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The nature and origins of dually diverse neighborhoods

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DEDICATION

This dissertation is dedicated to my husband, Jason Cutsinger, who has been by my side throughout my graduate studies. Without his love, support, and encouragement, the completion of this dissertation would not have been possible. Thank you, Jason, for your immense patience and your occasional prodding, as both were necessary along the way.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

Since the early Twentieth Century, America's neighborhoods have been characterized by a high degree of residential segregation. Racial-ethnic segregation has been and continues to be a prominent aspect of metropolitan neighborhood life. Segregation by economic class is also present, but to a lesser degree than racial-ethnic segregation. Although residential segregation of any sort certainly deserves the attention of researchers and policy makers, Maly (2005) contends that the focus on segregated neighborhoods has obscured the existence and importance of integrated neighborhoods. Furthermore, because we have become accustomed to residential segregation by race and class as a normally occurring feature in the urban landscape, it may be difficult to believe that integrated neighborhoods even exist (Maly 2005). But neighborhoods that are diverse both racial-ethnically and economically, what I will call dually diverse neighborhoods hereafter, do in fact exist in metropolitan America and are the subject of the current research endeavor.

The History of Studying Residential Patterns in the U.S.

There is a rich history of social scientific inquiry into residential settlement patterns, beginning with mapping and documentation of demographic characteristics of neighborhoods in 1920s Chicago by members of the Chicago School. Burgess' concentric zones model was the first to try to determine the spatial distribution of different social groups (Park, Burgess, and McKenzie 1925). Then in the late 1930s qualitative accounts of racial segregation came on to the scene. The black sociologist E. Franklin Frazier famously wrote about the negative effects that residential segregation had on black families in the U.S. (Frazier 1939).

In the 1940s, Gunnar Myrdal was commissioned by the Carnegie Corporation to conduct a qualitative evaluation of the unequal status of blacks in America. In this landmark 1500 page tome, Myrdal discusses the causes and consequences of racial segregation and ultimately cites segregation and discrimination as the primary culprits in the inequality of blacks in the U.S. (Myrdal 1944a; Myrdal 1944b). He also argued that it was impossible to fully describe the extent of racial segregation because, at the time, no studies to date had attempted to quantify it—but that would soon change.

After the enumeration of 1940, the U.S. Bureau of the Census released data on the racial makeup of neighborhoods. With the availability of these new data, researchers became interested in quantitatively measuring racial residential segregation (University of Michigan Population Studies Center 2008). Along with the desire to quantify the extent of racial residential segregation also came the issue of how to properly measure it and by what means. Researchers began proposing the use of different indices for measuring segregation (Bell 1954; Cowgill and Cowgill 1951; Jahn 1950; Jahn, Schmidt, and Schrag 1947), while others critically analyzed the properties of these indices and tried to determine their usefulness (Duncan 1957; Duncan and Duncan 1955).

Duncan and Duncan (1955) successfully argued for the use of the dissimilarity index in measuring segregation. The dissimilarity or D index measures how evenly two groups are distributed within a spatial unit that is a component of a larger geographic area (e.g., how evenly blacks and whites are distributed within neighborhoods of a city or metro area). The index can be interpreted as indicating what percentage of individuals from one of the two groups would need to move in order to achieve an even distribution of both groups within the larger geographic area. Because of its ease of use and simple interpretability, the D index became the gold standard with which to measure two-group segregation and is still widely used today.

Using the dissimilarity index, the Taeubers (1965) conducted the first nationwide examination of racial segregation in the U.S. They compared D index scores for black segregation in 207 cities and found that racial segregation was universal in the cities that they studied (Taeuber and Taeuber 1965). This would be the first of many quantitative studies of segregation using the D index, of which most come to a similar lamentable conclusion: racial segregation is extremely high in many American neighborhoods.

Beginning in the 1970s and continuing into the 1980s, researchers began proposing alternative measures of segregation that offered different qualities than the D index. For example, the entropy index (H) was introduced as a means for accounting for more than two groups in segregation analyses (Theil 1972; Theil and Finizza 1971). Farley (1977) used the correlation ratio to provide a “more succinct” measure of segregation, since he argued that the index of dissimilarity was not very parsimonious. White

(1983; 1986) evaluated and criticized the dissimilarity index, then presented a measure of segregation that takes distance into account, the proximity statistic.

Another important development in the measurement of segregation came along when Massey and Denton (1988a) introduced the notion of "dimensions" of segregation. The authors of this study put forth the idea that residential segregation varies along five different axes of measurement; namely evenness, exposure, concentration, centralization, and clustering. They argue that accounting for these five dimensions of segregation helps to elucidate underlying complexity in residential segregation patterns. They go on to analyze twenty indices of segregation, relating them conceptually to one of the five segregation dimensions, and ultimately choose one index to represent each of the five dimensions (based on factor analyses).

During the time when alternative measures of segregation were being introduced and their utility was being debated, another development in segregation measurement occurred—the focus of attention on residential settlement shifted to include segregation along economic lines. This segment of the research literature tended to focus on concentrated poverty, the segregation of the poor into separate neighborhoods than their more well-off counterparts. However, concentrated poverty is only one aspect of economic segregation into which researchers investigated.

With the introduction of multiple measures of residential segregation, along with the advent of statistical computing, more and more sophisticated analyses of segregation were made possible, leading to the volume of research we now have at our fingertips concerning the extent of both race and class segregation in the United States. But to date, race and class segregation have been studied in relative isolation of one another, with a few exceptions. For instance, early work on income segregation focused on race and class, but the interaction of the two was not overtly articulated (Erbe 1975; Farley 1977; Wilson 1987). Massey and Denton (1993), however, are the first to show how race and class segregation interact with one another. They argue that, given racial residential segregation, increasing black poverty will lead to the concentration of poor blacks.

More recently, researchers have shifted focus from segregation to integration and have begun to investigate the existence of neighborhoods that are diverse either racially (Ellen 1998; Ellen 2000; Maly 2005) or economically (Brophy and Smith 1997; Hardman and Ioannides 2004a); but there has yet to be much work done on the intersection of both racial-ethnic and economic diversity in U.S. neighborhoods. Building upon the work of previous investigators of residential diversity, the present research will quantitatively investigate the extent of neighborhoods that are diverse both racial-ethnically and economically in U.S. metropolitan areas. Additionally, the change in prevalence of dually diverse neighborhoods since 1970 will be examined, as well as probing what factors may contribute to the emergence of such neighborhoods.

Why Study Residential Settlement Patterns?

Social scientists have long been interested in studying residential settlement patterns because most agree that where one lives has consequences for life outcomes (Dreier, Mollenkopf, and Swanstrom 2004; Ellen and Turner 1997; Ellen and Turner 2003; Gephart 1997; National Research Council 2002). Research has found that there are negative outcomes associated with living in racially segregated neighborhoods, some of which include persistent racial inequality, low-wage work, out-of-wedlock childbirth, crime, and social disorder (Cutler and Glaeser 1997). Negative outcomes have also been associated with living in neighborhoods characterized by high degrees of income segregation. For instance, economic segregation in general inhibits residents from interacting with all segments of the population, possibly missing out on personal and professional contacts that could enhance their lives. Concentrated poverty, a specific type of economic segregation, has been shown to have particularly negative outcomes for residents such as welfare dependency, low educational attainment, joblessness or inconsistent attachment to the labor force, drug use, and crime (Jargowsky 1996b; Jargowsky 1996c; Jargowsky and Bane 1991; Krivo and Peterson 1996; Massey and Eggers 1990).

Given all of these negative consequences for life outcomes that have been associated with living in neighborhoods that are segregated either by race or class, it follows that these negative outcomes may be reduced or even eliminated if segregation were no longer an issue. Thus, the hope is that by encouraging the development of and sustained residency in dually diverse neighborhoods, residents of

these types of neighborhoods will ultimately have better life outcomes than if they were relegated to living in racially and economically segregated neighborhoods.

A Word on "Integration" and "Diversity"

Anyone interested in learning about race or income mixing in neighborhoods will quickly discover that the terms "integration" and "diversity" are sometimes used interchangeably in the research literature when referring to neighborhoods that have achieved some degree of spatial mixing by race or income. Although the literature is somewhat unclear on what is meant by both of these terms, diversity generally refers to social stratification or the presence of multiple different social groups, while integration is sometimes thought to have the added dimension of social interaction, in addition to spatial mixing. Molotch (1972) offers two conceptions of "integration:" one is a social condition which implies positive interpersonal contact; the other is a demographic condition in which racial mixing occurs without any implication about the social aspects of life. It is Molotch's second conception of integration that will be of concern to this study.

Some have argued that socially stratified communities can only be considered truly integrated if their residents participate in meaningful social interaction, rather than just the mere geographic mixing of social groups (Helper 1986; Molotch 1972; Saltman 1990; as cited in Ellen 2000). Indeed, theory suggests that what Molotch (1972) refers to as demographic integration can lead to social integration (Ford 1972; Helper 1979; Smith 1998; Williams 1964). Ford's (1972) contact hypothesis suggests that positive equal status contact among differing races can result in positive attitudes about the other race (DeMarco and Galster 1993; Galster 1992; Pettigrew 1973).

