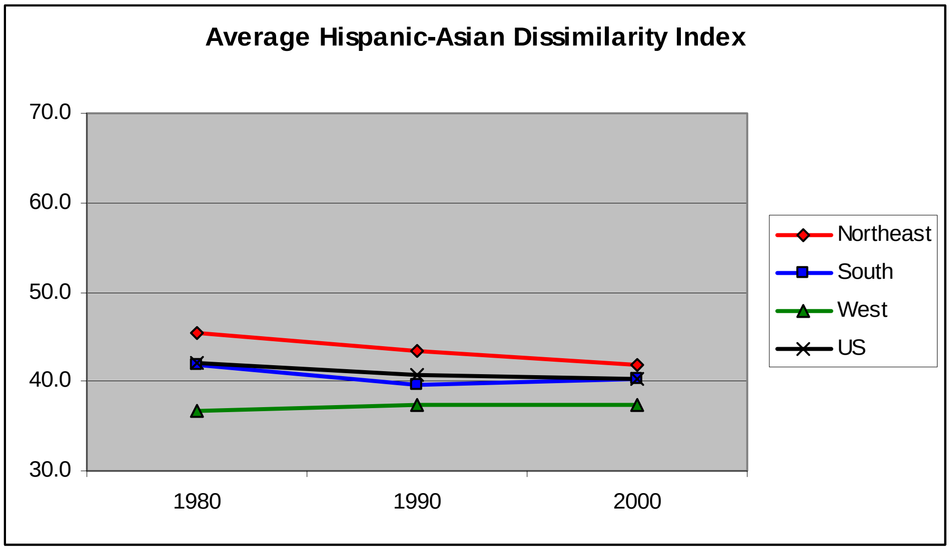


Figure 5.16. Graph of the average Hispanic-Asian Dissimilarity Index by region, from 1980 to 2000.

To analyze whether one segregation score mean in a region is statistically different than the mean in another region involves the calculation of a comparison of means test. The various t-tests presented compare the mean of each region to the mean in another region for each of the six ethnic group pairs from 1980 to 2000. To analyze the results of the t-tests, a significance level under 0.05 indicates that the means for both regions are statistically different from each other (as opposed to the differences occurring by chance). The following compares the segregation means for each ethnic group pair between regions, for 1980, 1990, and 2000.

The comparison of means between the Northeast (NE) and South (S) indicates significantly different segregation means for some ethnic group pairings over time (Tables 5.10, 5.11, and 5.12). Overall, the average segregation scores are typically higher in the Northeast than in the South. In 1980, only the White-Hispanic and Hispanic-Asian regional segregation means were significantly different between the two regions. For 1990, the Northeast and South had significantly different White-African American, White-Hispanic, African American-Hispanic, and Hispanic-Asian means. In 2000, cities in the Northeast differ from cities in the South in their White-African American, White-Hispanic, and African American-Hispanic segregation averages. The mean White-Hispanic segregation score is statistically different in the Northeast than in the South for 1980, 1990, and 2000. The White-Asian and African American-Asian segregation means were not significantly different between the Northeast and South for all three time periods. Unlike all other ethnic group pairs, the African American-Hispanic means are higher in the South than in the Northeast. In general, cities in the Northeast are more segregated than cities in the South.

Ethnic Group Pairs, In 1980		**n**	**Mean**	**t**	**df**	**Sign. (2-Tail)**	**95% Confidence Interval of the Difference**	
							Lower	**Upper**
White-African American	NE	133	64.368	1.221	253	.223	-1.228	5.233
	S	122	62.366					
White-Hispanic	NE	133	38.776	3.232	253	.001	1.871	7.712
	S	122	33.984					
White-Asian	NE	133	37.284	-1.514	253	.131	-2.850	0.373
	S	122	38.523					
African American-Hispanic	NE	133	50.761	-0.639	253	.524	-4.410	2.250
	S	122	51.841					
African American-Asian	NE	133	62.435	-1.913	253	.057	-6.400	0.094
	S	122	65.589					
Hispanic-Asian	NE	133	45.479	2.687	253	.008	0.989	6.414
	S	122	41.778					

Table 5.10. Independent-sampled t-test comparison of segregation means between the Northeast and South, in 1980.

Ethnic Group Pairs, In 1990		n	Mean	t	df	Sign. (2-Tail)	95% Confidence Interval of the Difference	
							Lower	Upper
White-African American	NE	134	61.293	3.193	254	.002	1.924	8.117
	S	122	56.272					
White-Hispanic	NE	134	40.063	4.969	254	.000	4.252	9.834
	S	122	33.020					
White-Asian	NE	134	39.972	0.474	254	.636	-1.560	2.549
	S	122	39.477					
African American-Hispanic	NE	134	45.499	-3.258	254	.001	-8.682	-2.140
	S	122	50.910					
African American-Asian	NE	134	57.760	-1.079	254	.281	-5.3507	1.562
	S	122	59.655					
Hispanic-Asian	NE	134	43.372	2.744	254	.007	1.0417	6.341
	S	122	39.681					

Table 5.11. Independent-sampled t-test comparison of segregation means between the Northeast and South, in 1990.

Ethnic Group Pairs, In 2000		n	Mean	t	df	Sign. (2-Tail)	95% Confidence Interval of the Difference	
							Lower	Upper
White-African American	NE	134	57.250	3.080	254	.002	1.6746	7.611
	S	122	52.607					
White-Hispanic	NE	134	41.527	3.531	254	.000	2.3149	8.154
	S	122	36.293					
White-Asian	NE	134	37.388	1.448	254	.149	-0.4800	3.143
	S	122	36.057					
African American-Hispanic	NE	134	38.690	-2.793	254	.006	-7.7298	-1.337
	S	122	43.223					
African American-Asian	NE	134	51.476	-0.503	254	.616	-4.3016	2.552
	S	122	52.351					
Hispanic-Asian	NE	134	41.749	1.077	254	.282	-1.2299	4.201
	S	122	40.264					

Table 5.12. Independent-sampled t-test comparison of segregation means between the Northeast and South, in 2000.

Comparing the Northeast and the West over time (Tables 5.13, 5.14, and 5.15) reveals that all the segregation means for each ethnic group pair are significantly different at the 0.05 level. In fact, White-African American, White-Asian, African American-Asian, and Hispanic-Asian mean differences are statistically significant at the 0.01 level for all of the years. All of the average segregation levels for cities in the Northeast are higher than those for the cities in the West. In 1980, the largest difference in regional means was the segregation between African Americans and Asians (difference of 18.54), with a DI value of 65.435 in the Northeast and 43.895 in the West. The difference between the regional averages for this ethnic group pair increased to 19.479 in 2000, yet the average DI values were lower than in 1980 (51.476 in the Northeast and 31.997 in the West). Overall, cities in the Northeast are significantly more segregated than cities in the West from 1980 to 2000 for all ethnic group pairs.

Ethnic Group Pairs, In 1980		n	Mean	t	df	Sign. (2-Tail)	95% Confidence Interval of the Difference	
							Lower	Upper
White-African American	NE W	133 75	64.368 50.463	7.213	206	.000	10.104	17.706
White-Hispanic	NE W	133 75	38.776 33.492	2.922	206	.004	1.719	8.849
White-Asian	NE W	133 75	37.284 32.120	5.371	206	.000	3.269	7.060
African American-Hispanic	NE W	133 75	50.761 45.156	2.849	206	.005	1.727	9.483
African American-Asian	NE W	133 75	62.435 43.895	9.008	206	.000	14.483	22.599
Hispanic-Asian	NE W	133 75	45.479 36.641	5.686	206	.000	5.773	11.902

Table 5.13. Independent-sampled t-test comparison of segregation means between the Northeast and West, in 1980.

Ethnic Group Pairs, In 1990		n	Mean	t	df	Sign. (2-Tail)	95% Confidence Interval of the Difference	
							Lower	Upper
White-African American	NE W	134 75	61.293 44.703	9.007	207	.000	12.959	20.221
White-Hispanic	NE W	134 75	40.063 34.105	3.255	207	.001	2.349	9.566
White-Asian	NE W	134 75	39.972 33.752	5.406	207	.000	3.951	8.488
African American-Hispanic	NE W	134 75	45.499 39.735	2.817	207	.005	1.730	9.800
African American-Asian	NE W	134 75	57.760 36.921	10.030	207	.000	16.743	24.935
Hispanic-Asian	NE W	134 75	43.372 37.411	4.219	207	.000	3.081	8.842

Table 5.14. Independent-sampled t-test comparison of segregation means between the Northeast and West, in 1990.

Ethnic Group Pairs, In 2000		n	Mean	t	df	Sign. (2-Tail)	95% Confidence Interval of the Difference	
							Lower	Upper
White-African American	NE W	134 75	57.250 39.143	9.991	207	.000	14.534	21.680
White-Hispanic	NE W	134 75	41.527 37.013	2.412	207	.017	0.825	8.202
White-Asian	NE W	134 75	37.388 31.105	5.749	207	.000	4.128	8.437
African American-Hispanic	NE W	134 75	38.690 33.955	2.357	207	.019	0.774	8.696
African American-Asian	NE W	134 75	51.476 31.997	9.445	207	.000	15.413	23.545
Hispanic-Asian	NE W	134 75	41.749 37.392	2.812	207	.005	15.822	7.412

Table 5.15. Independent-sampled t-test comparison of segregation means between the Northeast and West, in 2000.

Comparisons of the segregation means between cities in the South to cities in the West (Tables 5.16, 5.17, and 5.18) indicate that there are significant differences over time for most ethnic group pairs. For all three time periods, the White-African American, White-Asian, African American-Hispanic, and African American-Asian segregation means in the South are significantly different (under the 0.01 level) and higher than in the West. The segregation means between Whites and Hispanics are for the only ethnic group pair not to be significantly different between the regions for all three Census years. This would indicate that there are no regional differences in segregation for this ethnic group pairing. Only in 1980 were the regional segregation means determined to be statistically different for Hispanics and Asians.

Ethnic Group Pairs, In 1980		n	Mean	t	df	Sign. (2-Tail)	95% Confidence Interval of the Difference	
							Lower	Upper
White-African American	S	122	62.366	6.815	195	.000	8.458	15.348
	W	75	50.463					
White-Hispanic	S	122	33.984	0.315	195	.753	-2.593	3.578
	W	75	33.492					
White-Asian	S	122	38.523	5.969	195	.000	4.287	8.519
	W	75	32.120					
African American-Hispanic	S	122	51.841	3.601	195	.000	3.023	10.347
	W	75	45.156					
African American-Asian	S	122	65.589	12.376	195	.000	18.237	25.151
	W	75	43.895					
Hispanic-Asian	S	122	41.778	3.252	195	.001	2.022	8.252
	W	75	36.641					

Table 5.16. Independent-sampled t-test comparison of segregation means between the South and West, in 1980.

Ethnic Group Pairs, In 1990		n	Mean	t	df	Sign. (2-Tail)	95% Confidence Interval of the Difference	
							Lower	Upper
White-African American	S	122	56.272	7.252	195	.000	8.423	14.716
	W	75	44.703					
White-Hispanic	S	122	33.020	-0.738	195	.461	-3.987	1.816
	W	75	34.105					
White-Asian	S	122	39.477	4.630	195	.000	3.287	8.164
	W	75	33.752					
African American-Hispanic	S	122	50.910	6.883	195	.000	7.973	14.377
	W	75	39.735					
African American-Asian	S	122	59.655	13.050	195	.000	19.298	26.169
	W	75	36.921					
Hispanic-Asian	S	122	39.681	1.488	195	.138	-0.738	5.279
	W	75	37.411					

Table 5.17. Independent-sampled t-test comparison of segregation means between the South and West, in 1990.

Ethnic Group Pairs, In 2000		n	Mean	t	df	Sign. (2-Tail)	95% Confidence Interval of the Difference	
							Lower	Upper
White-African American	S W	122 75	52.607 39.143	8.596	195	.000	10.376	16.554
White-Hispanic	S W	122 75	36.293 37.013	-0.468	195	.640	-3.758	2.317
White-Asian	S W	122 75	36.057 31.105	4.361	195	.000	2.712	7.191
African American-Hispanic	S W	122 75	43.223 33.955	5.901	195	.000	6.171	12.366
African American-Asian	S W	122 75	52.351 31.997	12.521	195	.000	17.148	23.560
Hispanic-Asian	S W	122 75	40.264 37.392	1.843	195	.067	-0.202	5.946

Table 5.18. Independent-sampled t-test comparison of segregation means between the South and West, in 2000.

Summary of Regionalization

Statistical techniques have been employed to find the "optimal" regionalization of metropolitan areas in America on the basis of ethnic residential segregation scores. The division of American metropolitan areas into three regions, the Northeast, South, and West, has been found to be better suited to differentiating segregation levels than the regionalization offered by the U.S. Census. This finding should be a warning to other social researchers, such as (Logan et al. 2004), who utilize the U.S. Census-defined regions to undertake regional analysis of urban segregation levels. Statistical analysis reveals that cities in the Northeast generally are the most segregated cities, followed by the cities in the South, and then in the West. A major goal of this dissertation is to indicate if regions in the U.S. are distinguishable by their levels of segregation. The results from this chapter indicate that there are statistically significant differences in the levels of segregation by region in America.

The average segregation scores for all ethnic group pairings in all regions tended to have decreased over time, which echoes patterns found in previous studies (Frey and

Farley 1996, Logan and Alba 1995, and Iceland et al. 2002). African Americans are still the most segregated ethnic group when comparing their dissimilarity indices with those of the other ethnic groups. Of the ethnic minorities, Asians were the least segregated from the other groups from 1980 to 2000. Overall, the results from this section reveal regional differences in urban segregation levels. Thus, investigating segregation only for cities at the national scale masks the variability found at the regional scale. The next step is to try to explain the differences in segregation scores from city to city within each region.

Explaining Differences in Segregation by Region

Discovering the regions for which segregation levels vary was only one of the geographical research objectives of this study, since the question of why these spatial patterns exist is still yet to be answered. What factors explain the differences in residential segregation between African Americans and Whites in Northeastern metropolitan areas? Are these factors similar to or different than those for cities in the South or West? There may be regional differences in socioeconomic factors relating to the segregation between an ethnic group pair by region, which might be masked if only analyzing segregation at the national scale. The procedures used here to test differences in residential segregation for each region require the utilization of three statistical techniques.

Methodology to Explain Segregation Differences within Each Region

The first procedure involves selecting variables that are related to differences in segregation levels for cities within the Northeast, South, and West. These variables were chosen based on previous research that suggested that the causes of segregation are related to socioeconomic status (e.g. poverty levels), discrimination (e.g. especially in housing), and the role of preferences (e.g. Whites not wanting to live in African American neighborhoods). While there are no data on ethnic residential preferences for every metro area in America, there is a vast amount of socioeconomic data available to be used in this analysis. Also, the socioeconomic data are indirect measures of discrimination, as social inequalities can be measured by identifying education and income differences along ethnic lines. Thus, the methodology employed calculates the correlations between socioeconomic variables and the levels of segregation for each ethnic group pair using the enumeration unit of the metropolitan area. These socioeconomic variables are classified under economic (e.g. median household income), housing (e.g. median year housing structure was built), employment (e.g. percent employed in wholesale) and educational attainment (e.g. percent with a bachelors degree) categories. Overall, there are 111 socioeconomic variables that are correlated with ethnic residential segregation values for cities in each region and for each ethnic group pair.

However, “explaining” city to city differences in segregation cannot be accomplished by correlating segregation values to just one SES variable; which the simple correlation coefficient would indicate. There can be multiple factors that are jointly related to the differences in city segregation levels within each region. Therefore, the second statistical procedure involves selecting the variables that are moderately or more strongly correlated with segregation, and to enter these variables into multiple regression equations for each ethnic group pairing. This has been done by selecting variables that are correlated with segregation over an absolute value of 0.300 for any region or for the nation as a whole. For example, if the percent of a city’s population that is White is correlated with segregation (r = -0.514) in the Northeast, then this variable will be selected as one to be entered into the multiple regression equations for all regions. The reason for choosing the same pool of independent variables for all regions is that some variables may not be strongly correlated with segregation alone, yet these variables may be correlated with segregation when incorporated with other variables in a multiple regression model. Correlations near zero indicate that the two variables are uncorrelated and therefore were not included in the multiple regression analysis. Correlations above zero indicate a direct relationship between a metro's segregation score and variable, and correlations below zero indicated an inverse relationship between segregation and the explanatory variable.

The third procedure involves the calculation of multiple region equations using the selected, and correlated, variables. Multiple regression models are useful in relating various independent variables (e.g. socioeconomic characteristics) to a dependent variable (e.g. dissimilarity index). In terms of the multiple regression equation for the cities in the nation, the regional dummy variables of the Northeast, South, and West are included. The coefficient of determination (R^2) signifies the proportion of the variance in the dependent variable that is predicted by the variance in all of the independent variables acting together. The higher the R^2 values, the better fit the independent variables 'explain' the dependent variable. However, caution is needed when interpreting the results from a multiple regression model. A test is needed to see if multicollinearity occurred. Multicollinearity is a "vexing problem in the application of multiple regression analysis… in which two or more predictor variables are very highly correlated with each other" (Kachigan 1991, 189). Thus, the Variance Inflation Factor (VIF) has been calculated to test whether multicollinearity is a problem in each multiple regression analysis. A VIF over 5.0 indicates potential multicollinearity problems (Rogerson 2001, 136), and therefore, only variables with a VIF lower than 5.0 are incorporated in any final multiple regression equation which is described here.

After the multiple regression equations were computed for each ethnic group pair by region, beta weights are analyzed to indicate which of the independent variables impacts segregation scores the most. The beta weight, or standardized partial regression coefficient, that is the furthest from zero reveals the explanatory variable that has the most influence on the ethnic residential segregation level for a given ethnic pairing. Since these weights were standardized, “the absolute value of the beta coefficients will tell us the rank order of importance of the predictor variables” (Kachigan 1991, 183). These beta weights indicate the number of standard deviation changes in the dependent variable (e.g. segregation level) that is associated with one standard deviation change in the particular independent variable (e.g. socioeconomic variable), with all other independent variables statistically constant. Positive beta weights indicate a direct relationship with segregation, while negative beta weights indicate an inverse relationship with segregation.

The multiple regression procedures used in this dissertation followed the backward selection or “kitchen sink” approach (Rogerson 2001, 140). This approach puts all of the selected variables (e.g. simple correlations above an absolute value of 0.300) into the equation as the independent variables to “explain” the dependent variable of segregation, measured by the dissimilarity index. After the first multiple regression model was run, and in working backwards, the least significant variable in the multiple regression model was dropped and another multiple regression was computed with the remaining variables. This iterative process continued until all independent, or "explanatory," variables showed significance levels of 0.01 or more. In addition, all of the independent variables were required to have VIF values under 5.0 to avoid multicollinearity issues. Following are the results from the correlation and multiple regression procedures.

Correlating Segregation and Socioeconomic Characteristics by Region

Several correlation matrices were calculated (Appendix C) that indicate how the various socioeconomic variables relate to the dissimilarity indices for cities within each region. For example, table C1 in Appendix C denotes the correlations between the socioeconomic variables and White-African American residential segregation scores for the metro areas within each region and for the country as a whole. Similarly, correlation matrices for Whites and Hispanics (Table C2), Whites and Asians (Table C3), and African Americans and Hispanics (Table C4) are shown in Appendix C. Variables that have correlations over 0.300 and under -0.300, that are used in the multiple regression models, are indicated in bold lettering in the tables.

An interesting finding is that there are correlations between socioeconomic characteristics and segregation levels for metros for a specific region, but not for metros in another region, or for metros in the nation as a whole. Consider the White-African American correlation matrix for example (Table C1), the White percentage of a metro area is significantly correlated with segregation for cities in the Northeast (-0.514) and West (-0.419), but not for cities in the South (0.091) nor for cities in the nation as a whole (-0.042). If one were to look at the nation as a whole, the White percentage variable is not seen as correlated with White-African American segregation levels. Yet, dividing the metro areas into regions indicates that the White percentage of a city is significantly related to segregation for cities in the Northeast and West. This inverse relationship indicates that the higher the percentage of Whites in a city the lower is segregation between Whites and African Americans. These results suggest that some explanatory variables can be important for cities in one region, while not significant for cities in another region or in the nation. Since there are regional differences in segregation, the next step is to "explain" the reasons for the differences within each region.

Explaining Segregation Levels by Region

The full results of the various multiple regression equations for each region and ethnic group pairing are found in Appendix D. The multiple regression models are for the Northeast, South, West, and Nation in 2000, while the ethnic group pairs include Whites-African Americans, Whites-Hispanics, Whites-Asians, and African American-Hispanics. Since the focus of this research is on certain outputs from the multiple regression model, only pertinent information relating to the coefficient of determination (R^2) and the beta weights is provided in the tables below.

White-African American Analysis

The results from the multiple regression analysis (Table 5.19) for White-African American segregation levels nationwide indicate a fairly good fit (R^2 is 0.721) with various included independent variables. Variables relating to demographic, educational, housing, and income levels are found to be related to differences in segregation levels among metropolitan areas in America as a whole. The most important variable relating to the White-African American segregation of cities nationwide is the population size of the city, with a beta weight of 0.410. As the population of a metro area increases, so does the level of segregation. Second in importance is African American median housing value (-0.331), where cities with the lower White-African American segregation levels are those with higher African American median housing values. The next most important variable is the median year that the average housing structure was built for the city (-0.294), indicating that the least segregated metro areas tend to be "newer" or growing cities. The fourth most important variable is median household income for non-Hispanic Whites (0.221), in which the more segregated cities usually have higher White income levels.

NATION	R^2 = 0.721
Dependent Variable: DI between Whites and African Americans	
Independent Variables	**Beta Weight**
Log 10 of Metro Population in 2000	0.410
Median Housing Value, African American	-0.331
Median Year Housing Structure Built	-0.294
Median Household Income, Non-Hispanic White	0.221
Ratio of Household Income, Whites and African Americans	-0.183
Percent of African Americans with Bachelors	-0.180
Median Age, Non-Hispanic White	0.159
Percent African American	0.139

Table 5.19. Summary of multiple regression results for Whites and African Americans in the nation.

The other variables that are positively correlated with White-African American segregation in a city are the percentage of African Americans (0.139) and the median age of non-Hispanic Whites (0.159). The higher the percentage of African Americans in a city relates to that city having a higher White-African American segregation level. The other variable that is inversely related to segregation levels across the U.S. is the percentage of African Americans with a bachelor's degree (-0.180). Cities that have a higher proportion of African Americans with a college education tend to be less segregated, indicating that educational attainment is an important characteristic for

African Americans in decreasing their residential segregation from Whites. Given these national trends, are regional differences to be found regarding segregation?

There are several variables that 'explain' the differences in White-African American segregation levels for cities in the Northeast. The multiple regression analysis (Table 5.20) indicates that the coefficient of determination (R^2) is 0.786, which was very high. This indicates that the independent variables included in the equation do well together in "explaining" the differences in segregation between Whites and African Americans in cities of the Northeast. The beta weights indicate that the population of the city (Log 10 of Metro Population) is the most important factor (0.564) relating to White-African American segregation levels. Thus, as the population of a metro area in the Northeast increases the segregation level between Whites and African Americans also increases. Next in importance is the proportion of people employed in professional, scientific and related fields (-0.306). As the metro area's proportion employed in these jobs increases, there is a decline in segregation levels. The third most important variable is non-Hispanic White per capita income (0.245), which indicates that segregation levels are higher in cities that have higher average White income levels.

NORTHEAST	$R^2 = 0.786$
Dependent Variable: DI between Whites and African Americans	
Independent Variables	**Beta Weight**
Log 10 of Metro Population in 2000	0.564
Percent Employed in Prof., Sci., Man., Adm., and Waste Man. Services	-0.306
Per Capita Income, Non-Hispanic White	0.245
Percent African American	0.217
Percent of African Americans with Bachelors	-0.216
Percent of African Americans with No Mortgage	0.190
Ratio of Household Income, Whites and African Americans	-0.162
Percent of Homes Built in 1990s	-0.147

Table 5.20. Summary of multiple regression results for Whites and African Americans in the Northeast.

Other variables that have a positive relationship with White-African American segregation in the Northeast include percent African American (0.217) and the percentage of African Americans with no mortgages (0.190) in the metro area. Cities that have a higher proportion of African Americans and with more African Americans without mortgages have higher segregation scores. Inverse relationships with segregation for cities in the Northeast are associated with the percent of African Americans with a bachelor's degree, percent of homes built in the 1990s, and the ratio of household income between Whites and African Americans. The ratio of household income is calculated by dividing African American income by White income for each metro area. Values of the ratio near one indicate relatively equal income levels between African Americans and Whites, while values near zero indicate that African American income levels are far less than White income levels. Thus, the least segregated cities in the Northeast are those where African Americans have higher education, those which are "newer" cities (in terms of housing growth), and those where Whites and African Americans have similar average incomes. The results suggest that increasing the educational attainment for African Americans and having income equality with Whites can lead to less White-African American segregation for cities in the Northeast. Are income and education levels also important characteristics relating to segregation for other regions?

For cities in the South, the summary of the multiple regression results (Table 5.21) indicates a good fit ($R^2 = 0.636$) between the socioeconomic variables and segregation. The most important variable relating to White-African American segregation in the South is the per capita income of residents in a city (0.385). The next most important variable is the African American occupied median housing value

(-0.384), indicating that as African American housing values increase there is a decrease in segregation levels for cities in the South. Third in importance in explaining segregation in the South is the percentage of African Americans with no vehicles (0.301). This indicates that segregation is higher in Southern cities where African Americans do not have private transportation, which may inhibit access to jobs and other services if these facilities are not located in the segregated neighborhoods.

SOUTH	$R^2 = 0.634$
Dependent Variable: DI between Whites and African Americans	
Independent Variables	**Beta Weight**
Per Capita Income	0.385
Median Housing Value, African American	-0.384
Percent of African Americans with No Vehicles	0.301
Log 10 of Metro Population in 2000	0.283
Percent Employed, Wholesale Trade	0.231
Percent Employed, Ag., Forestry, Fishing/Hunting, or Mining	-0.217
Median Age, African American	-0.215
Median Age, Non-Hispanic White	0.215

Table 5.21. Summary of multiple regression results for Whites and African Americans in the South.

For cities in the South, White-African American segregation is positively correlated with the population size of the metro (not as important as in the Northeast), median age of non-Hispanic Whites, and percent employed in wholesale. With GeoDa™, a statistical program using GIS files, a scatter plot showing the correlations between median age of non-Hispanic Whites and segregation levels was created. Selecting the places in the scatter plot with high median age and segregation levels with a box also highlighted the metro areas on the map. Thus, further investigation in GeoDa™ has indicated that cities located in Florida relate the higher non-Hispanic White median age variable with higher levels of segregation. An inverse relationship with segregation levels exists for the African American median age variable and the percent employed in agriculture and related fields. This indicates that cities with a younger African American population are more segregated than cities with an older African American population. Unlike for cities in the Northeast, African American educational attainment is not related to differences in White-African American segregation for cities in the South. Thus, increasing educational attainment levels of African Americans in the South perhaps would not promote decreased levels of segregation from Whites in the region.

The multiple regression equation "explaining" White-African American segregation for cities in the West fits fairly well ($R^2 = 0.744$) with just four independent variables (Table 5.22). This model is better than that for the South ($R^2 = 0.636$), but does not have as good a fit as the equation for the Northeast (R^2 is 0.786). The most important variable relating to segregation levels in the West is the proportion of a city's population that is African American (0.533). The higher a city's African American proportion, the higher the White-African American segregation level for that city. Similar to the patterns in the Northeast and South, the population of a metro area in the West (0.385) is positively correlated with an increase in segregation. Growing, and thus newer, cities in the West are less segregated than older cities, as indicated by the median year that occupied housing structures were built (-0.250). The least important, yet still significant, variable relating to urban segregation differences in the West is the percent employed in agricultural and related fields in the primary sector (0.195). Unlike the inverse relationship in the South, the relationship in the West is positive, in that as the percent employed in agriculture and other fields increases so too does segregation for that city. Further analysis of the scatter plot in GeoDa™ indicated that the higher segregation levels and percentage employed in the primary sector were especially associated with cities located in the Central Valley of California.

WEST	R^2 = 0.744
Dependent Variable: DI between Whites and African Americans	
Independent Variables	**Beta Weight**
Percent African American	0.533
Log 10 of Metro Population in 2000	0.385
Median Year Housing Structure Built	-0.250
Percent Employed, Ag, Forestry, Fishing/Hunting, or Mining	0.195

Table 5.22. Summary of multiple regression results for Whites and African Americans in the West.

White-Hispanic Analysis

Nationally, there are several explanatory variables that account for differences in White-Hispanic segregation scores among cities in the nation. The national multiple regression equation (Table 5.23) does well (R^2 is 0.678) in accounting for the variance of White-Hispanic segregation by metropolitan areas. The most important variable relating to segregation is the percentage of Hispanics with a bachelor's degree (-0.313). Hispanic high school (-0.188) and graduate school (-0.170) education are also significant factors correlated to White-Hispanic segregation levels in American cities. In general, as Hispanic education increases in a metro area, the level of White-Hispanic segregation decreases. This suggests that increasing the percentage of Hispanics with a higher education would decrease segregation between Hispanics and Whites.

NATION	R^2 = 0.678
Dependent Variable: DI between Whites and Hispanics	
Independent Variables	**Beta Weight**
Percent of Hispanics with Bachelors	-0.313
Log 10 of Metro Population in 2000	0.266
Ratio of Household Income, Whites and Hispanics	-0.240
Percent of Hispanics with No Vehicles	0.212
Percent of Hispanics with High School Education	-0.188
Percent of Hispanics with Grad School Education	-0.170
Percent of Non-Hispanic Whites in Poverty	-0.162
Region III (West)	-0.138

Table 5.23. Summary of multiple regression results for Whites and Hispanics in the Nation.

The second most important beta weight is for the population size of the metro area (0.266), indicating that more populated cities are more likely to have higher levels of White-Hispanic segregation. This is similar to the White-African American trends for all regions and for the nation as a whole. The third most important variable impacting White-Hispanic segregation levels nationwide is the ratio of household income between Whites and Hispanics (-0.240). This inverse relationship indicates that as ratio decreases toward zero (indicating greater income disparity between Hispanics and Whites), then the segregation between these two groups increases. Next in importance is the percentage of Hispanics without a vehicle (0.212), indicating that more segregated cities are those where Hispanics do not have independent transportation. Other significant variables relating to White-Hispanic segregation differences nationwide include the percent of non-Hispanic Whites in poverty (-0.162) and the regional dummy variable of the West (-0.138). It is interesting that the greater percentage of poor Whites living in a city is related to lower White-Hispanic segregation levels. This indicates that poor Whites cannot afford to move out of ethnically diverse neighborhoods, which are generally located in the poorer parts of town. The West regional dummy variable (0 for not living in the West, 1 for living in the West) indicates that cities in the West have lower White-Hispanic segregation levels on average than cities in the Northeast and South.

Switching to the regional scale, the multiple regression model “explains” White-Hispanic segregation very well for cities in the Northeast, with an R^2 of 0.811(Table 5.24). The most important influence on Northeast White-Hispanic segregation is the percentage of non-Hispanic Whites in poverty (-0.297). This suggested that cities with a larger proportion of Whites in poverty have less residential separation between Hispanics and Whites. Hispanic poverty percentages (0.272) are also related to segregation levels in metro areas of the Northeast. Higher proportions of Hispanics who are in poverty for a city are related to higher segregation levels for that city. The second most influential variable in this region was the percent of Hispanics with a bachelor's degree (-0.278). Another significant educational variable is the percent of Hispanics with a high school education (-0.120). For cities in the Northeast, and similarly for cities nationwide, the higher the proportion of educated Hispanics the lower the segregation level. The third most important variable is income related, involving the ratio between White and Hispanic household income with a beta weight of -0.275. This indicates that cities with comparable income levels for the two ethnic groups are less segregated than cities with a greater disparity in income levels between Whites and Hispanics.

NORTHEAST	R^2 = 0.811
Dependent Variable: DI between Whites and Hispanics	
Independent Variables	**Beta Weight**
Percent of Non-Hispanic Whites in Poverty	-0.297
Percent Hispanic	0.246
Percent of Hispanics with Bachelors	-0.278
Ratio of Household Income, Whites and Hispanics	-0.275
Percent of Hispanics in Poverty	0.272
Log 10 of Metro Population in 2000	0.174
Percent of Hispanics with High School Education	-0.120

Table 5.24. Summary of multiple regression results for Whites and Hispanics in the Northeast.

Under the demographic category, the percent Hispanic and the total population of the city are directly related to levels of segregation in the city, with beta weights of 0.246 and 0.174 respectively. The higher percentage of Hispanics the greater the level of White-Hispanic segregation, holding all other included independent variables constant. Unlike the nation as a whole for which the population of the city is the second most important variable, in the Northeast region city population size is sixth in importance.

Overall, economic characteristics (poverty levels and household income) are important influences on the levels of White-Hispanic segregation for metro areas in the Northeast.

The multiple regression model of White-Hispanic segregation for cities in the South indicates a fair degree of association with the various included socioeconomic variables, with an R^2 of 0.635 (Table 5.25). The greatest influence on the levels of segregation in the South relates to housing values, with the median housing value for non-Hispanic White occupied (0.550) and Hispanic occupied housing (-0.548) relating differently to segregation levels. As White median housing values increase in the Southern metro areas, so do the levels of segregation for these urban areas. Conversely, increased Hispanic housing values for a city relate to decreased levels of segregation between Whites and Hispanics. Next in influencing segregation in the South are the percent of Hispanics with a bachelor's degree (-0.411) and the population size of the metro area (0.174). These two variables also influence the differences in White-Hispanic segregation for cities in the Northeast and in the nation as a whole. It is interesting that economic characteristics, such as income and poverty levels are not statistically influential in the South as they are in other regions. Increasing income levels for Hispanics in cities of the South do not seem to be statistically related to decreased levels of segregation with Whites.

SOUTH	$R^2 = 0.635$
Dependent Variable: DI between Whites and Hispanics	
Independent Variables	**Beta Weight**
Median Housing Value, Non-Hispanic White	0.550
Median Housing Value, Hispanic	-0.548
Percent of Hispanics with Bachelors	-0.411
Log 10 of Metro Population in 2000	0.174

Table 5.25. Summary of multiple regression results for Whites and Hispanics in the South.

The residential segregation between Whites and Hispanics for cities in the West is impacted by demographic and income characteristics. From the multiple regression model (Table 5.26), the explained variance from the independent variables acting together does well in accounting for segregation levels as shown by an R^2 of 0.750. The variable that has the most influence on White-Hispanic segregation in the West is a city's percentage of Hispanics in poverty (0.479). Poverty levels for non-Hispanic Whites (-0.434) also are related to segregation scores for cities in the West. Just as in the Northeast, higher Hispanic poverty percentages are related to higher segregation levels, while higher non-Hispanic White poverty levels are related to lower segregation levels. The second influential variable is the percent of the city's population that is Hispanic (0.449), with lower proportion of Hispanics in a city relating to lower White-Hispanic residential segregation. The least influential of the significant variables are the total population of the city (0.247) and the median per capita income of the city (0.288). Both metro area size and income levels are directly related to White-Hispanic segregation scores in the West, as increases in these variables are associated with increases in White-Hispanic segregation. While the population size of the metro areas is the most important factor nationwide, it is the least important factor in terms of White-Hispanic segregation differences in cities of the West.

WEST	R^2 = 0.750
Dependent Variable: DI between Whites and Hispanics	
Independent Variables	**Beta Weight**
Percent of Hispanics in Poverty	0.479
Percent Hispanic	0.449
Percent of Non-Hispanic Whites in Poverty	-0.434
Per Capita Income	0.288
Log 10 of Metro Population in 2000	0.247

Table 5.26. Summary of multiple regression results for Whites and Hispanics in the South.

White-Asian Analysis

The metropolitan differences in White and Asian segregation levels nationwide are found to be related to demographic, housing, employment, and regional characteristics. Overall, all of the included independent variables in the national multiple regression equation (Table 5.27) do not fit well (R^2 is 0.475) in accounting for the variance in White-Hispanic segregation between cities. The population size of a city is the most influential variable, with a beta weight of 0.522, indicating that larger cities have higher White-Asian segregation levels. The second most influential variable is the percent of occupied housing with an Asian head of household (0.375), which is directly related to segregation scores by city. The third variable that is associated with segregation is the median age for Asians (-0.278); cities with a younger Asian population tend to be more segregated than cities with an older Asian population. Des this indicate that cities with a larger immigrant population (which tend to be younger) are more segregated than cities with more established Asians, comprising second and third generations? If so, newer arrivals are more likely to live in clustered areas while Asians that have been here longer are able to move out of these ethnic enclaves as their socioeconomic status rises.

NATION	R^2 = 0.475
Dependent Variable: DI between Whites and Asians	
Independent Variables	**Beta Weight**
Log 10 of Metro Population in 2000	0.522
Percent of Occupied Housing, Asian Head of Household	0.375
Median Age, Asian	-0.278
Region III (WEST)	-0.271
Median Rent	-0.246
Percent Employed, Administrative-Support and Waste Man. Serv.	-0.227

Table 5.27. Summary of multiple regression results for Whites and Asians in the Nation.

In terms of employment, there is an association between White-Asian segregation and the percent employed in administrative support and waste management services (0.227) for cities nationwide. The West regional dummy variable, with a beta weight of -0.271, indicates that cities in the West have lower White-Asian segregation levels than cities in the Northeast or South. The least influential significant variable is the median rent of a city (-0.246); cities that have higher median rent have lower White-Asian segregation levels. This suggests that both Asians and Whites who live in cities with higher rents tend to live closer to each other than in cities with lower average rents.

The multiple regression equation for segregation between Whites and Asians in Northeastern metro areas (Table 5.28) exhibits a moderate level of explained variance, with an R^2 of 0.479. The variable that has the most influence on the differences in White-Asian segregation is the percent Asian in the metro area, with a beta weight of 0.569. This standardized coefficient illustrates that cities with a higher Asian proportion of total population tend to have higher White-Asian residential segregation. The second most important characteristic is the median household income for non-Hispanic Whites (beta weight of -0.469), which is inversely related to segregation scores. Whites and Asians are less segregated in cities when Whites median income levels are high. Third in importance are the percentage of occupied housing units in a city that are rented (-0.454), where the least segregated cities have a higher percentage of rented housing. Next in importance is population size (0.410), median age (-0.292), and percent of Asians with no vehicles (0.250). Cities in the Northeast that have higher segregation levels contain larger populations, average a younger population, and have proportionally more Asians who do not own a vehicle.

NORTHEAST	$R^2 = 0.479$
Dependent Variable: DI between Whites and Asians	
Independent Variables	**Beta Weight**
Percent Asian	0.569
Median Household Income, Non-Hispanic White	-0.469
Percent of Occupied Housing, Rented	-0.454
Log 10 of Metro Population in 2000	0.410
Median Age	-0.292
Percent of Asians with No Vehicles	0.250

Table 5.28. Summary of multiple regression results for Whites and Asians in the Northeast.

Residential segregation between Asians and Whites in the South is moderately "explained" by included socioeconomic variables (Table 5.29), with an R^2 of 0.512. The most important variable accounting for the variance of segregation is median rent (-0.691); cities with higher median rents have lower segregation levels. The second influential socioeconomic characteristic is the population size of the city (0.512), with a positive relationship with White-Asian segregation levels. Next in importance is the median age of Asians (-0.446); an increase in the median age of a city is related to a decrease in the city's White-Asian segregation level. The location of cities in Florida influenced the results in the South, as Floridian cities have older median ages and are less segregated between Whites and Asians than other cities in the South. This was opposite to the relationship between median age and White-African American segregation, where higher White median age is related to higher segregation levels with African Americans.

SOUTH	$R^2 = 0.512$
Dependent Variable: DI between Whites and Asians	
Independent Variables	**Beta Weight**
Median Rent	-0.691
Log 10 of Metro Population in 2000	0.512
Median Age, Asian	-0.446
Percent of Occupied Housing, Asian Head of Household	0.258
Percent Employed, Construction	0.210

Table 5.29. Summary of multiple regression results for Whites and Asians in the South.

Another measure of the ethnic composition of a city is related to segregation between Whites and Asians in the South. The percentage of occupied housing with an Asian head of household (0.258) is positively related to segregation levels, so an increase in one variable will lead to an increase in the other. The least influential significant variable in the multiple regression model of White-Asian segregation in the South is the percentage employed in construction (0.210), though it is not exactly clear why cities with a higher proportion employed in construction would have higher White-Asian segregation levels. More detailed analysis would be needed to understand this relationship.

The multiple regression model for White-Asian segregation (Table 5.30) in cities of the West in 2000 indicates a fairly good fit with the included socioeconomic variables (R^2 of 0.657). Population size of the metro area (0.541) is the most influential variable relating to the White-Asian segregation of a metro area; larger cities have higher levels of segregation. The second important variable is the percent employed in real estate and related sectors (-0.348); cities are less segregated in the West if they have a higher proportion of people working in the real estate business. Places with more people employed in real estate and renting could be an indicator of metropolitan growth, which is related to lower White-Asian segregation levels if both ethnic groups are living in the same suburbs.

WEST	$R^2 =$ 0.657
Dependent Variable: DI between Whites and Asians	
Independent Variables	**Beta Weight**
Log 10 of Metro Population in 2000	0.541
Percent Employed in Real Estate and Rental and Leasing	-0.348
Percent of Occupied Housing, Rented	0.335
Percent of Occupied Housing, White Head of Household	-0.306

Table 5.30. Summary of multiple regression results for Whites and Asians in the West.

Also, relating segregation with housing was the percentage of occupied housing that is rented (0.335), where places with proportionally more rental units are more segregated between Whites and Asians. An interesting aspect is that for cities in the Northeast, the percent rented is inversely related to White-Asian segregation (-0.454), but this does not seem true of cities found in the West. This emphasizes a key point of this research, that "explaining" differences in segregation in the Northeast need not be the same as "explaining" segregation differences in the West. The last variable found to influence White-Asian segregation levels in the West is the percentage of occupied housing with a White head of household (-0.306). With this inverse relationship, the levels of segregation are lower in cities that have a higher proportion of home owners who are White. Analysis of the tables in the shapefile using GeoDa™ indicates that the cities with high proportions of White household members do not have large Asian populations (metro areas in Montana, Utah, and Wyoming), and thus tend to have lower segregation levels. Overall, the socioeconomic variables used in the multiple regression equations for the nation and for each region do not "explain" White-Asian segregation levels particularly well. This would suggest that differences in White-Asian segregation by city are related to other variables not included in this analysis. Interestingly, education variables do not account for White-Asian segregation, but are found in the best-fit models explaining White-African American and White-Hispanic segregation. Educational differences by metro area do not seem to influence residential segregation levels between Asians and Whites.

African American-Hispanic Analysis

Most segregation research has compared Whites with ethnic minority groups, while little research has investigated segregation between minority ethnic groups. African Americans and Hispanics are the top two ethnic minority groups in America (U.S. Census 2006), and it would be interesting to see if these two groups also are residentially segregated from one another. The multiple regression equation for African American-Hispanic segregation (Table 5.31) for metro areas across America indicates a moderate link with the selected socioeconomic variables (R^2 of 0.495). Yet, over half of the variance of African American-Hispanic segregation is not explained by the socioeconomic variables examined. The most influential included variable explaining segregation is the population size of the metro area (0.625). More populated cities tend to be more ethnically diverse, as well as more residentially segregated along ethnic lines. The second significant variable relating to segregation is the percentage of African Americans with no mortgages (0.325). Cities with a higher level of segregation between African American and Hispanics also have higher percentages of African Americans without mortgages. Higher percentages of African Americans without mortgages likely indicates a more “rooted” population in that many home owners have paid off their housing loans. People owning homes are less likely to move, or to have other groups move into their neighborhoods, and the higher segregation levels of the past may be perpetuated by lower mobility rates.

NATION	R^2 = 0.495
Dependent Variable: DI between African Americans and Hispanics	
Independent Variables	**Beta Weight**
Log 10 of Metro Population in 2000	0.625
Percent of African Americans with No Mortgage	0.325
Percent African American	0.236
Percent Employed, Ag, Forestry, Fishing and Hunting	0.210
Percent with High School Education	0.142

Table 5.31. Summary of multiple regression results for African Americans and Hispanics in the Nation.

The percent of population which is African American is related to higher levels of segregation between Hispanics and African Americans, with a beta weight of 0.236. Yet, the percent of Hispanics in a city is not found to be an influential variable relating to Hispanic-African American segregation levels nationwide. In terms of employment, the percentage of a city's labor force in agriculture and related sectors is associated with higher segregation (0.210) between African Americans and Hispanics. In GeoDa™, additional analysis revealed that metro areas located in the Central Valley in California have higher percent of workers employed in the primary sector. The least influential significant variable in the multiple regression equation is the percent of the population with a high school education (0.142). Metropolitan areas are more segregated between African Americans and Hispanics when there is a higher percentage of only high school educated people. Overall, there are no socioeconomic variables that were found to be inversely related (or have a negative beta weight) with African American-Hispanic segregation at a national scale.

The multiple regression model for African American-Hispanic segregation in cities in the Northeast (Table 5.32) indicates a better fit than for the nation as a whole (R^2 of 0.567). However, just as with the multiple regression model for the nation, the most important variable in the Northeast is the population size of metro areas (0.389). Metro areas with a larger population are more segregated than metro areas with a smaller population in the Northeast. The second influential variable "explaining" segregation in the Northeast is the percentage of occupied housing with an African American head of household (0.323), which exhibits a direct relationship. Also similar to the national model, the percent of African Americans without a mortgage is positively associated with segregation (0.323). It is interesting that education and demographic variables relating to Hispanics are not found to be related to differences in segregation between Hispanics and African Americans in the Northeast.

NORTHEAST	$R^2 = 0.567$
Dependent Variable: DI between African Americans and Hispanics	
Independent Variables	**Beta Weight**
Log 10 of Metro Population in 2000	0.389
Percent of Occupied Housing, African American Head of Household	0.329
Percent of African Americans with No Mortgage	0.323

Table 5.32. Summary of multiple regression results for African Americans and Hispanics in the Northeast.

Unlike the Northeast, the multiple regression equation model for cities in the South fits better (R^2 of 0.597) and includes three times the number of significant variables that are related to African American-Hispanic segregation levels (Table 5.33). The most influential socioeconomic variable is the population size of a metro area (0.441), which is positively related to segregation levels. The second most influential variable is the percent of African Americans with no mortgages (0.364), as less Hispanic-African American segregation occurred in cities where African Americans have mortgages. Under the category of employment, the percentage employed in wholesale trade (0.353) and the percentage employed in agriculture, forestry, fishing/hunting, and mining (-0.200) are related to segregation differences in cities of the South. African

American-Hispanic segregation increases in a Southern city if the city's percentage employed in wholesale is high and if the percentage employed in the primary sector is low.

<u>SOUTH</u>	R^2 = 0.597
Dependent Variable: DI between African Americans and Hispanics	
Independent Variables	**Beta Weight**
Log 10 of Metro Population in 2000	0.441
Percent of African Americans with No Mortgage	0.364
Percent Employed, Wholesale Trade	0.353
Median Age, Hispanic	0.316
Percent with High School Education	0.270
Median Age, African American	-0.255
Percent of Hispanics with High School Education	-0.231
Percent Employed, Ag, Forestry, Fishing/Hunting, or Mining	-0.200
Percent of Hispanics with Bachelors	0.189

Table 5.33. Summary of multiple regression results for African Americans and Hispanics in the South.

Differences in general education and in education for Hispanics are related to differences in segregation between Hispanics and African Americans. The higher percentage of high school educated people in a city the higher the level of Hispanic-African American segregation in that city (0.270). However, the higher the percentage of Hispanics with only a high school education the lower the level of segregation (-0.231). Conversely, the higher the proportion of Hispanics with a bachelors degree the higher the level of Hispanic-African American segregation (0.189). This suggests that increased SES for Hispanics tends to lead to their movement away from African Americans in neighborhoods of cities in the South. In terms of age characteristics, cities in the South with higher African American-Hispanic segregation tend to have a younger African American median age (-0.255) and an older Hispanic median age (0.316). On the contrary, neighborhoods in Southern cities are less segregated if they have an older African American community and a younger Hispanic community.

Compared with the multiple regression models for the nation, Northeast, and South, the equation detailing socioeconomic relationships with African American-Hispanic segregation in cities of the West is the least robust, with an R^2 of 0.404 (Table 5.34). The low R^2 signifies that there may be missing variables, maybe other excluded socioeconomic characteristics or perhaps factors relating more closely to residential preferences, that might explain the differences in residential segregation between African Americans and Hispanics. Only two included variables both dealing with Hispanic education are significant at the 0.01 level after the kitchen-sink approach to multiple regression analysis was undertaken. The percent of Hispanics with a high school only education (-0.500) is inversely related to African American-Hispanic segregation in Western cities. The percentage of Hispanics with a graduate school education (-0.320) also is related to segregation levels. As a city's proportion of Hispanics with a graduate school education increases, there is a decline in segregation between Hispanics and African Americans. Unlike the other regions, the multiple regression equation for segregation in the West does not have the population size of the metro area as an influential or significant variable. In addition, the percentage of African Americans without mortgages also does not influence Hispanic-African American segregation in the West.

<u>WEST</u>	R^2 = 0.404
Dependent Variable: DI between African Americans and Hispanics	
Independent Variables	**Beta Weight**
Percent of Hispanics with High School Education	-0.500
Percent of Hispanics with Grad School Education	-0.320

Table 5.34. Summary of multiple regression results for African Americans and Hispanics in the West.

Summary of Explaining Segregation Levels by Region

Success in accounting for the city by city differences in segregation has been found to vary by the ethnic group pairing and by region. In general, the multiple regression models relating socioeconomic variables to segregation (Table 5.35) worked well for White-African American and White-Hispanic segregation (high R^2 values), but not as well for White-Asian and African American-Hispanic pairings. This indicates that more variables are needed to account for White-Asian and African American-Hispanic segregation levels across American cities.

Ethnic Pair	Northeast	South	West	Nation
White-African American	0.786	0.634	0.744	0.721
White-Hispanic	0.811	0.635	0.750	0.678
White-Asian	0.479	0.512	0.657	0.475
African American-Hispanic	0.567	0.597	0.404	0.495

Table 5.35. Summary of the coefficients of determination (R^2) for multiple regression equations by region and for the nation as a whole that relate socioeconomic variables (independent variables) to segregation levels between ethnic pairs. Data are for 2000.