Like Ellen (2000), the current research will be concerned with neighborhood *diversity*. That is, neighborhoods will be evaluated according to their demographic mix of race and income characteristics. The social interactive side of dually diverse neighborhoods will not be considered because, as Ellen (2000) points out, it is virtually impossible to examine social interaction in a study that includes such a large number of neighborhoods.

However, it is important to point out that although we do not know whether meaningful social interaction is occurring in the dually diverse neighborhoods that are of interest to this study, the simple fact that people of differing racial-ethnic and economic backgrounds are residing in the same, circumscribed geographic area could have benefits for residents and indeed for society itself. For instance, neighborhood diversity could be seen as an avenue for achieving racial justice. Providing equal access to the full array of housing and neighborhoods to all members of our society regardless of race or ethnicity could be a first step toward reaching this goal.

Maly (2005) argues that endorsing diversity should improve life chances for people of color and move society toward greater equality. One way in which this is achieved is by giving people of color access to amenity-rich neighborhoods with good city services, quality schools, and access to jobs. When compared with the racially segregated and disadvantaged neighborhoods from which many minorities have to choose when selecting a place of residence, it is much more likely that dually diverse neighborhoods will have these qualities to offer. Living in diverse neighborhoods could also be a means for lower-income households to climb the socioeconomic ladder and achieve social advancement (Galster and Killen 1995).

The Importance of Studying Dually Diverse Neighborhoods

In today's ever-changing world, there are many reasons why it is important to study diverse neighborhoods. Particularly relevant to any study of diverse neighborhoods is the phenomenon of immigration. Since the mid-1960s, when the Hart-Cellar Act was passed allowing more immigrants to enter legally into the United States, mass immigration has and will continue to radically change U.S. demographics. The addition of these non-native born persons gives us the potential for more residential diversity along both racial-ethnic and economic lines, given that many immigrants are initially poor when entering the country. In fact, by 2042, Americans who identify themselves as minorities (either Hispanic, black, Asian, American Indian, Native Hawaiian, or Pacific Islander) will together outnumber non-Hispanic whites (Roberts 2008). With this increased potential for diversity will also come increased urgency for learning how to live harmoniously with one another. Because true residential integration is seen as

proof of the American ideal of equal opportunity, it should be a concerted goal of public policy (Lewis Mumford Center 2001).

Another reason to study dually diverse neighborhoods is to attempt to identify what elements contribute to the emergence of these neighborhoods. Just as segregation is caused by a combination of factors, it is likely that dual diversity is also multifaceted. Determining exactly what factors are likely to lead to the genesis of these neighborhoods could help to foster the development of more dually diverse neighborhoods than are already in existence. Moreover, understanding how dually diverse neighborhoods develop could be the key to unlocking strategies for providing equal access to housing opportunities for all Americans, regardless of their race, ethnicity, or socioeconomic status.

Research Questions

In an effort to try to gain a deeper understanding of the state of dually diverse neighborhoods in America, the following six research questions will be investigated:

1) To what extent do dually diverse neighborhoods exist in U.S. metropolitan areas?
2) Has their prevalence changed over the last 30 years?
3) Where are dually diverse neighborhoods most prevalent?
4) Are dually diverse neighborhoods stable over time?
5) What does the demographic profile of the typical dually diverse neighborhood look like?
6) What factors influence the emergence of dually diverse neighborhoods?

Organization of the Study

The remaining sections of the study will proceed as follows. First, an extensive review of the literature related to residential segregation (both racial-ethnic and economic) and neighborhood diversity will be undertaken. Next, the methodology section will provide detailed information about the data being utilized and how dual-diversity will be measured, as well as providing information about the regression analysis that will be performed in order to determine what factors influence the development of dually diverse neighborhoods.

CHAPTER 2

REVIEW OF LITERATURE ON RESIDENTIAL SETTLEMENT PATTERNS

The ensuing chapter will present a review of the relevant literature pertaining to residential settlement patterns. I will begin by discussing the approaches to studying residential patterns that have been used in previous investigations, including a consideration of the strengths and weaknesses of each of these methods. I will then review the existing literature on the extent and trends of racial residential segregation in the U.S., moving on to look at the scholarly debates over the purported causes of racial residential segregation. Next, I will review the literature on the extent and trends of economic residential segregation in the U.S. and debates over its purported causes. I will then discuss the literature related to neighborhood diversity, first focusing on racial diversity, then on income diversity, and lastly on dual diversity. Finally, I will close by showing how the present study will fill a gap in the scholarly research and further our knowledge about dually diverse neighborhoods.

APPROACHES TO STUDYING RESIDENTIAL SETTLEMENT PATTERNS

Throughout the years of investigation into residential settlement patterns, social scientists have taken many different approaches in trying to grapple with this subject, with some using descriptive techniques and others using analytical ones. Some methods that have been used to study residential settlement include mapping and description of social characteristics, qualitative accounts such as ethnographies, surveys, participant observation, and quantitative analyses using statistical data. Quantitative techniques include calculating segregation indices such as dissimilarity and exposure indices, use of ordinary least squares regression modeling, and use of hierarchical linear modeling. An example of each of these types of studies will be presented here.

Qualitative Approaches

Some of the earliest attempts at identifying patterns of residential settlement occurred at the University of Chicago during the time of the Chicago School theorists. Researchers such as Robert Park, Nels Anderson, Walter Reckless, and F. M. Thrasher used mapping and descriptions of social characteristics in order to classify neighborhoods according to their constituent residents. They viewed

the city as a laboratory for studying human nature and social processes (Park 1925), of which residential settlement patterns were just one aspect.

The investigations conducted by the Chicago School researchers utilized qualitative methodologies to try to gain sociological insights into urban life in Chicago. As such, they yielded extremely detailed descriptions of their research subjects, which included slums and vice neighborhoods, Polish and Jewish immigrants, boys' gangs, and family disorganization (Burgess 1925; Park, Burgess, and McKenzie 1925).

One of the strengths of these studies was their early attempt at theorizing about residential settlement patterns. Burgess (1925), for instance, argued that the process of neighborhood sorting by social class occurred as a result of economic competition for scarce urban land. Moreover, given that not much work had been done yet concerning the organization of urban space, the rich descriptions of neighborhood settlement patterns were another major strength of this type of methodology. However, the purely descriptive nature of these studies could also be viewed as a weakness of this type of methodology, since these data give us no insight into causal factors affecting urban residential settlement.

Another approach that has been used in studying residential settlement is ethnography. One example of this approach is Elijah Anderson's (1990) case study of an urban neighborhood in the midst of racial and class transition and the problems that accompany such a transition. Anderson uses interviews and field notes to capture the true sense of what is happening in the neighborhood, the effect that gentrification has on incumbent residents, and their reactions to it. He finds that as white "yuppie" newcomers move in, "their presence threatens to undermine the heterogeneous character of the neighborhood, though many of them were attracted by just this aspect" (Anderson 1990: 159). Like the descriptive neighborhood portraits produced by the Chicago School, Anderson's ethnography yields very detailed data about one particular neighborhood. However, a weakness of utilizing this type of methodology is that findings from an ethnographic study are specific to the particular subject under study, in this case a neighborhood in Philadelphia, and may not be generalizable to other neighborhoods.

Researchers have also utilized survey methodology in order to study residential settlement patterns. Farley, Danziger, and Holzer (2000) used data from two years of the Detroit Area Study[1] survey (1976 and 1992) to investigate the factors influencing the persistence of racial residential segregation. In particular, the authors analyze survey data to determine whether blacks and whites share the same information about the housing market (such as desirability and affordability of certain areas), which metropolitan locations might be welcoming toward African Americans, and whether blacks and whites prefer to live in neighborhoods where their race makes up the majority of residents. They find that blacks' and whites' views overlap when it comes to knowledge about the housing market and which suburbs would be welcoming to blacks. They also find that, when it comes to living in integrated neighborhoods, both blacks and whites prefer a scenario where their neighborhoods have representations of both blacks and whites, but where their respective race is the majority.

Since these findings suggest that neither information discrepancies about the housing market nor the racial preferences of blacks or whites are spurring racial segregation in Detroit, the authors offer several other explanations for why it is still so persistent. They cite Detroit's low rate of new housing construction, the paucity of other minorities such as Latinos and Asians living in the metro area, and the precipitous loss of homeowner equity as reasons for the continuing pervasiveness of racial residential segregation in the Detroit metro area.

Using survey methodology to study segregation and other residential patterns has several advantages over other types of methods. Most importantly, survey data constitute firsthand experiences, perceptions, beliefs, motives, and feelings of the respondents—characteristics that are unlikely to be captured in other types of quantitative data. Additionally, surveys have the ability to elicit a wide range of responses (Andranovich and Riposa 1993). Furthermore, there is a high degree of reliability since the survey instrument is designed to ask the same questions of all respondents. Surveys can also be highly generalizable if the sample is representative of the population being studied. In the case of the Detroit

[1] The Detroit Area Study is a research and training program established in 1951 that is conducted annually by the Institute for Social Research at the University of Michigan. Its primary feature is an annual cross-sectional sample interview study of metro-Detroiters resulting in a cumulative annual series of cross-sectional data. Each year respondents are surveyed on a different topic. The research is undertaken by both professional and student staff at the University of Michigan (Freedman 1953).

Area Study, the principal investigators utilize random sampling to achieve a representative sample, thus ensuring greater generalizability. Utilizing a survey also has the advantage of describing and analyzing characteristics across a large population (Andranovich and Riposa 1993).

Despite the advantages of using survey methodology noted above, there are also disadvantages associated with this type of methodology. The main weakness is the susceptibility to bias. Since the questions generally tend to ask about the respondents' experiences and beliefs, the answers are thus open to memory and viewpoint biases on the part of the respondent (Smith 1975). Given the somewhat controversial nature of the questions related to race relations asked in the Detroit Area Study, the possibility of respondent untruthfulness is also a concern. Specifically, some respondents may feel the need to lie about their true feelings regarding racial issues, especially if their feelings run counter to what is considered "politically correct."

Another type of methodology, participant observation, has been used to study residential settlement patterns by researchers such as Carol Stack (1974). In her anthropological study of African American family and kinship organization, she describes a disadvantaged ghetto community of blacks who use cooperation and mutual aid as strategies for coping with poverty. She notes that the participants in her study are treated with some form of institutionalized or personalized racism in all their contacts with the dominant white culture, and their residential situation is no exception. Stack describes the process of searching for adequate housing with members of one of the families she is studying, after their rented home had been condemned. Because their housing choice was so constrained by the color line, it took the family more than a month and a half of searching before finding a home that was available. The newfound home was also condemned a short while later, forcing the family to begin their search anew. Although Stack's study is ultimately about how black families cope with economic deprivation, the overcrowded and segregated living arrangements of her participants serve as a backdrop for her analyses, as they are a manifestation of the racism and discrimination her subjects encounter.

One of the advantages of using the participant observation approach to studying residential settlement patterns is that the researcher is able to get a clear understanding of how segregation (or any other type of residential pattern) is lived and understood by the participants themselves. For instance, in

Stack's account, we get a sense of how living in a black ghetto affects the day-to-day lives of her subjects. However, some disadvantages of using such an approach are the fact that it is extremely time consuming and inherently subjective. Since participant observation studies are generally small-scale, they are also unlikely to be representative of other social groups and thus their generalizability is questionable.

Quantitative Approaches

Aside from the qualitative techniques discussed above, researchers have also used a number of quantitative techniques to study residential settlement patterns. The first such major undertaking was done by Karl and Alma Taeuber (1965). They used the dissimilarity (*D*) index to measure white/non-white residential segregation in 207 U.S. cities. They use a comparative approach to assess patterns of racial segregation in the cities they studied and find that racial segregation was ubiquitous in these cities, regardless of urban/suburb distinction, size of the minority population, or within which region of the country the city was located.

This study was groundbreaking because it was the first to use the *D* index to study segregation on such a large scale. It paved the way for many subsequent studies of segregation using the *D* index and other indices such as isolation and entropy. This study also helped to make segregation indices the conventional measure of residential differentiation. More recent examples of the use of segregation indices for reporting the extent of neighborhood racial and ethnic segregation in U.S. cities and metro areas are reports by the U.S. Bureau of the Census, which consistently report these statistics at each decennial interval (Iceland, Weinberg, and Steinmetz 2002).

The advent and widespread adoption of segregation indices as a key measure of residential settlement patterns made it possible to begin testing exploratory and prediction models of segregation using multiple regression analysis. In these types of analyses, the segregation index serves as the dependent variable while other variables related to residential settlement and population distribution serve as independent or predictor variables. As such, these analyses enable researchers to determine what factors are associated with the incidence of segregation.

The Taeubers (1965) comprehensive analysis of black segregation in U.S. cities also included an exploratory regression analysis that attempted to ascertain what variables were influencing decadal changes in racial residential segregation in 69 of the cities they sampled. They found that changes in the white and black populations, suburbanization, residential development (new home construction), and changes in black socioeconomic status were able to explain over half of the variance in the change in segregation from 1950 to 1960. This is one of the earlier attempts at empirically investigating what factors were contributing to changes in racial residential segregation.

Another early use of regression analyses to help explicate factors contributing to residential settlement patterns was that of Otis and Beverly Duncan (1957). In their investigation of black succession of white neighborhoods in Chicago, they undertook a regression analysis to try to determine what elements were influencing the racial change occurring in some of the city's neighborhoods from 1940 to 1950. The authors delineate five stages of succession from white to black residence: invasion, early consolidation, consolidation, late consolidation, and piling up. Their analyses revealed that, at each stage of succession, an increase of gross population density occurred, as well as an increase in the number of dwelling units. However, the increase in dwelling units did not occur as a result of new housing construction, but due to the conversion of non-residential structures to residential use or conversion of large units into smaller ones.

Both the Duncans' (1957) and the Taeubers' (1965) regression analyses were examples of how quantitative statistical analysis could be utilized to help understand patterns of residential settlement. They would lay the groundwork for much more sophisticated analyses of variables influencing residential settlement patterns. Using statistical methods to analyze residential settlement data has the advantages of mathematical measurement precision, high reliability and replicability, generalizability (given that the sample is representative of the population), the ability to test theories, and a higher degree of objectivity than is present in qualitative work. However, unlike the more qualitative approaches discussed above, quantitative analyses are usually unable to capture such human elements as personal experiences, beliefs, perceptions, motives, and feelings.

One example of a sophisticated statistical analysis of residential settlement patterns has been undertaken by Timberlake and Iceland (2007). In this study, the authors use hierarchical linear modeling (HLM) to estimate determinants of change in residential inequality between whites, blacks, Latinos, and Asians from 1970 to 2000. Hierarchical linear models are essentially an extension of the general linear model (Roberts 2004) in that they allow predictor variables to vary over multiple levels (such as geography or social location), whereas conventional linear regressions are modeled so that predictors vary at only one level. This technique also allows for analyzing repeated measures within the same spatial unit of analysis by treating each time-series observation as being nested within the unit of analysis. As will be explained further below, Timberlake and Iceland (2007) utilize the repeated measures functionality of HLM.

In HLM, the term *hierarchical* refers to the fact that observations are treated as being nested within other sets (Nezlek and Zyzniewski 1998). In fact, the only requirement for the data is that the level-1 units be nested inside level-2 units (Roberts 2004). For instance, data for individuals is analyzed as being nested within the groups to which the individuals belong. This technique allows one to determine whether individual-level relationships vary as a function of group characteristics (Nezlek and Zyzniewski 1998). In analyzing the data, HLM uses a series of regression-like hierarchical nested models where parameters from one level are analyzed at the next highest level of analysis (Nezlek and Zyzniewski 1998). Theoretically, HLM models can have an infinite number of levels (Nezlek and Zyzniewski 1998), but the majority of analyses generally limit the number of levels to two or three.

As used by Timberlake and Iceland (2007), HLM analyzes repeated measures within the same spatial unit of analysis, in this case, metropolitan areas. Their study treats multiple observations of metro-area level racial-ethnic segregation data as nested within metropolitan areas, yielding estimates of average decadal change in segregation from 1970 to 2000. This type of model is also referred to as a linear growth model, one of many types of “intercepts- and slopes-as-outcomes” models (Timberlake and Iceland 2007). These types of models are referred to as such because slopes and intercepts estimated at level-1 then become outcomes to be predicted by the independent variables at level-2. Specific details about how Timberlake and Iceland utilize this linear growth model will be provided below.

The authors perform four sets of HLM regressions using four different measures of metro-level residential inequality as dependent variables: the index of dissimilarity (*D*), the entropy index (*H*), the isolation index (*P**), and the index of net difference (*ND*). The independent variables that they utilize are percent minority English speakers, percent minorities with greater than a high school degree, minority-to-white income ratio, percent minority homeowners, metropolitan population characteristics, metropolitan housing market characteristics, region of the country, and age of the metro area.

The level-1 equation is used to estimate the slopes (changes in metro area-level segregation from 1970 to 2000) and intercepts (level of segregation in 2000) that are then utilized in level-2, which attempts to account for variation in these slopes and intercepts by estimating their association with other metro area characteristics. So in level-1, the intercepts are interpreted as the predicted level of segregation for the metro area in 2000, while the slopes are interpreted as estimated growth (or decline) in segregation from 1970 to 2000 per decade. The values of these intercepts (predicted level of residential inequality in 2000) and slopes (predicted per-decade change in residential inequality) estimated in level-1 are then regressed on metropolitan area-level covariates in order to assess how their association with metro-level characteristics affects variation in both the slopes and intercepts.