A major goal of this dissertation is to identify variables that are found to explain differences in ethnic residential segregation for metropolitan areas within the U.S. A summary of the variables that were most commonly found to be related to segregation between ethnic pairs (Table 5.36 to Table 5.39) indicates that there are regional differences. In that what variables explain White-African American segregation between cities in the Northeast are different then the variables accounting for White-African American segregation for cities in the South. The only exception is population size of a city, which is generally the most common variable explaining segregation between ethnic pairs for each region and for the nation as a whole. However, general patterns of variables are apparent for each ethnic pair.

Several income-related variables, such as per capita income, median household income, and the ratio of household income between Whites and African Americans, are significant in explaining White-African American segregation by metro area in each region and for the nation as a whole, except for the West (Table 5.36). These findings echo those found by Logan et al. (2004) that income levels of African Americans and Whites are related to residential segregation between the two groups. However, unlike the findings of Logan et al. (2004), several housing variables, such as median year housing structures were built, percent of African Americans with no mortgage, and median housing value also are related to White-African American segregation differences by metro area. These findings suggest that socioeconomic causes, in relation to income and housing characteristics, do fairly well in accounting for White-African American segregation.

Northeast	South	West	Nation
1. Log 10 of Metro Population (0.564) 2. Percent Employed in Profes.. & Mgt. (-0.306) 3. Per Capita Income, Non-Hispanic White (0.245) 4. Percent African American (0.217) 5. Percent of African Americans with Bachelors (-0.216) 6. Percent of African Americans with No Mortgage (0.190) 7. Ratio of Household Income, White-African American (-0.162) 8. Percent of Homes Built in 1990s (-0.147)	1. Per Capita Income (0.385) 2. Median Housing Value, African American (-0.384) 3. Percent of African Americans with No Vehicles (0.301) 4. Log 10 of Metro Population (0.283) 5. Percent Employed, Wholesale Trade (0.231) 6. Percent Employed, Agr., Forestry, & Mining (-0.217) 7a. Median Age, Non-Hispanic White (0.215) 7b. Median Age, African American (-0.215)	1. Percent African American (0.533) 2. Log 10 of Metro Population (0.385) 3. Median Year Housing Structure Built (-0.250) 4. Percent Employed, Agr., Forestry, & Mining (0.195)	1. Log 10 of Metro Population (0.410) 2. Median Housing Value, African American (-0.331) 3. Median Year Housing Structure Built (-0.294) 4. Median Household Income, Non-Hispanic White (0.221) 5. Ratio of Household Income, White-African American (-0.183) 6. Percent of African Americans with Bachelors (-0.180) 7. Median Age, Non-Hispanic White (0.159) 8. Percent African American (0.139)

Table 5.36. Summary of significant variables, ranked from most important to least important (by beta weight), most commonly found to be related to White-African American segregation by region and for the nation as a whole.

The most commonly found variables relating to White-Hispanic residential segregation (Table 5.37) can be categorized under income and Hispanic education categories. For all of the regions except the South, income-related variables, such as poverty, the ratio of household income between Whites and Hispanics, and per capita income, are associated with White-Hispanic segregation levels. In terms of education, the percent of Hispanics with a bachelors, high school, and graduate school degree are related to White-Hispanic segregation levels (except in the West). This provides support for differences in socioeconomic status as a major cause of residential segregation between Hispanics and Whites.

Northeast	South	West	Nation
1. Percent of Non-Hispanic Whites in Poverty (-0.297) 2. Percent of Hispanics with Bachelors (-0.278) 3. Ratio of Household Income, White-Hispanic (-0.275) 4. Percent of Hispanics in Poverty (0.272) 5. Percent Hispanic (0.246) 6. Log 10 of Metro Population (0.174) 7. Percent of Hispanics with High School Education (-0.120)	1. Median Housing Value, Non-Hispanic White (0.550) 2. Median Housing Value, Hispanic (-0.548) 3. Percent of Hispanics with Bachelors (-0.411) 4. Log 10 of Metro Population (0.174)	1. Percent of Hispanics in Poverty (0.479) 2. Percent Hispanic (0.449) 3. Percent of Non-Hispanic Whites in Poverty (-0.434) 4. Per Capita Income (0.288) 5. Log 10 of Metro Population (0.247)	1. Percent of Hispanics with Bachelors (-0.313) 2. Log 10 of Metro Population (0.266) 3. Ratio of Household Income, Whites and Hispanics (-0.240) 4. Percent of Hispanics w/ No Vehicles (0.212) 5. Percent of Hispanics with High School Education (-0.188) 6. Percent of Hispanics with Grad School Education (-0.170) 7. Percent of Non-Hispanic Whites in Poverty (-0.162) 8. Region III (West) (-0.138)

Table 5.37. Summary of significant variables, ranked from most important to least important (by beta weight), most commonly found to be related to White-Hispanic segregation by region and for the nation as a whole.

In general, demographic and rental housing variables are commonly found to be related White-Asian residential segregation (Table 5.37) by region and for the nation as a whole. In terms of demography, the total population, the percent Asian population, and the median age of a metro area are related to White-Asian segregation levels. Also, the percentage of occupied housing that is rented and the median rent are associated with White-Asian segregation. An important finding is the general lack of socioeconomic status variables, dealing with income and education, that relate to the segregation between Asians and Whites. This is a stark contrast to the variables explaining White-African American and White-Hispanic segregation. This provides support for non-SES reasons for the segregation between Whites and Asians in urban America.

Northeast	South	West	Nation
1. Percent Asian (0.569) 2. Median Household Income, Non-Hispanic White (-0.469) 3. Percent of Occupied Housing, Rented (-0.454) 4. Log 10 of Metro Population (0.410) 5. Median Age (-0.292) 6. Percent of Asians with No Vehicles (0.250)	1. Median Rent (-0.691) 2. Log 10 of Metro Population (0.512) 3. Median Age, Asian (-0.446) 4. Percent of Occupied Housing, Asian Head of Household (0.258) 5. Percent Employed, Construction (0.210)	1. Log 10 of Metro Population (0.541) 2. Percent Employed in Real Estate and Rental and Leasing (-0.348) 3. Percent of Occupied Housing, Rented (0.335) 4. Percent of Occupied Housing, White Head of Household (-0.306)	1. Log 10 of Metro Population (0.522) 2. Percent of Occupied Housing, Asian Head of Household (0.375) 3. Median Age, Asian (-0.278) 4. Region III (WEST) (-0.271) 5. Median Rent (-0.246) 6. Percent Employed, Admin.-Support & Waste Mgt. (-0.227)

Table 5.38. Summary of significant variables, ranked from most important to least important (by beta weight), most commonly found to be related to White-Asian segregation by region and for the nation as a whole.

The most commonly found variables relating to African American-Hispanic residential segregation (Table 5.38) fall under demographic, housing, and education categories. Once again, population size of a city is an important variable that relates to African American and Hispanic segregation, except in the West. Other demographic variables, such as percent African American and median age, relate to segregation between Hispanics and African Americans. In terms of housing, the percent of African Americans with no mortgage is very important in accounting for African American-Hispanic segregation for cities in the Northeast, South, and for the nation as a whole. This possibly suggests that more “rooted” African Americans are tied to an area, which will have less housing up for sale or rent for the more recent arriving Hispanics, who will live in other sections of the city.

Northeast	South	West	Nation
1. Log 10 of Metro Population (0.389) 2. Percent of Occupied Housing, African American Head of Household (0.329) 3. Percent of African Americans with No Mortgage (0.323)	1. Log 10 of Metro Population (0.441) 2. Percent of African Americans with No Mortgage (0.364) 3. Percent Employed, Wholesale Trade (0.353) 4. Median Age, Hispanic (0.316) 5. Percent with High School Education (0.270) 6. Median Age, African American (-0.255) 7. Percent of Hispanics with High School Education (-0.231) 8. Percent Employed, Agr., Forestry, & Mining (-0.200) 9. Percent of Hispanics with Bachelors (0.189)	1. Percent of Hispanics with High School Education (-0.500) 2. Percent of Hispanics with Grad School Education (-0.320)	1. Log 10 of Metro Population (0.625) 2. Percent of African Americans with No Mortgage (0.325) 3. Percent African American (0.236) 4. Percent Employed, Agr., Forestry, & Mining (0.210) 5. Percent with High School Education (0.142)

Table 5.39. Summary of significant variables, ranked from most important to least important (by beta weight), most commonly found to be related to African American-Hispanic segregation by region and for the nation as a whole.

African American and Hispanic segregation levels also are related to education variables, especially in the West. These education variables include: percent with only a high school education, and the percents of Hispanics with a high school education, bachelors and graduated school degrees. The higher the city's proportion of people with only a high school diploma, the more segregated African Americans and Hispanics were, indicating that the more working class cities were more segregated between these two ethnic groups, especially in the South. These results suggest that SES variables, such as education, also play a prominent role in the residential segregation between ethnic minority groups.

Overall, a key finding from this dissertation is that what specifically “explains” or accounts for the segregation in one region can be different than what specifically “explains” or accounts for segregation among cities in another region. Given that there are regional differences in ethnic residential segregation levels across the U.S., how do the patterns of segregation within a metro area compare to national patterns? Does the case study of Omaha, Nebraska relate well to national or regional segregation trends, or are the patterns and consequences of Omaha segregation different than what is found elsewhere? The next two chapters detail the results and analysis of ethnic residential segregation research at the local scale for Omaha, Nebraska.

CHAPTER 6: PATTERNS OF SEGREGATION IN OMAHA, NEBRASKA

Introduction

Investigating segregation differences between metropolitan areas throughout the United States was a good overview of national and regional trends, but the analysis did not "explain" the patterns and consequences of segregation within cities. In switching the scale of analysis from a national and regional to local level, a case study can complement findings regarding national trends in segregation. A case study is useful for investigating the spatial arrangements and impacts of living in ethnically segregated neighborhoods. The following two chapters analyze the patterns of segregation and consequences of living in segregated neighborhoods in Omaha, Nebraska.

Analysis at the national scale cannot answer questions pertaining to a particular city, as local characteristics may not match national trends. Are there different ethnic residential patterns in the selected city? What are the levels of segregation within that city? If segregation exists, what explains these residential patterns? The first section of this chapter involves the mapping of ethnic residential patterns in Omaha, Nebraska. This cartographic analysis indicates whether ethnically concentrated neighborhoods can be observed for Omaha in 2000. The second portion of the chapter measures the segregation differences between Whites, African Americans, Hispanics, and Asians in Omaha. This analysis reveals which ethnic groups are the most and least residentially isolated from the other ethnic groups. The final section of the chapter "explains" the differences in segregation between ethnic groups in Omaha using statistical techniques. The outcome of this chapter reveals which variables, or factors, are most related to higher and lower segregation levels between each ethnic group pairing in Omaha.

Ethnic Residential Patterns in Omaha

Geographic Information System (GIS) and cartographic software allow for the mapping of ethnic group percentages calculated from U.S. Census data at the census tract level. The ethnic groups included are African Americans, Hispanics, Asians, and non-Hispanic Whites (referred to as “White”). However, caution is needed when studying these ethnic group categories. There may be ethnic subgroup differences in residential patterns on the basis of national origin (e.g. country in Asia) that are linked to socioeconomic differences (e.g. income, levels of segregation, etc.) between the ethnic sub-groups. Li (1998) found differences in the residential locations of Chinese from Taiwan and Hong Kong and Chinese from China and Indochina in Los Angeles. Residential patterns of ethnic subgroups may involve different concentrations in Omaha that are masked when mapping more general, all-inclusive ethnic categories. Thus, maps of Asian and Hispanic subgroups are produced for Chinese, Filipino, Japanese, Vietnamese, Mexican, and non-Mexican Hispanics.

African Americans in Omaha

For Douglas County (Omaha), Nebraska in 2000, there were 52,821 African Americans, which constituted 11.4% of the total population (U.S. Census 2000). Instead of being evenly distributed throughout Omaha, African Americans are concentrated in certain neighborhoods of the city (Figure 6.1). The highest concentrations of African Americans, with 15 census tracts over 50% African American (these data were queried in ArcView GIS), are located east of 72nd Street and north of Dodge Street—an area referred to as “North Omaha.” This concentrated area is roughly bounded by North 16th Street in the east, North 60th Street in the west, Cuming Street in the south, and Redick

Avenue in the north. African Americans are residentially concentrated in urban space; the most concentrated tract (with an African American proportion of 87.6%) is more than seven times the African American percentage for the county as a whole (11.4%). Conversely, there are many neighborhoods that did not have a large African American presence in Douglas County, with 31 out of the 146 census tracts (or 21.2% of the tracts) having less than 1.0% African American. Analysis of African American residential patterns from 1960 to 2000 in Omaha (French 2002, 157-162) indicate African American residential growth from a core area in North Omaha toward the north and northwest. There have not been many African Americans moving to the western suburbs of Omaha; except for the census tract containing Boys Town, which is 9.1% African American.

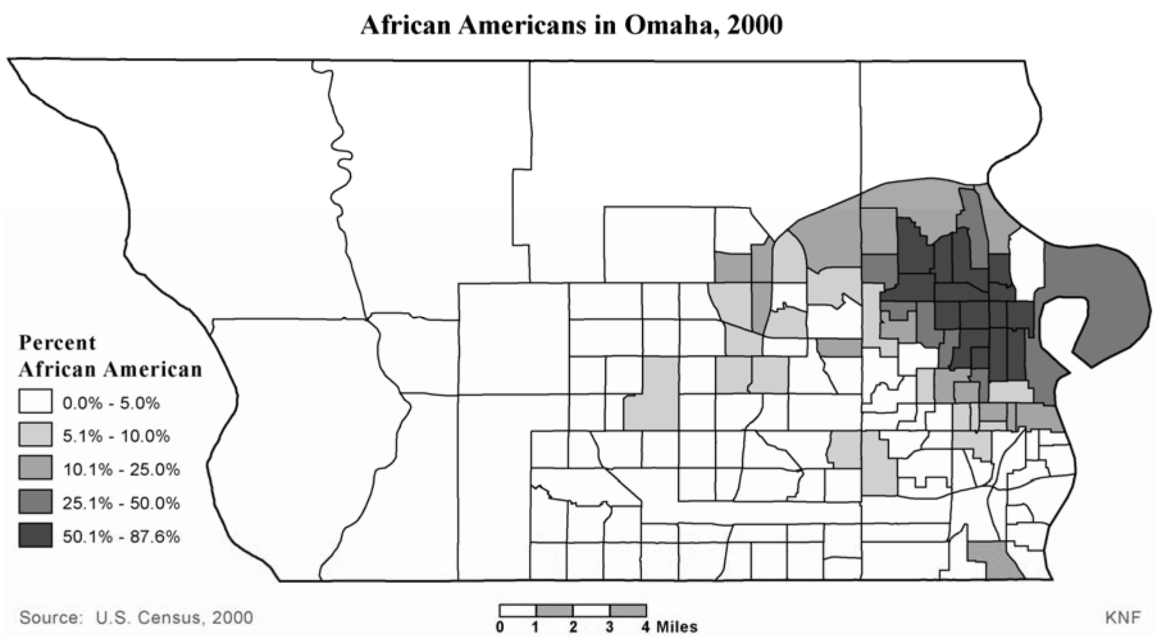


Figure 6.1. Residential patterns of African Americans in Omaha, Nebraska by census tract in 2000.

Hispanics in Omaha

In 2000, Hispanics were the second most populous ethnic minority group in Omaha at 30,928 people, constituting 6.7% of the total population in Douglas County

(U.S. Census 2000). Similar to the African American residential patterns, Hispanics are concentrated in certain neighborhoods of the city (Figure 6.2). Unlike African Americans, Hispanics are predominately located in the southeastern section of the county. The highest concentration of Hispanics, with census tracts over 50.0% Hispanic, is in "South Omaha." The Hispanic residential area is bounded by John F. Kennedy Freeway in the west, the Missouri River in the East, Q Street in the south, and B Street and Interstate 80 in the north. The highest Hispanic-concentrated tract, consisting of 55.4% of the total population, has more than eight times the county proportion of Hispanics (at 6.7%). Previous research found that Hispanic residential growth, from 1980 to 2000, occurred out from South Omaha toward the north, closer to the predominately African American neighborhoods (French 2002, 174-177).

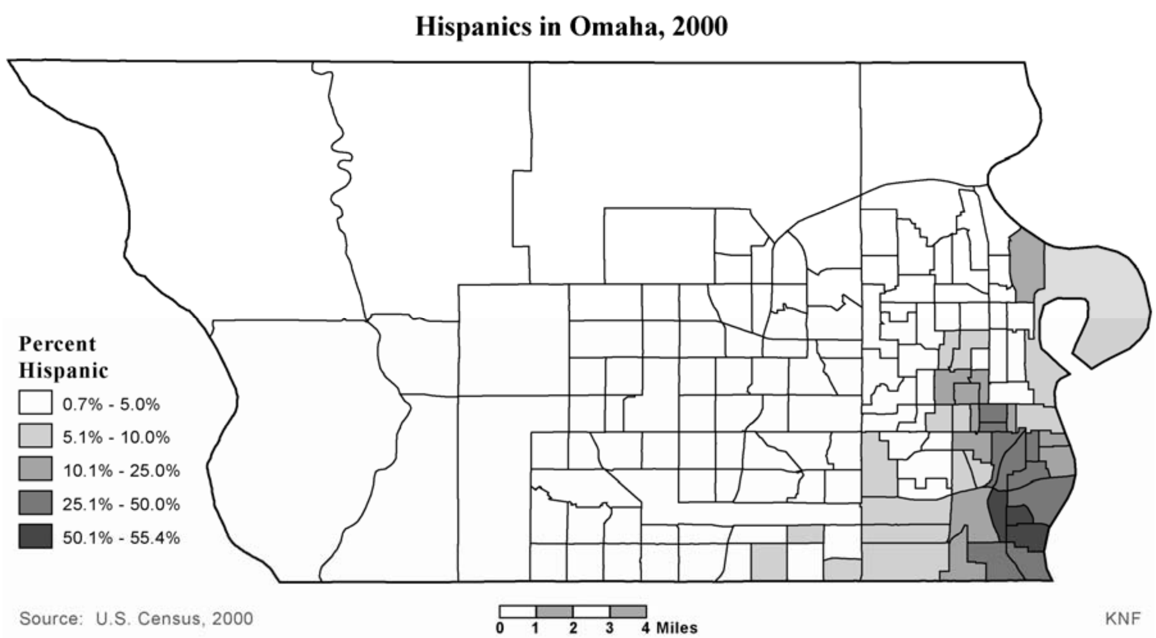


Figure 6.2. Residential patterns of Hispanics in Omaha, Nebraska by census tract in 2000.

Even though there was a recent growth of Hispanic immigrants in Omaha, there has been a historical Hispanic imprint in Omaha and Nebraska. Railroad, meat packing, and beet farming in western Nebraska were economic pull factors for Hispanics coming to Nebraska in the early 20th Century. The stockyards and meat packing plants in Omaha were located in South Omaha. In the 1910s, Hispanics lived in boarding houses near Q and R Streets, and by the 1920s, an early enclave developed along R Street from 23rd to 33rd Streets (De La Garza 2000, 6).

South Omaha grew from efforts to create stockyards and a meat packing industry near Omaha, and this industrial suburb was later annexed by Omaha in 1915. Beef was processed in Omaha and sent by rail to markets in the East, such as Chicago. Due to the dangers of working in the meat packing industry, mainly immigrants took these jobs since no one else wanted to do such dangerous work. Due to the influx of immigrants over time, cultural diversity continues to be a hallmark of South Omaha. By 1900, immigrants from Southern and Eastern European countries moved to South Omaha, creating Polish, Italian, and Czech ethnic enclaves (Fimple 1989). Even with the changing ethnic make-up of South Omaha over time, one constant has been religion. Many Hispanics, as well as most Southern and Eastern European immigrants of the past, adhered to Roman Catholicism. An interesting longitudinal study would be to analyze the change in Catholic Church enrollment by ethnicity in South Omaha.

As noted earlier, the Hispanic ethnic category includes several subgroups that differ in their countries of origin. Does the "Hispanic" residential pattern most relate to Mexicans, Cubans, or Puerto Ricans? Analyzing the top four Hispanic subgroups, by country of origin (Table 6.1), indicates that Mexicans constitute the majority of Hispanics in Omaha (Douglas County), comprising 78.9% of all Hispanics in the city. Due to the high concentration of Mexicans in Omaha, the residential patterns of Hispanic subgroups

(Figure 6.3) are for two categories: Mexican and Hispanic-not Mexican. The spatial pattern of Mexicans in Omaha closely correlates with the overall Hispanic distribution, which is not surprising since the majority of Hispanics in Omaha are Mexican. For non-Mexican Hispanics, there are no census tracts that have over 10.0% non-Mexican Hispanic populations. Also, their residential pattern does not vary much from the overall Hispanic and the Mexican residential patterns.

Hispanic Subgroup	Population, 2000	Percent of Hispanic Population
Mexican	24,396	78.88%
Puerto Rican	690	2.23%
El Salvadoran	668	2.16%
Guatemalan	388	1.25%

Table 6.1. Hispanic subgroup totals and percentages of the Hispanic population by country of origin in Douglas County, Nebraska in 2000.

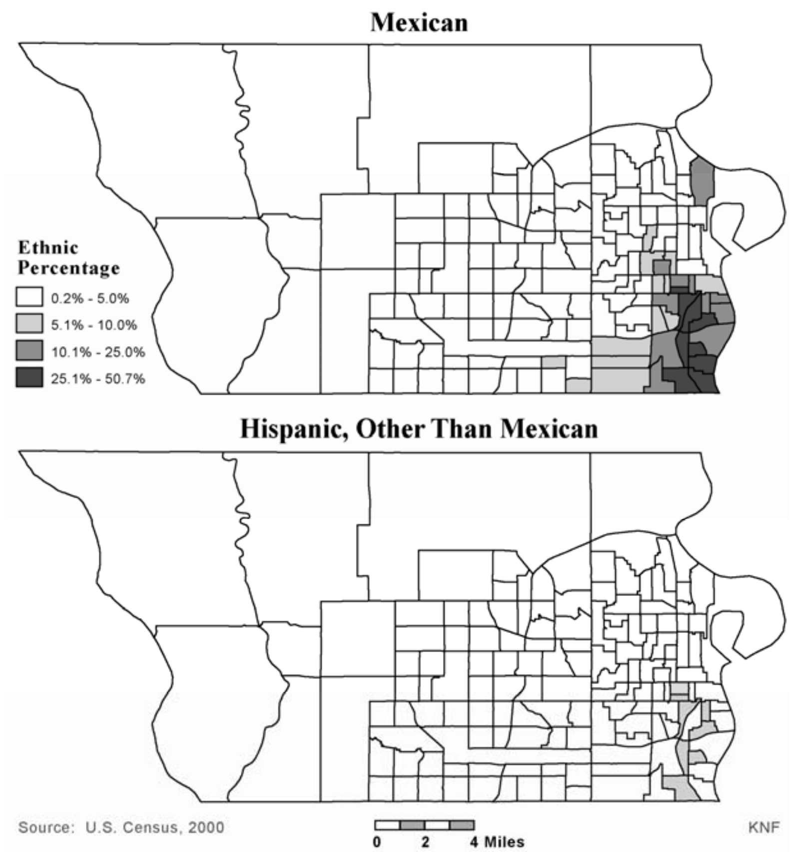


Figure 6.3. Residential patterns of Mexican and non-Mexican Hispanics in Omaha, Nebraska by census tract in 2000.

Asians in Omaha

There were 7,848 Asians living in Douglas County (Omaha), Nebraska in 2000, constituting 1.69% of the total population (U.S. Census 2000). The residential locations of Asians in Omaha (Figure 6.4) reveal two patterns: a core area and a concentration in the western suburbs. Even though Asians comprise a small proportion of the total population, there are neighborhoods that have more than the county-wide proportions of Asians. The highest concentration of Asians in a census tract in 2000 is 12.1%, which is more than seven times the Douglas County Asian proportion (1.7%). This Asian core area is located near the central business district of Omaha, and this census tract includes Creighton University. Unlike the African American and Hispanic residential patterns, there was a higher than county proportion of Asians living in the western suburbs of Omaha in 2000.

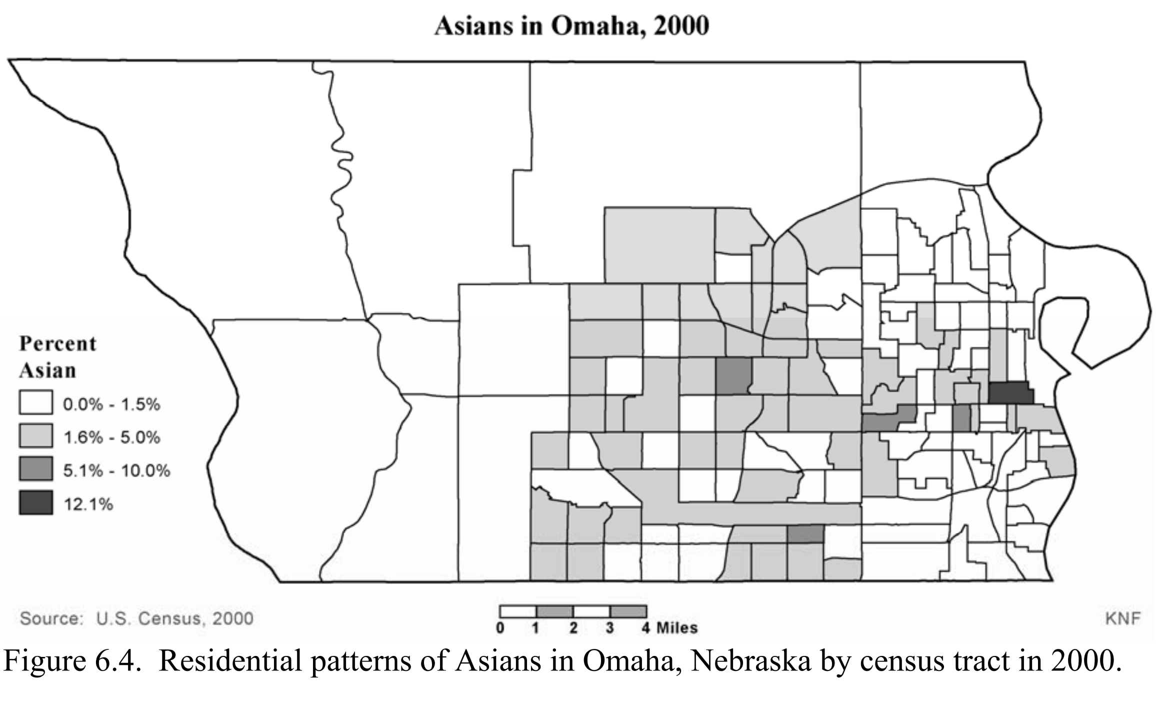


Figure 6.4. Residential patterns of Asians in Omaha, Nebraska by census tract in 2000.

There have been few historical descriptions of Asians living in Omaha. The earliest Asian residences in Omaha occurred shortly after the completion of the

Transcontinental Railroad in 1869. Immigrants from China (Canton region) found a home in Omaha, and were generally employed in laundry and restaurant businesses—there were 20 Chinese laundries and six Chinese restaurants by1890 (Greater Omaha Chamber of Commerce 2006, 22). The traditional Chinatown of Omaha was located near the intersection of Douglas and 12th Street. This intersection is still within the highest Asian-concentrated area in 2000, with 12.1% of the tract's population consisting of Asians. The first Japanese people to move to Omaha worked in the packing houses, and by 1910 there were 200 Japanese workers at the Cudahy Packing Company (Greater Omaha Chamber of Commerce 2006, 23).

As noted for the Hispanic population category, the potential exists for sub-ethnic group residential differences between Asians delineated by national origins. By looking at the foreign born populations of selected Asian subgroups (Table 6.2), Omaha has a relatively large number of foreign-born Chinese and Vietnamese. However, the Asian category for the U.S. Census of 2000 includes both the foreign-born Asian population and also Asians who were born domestically in America. Thus, there are more people with Chinese ancestry in Omaha than the table indicates by tallying only the foreign-born Chinese.

Asian Subgroup	Foreign Born Population	Percent of Foreign-Born Asian Population
Chinese	1,035	14.96%
Vietnamese	1,032	14.92%
Filipino	680	9.83%
Japanese	459	6.63%

Table 6.2. The totals and percentages of the Asian population by foreign-born population Douglas County, Nebraska in 2000. This does not include people born in the U.S. to Asian parents, which would be included in the percent Asian categories by the U.S. Census.

Given the numerous Asian ethnic subgroups, there is a potential to find varying residential patterns on the basis of country of origin. There are residential differences between Chinese, Japanese, Filipino and Vietnamese (Figure 6.5) in Omaha, even though the total numbers were small in 2000. All four selected subgroups have high proportions in the Asian core census tract (that constituted a total Asian proportion of 12.1%), yet differ in their residential patterns in the rest of the city. The Chinese residential pattern indicates “higher” concentrations in the western suburbs of Omaha along Dodge Street. Unlike the Chinese, the Vietnamese live in the eastern portions of the city, with some Vietnamese living in South Omaha. Japanese and Filipino residential distributions are scattered into a few neighborhoods in Omaha, with the latter residing more in the northwestern suburbs. The differing residential distributions of Asian subgroups indicates that caution is needed in investigating Asians as a whole. Masked under the overall Asian pattern, foreign-born Chinese are to found in the western suburbs of Omaha while foreign-born Vietnamese are more likely to be found in South Omaha.

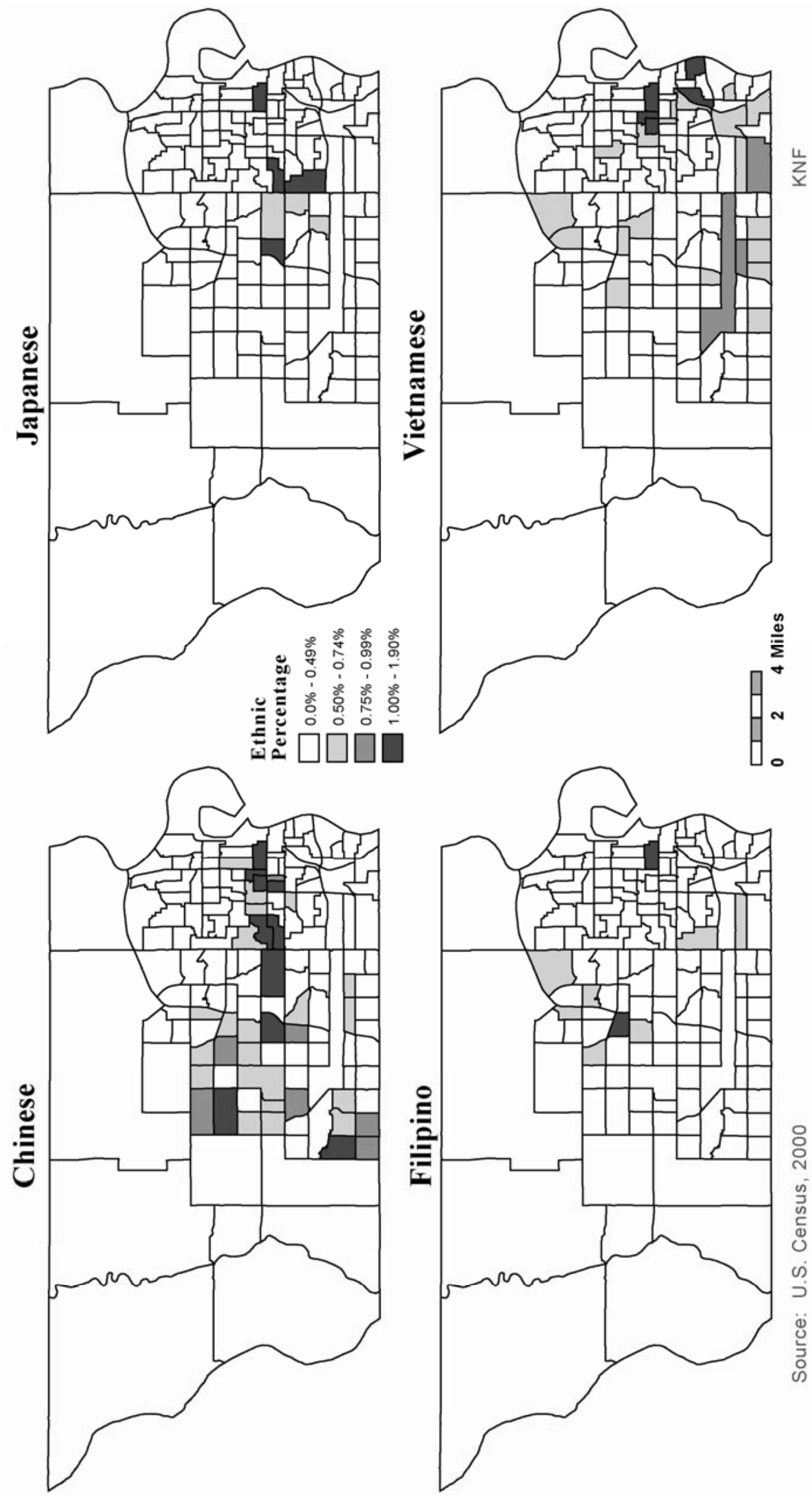


Figure 6.5. Residential patterns of ethnic-Asian subgroups in Omaha, Nebraska by census tract in 2000.

Whites in Omaha

Non-Hispanic Whites numbered 362,528 and constituted 78.2% of the total population of Omaha, Nebraska in 2000 (U.S. Census 2000). Whites were not evenly distributed in Omaha (Figure 6.6), as the highest proportions of Whites are found in the western suburbs of Omaha and in the rural western and northern sections of Douglas County. In fact, 23 out of the total 146 census tracts (or 15.8%) are over 95.0% White, all of which are west of 72nd Street (except for one rural tract in the northeast). The neighborhoods with the lowest proportions of Whites are in North and South Omaha, which are areas of African American and Hispanic residential concentrations, respectively. Whites in Omaha have followed the "White Flight" pattern, suburbanizing to the west over time (French 2002, 150-155). Even though the White ethnic category includes many people with European heritages, the residential patterns of White subgroups are not mapped.

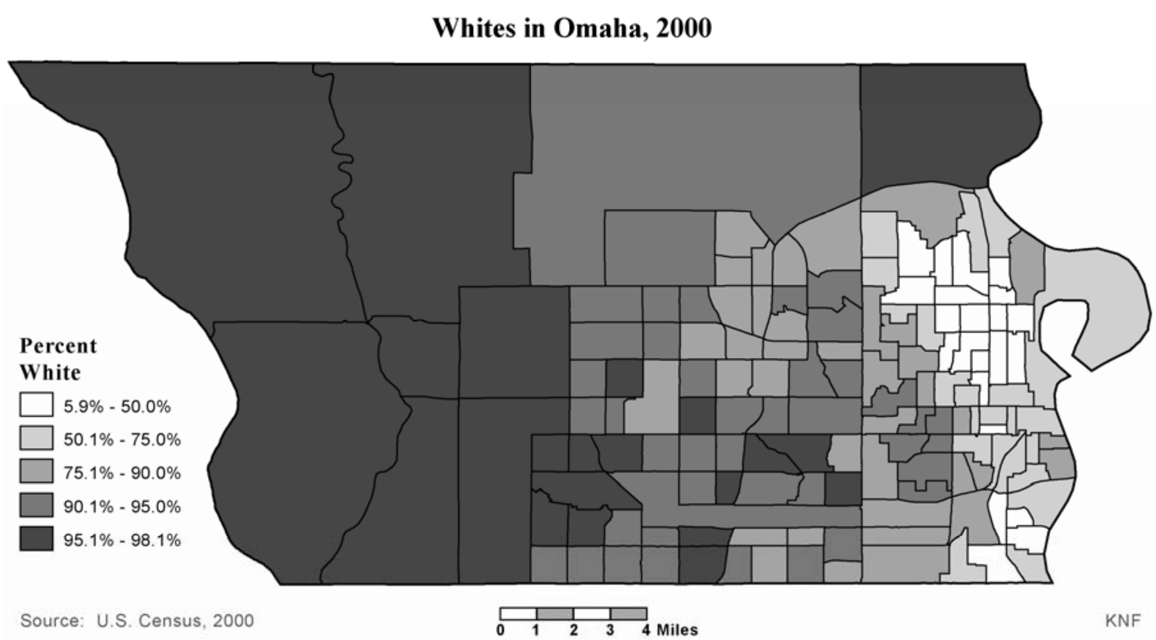


Figure 6.6. Residential patterns of Whites in Omaha, Nebraska by census tract in 2000.

Segregation Levels Between Ethnic Groups

There were differences in the levels of segregation between ethnic groups in Omaha, Nebraska in 2000 (Table 6.3). African Americans are the most segregated ethnic group, having high Dissimilarity Index levels with Whites (67.6), Hispanics (67.1), and Asians (69.1). These dissimilarity indices above 67 indicate that over 67.0 percent of African Americans, or the other ethnic group pairs, would have to move to neighborhoods of the other group to create no African American segregation in Omaha. Hispanics are the next most segregated ethnic group, with moderately-high levels of segregation with Whites (54.1) and Asians (58.1), and high segregation with African Americans (67.1). Asians are the least segregated with Whites (29.2), but had moderate- to high-levels of segregation with African Americans (69.1) and Hispanics (58.1). In terms of White segregation levels, the highest segregation levels are with African Americans (67.6), then with Hispanics (54.1), and least with Asians (29.2).

Ethnic Group	White	African American	Hispanic	Asian
White	-	67.6	54.1	29.2
African American	67.6	-	67.1	69.1
Hispanic	54.1	67.1	-	58.1
Asian	29.2	69.1	58.1	-

Table 6.3. Matrix of dissimilarity indices among ethnic group pairings in Omaha (Douglas County), Nebraska in 2000.

The analysis of the dissimilarity indices, in conjunction with maps of the ethnic residential patterns, generally indicate that Whites and Asians live near each other in Omaha, while African Americans and Hispanics live in separate, ethnically segregated neighborhoods. In general, North Omaha contains neighborhoods occupied primarily by African Americans, South Omaha has several Hispanic neighborhoods, and Western Omaha has neighborhoods occupied mainly by Whites and a few Asians. Given these ethnic residential patterns, the goal of the following section is to explain ethnic residential segregation in Omaha, Nebraska. Why do these geographic patterns exist? What variables account for the various patterns of ethnic segregation in Omaha?

Explaining Ethnic Residential Segregation in Omaha

Explaining the patterns of ethnic residential segregation in Omaha involves several research steps. The initial step was to acquire data that were anticipated to relate to ethnic residential segregation. Second, the appropriate statistical procedures were selected to analyze the variables. Lastly, the outputs of the statistical models are examined. The following sections discuss the data, the methodology, and the results obtained in an effort to explain ethnic residential segregation in Omaha, Nebraska.

Data and Methodology

Socioeconomic and housing differences between ethnic groups have been proposed as one explanation for the creation of ethnically concentrated neighborhoods. Data used in this analysis were collected from the United States Bureau of the Census, the Department of Housing and Urban Development, and from enforcement of the Home Mortgage Disclosure Act (HMDA) at the census tract level for Douglas County. Most of the data were acquired from the U.S. Census of 2000, which provides a plethora of economic, education, and housing data. Economic data, such as median household income and percent in poverty, may be associated with ethnic residential segregation. The U.S. Census tallied educational attainment levels, for instance the percent of the population over 25 years of age with only a high school degree, which may account for the segregation of a particular ethnic group. Housing data from the U.S. Census, for example the percent of occupied housing that was rented and median year the housing structure was built, also were used to relate to segregation.

Additional housing data from other sources complemented the housing data gathered from the U.S. Census. Assisted housing data from the Department of Housing and Urban Development (HUD) were collected to see if the location of public housing units correlated with ethnically concentrated areas. The data came from a HUD file: "A Picture of Subsidized Households, 2000," which includes data at the census tract level for all metropolitan areas. The data included the number of public assisted housing units from various HUD programs (e.g. low income housing tax credit, rent supplements, etc.). Also, this dataset tallied the number of Section 8 units, which historically have been the most stigmatized public housing units. Section 8 was part of the Housing and Community Development Act of 1974, which provided subsidized rent in new or renovated buildings by organizations and certificates to subsidize rent in dwellings owned by private landlords (Vale 2002, 17-18).

The illegal denial of loans by banks due a person's ethnic background, through the process of redlining, historically has partly explained the creation of ethnically concentrated residential space. Even though redlining was deemed illegal, the distribution of the denial rates of mortgage loans may still correlate with the locations of certain ethnic groups. Under the Home Mortgage Disclosure Act, enacted in 1975, banks and other lending organizations must release information on the status of mortgage loans (e.g. number of applications, loans accepted, loans denied, etc.). HMDA data were reported at the census tract level by the Federal Financial Institutions Examination Council (FFIEC) on their website (http://www.ffiec.gov/hmdafeedback/hmdaproducts.aspx). There were aggregated reports online for every year from 1999 to 2006; however data from 1999 to 2002 used the 1990 census tracts as the enumeration units (not the 2000 census tracts). Thus, the 2000 mortgage data were collected in enumeration units (1990 census tracts) that did not match the enumeration units (2000 census tracts) of the other socioeconomic data used in the analysis. The most current data enumerated at the 2000 census tract level were the 2003 HMDA data, which are analyzed to help explain patterns of ethnic residential segregation. The mortgage variable included in the analysis was the percentage of conventional- and refinanced- mortgage loans that were denied by lending institutions.

All of the data from the U.S. Census, HUD, and HMDA comprised the variables (50 in total) that were used in an effort to explain segregation in Omaha at the census tract level. However, a problem was faced in calculating and measuring segregation for each census tract. Segregation scores usually are calculated only for the city as a whole, and not for each census tract. The solution was to use a component of the dissimilarity index (DI) equation to measure segregation between two ethnic groups at the level of each census tract. Measuring the DI for the entire city involved calculating the total proportional difference between group x and group y in each census tract, or $(x_i – y_i)$. Once again, x_i was the percentage of the total x-group population in census tract i and y_i was the percentage of the total y-group population in census tract i. The absolute value of $(x_i – y_i)$ revealed the segregation between the two groups for each census tract. But it would not indicate if a tract was segregated more by group x or by group y, just that the tract was segregated. Thus, the non-absolute value of $(x_i – y_i)$ was used here as a signed proxy for segregation.

Interpreting the results of the segregation measure ($x_i - y_i$) reveal several patterns. A value of zero indicates that the total city's proportion of group x members equals the total city's proportion of group y members in census tract i, and that the tract is not ethnically segregated between the two groups. Positive values indicate that the census tract is more segregated with x-group members; conversely, negative values from the equation ($x_i - y_i$) point to a census tract that is more segregated with y-group members. The segregation scores between ethnic group pairs were calculated between African Americans, Hispanics, Asians, and Whites in Omaha. Using ($x_i - y_i$) as a tract level measure of ethnic residential segregation between two groups (dependent variable) allows it to be related to other socioeconomic variables (independent variables) using various statistical techniques at a census tract scale of analysis.

Correlation and Multiple Regression Analysis

The following statistical procedures were applied in ways similar to the methods used to explain segregation levels among metropolitan areas in America. The first step was to select independent variables that significantly correlated to the segregation differences between two ethnic groups at the census tract level. A correlation matrix was created (Appendix E) to individually correlate each socioeconomic variable to the dependent variables (segregation between each ethnic group pairing) for all 146 census tracts in Douglas County. For example, the White (x_i) - African American (y_i) segregation levels were negatively correlated (-0.743) to the percent in poverty. The negative simple correlation indicates that neighborhoods more segregated with Whites have lower proportions of people in poverty. Conversely, African American-segregated areas (with a negative difference from the $x_i - y_i$ equation) relate to neighborhoods with a higher percentage of people living in poverty. Since there were several variables significantly correlated with segregation, only the most statistically significant variables were selected for further analysis. Only the variables with correlations greater than the absolute value of 0.300 were selected (indicated in bold in Appendix E) for the multiple regression models.

Multiple regression models were used in this dissertation as an exploratory tool, and not for the usual purpose to predict values based on a sample of data. Various multiple regression equations were calculated to relate the various correlated socioeconomic variables to segregation between each ethnic group pairing. Once again an iterative kitchen sink approach was utilized, by where all correlated values were included into an initial multiple regression model. Then the least significant variable was excluded and another multiple regression model was calculated. The iteration stopped when all independent variables were significant at alpha = 0.01 or above, and there was no serious multicollinearity (VIF under 5.0). Then the influence of each independent variable on the dependent variable was examined by comparing the standardized partial regression coefficients, or beta weights, with each other. Each beta weight represents the number of standard deviational unit changes in the dependent variable (segregation measure) in relation to each standard deviation change in an independent variable, holding the influences of all other independent variables included in the equation constant. The full results of the multiple regression equations are shown in Appendix F, while the following section summarizes the multiple regression models by focusing on the coefficient of determination (R^2) and on the beta weights.

Sam Kachigan (1991, 153) noted that multiple regression is "concerned with combining the values of individual predictor variables to determine their joint contribution to the variation of a criterion variable." The variance in the dependent variable is explained jointly by all independent variables working together and not individually. In multiple regression analysis, it is difficult to measure how each independent variable explains the variation in the dependent variable since the independent variables might be to a degree correlated with each other. Partial coefficients from a multiple regression are "obtained by holding out or holding constant each of the remaining independent variables considered in the regression equation" (Blalock 1960, 328). These partial coefficients (and related beta weights) from a multiple regression equation must be interpreted differently than a simple regression between two variables. It is possible for a variable (e.g. per capita income) to be directly correlated with a dependent variable (e.g. White-Hispanic segregation) in a simple correlation, but inversely related to the dependent variable as a partial coefficient when combined with other independent variables. These potential issues occurred when dealing with various variables, and interpreting the results in multidimensional statistical space (multiple regression) is more complicated than interpreting the results in two dimensional statistical space (simple regression). Caution was used when interpreting the results of the multiple regression models explaining the statistical variance in segregation between ethnic group pairs in Omaha.

Explaining White-African American Segregation in Omaha

The tract level variance in segregation levels between Whites and African Americans in Omaha is explained very well (R^2 is 0.793) by the selected economic and housing independent variables in 2000 (Table 6.4). The most influential variable explaining African American-White segregation levels is the number of Section 8 public housing units (-0.403). The beta weight for this variable indicates that more segregated African American neighborhoods (a low, negative number from $x_i - y_i$) are places with more Section 8 housing units. Also, the neighborhoods which have proportionally more Whites and fewer African Americans tend to have less of Section 8 housing. The second most important variable relating to White-African American segregation is the percent in poverty in a neighborhood (-0.381). Higher poverty levels are found in neighborhoods that consist of segregated African Americans. The third most influential variable is the percentage of refinanced mortgage applications that were denied (-0.347); segregated African American neighborhoods have higher denial rates of refinancing of mortgages than segregated White neighborhoods.

The least influential of the significant variables relating to African American-White segregation levels relates to employment. The percents of workers living in a census tract employed in wholesale trade (0.127) and in accommodation and food services (0.264) are higher in segregated White neighborhoods. The partial regression coefficient for the percent employed in accommodation and food services was positive, yet the simple correlation with White-African American segregation was negative. An interpretation of this finding is that after controlling for the other included independent variables, some of the remaining variance is explained by a higher percent employed in accommodation/food services in White-segregated areas.

White – African American Model	$R^2 = 0.793$
Dependent Variable: Segregation between Whites (x_i) and African Americans (y_i)	
Independent Variables	**Beta Weight**
Number of Section 8 Public Housing Units	-0.403
Percent in Poverty	-0.381
Percent of Refinance Mortgage Applications Denied	-0.347
Percent Employed in Accommodation and Food Services	0.264
Percent Employed in Wholesale Trade	0.127

Table 6.4. Summary of multiple regression results for Whites and African Americans in Omaha.

Explaining White-Hispanic Segregation in Omaha

The multiple regression model accounting for Hispanic and White segregation in Omaha includes demographic, economic, housing, and educational factors (Table 6.5). This model is a better fit (R^2 is 0.863) than the model explaining White-African American segregation (R^2 is 0.793). The most influential variable, by far, explaining Hispanic-White segregation is the percent of the population over 25 years of age with less than a 9th Grade education (-0.841). Hispanic-segregated neighborhoods tend to have higher proportions of residents with less than a 9th grade education. Conversely, White-segregated neighborhoods tend to have lower percentages of inhabitants with less than a 9th grade education. A demographic variable related to White-Hispanic segregation is the median age of a census tract (0.235); segregated White neighborhoods tend to be older than segregated Hispanic neighborhoods. Neighborhoods with Hispanics and immigrants tend to be younger than the overall population of many cities, which is a pattern also found in Omaha.

White – Hispanic Model	$R^2 = 0.863$
Dependent Variable: Segregation between Whites (x_i) and Hispanics (y_i)	
Independent Variables	**Beta Weight**
Percent with Less than a 9th Grade Education	-0.841
Median Age	0.235
Per Capita Income	-0.235
Number of Public Housing Units, all programs	-0.158
Percent Employed in Construction	-0.152
Percent of Workers (over 16), Commute by Public Transportation	0.137
Median Year Structure (Housing) Built	0.135

Table 6.5. Summary of multiple regression results for Whites and Hispanics in Omaha.

There are several economic and housing differences between Hispanics and Whites that help to account for the segregation between the two groups. In terms of employment (-0.152), the more segregated Hispanics neighborhoods have a greater proportion of people working in construction. The coefficient for the median year housing structures were built (0.135) variable indicates that newer housing units are more common in segregated White neighborhoods and older housing units are more common in segregated Hispanic neighborhoods. Another housing variable, the number of public housing units (-0.158) indicates more public housing in Hispanic areas and less public housing in White areas of Omaha.

Per capita income (-0.235) differences are related to White-Hispanic segregation, as lower levels of income are found in segregated White neighborhoods, while higher income levels are found in segregated Hispanic areas. This goes against the simple correlation between White-Hispanic segregation and per capita income (0.479). Using GeoDA™ to analyze the scatter plot between White-Hispanic segregation and per capita income revealed the presence of a few poorer “White” neighborhoods in Omaha. In GeoDa™, selecting points in the scatter plot corresponded to the census tracts on a map. The census tracts that were poor and had more White-segregated areas were located in

North Omaha, where the predominant ethnic group was African American. With only a few Whites and little to no Hispanics living in North Omaha, this poor area is correlated with slightly higher White-segregated areas, helping to explain the divergence between simple and partial effects of income differences.