The findings of this complex analysis were many, so only the primary results will be highlighted here. First, Timberlake and Iceland (2007) find that residential segregation between Blacks, Hispanics, Asians, and Whites has declined substantially over the 1970 to 2000 period according to the multigroup entropy index. Additionally, White-Black residential inequality declined considerably since 1970 on all measures. They also found that Asians are becoming more isolated over time, but that they are not living in neighborhoods with increasing poverty rates relative to Whites. Increasing income equality between Whites and minorities was strongly associated with declines in residential inequality, indicating that minorities are increasingly converting economic gains into reductions in residential disadvantage (but not necessarily residential integration with Whites). Lastly, they conclude that if trends continue unabated, Latinos will overtake Blacks as the most segregated racial-ethnic group by the end of this decade.

As demonstrated by Timberlake and Iceland (2007), sophisticated statistical analyses have allowed more rigorous investigation into residential settlement patterns and more detailed conclusions to

be drawn about what may be causing the residential patterns we see in metropolitan areas. As exploration into segregation and other residential patterns has evolved over time, this type of analysis has become the preferred mode of investigation for many researchers and scholars in the field. In this vein, the current dissertation research will utilize quantitative methods to investigate the determinants of dually diverse neighborhoods. As such, the remaining sections of the literature review will focus mainly on quantitative empirical studies of residential settlement patterns. We now turn to a discussion of the literature on the extent and trends of racial residential segregation and its reputed causes.

TRENDS IN THE EXTENT OF RACIAL SEGREGATION IN U.S. NEIGHBORHOODS

Of all of the subtopics related to residential settlement, the empirical investigation into the extent of racial residential segregation has the longest history. Decennial race-related statistics have been continuously available from the Census Bureau since 1940, enabling the analysis of trends or changes in racial residential segregation.

As noted previously, the first serious attempt to quantitatively measure the extent of residential segregation for African Americans using Census data was done by Taeuber and Taeuber (1965). This investigation has since been replicated and built upon using data from subsequent decennial censuses by Sorensen, Taeuber, and Hollingsworth (1975), Van Valey, Wade, and Wilcox (1977), Farley and Frey (1994), and Iceland, Weinberg, and Steinmetz (2002). Whereas Sorensen and her colleagues and Van Valey and his colleagues examine trends in the residential segregation of blacks from 1960 to 1970, Farley and Frey look at trends in black segregation from 1980 to 1990. Iceland and his colleagues examine trends in racial residential segregation from 1980 to 2000. Each of these studies finds that there were modest declines in black segregation from the previous decade, but that the overall level of residential segregation of blacks from whites remained very high. Farley (1993) discusses the fact that in the major metropolitan areas that the majority of blacks live, racial residential segregation in 1990 was only slightly less than that measured in 1970 or 1980.

One other point that can be made when discussing the extent of racial residential segregation in the United States is the fact that the severity and rate of change differ significantly from one metropolitan area to the next (Turner and Wienk 1993). For instance, Detroit was one of the several metropolitan

areas located in the Midwest and North that actually saw increases in racial segregation during the 1980s (Farley 1993), whereas the majority of other metropolitan areas saw declines in racial segregation over this same period.

Starting around the time when Census data for 1970 and 1980 became available, scholars began including other ethnic groups in their analyses of residential segregation, particularly Asians and Latinos. These studies evaluate the level of residential segregation and isolation of each racial-ethnic group and make comparisons across groups using dissimilarity and exposure indices. Notable examples of studies that measure residential segregation for multiple racial-ethnic groups include Massey and Denton (1987), Iceland, Weinberg, and Steinmetz (2002) and Logan, Stults, and Farley (2004). Although Massey and Denton's (1987) article utilizes Census data from the 1970 and 1980 Censuses, while Iceland, Weinberg, and Steinmetz (2002) and Logan, Stults, and Farley (2004) analyze data from the 2000 Census, all of their studies come to the same general conclusion. That is, even though black-white segregation has steadily declined since 1970, it remains alarmingly high in U.S. metropolitan areas. They also find that Hispanic-white segregation is lower than that of blacks but higher than that of Asians, and Asians experience the lowest level of residential segregation from whites.

In Cutler, Glaeser, and Vigdor's (1999) historical analysis of the formation and perpetuation of the black ghetto from 1890 to 1990, the authors chronicle changes in black-white segregation and then consider why the pattern of segregation present in many urban areas developed such as it did. They conclude that the level of racial residential segregation in America rose for nearly a century and then declined modestly after 1970. They also find that racial segregation across cities was very persistent and strongly correlated with city size. The authors argue that at mid-century, collective racism on the part of whites opposing integration was more responsible for black residential segregation than was blacks' desire for self-segregation. Since 1970, black segregation has remained high largely due to whites' preferences to live with other whites. The authors suggest that meaningful declines in black segregation will have to await attitudinal changes toward racial integration on the part of whites.

Although the above cited studies primarily utilize the dissimilarity index to evaluate the extent of racial segregation, this measure is by no means the only index available for this purpose. The issue of

which index is the most appropriate for measuring residential segregation has been hotly debated amongst researchers for many years. In response to this ongoing debate, Massey and Denton (1988a) undertook a systematic examination of twenty segregation indices used in the research literature on segregation in an effort to determine which were the most useful in capturing what they term the five different "dimensions of segregation." They argue that relying solely on dissimilarity overlooks the fact that segregation is more than just an uneven distribution of social groups across metropolitan space. In fact, besides evenness, segregation can be conceptualized as having four additional dimensions: exposure, concentration, centralization, and clustering. Massey and Denton (1988) inventory all possible measures of these five dimensions of segregation and determine the most useful measures using factor analysis. A short summary of the dimensions of segregation and their associated measures identified by Massey and Denton follows.

The Dimensions of Residential Segregation

Evenness refers to the differential distribution of social groups among areal units such as census tracts (Massey and Denton 1988). A group is thought to be segregated if it is unevenly distributed over areal units (Blau 1977). The dissimilarity index (*D*) is the most widely used measure of evenness, but evenness can also be measured using the Gini coefficient (*G*), the entropy index (*H*), which allows the analysis of the distribution of more than two groups, and the Atkinson index (*A*), which allows the researcher to weight areal units.

Exposure refers to the degree of potential contact between minority and majority group members within geographic areas of a city (Massey and Denton 1988). Indices that measure exposure determine the extent to which minority and majority group members physically confront one another, by virtue of sharing a common geographic area. There are two basic measures of exposure: the interaction index (*xP*y*) and the isolation index (*xP*x*). The former index measures exposure of members of group *X to* members of group *Y*, whereas the latter index measures group members' exposure to one another. Exposure can also be measured using the correlation ratio, or Eta^2.

Concentration refers to the relative amount of physical space that a minority group occupies in an urban environment (Massey and Denton 1988). Groups are considered concentrated if they occupy a

small share of the total geographic area. Concentration can be measured using Duncan's delta index (*DEL*), which computes the proportion of minority group members residing in areal units with above average density of group members. Concentration can also be measured in an absolute sense using the absolute concentration index (*ACO*) and in a relative sense using the relative concentration index (*RCO*). Both the *ACO* and the *RCO* take into consideration the total area inhabited by a group, however, the *RCO* measures the share of urban space occupied by a group in comparison with another group.

Centralization is the degree to which a group is located spatially near the center of an urban area (Massey and Denton 1988). Centralization is considered a component of segregation because discrimination often confines minorities to declining central city areas (Farley, Schuman, Bianchi, Colasanto, and Hatchett 1978). The most straightforward measure of centralization is the proportion of a minority group that resides in the central city (*PCC*). However, centralization can also be measured using the relative centralization index (*RCE*) and the absolute centralization index (*ACE*). The *RCE* can be interpreted as the relative share of group *X* members that would have to change their residential area to match the degree of centralization of group *Y*. The *ACE* index, by contrast, can be interpreted as the proportion of group *X* members that would need to change residential areas in order to achieve an even distribution of group *X* in the central city.

Clustering is the extent to which areal units in which minority members reside are adjacent to one another, or cluster, in space. A high degree of clustering implies a residential structure where minority areas are closely crowded, creating a large racial-ethnic enclave or ghetto (Massey and Denton 1988). The absolute clustering index (*ACL*) expresses the average number of group members in nearby tracts as a proportion of the total population in nearby tracts. Another measure of clustering, the index of relative clustering (*RCL*) compares the average distance between minority group members with the average distance between majority group members. The spatial proximity index (*SP*) calculates the average of intergroup proximities. In addition to these three measures, a distance decay interaction index and a distance decay isolation index have also been proposed as measures of clustering. These indices explicitly introduce a distance measurement and interpretation into their calculations.

After performing a factor analysis using 1980 census data for 60 metropolitan areas on the twenty indices described above, Massey and Denton (1988) find that the following indices are the best measures of the five dimensions of residential segregation: *D* for evenness, *xP*y* for exposure, *RCO* for concentration, *SP* for clustering, and *ACE* for centralization. Both their orthogonal and oblique factor solutions produce pattern matrices that support their hypothesized five-dimension structure for residential segregation.

Utilizing census data from 1990, Massey, White, and Phua (1996) replicate and expand Massey and Denton's (1988) investigation into the multidimensional nature of segregation. The authors analyze the same twenty segregation indices, but utilize all 318 metropolitans areas defined in 1990, rather than just the 60 utilized by Massey and Denton. They also carry out systematic comparisons of factor analyses across racial-ethnic groups. Their findings support the findings of Massey and Denton (1988) of five, empirically identifiable dimensions of segregation; however, the authors find some differences in the way the recommended indices for concentration and clustering function in 1990 as compared to 1980. The findings indicate that although minority residential patterns are still characterized by significant clustering in 1990, they are no longer spatially configured in the same way they were in 1980 (Massey, White, and Phua 1996).

Some ambiguity into the choice of measures for clustering and concentration were introduced in Massey, White and Phua (1996) when the factor analyses were evaluated because the indices previously recommended by Massey and Denton (1988) for these dimensions (*SP* and *RCO*) loaded highly on more than one factor. However, the authors do not find strong empirical grounds in the group-specific analyses to recommend not using *SP* and *RCO* and thus recommend using the same indices put forth by Massey and Denton (1988) in an effort to maintain continuity.

Hypersegregation

Massey and Denton's (1988) article on the dimensions of segregation also introduced an additional concept to the study of segregation: hypersegregation. Hypersegregation refers to the situation where a minority group experiences extreme segregation on all five dimensions empirically verified by the authors. In a paper that was an outgrowth of their dimensions of segregation work,

Massey and Denton (1989) evaluate the level of segregation for blacks and Hispanics along the five dimensions of segregation and determine that blacks are the only racial group in America that experiences hypersegregation, even after controlling for differences in socioeconomic characteristics and metropolitan context. Based on these findings, the authors conclude that blacks occupy a unique, distinctly disadvantaged position in urban America.

Since Denton (1994) suggested that hypersegregation might be increasing in certain cities, Wilkes and Iceland (2004) update the previous inquiries into hypersegregation by Massey and Denton by using data from the 2000 Census in order to analyze the level of hypersegregation of blacks, Hispanics, Asians, and Native Americans. They find that blacks are hypersegregated in 29 of the 298 metro areas analyzed for blacks, while Hispanics are hypersegregated in 2 of the 305 metro areas analyzed for Hispanics. These findings indicate that race and ethnicity are still salient factors shaping residential patterns in metropolitan areas.

When one considers the foregoing evidence on the extent of racial-ethnic segregation as well as the trends and changes in racial residential segregation through the decades, one could conclude that although racial segregation has declined somewhat over time, it still remains at an unacceptably high level. Now that I have reviewed the pertinent literature regarding levels and trends of racial segregation, I will turn to a discussion of the causes of racial-ethnic segregation.

PURPORTED CAUSES OF RACIAL-ETHNIC RESIDENTIAL SEGREGATION

Throughout the many years sociologists have been studying inequality in residential patterns, the main focus has been on neighborhood separation based on racial and ethnic group membership. Since racial residential segregation is a much-studied phenomenon, there have been many theories advanced as to why it exists, which has led to several recent comprehensive reviews of the competing theories (Dawkins 2004; Charles 2003).

In most cases, when authors discuss the competing theories related to the causes of racial residential segregation, these theories are presented individually, just as they will be discussed in this review individually. However, it is important to keep in mind that in order to truly understand the

underlying causality of racial residential segregation, one must view these competing causal explanations as mutually reinforcing of one another. A discussion of the importance of recognizing the interrelated nature of these causal theories will be included at the end of the section.

Objective Differences vs. Prejudice/Discrimination

For the most part, theories on racial residential segregation can be classified as falling under one of two general theoretical umbrellas: objective differences in status and lifestyle (voluntary forces) or prejudice/discrimination (involuntary forces) (Charles 2003; Lieberson and Carter 1982). Three frequently cited theories on racial residential segregation that focus on objective differences include the class theory of racial segregation, the information theory of racial segregation, and racial differences in tastes for housing services. Three theories included under the prejudice/discrimination perspective include the prejudice/preference theory of racial segregation, the private discrimination theory of racial segregation, and the public policy discrimination theory. Each of these six theories will be discussed below.

The Class Theory of Racial Segregation

The class theory of racial segregation posits that high levels of racial residential segregation reflect real socioeconomic differences between blacks and whites (Charles 2003; Dawkins 2004; Massey and Denton 1993). This explanation says that given that dwellings tend to be segregated by level of affordability (i.e. most dwellings in a given neighborhood will tend to be of the same quality and in a similar price range), and given interracial differences in the distribution of housing purchasing power, economic sorting of groups by ability to pay results in sorting by race as well.

This theory, however, can't explain why equally affordable neighborhoods have different racial compositions. Empirical investigations continually show that high income blacks are as segregated from high income whites as their low income counterparts are from low income whites (Darden and Kamel 2000; Denton and Massey 1988; Erbe 1975; Farley 1995; Farley 1977; Fielding and Taeuber 1992; Massey and Denton 1993; Massey and Denton 1988b; Simkus 1978; Taeuber and Taeuber 1965; Taeuber 1975). Taken as a whole, these studies indicate that, regardless of what geographic location or

what specific economic classes are analyzed, class differences between blacks and whites do not seem to be driving racial residential segregation between these two groups.

More recently, Crowder, South, and Chavez (2006) found that racial differences in household and parental wealth only account for a trivial amount of the difference between blacks and whites when it comes to in-migration into neighborhoods with higher proportions of white residents. They conclude that researchers of racial residential segregation will need to look beyond the influence of wealth as an explanation for disparities in residential attainment.

The Information Theory of Racial Segregation

Another theory forwarded to explain racial residential segregation under the objective differences rubric is the information theory of segregation. This theory suggests that groups differ in the quantity and accuracy of information they possess or receive on housing opportunities in neighborhoods where their group is underrepresented (Dawkins 2004; Massey and Denton 1993). As Farley and his colleagues (2000) point out, a person contemplating a move generally relies on information (and misinformation) from friends, family, co-workers, and others one might encounter in his or her day to day life. Galster (1988b) also contends that housing searches may be limited to areas near one's current residence. Thus, one's base of information is usually limited to where they themselves, their friends, and their family live. So if an individual lives in a segregated neighborhood or one's circle of friends and family members live in segregated neighborhoods, it follows that information gleaned or passed on about housing opportunities would be limited to segregated neighborhoods as well.

In an attempt to test this theory, Farley et al. (2000) surveyed both black and white respondents from the Detroit Area Study to determine whether members of both racial groups had the same or differing information about housing opportunities in different locations within the Detroit metro area. Their results indicate that both black and white homeseekers have the same information about neighborhoods and thus differences in the desirability of different locations of blacks and whites do not seem to be driven by differences in the availability of information (Farley, Danziger, and Holzer 2000). Earlier work by Farley, Schuman, Bianchi, Colasanto, and Hatchett (1978) which investigated racial residential

segregation in the Detroit area also rejected the idea that ignorance about the housing market was responsible for racial residential segregation there.

Differences in Tastes for Housing Services

An additional theory that has been posited about the causes of racial segregation that is included under the objective differences umbrella is that of racial differences in tastes for housing services. Characteristics that may be considered and evaluated by black and white homeseekers include the structural features of the housing unit, neighborhood characteristics, and local public services comprising the housing service bundle (Dawkins 2004). As McAuley and Nutty (1982) point out, residential preferences for housing characteristics are related to circumstances dictated by the family life cycle such as age, marital status, and family size. However, these are only a handful of considerations that influence homeseekers' decisions to choose one neighborhood over another.

Previous studies have shown that there are substantial racial differences when it comes to the consumption of housing amenities. For instance, Boehm and Ihlanfeldt (1991) found racial differences in the consumption of housing quality, DiPasquale and Kahn (1999) found racial differences in the consumption of neighborhood amenities, and others have found racial differences in the consumption of local public services (Bergstrom, Rubinfeld, and Shapiro 1982; Rubinfeld, Shapiro, and Roberts 1987). Ross (2003) found that racial differences in preferences for education (a local public service included in the housing service bundle) explained a substantial proportion of racial residential segregation in Philadelphia. A major challenge, however, has been quantifying the proportion of empirical differences measured in the above cited studies that is due to underlying racial differences in location preference rather than to constraints imposed on homeseekers by discrimination in the housing market (Dawkins 2004).

Theories coming from the prejudice/discrimination perspective of racial residential segregation emphasize the role that prejudice and discrimination play in constraining the residential mobility of disadvantaged groups, especially those that are phenotypically black (Charles 2003). It is possible for prejudice and/or discrimination to occur either among private actors or at an institutional level. Three theories situated within the prejudice/discrimination perspective will be reviewed here: the

prejudice/preference theory, the private discrimination theory, and the public policy theory of racial residential segregation.