The final variable that accounts for the segregation between Whites and Hispanics is the percent of workers who commute by public transportation (0.137). Contrary to the simple correlation, which was -0.353, the positive partial correlation indicates that higher public transportation commuters are in White-segregated areas. Once again, this partial regression coefficient takes into account controls for all of the other independent variables acting together to explain the variance in segregation between Whites and Hispanics.

Explaining White-Asian Segregation in Omaha

The estimated multiple regression equation does not do well ($R^2 = 0.413$) in relating the selected socioeconomic variables with segregation between Whites and Asians in Omaha for 2000 (Table 6.6). Nearly 60.0 percent of the tract level variance in the White-Asian segregation levels is not explained by the variance of all included independent variables acting together. The failure to account for White-Asian segregation is perhaps related to the fact that these two groups are not strongly segregated from one another (with a DI of 29.2). If there were few differences or variances in segregation with most ($x_i – y_i$) values near zero, then the multiple regression equation does not have a large variation in the dependent variable to associate with the variations in the independent values. Only three statistically significant socioeconomic variables relating to housing and occupation are included in the White-Asian segregation equation.

The most influential factor explaining Asian-White segregation is the percent of occupied housing that are rented (-0.529). The Asian-segregated areas had higher percentages of renter-occupied housing, while Whites-segregated areas had lower renter percentages. The next significant variable is the percent employed in education (-0.358), for which the higher proportions are found in Asian-segregated neighborhoods. GeoDa™ was used to link a scatter plot of White-Asian segregation ($x_i - y_i$) and percent employed in education with census tracts locations. The neighborhoods with high Asian-segregation and high education employment levels are found near Creighton University and in the neighborhoods including the University of Nebraska-Omaha. Actually, the census tract containing Creighton University has 37.8% of its population working in education (the next highest tract was 17.8%) and 12.1% of the population here are Asian (the highest percentage in Omaha). The least influential significant factor relating to White-Asian segregation is median age (0.217). The neighborhoods with an older population are White-segregated areas, while younger areas are places with Asian concentrations.

White – Asian Model	$R^2 = 0.413$
Dependent Variable: Segregation between Whites (x_i) and Asians (y_i)	
Independent Variables	**Beta Weight**
Percent of Renter Occupied Housing	-0.529
Percent Employed in Education	-0.358
Median Age	0.217

Table 6.6. Summary of multiple regression results for Whites and Asians in Omaha.

Explaining African American-Hispanic Segregation in Omaha

Explaining the segregation between ethnic minority groups provides an alternative to most earlier segregation research which only compared ethnic minority groups with Whites. The variation in segregation levels between African Americans and

Hispanics is fairly well accounted for ($R^2 = 0.700$) by several included socioeconomic variables (Table 6.7). Positive beta weights indicate variables that are more related to African American-segregated areas, while negative values indicate variables more related to Hispanic-segregated places. The most influential variable relating to African American-Hispanic segregation levels is the percentage of a census tract with less than a 9th grade education (-0.582). Similar to the White-Hispanic multiple regression model, higher proportions of adults with less than a 9th grade education tend to be found in areas with higher Hispanic segregation. The next influential variable is the number of Section 8 public housing units (0.438), where higher subsidized housing is found in areas where African Americans are segregated from Hispanics.

African American – Hispanic Model	$R^2 = 0.700$
Dependent Variable: Segregation between African Americans (x_i) and Hispanics (y_i)	
Independent Variables	**Beta Weight**
Percent with Less than a 9th Grade Education	-0.582
Number of Section 8 Public Housing Units	0.438
Percent Employed in Wholesale Trade	-0.198
Percent Employed in Public Administration	0.192
Percent Employed in Admin. and Support and Waste Mgt. Services	0.183

Table 6.7. Summary of multiple regression results for African Americans and Hispanics in Omaha.

The other significant independent variables relate to the percent employed in various industries: wholesale trade (-0.198), administration and support and waste management services (0.183), and public administration (0.192). Greater proportions working in wholesale trade are found in more Hispanic-segregated city sections. In contrast, higher percentages of people working in administration and support, waste management, and public administration are found in areas with higher African American segregation.

Explaining African American-Asian Segregation in Omaha

The model explaining African American-Asian segregation levels in Omaha (Table 6.8) indicates a very high correlation (R^2 = 0.741) with several included socioeconomic variables. The most important variables in explaining African American-Asian segregation are found to be related to housing. The percentage of refinanced mortgage loans that were denied (0.498) and the number of Section 8 public housing units (0.427) are the most influential variables. The higher mortgage denial rates and greater numbers of Section 8 housing are located in more African American-segregated areas. These two housing variables are also significant in explaining White-African American segregation patterns in Omaha, which is sensible since Whites and Asians are not very residentially segregated from one another.

Educational and employment variables are also related to African American-Asian segregation levels in Omaha in 2000. The higher proportions of people with only a high school education (0.242) are found in African American-concentrated areas. The higher percents employed in administrative and waste management services (0.198) and in public administration (0.159) also are located in African American segregated places. A variable that goes against convention is median household income (0.419), since higher household incomes are found in African American-segregated neighborhoods. The simple correlation of household income and African American-Asian segregation is negative (-0.416), yet when combining this independent variable with the other variables the beta weight turns positive. Once again, a multiple regression model reveals that a simple correlation is different in sign than a partial correlation.

African American – Asian Model	R^2 = 0.741
Dependent Variable: Segregation between African Americans (x_i) and Asians (y_i)	
Independent Variables	**Beta Weight**
Percent of Refinance Mortgage Applications Denied	0.498
Number of Section 8 Public Housing Units	0.427
Median Household Income	0.419
Percent with only a High School Education	0.242
Percent Employed in Admin. and Support and Waste Mgt. Services	0.198
Percent Employed in Public Administration	0.159

Table 6.8. Summary of multiple regression results for African Americans and Asians in Omaha.

Explaining Hispanic-Asian Segregation in Omaha

The variance in residential segregation between Hispanics and Asians (Table 6.9) is statistically explained very well (R^2 = 0.820) by several included socioeconomic variables working together. Positive beta weights indicate variables higher in more Hispanic-segregated, while negative beta weights indicate variables higher in segregated Asian sections. The most influential variable is the percent of the population over 25 with less than a 9th grade education (0.590); less educated persons tend to be found in places with Hispanic segregation. This variable is also statistically significant in both the White-Hispanic and the African American-Hispanic models.

Other significant variables include demographic, employment, and housing characteristics. The higher average family size (0.206) of a census tract is related to more segregated Hispanic sections of Omaha, while concentrated Asian areas tend to have smaller family sizes. Segregated Hispanic areas were have higher percentages employed in construction (0.192) and Asians segregated areas have more employed in education (-0.122). In terms of housing, Asian segregated areas have a higher median year the structures were built (-0.254) than segregated Hispanic places. Much housing in the western suburbs was built later than housing in South Omaha, and relatively higher Asian percentages in the west are correlated with the newer portions of the city. Hispanic segregated areas tend to have a higher number of public housing units (0.215), when compared to Asian segregated areas.

The second most influential variable is the percentage in poverty (-0.327), in which neighborhoods with higher proportions in poverty are Asian segregated neighborhoods. This contrasts with the simple correlation (0.332) between percent in poverty and Hispanic-Asian segregation. Once again, it is difficult to understand why this switch from simple to partial relationships occurred.

Hispanic – Asian Model	$R^2 = 0.820$
Dependent Variable: Segregation between Hispanics (x_i) and Asians (y_i)	
Independent Variables	**Beta Weight**
Percent with Less than a 9th Grade Education	0.590
Percent in Poverty	-0.327
Median Year Structure (Housing) Built	-0.254
Number of Public Housing Units, all programs	0.215
Average Family Size	0.206
Percent Employed in Construction	0.192
Percent Employed in Education	-0.122

Table 6.9. Summary of multiple regression results for Hispanics and Asians in Omaha.

Summary of Patterns of Ethnic Residential Segregation in Omaha

One of the main goals of this dissertation is to identify if ethnic groups live in distinctively different sections of Omaha and to measure the segregation between ethnic-group pairs. This study found that Omaha is residentially divided along ethnic lines in 2000. North Omaha has a higher proportion of African Americans, South Omaha tends to be concentrated with more Hispanics, and the western suburbs are where Whites and Asians resided. The dissimilarity index calculations reveal that African Americans are the most residentially segregated ethnic minority group from Whites, followed by

Hispanics, and Asians. The levels of residential segregation between ethnic minority groups are moderate to high in Omaha.

Explaining the ethnic residential segregation between each pair of ethnic groups in Omaha involved examining several socioeconomic variables. The most influential neighborhood characteristic relating to White-African American segregation was found to be Section 8 housing. Segregated African American areas had higher numbers of Section 8 public housing units. The variable that affected White-Hispanic segregation the most was the percent of the tract with less than a 9^{th} grade education. The neighborhoods with higher proportions of Hispanics are also areas with higher proportions of people with less than a 9^{th} grade education. The variable that was most related to White-Asian segregation was the percentage of renter occupied housing, in which Asian segregated areas had higher proportions of housing that were rented.

The independent variables used in these multiple regression equations do not include ethnic-specific characteristics. Due to confidentiality issues, ethnic-specific data are not available for every census tract in Omaha and multiple regression models cannot be calculated. If a census tract had one Hispanic person, publicly revealing information about this person would violate that person's privacy—thus certain data were not reported for every tract. However, ethnic-specific data are provided in tracts with higher ethnic populations, since privacy issues are avoided. Thus, comparisons between ethnically-concentrated areas can be undertaken—perhaps revealing if there are consequences of living in ethnically segregated neighborhoods in Omaha. The next chapter examines several ethnic-specific measures that allow for more careful comparisons between the ethnic groups.

CHAPTER 7: CONSEQUENCES OF SEGREGATION IN OMAHA, NEBRASKA

Introduction

The fact that Omaha has been found to be residentially divided into ethnic neighborhoods may have consequences of for those living in these urban settings. If indicators of quality of life (e.g. poverty levels, high educational attainment, etc.) are not evenly distributed in Omaha in 2000, then this social inequality may interrelate with areas that are ethnically segregated. The goal of this chapter is to analyze the consequences of living in ethnically-concentrated neighborhoods.

Quality of Life

Comparing the quality of life between ethnically-concentrated neighborhoods involves the problem of defining and measuring quality of life. The term quality of life does not have a universally accepted definition, and thus has a diversity of meanings (Dissart and Deller 2000 and Randall and Morton 2003). Depending on how researchers define "quality of life," the results from analyses can vary from one study to the next due to how "quality of life" is operationalized. Adding a geographic dimension of scale can also affect the results of quality of life studies, as there may be differences in measuring the quality of life for individuals, neighborhoods, cities, states, and nations. Given the various definitions and contexts of "quality of life," researchers have related several indicators (e.g. education, income, and other socioeconomic characteristics) to the concept.

Hirschman (1989) stated that researchers should take note that opinions regarding the issue of quality of life are subjective. Relevant variables cannot be restricted to GNP or household income alone. Also, ideas of what constitutes or affects quality of life vary across the globe; so as Diener and Suh (2000, 4) noted, researchers "encounter the vexatious question of cultural relativism." Thus, someone in China could have different ideas of what constitutes their quality of life than someone in Australia. However, there may be similarities in life satisfaction across cultures; as Dissart and Deller (2000, 136) noted, "a person's quality of life is dependent on the exogenous (objective) facts of his or her life and the endogenous (subjective) perception he or she has of these factors." Thus, even though what constitutes quality of life is up to the researcher to define, there can be measurable variables that are relatable to the values of people everywhere.

Quality of Life and Education

Various studies have investigated how quality of life related to educational attainment. Haring et al. (1984) studied whether educational attainment had an influence on subjective well-being, and were able to determine that educational attainment is positively linked to subjective well-being. They also found that a person's subjective well-being is more influenced by a person's occupational status than by income. Reynolds and Ross (1998) found that people with higher levels of education not only experience better physical and mental health, but also have lower levels of morbidity, disability, and mortality. Education improves well-being by providing better access to full-time work, greater access to more fulfilling employment that leads to better psychological and physical health, and to less economic hardship. In a random sample mail survey of 2,000 residents in West Virginia, Bukenya et al. (2003) found that quality of life satisfaction increased with higher income and education status.

Geographers add a spatial dimension to measuring quality of life, as access to certain services can increase the quality of life of people depending on where they live.

In terms of education, differences in educational quality exist between inner city and suburban school districts. Friedman and Rosenbaum (2001) found that people with a higher education or income can choose to locate themselves in places that reflect their position in society, usually in the suburbs. Poor people with little education or choice are "forced" to live in locations that are less than ideal, which leads to a question for this research: does educational attainment relate to the ethnic make-up of residential neighborhoods in Omaha?

Quality of Life and Income

Research regarding the effects of income on a person's quality of life has provided mixed results. Bukenya et al. (2003) found that the quality of life of West Virginians increased with income and decreased with higher unemployment. In a cross-national study, Easterly (1999) compared per capita income and quality of life between many nations. The data on income levels were for 1960, 1970, 1980, and 1990, with 81 indicators on the quality of life, categorized in seven areas (individual rights, war, education, health, transport, class and gender, and "bads"). The results of the analysis indicated that 61 of the 81 quality of life indicators have significantly positive relations with income, while only 12 of the 81 indicators are negatively related to income. In general, these findings related to "economic theory," which "suggest[s] that individuals with higher incomes are more likely to be satisfied with life and have better health" (Bukenya et al. 2003, 289). With income as an indicator of quality of life, the distribution of income levels in Omaha perhaps may correlate with ethnically-segregated neighborhoods.

Caution must be used when using income as a measure of quality of life, in that higher income levels are not the only factors which are related to “happiness.” Under Veenhoven’s Livability Theory, “income increase[d] SWB (social well-being) only insofar as it allows people to meet their inborn needs” (Diener and Suh 2000, 187). Thus, there tends to be a plateau of life satisfaction, where after a certain level of income is met there is little increase in life satisfaction. At the country scale, there were observed “surprisingly mixed changes in quality of life as per capita income increased” (Easterly 1999, 4). For example, U.S. life expectancy declined during an economically productive period of time (1830 to 1880), while life expectancy rose during the Great Depression. Noddings (2003) also stated that after getting above the poverty level there is little additional increase in happiness with an increase in wealth. This exhibited the Easterlin Paradox, in which “surveys of self-reported happiness do not show increasing happiness as per capita income rises over time” (Easterly 1999, 4).

Quality of Life and Socioeconomic Status

The previous research summarized above indicates that socioeconomic status (SES) may prove to be a useful, but not a perfect, proxy for quality of life. Thumboo et al. (2003) defined SES as educational attainment and housing type, and related it to quality of life. They found that in Singapore, the SES was positively related to health indicators of quality of life. Due to the various findings from previous studies this dissertation has operationalized neighborhood quality of life using socioeconomic variables dealing with economic, educational, and housing characteristics. The geographic analysis is conducted to relate ethnic residential segregation with socioeconomic status, which is regarded as a measure of quality of life. The advantage of this methodology is that it attempts to understand the actual consequences of living in ethnically-concentrated neighborhoods in Omaha. Survey results would have been useful, but looking at the actual outcomes (e.g. maps of educational attainment) detail quality of life variations better than a small sample. Nonetheless, quality of life indicators do not reveal the "happiness" of residents in each neighborhood, an issue for which a survey would be more useful.

Consequences of Living in Ethnically Segregated Neighborhoods in Omaha

Analyzing the consequences of segregation in Omaha involved gathering and analyzing various data. The first section of this portion of the dissertation cartographically analyzes the geographic distribution of economic, educational, and housing factors in Omaha. The second section undertakes comparisons of quality of life measures between ethnically-concentrated neighborhoods. The third section cartographically and statistically analyzes school quality in terms of the ethnic make-up of public schools. The fourth section deals with ethnic businesses and their locations. And the fifth section cartographically examines ethnic organizations and religious centers in relation to the locations of ethnically-segregated neighborhoods. The overall objective of this chapter is to assess the consequences, as measured by quality of life indicators and social institutions, of living in ethnically-divided neighborhoods in the city of Omaha.

Socioeconomic Consequences

Mapping the spatial distributions of selected socioeconomic data can reveal areas of advantage or disadvantage in Omaha for 2000. The maps of various economic, education, and housing data indicate the extent of spatial disparities in the city. These distributions can then be spatially associated with ethnic residential distributions to see whether certain ethnic groups have higher or lower qualities of life.

Economic Patterns

In 2000, the differences in income levels varied spatially within Omaha. A map of household income (Figure 7.1) reveals that the western suburbs of Omaha are wealthier than neighborhoods east of 72nd Street. The lone exception is the census tract encompassing the University of Nebraska-Omaha campus and the historic Dundee neighborhood (centered around 60th and Dodge). Of the 19 census tracts having a median household income over $70,000, 14 of the census tracts (or 74.7%) are located west of 132nd Street. Conversely, the poorer neighborhoods with the lowest median household incomes are located in the eastern sections of the city, in the areas of North and South Omaha.

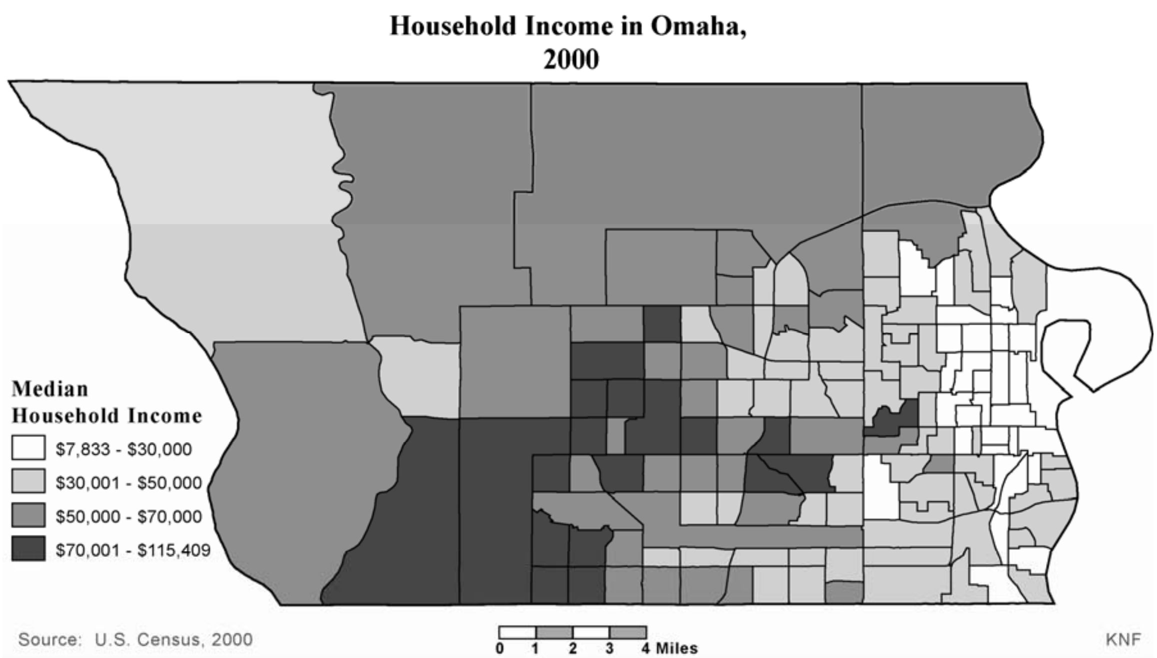


Figure 7.1. Median household income in Douglas County (Omaha), Nebraska in 2000.

As expected, an eastern Omaha versus western Omaha duality is found when viewing a map of poverty levels in the city (Figure 7.2). The overall poverty level in

2000 for Douglas County stood at 9.8%. The highest poverty levels are located in North Omaha, with several neighborhoods having over 30.0% of their residents (or three times the county-wide level) living in poverty. 36 of the 39 (or 92.3%) census tracts with over 15.1% of the population in poverty are located east of 48th Street, while the western suburbs generally show poverty levels under 5.0% of the population.

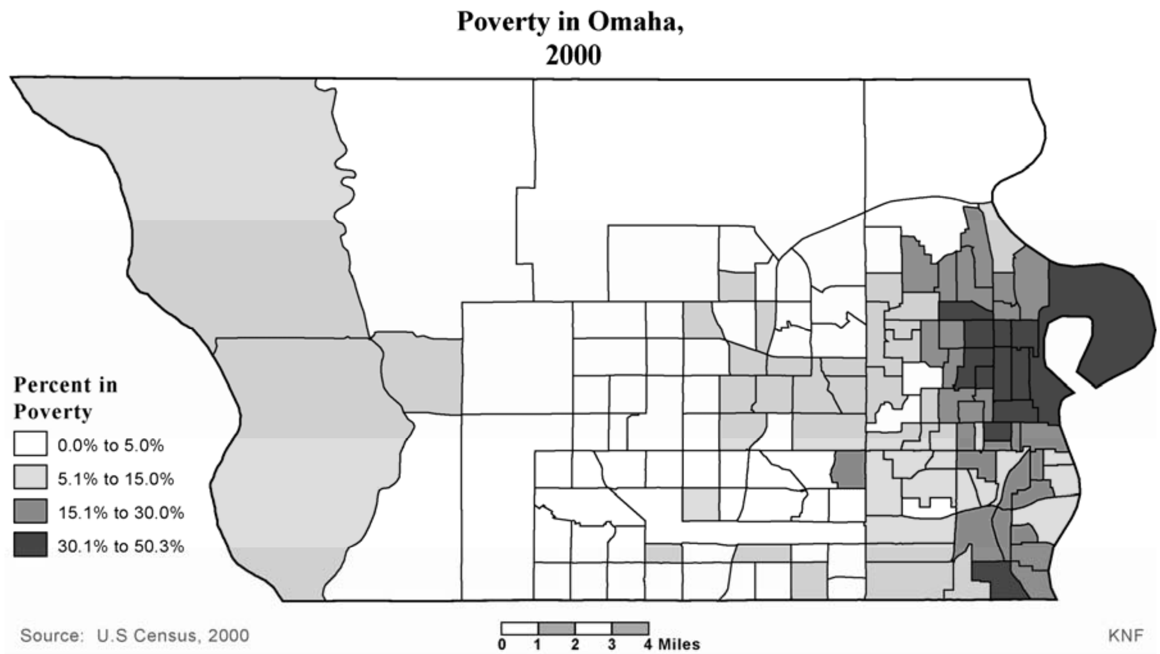


Figure 7.2. Poverty levels in Douglas County (Omaha), Nebraska in 2000.

The distribution of unemployment (Figure 7.3) mirrors the spatial patterns of household income and poverty. The overall unemployment level was 3.9% in Douglas County in 2000. The highest levels of unemployment, with over 7.6% of the labor force aged 16 and over not working, were located in North Omaha, with the lone exception of one census tract in South Omaha. Higher unemployment levels are located in areas that are predominantly African American, while lower unemployment levels are located in areas that are predominantly White.

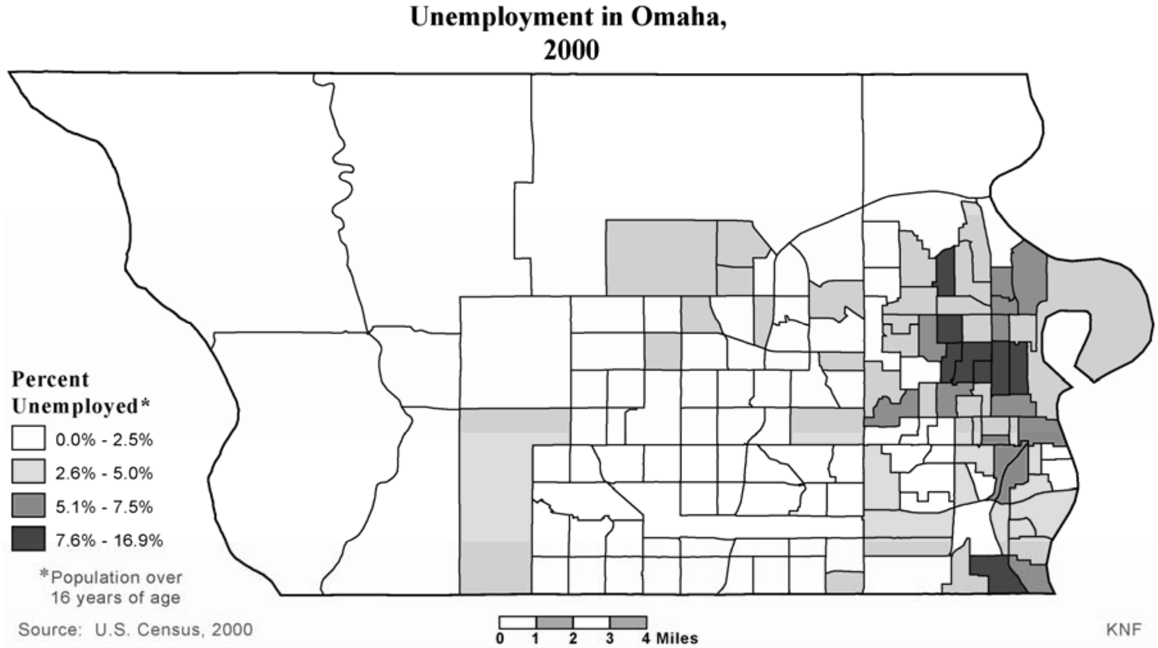


Figure 7.3. Unemployment in Douglas County (Omaha), Nebraska in 2000.

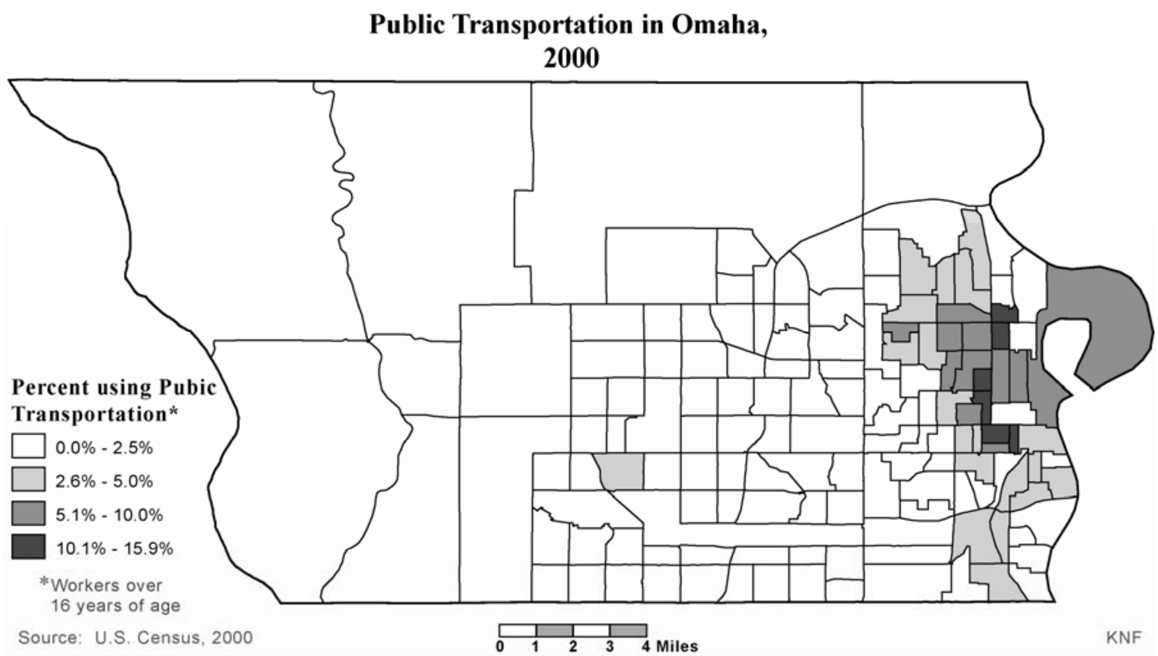


Figure 7.4. Public transportation commuters in Douglas County (Omaha), Nebraska in 2000.

How people travel to work is perhaps related to employment, since workers in certain neighborhoods must rely on public modes of transportation. Most public transportation commuters were located in the northeast and east-central portions of the city (Figure 7.4). Due to the reliance on public transportation, the commuting times for workers residing in North Omaha are relatively high (Figure 7.5). An interesting pattern existed in 2000, since commuting times are similarly high in sections of North, South, and West Omaha. However, the mode of transportation is probably different, with more public transportation use in the North, and more private car use in the western suburbs. In southeast Omaha, which has a higher Hispanic population, there was low public transportation usage but high commute times (unlike in the African American neighborhoods). This suggests that people employed in these neighborhoods journeyed to work further distances using private transportation.

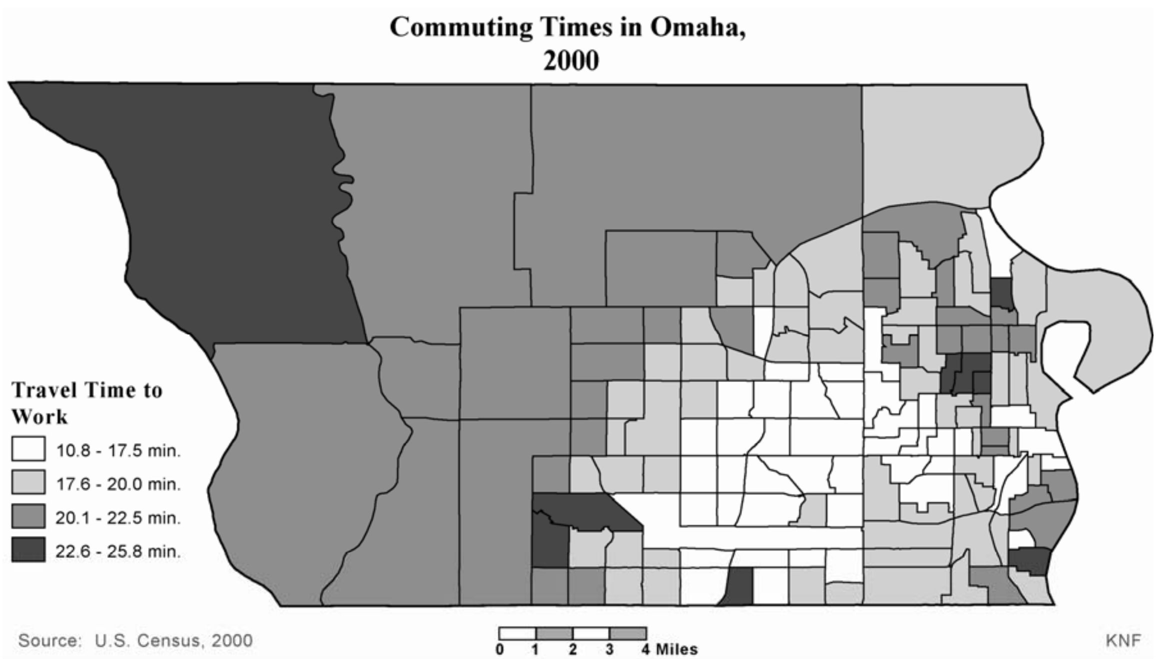


Figure 7.5. Commuting time to work in Douglas County (Omaha), Nebraska in 2000.

Education Patterns

Educational attainment levels varied across neighborhoods in Omaha in 2000. The highest proportions of people over twenty-five with less than a 9th grade education were located in the southeastern neighborhoods of Omaha (Figure 7.6). A possible reason for the low educational attainment in these tracts is that they contain immigrants who entered the U.S. as young adults and who did not have the same educational chances as did people born in America. There was a spatial association in 2000 between the foreign-born population (Figure 7.7) and the population with less than a 9th grade education. In comparing the Hispanic residential distribution map in Chapter Six with these maps, many of the foreign-born people likely were from Spanish-speaking countries, mainly Mexico.

The neighborhoods with the highest proportions of people with only a high school degree, or high school equivalency, are found mainly in North and South Omaha (Figure 7.8), which includes areas in which are predominantly African-American and Hispanic, respectively. Other areas that also have a higher proportion of only high school educated people are located in the rural parts of Douglas County in the west. This could be a proxy of the rural working class, as many people with only a high school education do not work in white-collar jobs that tend to pay more. Some neighborhoods with the lowest proportions of only high school educated people are found in the western rural-suburban fringes of Omaha.

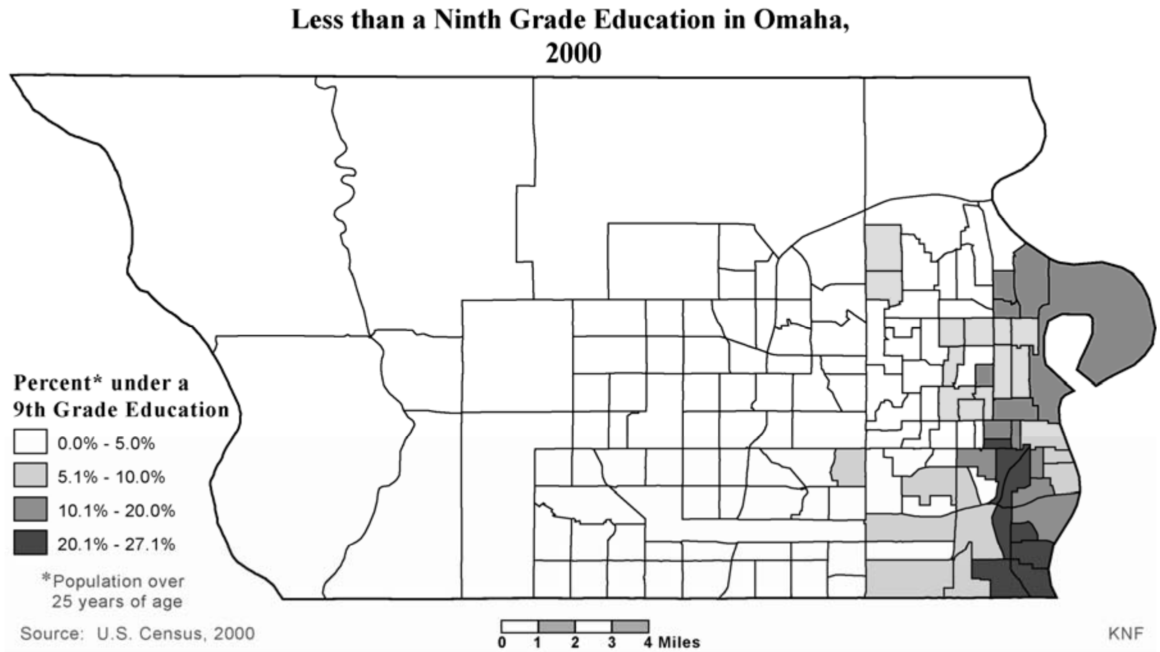


Figure 7.6. Less than a ninth grade education in Douglas County (Omaha), Nebraska in 2000.

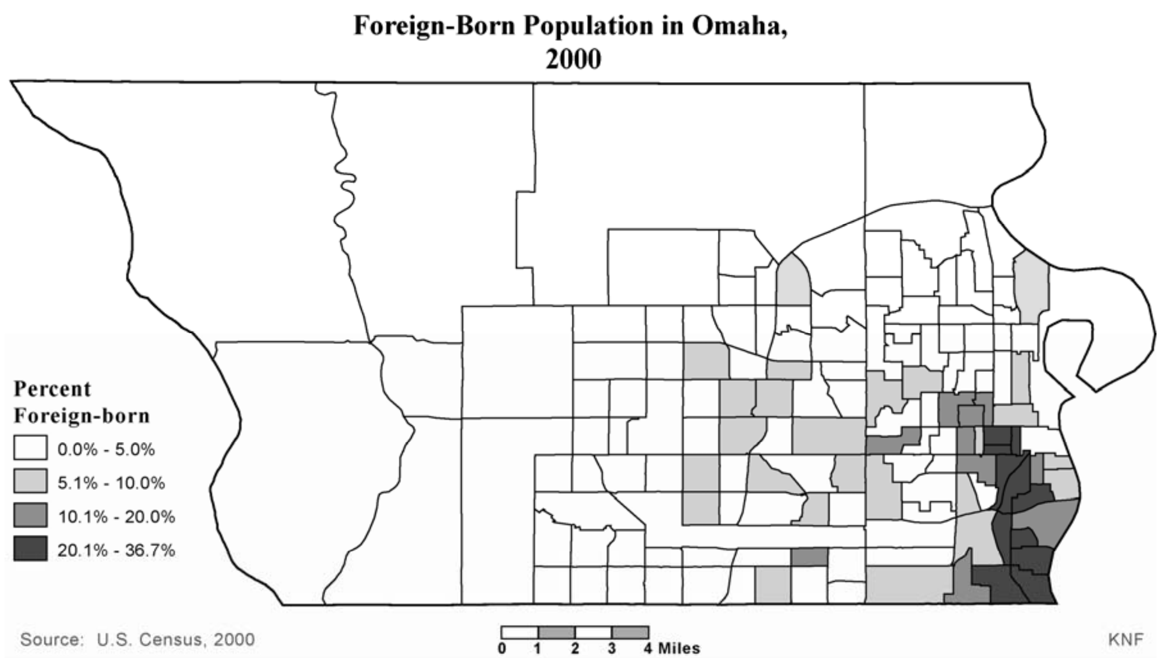


Figure 7.7. Foreign-born population in Douglas County (Omaha), Nebraska in 2000.

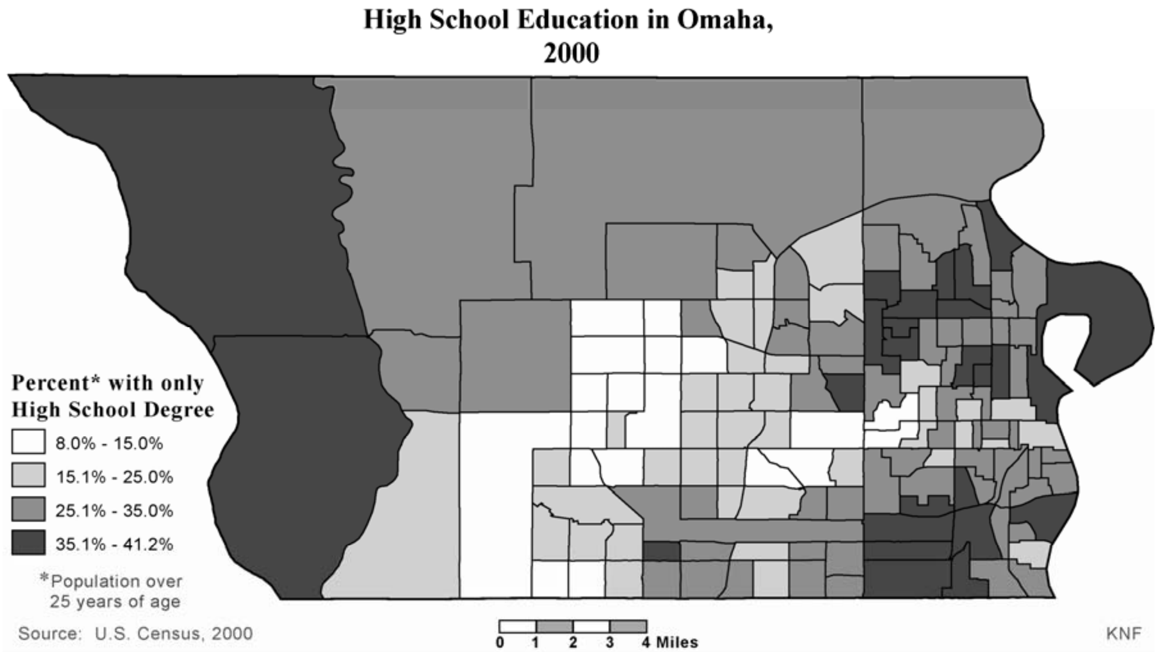


Figure 7.8. High school education, or high school equivalency, only in Douglas County (Omaha), Nebraska in 2000.

The majority of the bachelor's degree-educated people in Omaha lived in the closer western, predominantly White suburbs in 2000 (Figure 7.9). Of the 32 census tracts with over 30.0% of the population aged 25 years and older with a bachelor's degree, 24 tracts (or 71.9%) were located west of 120th Street. There also were neighborhoods with a higher proportion of people with a bachelor's degree extending westward along Dodge Street from the central business district; including Creighton University and the University of Nebraska-Omaha. Conversely, the neighborhoods with the lowest proportions of persons having a bachelor's degree (under 15.1%) are located in the northeast and southeast sections of Omaha, away from the band of higher education along Dodge Street.

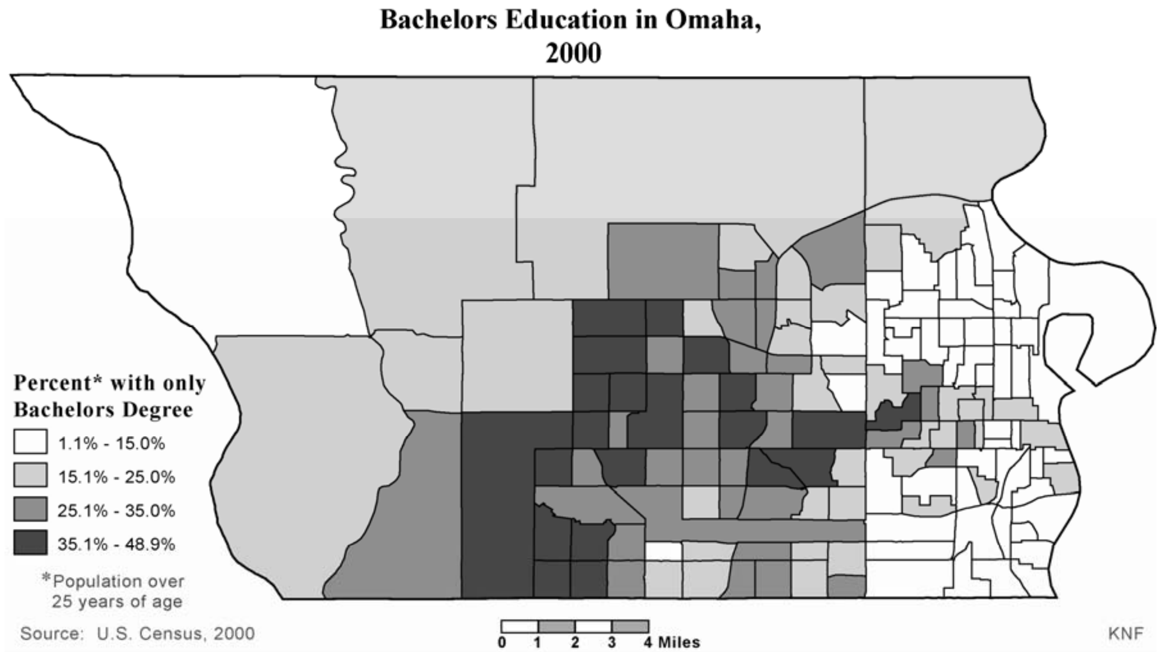


Figure 7.9. Bachelor's education in Douglas County (Omaha), Nebraska in 2000.

Housing Patterns

The patterns of housing characteristics throughout Omaha reveal spatial differences in housing as a quality of life indicator. The age of housing varied by neighborhood throughout the city in 2000 (Figure 7.10), with the newer homes found mainly in the suburbs of Omaha. Census tracts in the northwestern and western portions of the city had more recent median years the residential structures were built. Of the 17 tracts that have the median year that the housing structures were built newer than 1990, 12 tracts (or 70.6%) are located west of 132nd Street. On the opposite end of the spectrum, the median ages of construction show that older housing units are located in neighborhoods in South Omaha; with 15 of the 24 (or 62.5%) tracts with housing built before 1940 located south of Dodge Street and east of South 42nd Street. Typically older homes do not have the best housing quality (e.g. older plumbing, poorer roof conditions, etc), unless they have been maintained or refurbished over time. The exception to older housing equating with poor housing quality was in the Dundee Neighborhood near the

University of Nebraska-Omaha. The older homes in these areas, due to their historic and architectural appeal, have been kept-up over time. These older homes were actually often more expensive than newer homes found in North and South Omaha.

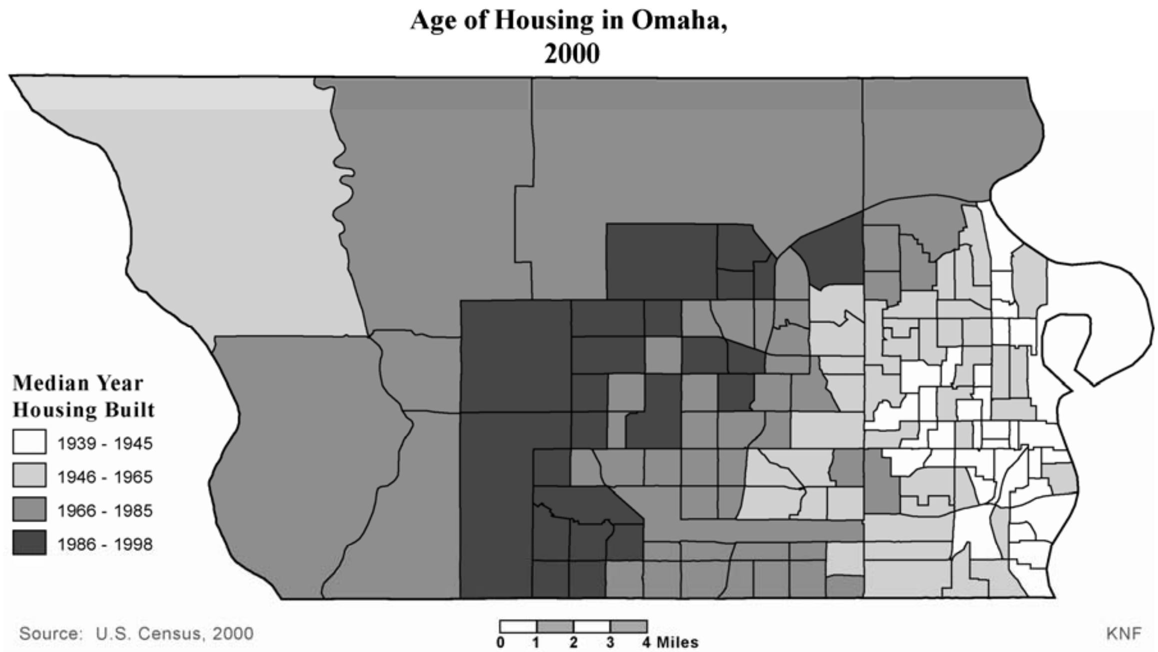


Figure 7.10. Median year housing structures were built in Douglas County (Omaha), Nebraska in 2000.

The tenure status of housing is an important SES indicator of quality of life, since a home not only provides shelter, but is also an investment that accounts for a large proportion of most homeowners' wealth. The patterns of renter-occupied housing in Omaha (Figure 7.11) show concentrations predominantly located in the east-central portions of the city. Of the 25 census tracts with over 60.0% of the housing rented, 15 (or 60.0%) were located in a contiguous area between the central business district and the campus of the University of Nebraska-Omaha. There are few neighborhoods west of 72nd Street that had a high proportion of renter-occupied housing. The census tracts with the lowest percentages of renter occupied housing are in the extreme western suburbs of Omaha and in the rural-suburban fringe areas of Douglas County.

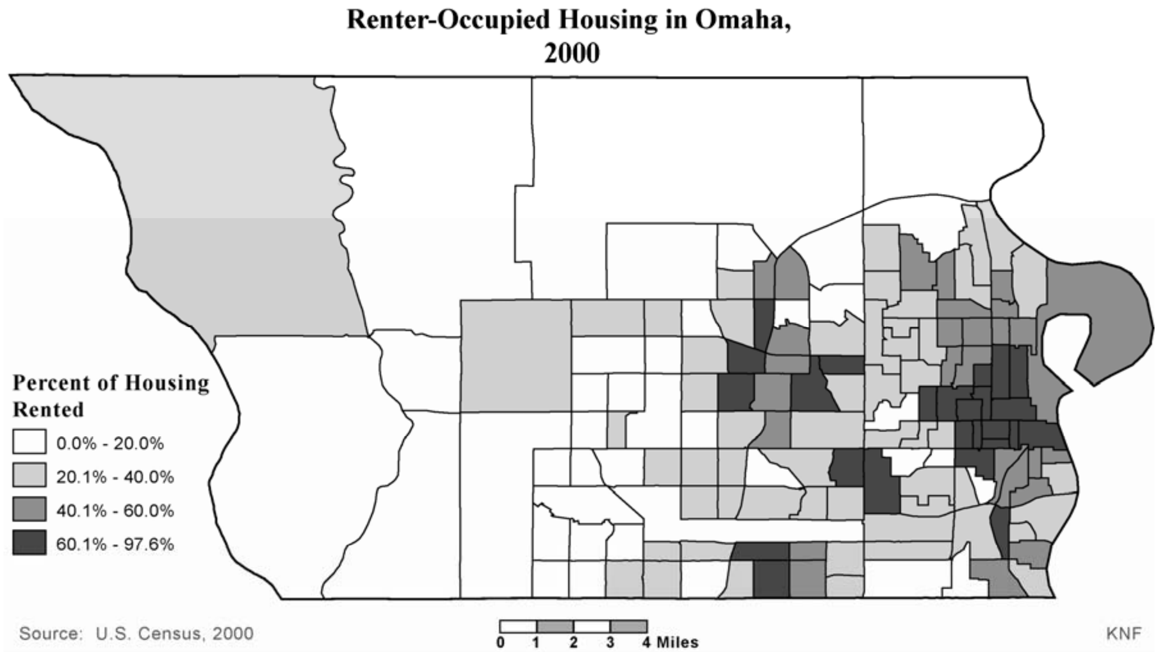


Figure 7.11. Percent of housing that was rented in Douglas County (Omaha), Nebraska in 2000.