The Prejudice/Preference Theory of Racial Segregation

The prejudice/preference theory posits that groups self-segregate because they prefer living with members of their own group or dislike living with members of other groups (Clark 1992). This desire to self-segregate doesn't always stem from prejudice, but sometimes rather out of a sense of neutral ethnocentrism (Clark 1992; Krysan 2002). For instance, it has been suggested that high degrees of black residential segregation is simply an expression of the desire of blacks to self-segregate (Patterson 1997; Thernstrom and Thernstrom 1997). But both Farley and his colleagues (1978, 2000) and Massey and Denton (1993) cite opinion poll and survey evidence showing that many black residents prefer to live in integrated neighborhoods. Moreover, Krysan and Farley (2002) found that black racial residential preferences are not driven by neutral ethnocentrism or solidarity, but rather by fear of white hostility. Others have found that while black self-segregation does play a part in residential segregation, its role is minor (Ihlanfeldt and Scafidi 2002). Bobo and Zubrinsky (1996) specifically tested for neighborhood in-group preferences (i.e. ethnocentrism) using survey data from a multi-ethnic study in Los Angeles. They found virtually no support for this hypothesis as an explanation of attitudes about racial residential segregation. Furthermore, when Van der Laan Bouma-Doff (2007) looked at the desire for minorities to self-segregate in the Dutch context, she found that inter-ethnic prejudice, and not ethnocentrism per se, was the driving force behind ethnic minorities' desire to self-segregate in Holland.

A recent study by Krysan (2008) supports the notion that black and white homeseekers have different preferences when it comes to the racial composition of the neighborhoods within which they search for housing. The author found that whites searched for housing mainly in white communities, while blacks searched for housing in communities with a variety of racial compositions. However, it must be noted that where homeseekers search is a weak proxy for residential preferences since the act of searching is also influenced by the amount and type of information the homeseeker possesses, as well as discrimination and other forces outside of the homeseekers' control.

Nevertheless, Krysan's (2008) findings generally support the arguments put forth earlier by Clark (1991) that the residential preferences of blacks and whites barely overlap. The majority of whites interviewed in Clark's (1991) study indicated a preference for a residential neighborhood with an 80% white / 20% black mix, while the majority of blacks stated a preference for a 50% black / 50% white mix. Thus, many whites simply won't move into the kinds of neighborhoods that many blacks find most attractive (Farley 1993), further reducing the chances for neighborhood racial integration.

The notion of black-white differences in desired racial make-up of one's neighborhood is also supported in Farley et al.'s (1978) article in which the authors argue that whites underestimate the willingness of blacks to live in racially mixed areas because whites seldom wish to live in these types of neighborhoods themselves. Moreover, Adelman (2005) argues that even though blacks and whites may have differing preferences for the racial makeup of their neighborhoods, middle-class blacks are unable to implement their preferences relative to middle-class whites due to powerful social forces which hinder them from accessing the types of neighborhoods in which they desire to live.

Clark's (1991) study lends support to the ubiquitous Schelling model of neighborhood transition (Schelling 1969; Schelling 1971). The Schelling model explains neighborhood racial transition as a process of invasion and succession whereby black residents enter a previously all-white neighborhood until the neighborhood reaches a "tipping point" beyond which demand for housing by white residents declines and the neighborhood becomes all-black. According to Schelling (1969, 1971), the racial transitioning of neighborhoods is a manifestation of neighborhood racial preferences (particularly, those of whites). As black residents move into an all-white neighborhood, some whites might be inclined to move due to their discontent with having black neighbors. If blacks fill the vacancies created by the departing whites, presumably more white residents will reach the point past which their neighborhood racial preferences are being met satisfactorily and thus leave the neighborhood themselves. If the cycle continues unabated, the neighborhood eventually becomes all-black.

Schelling's work was groundbreaking because he utilized an agent-based model to simulate moving behavior of residents once their tolerance for minority neighbors had been exceeded to test his hypothesis that the interplay of individual choices leads to collective results that "bear no close relation to

individual intent" (1969: 488). What Schelling means by this in the context of racial group separation is that individual behavioral choices made by residents regarding the racial makeup of their neighborhood (such as moving in response to someone from another racial group moving into the neighborhood) could aggregate into unintended or unexpected social phenomena (such as racial segregation). So although there is no "universal desire" for racial residential segregation, people's individual actions add up in such a way that the result is complete segregation, even in the absence of discrimination by the private or public sector. The point that one should take away from Schelling's work is that residential segregation is determined not by the preferences of one group, but rather by the relationship of preferences across racial groups. When the preferences of two groups are even slightly misaligned, the resultant housing market equilibrium reflects neither group's preferences (Vigdor 2003).

Many studies have since utilized agent-based models in an attempt to test Schelling's finding that nearly complete racial segregation results from the "tipping point" being exceeded. For instance, Clark (1991) analyzes survey data on residential preferences to evaluate the underpinnings of Schelling's model. His findings support Schelling's conclusion that stable racially integrated neighborhood equilibria are unlikely. More recent articles utilizing agent-based simulations by Fossett and Waren (2005), Fossett (2006), and Clark and Fossett (2008) have all supported Schelling's initial argument that modest racial preferences of whites for co-ethnic contact can have significant impacts on segregation under certain conditions. These more recent articles additionally point out that it is also necessary to take into account the preferences of blacks, as well as whites, in order to fully understand how preferences for co-ethnic contact affect racial residential segregation.

White Preferences for Leaving Diversifying Neighborhoods

The term "white flight" has often been used to describe the phenomenon that occurs once neighborhoods have reached the tipping point to which Schelling (1971) refers. Thus, as successively more blacks move into a neighborhood, white residents who otherwise would have stayed in the neighborhood are pushed beyond their threshold of comfort with living alongside different-race neighbors and choose to leave the neighborhood (Galster 1990c). As vacancies are created by the exiting white residents, more and more black residents move in, pushing still more white residents past their comfort

point. The cycle continues until all of the whites have “fled” and the neighborhood transitions into an all-black neighborhood. Although it is generally agreed upon that white flight is not the only cause of racial residential segregation, its contributions have been debated by researchers for decades (Crowder 2000; Frey 1979; Galster 1990c; Goering 1978; Lee and Wood 1990; Marshall 1979; Marshall and O'Flaherty 1987; Molotch 1969; Quillian 1999; Schelling 1971; Wolf 1963; Wurdock 1981).

In a study that attempts to test for empirical tipping points in white population flows, Card, Mas, and Rothstein (2008b) use regression discontinuity methods to test for discontinuities in the dynamics of neighborhood racial composition. To date, this is the first study that uses actual population data to determine tipping points, rather than utilizing agent-based simulation techniques to estimate tipping points in the Schelling tradition. In this study, the authors analyze data for 114 metropolitan areas to test for tipping points in white demand for housing in neighborhoods with some minority representation. The main dependent variable that they utilize is the ten-year change in the neighborhood’s white population, taken as a share of the initial population. The key explanatory variable is the share of minorities in the neighborhood during the base year. The authors use two procedures for identifying discontinuities, or tipping points: a search technique similar to that used in identifying structural breaks in time series data (which they use for analyzing the larger cities in their sample), and a “fixed point” procedure that identifies the minority share at which the white population of the neighborhood grows at the average rate for the city. To identify the fixed point, the data are smoothed to obtain a continuous approximation and the root of the function is selected. Often, the two procedures identified the same tipping point or very similar tipping points within the same city.

Overall, Card, Mas, and Rothstein (2008) find strong evidence for tipping behavior on the part of whites. They found that the general range within which tipping points were discovered was between 5% and 20%. When their data are plotted, the representations indicate that tracts just beyond the tipping points (identified by either of the two procedures) experience substantial outflows of white residents. However, they also found that integrated neighborhoods with non-trivial shares of minorities can be stable, so long as the tipping point for the particular city is not exceeded.

Krysan's (2002) study brings forth empirical evidence on the motives underlying the white flight process by analyzing individual-level data from the Multi-City Study of Urban Inequality (MCSUI), consisting of data from Atlanta, Boston, Detroit, and Los Angeles metropolitan areas. The MCSUI asked non-Hispanic whites to rate the level of comfort they would feel (on a 4-point scale ranging from "very comfortable" to "very uncomfortable") living in several different neighborhood scenarios where the concentration of black residents successively increases. Those who said they would feel somewhat to very uncomfortable were asked if they would try to move out of their own neighborhood if the racial composition came to look like the examples with which they were uncomfortable. Krysan (2002) uses this measure of the level of integration at which respondents said they would leave a neighborhood as the dependent variable in a multinomial logistic regression. She uses demographic variables as well as indicators of homeownership, presence of children, and a measure of stereotypes as independent variables in her model. She finds that, among other things, location matters: Detroiters were much more likely to say that they would leave an integrating neighborhood than respondents from the other three metro areas. This finding is explained within the context of Detroit's past racial struggles and the seemingly permanent mark it has left on residents. She also finds that the strongest predictor of white flight attitudes is whether or not a person holds negative stereotypical beliefs about African Americans. Thus, the occurrence of white flight is contingent on certain factors such as segregationist sentiment (Galster 1990).

Using the same MCSUI dataset that Krysan (2002) uses, Vigdor (2003) investigated the role that disparities in racial-ethnic group preferences for neighborhood racial composition plays in the perpetuation of residential segregation. He found that, given the differences in the preferences for neighborhood racial mix by racial-ethnic group, it would be impossible to simultaneously sort white, black, Asian, and Hispanic households into neighborhoods that match their stated ideal. Vigdor's simulation analyses show that, mathematically, it would be impossible to sort both blacks and whites into neighborhoods that meet both groups' stated preferences for same- and other-race neighbors stated in the MCSUI, even when taking into account the preferences of Asians and Hispanics. Furthermore, since the neighborhood racial preferences of blacks and whites are incompatible, the resulting pattern of neighborhood composition thus reflects neither group's notion of ideal. It should be noted that Vigdor's

estimates do not take neighborhood amenities, housing price, or other factors that might influence one's actual market behavior into account (respondents were asked to hold these factors constant when assessing their desire for the racial mix of their "ideal" neighborhood).

In their study of the Detroit metro area, Krysan and Bader (2007) concluded that realities created by past segregation constrain the choices of whites and African Americans for the full complement of neighborhood diversity. In response to these constraints, whites are more likely to narrow their options and consider living mainly in white neighborhoods while blacks tend to broaden their options and consider communities with widely ranging racial compositions.

White Avoidance of Diverse Neighborhoods

Another aspect of the prejudice/preference theory has been articulated by Quillian (2002) as white avoidance of black neighborhoods. In this study, the author utilizes data from the 1979 and 1990 Panel Study of Income Dynamics, as well as matched census data from 1980 and 1990 to examine probabilities of moving among neighborhoods classified by their racial composition. A multivariate model is used to determine the extent to which racial differences in income and other variables explain racial differences in transition probabilities. Results indicate that white avoidance is a very important process upholding racial residential segregation. This was true for whites both leaving predominantly black and racially mixed neighborhoods (the phenomenon sometimes referred to as "white flight") and in the selection of predominantly white destination neighborhoods. Quillian's (2002) findings generally support those of Farley, Fielding, and Krysan (1997), who argue that whites' willingness to enter a neighborhood is inversely related to the proportion of black residents living there.

Emerson, Yancey, and Chai (2001) utilized a national, random-digit-dial telephone survey of over 1600 white Americans to determine whether whites avoid racially mixed neighborhoods because they do not want to live with non-whites, and if so, is it independent of factors generally associated with race such as housing values and crime. They find that Hispanic and Asian neighborhood composition exerted no independent effect on whites' assessed likelihood of buying a home in a particular neighborhood. However, they conclude that there is "a low probability of whites moving to neighborhoods with anything but a token black population, even after controlling for the reasons they typically give for avoiding residing

with African Americans" (Emerson, Yancey, and Chai 2002: 932). They argue that this white avoidance of black neighborhoods is due to associations whites make between the presence of blacks and high crime, low housing values, and low quality education, and this is especially pronounced for white families with children under the age of 18. The authors then raise the possibility that whites either cannot or will not divorce race from other variables which serve as its proxy (such as those listed above). Kirschenman and Neckerman (1991) have argued that the links between black composition and racial proxy variables to which Emerson and his colleagues refer are so strong that they are nearly impossible to separate. Furthermore, Farley (1993: 184) argues that "skin color is a readily available code—a 'signal,' if you will—to whites about the possible character of a neighborhood, including its economic status and crime rate."

One important point that must be discussed before turning away from the topic of neighborhood racial preferences is the idea that people's attitudes concerning the racial mix of their neighborhood are not necessarily equivalent to behaviors. For instance, white residents who are prejudiced toward minorities don't always move in response to minority entrance into their neighborhoods, even if they would prefer to. Attitudes not directly translating to behaviors can also be the case when it comes to residential integration. In fact, Farley (1993) points out that there are marked differences in white support for the principle of integration and white support for the implementation of it. Farley also notes that blacks' views are similar to that of whites in that they are more supportive of the principle of integration than they are of implementation, especially when government action is involved. So, although attitudinal support for neighborhood racial integration exists, when behaviors are enacted to make neighborhood racial integration more of a reality, support of both blacks and whites wanes.

An additional point to keep in mind when considering how preferences for the racial mix of a neighborhood influence racial residential segregation is the fact that other housing, neighborhood, and demographic characteristics besides race and ethnicity play a role in the decision-making process of both white and minority homeseekers (Turner and Wienk 1993). Thus, although preference for the racial mix of a neighborhood may be taken into consideration by homeseekers, it is certainly not the only driving force behind most decisions to locate in one neighborhood or another.

The Private Discrimination Theory of Racial Segregation

Another theory classified under the prejudice/preference umbrella, the private discrimination theory of racial segregation, attributes high levels of segregation in neighborhoods to illegal actions on the part of individuals, real estate agents, and landlords. In his groundbreaking study of black inequality, Myrdal (1944) argued that informal social pressure from whites maintained racial segregation. The tactics described below, falling under the private discrimination theory of racial segregation, could certainly be classified as informal social pressure.

When considering the contributions of individuals to the development and maintenance of racially segregated neighborhoods, one cannot discount the effect that a century of discrimination, obstruction, intimidation, and violence has had on the current circumstance of racial residential separation in U.S. metropolitan areas (Meyer 2000). Although other studies on the causes of racial residential segregation do mention the fact that whites used violence to defend the neighborhood color line, they tend to state that violence was limited to when blacks first entered a neighborhood and that the majority of housing-related racial violence peaked in the 1920s (Abrams 1955; Massey and Denton 1993; Woofter 1928). Meyer (2000), on the other hand, suggests that the use of violence as a deterrent to integration has been underrepresented in previous studies. Instead, he argues, resistance to blacks moving into white areas occurred as thousands of small acts of terrorism, persisting throughout the past century.

As far as the realty industry's contribution to private discrimination is concerned, it is argued that economic motivations and personal preferences for segregation by real estate agents influence them to use tactics such as "blockbusting,"[2] steering people of certain ethnic or racial backgrounds to specific neighborhoods (Galster and Godfrey 2005), flat refusals to show dwellings in certain neighborhoods, selective commentary by agents, poor advertising of units in black and integrated neighborhoods, and subterfuge such as saying a unit is sold when it is not (Massey and Denton 1993).

[2] Blockbusting is a method used by realtors to open up neighborhoods for black residency. It entails selecting poorer neighborhoods on the periphery of the ghetto, acquiring several dwellings, and selling or renting them to black families. The realtors then deliberately attempt to raise white fears about the "coming invasion" of black residents and offer to buy the homes of white owners. The influx of black residents soon causes the neighborhood to tip toward all-black residency. Blockbusting has all but disappeared due to changes in the law and the real estate market since the 1980s (Mehlhorn 1998.)

The most common way of determining whether or not some of the illegal actions described above are being practiced by real estate agents and landlords is to conduct a fair housing audit. Fair housing audits "provide direct evidence of unfavorable treatment of minority homeseekers" (Turner and Wienk 1993: 199). A fair housing audit uses two individuals—one minority, one white—to visit a rental or sales agent and inquire about the availability of housing units. The two people pose as identically qualified homeseekers, the only difference being their race. Since the agent is presented with two homeseekers with the same housing needs and qualifications, systematic differences in treatment are attributed to differences in race (Turner and Wienk 1993).

The most recent national fair housing audit, the Housing Discrimination Study 2000 (HDS2000), was sponsored by the Department of Housing and Urban Development and was conducted by a team at The Urban Institute (Turner, Ross, Galster, and Yinger 2002). In the undertaking of this study, 4600 paired tests were conducted in 23 US metropolitan areas nationwide. HDS2000 is the third paired-testing study that was conducted on a national basis. The two earlier paired-testing studies, the 1977 Housing Market Practices Study (Wienk, Reid, Simonson, and Eggers 1979), and the 1989 Housing Discrimination Study (Turner, Struyk, and Yinger 1991), both found significant levels of discrimination based on race and ethnicity in nationwide rental and sales markets (Turner, Ross, Galster, and Yinger 2002). For instance, Turner, Struyk, and Yinger (1991) report the overall incidence of discrimination against black homeseekers discerned in the 1989 HDS to be 53% in the rental market and 59% in the sales market. For Hispanics, those incidence rates are 46% and 56%, respectively.

The HDS2000 was designed to measure changes in adverse treatment of minorities from since the last HDS in 1989. The findings from HDS2000 indicate that discrimination still persists in both the sales and housing segments of the market in large metropolitan areas nationwide, but that discrimination has generally declined since 1989 (Turner, Ross, Galster, and Yinger 2002). Specifically, consistent adverse treatment of African American renters, when compared to identically-qualified white renters, declined by nearly 5 percent since 1989 (from 26 percent to 21 percent). Hispanic renters, on the other hand, did not experience changes in the incidence of discrimination over the same time period. Hispanic renters continued to be told about fewer available housing units and were invited to inspect fewer housing

units than their similarly qualified white counterparts. Since discrimination of Hispanic renters hasn't changed since 1989, Hispanics now face a higher incidence of rental housing discrimination than blacks, according to the HDS2000. Choi, Ondrich, and Yinger (2008) attribute discrimination in the rental market discovered in the HDS2000 to the prejudice of rental agents and their response to the prejudice of their white clients.