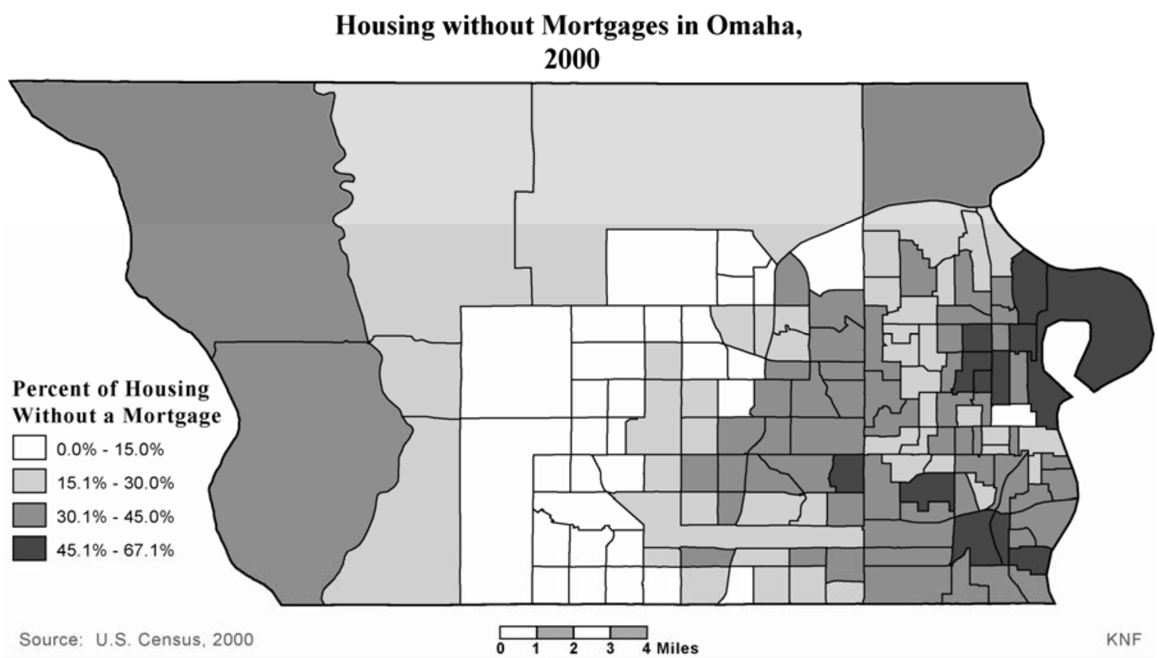


Figure 7.12. Home owners with no mortgages in Douglas County (Omaha), Nebraska in 2000.

The geographical distributions of home owners who do not have a mortgage (Figure 7.12) in Omaha show concentrations located in the eastern sections of the city. A home owner without a mortgage is one who has already paid off their home loan or who inherited a home that was already paid off. This represents more entrenched and stable areas in terms of home ownership, where people have invested in their homes and have paid off their mortgage. If the values of these homes are low, then it may be difficult to move away from such areas and buy a newer home, especially if the home owner cannot sell their current house. Thus, a home ownership pattern of older homes not encumbered by mortgages may be an anchor for people and families, which could make ethnic residential desegregation a slow process.

It would seem that neighborhoods without mortgages are more common in areas east of 72nd Street. However, data about mortgage denials from the Home Mortgage Disclosure Act paints a different and more complex picture. In 2003, the percent of conventional home mortgage loans that were denied (Figure 7.13) was the highest in the northeastern and southeastern neighborhoods of Omaha. Of the 13 census tracts with over 25.0% conventional mortgage loan denial rates, 7 (or 53.8%) were located north of Dodge Street and east of North 40th Street. Conversely, neighborhoods in West Omaha (predominantly White) had the lowest proportions of conventional home mortgage loan denials.

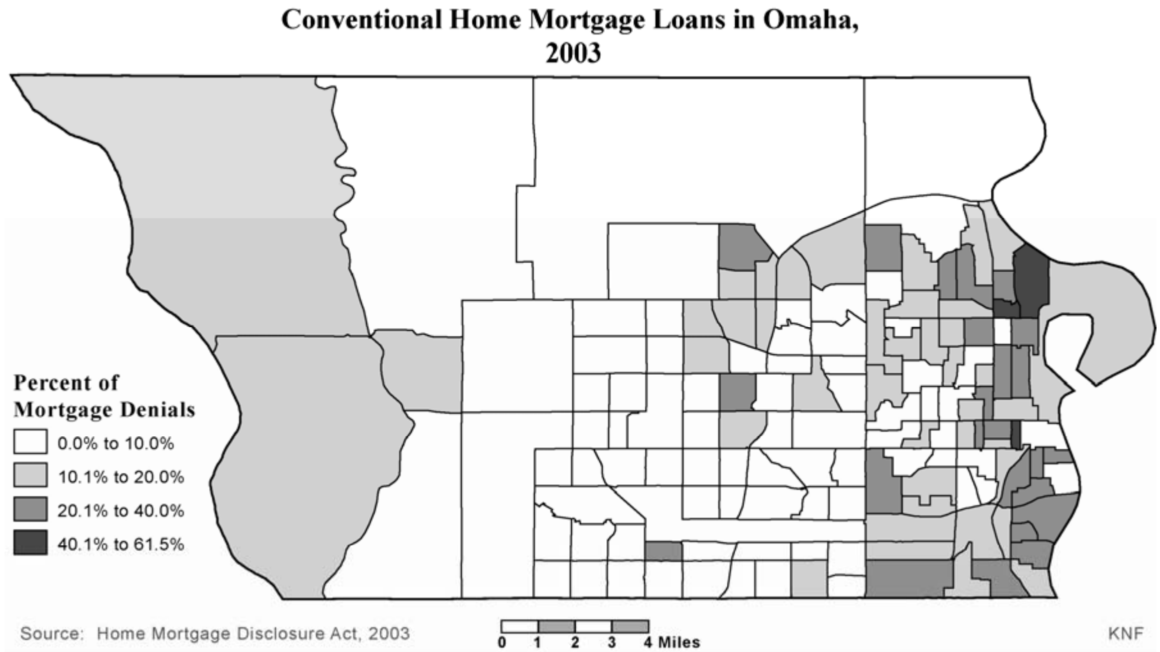


Figure 7.13. Conventional home mortgage loan denials in Douglas County (Omaha), Nebraska in 2000.

When interest rates were low, homeowners could opt to refinance their mortgage to a lower interest rate to save money. For example, a home owner might refinance their mortgage from a 30-year mortgage to a 15-year mortgage to save money in the long run, by paying off their mortgage quicker and at a lower interest rate. The spatial pattern of the denial of refinanced mortgage loan applications (Figure 7.14) indicated high denial rates in North Omaha. Areas that were predominantly African American were more often denied refinance loan applications by banks in 2003, as 24 of the 32 census tracts (or 75.0%) with refinance denial rates over 30.0% were located east of 72nd Street and north of Dodge Street. Also South Omaha, with a higher proportion of Hispanics, had moderate-to-high mortgage refinance denial percentages. These denials for mortgage refinancing indicated that people were "stuck" with their mortgage, which might have reflected high interest rates that put financial burdens upon homeowners in these areas.

Other than the rural fringe tracts in the northern and western portions of Douglas County, the western suburbs had the lowest proportions of refinanced mortgage loan denials.

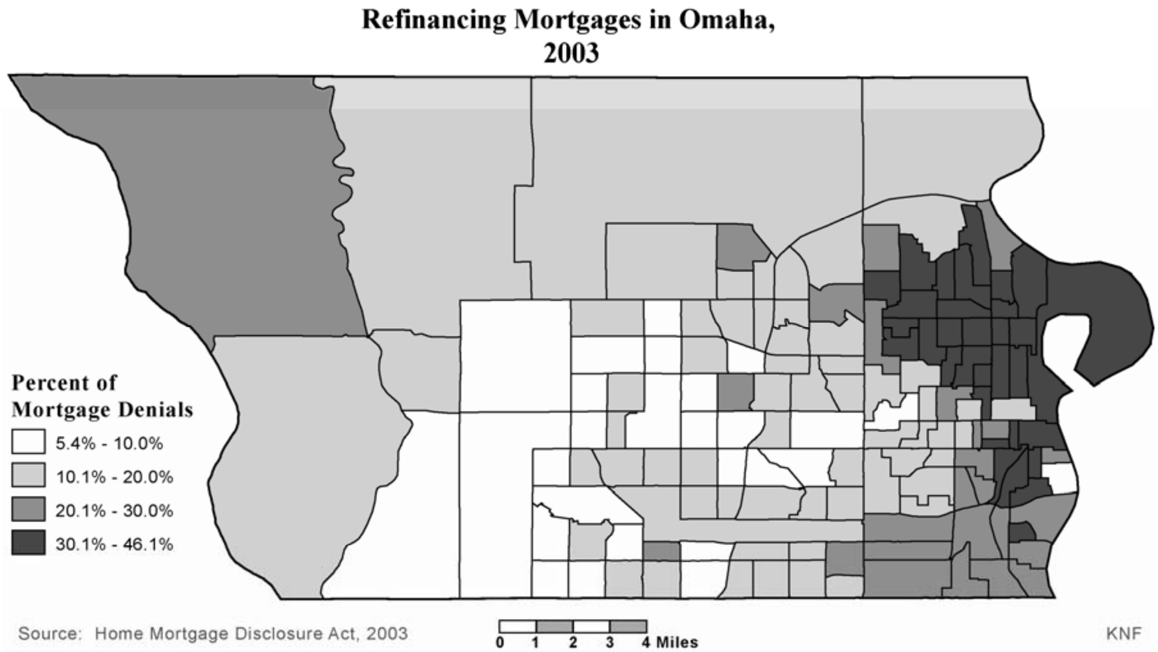


Figure 7.14. Refinanced home mortgage loan denials in Douglas County (Omaha), Nebraska in 2000.

Government assisted housing, where poorer people can apply for public housing aid, is an indicator of both income and housing characteristics. The majority of public housing programs and rental assistance units were located east of 72nd Street (Figure 7.15). The census tracts with over 200 public housing units each were concentrated along the north-south running 30th Street in eastern Omaha and the three highest tracts (with over 400 public housing units) were located south of Dodge Street. Of all of the public housing programs, the Section 8 program is the most widely known. The location of Section 8 housing reveals a predominantly North Omaha pattern (Figure 7.16), where six of the top nine tracts (or 66.7%) with over 101 Section 8 units were located in 2000. The next major clusters of Section 8 housing were located in just a few neighborhoods west of 72nd Street. One cluster centered around 108th and Fort Streets, and another was found to the south, bounded by 120th and 132nd Streets south of West Center Road. These two outer clusters reflect the goal of HUD to distribute public housing units and housing assistance funding away from ethnically-concentrated inner city neighborhoods.

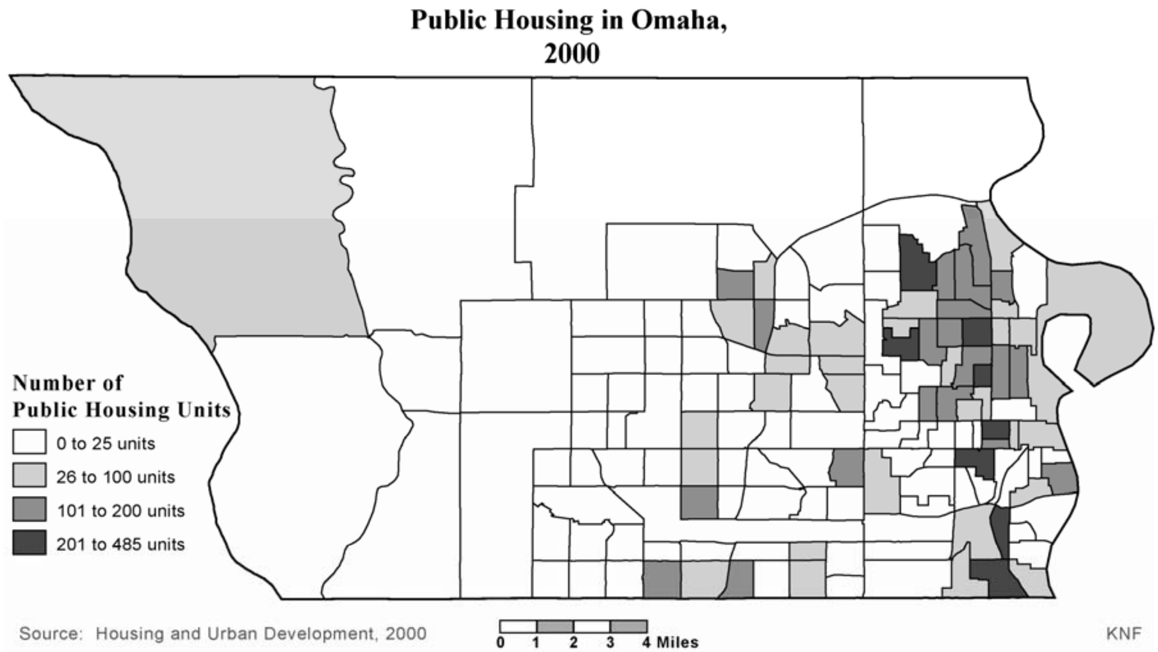


Figure 7.15. Number of public housing units, all programs, in Douglas County (Omaha), Nebraska in 2000.

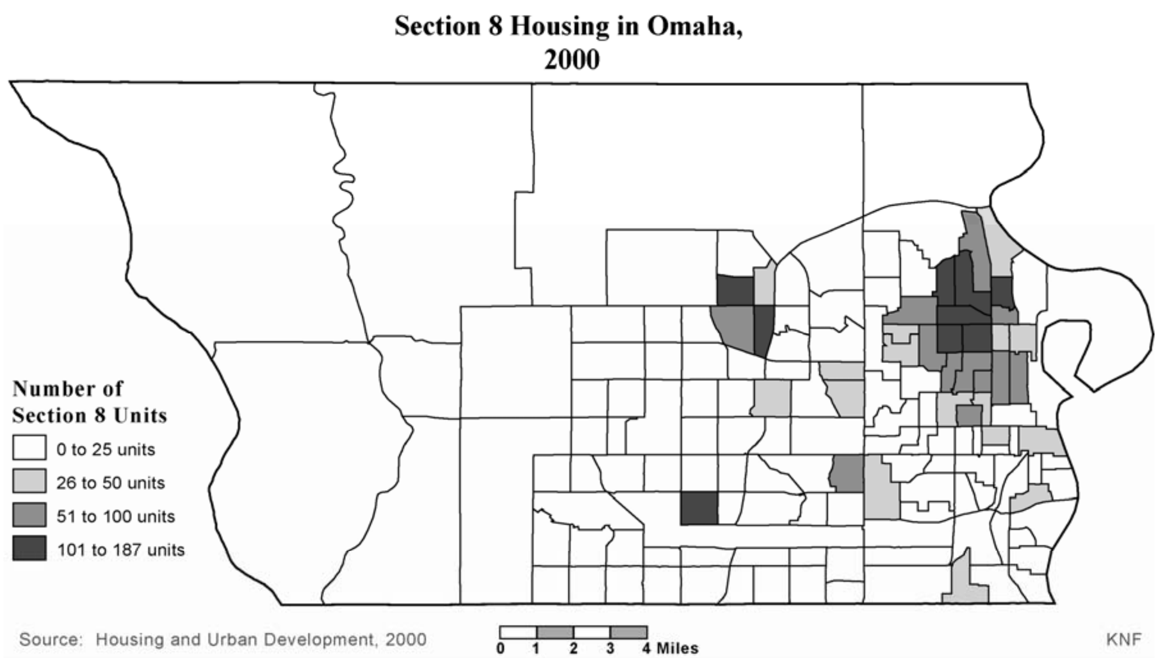


Figure 7.16. Number of public housing units, Section 8 units, in Douglas County (Omaha), Nebraska in 2000.

Overall in 2000, there were differences in the spatial distributions of socioeconomic variables in Omaha. The neighborhoods with the lowest income, highest poverty and unemployment rates generally were located east of 72nd Street, mainly in North Omaha The areas of Omaha with the higher proportions of low educational attainment (only a high school degree and less) also were located east of 72nd Street, mainly in the South Omaha neighborhoods. In terms of housing, the older homes, higher numbers of rental rather than owner occupied units, higher mortgage denial rates, and more public housings or rental assistance were found in neighborhoods east of 72nd Street. Mapping socioeconomic variables indicative of quality of life in Omaha revealed spatial inequalities with differences in the locational patterns of education, income, and housing variables. However, problems of ecological inference in using neighborhood-wide data (census tract) generalized to all people in an area are a concern. If an ethnically-mixed neighborhood has high poverty levels, does this indicate that every ethnic group member has a high poverty rate, or do certain groups have higher levels than others? To make inferences on the quality of life for ethnic-group members, ethnic-specific data (e.g. Hispanic per capita income, Asian high school degree attainment, etc.) must be analyzed. This was done by summarizing and comparing ethnic-specific data among ethnically segregated neighborhoods in Omaha.

Comparing Ethnically-Concentrated Neighborhoods in Omaha

What are the consequences for ethnic groups living in residentially segregated neighborhoods? Contrasting the socioeconomic characteristics of neighborhoods by ethnic make-up can reveal differing patterns. The following section describes the data involved, the methodology used to create ethnically-concentrated regions, and the results found in the analysis.

Data and Methodology

Data gathered from the U.S. Census, the Department of Housing and Urban Development, and under the Home Mortgage Disclosure Act were used in this analysis. The socioeconomic data include demographic, economic, educational, and housing variables. Before comparing socioeconomic data between ethnic groups, ethnically-concentrated neighborhoods needed to be defined. An "ethnic neighborhood" was defined by selecting the ten census tracts that had the highest population proportions for each ethnic group. For example, the top ten census tracts with the highest percentages of African Americans were queried from a GIS and used to create an "African American" residential area. Quotations are used here since not all residents in these neighborhoods were African American. Thus, the "African American" neighborhood could house people of different ethnic backgrounds. Nonetheless, the process of selecting the top ten census tracts also was used to generate the "White," "Asian," and "Hispanic," neighborhoods which are investigated.

The spatial distributions of the "ethnic neighborhoods" created (Figure 7.17) indicate that the highest concentration of African American neighborhoods is in North Omaha and the highest concentration of Hispanic neighborhoods is in South Omaha. The tracts with the highest proportions of Asians are scattered throughout Omaha, both in the suburbs west of 72nd Street and in neighborhoods close to the central business district east of 72nd Street. An important note is that Asians do not make-up the majority of any census tract in the city (the highest Asian proportion of a tract was 12.1%). The White-concentrated neighborhoods in the city were also scattered throughout Omaha, but all were located in the suburbs west of 72nd Street. After selecting the top ten census tracts with the highest proportions of each ethnic group, the data for these tracts were averaged to facilitate the comparisons between each ethnically-concentrated area. The averages of the general neighborhood characteristics (e.g. median year housing structures were built) and the ethnic-specific characteristics (e.g. percent of African Americans with a bachelor's degree) were compiled for each ethnic area.

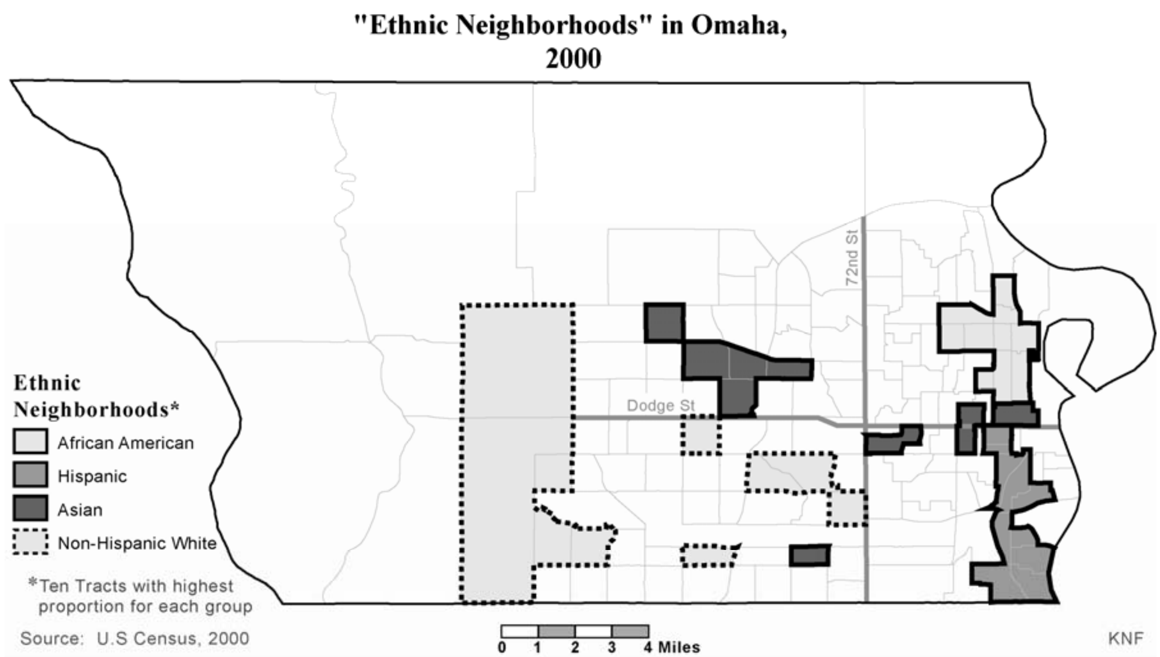


Figure 7.17. Location of ethnically-concentrated neighborhoods in Douglas County (Omaha), Nebraska in 2000.

Results

The results of averaging the data for each ethnically-concentrated neighborhood can be divided into demographic, housing, economic, and educational categories. There are demographic differences in ethnic percentages, median age, and family size for each ethnically-concentrated neighborhood (Table 7.1). The predominantly "White" neighborhoods have on average few ethnic minorities (all other groups consisted of less than 1.4% of the total population). Whites in these "White" neighborhoods had the highest median age (40.1 years) and the lowest family size (3.11 people). On average, the "African American" neighborhoods are predominantly African American (76.6%); African Americans in these neighborhoods are relatively younger (28.4 years) than the Whites (40.1 years) in the "White" neighborhood. For Hispanics in the "Hispanic" neighborhood, average median age is the lowest of all ethnic groups (23.6 years) and the average Hispanic family size is the highest of all ethnic groups (4.36 family members). In the "Asian" neighborhood, the average family size is by far the lowest of all ethnic groups (2.84 people) among each respective neighborhood.

Ethnic Neighborhood	Percent White	Percent African American	Percent Hispanic	Percent Asian	Ethnic Median Age	Ethnic Family Size
"White"	96.4	0.5	1.3	1.0	40.1	3.11
"Afr. American"	15.6	76.6	3.6	0.3	28.4	3.33
"Hispanic"	47.7	6.2	42.0	0.9	23.6	4.36
"Asian"	81.4	5.5	5.2	5.5	27.5	2.84

Table 7.1. Averages of demographic characteristics for each "ethnic" neighborhood in Omaha in 2000.

The averages of the housing characteristics of each "ethnic neighborhood" (Table 7.2) indicates several kinds of housing disparities in Omaha. The older average median years that the housing structures were built were located in the "Hispanic" (1942) and "African American" (1947) neighborhoods. The newer-built homes are located in the "White" (1978) and "Asian" (1970) neighborhoods. On average, the African Americans in the "African American" neighborhoods had the highest percentages without a mortgage (44.5%), followed by Whites (23.0%) in the "White" areas and Hispanics (18.1%) in the "Hispanic" sections. The "African American" neighborhoods had the highest conventional (22.3%) and refinancing (35.6%) mortgage loan denial rates, followed by the Hispanics, Asians, and Whites in their respective neighborhoods. In terms of public housing, the "African American" neighborhoods had the highest numbers of public housing units (151), with the "Hispanic" neighborhoods a close second (133). A public housing disparity occurred in terms of Section 8 housing units; since on average the "African American" neighborhoods had over six times more units than the next highest "Hispanic" neighborhoods.

Ethnic Neighborhood	Median Year House Built	Ethnic Percent Without Mortgage	Percentage of Conventional Mortgage Loans Denied (2003)	Percentage of Refinancing Mortgage Loans Denied (2003)	Public Housing Units	Section 8 Units
"White"	1978	23.0	4.8	9.4	7	1
"Afr. American"	1947	44.5	22.3	35.6	151	97
"Hispanic"	1942	18.1	21.3	30.3	133	16
"Asian"	1970	NA	9.4	14.4	18	10

Table 7.2. Averages of housing characteristics for each "ethnic" neighborhood in Omaha in 2000 (conventional and refinancing loan denials were for the year 2003).

In Omaha, there were vast economic differences between ethnic groups in their respective neighborhoods in 2000 (Table 7.3). Comparing the averages of household income reveal that Whites ($72,824.70) in the "White" neighborhood have more than three times the average income than African Americans ($20,446.40) in the "African American" neighborhoods. There is a similar pattern in the averages of per capita income, with Whites ($34,152.10) having higher per capita incomes than Asians ($23,340.30), African Americans ($9,831.30), and Hispanics ($9,790.50) in their respective neighborhoods. The per capita incomes for African Americans and Hispanics in their ethnically-concentrated neighborhoods are even less than half of the average per capita income level ($22,879) for the county as a whole. The average poverty levels for each "ethnic" neighborhood indicated that the poorest groups are African Americans (35.5%), Hispanics (23.0%), and Asians (18.9%) in their particular neighborhoods. These numbers are ten to 15 times greater than the average White percentage in poverty

(1.7%) in the "White" neighborhoods. The highest ethnic percentage unemployed are for African Americans (15.1%) and Asians (6.9%), and lowest for Whites (1.5%) and Hispanics (2.0%).

Ethnic Neighborhood	Ethnic Median Household Income	Ethnic Per Capita Income	Ethnic Percent in Poverty	Ethnic Percentage Unemployed
"White"	$72,824.70	$34,152.10	1.7	1.5
"Afr. American"	$20,446.40	$9,831.30	35.5	15.1
"Hispanic"	$32,930.80	$9,790.50	23.0	2.0
"Asian"	$39,672.40	$23,340.30	18.9	6.9

Table 7.3. Averages of economic characteristics for each "ethnic" neighborhood in Omaha in 2000.

Associated with income patterns are access to employment and commuting time to work (Table 7.4). African Americans in the "African American" neighborhoods had the highest average of workers who commuted to work by public transportation (9.0%) and the highest proportions not owning a vehicle (24.7%). Since many sources of jobs are not located near "African American" areas, the highest average commuting times also were in African American areas (at 21.2 minutes). An interesting finding is that the proportion of Asians in the "Asian" neighborhoods who walked to work (17.9%) was more than five times the proportions for the second highest category (3.5% of Hispanics walking to work).

Ethnic Neighborhood	Ethnic Percentage Using Public Transportation	Ethnic Percentage Walking to Work	Ethnic Percentage With No Vehicles	Travel Time to Work
"White"	0.1	0.4	3.6	18.6 min.
"Afr. American"	9.0	2.8	24.7	21.2 min.
"Hispanic"	3.9	3.5	13.2	19.4 min.
"Asian"	0.8	17.9	9.1	16.9 min.

Table 7.4. Averages of commuting to work characteristics for each "ethnic" neighborhood in Omaha in 2000.

Educational attainment differs among ethnic groups in the ethnically-concentrated neighborhoods (Table 7.5). Hispanics in the "Hispanic" neighborhoods had the highest proportion of population with less than a ninth grade education at 51.9%. On average, roughly a third of African Americans in the "African American" neighborhood had only a high school degree or high school equivalency, the highest average for any ethnic group. In terms of a bachelor's-level education, roughly one-third of Asians (32.9%) and of Whites (35.6%) had a college degree in their respective neighborhoods. The most educated ethnic groups were Asians, with an average of 35.6% of Asians in the "Asian" neighborhood having graduate degrees. This was more than two times the White average, and more than 20 times the African American and Hispanic averages.

Ethnic Neighborhood	Ethnic Percentage With Only a 9th Grade Education	Ethnic Percentage With Only a High School Degree	Ethnic Percentage With a Bachelors Degree	Ethnic Percentage With Graduate Degree
"White"	0.9	20.6	32.4	14.7
"Afr. American"	8.4	33.6	5.5	1.7
"Hispanic"	51.0	16.8	3.0	1.2
"Asian"	1.2	4.8	32.9	35.6

Table 7.5. Averages of educational attainment for each "ethnic" neighborhood in Omaha in 2000.

As measured by several socioeconomic variables, the "quality of life" in "ethnically-concentrated" neighborhoods varied throughout Omaha in 2000. In comparison to the other ethnic groups, African Americans in the "African American" neighborhoods have the least favorable housing (e.g. older homes, higher mortgage denial rates), income (e.g. high poverty, low income levels), and education (e.g. fewer percent with bachelors and graduate degrees) characteristics. Hispanics living in the "Hispanic" neighborhoods were located in the oldest parts of Omaha, had the lowest median age, had low income levels, and had the highest proportion with only a 9th grade education. Living in segregated neighborhoods for African Americans and Hispanics in Omaha did not provide these groups with high quality of life standards. As a consequence it may be difficult for members of these groups to move up the social ladder due to this social inequality.

In comparison to the other ethnic minorities, Asians living in the Asian-concentrated areas have higher income and educational levels, which perhaps is related to living near Whites (these two groups were not strongly segregated from each other). The Asian averages perhaps masked differences within the Asian neighborhoods, however, as there are distinctions between neighborhoods east and west of 72nd Street. For example, the range of Asian median household income levels for the "Asian neighborhoods" went from $2,499 to $82,020, the former in a tract near downtown and the latter in a tract in the western suburbs. This suggests that within the Asian ethnic group, there were possible class or country origin differences that were manifested by differences in neighborhood locations. The U.S. Census did not provide socioeconomic data broken down by national origin (e.g. Chinese per capita income) that could unmask these possible sub-ethnic group differences.

Whites in the "White" neighborhoods have the best quality of life characteristics: newer housing, low mortgage loan denials, the highest income levels, and very high educational attainment. The segregated-White neighborhoods seemed to provide Whites in these areas with better social amenities. In comparison, ethnic minorities living in their segregated spaces did not have such favorable quality of life measures. This analysis did well in summarizing socioeconomic differences by segregated areas, yet there may be other variables that also relate to a neighborhood's overall quality of life, but which have not been examined.

School Quality and Ethnic Residential Segregation in Omaha

One way to decrease the gap in social inequality between ethnic minorities and Whites would be through education. Better educated students, for all ethnic groups, have more opportunities to increase their socioeconomic status that in turn may relate to achieving higher paying jobs and better quality of life characteristics. The following discusses how public school quality is related to ethnic residential segregation in Omaha, Nebraska.

Data and Methodology

The education data used in this section are from the Nebraska Department of Education Report Card for 2000. The ethnic proportions and standardized reading tests mainly given to 4^{th} graders, 7^{th} graders, and 11^{th} graders (used as a measure of school quality) were enumerated for each elementary, middle, and high school. Other school quality measures that relate to the teachers also are analyzed; these include average teacher experience and average teacher salary. The last school measure examined relates to income levels, in which the proportion of students eligible for a free or reduced price lunch is tallied for each school.

The cartographic methodology applied includes the mapping of the various school characteristics. Simple correlations between a school's ethnic percentage and the various school quality measures are calculated to corroborate the spatial patterns. In this analysis, the ethnic segregation level of the school is measured by the proportion of a specific ethnic group that attended each school. For example, a correlation between schools' percentages of Hispanic students and percentages of students meeting the reading standards are computed. A positive simple correlation suggests that higher reading standards are related to higher proportions of Hispanics in the schools, for example. A negative correlation suggests that the higher reading standards are found in schools with lower proportions of Hispanics. A simple correlation near zero would indicate no association between students meeting the reading standards and a school's proportion of Hispanics.

Maps of School Quality

There are spatial differences among public schools in Douglas County in terms of teacher experience, teacher salaries, percentage of students eligible for free lunches, and reading scores. Teacher experience varied within Omaha (Figure 7.18), with the least experienced teachers located at schools east of 72nd Street and the most experienced teachers located at schools south and west of 72nd and Dodge.

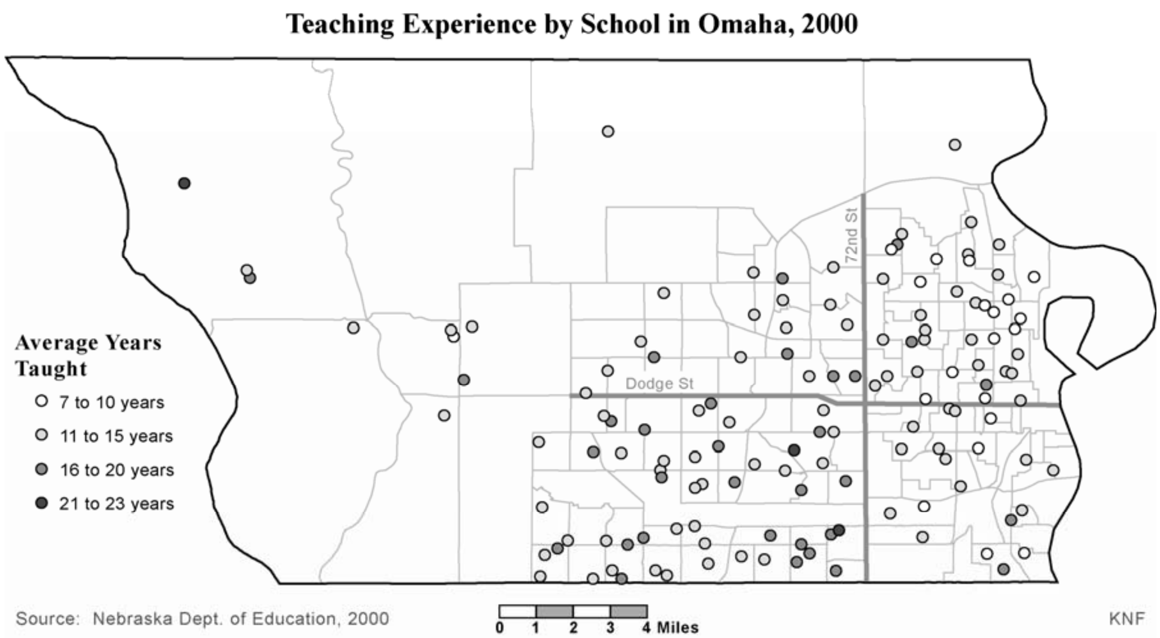


Figure 7.18. Distribution of teacher experience by public school in Omaha for 2000.

Of the 20 schools with median teacher experience under ten years, 19 (or 95.0%) were located east of 72nd Street, and fourteen (73.7%) of these schools also were located north of Dodge Street. This indicates that the least experienced teachers tend to teach at schools that are located in predominantly African American neighborhoods, and, to less extent, in Hispanic neighborhoods. The geographical distributions of teaching experience and teacher salaries were similar in 2000 for Omaha (Table 7.19), as the highest paid teachers were located southwest of 72nd and Dodge Streets, while the lowest paid teachers were located east of 72nd Street.

Teacher Salary by School in Omaha, 2000

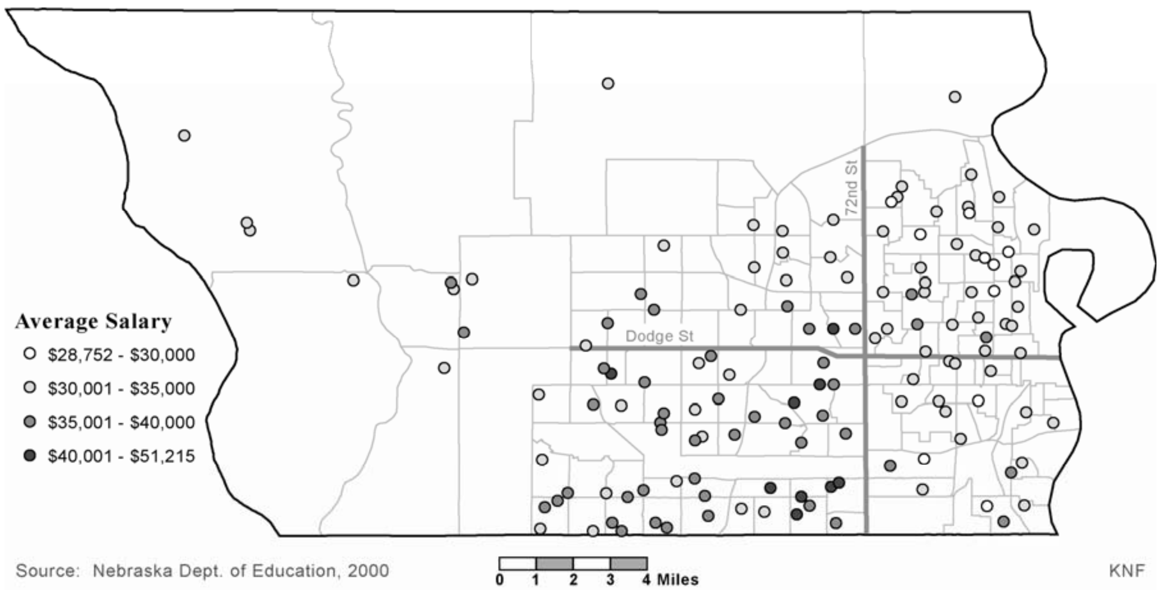


Figure 7.19. Distribution of teacher salaries by public school in Omaha for 2000.

The distribution of students eligible for free or reduced priced lunches by public school (Figure 7.20) indexes where the poorer students lived in Omaha. Schools with over 75.0% of students eligible for free lunches are located east of 52nd Street; with 12 of the 16 (or 75.0%) schools located north of Dodge Street. The lowest proportions of students eligible for free lunches are located in the western suburbs, with 21 of the 24 (or 87.5%) schools with less than 5.1% of the students eligible for free lunches are located west of 132nd Street. These results are not surprising when considering that the “richer” neighborhoods are located in the western suburbs and the "poorer" neighborhoods are located in the eastern parts of Omaha.

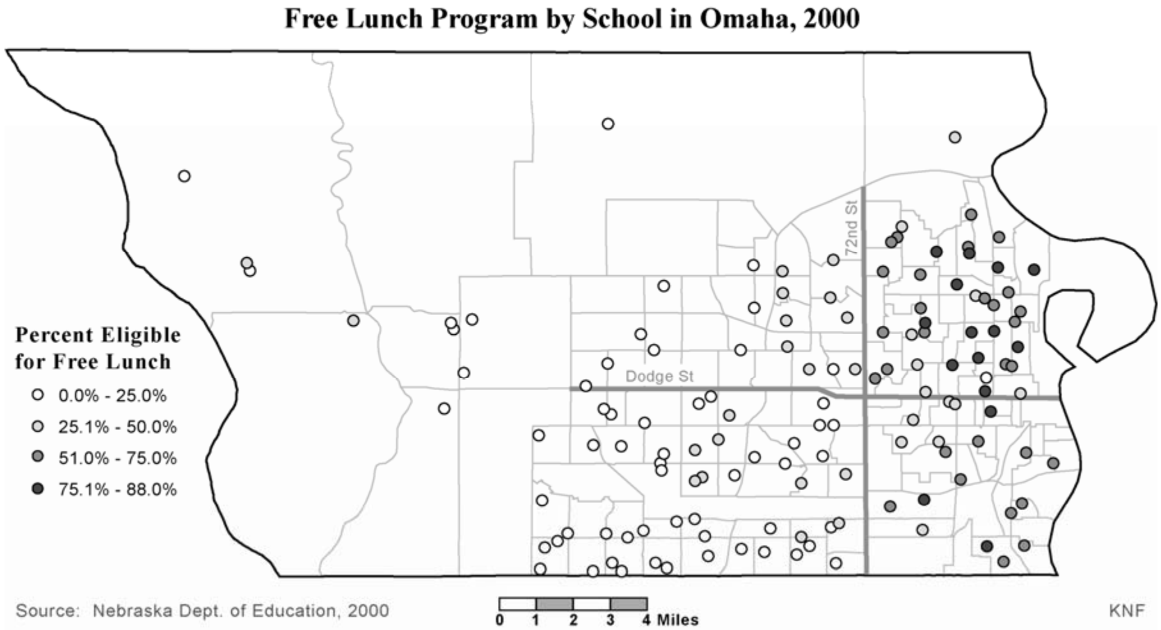


Figure 7.20. Distribution of the percentage of students eligible for free lunches by public school in Omaha for 2000.

The best indicator of school quality studied is the proportion of students who meet the Nebraska reading standards (Figure 7.21). The schools with the lowest reading achievements, with under 50.0% of students meeting the standards, are located east of 72nd Street; with ten out of the 14 of these schools predominantly located in the African American neighborhoods north of Dodge Street. The schools with the highest proportions of students passing the reading standards are located in the western suburbs of Omaha. In fact, 26 of the 31 schools (or 83.9%) with over 90.0% of students meeting the reading standards are located south of Dodge Street and west of 72nd Street. Overall in 2000, school quality of schools in the eastern neighborhoods is not as good as school quality of schools in western Omaha.

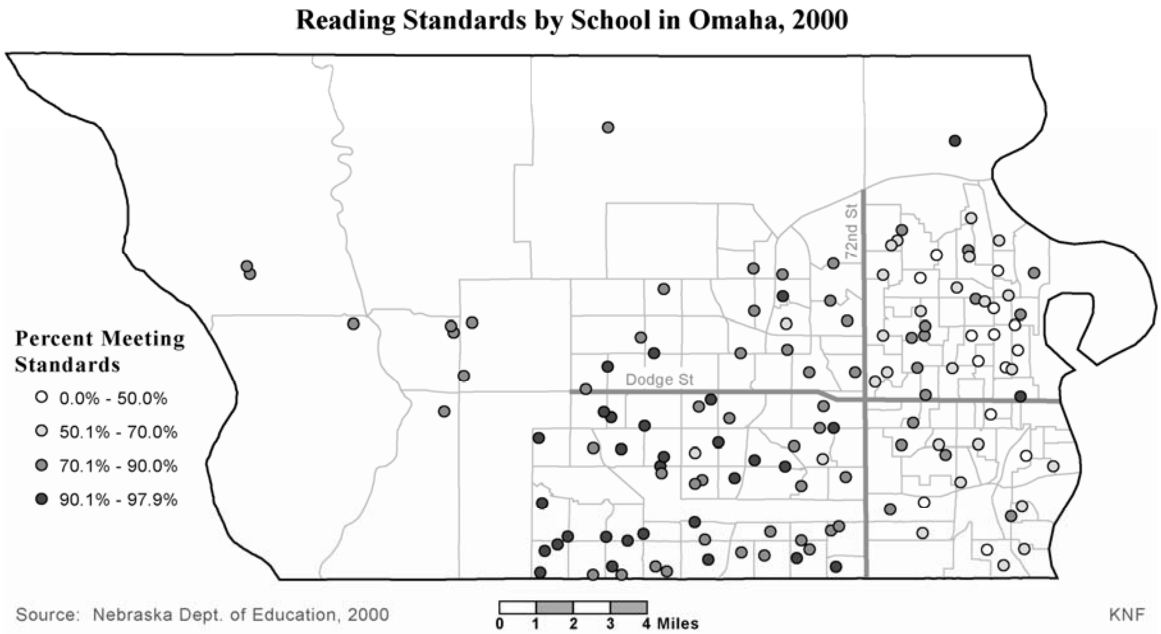


Figure 7.21. Distribution of the percentage of student meeting the reading standard by public school in Omaha for 2000.

The cartographic analysis suggests that certain ethnic neighborhoods suffered more from poor school quality. To statistically correlate school quality with ethnic residential segregation, several bivariate correlations were computed between the schools' ethnic percentages and school quality measures (Table 7.6). Schools with higher proportions of Whites had strong correlations with students meeting the reading standards (0.838) and with fewer students eligible for free lunches (-0.891). Also, average teacher salary (0.639) and average years of teacher experience (0.592) are positively correlated with a school's White percentage. The opposite patterns were found for schools with higher proportions of African American students. There were strong correlations indicating that schools with higher percentages of African American students had lower proportions of students meeting the reading standards (-0.733) and more students eligible for free lunches (0.753). Teachers in schools with more African Americans have lower salaries (-0.577) and lower teaching experience (-0.554) than teachers in schools with fewer African Americans. The strengths of the correlations were high in 2000 (all above an absolute value of 0.550).

School Quality Measure	Percent White	Percent African American	Percent Hispanic	Percent Asian
Percent Meeting Reading Standard	**0.838**	**-0.733**	**-0.341**	**0.414**
Percent Eligible for Free Lunches	**-0.891**	**0.753**	**0.452**	**-0.402**
Average Teachers Salary	**0.639**	**-0.577**	**-0.244**	**0.426**
Average Years Teaching	**0.592**	**-0.554**	-0.214	**0.333**

Table 7.6. Correlations between school quality measures and ethnic percentage by public school for Omaha in 2000. **Bold** indicates that the correlation was statistically significant at the 0.01 level (two-tailed test).

There are moderate correlations between a school's percentage of Hispanics and school quality measures. The correlation between percent Hispanic and percent meeting reading standards is negative (-0.341), which indicates that fewer students meeting the standards are found in schools with higher proportions of Hispanics. Also, the higher proportion of students at a school eligible for free lunches was positively correlated with percent Hispanic (0.452). The only significant teaching variable related to a schools' proportion of Hispanic students is teacher salary (-0.244); lower paid teachers are found in schools with higher percentages of Hispanics.

Asian correlations with school quality data mirrors the patterns found for Whites, although the strengths of the correlations are lower. Public schools with higher proportions of Asians have higher percentages of students meeting the reading standards (0.414), lower proportions eligible for free lunches (-0.402), higher average teacher salaries (0.426) and greater teacher experience (0.333). Given that Whites and Asians are not strongly residentially segregated from one another, the findings regarding the comparable school quality variables between the two groups are not surprising.

The overall patterns reveal that public school quality in Omaha tends to be better in schools with higher proportions of White and Asian students in 2000. However, school quality is worse for schools that had higher proportions of African American and Hispanic students. Due to the poorer quality schools in certain ethnically-concentrated areas, it probably is difficult for African American and Hispanic kids to "get ahead" in the future and to overcome the obstacles of social inequality found in American society.

Ethnically-Owned Businesses in Omaha

Analyzing ethnic residential patterns focuses on segregation at "night," when people are away from work. Another aspect of segregation involves where people work and how this relates to where people live. If members of an ethnic group tend to live near their places of work (and in segregated areas), then there would be fewer chances of workplace interactions with people with a different ethnic background. However, a positive aspect of ethnically-segregated areas would be the creation of ethnic enclaves (through ethnic businesses), which not only cater to the needs of ethnic group members but also can benefit the entire city. For example, ethnic restaurants may generally serve members of that ethnic group, but they can also provide everyone in the city with the opportunity to try ethnic-specific dishes. Cities can promote their ethnic enclaves as tourist destination spots, in which ethnic diversity can be celebrated. The locations of ethnically-owned businesses could be related to the existence of ethnic residential enclaves in Omaha, in that if ethnic-owned businesses were scattered throughout the city then no ethnic business enclaves would exist. If the majority of businesses were concentrated in space, and these areas matched the ethnic residential clusters, then there would be evidence of the existence of ethnic business enclaves. The importance of mapping ethnically-owned businesses is to examine whether employment locations are concentrated in ethnically segregated residential neighborhoods.

Data and Methodology

Data from the "*Minority Economic Development Council Business Directory*" (2005) by the Greater Omaha Chamber of Commerce lists minority-owned business in Omaha. The purpose of the business directory is mainly to provide governmental organizations a list of businesses that have been historically underutilized. As mentioned earlier, the category of "minority" in the business directory includes businesses that are owned by women and ethnic minorities. The women-owned businesses were kept in the analysis dataset, since a woman owner could also be associated with an ethnic minority group. Given that the data set does not just include ethnic minority groups, caution was used when interpreting the results.

The methodology to show the geographic distribution of ethnically-owned businesses involved the geocoding of addresses for each business in a GIS, which resulted in the mapping of 453 businesses. Then the Asian- and Hispanic-owned businesses were drawn from this database by the using surname of the owner or the name of the business. For example, businesses owned by surnames "Kim" or "Ngyuen" were categorized as Asian while those owned by "Gonzales" or "Lopez" were categorized as Hispanic. The same could not be done for African Americans, since ethnic-specific surnames are difficult to identify for African Americans. Not every business provided an owner name, so the number of Asian and Hispanic businesses probably under represents the actual number of minority-owned businesses. Ethnic minority-owned businesses can then be compared to the ethnically-concentrated neighborhoods defined earlier in this research. For example, the analysis revealed how many Hispanic businesses were within the top ten census tracts with the highest proportions of Hispanics in Omaha.

Maps and Analysis

The geographical distribution of minority-owned businesses in Omaha (Figure 7.22) shows concentrations in areas east of 72nd Street in 2005, with 380 of the 453 (or 83.9%) minority-owned businesses located in these areas. There are several minority-owned business clusters in North and South Omaha. In North Omaha, there are many minority-owned businesses along Ames Avenue and along North 24th Street. In South Omaha, there are several businesses along Q Street and South 24th Street. Another cluster of ethnic businesses is located in and around the central business district, near 16th and Dodge Streets.

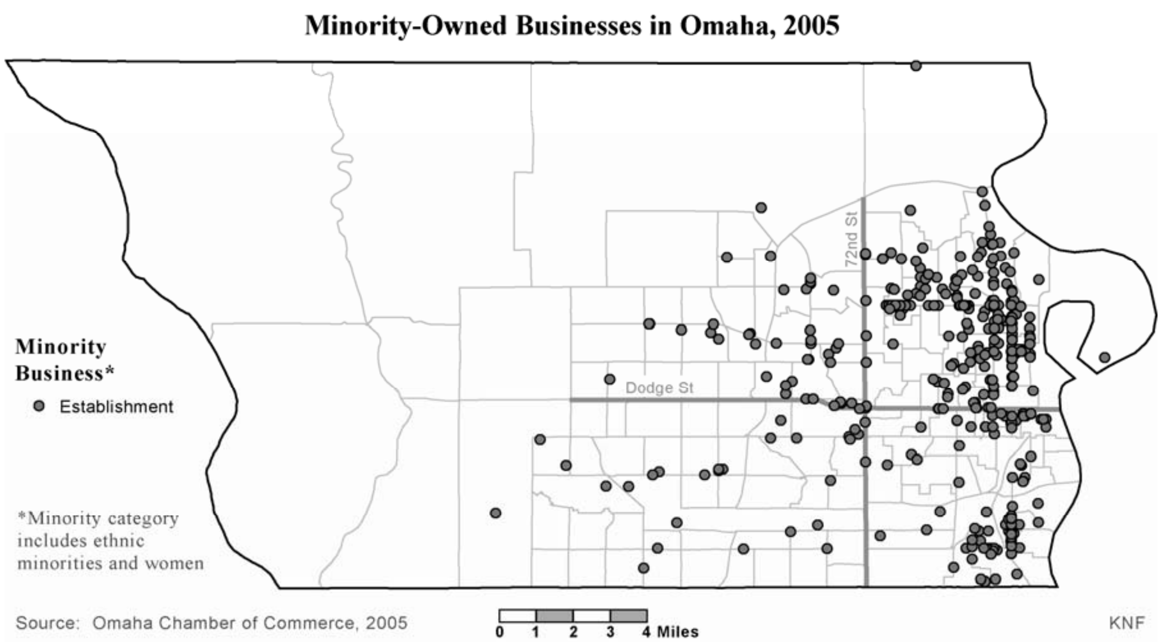


Figure 7.22. Distribution of minority-owned businesses in Omaha for 2005.

African American-owned businesses are not categorized separately because it was not possible to differentiate African American surnames. However, the number of businesses in African American residential areas that did not have an Asian or Hispanic surname provided a loose proxy for African American businesses. Of the 337 minority businesses that are not identified as Asian or Hispanic, 243 (or 72.1%) are located east of 72nd Street and north of Dodge Street. Also, 38.9% (or 131 of the 337) of the minority businesses were located in the top ten census tracts with the highest proportions of African Americans. The numbers are lower than expected, since several businesses were not identified into an ethnic-minority group and female-headed businesses were also included in the totals.

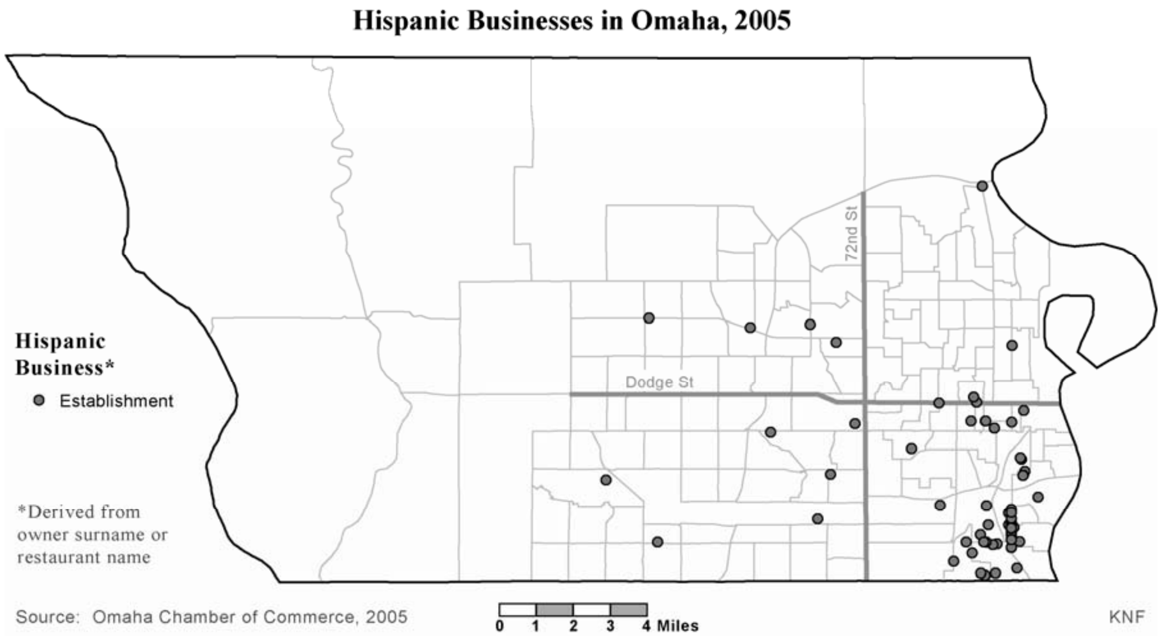


Figure 7.23. Distribution of Hispanic-owned businesses in Omaha for 2005.

Hispanic-owned businesses are mainly located east of 72nd Street and south of Dodge Street (Figure 7.23). 65 of the 78 Hispanic businesses (or 83.3%) are located south and east of 72nd and Dodge. There are 51 of the 78 (or 65.4%) Hispanic businesses located in the "Hispanic" neighborhoods. This clustering of Hispanic businesses in the "Hispanic" neighborhoods indicates that an ethnic business enclave exists in South Omaha.

Asian-owned businesses are scattered throughout Omaha, with no major business clusters (Figure 7.24). The largest "cluster" of Asian-owned businesses is located near

72nd and Dodge, with many businesses along Dodge Street as well. Of the 35 identified Asian businesses, only three (or 8.6%) are located in the ten census tracts with the most "Asian" neighborhoods. This would indicate that there is no predominant Asian business enclave in Omaha in 2005, since Asian businesses and residential areas were not concentrated in the same neighborhoods.

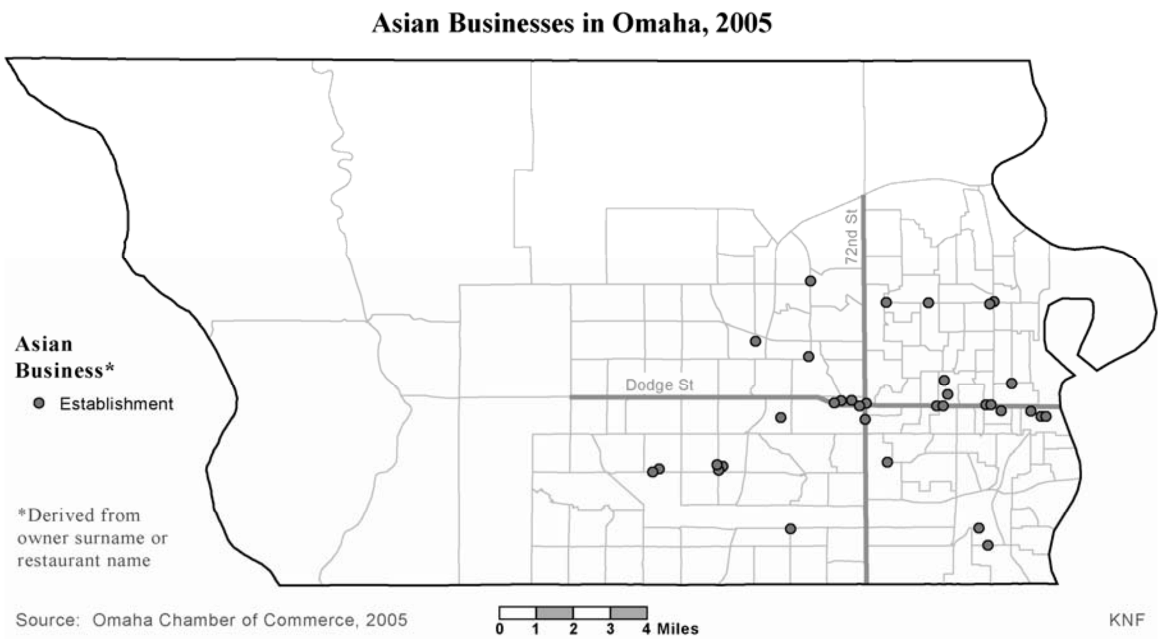


Figure 7.24. Distribution of Asian-owned businesses in Omaha for 2005.

Ethnic Community Organizations and Religious Centers in Omaha

As important institutions, ethnic community services and organizations provide social support for their respective ethnic group members. The importance of locating these establishments was to indicate if ethnic community enclaves existed in Omaha on the basis of ethnic-specific community organizations. Information on ethnic organizations was gathered from the "*Multi-Ethnic Guide for the Greater Omaha Area (2006)*," from the Greater Omaha Chamber of Commerce. Data included the addresses of ethnic religious centers, university organizations, minority newspapers, cultural centers, and museums; these were geocoded by address to create several maps.

The majority of African American community services and organizations are clustered in North Omaha (Figures 7.25 and 7.26). Very few African American organizations are located away from the predominantly African American segregated areas. Of the 102 African American community organizations and religious centers, 82 (or 80.4%) are located in the "quadrant" east of 72nd Street and north of Dodge Street. There are 56 of the 102 African American establishments, or 54.9%, located within the ten census tracts constituting the "African American" neighborhoods. The eight African American community organizations west of 72nd Street in 2006 are Glad Tidings Church, Nebraska Chapter of the Gospel Music, New Hope Apostolic Temple, God's Missionary Baptist Church, Islamic Center of Omaha, Shiloh Lodge, 100 Black Men of Omaha, Inc., and Black Employees of Xerox. Future research on the locations of ethnic establishments would benefit from a longitudinal study, where the year that these organizations were established would indicate the speed at which the African American community has grown. Was the diffusion of African American organizations a slow or quick process?

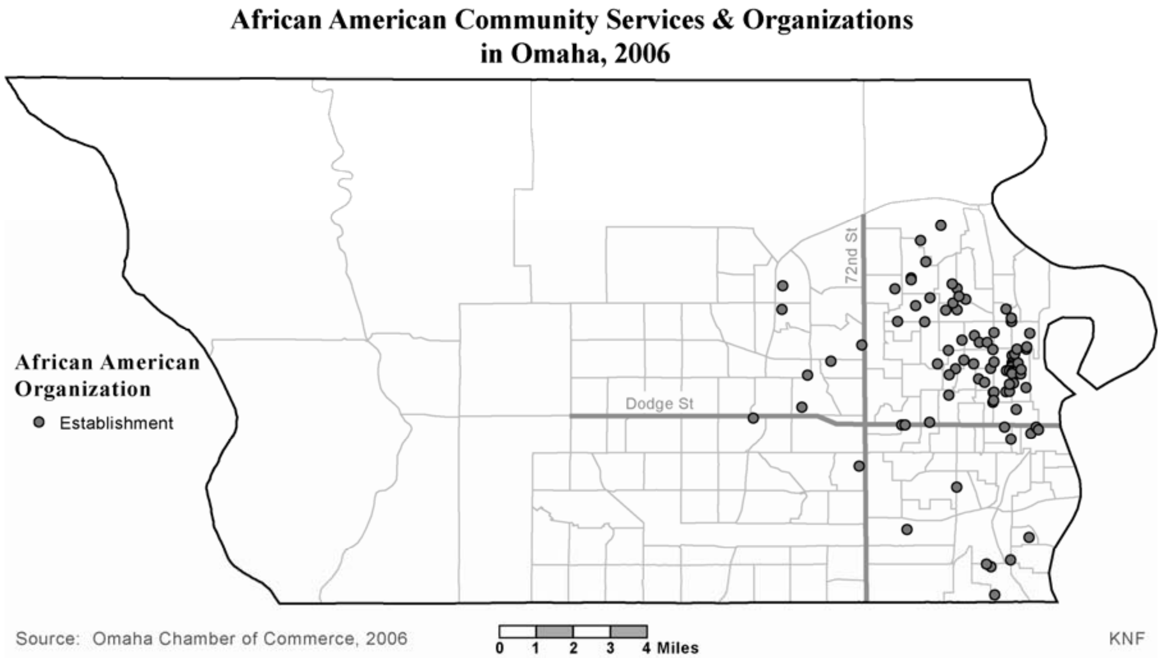


Figure 7.25. Distribution of African American community organizations in Omaha for 2006.

Figure 7.26. Distribution of African American religious centers in Omaha for 2006.

A "windshield survey" of neighborhoods in North Omaha revealed an expression of African American heritage on the landscape. There is a mural (Photo 7.1) that depicts a parade in which both African heritage with dress and drums, and African American heritages are celebrated. The mural is located on the outside wall of Goodwin's barbershop (Photo 7.2), a famous barbershop that once employed long-time Nebraska State Senator Ernie Chambers. Located on North 24th Street, this barbershop is the only building on its side of the street (between Spencer and Wirt Streets), since the adjacent buildings have been razed. African American heritage also is displayed in the Juneteenth parade (Photo 7.3), which celebrates the ending of slavery in America. The mural and parade are visual expressions of an African American enclave in North Omaha.

Photo 7.1. Mural on North 24th Street in North Omaha [photo taken by author].

Photo. 7.2. Goodwin's Barbershop on North 24th Street in North Omaha [photo taken by author].

Photo. 7.3. Juneteenth parade of 2008 on North 24th Street in North Omaha [photo taken by author].

It is not surprising to find African American community organizations and religious centers in areas near African American population areas. The locations of African American residences, businesses, community organizations, and religious centers indicate high spatial concentrations of African Americans in certain areas of Omaha. One of the many positive aspects of ethnic enclaves includes the creation of spaces where members of a particular ethnic feel comfortable to reside and work.

Hispanic Community Services & Organizations in Omaha, 2006

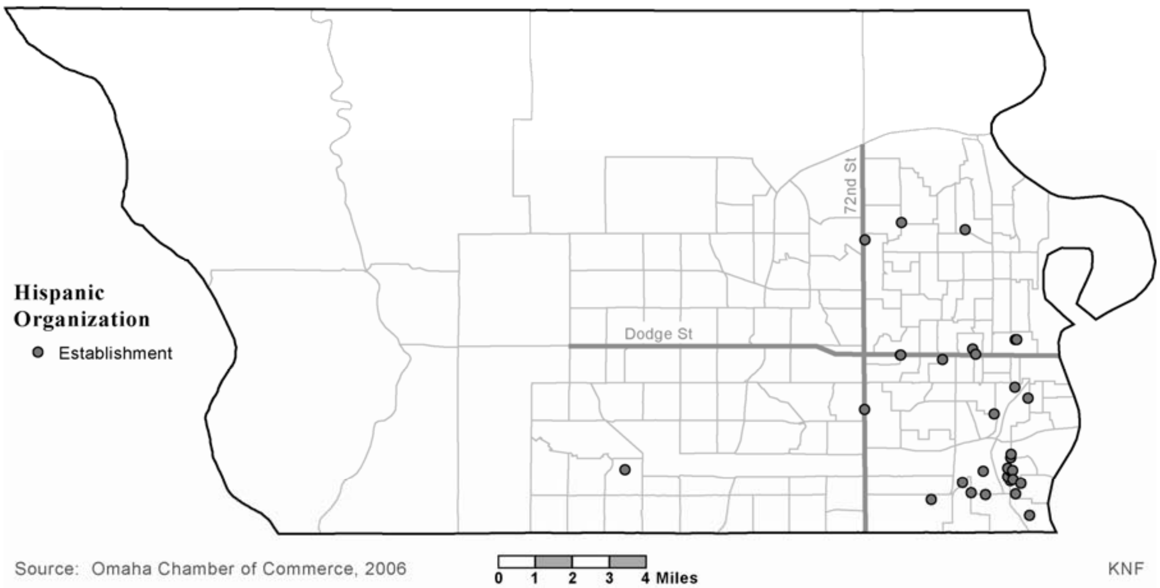


Figure 7.27. Distribution of Hispanic community organizations in Omaha for 2006.

Hispanic community organizations and religious centers are predominantly located east of 72nd Street and south of Dodge Street (Figures 7.27 and 7.28). These Hispanic social institutions are spatially associated with Hispanic residential patterns, for 25 of the 32 Hispanic (or 78.1%) community organizations are located east of 72nd Street and south of Dodge Street. The "Hispanic" neighborhoods encompassed 46.0% (or 15 of the 32) of the Hispanic community organizations in Omaha. The Hispanic religious centers are predominantly Roman Catholic, with St. Martin of Tours, St. Ann's, Our Lady of Guadalupe, and St. Joseph's located in the "Hispanic"-concentrated neighborhoods. The concentrated distribution of Hispanic community services and organizations provides another indication of the development of a Hispanic enclave in South Omaha. The lone Hispanic religious center not located in South Omaha was the

Jehovah's Witnesses establishment in North Omaha, which also catered to African Americans and Asians.

Figure 7.28. Distribution of Hispanic religious centers in Omaha for 2006.

A "windshield survey" of the South Omaha neighborhoods, there was a Mexican imprint in the landscape. The expression of Mexican heritage was displayed in the form of a mural in South Omaha (Photo 7.4), where the Catholic faith, Aztec traditions, and Mexican flag were painted on a wall. Another expression of a Mexican ethnic enclave are the celebrations hosted by, and for, the Mexican community in South Omaha. One such celebration, Cinco De Mayo (Photos 7.5 and 7.6), has been celebrated in South Omaha since 1985.

Photo 7.4. A mural on South 24th Street in South Omaha [photo taken by author].

Photo 7.5. Cinco De Mayo parade in 2008. The parade along South 24th street started at "B" street and ended at "Q" street, passing several Hispanic-owned businesses [photo taken by author].

Photo 7.6. Young ladies displaying Mexican dress and dance [photo taken by author].

Asian community organizations and religious centers display a scattered spatial distribution in Omaha (Figures 7.29 and 7.30). There is no cluster of Asian establishments in the city, for not one census tract had more than two Asian community organizations. The majority of the Asian community organizations, with seven of the 12 establishments, are ethnic religious centers: Hindu Temple, Korean Assembly of God, Vietnamese Alliance Church of Omaha, Vietnamese Buddhist Association, Nebraska Zen Center, Islamic Center of Omaha, and Omaha Chinese Christian Church. The lack of ethnic clustering is exhibited by the separate locations of the Vietnamese Buddhist Association and Vietnamese Alliance Church, with the former in North Omaha and the later in South Omaha. Due to the lack of a concentration of Asian residences, businesses, community organizations and religious centers, there is not any current indication of a strong Asian enclave within Omaha.

Figure 7.29. Distribution of Asian community organizations in Omaha for 2006.

Figure 7.30. Distribution of Asian religious centers in Omaha for 2006.

Summary

One of the main goals of this dissertation is to identify the impacts of living in ethnically segregated neighborhoods. The results from this chapter indicate that there are many positive and negative consequences to living in ethnically segregated Omaha neighborhoods. There are several differences in housing, income, and educational characteristics between each "ethnic" neighborhood (Table 7.7). African Americans in the "African American" neighborhoods live in older housing (median year of 1947), have higher conventional loan denial rates (22.3%), have the lowest median household income level ($20,446.40), and have the highest proportion without private transportation (24.7%). Hispanics in the "Hispanic" neighborhoods live in the oldest housing (median year 1943), have high poverty rates (13.2%), and have the lowest educational levels (3.0% of Hispanics have a bachelor's degree).

Ethnic Neighborhood	Median Year House Built	Percentage of Conventional Mortgage Loans Denied (2003)	Ethnic Median Household Income	Ethnic Percent in Poverty	Ethnic Percent With No Vehicles	Ethnic Percent With a Bachelors Degree
"White"	1978	4.8	$72,824.70	1.7	3.6	32.4
"Afr. American"	1947	22.3	$20,446.40	35.5	24.7	5.5
"Hispanic"	1942	21.3	$32,930.80	23.0	13.2	3.0
"Asian"	1970	9.4	$39,672.40	18.9	9.1	32.9

Table 7.7. Summary of the averaged socioeconomic characteristics for selected variables in each "ethnic" neighborhood in Omaha for 2000 (conventional loan denials were for the year 2003).

Asians and Whites, in their respective "ethnic" neighborhoods, have higher socioeconomic status characteristics than African Americans and Hispanics in their respective neighborhoods. Asians in the "Asian" neighborhoods tend to live in newer housing (median year of 1970), have lower denial rates of conventional mortgage loans (9.4%), and have the highest educational levels (32.9% of Asians have a bachelor's degree). Whites in the "White" neighborhoods live in the newest homes (median year of 1978), have the lowest conventional mortgage loan denial rates (4.8%), have the highest median household income levels by far ($72,824.70), and have high levels of educational attainment (32.4% of Whites have a bachelor's degree).

There are quality of life differences in terms of education at the public school level. Ten out of the 14 public schools with fewer than 50.0% of the students meeting the reading standards are located north of Dodge Street and east of 72nd Street, in predominantly African American neighborhoods. Conversely, 83.9% of the schools with over 90.0% of the students meeting the reading standards are located south of Dodge Street and west of 72nd Street, in predominantly White neighborhoods. These results echo Zubrinsky-Charles (2006) conclusion that Whites, and to a certain extent Asians, benefited from increased wealth and education attainment by moving to where the quality of life is better (e.g. better quality schools).

The findings in this chapter support Friedman and Rosenbaum (2001) findings, in that people with a higher education or income locate themselves in places that reflect their position in society. The ethnically-concentrated African Americans and Hispanics are located in the eastern "inner" city, while Whites and many Asians are concentrated in the western suburbs. And there are differences in quality of life between the eastern and western sections of Omaha. In terms of overall socioeconomic status, African Americans have lower neighborhood quality of life standards, followed by Hispanics, then Asians, and Whites in their respective neighborhoods.

Ethnic Neighborhood	Ethnic Percent of all Minority Businesses	Percent of Ethnic Community Organizations
"African American"	38.9	54.9
"Hispanic"	65.4	46.0
"Asian"	8.6	16.7

Table 7.8. Summary of ethnic minority businesses and social institutions for each "ethnic" neighborhood in Omaha (business data were for 2005 and institution data were for 2006).

A positive consequence of segregation for ethnic minorities in Omaha is the development of ethnic businesses and community organizations (Table 7.8). The

"African American" neighborhoods are home to 38.9% of all non-Asian and non-Hispanic minority businesses, which is more than likely an undercount of total African American businesses in Omaha. Also, 54.9% of all African American community organizations are located in the "African American" neighborhoods. Of the total Hispanic-identified businesses and community organizations, 65.4% and 46.0% respectively, are located in the "Hispanic" neighborhoods. There are 8.6% of the Asian businesses and 16.7% of the Asian community organizations located in the "Asian" neighborhoods. Overall, these percentages indicate there are ethnic business and community organization enclaves for African Americans and Hispanics, but not for Asians in Omaha.

CHAPTER 8: CONCLUSION

Introduction

The first section of this conclusion chapter summarizes the key findings from this dissertation at both the national and local geographic scales. The second section proposes several policy implications derived from the findings. The last section details future considerations on studying the patterns and consequences of ethnic residential segregation.

Summary of Key Findings

The main research goals at the national scale was to indicate if regions in the U.S. are distinguishable by their levels of segregation and to identify variables that explained differences in segregation for metro areas within each region. The "optimal" regionalization developed in this dissertation divided cities by segregation levels into three regions: Northeast, South, and West. Also, there are statistically significant differences in the segregation levels for metro areas in the Northeast, South, and West. In general for 2000, cities in the Northeast are the most segregated, followed by cities in the South, and then in the West. African Americans are the most segregated ethnic group in America, with their dissimilarity indices being higher than those of the other ethnic groups. Hispanics are the next most segregated group and Asians were the least segregated ethnic minority group in urban America.

If ethnic residential segregation varies by region, what variables relate to these differences in segregation? A key finding from this research is that what "explains" or accounts for segregation in one region is different than what "explains" or accounts for segregation in another region. The results from the multiple regression equations reveal that socioeconomic variables account for metro area ethnic residential segregation by region well for White-African American and White-Hispanic pairings (with R^2 values above 0.600). However, multiple regression equations do not generally do well in relating socioeconomic variables to White-Asian and African American-Hispanic segregation by region (with R^2 values under 0.600).

The main research goals at the local scale is to indicate if ethnic groups live in distinctively separate sections of a city and to analyze the consequences of living in ethnically segregated neighborhoods. A case study of Omaha, Nebraska reveals that African Americans live in North Omaha, Hispanics in South Omaha, and Whites and Asians live in the suburbs of western Omaha in 2000. African Americans in Omaha are the most segregated ethnic group, having dissimilarity indices with the other groups all over 67.0. Hispanics are the second most segregated group, with their DI values ranging from 54.1 (segregation with Whites) to 67.1 (segregation with African Americans). Asians in Omaha are the least segregated with Whites (29.2), but are very residentially segregated from African Americans (69.1) and Hispanics (58.1).

The tract level variance in segregation levels between Whites and African Americans in Omaha is explained by several housing and income related variables. The most influential variable is the number of Section 8 housing units (with a beta weight of -0.403) that indicates more Section 8 housing units relates to more segregated African American neighborhoods. The second most influential variable was poverty (-0.381), which signifies higher poverty levels in a tract relates to more segregated African American tracts. Differences in White-Hispanic segregation in Omaha are explained by education and income variables. The most influential variables are the percent with less than a 9th grade education (-0.841) and per capita income (-0.235). More segregated Hispanic areas are associated with higher populations with less than a 9th grade education and with lower per capita incomes. Explaining White-Asian segregation in Omaha with the selected socioeconomic variables is more difficult, with the multiple regression model having an R^2 of -0.413. The most influential variable accounting for White-Asian segregation is the percent of renter occupied housing (-0.529); indicating that more segregated Asian neighborhoods have higher percentages of rental housing.

Omaha is residentially divided by ethnicity. What are the consequences of living in these ethnically segregated neighborhoods? A comparison of the characteristics of ethnically-concentrated neighborhoods reveals several social inequalities. African Americans in the "African American" neighborhoods have an average household income ($20,446.40) that is under one-third the average household income of Whites ($72,824.70) in the "White" neighborhoods. The poverty levels of African Americans (35.5%), Hispanics (23.0%), and Asians (18.9%) in their respective "ethnic" neighborhoods are ten to 15 times greater than the poverty level of Whites (1.7%) in the "White" neighborhood.

The impacts of living in ethnically segregated areas also relate to educational attainment and school quality characteristics. In terms of having a bachelor's degree, Whites (32.3%) and Asians (32.9%) have higher averages than African Americans (5.5%) and Hispanics (3.0%) in their respective "ethnic" neighborhoods. Also, public school data reveal spatial and ethnic differences in school quality in Omaha. The public schools with the highest proportions of students meeting their reading standards (over 90.0%) are in the suburbs of western Omaha. Conversely, the public schools with the lowest proportions of students meeting their reading standards (under 50.0%) are in North and South Omaha, predominantly areas of African American and Hispanic neighborhoods, respectfully.

A positive consequence of ethnic segregation for African Americans and Hispanics in Omaha are the development of ethnic business enclaves and ethnic community organizations and religious centers. These businesses and institutions have the possibility to serve both the local ethnic community and people in the wider metro area. The positive results of living in residential segregation suggest that the ghetto-ethnic enclave dichotomy, or "good" and "bad" segregation (Peach 1996), is too simplistic. A segregated place may have both advantageous and disadvantageous consequences for its ethnic group members.

Of the 337 minority businesses that are not Hispanic-identified or Asian-identified in 2005, 72.1% are located east of 72nd Street and north of Dodge Street, which have a higher proportion of African Americans. In terms of the 102 African American social organizations and religious centers in 2006, 82 (or 80.4%) are located east of 72nd and north of Dodge. Even with the comparably low socioeconomic characteristics for African Americans in North Omaha, there are some advantages of living in ethnically segregated areas.

Hispanic-owned businesses in 2005 are predominantly found in South Omaha, with 65.4% of the total Hispanic-identified businesses located east of 72nd Street and south of Dodge Street. In terms of Hispanic social organizations and religious centers, 78.1% of these institutions are located east of 72nd Street and south of Dodge Street. The development of Hispanic businesses and social organizations within South Omaha indicates positive outcomes of segregated Hispanic spaces. The development of Hispanic institutions has benefited from the residential concentration of Hispanics in South Omaha, even though these neighborhoods have relatively poor socioeconomic characteristics.

Unlike the African American and Hispanic patterns, Asians in Omaha do not have predominant residential or ethnic business enclaves. It might possibly be that heterolocalism, as developed by Zelinsky and Lee (1998), describes Asian connections in Omaha. Asian group members, probably divided along national origin lines, are not living near each other but may possibly stay connected with each other via the internet or by attending festivals at one of the Asian social organizations. Further research is needed to verify if heterolocalism is an explanation of the Asian experiences in Omaha.

Policy Implications

Given that there are differences in "explaining" or accounting for segregation in each region, there are many policy implications that can be suggested from this finding. The results from a national scale analysis indicate that what can "solve" segregation in some areas may not work in other places. Reasons for higher White-African American segregation levels in the Northeast (e.g. per capita income of non-Hispanic Whites) are different than the reasons for higher segregation levels in the South and West. Policies to alleviate segregation between Whites and African Americans by promoting equality in income may only help African Americans living in the Northeast and not the West, which had no income-related variable tied to explaining White-African American segregation. Analyses from this dissertation identified region specific variables that could be used by federal policy makers to desegregate our cities.

Ethnic residential segregation policies can be categorized into two groups: those that help people or those that help places. The policies that help people involve ethnic residential integration of the city by moving ethnic minorities from the inner city to White suburbs (Maly (2005) and De Souza Briggs (2005) favor integration policies). The HOPE VI and Gautreaux housing programs relate to this approach by moving people from the poorer quality of life conditions of the "ghetto" to the better amenities found in the suburbs. Other policies that move people to the suburbs relate to more strict enforcement of fair housing legislation by HUD (Bonastia 2006). This would reduce housing discrimination and allow ethnic minorities to buy homes that they can afford, whether that be in the suburbs or within an ethnically segregated neighborhood. A problem of these policies is that not everyone will be able to move out to "opportunities" in the suburbs. What about the people that are left behind?

The policies that help a place, and thus the people living in that residentially segregated neighborhood, involve re-investment in ethnically segregated neighborhoods. These policies include community redevelopment programs that attempt to economically revitalize an area, with the goal of providing the residents with a better source of income and higher quality of life standards. Other policies relate to the development of ethnic community organizations that meet the needs of specific ethnic group members. The goal here is that empowered ethnic groups may be able to fight for social injustices that their group members' face. Qadeer (2005) calls for policies that focus on the greater ethnic mixing in schools, the workplace, and recreational activities, rather than for a desegregation of residential spaces. Rohe and Freeeman (2001, 183) feel that a combination of “pro-people” and “pro-place” policies are needed to overcome the negative consequences of ethnic residential segregation.

This dissertation found that separate living spaces equates to unequal living spaces. Given this problem, do policy makers fix the “separate” part and residentially integrate urban American or do policy makers fix the “unequal” part and strive towards eradicating social differences (e.g. income) between ethnic groups? The Omaha case study reveals negative and positive consequences of ethnic residential segregation. Since moving people from a place may diminish the positive consequences and eradicate the social capital developed in a neighborhood, “pro-place” policies might be favored over “pro-people” desegregation policies. This dissertation found inequality in the distribution of school quality in Omaha, with a higher percentage of students not meeting the reading standards living east of 72nd Street. Instead of busing students to different schools, students in poorer quality schools may be aided by “busing” more experienced teachers to the schools east of 72nd Street. A negative impact of a “pro-place” policy is that fewer contacts between ethnic groups would be facilitated. To counteract this problem, there could be the development of a partner school program in Omaha, where three schools (one predominantly White, one predominantly African American, and one predominantly Hispanic) can partake in joint school activities. The case study analysis of Omaha in this dissertation identifies several socioeconomic variables that are related to ethnic residential segregation between ethnic pairs. Thus, policies and programs could use the information presented here to alleviate ethnic residential segregation or to alleviate the social inequalities found in living in segregated neighborhoods.

Future Considerations

The results from this dissertation generally amplify Kaplan and Woodhouse's statement that ethnic residential segregation "victimizes some groups while liberating others" (2004, 583). Future studies on the positive and negative consequences of living in ethnically segregated neighborhoods would benefit by investigating more variables. The inclusion of other quality of life variables, such as crime, amount and type of recreational spaces, community involvement, etc., would strengthen the understanding of the impacts of ethnic residential segregation within a city. This dissertation suggested sub-ethnic group differences in SES, so information about Chinese-specific or Mexican-specific socioeconomic data would be beneficial to investigate sub-ethnic group differences. For example, a comparison between Chinese and Vietnamese in terms of their educational attainment levels and income levels would be interesting to study.

The addition of survey questionnaires could be useful for the case study section of this dissertation. This may reveal ethnic group preferences on the "optimal" ethnic mix of a neighborhood in Omaha. Surveys relating to where certain ethnic groups shop and participate in sporting activities would possibly indicate if ethnic groups live in isolation or interact with other groups. A survey would be useful to test the heterolocalism hypothesis for Asians in Omaha: are Asian community ties found in cyberspace? Are there emails that provide ethnic community updates? If so, how big is the list serve and where are these residents located? Social institutions, such as ethnic churches, may act as residential "anchors" when ethnic group members decide where to move and might make desegregation a slow process over time. An interesting longitudinal study would be to geocode and map the distribution of adherents at a particular ethnic religious center over time.

A future research consideration would be to replicate the same methodology employed in this dissertation for Omaha to other similar-sized metropolitan areas. Are the patterns and consequences of ethnic residential segregation in other cities similar to or different than those found in Omaha? This comparison may reveal different variables that relate to the residential segregation of ethnic pairs. Overall, a future longitudinal consideration is to implement the methodology developed in this dissertation to data from the 2010 U.S. Census.

Conclusion

The overall goal of this dissertation is to further understand the patterns and consequences of ethnic residential segregation at two geographic scales. Several statistical and cartographic techniques were implemented to accomplish this goal. This dissertation found that American urban spaces are residentially divided by ethnicity. Even though there are different variables explaining the regional variations in ethnic residential segregation in the U.S., the fact that segregation even exists today is noteworthy. It is not only symbolic that people of different ethnic backgrounds do not live together, but the reality is that there are socioeconomic differences between ethnic groups living in segregated neighborhoods. If there are social inequalities found in American metro areas, how does this fact reflect on our society?

Analyzing the patterns and consequences of ethnic residential segregation in Omaha indicates that separate living spaces do not equate to equal living spaces. African Americans and Hispanics are the most residentially segregated groups and tend to live in poorer quality of life conditions, while the least segregated Whites and some Asians tend to live in better quality of life conditions. Progress towards social equality will not just involve decreasing segregation levels over time, but will also involve decreasing the economic, education, and housing gaps found between ethnic groups. The investigation of the patterns and consequences of ethnic residential segregation in this dissertation has found that social inequality and spatial inequality appear to be linked in American urban society.

References

Adobe Systems Incorporated. Adobe Illustrator™ 10.0.3.

Alba, R. and Logan, J. 1993. Minority Proximity to Whites in Suburbs: An Individual-Level Analysis of Segregation. *The American Journal of Sociology* 98, 1388-1427.

________. 1991. Variations on Two Themes: Racial and Ethnic Patterns in the Attainment of Suburban Residence. *Demography* 28, 431-453.

Alba, R., Logan, J., Stults, B., Marzan, G., and Zhang, W. 1999. Immigrant Groups in the Suburbs: A Reexamination of Suburbanization and Spatial Assimilation. *American Sociological Review* 64, 446-460.

Aldelman, R. 2005. The Roles of Race, Class, and Residential Preferences in the Neighborhood Racial Composition of Middle-Class Blacks and Whites. *Social Science Quarterly* 86, 209-228.

Anselin, L. GeoDa™ . Spatial Analysis Lab, University of Illinois.

Archer, J.C. 1975. Occupational Rank and Residential Association: Testing A Hypothesis. *Proceedings of the Association of American Geographers* 7, 29–31.

Banerjee, T. and Verma, N. 2005. Sprawl and Segregation: Another Side of the Los Angeles Debate in *Desegregating the City: Ghettos, Enclaves, and Inequality*. Varady, D. editor. Albany: State University of New York.

Berry, B. 1964. Cities as Systems within Systems of Cities. *Papers in Regional Science* 13, 146-163.

Berry, K. and Henderson, M. 2002. *Geographical Identities of Ethnic America: Race, Space, and Place*. Reno and Las Vegas: University of Nevada Press.

Beveridge, A. 2002. Immigration, Ethnicity, and Race in Metropolitan New York, 1900-2000 in *Past Time, Past Place: GIS for History*. Knowles, A. editor. Redlands, CA: ESRI Press.

Bitzes, J. 1970. Anti-Greek Riot of 1909-South Omaha. *Nebraska History* 51, 199-204.

Blalock, H. 1960. *Social Statistics*. New York: McGraw-Hill Book Company, Inc.

Bonastia, C. 2006. *Knocking on the Door: The Federal Government's Attempt to Desegregate the Suburbs*. Princeton, N.J.: Princeton University Press.

Bond, C. 2004. *Does Increasing Black Homeownership Decrease Residential Segregation?* PhD Dissertation, University of Notre Dame: Indiana

Boswell, T. and Cruz-Báez, A. 1997. Residential Segregation by Socioeconomic Class in Metropolitan Miami: 1990. *Urban Geography* 18, 474-496.

Bukenya, J., Gebremedhin, T., and Schaeffer, P. 2003. Analysis of Rural Quality of Life and Health: A Spatial Approach. *Economic Development Quarterly* 17, 280-293.

Bullard, R., Johnson, G., and Torres, A. 2000. *Sprawl City: Race, Politics, and Planning in Atlanta*. Washington, D.C.: Island Press.

Checkoway, B. and Patton, C. 1985. *The Metropolitan Midwest*. Urbana and Chicago: University of Illinois Press.

Clark, W. 2002. Ethnic Preferences and Ethnic Perceptions in Multi-Ethnic Settings. *Urban Geography* 23, 237-256.

Clark, W. and Blue, S. 2004. Race, Class, and Segregation Patterns in U.S. Immigrant Gateway Cities. *Urban Affairs Review* 39, 667-688.

Cundiff, R. 1999. Using Geographic Information Systems to Measure Segregation in U.S. Metropolitan Areas. http://www.utexas.edu/depts/grg/hudson/grg394k/studentprojects/cundiff/cundiff.html#

Dalstrom, H. 2004. Omaha, Nebraska. Entry in *Encyclopedia of the Great Plains*. David Wishart, editor. Lincoln, NE: University of Nebraska Press.

De La Garza, M. 2000. *Anti-Mexican Hysteria in Nebraska, 1910-1920: The Lynching of Juan Gonzalez and The Trial of Juan Parral*. Thesis, University of Nebraska-Lincoln.

DeMers, M. 2000. *Fundamentals of Geographic Information Systems, 2nd Ed*. New York: John Wiley and Sons, Inc.

Department of Education in Nebraska. 2000. *State of the Schools Report: A Report on Nebraska Public Schools*. http://reportcard.nde.state.ne.us/20002001/Main/Home.asp

Department of Housing and Urban Development. 2000. *A Picture of Subsidized Households 2000*. http://www.huduser.org/picture2000/index.html

De Souza Briggs, X. 2005. *The Geography of Opportunity: Race and Housing Choice in Metropolitan America*. Washington, D.C.: Brookings Institution Press.

De Souza Briggs, X., Darden, J., and Aidala, A. 1999. In the Wake of Desegregation: Early Impact of Scattered-Site Public Housing on Neighborhoods in Yonkers, New York. *Journal of the American Planning Association* 65, 27-49.

Diener, E. and Suh, M. 2000. *Culture and Subjective Well-being*. Cambridge: MIT Press.

Dissart, J. and Deller, S. 2000. Quality of Life in the Planning Literature. *Journal of Planning Literature* 15, 135-146.

Duncan, O. and Duncan. B. 1955. A Methodological Analysis of Segregation Indexes. *American Sociological Review* 20, 210-217.

Easterly, W. 1999. Life During Growth. World Bank http://econ.worldbank.org/external/default/main?pagePK=64165259&theSitePK=469372&piPK=64165421&menuPK=64166093&entityID=000094946_99060201522485

Egan, K., Anderton, D., and Weber, E. 1998. Relative Spatial Concentration among Minorities: Addressing Errors in Measurement. *Social Forces* 76, 1115-1121.

Ehrenreich, B. 2001. *Nickel and Dimed: On (Not) Getting By in America*. New York: Henry Hold and Company.

Ellen, I. 2000a. *Sharing America's Neighborhoods: The Prospects for Stable Racial Integration*. Cambrige, Mass: Harvard University Press.

________. 2000b. Is Segregation Bad For Your Health? The Case of Low Birth Weight. *Brookings-Wharton Papers on Urban Affairs* 2000, 203-229.

Emerson, M., Yancey, G., and Chai, K. 2001. Does Race Matter in Residential Segregation? Exploring the Preferences of White Americans. *American Sociological Review* 66, 922-935.

Espino, N. 2005. Inequality, Segregation, and Housing Markets: The U.S. Case in *Desegregating the City: Ghettos, Enclaves, and Inequality*. Varady, D. editor. Albany: State University of New York.

Environmental Systems Research Institute (ESRI). ArcView 3.2. Geographic Information System.

Farley, R., Fielding, E., and Krysan, M. 1997. The Residential Preferences of Blacks and Whites: A Four-Metropolis Analysis. *Housing Policy Debate* 8, 763-799.

Farley, J. and Squires, G. 2005. Fences and Neighbors: Segregation in 21st-Century America. *Contexts* 4, 33-39.

Federal Financial Institutions Examination Council. 2003. *Home Mortgage Disclosure Act (HMDA) Aggregate Reports, 2003*. http://www.ffiec.gov/hmda/default.htm

Fimple, K. 1989. *An Analysis of the Changing Spatial Dimensions of Ethnic Neighborhoods in Omaha, Nebraska, 1880-1900*. PhD dissertation. University of Nebraska-Lincoln.

Fischer, C., Stockmayer, G., Stiles, J., and Hout, M. 2004. Distinguishing the Geographic Levels and Social Dimensions of U.S. Metropolitan Segregation, 1960-2000. *Demography* 41, 37-59.

French, K. 2002. *Ethnic Groups in the Urban Fringe: An Analysis of Residential Patterns in Four Midland Cities, 1960 to 2000*. Thesis. University of Nebraska-Lincoln.

Frey, W. and Farley, R. 1996. Latino, Asian, and Black Segregation in U.S. Metropolitan Areas: Are Multiethnic Metros Different? *Demography* 33, 35-50.

Friedman, S. and Rosenbaum, E. 2001. Differences in the Locational Attainment of Immigrant and Native-born Households with Children in New York City. *Demography* 38, 337-348.

Glaeser, E. and Vigdor, J. 2001. Racial Segregation in the 2000 Census: Promising News. *The Brookings Institution* April, 1-16.

Goering, J., Kamely, A., and Richardson, T. 1997. Recent Research on Racial Segregation and Poverty Concentration in Public Housing in the United States. *Urban Affairs Review* 32, 723-745.

Gotham, K. 2000. Urban Space, Restrictive Covenants and the Origins of Racial Residential Segregation in a US city, 1900-1950. *International Journal of Urban and Regional Research* 24, 616-633.

________. 1998. Suburbia Under Siege: Low-Income Housing and Racial Conflict in Metropolitan Kansas City, 1970-1990. *Sociological Spectrum* 18, 449-483.

Greater Omaha Chamber of Commerce. 2006. *Multi-Ethnic Guide for the Greater Omaha Area*.

________. 2005. *Minority Economic Development Council Business Directory*.

Greene, R. and Pick, J. 2006. *Exploring the Urban Community: A GIS Approach*. United States: Prentice Hall.

Haring, M. J., Stock W. A., Okun, M. A., and Witter, R. A. 1984. Education and Subjective Well-Being: a Meta-analysis. *Educational Evaluation and Policy Analysis* 6, 165-173.

Harrison, R. and Weinberg, D. 1992. Residential Segregation – Measure Definitions in *Racial and Ethnic Segregation: 1990.*

Hartshorn, T. 1992. *Interpreting the City: An Urban Geography, 2nd ed*. New York: John Wiley & Sons, Inc.

Hirschman, A. O. 1989. Having Opinions—One of the Elements of Well-Being. *The American Economic Review* 79, 75-79.

Hwang, S. and Murdock, S. 1998. Racial Attraction or Racial Avoidance in American Suburbs? *Social Forces* 77, 541-566.

Iceland, J. 2004. Beyond Black and White Metropolitan Residential Segregation in Multi-ethnic America. *Social Science Research* 33, 248-271.

Iceland, J., Sharpe, C., and Steinmetz, E. 2005. Class Differences in African American Residential Patterns in US Metropolitan Areas: 1990-2000. *Social Science Research* 34, 252-266.

Iceland, J., Weinberg, D., and Steinmetz, E. 2002. Racial and Ethnic Residential Segregation in the United States: 1980-2000. *U.S. Census Report CENSR-3*.

James, D. and Taeuber, K. 1985. Measures of Segregation. *Sociological Methodology* 15, 1-32.

Johnston, R., Poulsen, M., and Forrest, J. 2007. Ethnic and Racial Segregation in U.S. Metropolitan Areas, 1980-2000: The Dimensions of Segregation Revisited. *Urban Affairs Review* 42, 479-504.

Kain, J. 1968. Housing Segregation, Negro Employment, and Metropolitan Decentralization. *Quarterly Journal of Economics* 82, 175-197.

Kaplan, D. and Woodhouse, K. 2005. Research in Ethnic Segregation II: Measurements, Categories, and Meanings. *Urban Geography* 26, 737-745.

________. 2004. Research in Ethnic Segregation I: Causal Factors. *Urban Geography* 25, 579-585.

Kachigan, S. 1991. *Multivariate Statistical Analysis: A Conceptual Introduction, 2nd Ed.* New York: Radius Press.

Kawachi, I. and Berkman, L. 2003. *Neighborhoods and Health*. Oxford, New York: Oxford University Press.

Knowles, A. 2002. *Past Time, Past Place: GIS for History*. Redlands, CA: ESRI Press.

Knox, P. and Pinch, S. 2000. *Urban Social Geography: An Introduction, 4th Edition*. London: Prentice Hall.

Krupka, D. 2007. Are Big Cities More Segregated? Neighbourhood Scale and the Measurement of Segregation. *Urban Studies* 44, 187-197.

Krysan, M. and Farley, R. 2002. The Residential Preferences of Blacks: Do They Explain Persistent Segregation? *Social Forces* 80, 937-980.

Lamb, C. 2005. *Housing Segregation in Suburban America since 1960: Presidential and Judicial Politics*. Cambridge, NY: Cambridge University Press.

Lane, V. 1995. Best Management Practices in U.S. Public Housing. *Housing Policy Debate* 6, 867-904.

Larsen, L. and Cottrell, B. 1997. *The Gate City: A history of Omaha.* Boulder, CO: Pruett Publishing Company.

Lee, J. and Wong, D. 2001. *Statistical Analysis with ArcView GIS*. United States: John Wiley & Sons.

Lewis Mumford Center. 2002. *Metropolitan Racial and Ethnic Change-Census 2000*. http://mumford.albany.edu/census/

Li, W. 1998. Anatomy of a New Ethnic Settlement: The Chinese Ethnoburb in Los Angeles. *Urban Studies* 35, 479-501.

Logan, J. and Alba, R. 1995. Who Lives in Affluent Suburbs? Racial Differences in Eleven Metropolitan Regions. *Sociological Focus* 28, 353-363.

Logan, J., Stults, B., and Farley, R. 2004. Segregation of Minorities in the Metropolis: Two Decades of Change. *Demography* 41, 1-22.

Marcuse, P. 2005. Enclaves Yes, Ghettos No: Segregation and the State in *Desegregating the City: Ghettos, Enclaves, and Inequality*. Varady, D. editor. Albany: State University of New York.

Massey, D. 1979. Effects of Socioeconomic Factors of the Residential Segregation of Blacks and Spanish Americans in U.S. Urbanized Areas. *American Sociological Review* 44, 1015-1022.

Massey, D. and Denton, N. 1993. *American Apartheid*. Cambridge: Harvard University Press.

________. 1988. The Dimensions of Residential Segregation. *Social Forces* 67, 281-315.

Mayadas, N. and Segal, U. 2000. Refugees in the 1990s: A U.S. Perspective in *Social Work Practice with Immigrants and Refugees*. Balgopal, P. editor. New York: Columbia University Press.

Mead and Hunt, Inc. 2005. *Reconnaissance Survey of Portions of South Omaha: Nebraska Historic Buildings Survey*. City of Omaha and Nebraska State Historical Society.

Meyer, S. 2000. *As Long As They Don't Move Next Door: Segregation and Racial Conflict in American Neighborhoods*. Lanham, Boulder, New York, and Oxford: Rowman & Littlefield Publishers, Inc.

Mouw, T. 2002. Are Black Workers Missing the Connection? The Effect of Spatial Distance and Employee Referrals on Interfirm Racial Segregation. *Demography* 39, 507-528.

Muth, R. 1969. *Cities and Housing*. Chicago: The University of Chicago Press.

Newman, O. 1976. *Design Guidelines For Creating Defensible Space*. Washington, D.C.: U.S. Government Printing Office.

Noddings, N. 2003. *Happiness and Education*. United States: Cambridge University Press.

Omer, I. and Benenson, I. 2002. Investigating Fine-Scale Residential Segregation by Means of Local Spatial Statistics. *Geography Research Forum* 22, 41-20.

Peach, C. 2005. The Ghetto and the Ethnic Enclave in *Desegregating the City: Ghettos, Enclaves, and Inequality*. Varady, D. editor. Albany: State University of New York.

________. 1996. Good segregation, bad segregation. *Planning Perspectives* 11, 379-398.

Pendall, R. 2000. Local Land Use Regulation and the Chain of Exclusion. *Journal of the American Planning Association* 66, 125-141.

Polikoff, A. 2006. *Waiting for Gautreaux: A Story of Segregation, Housing, and The Black Ghetto*. Evanston, IL: Northwestern University Press.

Popkin, S. 2003. H.R. 1614 HOPE VI Reauthorization and Small Community Revitalization Housing Act (Testimony before U.S. House of Representatives, Committee on Financial Services). www.urban.org/urlprint.cfm?ID=8367

________. 2002. The HOPE VI Program-What About the Residents? *Urban Institute* December.

Qadeer, M. 2005. Ethnic Segregation in a Multicultural City in *Desegregating the City: Ghettos, Enclaves, and Inequality*. Varady, D. editor. Albany: State University of New York.

Randall, J. and Morton, P. 2003. Quality of Life in Saskatoon 1991 and 1996: A Geographic Perspective. *Urban Geography* 24, 691-722.

Reynolds, J. R. and Ross, C. E. 1998. Social stratification and health: education's benefit beyond economic status and social origins. *Social Problems* 45, 221-247.

Rogerson, P. 2001. *Statistical Methods for Geography*. London: Sage Publications.

Rohe, W. and Freeman, L. 2001. Assisted Housing and Residential Segregation: The Role of Race and Ethnicity in the Siting of Assisted Housing Developments. *Journal of the American Planning Association* 67, 279-292.

Rose, H. 1981. The Black Professional and Residential Segregation in the American City in *Ethnic Segregation In Cities*. Peach, C., Robinson, V., and Smith, S., editors. London: Croom Helm.

Rossum, S. and Lavin, S. 2000. Where are the Great Plains? A Cartographic Analysis. *Professional Geographer* 52, 543-552.

Rusk, D. 1999. *Inside Game/Outside Game: Winning Strategies for Saving Urban America*. Washington, D.C.: Brookings Institute Press.

Schneider, M. and Phelan, T. 1993. Black Suburbanization in the 1980s. *Demography* 30, 269-279.

Shortridge, J. 1985. The Vernacular Middle West. *Annals of the Association of American Geographers* 75, 48-57.

Sugrue, T. 1996. *The Origins of the Urban Crisis: Race and Inequality in Postwar Detroit*. Princeton: Princeton University Press.

Squires, G., Friedman, S., and Saidat, C. 2005. Housing Segregation in the United States in *Desegregating the City: Ghettos, Enclaves, and Inequality*. Varady, D. editor. Albany: State University of New York.

Thumboo, J., Fong, K., Machin, D., Chan, S., Soh, C., Leong, K., Feng, P., Thio, S., and Boey, M. 2003. Quality of life in an urban Asian population: the impact of ethnicity and socio-economic status. *Social Science and Medicine* 56, 1761-1772.

Trudeau, D. 2006. The Persistence of Segregation in Buffalo, New York: *Comer vs. Cisneros* and Geographies of Relocation Decisions among Low-Income Black Households. *Urban Geography* 27, 20-44.

Turner, M. and Ross, S. How Racial Discrimination Affects the Search for Housing in *The Geography of Opportunity: Race and Housing Choice in Metropolitan America*. De Souza Briggs, editor. Washington, D.C.: Brookings Institution Press.

Turner, M., Ross, S., Galster, G., and Yinger, J. 2002. *Discrimination in Metropolitan Housing Markets; National Results from Phase I HDS 2000*. Washington D.C.: U.S. Department of Housing and Urban Development.

U.S. Census. 2008. *Metropolitan Areas, Chapter 13*. http://www.census.gov/geo/www/GARM/Ch13GARM.pdf

________. 2007a. Census Regions. http://www.census.gov/geo/www/cob/rg_metadata.html

________. 2007b. Cartographic Boundary Files. http://www.census.gov/geo/www/cob/rg_metadata.html

________. 2006. Nation's Population One-Third Minority. http://www.census.gov/population/www/estimates/aboutmetro.html

________. 2005. About Metropolitan and Micropolitan Statistical Areas. www.census.gov/PressRelease/www/releases/archives/population/006808.html

________. 2000. American Factfinder. *www.census.gov*

Vale, L. 2002. *Reclaiming Public Housing: A Half Century of Struggle in Three Neighborhoods*. Cambridge, Mass: Harvard University Press.

van Kempen, R. and Özüekren, A. 1998. Ethnic Segregation in Cities: New Forms and Explanations in a Dynamic World. *Urban Studies* 35, 1631-1656.

Varady, D. 2005. *Desegregating the City: Ghettos, Enclaves, and Inequality*. Albany: State University of New York.

Wassner, R. 2005. The Economic View of the Causes as Well as the Costs and Some of the Benefits of Urban Spatial Segregation in *Desegregating the City: Ghettos, Enclaves, and Inequality*. Varady, D. editor. Albany: State University of New York.

Williams, D. 2000. *Urban Sprawl: A Reference Handbook*. Santa Barbara, CA: ABC-CLIO.

Wilson, W. 1987. *The Truly Disadvantaged: The Inner City, The Underclass, and Public Policy*. Chicago: University of Chicago Press.

________. 1978. *The Declining Significance of Race: Blacks and Changing American Institutions*. Chicago: University of Chicago Press.

Wilson, F. and Hammer, R. 2001. *Urban Inequality: Evidence from Four Cities*. O'Connor, A., Tilly, C., and Bobo, L. editors. New York: Russell Sage Foundation.

Wishart, D. 2004. Period and Region. *Progress in Human Geography* 28, 305-319.

Wong, D. 2005. Desktop and Internet GIS Development for Spatial Segregation Analysis. http://geog.gmu.edu/seg/esri_paper/p0275.htm

________. 2003. Spatial Decomposition of Segregation Indices: A Framework Toward Measuring Segregation at Multiple Levels. *Geographical Analysis* 35, 179-194.

________. 2002. Spatial Measures of Segregation and GIS. *Urban Geography* 23, 85-92.

________. 1999. Geostatistics as Measures of Spatial Segregation. *Urban Geography* 20, 635-647.

________. 1998. Measuring Multiethnic Spatial Segregation. *Urban Geography* 19, 77-87.

Wong, D. and Chong, W. 1998. Using Spatial Segregation Measures in GIS and Statistical Modeling Packages. *Urban Geography* 19, 477-485.

Yinger, J. 1995. *Closed Doors, Opportunities Lost: The Continuing Costs of Housing Discrimination*. New York: Russell Sage Foundation.

Yuan, A. 2008. Racial Composition of Neighborhood and Emotional Well-Being. *Sociological Spectrum* 28, 105-129.

Zelinsky, W. and Lee, B. 1998. Heterolocalism: An Alternative Model of Sociospatial Behaviour of Immigrant Ethnic Communities. *International Journal of Population Geography* 4, 281-298.

Zhang, Q. 1998. Residential Segregation of Asian Americans in the Atlanta Metropolitan Area, 1990. *Southeastern Geographer* 38, 125-141.

Zubrinsky, C. and Bobo, L. 1996. Prismatic Metropolis: Race and Residential Segregation in the City of the Angels. *Social Science Research* 25, 335-374.

Zubrinsky-Charles, C. 2006. *Won't You Be My Neighbor? Race, Class, and Residence in Los Angeles*. New York: Russell Sage Foundation

________. 2001. Processes of Racial Residential Segregation in *Urban Inequality: Evidence from Four Cities*. O'Connor, A., Tilly, C., and Bobo, L. editors. New York: Russell Sage Foundation.

Appendix A: Histograms of segregation levels (dissimilarity index) between ethnic group pairs for metro areas divided by region and by population size, from 1980 to 2000.

Table A1. Histograms of White-African American segregation levels (dw_aa80) for metro areas in 1980.

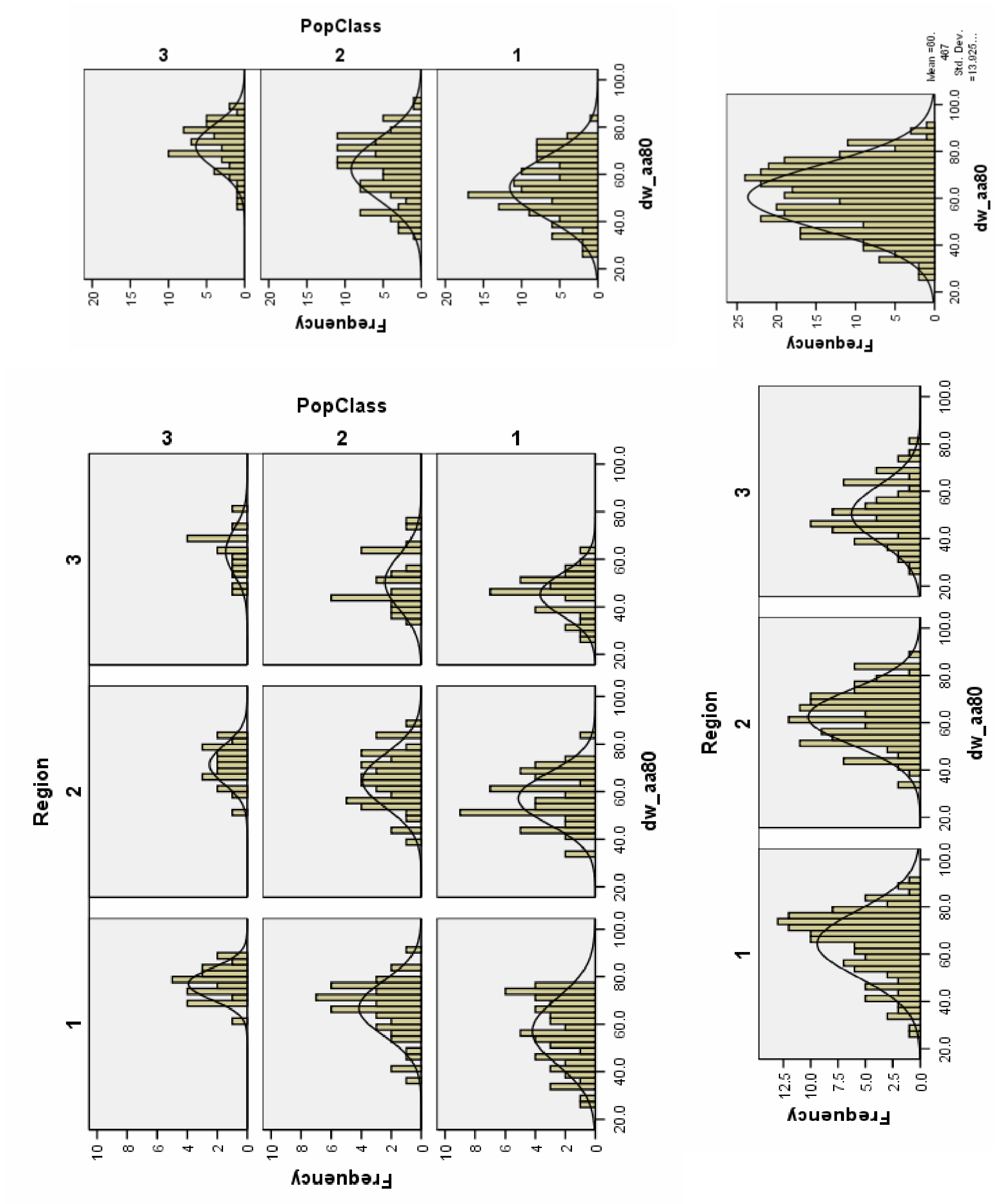


Table A2. Histograms of White-Hispanic segregation levels (dw_h80) for metro areas in 1980.

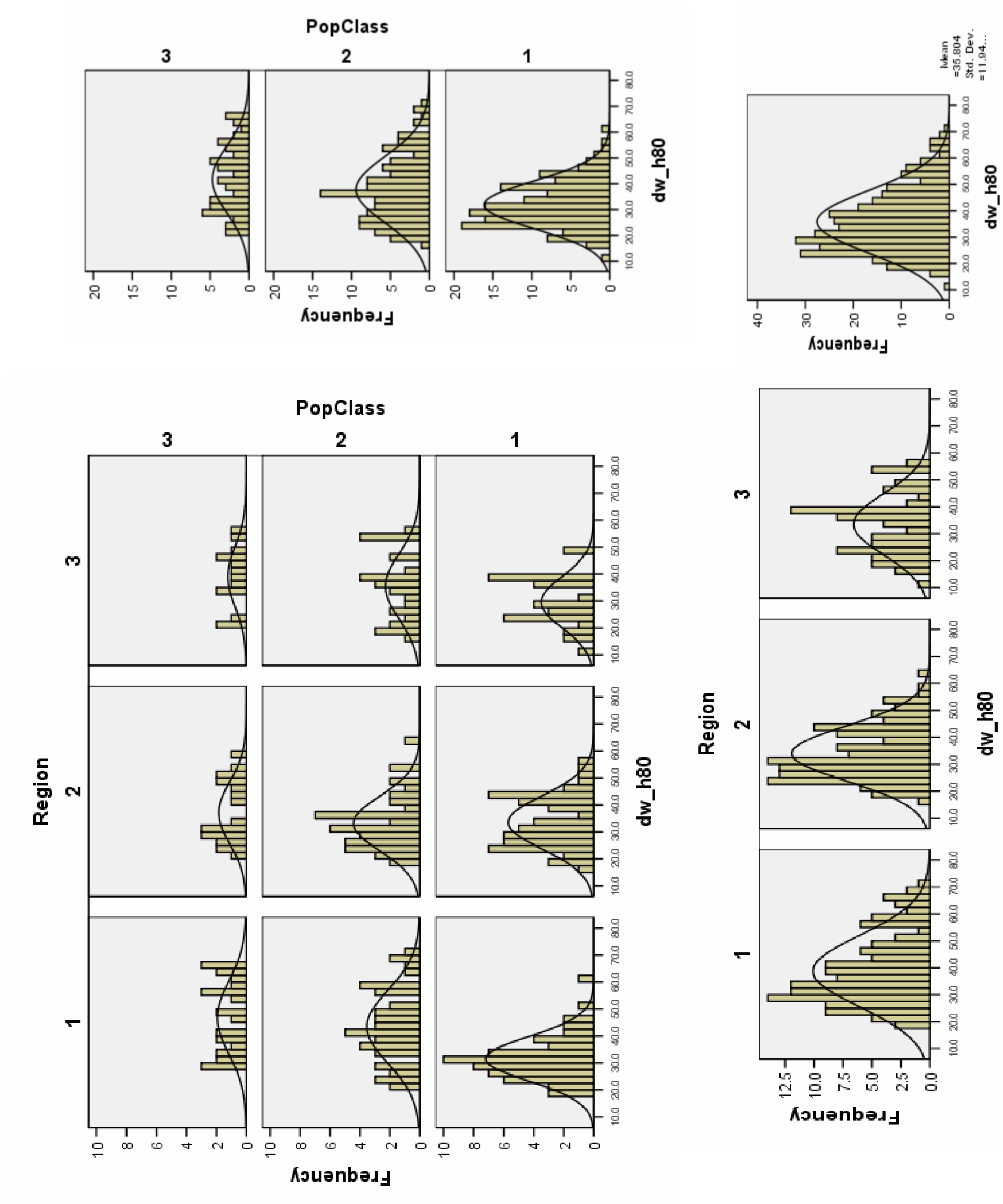


Table A3. Histograms of White-Asian segregation levels (dw_as80) for metro areas in 1980.

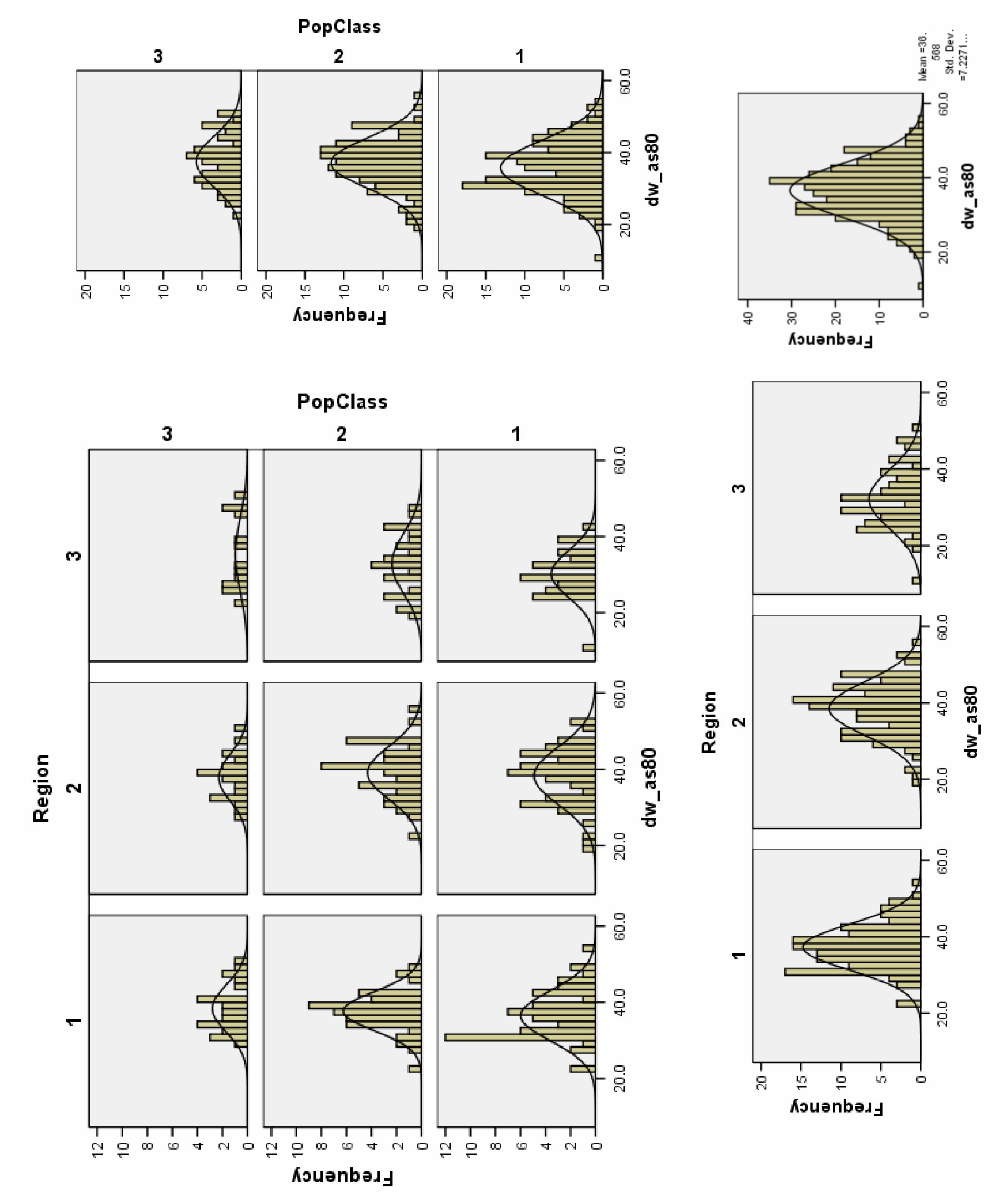
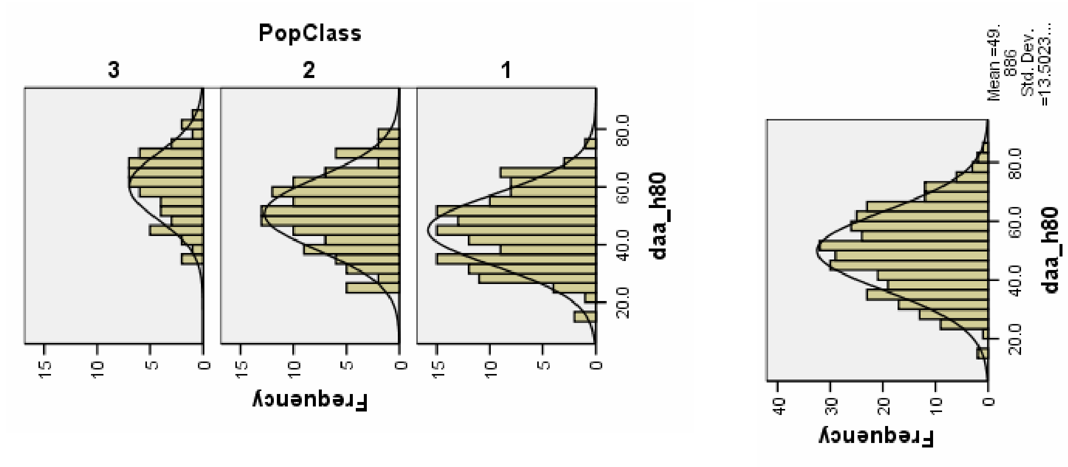


Table A4. Histograms of African American-Hispanic segregation levels (daa_h80) for metro areas in 1980.



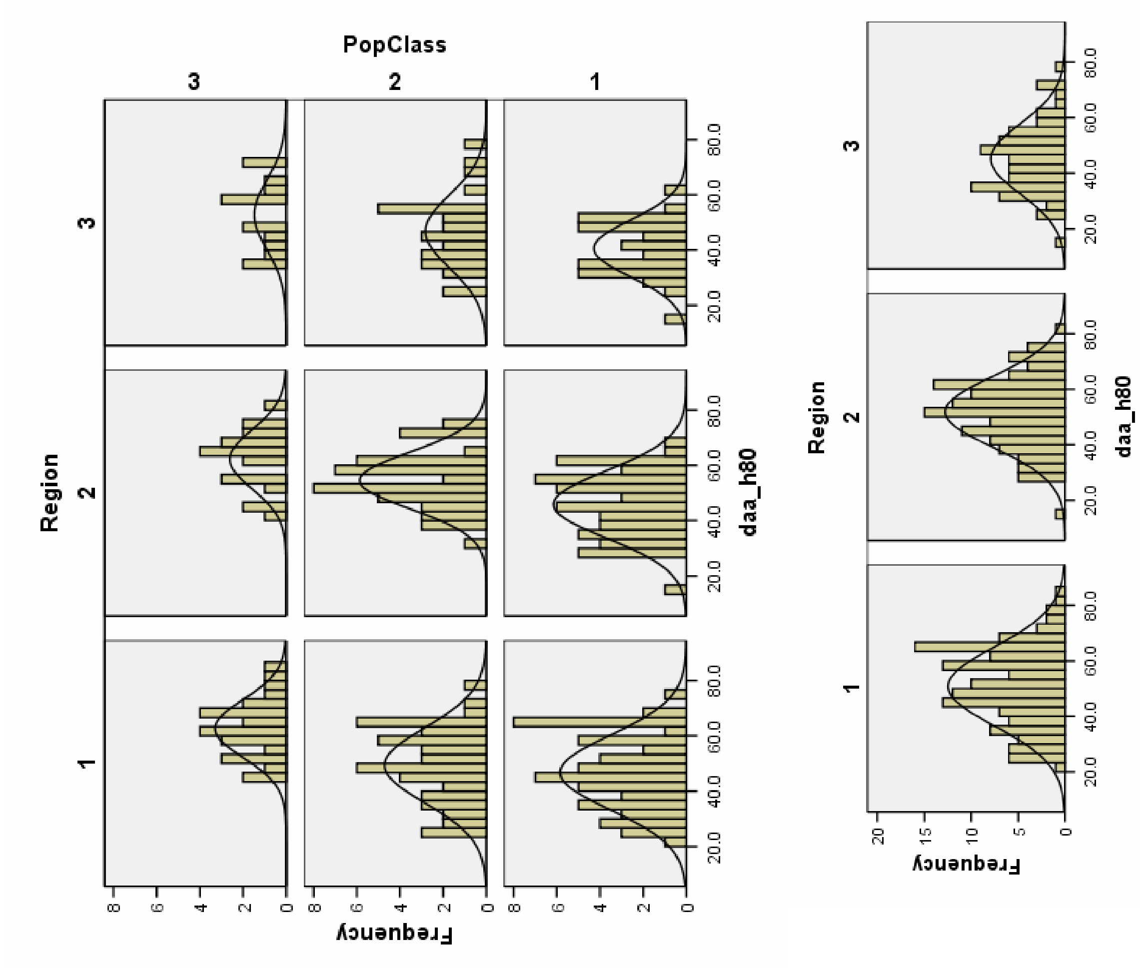
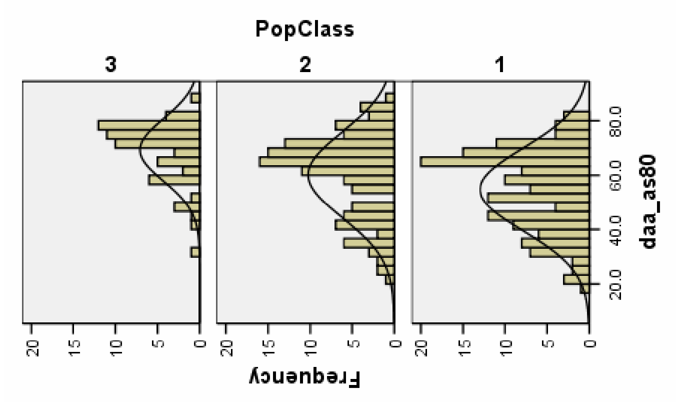
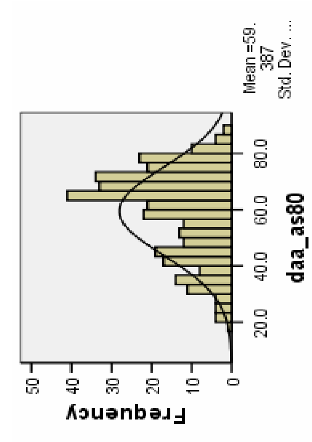
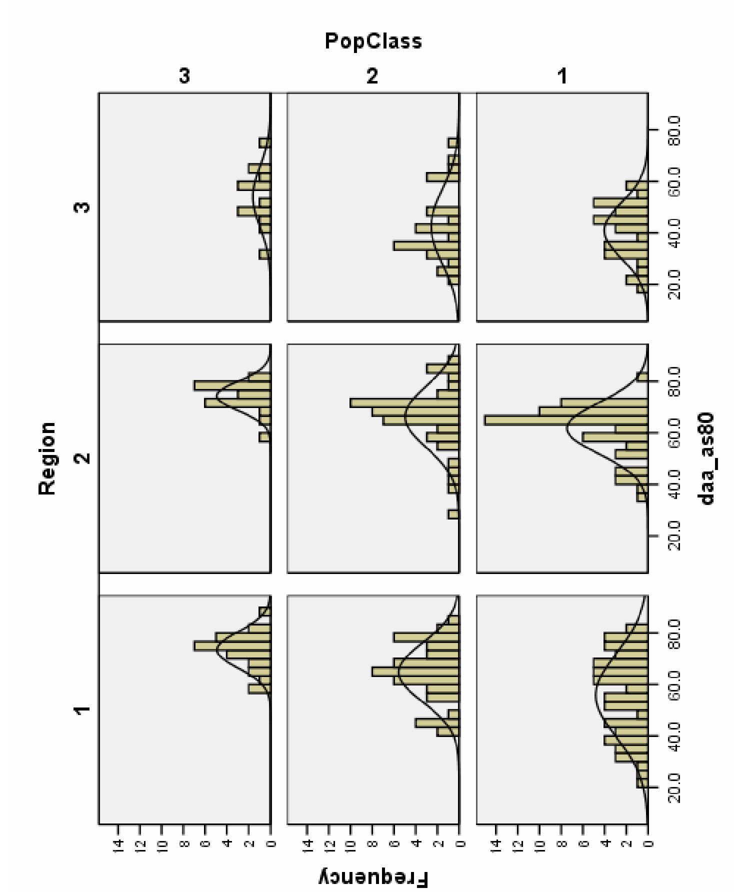


Table A5. Histograms of African American-Asian segregation levels (daa_as80) for metro areas in 1980.







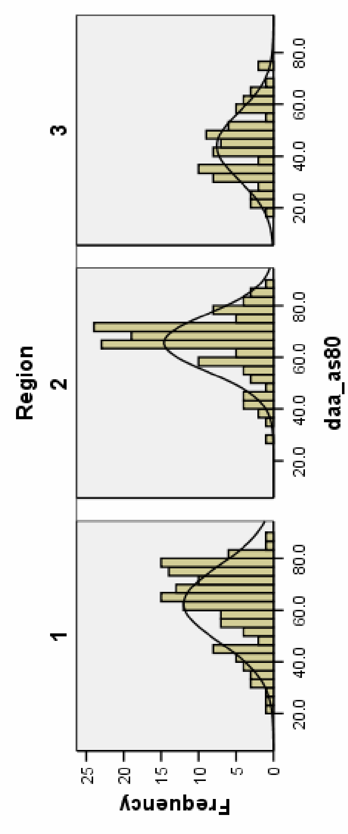
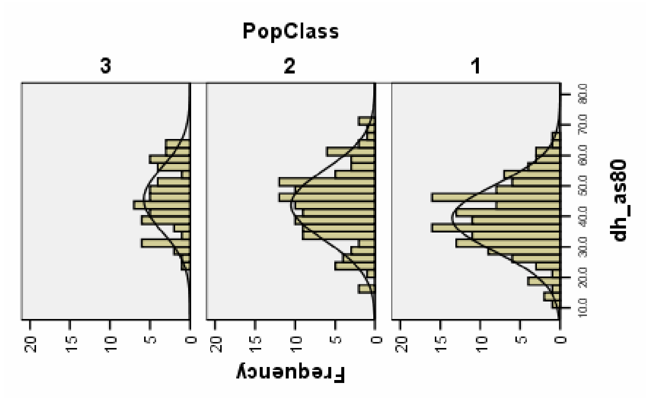
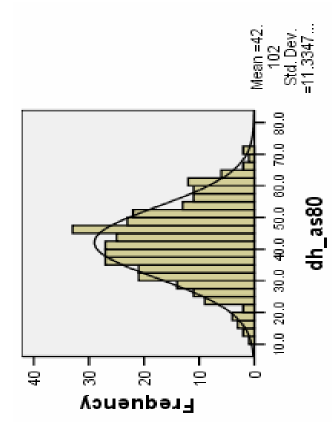
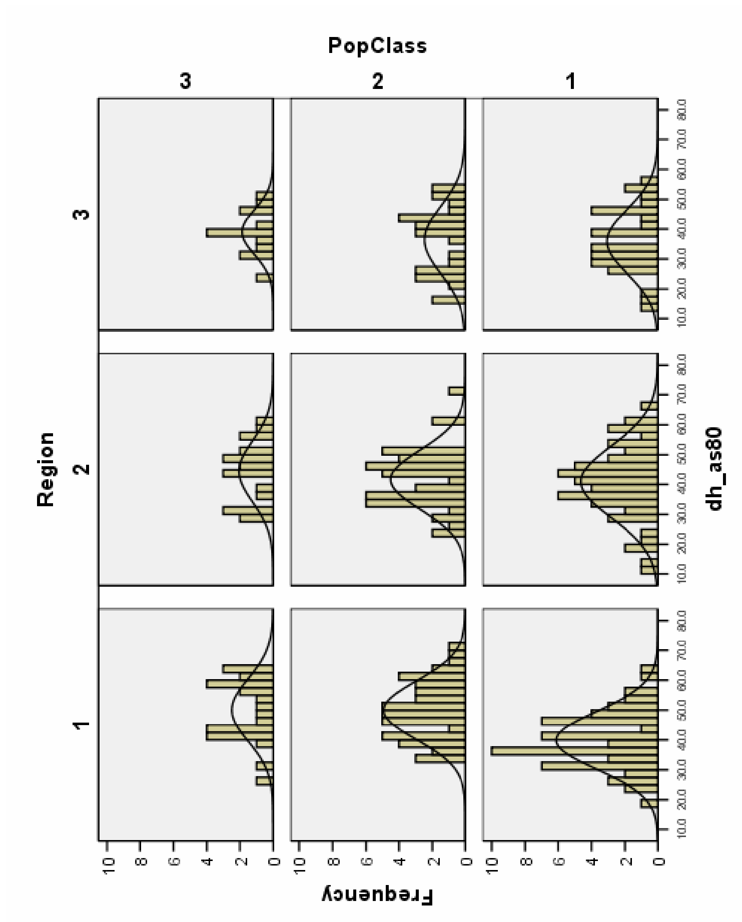


Table A6. Histograms of Hispanic-Asian segregation levels (dh_as80) for metro areas in 1980.







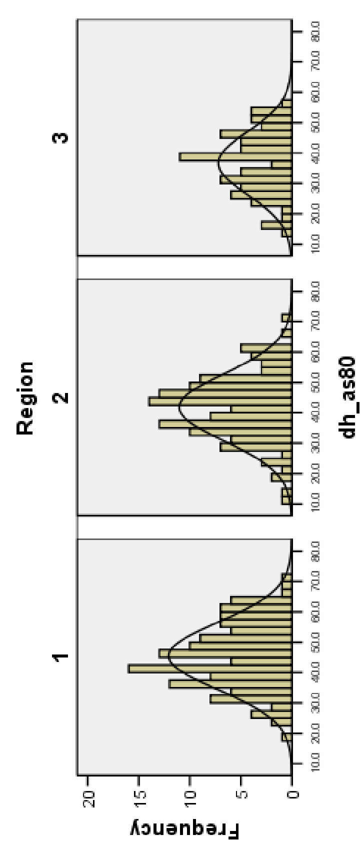


Table A7. Histograms of White-African American segregation levels (dw_aa90) for metro areas in 1990.

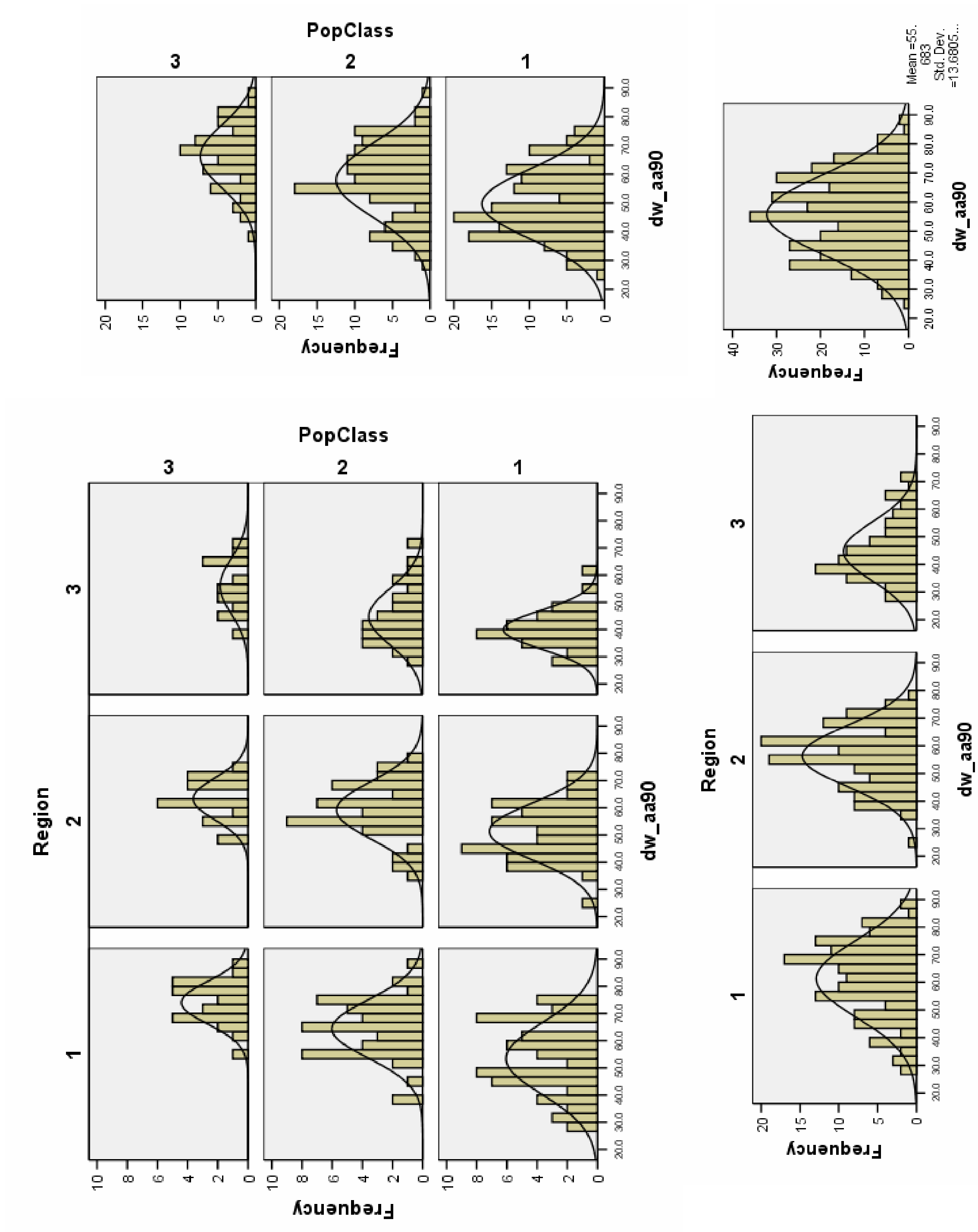


Table A8. Histograms of White-Hispanic segregation levels (dw_h90) for metro areas in 1990.

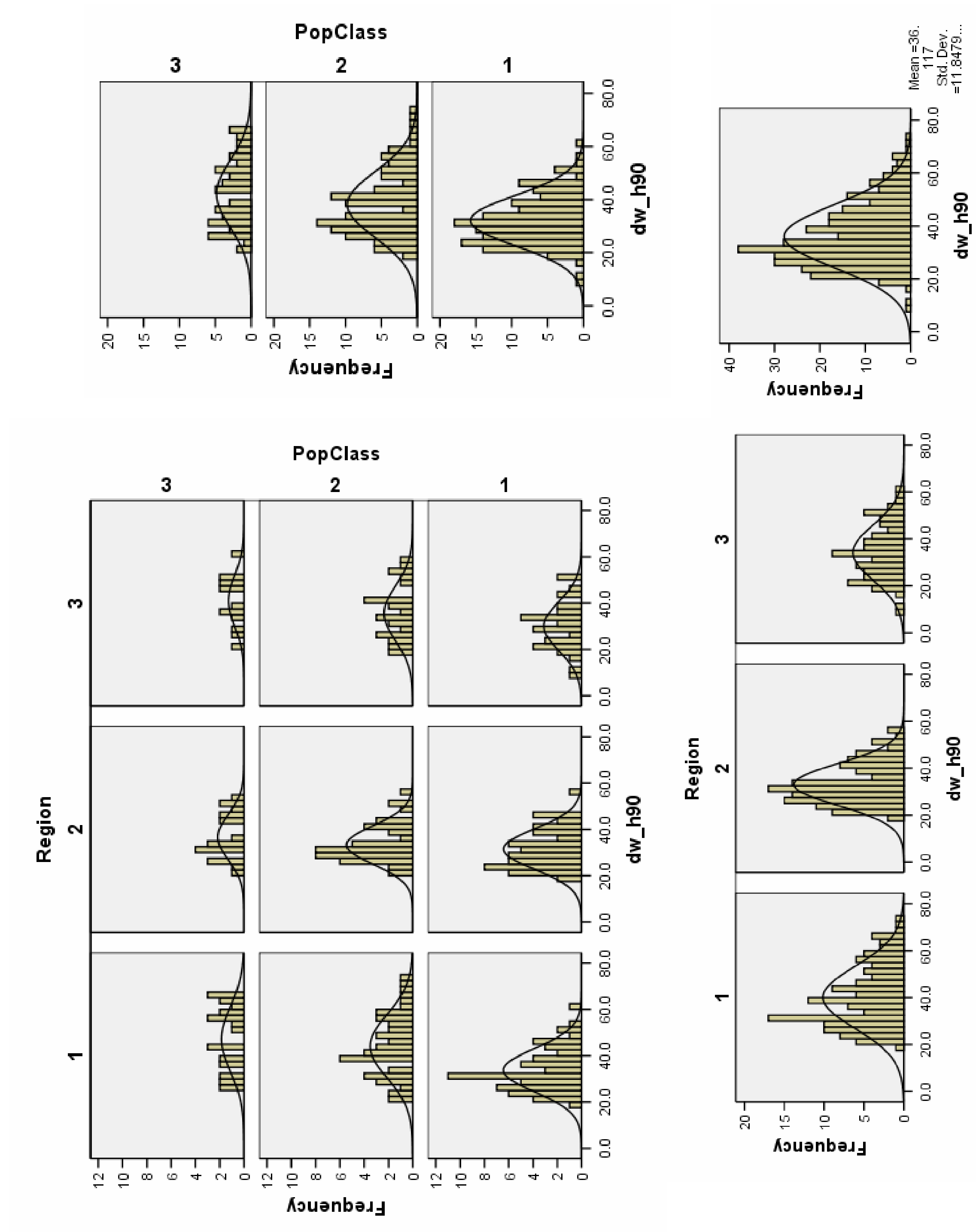


Table A9. Histograms of White-Asian segregation levels (dw_as90) for metro areas in 1990.

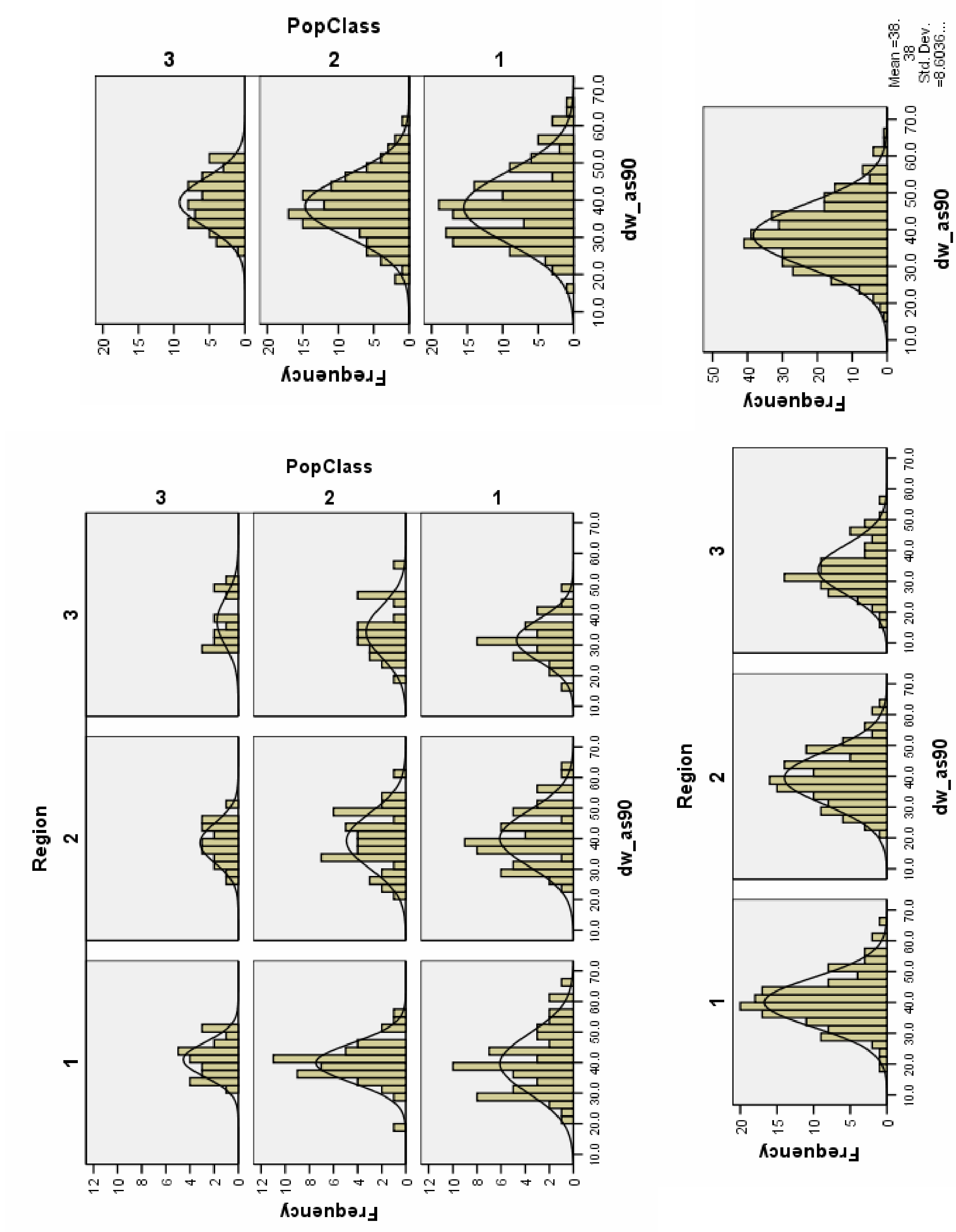


Table A10. Histograms of African American-Hispanic segregation levels (daa_h90) for metro areas in 1990.

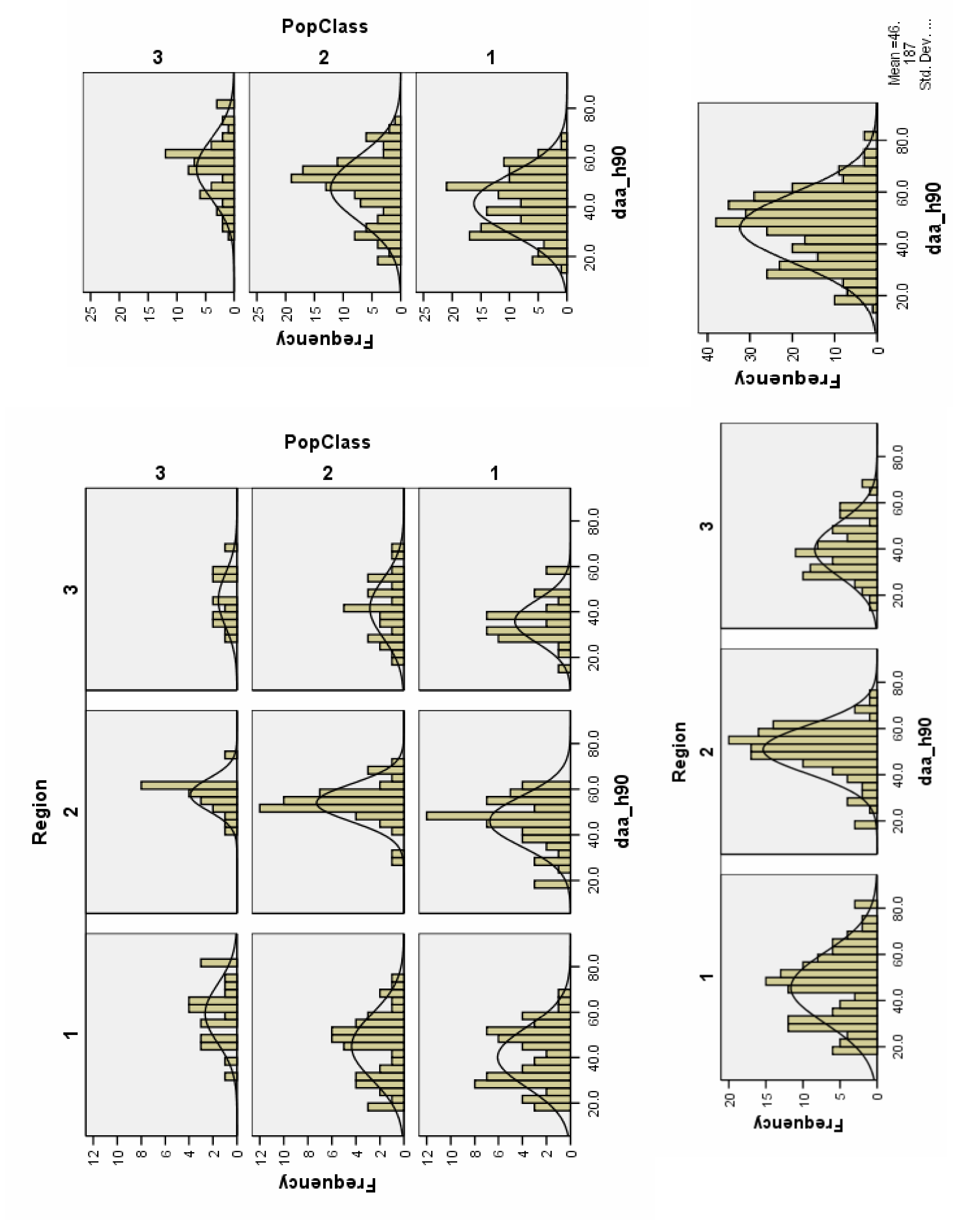


Table A11. Histograms of African American-Asian segregation levels (daa_as90) for metro areas in 1990.

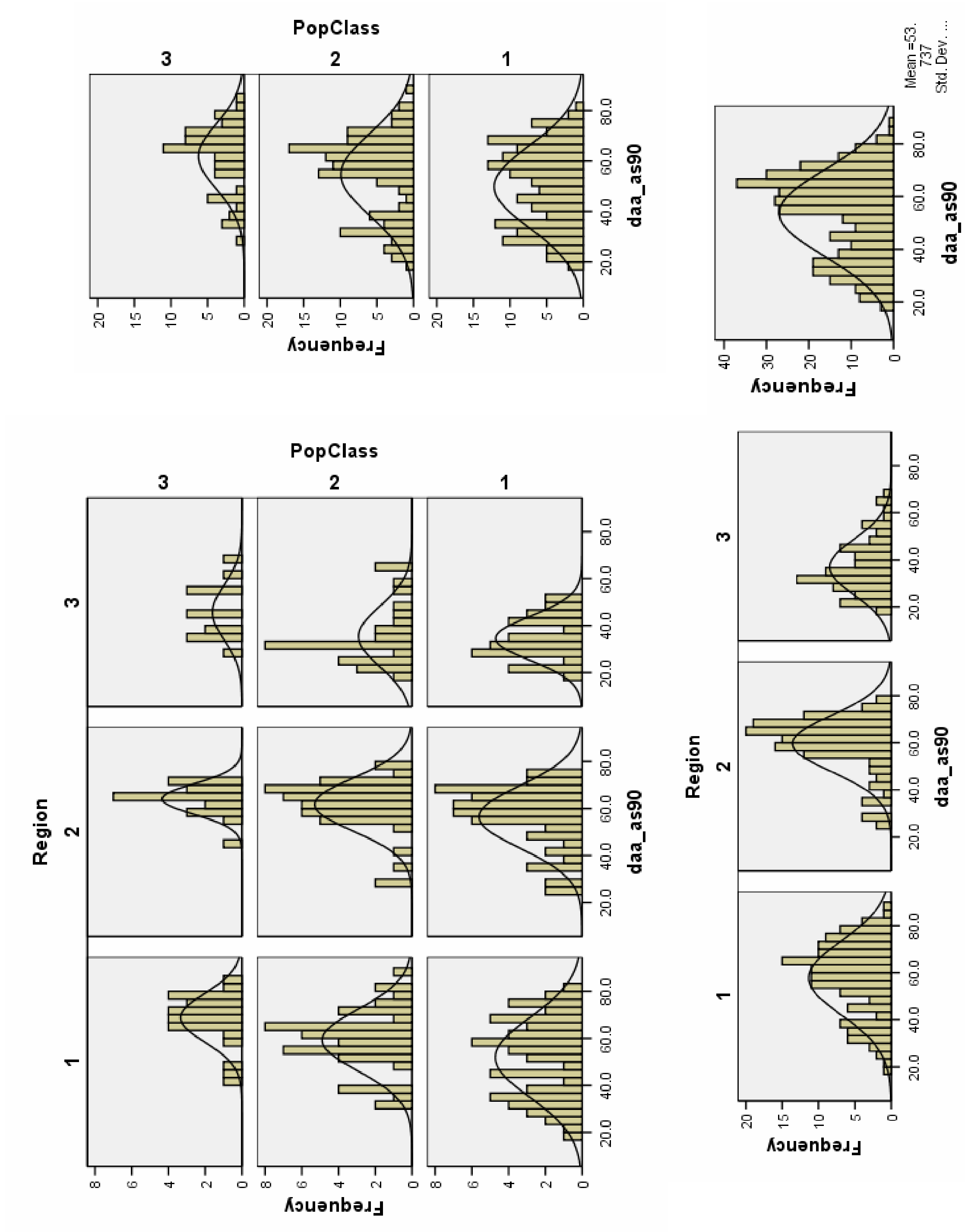


Table A12. Histograms of Hispanic-Asian segregation levels (dh_as90) for metro areas in 1990.

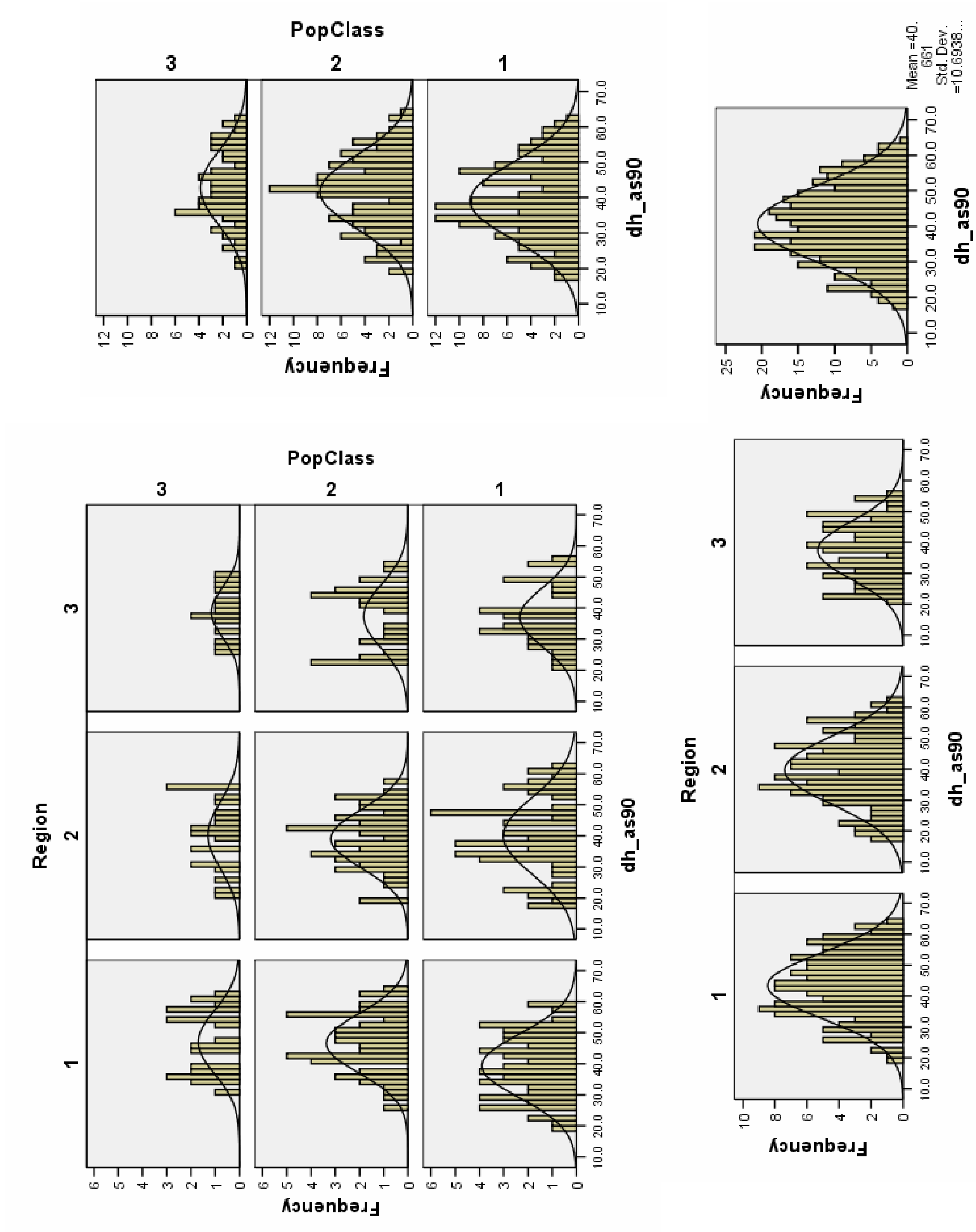
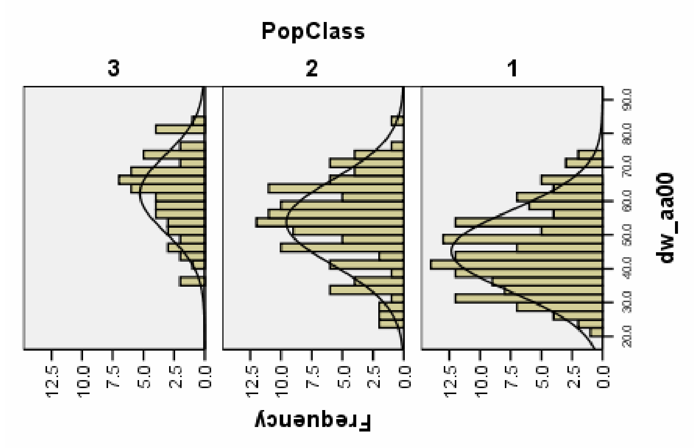
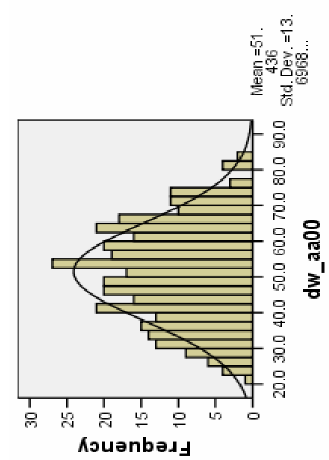
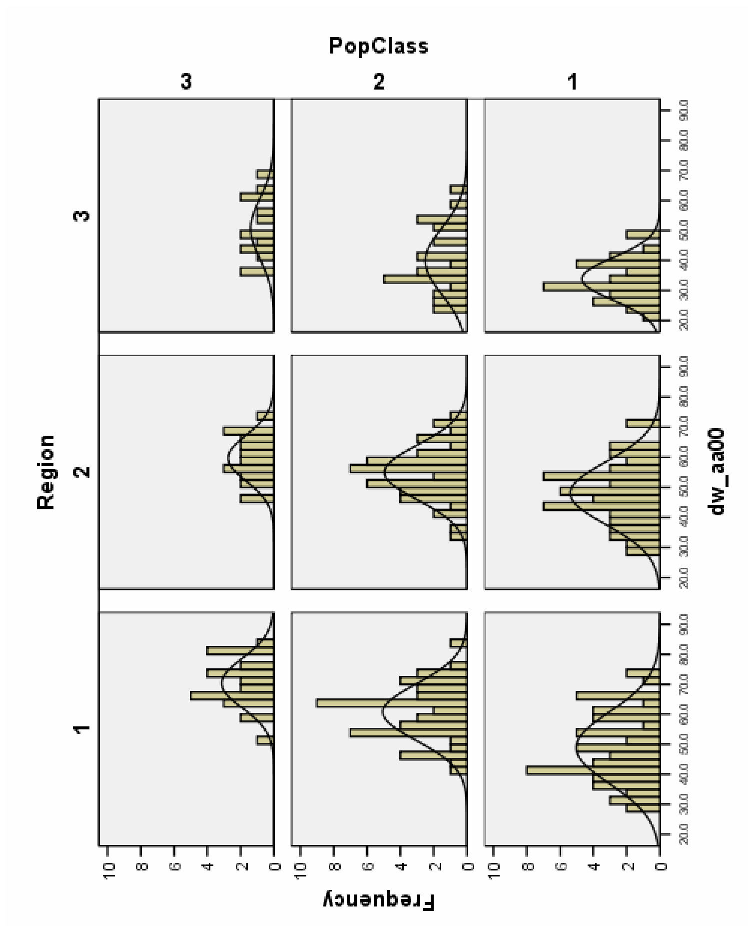


Table A13. Histograms of White-African American segregation levels (dw_aa00) for metro areas in 2000.







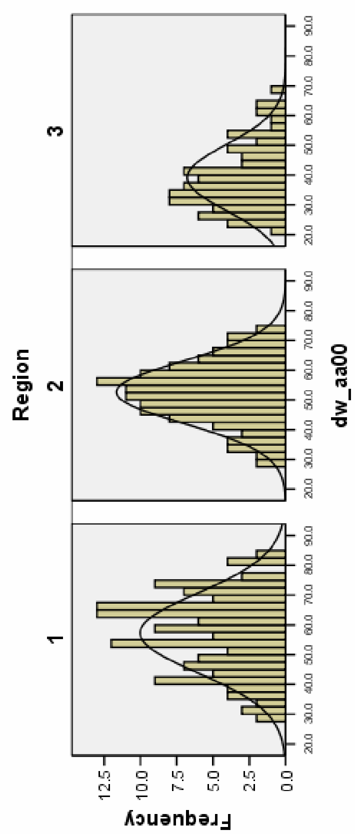
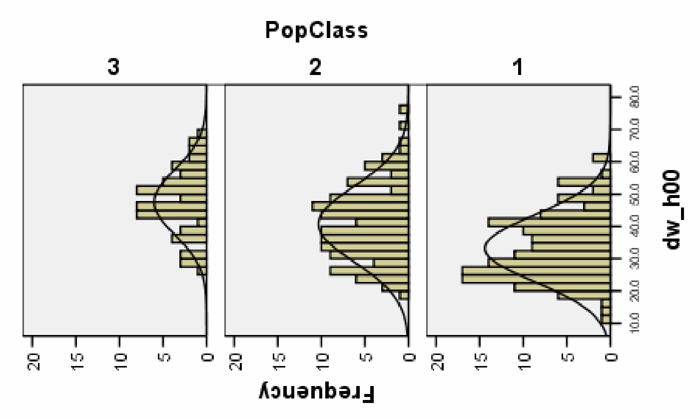
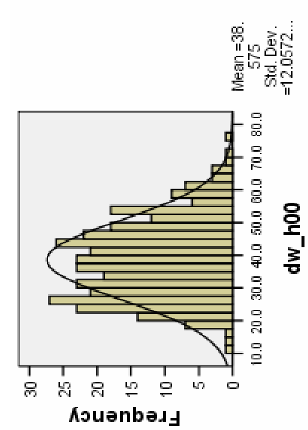
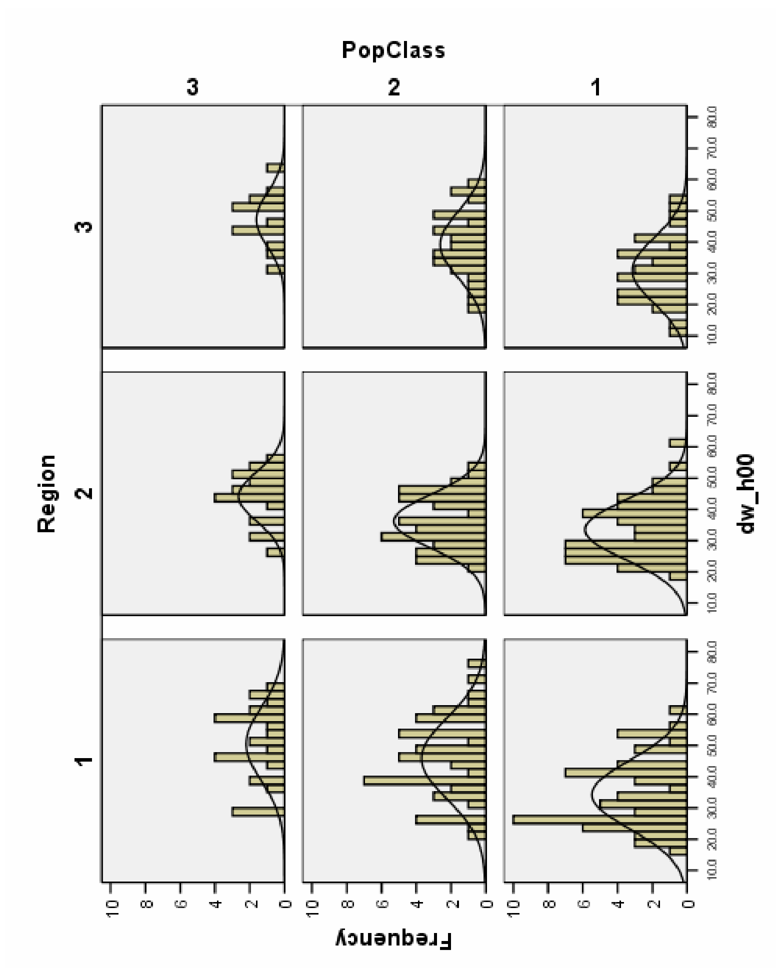


Table A14. Histograms of White-Hispanic segregation levels (dw_h00) for metro areas in 2000.







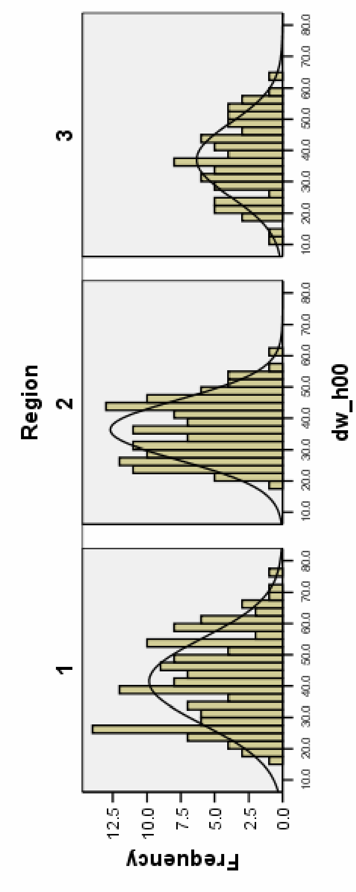


Table A15. Histograms of White-Asian segregation levels (dw_as00) for metro areas in 2000.

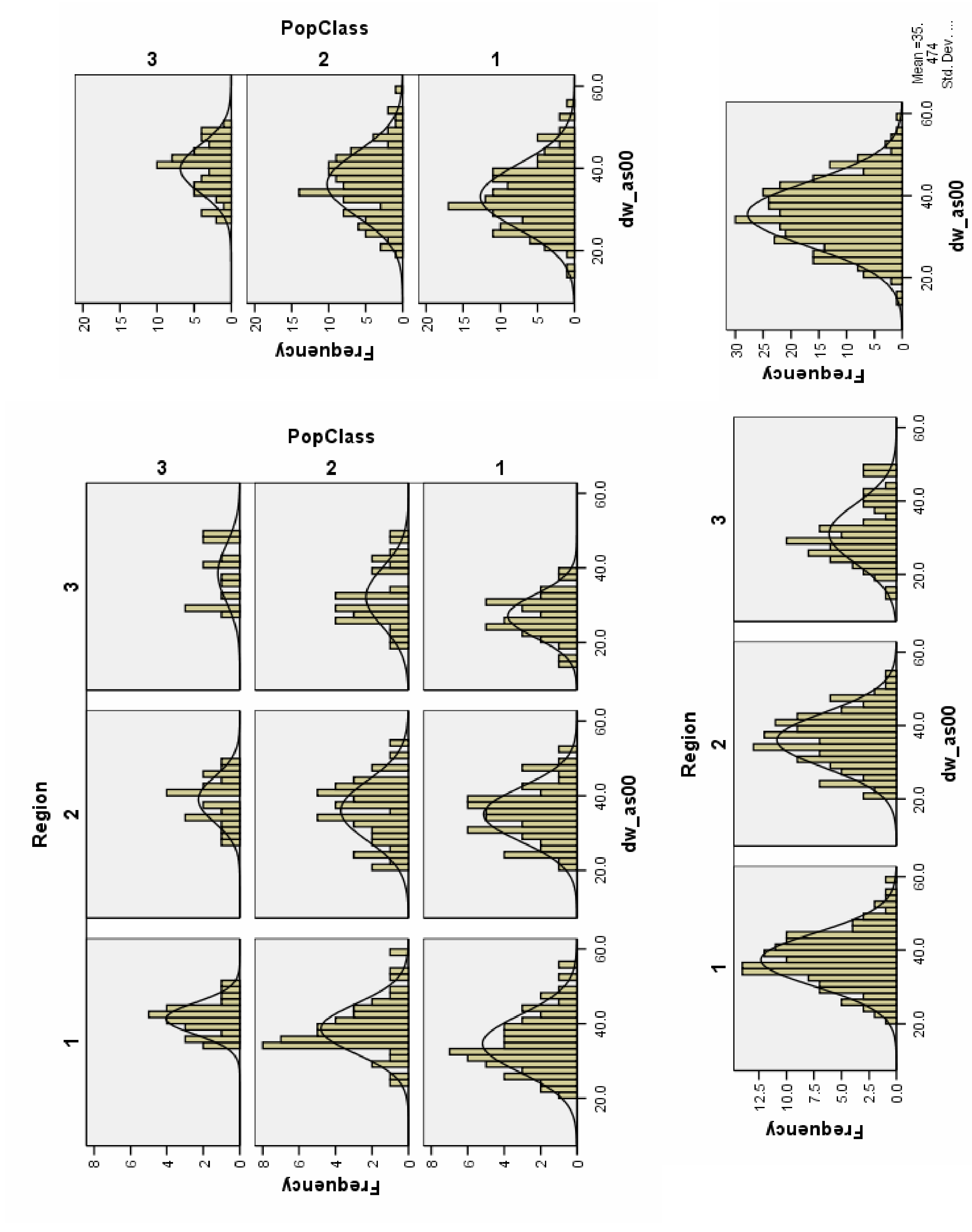


Table A16. Histograms of African American-Hispanic segregation levels (daa_h00) for metro areas in 2000.

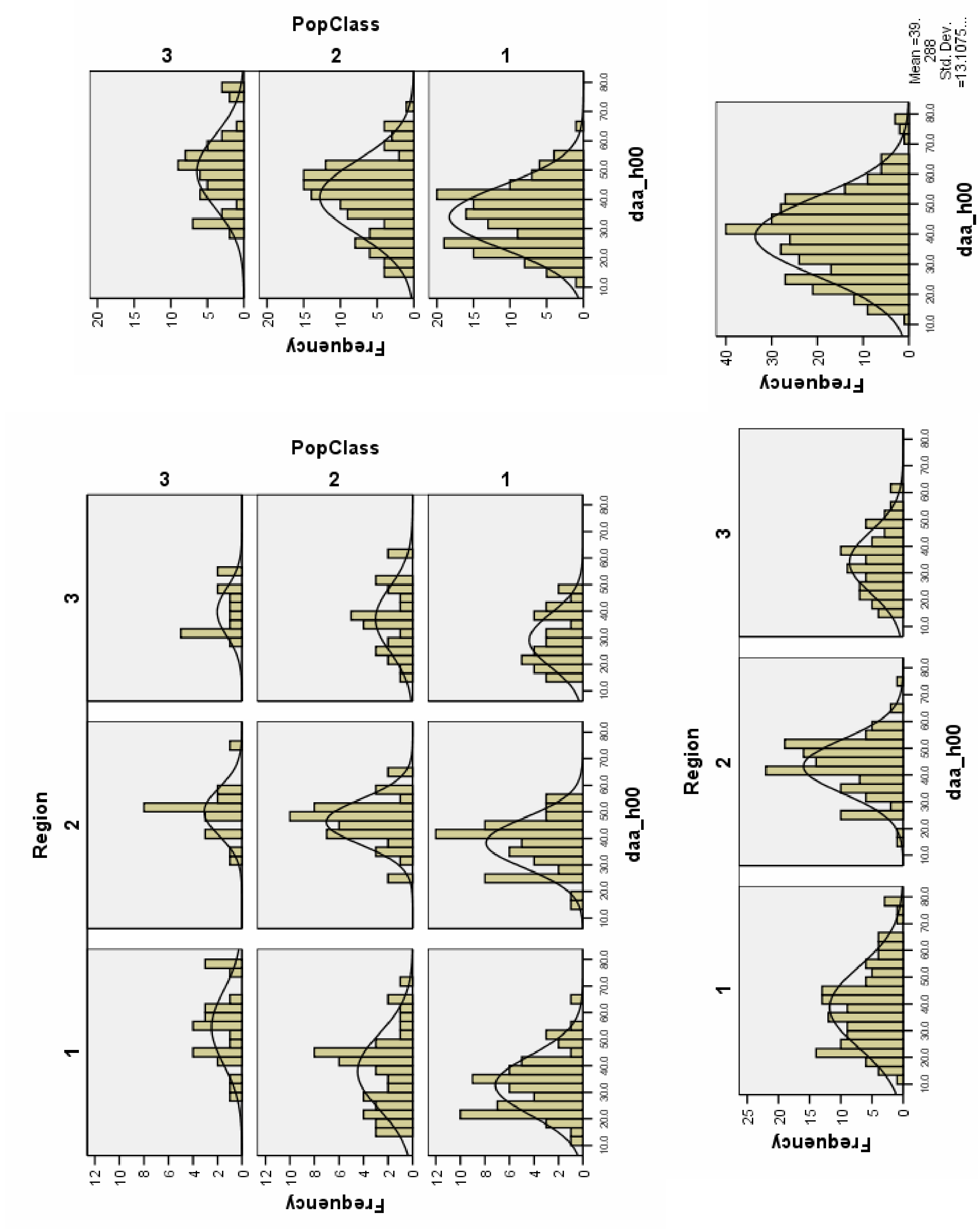


Table A17. Histograms of African American-Asian segregation levels (daa_as00) for metro areas in 2000.

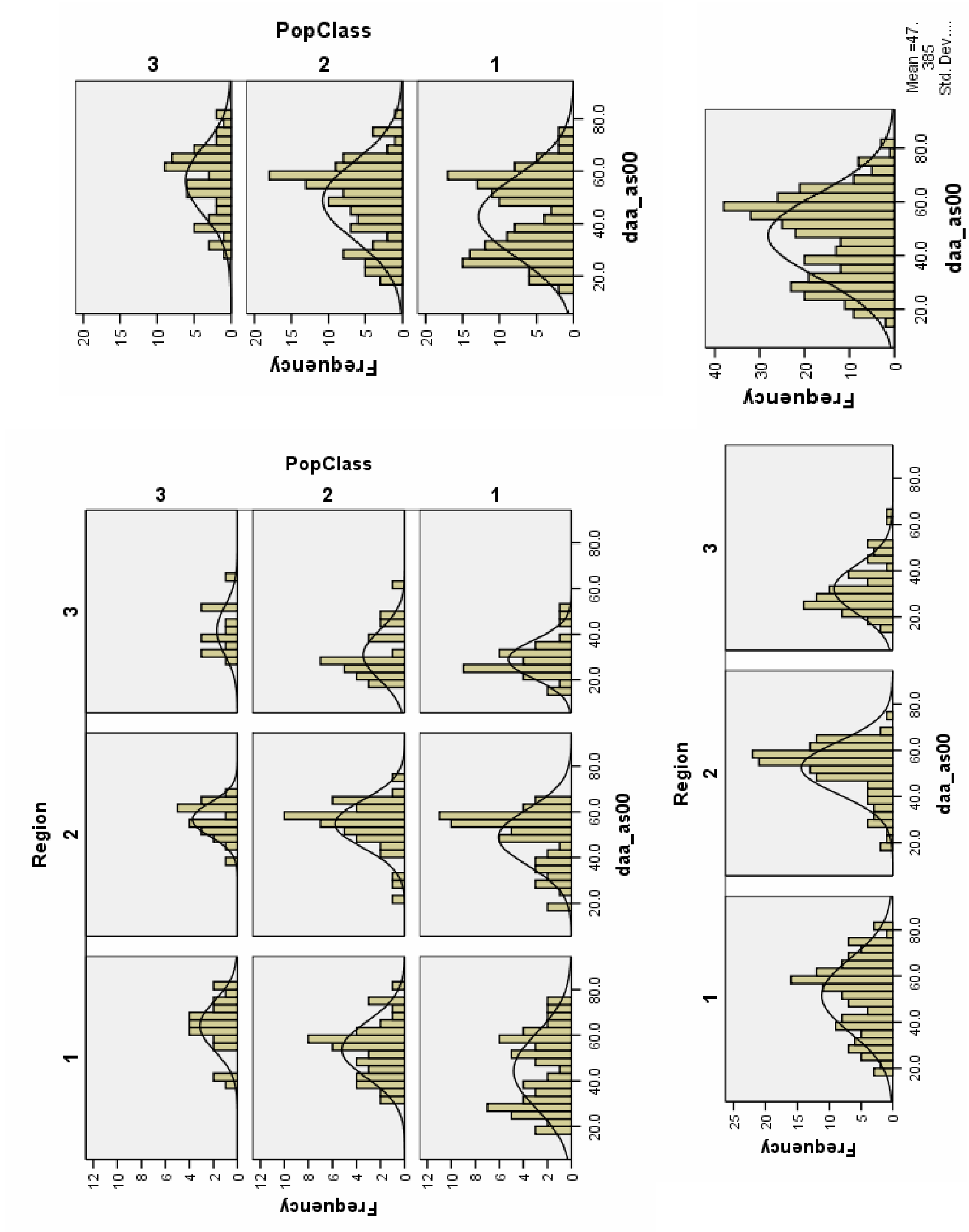
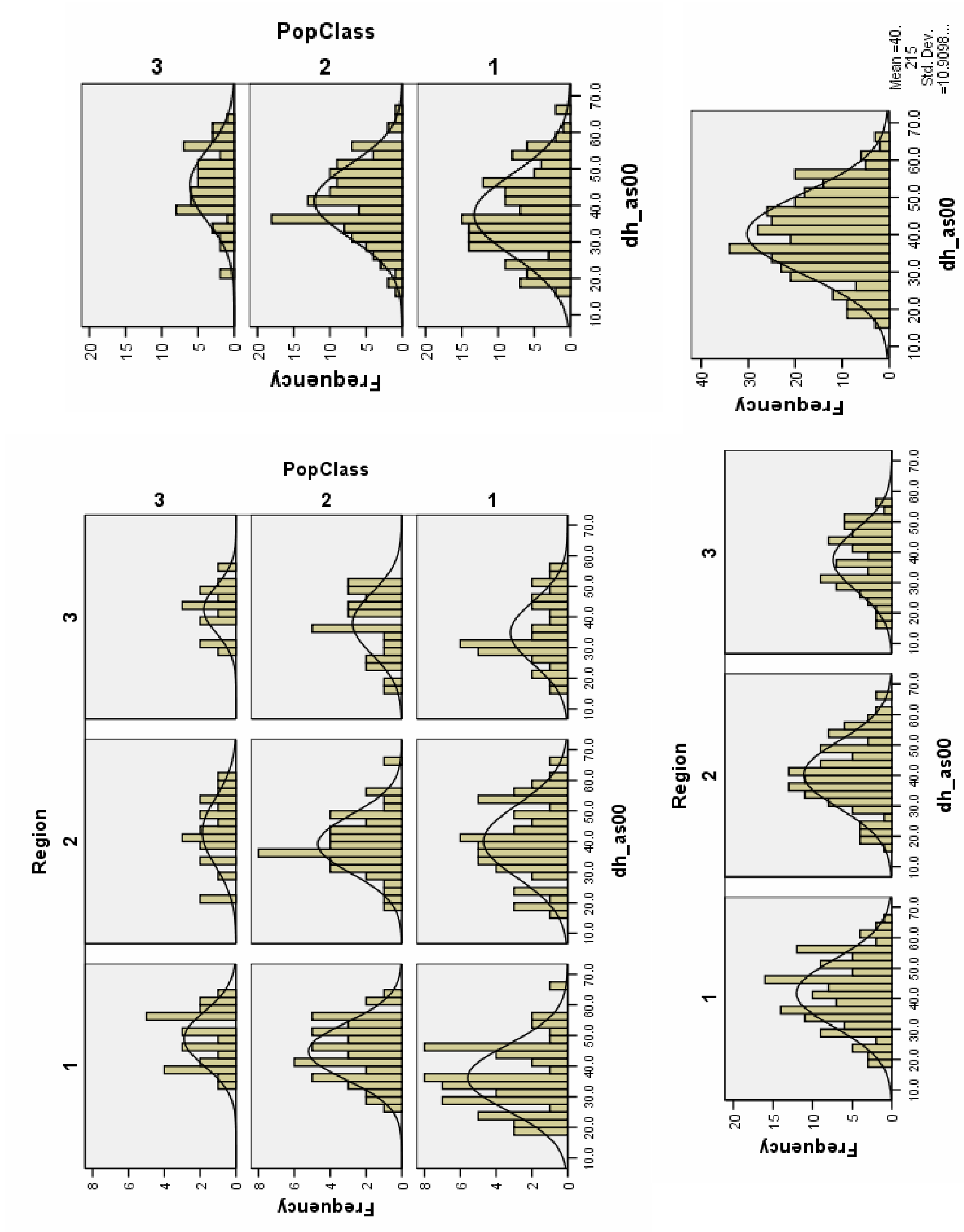


Table A18. Histograms of Hispanic-Asian segregation levels (dh_as00) for metro areas in 2000.



Appendix B. Definitions for the SES acronyms used in the correlation and multiple regression tables. Unless noted, all included variables are from 2000.

SES Acronym	Definition
dw_aa00	White-African American dissimilarity index in 2000
dw_h00	White-Hispanic dissimilarity index in 2000
dw_as00	White-Asian dissimilarity index in 2000
daa _h00	African American-Hispanic dissimilarity index in 2000
%WH00	Percent White population
%AA00	Percent African American population
%HI00	Percent Hispanic population
%AS00	Percent Asian population
%Renter	Percent of occupied housing that is Rented
%OccH_WH	Percent of Occupied Housing, with White Head of Household
%OccH_AA	Percent of Occupied Housing, with African American Head of Household
%OccH_AS	Percent of Occupied Housing, with Asian Head of Household
%OccH_NWH	Percent of Occupied Housing, with non Hispanic White Head of Household
%OccH_HI	Percent of Occupied Housing, with Hispanic Head of Household
Ave_H_Size	Average Household Size
Ave_F_Size	Average Family Size
Md_Age_To	Median Age
Md_Age_WH	Median Age, White
Md_Age_AA	Median Age, African American
Md_Age_HI	Median Age, Hispanic
Med_Age _AS	Median Age, Asian
Md_Age_NWH	Median Age, non-Hispanic White
%No_Sch	Percent of population over 25 with No Schooling
%Less9	Percent of population over 25 with Less than a 9^{th} Grade Education
%HiSch	Percent of population over 25 with only a High School Degree
%Bach	Percent of population over 25 with a Bachelors Degree
%Mast	Percent of population over 25 with a Masters Degree
%Doct	Percent of population over 25 with a PhD Degree
%GrdSch	Percent of population over 25 with a Graduate Degree
%AA_HiSch	Percent of African Americans over 25 with only a High School Degree
%AA_Bach	Percent of African Americans over 25 with a Bachelors Degree
%AA_GrdSc	Percent of African Americans over 25 with a Graduate Degree
%AS_HiSch	Percent of Asians over 25 with only a High School Degree
%AS_Bach	Percent of Asians over 25 with a Bachelors Degree
%AS_GrdSch	Percent of Asians over 25 with a Graduate Degree
%HI_HiSch	Percent of Hispanics over 25 with only a High School Degree
%HI_Bach	Percent of Hispanics over 25 with a Bachelors Degree
%HI_GrdSch	Percent of Hispanics over 25 with a Graduate Degree
%WH_HiSch	Percent of Whites over 25 with only a High School Degree
%WH_Bach	Percent of Whites over 25 with a Bachelors Degree
%WH_GrdSch	Percent of Whites over 25 with a Graduate Degree
%Unempl	Percent of labor force over 16, Unemployed
%AgForMin	Percent of labor force over 16, Employed in Agriculture, Forestry, & Mining
%Ag_Fish	Percent of labor force over 16, Employed in Agriculture, Forestry & Fishing

%Ag_Min	Percent of labor force over 16, Employed in Mining
%Contr	Percent of labor force over 16, Employed in Construction
%Manuf	Percent of labor force over 16, Employed in Manufacturing
%WholeSale	Percent of labor force over 16, Employed in Wholesale Trade
%Retail	Percent of labor force over 16, Employed in Retail Trade
%TransUtil	Percent of labor force over 16, Employed in Transportation & Utilities
%TransWA	Percent of labor force over 16, Employed in Transportation & Warehousing
%Util	Percent of labor force over 16, Employed in Utilities
%Inform	Percent of labor force over 16, Employed in Information
%FinRealE	Percent of labor force over 16, Employed in Finance & Real Estate
%FinInsur	Percent of labor force over 16, Employed in Finance & Insurance
%RealEst	Percent of labor force over 16, Employed in Real Estate & Rental & Leasing
%ProfManW	Percent of labor force over 16, Employed in Professional & Administration
%ProfSci	Percent of labor force over 16, Employed in Professional & Scientific
%Manage	Percent of labor force over 16, Employed in Management of companies
%AdminWM	Percent of labor force over 16, Employed in Administrative & Waste Management
%EducHeal	Percent of labor force over 16, Employed in Education & Health Services
%Educ	Percent of labor force over 16, Employed in Education
%Health	Percent of labor force over 16, Employed in Health Care & Social Services
%ArtFood	Percent of labor force over 16, Employed in Arts, Entertainment, & Food Services
%ArtRec	Percent of labor force over 16, Employed in Arts, Entertainment, & Recreation
%AcmFood	Percent of labor force over 16, Employed in Accommodation and Food Services
%OtherServ	Percent of labor force over 16, Employed in Other Services
%PublicAd	Percent of labor force over 16, Employed in Public Administration
Md_H_inc	Median Household Income
PerCapInc	Per Capita Income
Med_F_Inc	Median Family Income
%Blt_Aft90	Percent of Housing Built After 1990
%Blt_Bf40	Percent of Housing Built Before 1940
MdYr_H_Blt	Median Year a Housing Structure was Built
Md_Rent	Median Rent
Md_OccH_Va	Median Occupied Housing Value
%FrBrn_Pov	Percent of Foreign-Born Population in Poverty
%PubTrans	Percent Commuting to Work by Public Transportation
C_Time_Min	Median Commuting Time to Work, in minutes
%AA_No_Veh	Percent of African Americans with No Vehicle Available
%AS_No_Veh	Percent of Asians with No Vehicle Available
%HI_No_Veh	Percent of Hispanics with No Vehicle Available
%WH_No_Veh	Percent of non-Hispanic Whites with No Vehicle Available
AA_Rent	Median African American Rent
AS_Rent	Median Asian Rent
HI_Rent	Median Hispanic Rent
WH_Rent	Median non-Hispanic White Rent
AA_Hvalue	Median Household Value, African Americans
AS_Hvalue	Median Household Value, Asians
HI_Hvalue	Median Household Value, Hispanics
WH_Hvalue	Median Household Value, non-Hispanic Whites
%NO_MR	Percent of Housing Units without a Mortgage

%AA_No_Mr	Percent of African American Housing Units without a Mortgage
%AS_No_Mr	Percent of Asian Housing Units without a Mortgage
%HI_No_Mr	Percent of Hispanic Housing Units without a Mortgage
%WH_No_Mr	Percent of non-Hispanic White Housing Units without a Mortgage
Md_Inc_Wh	Median White Household Income
Md_Inc_AA	Median African American Household Income
Md_Inc_AS	Median Asian Household Income
Md_Inc_HI	Median Hispanic Household Income
Md_Inc_NWH	Median non-Hispanic White Household Income
PCapInc_Wh	White Per Capita Income
PCapInc_AA	African American Per Capita Income
PCapInc_AS	Asian Per Capita Income
PCapInc_HI	Hispanic Per Capita Income
PCapInc_NWH	Non-Hispanic White Per Capita Income
%Pov	Percent of Population in Poverty
%Pov_Wh	Percent of Whites in Poverty
%Pov_AA	Percent of African Americans in Poverty
%Pov_AS	Percent of Asians in Poverty
%Pov_HI	Percent of Hispanics in Poverty
%Pov_NWH	Percent of non-Hispanic Whites in Poverty
R_Inc_Wh_AA	Ratio of Median Household Income, non-Hispanic Whites and African Americans
R_Inc_WH_AS	Ratio of Median Household Income, non-Hispanic Whites and Asians
R_Inc_WH_HI	Ratio of Median Household Income, non-Hispanic Whites and Hispanics
R_Inc_AA_AS	Ratio of Median Household Income, African Americans and Asians
R_Inc_AA_HI	Ratio of Median Household Income, African Americans and Hispanics
R_Inc_HI_AS	Ratio of Median Household Income, Hispanic and Asians
R_PCI_WH_AA	Ratio of Per Capita Income, non-Hispanic Whites and African Americans
R_PCI_WH_AS	Ratio of Per Capita Income, non-Hispanic Whites and Asians
R_PCI_WH_HI	Ratio of Per Capita Income, non-Hispanic Whites and Hispanics
R_PCI_AA_AS	Ratio of Per Capita Income, African Americans and Asians
R_PCI_AA_HI	Ratio of Per Capita Income, African Americans and Hispanics
R_PCI_HI_AS	Ratio of Per Capita Income, Hispanic and Asians
LogPop	Log of the Total Population
Con_Deny	Percent of Conventional Home Mortgage Loans Denied, 2003
Ref_Deny	Percent of Refinancing Home Mortgage Loans Denied, 2003
All_HUD_PH	Number of All Public Housing Units
Section8	Number of Section 8 Housing Units

Appendix C: Simple correlation matrices between segregation level (dissimilarity index) and various socioeconomic status variables (SES) by metropolitan areas for each region and for the nation as a whole in 2000. A (**) indicates significance at the 0.01 level and a (*) indicates significance at the 0.05 level. **Bold** indicates the variable has a correlation over the absolute value of 0.300 for at least one region, and the variable was selected to be used in the initial multiple regression equation.

Table C1. Correlations between White-African American Dissimilarity Index (dw_aa00) and various socioeconomic variables, for each region and for the nation as a whole.

SES VARIABLE	NORTHEAST (n = 134)	SOUTH (n = 122)	WEST (n = 75)	NATION (n = 331)
	dw_aa00	dw_aa00	dw_aa00	dw_aa00
%WH00	-.514**	0.091	-.419**	-0.042
%AA00	.657**	0.145	.758**	.361**
%HI00	.249**	-.179*	.253*	-.155**
%AS00	0.031	-0.030	.228*	-0.079
%Renter	-0.064	-.179*	.294*	-.178**
%OccH_WH	-.558**	-0.044	-.452**	-.177**
%OccH_AA	.649**	0.128	.762**	.353**
%OccH_AS	0.061	0.041	.253*	-0.049
%OccH_NWH	-.550**	0.096	-.401**	-0.081
%OccH_HI	.240**	-.187*	0.217	-.148**
Md_Age_To	.229**	.301**	0.044	.306**
Md_Age_WH	.388**	.368**	0.226	.346**
Md_Age_AA	.491**	-0.028	.508**	.299**
Md_Age_HI	.353**	.307**	.263*	.313**
Med_Age_AS	.400**	-0.134	.321**	.119*
Md_Age_NWH	.392**	.258**	.297**	.251**
%No_Sch	.207*	-.178*	.303**	-0.092
%HiSch	0.043	0.043	-0.130	.281**
%Bach	-.175*	.179*	-0.083	-.139*
%Mast	-0.077	0.048	-0.121	-0.048
%Doct	-.235**	-0.102	-.272*	-.217**
%AA_HiSch	.227**	-0.158	.465**	.410**
%AA_Bach	-.441**	-0.041	-.413**	-.437**
%AA_GrdSc	-.383**	0.040	-.397**	-.363**
%AS_HiSch	-0.055	-.215*	0.052	-.161**
%AS_Bach	0.168	0.094	0.049	.152**
%AS_GrdSch	0.090	0.050	-.286*	.178**
%HI_HiSch	0.070	0.022	-.244*	0.076
%HI_Bach	-.313**	-0.023	-.261*	-0.102
%HI_GrdSch	-.230**	0.038	-.286*	-0.024
%WH_HiSch	0.040	0.071	-0.062	.290**
%WH_Bach	-0.054	0.092	0.044	-.126*
%WH_GrdSch	0.016	-0.040	-0.021	-0.082
%Unempl	.280**	-.209*	0.060	-0.077
%AgForMin	-.352**	-.180*	-0.009	-.289**
%Ag_Fish	-.365**	-.275**	0.009	-.294**

%Ag_Min	-0.059	-0.072	-0.061	-0.070
%Contr	-0.047	0.087	-0.206	-.158**
%Manuf	-0.014	-0.094	0.041	.158**
%WholeSale	.186*	.440**	.240*	.190**
%Retail	-.301**	-0.092	-.381**	-.204**
%TransUtil	.295**	0.132	0.173	.168**
%TransWA	.289**	0.123	0.206	.164**
%Util	0.104	0.032	-0.029	0.050
%Inform	0.088	.187*	.330**	.111*
%FinRealE	0.099	.417**	.350**	.215**
%FinInsur	0.077	.391**	.321**	.233**
%RealEst	.173*	.229*	0.178	-0.009
%ProfManW	.252**	.372**	0.202	0.101
%ProfSci	.210*	.335**	0.130	0.094
%Manage	0.015	.214*	0.124	.163**
%AdminWM	.341**	.285**	.349**	0.067
%EducHeal	-.264**	-.299**	-.398**	-.201**
%Educ	-.277**	-.314**	-.369**	-.268**
%Health	-0.071	-0.090	-0.145	0.028
%ArtFood	-0.071	0.036	-0.088	-.140*
%ArtRec	0.055	.199*	-0.006	-0.007
%AcmFood	-.187*	-0.111	-0.159	-.232**
%OtherServ	.363**	0.003	-0.007	0.034
%PublicAd	0.073	-.182*	-0.038	-.131*
Md_H_inc	0.123	.270**	.290*	.148**
PerCapInc	0.159	.412**	.257*	.240**
%Blt_Aft90	-.371**	-0.158	-.326**	-.351**
%Blt_Bf40	-0.007	-0.026	0.180	.247**
MdYr_H_Blt	-.341**	-0.113	-.360**	-.389**
Md_Rent	0.081	.234**	.246*	-0.011
Md_OccH_Va	0.122	.241**	0.213	-0.043
%FrBrn_Pov	-.247**	-0.122	-0.085	-.290**
%AA_No_Veh	.420**	.359**	.426**	.540**
%AS_No_Veh	0.057	-0.005	0.136	0.066
%HI_No_Veh	.194*	.206*	0.143	.284**
%WH_No_Veh	0.151	0.091	.293*	.200**
AA_Rent	-0.055	0.033	0.096	-.164**
AS_Rent	.248**	0.100	0.224	.157**
HI_Rent	0.074	.253**	.251*	0.055
WH_Rent	.189*	.255**	.319**	0.063
AA_Hvalue	-.243**	-0.099	0.021	-.313**
AS_Hvalue	.262**	0.038	0.190	0.073
HI_Hvalue	-0.038	0.095	0.170	-0.102
WH_Hvalue	0.162	.281**	.255*	-0.023
%AA_No_Mr	.437**	0.004	0.063	.256**
%AS_No_Mr	0.068	0.121	-0.057	0.076
%HI_No_Mr	.189*	-0.060	-0.098	0.068
%WH_No_Mr	0.152	-0.044	-0.057	.214**

Md_Inc_Wh	.226**	.321**	.368**	.232**
Md_Inc_AA	-0.046	-0.160	0.086	-.165**
Md_Inc_AS	.267**	0.140	.319**	.286**
Md_Inc_HI	0.072	.369**	.354**	.139*
Md_Inc_NWH	.237**	.249**	.390**	.212**
PCapInc_Wh	.262**	.461**	.386**	.282**
PCapInc_AA	0.000	-0.137	0.080	-.134*
PCapInc_AS	.450**	0.065	0.039	.303**
PCapInc_HI	0.101	.304**	0.207	.233**
PCapInc_NWH	.277**	.367**	.434**	.236**
%Pov_Wh	-.269**	-.302**	-.259*	-.310**
%Pov_AA	-0.068	0.151	-0.075	.142**
%Pov_AS	-.343**	0.023	-.236*	-.240**
%Pov_HI	-0.087	-0.143	-0.101	-0.060
%Pov_NWH	-.304**	-.265**	-.450**	-.325**
R_Inc_Wh_AA	-.358**	-.396**	-.286*	-.457**
R_Inc_WH_AS	0.139	0.021	0.085	.176**
R_Inc_WH_HI	-0.167	0.164	-0.131	-0.063
R_Inc_AA_AS	.269**	.233**	.267*	.370**
R_Inc_AA_HI	0.056	.386**	0.208	.269**
R_Inc_HI_AS	.175*	-0.083	0.123	.186**
R_PCI_WH_AA	-.286**	-.446**	-.305**	-.357**
R_PCI_WH_AS	.275**	-.183*	-.235*	0.087
R_PCI_WH_HI	-.180*	0.059	-.357**	0.017
R_PCI_AA_AS	.411**	0.134	-0.122	.298**
R_PCI_AA_HI	0.009	.307**	-0.061	.230**
R_PCI_HI_AS	.338**	-0.152	-0.103	0.106

Table C2. Correlations between White-Hispanic Dissimilarity Index (dw_h00) and various socioeconomic variables, for each region and for the nation as a whole.

SES VARIABLE	NORTHEAST (n = 134)	SOUTH (n = 122)	WEST (n = 75)	NATION (n = 331)
	dw_h00	dw_h00	dw_h00	dw_h00
%WH00	-.499**	-.262**	-.604**	-.276**
%AA00	.236**	-0.145	.284*	-0.025
%HI00	.586**	.336**	.613**	.308**
%AS00	.298**	0.177	0.165	.123*
%Renter	0.167	0.136	.255*	.133*
%OccH_WH	-.430**	-0.056	-.490**	-.190**
%OccH_AA	.252**	-0.124	.331**	-0.009
%OccH_AS	.289**	.251**	0.219	.157**
%OccH_NWH	-.444**	-.221*	-.520**	-.229**
%OccH_HI	.551**	.285**	.546**	.261**
Md_Age_To	0.056	-0.052	-0.156	0.011
Md_Age_WH	.251**	-0.004	0.172	.128*
Md_Age_AA	.228**	-0.037	.510**	.194**
Md_Age_HI	0.078	-0.156	.278*	0.000
Med_Age_AS	0.154	-0.079	.401**	0.090

Md_Age_NWH	.319**	.189*	.381**	.241**
%No_Sch	.516**	.226*	.500**	.256**
%HiSch	-.205*	-.358**	-.405**	-.146**
%Bach	0.084	.238**	-0.050	0.092
%Mast	0.155	0.033	0.039	.134*
%Doct	-0.110	-0.024	-0.021	-0.056
%AA_HiSch	0.078	-.229*	0.134	0.062
%AA_Bach	-0.105	.231*	-.276*	-0.088
%AA_GrdSc	-.199*	0.173	-0.148	-0.106
%AS_HiSch	0.057	-0.158	-0.073	-0.093
%AS_Bach	0.092	.201*	0.211	.161**
%AS_GrdSch	-0.157	-0.057	-0.014	-0.022
%HI_HiSch	-0.138	-.216*	-.480**	-.152**
%HI_Bach	-.518**	-.542**	-.541**	-.496**
%HI_GrdSch	-.431**	-.481**	-.406**	-.376**
%WH_HiSch	-.191*	-.316**	-.327**	-.119*
%WH_Bach	.187*	.351**	0.219	.203**
%WH_GrdSch	.196*	0.127	.237*	.180**
%Unempl	0.113	-0.057	0.084	-0.006
%AgForMin	-.347**	-0.055	0.167	-0.070
%Ag_Fish	-.317**	0.011	0.202	-0.014
%Ag_Min	-.179*	-0.069	-0.106	-.119*
%Contr	-0.128	0.065	-0.185	-.162**
%Manuf	-0.012	0.041	0.140	0.098
%WholeSale	.251**	.311**	.361**	.276**
%Retail	-.363**	-0.096	-.549**	-.339**
%TransUtil	0.026	0.045	-0.186	-0.034
%TransWA	0.076	0.097	-0.174	0.015
%Util	-0.113	-0.141	-0.077	-.133*
%Inform	.233**	.244**	.243*	.246**
%FinRealE	.223**	.218*	0.164	.220**
%FinInsur	.213*	0.163	0.108	.212**
%RealEst	.187*	.209*	.260*	0.093
%ProfManW	.371**	.262**	.368**	.306**
%ProfSci	.368**	.194*	.313**	.300**
%Manage	0.125	.228*	0.038	.177**
%AdminWM	.247**	.281**	.369**	.171**
%EducHeal	-.213*	-.221*	-.463**	-.230**
%Educ	-0.167	-0.075	-.232*	-.141*
%Health	-0.136	-.314**	-.467**	-.208**
%ArtFood	-.173*	-0.128	-0.043	-.154**
%ArtRec	0.096	-0.067	0.098	0.037
%AcmFood	-.429**	-0.149	-0.175	-.298**
%OtherServ	0.035	0.048	-0.224	-.109*
%PublicAd	-0.036	-.227*	-0.112	-.148**
Md_H_inc	.397**	.300**	.369**	.393**
PerCapInc	.323**	.253**	.258*	.327**
%Blt_Aft90	-.318**	0.054	-0.163	-.227**

%Blt_Bf40	0.165	-.190*	-0.109	.182**
MdYr_H_Blt	-.252**	0.137	-0.174	-.238**
Md_Rent	.409**	.322**	.418**	.360**
Md_OccH_Va	.405**	0.119	.395**	.306**
%FrBrn_Pov	-0.084	.293**	0.120	0.011
%AA_No_Veh	.327**	-0.171	0.174	.254**
%AS_No_Veh	0.113	-0.163	-0.097	0.054
%HI_No_Veh	.577**	0.026	0.087	.438**
%WH_No_Veh	.225**	-.186*	0.086	.191**
AA_Rent	.394**	.352**	.376**	.332**
AS_Rent	.404**	0.172	.468**	.357**
HI_Rent	.239**	0.108	.321**	.227**
WH_Rent	.455**	.374**	.499**	.404**
AA_Hvalue	.227**	0.019	.280*	.164**
AS_Hvalue	.275**	-0.091	.384**	.235**
HI_Hvalue	0.159	-.307**	.276*	0.103
WH_Hvalue	.417**	.213*	.445**	.327**
%AA_No_Mr	-0.128	-0.050	0.048	-0.103
%AS_No_Mr	-0.073	-0.029	-0.060	-0.071
%HI_No_Mr	-.227**	0.035	0.032	-.121*
%WH_No_Mr	-0.119	-0.063	-0.084	-0.080
Md_Inc_Wh	.454**	.259**	.452**	.431**
Md_Inc_AA	.309**	.280**	.323**	.288**
Md_Inc_AS	.297**	0.135	.476**	.325**
Md_Inc_HI	-.173*	0.023	.323**	-0.005
Md_Inc_NWH	.474**	.383**	.524**	.479**
PCapInc_Wh	.402**	.275**	.433**	.391**
PCapInc_AA	.184*	.191*	0.153	.171**
PCapInc_AS	0.127	0.028	.233*	.146**
PCapInc_HI	-.253**	-.384**	-0.047	-.236**
PCapInc_NWH	.424**	.478**	.569**	.465**
%Pov_Wh	-.349**	-0.010	-0.131	-.201**
%Pov_AA	-.346**	-.240**	-0.142	-.227**
%Pov_AS	-.243**	-0.148	-.331**	-.234**
%Pov_HI	.395**	0.124	0.090	.258**
%Pov_NWH	-.447**	-.302**	-.478**	-.428**
R_Inc_Wh_AA	-0.073	-0.004	-0.119	-0.085
R_Inc_WH_AS	0.028	-0.085	0.182	0.034
R_Inc_WH_HI	-.671**	-.335**	-.502**	-.545**
R_Inc_AA_AS	0.037	-0.068	0.193	0.057
R_Inc_AA_HI	-.510**	-.259**	-0.162	-.348**
R_Inc_HI_AS	.398**	0.088	.374**	.326**
R_PCI_WH_AA	-.260**	-.275**	-.410**	-.273**
R_PCI_WH_AS	-0.135	-0.063	-0.093	-0.088
R_PCI_WH_HI	-.697**	-.573**	-.768**	-.580**
R_PCI_AA_AS	-0.030	-0.050	-0.038	-0.025
R_PCI_AA_HI	-.457**	-.428**	-.307**	-.367**
R_PCI_HI_AS	.222**	.248**	0.212	.235**

Table C3. Correlations between White-Asian Dissimilarity Index (dw_as00) and various socioeconomic variables, for each region and for the nation as a whole.

SES VARIABLE	**NORTHEAST** (n = 134)	**SOUTH** (n = 122)	**WEST** (n = 75)	**NATION** (n = 331)
	dw_as00	dw_as00	dw_as00	dw_as00
%WH00	-.200*	-0.014	-.597**	-.123*
%AA00	0.142	0.134	.598**	.208**
%HI00	0.079	-0.087	.357**	-0.045
%AS00	.429**	0.125	.496**	.191**
%Renter	.184*	0.097	.571**	.121*
%OccH_WH	-.225**	-0.150	-.657**	-.232**
%OccH_AA	0.161	0.149	.616**	.217**
%OccH_AS	.411**	.214*	.515**	.217**
%OccH_NWH	-.188*	-0.034	-.592**	-.139*
%OccH_HI	0.090	-0.083	.332**	-0.041
Md_Age_To	-.317**	-.263**	-0.173	-.154**
Md_Age_WH	-.237**	-.287**	0.058	-.140*
Md_Age_AA	-0.105	-0.018	.306**	0.046
Md_Age_HI	0.004	-0.106	0.209	0.039
Med_Age_AS	-.330**	-.516**	0.075	-.296**
Md_Age_NWH	-.249**	-.255**	0.210	-.127*
%No_Sch	0.101	0.046	.509**	.109*
%HiSch	-.180*	-0.047	-.366**	0.026
%Bach	0.161	0.091	-0.089	0.001
%Mast	0.169	0.068	-0.066	0.063
%Doct	.265**	0.106	-0.055	0.091
%AA_HiSch	-.208*	0.106	0.195	.156**
%AA_Bach	.208*	0.117	-.281*	-0.088
%AA_GrdSc	.298**	0.159	-.234*	-0.007
%AS_HiSch	-.269**	-.275**	-0.186	-.280**
%AS_Bach	-0.008	0.017	0.000	0.032
%AS_GrdSch	.200*	.309**	-0.212	.234**
%HI_HiSch	-.236**	-0.081	-.394**	-.154**
%HI_Bach	0.114	-0.019	-0.196	0.057
%HI_GrdSch	.226**	0.072	-0.135	.171**
%WH_HiSch	-0.151	-0.024	-.264*	0.054
%WH_Bach	.170*	0.081	0.056	0.016
%WH_GrdSch	.177*	0.031	0.104	0.055
%Unempl	0.027	0.028	.266*	0.029
%AgForMin	-0.039	-0.029	0.120	-0.085
%Ag_Fish	-0.016	-.178*	0.156	-0.090
%Ag_Min	-0.042	0.053	-0.120	-0.011
%Contr	-.257**	-0.156	-.362**	-.264**
%Manuf	-0.143	.257**	0.142	.156**
%WholeSale	-0.082	.292**	0.180	0.094
%Retail	-.260**	-.388**	-.493**	-.330**
%TransUtil	0.015	0.123	-0.054	0.042

%TransWA	0.027	0.075	0.018	0.041
%Util	-0.037	0.147	-0.210	0.012
%Inform	0.042	0.028	0.194	0.050
%FinRealE	0.095	-0.017	0.070	0.062
%FinInsur	0.092	0.142	0.056	.126*
%RealEst	0.052	-.333**	0.086	-.205**
%ProfManW	0.129	-0.030	0.164	0.004
%ProfSci	.174*	0.097	0.093	0.060
%Manage	-0.144	.244**	0.000	0.064
%AdminWM	-0.083	-.299**	.329**	-.168**
%EducHeal	0.111	0.034	-0.181	0.051
%Educ	.251**	0.128	-0.058	.126*
%Health	-0.162	-0.139	-.235*	-0.094
%ArtFood	0.136	-.315**	-0.163	-.164**
%ArtRec	0.104	-0.175	-0.072	-0.079
%AcmFood	0.129	-.352**	-.232*	-.208**
%OtherServ	-0.102	-.191*	-0.115	-.162**
%PublicAd	-0.003	-.254**	-0.037	-.151**
Md_H_inc	0.023	0.048	.307**	0.084
PerCapInc	-0.012	-0.069	0.188	0.039
%Blt_Aft90	0.128	-0.035	-.308**	-.133*
%Blt_Bf40	-0.106	.191*	-0.004	.130*
MdYr_H_Blt	0.085	-0.163	-.274*	-.169**
Md_Rent	0.056	-.197*	.350**	-0.021
Md_OccH_Va	-0.006	-0.030	.347**	0.003
%FrBrn_Pov	.351**	.192*	0.145	.110*
%AA_No_Veh	.174*	.234**	.432**	.335**
%AS_No_Veh	.395**	0.141	.307**	.278**
%HI_No_Veh	0.155	.263**	0.225	.225**
%WH_No_Veh	0.150	0.002	.387**	.166**
AA_Rent	0.065	-0.135	.275*	-0.041
AS_Rent	-0.050	-.223*	.322**	-0.019
HI_Rent	0.010	-0.141	.375**	0.017
WH_Rent	0.045	-0.167	.440**	0.021
AA_Hvalue	0.038	-0.095	.230*	-0.079
AS_Hvalue	0.003	0.045	.332**	0.063
HI_Hvalue	0.010	0.016	.345**	0.022
WH_Hvalue	0.003	0.019	.383**	0.024
%AA_No_Mr	-0.151	.197*	-0.048	0.069
%AS_No_Mr	-0.123	-0.005	-0.167	-0.061
%HI_No_Mr	0.030	0.091	-0.119	0.048
%WH_No_Mr	-0.109	0.070	-0.078	0.095
Md_Inc_Wh	0.050	0.129	.382**	.140*
Md_Inc_AA	-0.034	-0.009	0.177	-0.056
Md_Inc_AS	-.201*	0.070	.228*	0.023
Md_Inc_HI	-0.051	-0.003	.343**	0.033
Md_Inc_NWH	0.054	0.099	.420**	.136*
PCapInc_Wh	0.036	-0.010	.382**	0.103

PCapInc_AA	-0.012	0.028	0.085	-0.057
PCapInc_AS	-.279**	0.044	-0.094	-0.063
PCapInc_HI	0.076	-0.001	0.131	0.094
PCapInc_NWH	0.045	-0.057	.456**	0.097
%Pov_Wh	0.056	0.041	0.024	-0.016
%Pov_AA	0.081	0.054	0.013	.141*
%Pov_AS	.320**	.185*	0.106	.160**
%Pov_HI	0.060	.184*	0.015	0.105
%Pov_NWH	0.035	0.072	-0.170	-0.032
R_Inc_Wh_AA	-.171*	-0.096	-0.215	-.246**
R_Inc_WH_AS	-.252**	0.036	-0.108	-0.055
R_Inc_WH_HI	-0.133	-0.074	-0.224	-.118*
R_Inc_AA_AS	-.189*	0.082	0.042	0.050
R_Inc_AA_HI	-0.013	0.049	0.093	0.099
R_Inc_HI_AS	-.202*	0.074	-0.020	-0.005
R_PCI_WH_AA	-0.100	0.031	-.340**	-.179**
R_PCI_WH_AS	-.309**	0.069	-.361**	-0.095
R_PCI_WH_HI	0.003	0.040	-.440**	0.012
R_PCI_AA_AS	-.304**	0.026	-0.211	-0.067
R_PCI_AA_HI	0.103	0.021	-0.100	.109*
R_PCI_HI_AS	-.346**	0.042	-0.193	-.124*

Table C4. Correlations between African American-Hispanic Dissimilarity Index (daa_h00) and various socioeconomic variables, for each region and for the nation as a whole.

SES VARIABLE	NORTHEAST (n = 134)	SOUTH (n = 122)	WEST (n = 75)	NATION (n = 331)
	daa_h00	daa_h00	daa_h00	daa_h00
%WH00	-.490**	-0.143	-.509**	-.321**
%AA00	.639**	0.128	.285*	.386**
%HI00	.191*	0.063	.523**	.123*
%AS00	0.106	-0.088	0.157	-0.013
%Renter	0.040	-0.174	.272*	-0.038
%OccH_WH	-.559**	-0.074	-.436**	-.360**
%OccH_AA	.648**	0.118	.320**	.390**
%OccH_AS	0.128	-0.015	0.190	0.015
%OccH_NWH	-.507**	-0.148	-.451**	-.334**
%OccH_HI	.196*	0.087	.473**	.126*
Md_Age_To	0.047	0.141	-0.171	0.069
Md_Age_WH	0.163	0.156	0.110	.156**
Md_Age_AA	.391**	-0.003	.344**	.301**
Md_Age_HI	.268**	.432**	0.115	.341**
Med_Age_AS	.193*	-0.046	0.169	.139*
Md_Age_NWH	0.158	.219*	.306**	.204**
%No_Sch	0.133	0.109	.533**	.184**
%HiSch	-0.014	-0.012	-.361**	0.004
%Bach	-0.104	0.025	-0.123	-.142**
%Mast	-0.130	-0.048	-0.082	-.147**
%Doct	-0.135	-0.145	-0.104	-.159**

%AA_HiSch	0.113	-0.150	0.080	.165**
%AA_Bach	-.256**	0.142	-.333**	-.257**
%AA_GrdSc	-.187*	.244**	-0.223	-.206**
%AS_HiSch	-0.104	-0.130	-0.049	-0.079
%AS_Bach	.173*	.220*	0.055	.165**
%AS_GrdSch	0.109	0.078	-0.072	0.086
%HI_HiSch	-0.007	-0.048	-.552**	-.146**
%HI_Bach	-0.088	0.147	-.468**	-0.042
%HI_GrdSch	-0.063	.200*	-.400**	-0.019
%WH_HiSch	-0.005	0.045	-.247*	0.028
%WH_Bach	-0.005	0.083	0.093	-0.020
%WH_GrdSch	-0.033	0.040	0.099	-0.031
%Unempl	.238**	0.054	.280*	.163**
%AgForMin	-.240**	-0.144	.310**	-0.038
%Ag_Fish	-.244**	-.217*	.366**	-0.032
%Ag_Min	-0.046	-0.054	-0.163	-0.014
%Contr	-0.124	0.006	-0.160	-0.010
%Manuf	0.024	-0.084	0.185	0.035
%WholeSale	0.120	.508**	.392**	.267**
%Retail	-.262**	-0.065	-.436**	-.162**
%TransUtil	.365**	.314**	-0.120	.250**
%TransWA	.385**	.314**	-0.106	.245**
%Util	0.068	0.041	-0.065	0.069
%Inform	0.029	0.154	0.123	0.035
%FinRealE	0.045	.266**	-0.038	0.072
%FinInsur	0.024	.281**	-0.057	0.052
%RealEst	0.138	0.086	0.080	0.086
%ProfManW	.199*	.287**	0.183	.141*
%ProfSci	0.166	.246**	0.125	0.096
%Manage	0.015	.270**	0.097	0.085
%AdminWM	.270**	.241**	.294*	.206**
%EducHeal	-.248**	-.236**	-.240*	-.229**
%Educ	-.222**	-.216*	-0.099	-.202**
%Health	-0.123	-0.122	-.277*	-.118*
%ArtFood	-0.041	0.046	-0.177	-0.063
%ArtRec	-0.011	0.150	-0.081	-0.015
%AcmFood	-0.061	-0.049	-.245*	-0.093
%OtherServ	.245**	-0.045	-0.147	.119*
%PublicAd	0.032	-0.143	-0.150	-0.067
Md_H_inc	-0.007	0.078	0.175	-0.044
PerCapInc	0.021	0.113	0.100	0.005
%Blt_Aft90	-0.143	-0.059	-0.178	-0.053
%Blt_Bf40	-0.161	0.076	0.041	-0.101
MdYr_H_Blt	-0.140	-0.083	-0.216	-0.047
Md_Rent	-0.034	0.071	.246*	-0.050
Md_OccH_Va	-0.055	0.134	.277*	-0.053
%FrBrn_Pov	-0.044	0.005	.257*	0.025
%AA_No_Veh	.249**	.293**	.309**	.260**

%AS_No_Veh	0.104	0.062	0.069	0.037
%HI_No_Veh	-0.025	.197*	0.118	-0.008
%WH_No_Veh	0.118	.219*	0.188	0.084
AA_Rent	-0.152	0.016	0.225	-.132*
AS_Rent	0.048	0.055	.307**	0.067
HI_Rent	0.000	0.158	0.195	0.015
WH_Rent	0.044	.180*	.329**	0.067
AA_Hvalue	-.291**	0.060	0.170	-.210**
AS_Hvalue	0.106	0.062	.277*	0.044
HI_Hvalue	-0.099	.241**	0.176	-0.059
WH_Hvalue	-0.014	.230*	.321**	-0.003
%AA_No_Mr	.392**	-0.027	0.129	.300**
%AS_No_Mr	0.032	-0.063	0.070	0.043
%HI_No_Mr	.222**	-0.009	0.053	.174**
%WH_No_Mr	0.074	-0.028	0.028	.145**
Md_Inc_Wh	0.089	0.139	.250*	0.060
Md_Inc_AA	-0.065	0.020	0.132	-0.100
Md_Inc_AS	0.106	0.172	.246*	.132*
Md_Inc_HI	.175*	.243**	0.156	.139*
Md_Inc_NWH	0.099	.216*	.308**	0.095
PCapInc_Wh	0.126	0.162	.255*	.116*
PCapInc_AA	0.020	-0.003	0.040	-0.087
PCapInc_AS	.263**	0.129	0.038	.190**
PCapInc_HI	.178*	.297**	-0.171	.182**
PCapInc_NWH	0.144	.276**	.369**	.174**
%Pov_Wh	-0.141	-0.019	0.081	-0.016
%Pov_AA	-0.030	0.119	0.015	0.085
%Pov_AS	-0.144	-0.095	-0.056	-.139*
%Pov_HI	-.242**	-0.054	0.190	-0.094
%Pov_NWH	-0.165	-.180*	-0.196	-.131*
R_Inc_Wh_AA	-.236**	-0.165	-0.136	-.246**
R_Inc_WH_AS	0.041	0.084	0.064	0.089
R_Inc_WH_HI	0.096	0.067	-.395**	0.060
R_Inc_AA_AS	0.133	0.175	0.127	.194**
R_Inc_AA_HI	.207*	.202*	-0.039	.231**
R_Inc_HI_AS	-0.042	0.035	0.220	0.031
R_PCI_WH_AA	-0.164	-.279**	-.316**	-.281**
R_PCI_WH_AS	0.165	0.083	-0.145	.119*
R_PCI_WH_HI	0.003	0.101	-.651**	0.016
R_PCI_AA_AS	.227**	0.134	-0.096	.188**
R_PCI_AA_HI	0.101	.262**	-.285*	.192**
R_PCI_HI_AS	0.132	-0.040	0.110	0.071
LogPop	.584**	.514**	.463**	.500**

Appendix D: Multiple regression models, with MSA level dissimilarity index as the dependent variable and various socioeconomic variables as the independent variables in 2000.

Table D1: Multiple regression models "explaining" White-African American segregation levels (dw_aa00) by metropolitan area for each region and for the nation as a whole in 2000.

NORTHEAST	n = 134					
Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.886(a)	0.785796	0.772086	6.3671		
a. Predictors: (Constant), LogPop, %AA_No_Mr, R_Inc_Wh_AA, %Blt_Aft90, PCapInc_NWH, %AA_Bach, %AA00, %ProfManW						
ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	18589.81	8	2323.7	57.31934	.000(a)
	Residual	5067.501	125	40.54		
1	Total	23657.32	133			
a. Predictors: (Constant), LogPop, %AA_No_Mr, R_Inc_Wh_AA, %Blt_Aft90, PCapInc_NWH, %AA_Bach, %AA00, %ProfManW						
b. Dependent Variable: dw_aa00						

Coefficients(a)					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-18.0979	11.2052		-1.61514	0.108802
%AA00	0.46147	0.123263	0.2171	3.743788	0.000275
%AA_Bach	-0.67697	0.185962	-0.216	-3.64039	0.000397
%ProfManW	-1.59457	0.554039	-0.306	-2.87809	0.004707
%Blt_Aft90	-0.39023	0.123502	-0.147	-3.15971	0.001981
%AA_No_Mr	0.262405	0.079987	0.1903	3.280602	0.001343
PCapInc_NWH	0.000595	0.000215	0.2454	2.761613	0.006619
R_Inc_Wh_AA	-21.1315	5.672648	-0.162	-3.72516	0.000294
LogPop	16.02648	1.834373	0.5641	8.73676	1.32E-14

SOUTH	n = 122					
Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.796(a)	0.633877	0.607957	6.5361		
a. Predictors: (Constant), LogPop, Md_Age_AA, %AA_No_Veh, %AgForMin, Md_Age_NWH, %WholeSale, PerCapInc, AA_Hvalue						
ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.

	Regression	8357.928	8	1044.7	24.45497	.000(a)
	Residual	4827.475	113	42.721		
1	Total	13185.4	121			
a. Predictors: (Constant), LogPop, Md_Age_AA, %AA_No_Veh, %AgForMin, Md_Age_NWH, %WholeSale, PerCapInc, AA_Hvalue						
b. Dependent Variable: dw_aa00						

Coefficients(a)

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			B	Std. Error
(Constant)	-8.59833	12.05583		-0.71321	0.477187		
Md_Age_AA	-0.85752	0.256052	-0.215	-3.349	0.001103	0.79	1.270003426
Md_Age_NWH	0.466686	0.140044	0.2147	3.332419	0.001164	0.78	1.281002915
%AgForMin	-1.33206	0.398265	-0.217	-3.34465	0.001119	0.77	1.298317045
%WholeSale	3.034986	0.94698	0.2311	3.204909	0.001757	0.62	1.605461582
PerCapInc	0.001302	0.000252	0.3845	5.158371	1.07E-06	0.58	1.714694358
%AA_No_Veh	0.73837	0.150858	0.3007	4.894475	3.3E-06	0.86	1.164784389
AA_Hvalue	-0.00026	5.25E-05	-0.384	-5.01768	1.96E-06	0.55	1.810289855
LogPop	7.174865	2.142415	0.2832	3.348961	0.001103	0.45	2.207271406

WEST	n = 75				
Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.863(a)	0.744045	0.729419	5.7477	
a. Predictors: (Constant), LogPop, MdYr_H_Blt, %AgForMin, %AA00					

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	6722.274	4	1680.6	50.87149	.000(a)
	Residual	2312.49	70	33.036		
1	Total	9034.763	74			
a. Predictors: (Constant), LogPop, MdYr_H_Blt, %AgForMin, %AA00						
b. Dependent Variable: dw_aa00						

Coefficients(a)

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			B	Std. Error
(Constant)	1052.236	262.9152		4.002188	0.000154		
%AA00	1.932189	0.272461	0.533	7.091614	8.5E-10	0.65	1.544668
%AgForMin	0.652213	0.210324	0.1948	3.100986	0.002779	0.93	1.0793204
MdYr_H_Blt	-0.54217	0.133228	-0.25	-4.0695	0.000122	0.97	1.0315622
LogPop	8.70427	1.708488	0.3845	5.094722	2.84E-06	0.64	1.5579214

NATION	n = 331					
Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.849(a)	0.721135	0.714207	7.3223		
a. Predictors: (Constant), LogPop, MdYr_H_Blt, Md_Age_NWH, AA_Hvalue,						

R_Inc_Wh_AA, %AA00, %AA_Bach, Md_Inc_NWH						
ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	44644.68	8	5580.6	104.0852	.000(a)
	Residual	17264.2	322	53.616		
1	Total	61908.88	330			
a. Predictors: (Constant), LogPop, MdYr_H_Blt, Md_Age_NWH, AA_Hvalue, R_Inc_Wh_AA, %AA00, %AA_Bach, Md_Inc_NWH						
b. Dependent Variable: dw_aa00						

Coefficients(a)							
	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	B	Std. Error
(Constant)	892.4784	102.5463		8.703173	1.7E-16		
%AA00	0.179814	0.046721	0.1389	3.848697	0.000143	0.66	1.504998
Md_Age_NWH	0.572392	0.114624	0.1594	4.993649	9.73E-07	0.85	1.176531
%AA_Bach	-0.54866	0.116586	-0.18	-4.70603	3.76E-06	0.59	1.698185
MdYr_H_Blt	-0.46778	0.052321	-0.294	-8.94054	3.08E-17	0.8	1.247639
AA_Hvalue	-9.5E-05	1.4E-05	-0.331	-6.78718	5.51E-11	0.36	2.749311
Md_Inc_NWH	0.000356	7.84E-05	0.2214	4.548471	7.66E-06	0.37	2.734691
R_Inc_Wh_AA	-21.772	4.162178	-0.183	-5.23092	3.04E-07	0.71	1.411771
LogPop	12.41676	1.112505	0.4104	11.16108	1.13E-24	0.64	1.561483

Table D2: Multiple regression models "explaining" White-Hispanic segregation levels (dw_h00) by metropolitan area for each region and for the nation as a whole in 2000.

NORTHEAST	n = 134					
Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.901(a)	0.811315	0.800832	6.0579		
a. Predictors: (Constant), LogPop, %HI_Bach, %Pov_HI, %HI_HiSch, %HI00, %Pov_NWH, R_Inc_WH_HI						
ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	19882.3	7	2840.328	77.39703	.000(a)
	Residual	4623.967	126	36.69815		
1	Total	24506.26	133			
a. Predictors: (Constant), LogPop, %HI_Bach, %Pov_HI, %HI_HiSch, %HI00, %Pov_NWH, R_Inc_WH_HI						
b. Dependent Variable: dw_h00						

Coefficients(a)							
	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	B	Std. Error
(Constant)	44.78178	11.66599		3.83866	0.000195		

%HI00	0.635037	0.118552	0.246058	5.356606	3.89E-07	0.710	1.409057103
%HI_HiSch	-0.28863	0.10609	-0.11986	-2.72057	0.007438	0.772	1.296064317
%HI_Bach	-0.74754	0.132064	-0.27819	-5.66041	9.68E-08	0.620	1.612974744
%Pov_HI	0.484286	0.118488	0.272103	4.087203	7.72E-05	0.338	2.959688255
%Pov_NWH	-1.46327	0.269482	-0.29748	-5.42994	2.79E-07	0.499	2.004223158
R_Inc_WH_HI	-27.1079	5.979013	-0.2754	-4.53385	1.33E-05	0.406	2.463998728
LogPop	5.023319	1.346436	0.173707	3.730827	0.000287	0.691	1.447625588

SOUTH	n = 122					
Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.797(a)	0.634864	0.622381	5.895789		
a. Predictors: (Constant), LogPop, %HI_Bach, WH_Hvalue, HI_Hvalue						
ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	7071.245	4	1767.811	50.85714	.000(a)
	Residual	4066.959	117	34.76033		
1	Total	11138.2	121			
a. Predictors: (Constant), LogPop, %HI_Bach, WH_Hvalue, HI_Hvalue						
b. Dependent Variable: dw_h00						

Coefficients(a)							
	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	B	Std. Error
(Constant)	-0.36303	7.578552		-0.0479	0.961876		
%HI_Bach	-0.97325	0.167684	-0.4106	-5.80407	5.65E-08	0.624	1.603639794
HI_Hvalue	-0.00021	3.9E-05	-0.54771	-5.48233	2.45E-07	0.313	3.198223381
WH_Hvalue	0.000245	4.35E-05	0.550129	5.632833	1.24E-07	0.327	3.056372867
LogPop	7.129742	1.59594	0.306204	4.467424	1.84E-05	0.664	1.505357149

WEST	n = 75					
Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.866(a)	0.749829	0.731701	6.123831		
a. Predictors: (Constant), LogPop, %Pov_HI, %HI00, %Pov_NWH, PerCapInc						
ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	7755.697	5	1551.139	41.36228	.000(a)
	Residual	2587.59	69	37.5013		
1	Total	10343.29	74			
a. Predictors: (Constant), LogPop, %Pov_HI, %HI00, %Pov_NWH, PerCapInc						
b. Dependent Variable: dw_h00						
Coefficients(a)						
			t	Sig.		
	Unstandardized	Standardized			Collinearity Statistics	

	Coefficients		Coefficients				
	B	Std. Error	Beta			B	Std. Error
(Constant)	-24.6293	12.79191		-1.92538	0.058304		
%HI00	0.345823	0.054354	0.449167	6.362408	1.86E-08	0.727	1.374624522
PerCapInc	0.000827	0.000271	0.287814	3.049168	0.003253	0.407	2.457392713
%Pov_HI	0.998516	0.18426	0.479216	5.419069	8.26E-07	0.464	2.15687692
%Pov_NWH	-1.88608	0.388966	-0.43359	-4.84894	7.39E-06	0.453	2.205322483
LogPop	5.991261	1.869329	0.247366	3.205032	0.002046	0.609	1.642966989

NATION	n = 331			
Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.823(a)	0.677778	0.669772	6.928701
a. Predictors: (Constant), LogPop, %HI_Bach, %HI_HiSch, reg3_iii, %HI_No_Veh, %Pov_NWH, R_Inc_WH_HI, %HI_GrdSch				

ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	32515.58	8	4064.448	84.66383	.000(a)
	Residual	15458.22	322	48.00689		
1	Total	47973.8	330			
a. Predictors: (Constant), LogPop, %HI_Bach, %HI_HiSch, reg3_iii, %HI_No_Veh, %Pov_NWH, R_Inc_WH_HI, %HI_GrdSch						
b. Dependent Variable: dw_h00						

Coefficients(a)							
	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	B	Std. Error
(Constant)	40.45382	7.4213		5.451043	9.98E-08		
%HI_HiSch	-0.42891	0.079113	-0.18847	-5.42142	1.16E-07	0.82804	1.207677
%HI_Bach	-0.85357	0.123402	-0.31275	-6.91702	2.49E-11	0.4895	2.042921
%HI_GrdSch	-0.4857	0.131142	-0.16968	-3.7036	0.00025	0.47672	2.097660
%HI_No_Veh	0.339515	0.065397	0.211728	5.191583	3.7E-07	0.60165	1.662108
%Pov_NWH	-0.64843	0.150003	-0.16193	-4.32277	2.06E-05	0.71312	1.40230
R_Inc_WH_HI	-24.8115	4.170049	-0.24017	-5.94993	7E-09	0.61417	1.628216
reg3_iii	-3.98277	0.958744	-0.13849	-4.15415	4.19E-05	0.90038	1.110645
LogPop	7.087444	1.004857	0.266133	7.053186	1.07E-11	0.70286	1.422749

Table D3: Multiple regression models “explaining” White-Asian segregation levels (dw_as00) by metropolitan area for each region and for the nation as a whole in 2000.

NORTHEAST	n = 134			
Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.692(a)	0.478826	0.454204	5.346857
a. Predictors: (Constant), LogPop, Md_Age_To, %AS_No_Veh, Md_Inc_NWH, %Renter, %AS00				
ANOVA(b)				

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	3335.773	6	555.9621	19.4468	.000(a)
	Residual	3630.788	127	28.58888		
1	Total	6966.561	133			
a. Predictors: (Constant), LogPop, Md_Age_To, %AS_No_Veh, Md_Inc_NWH, %Renter, %AS00						
b. Dependent Variable: dw_as00						

Coefficients(a)

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			B	Std. Error
(Constant)	57.48911	10.07392		5.706729	7.7E-08		
%AS00	2.054766	0.377784	0.569315	5.438993	2.65E-07	0.37	2.669870517
%Renter	-0.49726	0.106234	-0.45388	-4.68082	7.22E-06	0.44	2.291147246
Md_Age_To	-0.84218	0.211285	-0.29188	-3.98598	0.000113	0.77	1.306672557
%AS_No_Veh	0.305756	0.114734	0.250072	2.66492	0.0087	0.47	2.145763185
Md_Inc_NWH	-0.00036	7.61E-05	-0.46865	-4.757	5.25E-06	0.42	2.365115592
LogPop	6.328889	1.234771	0.410471	5.125556	1.08E-06	0.64	1.562806247

SOUTH	n = 122					
Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.716(a)	0.512111	0.491081	5.331023		
a. Predictors: (Constant), LogPop, Med_Age_AS, %Contr, %OccH_AS, Md_Rent						

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	3460.362	5	692.0724	24.35176	.000(a)
	Residual	3296.698	116	28.41981		
1	Total	6757.06	121			
a. Predictors: (Constant), LogPop, Med_Age_AS, %Contr, %OccH_AS, Md_Rent						
b. Dependent Variable: dw_as00						

Coefficients(a)

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			B	Std. Error
(Constant)	30.27948	8.786251		3.446235	0.000792		
%OccH_AS	2.428843	0.825362	0.258196	2.942763	0.003929	0.55	1.830315143
Med_Age_AS	-0.99613	0.155574	-0.44603	-6.40296	3.37E-09	0.87	1.15372931
%Contr	1.107316	0.405249	0.210155	2.732431	0.007271	0.71	1.406422254
Md_Rent	-0.05861	0.008655	-0.69063	-6.77184	5.53E-10	0.4	2.472968887
LogPop	9.293235	1.557379	0.512428	5.967227	2.68E-08	0.57	1.753305599

WEST	n = 75					
Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.810(a)	0.656795	0.637183	4.911439		

a. Predictors: (Constant), LogPop, %Renter, %OccH_NWH, %RealEst						
ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	3231.401	4	807.8504	33.48986	.000(a)
	Residual	1688.556	70	24.12223		
1	Total	4919.958	74			
a. Predictors: (Constant), LogPop, %Renter, %OccH_NWH, %RealEst						
b. Dependent Variable: dw_as00						

Coefficients(a)

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	B	Std. Error
(Constant)	-11.7106	10.07982		-1.16179	0.249268		
%Renter	0.513457	0.117622	0.335237	4.365297	4.3E-05	0.83	1.202874
%OccH_NWH	-16.0809	4.291654	-0.30644	-3.74702	0.000364	0.73	1.364192
%RealEst	-7.01857	1.738449	-0.34816	-4.03726	0.000136	0.66	1.516809
LogPop	9.039302	1.585417	0.541135	5.70153	2.61E-07	0.54	1.837270

NATION	n = 331					
Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.690(a)	0.475437	0.465723	5.776126		
a. Predictors: (Constant), LogPop, reg3_iii, Med_Age_AS, %OccH_AS, %AdminWM, Md_Rent						
ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	9797.483	6	1632.914	48.94292	.000(a)
	Residual	10809.82	324	33.36364		
1	Total	20607.3	330			
a. Predictors: (Constant), LogPop, reg3_iii, Med_Age_AS, %OccH_AS, %AdminWM, Md_Rent						
b. Dependent Variable: dw_as00						

Coefficients(a)

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	B	Std. Error
(Constant)	17.24795	4.926869		3.500793	0.000529		
%OccH_AS	0.850628	0.112397	0.375497	7.568079	3.97E-13	0.66	1.520506567
Med_Age_AS	-0.5735	0.092549	-0.27849	-6.19678	1.75E-09	0.8	1.247470164
%AdminWM	-2.43386	0.583793	-0.2266	-4.16905	3.93E-05	0.55	1.824752567
Md_Rent	-0.01545	0.003501	-0.24584	-4.41187	1.4E-05	0.52	1.917740325
reg3_iii	-5.10965	0.864351	-0.27109	-5.91155	8.59E-09	0.77	1.298912758
LogPop	9.117782	0.906546	0.522385	10.05772	6.87E-21	0.6	1.666210058

Table D4: Multiple regression models “explaining” African American-Hispanic segregation levels (daa_h00) by metropolitan area for each region and for the nation as a whole in 2000.

NORTHEAST	n = 134				
Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.753(a)	0.567014408	0.557022	10.04327	
a. Predictors: (Constant), LogPop, %AA_No_Mr, %OccH_AA					

ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	17171.75089	3	5723.917	56.747	.000(a)
	Residual	13112.75448	130	100.8673		
1	Total	30284.50537	133			
a. Predictors: (Constant), LogPop, %AA_No_Mr, %OccH_AA						
b. Dependent Variable: daa_h00						

Coefficients(a)							
	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	B	Std. Error
(Constant)	-46.7721158	13.22458		-3.537	0.0006		
%OccH_AA	0.82995966	0.196076	0.329029	4.2329	4E-05	0.55122	1.814145874
%AA_No_Mr	0.503898685	0.095346	0.322974	5.2849	5E-07	0.89182	1.121306658
LogPop	12.51934493	2.426288	0.389436	5.1599	9E-07	0.5847	1.710264477

SOUTH	n = 122				
Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.773(a)	0.597331298	0.564974	6.689157	
a. Predictors: (Constant), LogPop, Md_Age_AA, %HI_Bach, %HI_HiSch, %AgForMin, Md_Age_HI, %WholeSale, %AA_No_Mr, %HiSch					

ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	7434.096066	9	826.0107	18.46	.000(a)
	Residual	5011.419672	112	44.74482		
1	Total	12445.51574	121			
a. Predictors: (Constant), LogPop, Md_Age_AA, %HI_Bach, %HI_HiSch, %AgForMin, Md_Age_HI, %WholeSale, %AA_No_Mr, %HiSch						
b. Dependent Variable: daa_h00						

Coefficients(a)							
	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	B	Std. Error
(Constant)	-55.25878004	13.70936		-4.031	0.0001		
Md_Age_AA	-0.988453977	0.260248	-0.25489	-3.798	0.0002	0.79832	1.252627918

Md_Age_HI	1.274272938	0.296976	0.315537	4.2908	4E-05	0.66483	1.504145133
%HiSch	0.613124252	0.17719	0.269799	3.4603	0.0008	0.59138	1.690961442
%HI_HiSch	-0.532399003	0.168129	-0.23098	-3.167	0.002	0.67574	1.479857314
%HI_Bach	0.474294814	0.171699	0.189298	2.7624	0.0067	0.7656	1.306168896
%AgForMin	-1.190869528	0.428618	-0.19962	-2.778	0.0064	0.6965	1.435745203
%WholeSale	4.504810017	0.961774	0.353142	4.6839	8E-06	0.63247	1.581111774
%AA_No_Mr	0.375585833	0.07954	0.364349	4.722	7E-06	0.60387	1.655973534
LogPop	10.85694772	2.1399	0.441109	5.0736	2E-06	0.47563	2.102492221

WEST	n = 75					
Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.635(a)	0.40374909	0.387187	9.052529		
a. Predictors: (Constant), %HI_GrdSch, %HI_HiSch						
ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	3995.349936	2	1997.675	24.377	.000(a)
	Residual	5900.27593	72	81.94828		
1	Total	9895.625867	74			
a. Predictors: (Constant), %HI_GrdSch, %HI_HiSch						
b. Dependent Variable: daa_h00						

Coefficients(a)							
	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	B	Std. Error
(Constant)	66.96878	5.206506		12.863	2E-20		
%HI_HiSch	-1.186582346	0.218612	-0.50038	-5.428	7E-07	0.97441	1.026267161
%HI_GrdSch	-1.303915506	0.37604	-0.31966	-3.467	0.0009	0.97441	1.026267161

NATION	n = 331					
Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.704(a)	0.49515578	0.487389	9.384545		
a. Predictors: (Constant), LogPop, %AA00, %Ag_Fish, %HiSch, %AA_No_Mr						
ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	28073.3517	5	5614.67	63.753	.000(a)
	Residual	28622.64751	325	88.06968		
1	Total	56695.99921	330			
a. Predictors: (Constant), LogPop, %AA00, %Ag_Fish, %HiSch, %AA_No_Mr						
b. Dependent Variable: daa_h00						

Coefficients(a)							
	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	B	Std. Error

(Constant)	-84.19771263	8.73656		-9.637	2E-19		
%AA00	0.292005253	0.053903	0.235786	5.4172	1E-07	0.81996	1.219567191
%HiSch	0.307962848	0.09562	0.141632	3.2207	0.0014	0.80324	1.244961965
%Ag_Fish	1.519754225	0.308491	0.209591	4.9264	1E-06	0.8582	1.165229605
%AA_No_Mr	0.377663458	0.051462	0.325146	7.3386	2E-12	0.79131	1.263725091
LogPop	18.10597842	1.291444	0.625399	14.02	3E-35	0.78064	1.280997209

Appendix E. Simple correlation matrix between segregation level ($x_i - y_i$) and socioeconomic variables (SES), for census tracts (n = 146) within Douglas County (Omaha), Nebraska. Here, x_i is the percentage of the total x-group population in census tract i and y_i is the percentage of the total y-group population in census tract i. A (**) indicates significance at the 0.01 level and a (*) indicates significance at the 0.05 level. **Bold** indicates the variable has a correlation over the absolute value of 0.300 and that the variable was selected to be used in the initial multiple regression equation.

SES Variable	White-African American	White-Hispanic	White-Asian	African American-Hispanic	African American-Asian	Hispanic-Asian
MD_AGE_TO	__.381**__	__.372**__	__.378**__	-0.045	-.198*	-0.162
%RENTER	__-.333**__	__-.354**__	__-.504**__	0.019	0.101	0.088
AVE_H_SIZE	-0.105	-0.115	__.312**__	0.004	.227**	.245**
AVE_F_SIZE	-.262**	__-.480**__	.203*	-0.134	__.328**__	__.524**__
MD_H_INC	__.504**__	__.462**__	0.128	-0.082	__-.416**__	__-.356**__
MED_F_INC	__.546**__	__.482**__	0.069	-0.103	__-.480**__	__-.401**__
PERCAPINC	__.521**__	__.479**__	0.025	-0.084	__-.475**__	__-.419**__
%Pov	__-.743**__	__-.483**__	-.224**	.268**	__.599**__	__.332**__
%LESS9	-.264**	-.893**	-0.016	-.438**	.240**	__.796**__
%HISCH	__-.420**__	-.299**	.291**	0.132	__.512**__	__.401**__
%BACH	__.545**__	__.566**__	-.184*	-0.040	__-.585**__	__-.593**__
%GRDSCH	__.419**__	__.438**__	-.185*	-0.029	__-.468**__	__-.478**__
%Unempl	__-.684**__	__-.406**__	-0.099	.275**	__.597**__	__.320**__
MDYR_H_BLT	__.379**__	__.541**__	-0.101	0.081	__-.396**__	__-.532**__
MD_RENT	0.012	.168*	-0.097	0.114	-0.051	-.195*
%NO_MR	__-.334**__	__-.353**__	.168*	0.020	__.381**__	__.394**__
%PUBTRANS	__-.629**__	__-.353**__	-0.116	.268**	__.538**__	.265**
C_TIME_MIN	-.269**	-0.101	.254**	0.152	__.356**__	.206*
%BLT_BF40	-.275**	__-.629**__	0.058	-.234**	.280**	__.592**__
%BLT_AFT90	.236**	.279**	-0.134	0.008	-.275**	__-.312**__
%AGFORMIN	-0.091	-.189*	0.109	-0.063	0.130	.219**
%AG_FISH	-0.098	-.198*	0.107	-0.064	0.135	.226**
%AG_MIN	0.031	0.028	0.032	-0.005	-0.016	-0.011
%CONTR	0.140	__-.335**__	__.364**__	__-.364**__	0.021	__.466**__
%MANUF	-.286**	__-.723**__	.203*	-.293**	__.351**__	__.742**__
%WHOLESALE	__.524**__	0.086	0.129	__-.376**__	__-.435**__	-0.019
%RETAIL	.255**	.232**	0.033	-0.043	-.224**	-.194*
%TRANSUTIL	-0.038	0.031	0.147	0.054	0.096	0.039
%TRANSWA	-0.119	-0.091	0.140	0.032	.169*	0.146
%UTIL	.188*	__.301**__	0.059	0.064	-0.150	-.243**

%INFORM	.244**	.284**	-0.062	0.005	-.253**	-.284**
%FINREALE	.371**	.515**	-0.092	0.068	-.384**	-.505**
%FININSUR	.321**	.518**	-0.103	0.113	-.342**	-.512**
%REALEST	.261**	0.149	0.007	-0.109	-.240**	-0.131
%PROFMANW	-0.058	.249**	-.236**	.232**	-0.044	-.332**
%PROFSCI	.457**	.458**	-0.157	-0.046	-.491**	-.483**
%MANAGE	0.144	0.103	-0.160	-0.045	-.201*	-.165*
%ADMINWM	-.598**	-.241**	-0.089	.324**	.520**	.176*
%EDUCHEAL	-0.103	.434**	-.289**	.407**	-0.024	-.522**
%EDUC	0.124	.344**	-.346**	0.150	-.259**	-.467**
%HEALTH	-.299**	.304**	-0.075	.476**	.248**	-.308**
%ARTFOOD	-.269**	-.454**	-0.158	-0.109	.185*	.336**
%ARTREC	0.138	-.241**	-.176*	-.293**	-.201*	0.136
%ACMFOOD	-.378**	-.437**	-0.111	-0.005	.306**	.342**
%OTHERSERV	-0.062	-0.044	.253**	0.019	0.162	0.155
%PUBLICAD	-.335**	0.070	0.080	.332**	.345**	-0.026
CON_DENY	-.388**	-.413**	-0.026	0.021	.351**	.359**
REF_DENY	-.700**	-.485**	0.081	.230**	.686**	.473**
ALL_HUD_PH	-.498**	-.390**	0.050	0.130	.485**	.373**
SECTION8	-.744**	-0.080	-0.024	.566**	.684**	0.061

Appendix F: Multiple regression models, with census tract segregation level ($x_i - y_i$) as the dependent variable and various socioeconomic variables as the independent variables for Douglas County (Omaha), Nebraska. Here, x_i is the percentage of the total x-group population in census tract i and y_i is the percentage of the total y-group population in census tract i. There are n = 146 census tracts for Douglas County.

Table F1: Multiple regression models "explaining" White-African American segregation levels (whaa) in Douglas County (Omaha), Nebraska.

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.890(a)	0.7928	0.7854	0.6145		
a. Predictors: (Constant), SECTION8, %ACMFOOD, %WHOLESALE, REF_DENY, %POV						

ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	202.3062	5	40.4612	107.1568	.000(a)
	Residual	52.8625	140	0.3776		
1	Total	255.1687	145			
a. Predictors: (Constant), SECTION8, %ACMFOOD, %WHOLESALE, REF_DENY, %POV						
b. Dependent Variable: whaa						

Coefficients(a)								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std.	Beta			B	Std.

			Error					Error
	(Constant)	0.6063	0.2061		2.9424	0.0038		
	%POV	-0.0462	0.0084	-0.3807	-5.5298	0.0000	0.312	3.2038
	%WHOLESALE	0.0881	0.0309	0.1273	2.8480	0.0051	0.741	1.3502
	%ACMFOOD	0.1165	0.0243	0.2641	4.7938	0.0000	0.488	2.0512
	REF_DENY	-0.0446	0.0078	-0.3473	-5.6948	0.0000	0.398	2.5130
1	SECTION8	-0.0142	0.0017	-0.4029	-8.5121	0.0000	0.660	1.5142

Table F2: Multiple regression models "explaining" White-Hispanic segregation levels (whhi) in Douglas County (Omaha), Nebraska.

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.929(a)	0.8629	0.8559	0.4425		
a. Predictors: (Constant), ALL_HUD_PH, %CONTR, MD_AGE_TO, MDYR_H_BLT, %LESS9, %PUBTRANS, PERCAPINC						

ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	169.9916	7	24.2845	124.0348	.000(a)
	Residual	27.0187	138	0.1958		
1	Total	197.0103	145			
a. Predictors: (Constant), ALL_HUD_PH, %CONTR, MD_AGE_TO, MDYR_H_BLT, %LESS9, %PUBTRANS, PERCAPINC						
b. Dependent Variable: whhi						

Coefficients(a)								
		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	B	Std. Error
	(Constant)	-16.7324	6.0172		-2.7808	0.0062		
	MD_AGE_TO	0.0486	0.0092	0.2354	5.2980	0.0000	0.504	1.9861
	PERCAPINC	0.0000	0.0000	-0.2351	-4.3502	0.0000	0.340	2.9380
	%LESS9	-0.1624	0.0085	-0.8406	-19.0146	0.0000	0.509	1.9663
	MDYR_H_BLT	0.0086	0.0030	0.1346	2.8454	0.0051	0.444	2.2526
	%PUBTRANS	0.0541	0.0182	0.1370	2.9787	0.0034	0.470	2.1274
	%CONTR	-0.0628	0.0152	-0.1519	-4.1248	0.0001	0.732	1.3655
1	ALL_HUD_PH	-0.0021	0.0005	-0.1579	-4.2086	0.0000	0.706	1.4165

Table F3: Multiple regression models "explaining" White-Asian segregation levels (whas) in Douglas County (Omaha), Nebraska.

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.643(a)	0.4129	0.4005	0.4570		
a. Predictors: (Constant), %EDUC , %RENTER, MD_AGE_TO						

ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	20.8603	3.0000	6.9534	33.2938	.000(a)
	Residual	29.6568	142.0000	0.2089		
1	Total	50.5171	145.0000			
a. Predictors: (Constant), %EDUC , %RENTER, MD_AGE_TO						
b. Dependent Variable: whas						

Coefficients(a)								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			B	Std. Error
	(Constant)	0.0068	0.2965		0.0228	0.9819		
	MD_AGE_TO	0.0227	0.0075	0.2172	3.0390	0.0028	0.8093	1.2357
	%RENTER	-0.0105	0.0018	-0.4106	-5.7521	0.0000	0.8112	1.2327
1	%EDUC	-0.0532	0.0096	-0.3575	-5.5527	0.0000	0.9971	1.0029

Table F4: Multiple regression models "explaining" African American-Hispanic segregation levels (aahi) in Douglas County (Omaha), Nebraska.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.837(a)	0.7002	0.6894	0.8799
a. Predictors: (Constant), SECTION8, %LESS9, %PUBLICAD, %WHOLESALE, %ADMINWM				

ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	253.1225	5	50.6245	65.3822	.000(a)
	Residual	108.4000	140	0.7743		
1	Total	361.5226	145			
a. Predictors: (Constant), SECTION8, %LESS9, %PUBLICAD, %WHOLESALE, %ADMINWM						
b. Dependent Variable: aahi						

Coefficients(a)								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			B	Std. Error
	(Constant)	-0.1568	0.3288		-0.4767	0.6343		
	%LESS9	-0.1523	0.0127	-0.5818	-12.0167	0.0000	0.914	1.095
	%WHOLESALE	-0.1631	0.0447	-0.1980	-3.6462	0.0004	0.726	1.377
	%ADMINWM	0.1005	0.0313	0.1828	3.2096	0.0016	0.660	1.515
	%PUBLICAD	0.2323	0.0577	0.1918	4.0264	0.0001	0.944	1.059
1	SECTION8	0.0184	0.0023	0.4381	8.1373	0.0000	0.739	1.353

Table F5: Multiple regression models "explaining" African American-Asian segregation levels (aaas) in Douglas County (Omaha), Nebraska.

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.861(a)	0.7411	0.7299	0.7398		
a. Predictors: (Constant), SECTION8, %PUBLICAD, %HISCH, %ADMINWM, REF_DENY, MD_H_INC						
ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	217.7353	6.0000	36.2892	66.3052	.000(a)
	Residual	76.0755	139.0000	0.5473		
1	Total	293.8108	145.0000			
a. Predictors: (Constant), SECTION8, %PUBLICAD, %HISCH, %ADMINWM, REF_DENY, MD_H_INC						
b. Dependent Variable: aaas						

Coefficients(a)								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			B	Std. Error
	(Constant)	-5.0355	0.5078		-9.9164	0.0000		
	MD_H_INC	0.0000	0.0000	0.4193	5.7965	0.0000	0.3560	2.8089
	%HISCH	0.0403	0.0108	0.2421	3.7339	0.0003	0.4430	2.2574
	%ADMINWM	0.0982	0.0267	0.1981	3.6789	0.0003	0.6427	1.5559
	%PUBLICAD	0.1731	0.0487	0.1586	3.5576	0.0005	0.9375	1.0667
	REF_DENY	0.0687	0.0097	0.4984	7.0598	0.0000	0.3738	2.6754
1	SECTION8	0.0162	0.0020	0.4269	8.2712	0.0000	0.6994	1.4298

Table F6: Multiple regression models "explaining" Hispanic-Asian segregation levels (hias) in Douglas County (Omaha), Nebraska.

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.912(a)	0.8309	0.8223	0.5468		
a. Predictors: (Constant), ALL_HUD_PH, %CONTR, AVE_F_SIZE, MDYR_H_BLT, %EDUC , %LESS9, %POV						
ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	202.7434	7.0000	28.9633	96.8623	.000(a)
	Residual	41.2642	138.0000	0.2990		
1	Total	244.0076	145.0000			
a. Predictors: (Constant), ALL_HUD_PH, %CONTR, AVE_F_SIZE, MDYR_H_BLT, %EDUC , %LESS9, %POV						
b. Dependent Variable: hias						

Coefficients(a)									
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			B	Std. Error
	(Constant)	31.7595	7.0331		4.5157	0.0000		
	AVE_F_SIZE	0.9752	0.1972	0.2063	4.9442	0.0000	0.704	1.4211
	%POV	-0.0389	0.0068	-0.3271	-5.7206	0.0000	0.375	2.6684
	%LESS9	0.1269	0.0120	0.5900	10.6072	0.0000	0.396	2.5246
	MDYR_H_BLT	-0.0180	0.0036	-0.2538	-5.0317	0.0000	0.482	2.0764
	%CONTR	0.0885	0.0187	0.1923	4.7329	0.0000	0.742	1.3469
	%EDUC	-0.0400	0.0135	-0.1222	-2.9653	0.0036	0.721	1.3866
1	ALL_HUD_PH	0.0031	0.0006	0.2148	4.9619	0.0000	0.654	1.5286