As far as the housing sales market is concerned, both blacks and Hispanics continued to experience some discrimination when compared to their white counterparts. Whites were consistently able to inspect more housing units, received more information and assistance with financing and received more encouragement than both blacks and Hispanics. Even so, discrimination toward Hispanic homebuyers fell by 7 percentage points over the 1989 value (from 27 percent to 20 percent). Discrimination toward black homebuyers saw the greatest decline of any group by tenure and ethnicity since 1989. According to the HDS2000 results, black homebuyer discrimination fell from 29 percent to 17 percent over the 10 year period, a difference of 12 percentage points. One caveat that the authors mention, however, is that although this finding is encouraging, the incidence of steering increased since 1989, indicating that blacks and whites are increasingly recommended and shown homes in different neighborhoods (Turner, Ross, Galster, and Yinger 2002).

Discrimination by lending institutions in denying loans to black homeseekers, as well as providing more favorable credit assistance and terms to white homeseekers is also included under the private discrimination explanation of racial residential segregation. According to Turner et al. (2002), differential treatment of black and white homeseekers by lending agencies (such as providing discrepant estimates of home price and total loan amount that the homeseeker can afford) is a serious form of discrimination. Because a homebuyer's understanding of how much he or she can afford to borrow determines what types of houses and neighborhoods one considers in their housing search, the act of estimating lower loan amounts for minority homebuyers can significantly restrict the range of housing locations open to them, thus leading to or reinforcing established patterns of residential segregation (Turner et al. 2002).

The critique of the private discrimination theory of racial segregation that is sometimes forwarded is that since paired testing shows that nearly all of the acts of real estate agents and landlords listed

above as falling under this category (save for racial steering) are on the decline (Turner, Freiberg, Godfrey, Herbig, Levy, and Smith 2002; Turner and Skidmore 1999) and thus their contribution to the establishment and maintenance of racially segregated neighborhoods must also be diminished. However, this critique is actually an erroneous one. Although past research has concluded that discrimination and racial segregation are correlated (Galster 1986; Galster 1987), it is specious to assume that if discrimination goes down, it is a foregone conclusion that racial residential discrimination will also go down. Discrimination is only one factor in the equation explaining racial segregation. Stating that a decline in discrimination should lead to a decline in racial segregation is thus misleading. Therefore, in order to broaden our understanding of the relationship between discrimination and racial residential segregation, more quantitative work is needed.

The Public Policy Theory of Racial Segregation

An additional theory of racial residential segregation, the public policy discrimination theory, suggests that governmental bodies undertake discriminatory acts that effectively create a dual housing market for whites and minorities, leading to racial residential segregation (Charles 2003; Polikoff 2006). Thus, the emergence of racial segregation didn't happen by chance, but rather was the result of deliberate housing policies of federal, state, and local governments (Kushner 1979). Seitles (1998) even goes so far as to call such acts "government sponsored racism." Seitles (1998) also argues that the U.S. government reinforced discriminatory norms through the use of various public policies. Discriminatory acts included within this domain include the siting and subsequent occupancy of public housing, race restrictive covenants, exclusionary zoning, and redlining. Each of these public policy forms of discrimination will be discussed briefly next.

Siting of Public Housing Developments

One public policy that has been cited as contributing to racial residential segregation is the siting of public housing projects. Choice of locations on which to site public housing projects has a direct impact on racial residential segregation given that residents of public housing are often people of color. If the majority of residents slated to move into a new public housing project are minorities, the siting of the housing project in an already minority-majority neighborhood could serve to concentrate minority

residency even further. According to Seitles (1998: 3), HUD "has played a significant role in reinforcing the problems of housing segregation by allowing intentional discrimination and courts have found HUD liable on many occasions for their overt racist policies in site selection and tenant housing procedures."

The most well-known case in which HUD was found liable for funding civil rights violations against black public housing residents was the Gautreaux case, a class action law suit brought against HUD and the Chicago Housing Authority which charged that the agencies used racially discriminatory policies in administering the Chicago Public Housing program (Peroff, Davis, and Jones 1979). This suit actually consisted of two cases, *Gautreaux v. Chicago Housing Authority (CHA)* and *Gautreaux v. Dept. of Housing and Urban Development (HUD)*, which moved along on separate and distinct tracts (Rubinowitz 1992). In 1969, a federal district court in Chicago found that CHA had "discriminated in selecting sites for public housing and assigning tenants on a racially segregated basis" (Rubinowitz 1992: 591). In 1976, the U.S. Supreme Court decided the HUD case, ruling that HUD was guilty of racial discrimination in the siting of public housing developments (Kaufman and Rosenbaum 1992).

In an effort to redress past discrimination and segregation, the courts ordered CHA and HUD to provide additional public housing options for plaintiffs and other black residents of CHA. These new public housing units were to consist of small-scale scattered site developments in predominantly white areas of the city of Chicago and surrounding metropolitan area (Rubinowitz 1992).

The Gautreaux Assisted Housing Program, named for the initiator of the original lawsuit, was created in response to the courts' rulings. The program granted Section 8 housing vouchers to CHA public housing residents so that they could move to private apartments in mostly white areas of the suburbs (Kaufman and Rosenbaum 1992). Longitudinal studies of Gautreaux families that moved to the suburbs have found that, although some racial incidents have occurred and some families felt somewhat isolated from family, friends, and the greater African American community, most families who moved to the suburbs were pleased that their neighborhoods were safer, their children were attending better quality schools, and they had greater job opportunities (Kaufman and Rosenbaum 1992).

Restrictive Covenants

Another discriminatory public policy, restrictive covenants, directly contributed to racial residential segregation for several decades during the early- to mid-20th Century. Racial restrictive covenants are "private agreements barring non-Caucasians from occupying or owning property" (Jones-Correa 2000-01). They generally occur as part of the deed to the property and stipulate that the owner may not rent, sell, or lease the property to a minority group member (usually black, but sometimes other non-Caucasians were prohibited). Property owners agreed to include these race restrictive covenants on their deeds under the guise of protecting property values, but Weaver (1944) argues that the other motivating factor behind the spread of race restrictive covenants was racial prejudice.

As discussed by Freund (2007), after 1910, a nationwide coalition of real estate brokers, planners, and public officials began forwarding the proposition that African American residency in neighborhoods caused property values to decline (even though the prior era of integrated neighborhood living had proven this proposition to be untrue). According to Freund, the coalition mobilized over a number of decades to create institutional structures to protect white property—including racial restrictive covenants. In doing so, the coalition convinced whites in the general public that "certain land uses and…populations categorically threatened the value of private property and the 'health and welfare' of white property owners" (Freund 2007: 93). In convincing white property owners that property values would decline in response to black residency or ownership, the coalition was able to persuade white property owners into agreeing to the inclusion of race restrictive covenants on their property deeds.

Although they first appeared in the South around 1904 and then in the North and Midwest in 1922, race restrictive covenants were common after 1926 when the U.S. Supreme Court validated their use in the *Corrigan v. Buckley* decision (Jones-Correa 2000-01). This ruling essentially nationalized the use of racial restrictive covenants as enforceable contracts where owners who violated them risked forfeiting their property. White property owners wishing to keep minority group members out of their neighborhoods via the use of race restrictive covenants had the law on their side until 1948, when in the case of *Shelley v. Kraemer*, the U.S. Supreme Court declared that racial restrictive covenants would no longer be enforced (Jones-Correa 2000-01; Meyer 2000). However, according to Polikoff (2006: 17), the

Supreme Court's decision that restrictive covenants could not be enforced by courts "didn't stop their continued use for years." Racial restrictive covenants, during their time, helped to create and maintain racially segregated neighborhoods in a very straightforward fashion—blacks and other minorities were simply not allowed by law to inhabit, rent, or own property in white neighborhoods.

Exclusionary Zoning

Exclusionary zoning is another policy utilized by municipalities that has the consequence of creating and maintaining racially segregated neighborhoods. The term exclusionary zoning refers to laws that a municipality enacts in order to prohibit the development of low- and moderate-income housing in the community. Exclusionary zoning occurs almost exclusively in suburban areas, as a result of suburbs trying to avoid problems usually associated with urban areas (King 1978). The measures passed are an "attempt to exclude all land uses that do not generate more in real property tax revenues than they consume in expenditures for public services" (King 1978: 459). Metcalf (1988) refers to exclusionary zoning tactics as a judicial means of excluding the "undesirables." These measures include the exclusion of small lots, the exclusion of multiple-dwelling units, minimum house size requirements, the exclusion of apartment buildings from residential classification, the exclusion of mobile homes, limits on the number of subsidized housing units within the municipality, and the establishment of excessive requirements for subdivisions (Harvard Law Review 1971; King 1978; Nelson 1996). The effect of exclusionary zoning is that development costs increase, increasing the cost of housing. Thus, lower-income people are usually unable to afford housing in municipalities using these types of exclusionary measures. Although exclusionary zoning is aimed at keeping low- and moderate-income families out of suburban locations, it can have an effect on racial residential segregation in that many low- and moderate-income families are also minority group members.

The most famous court case involving exclusionary zoning occurred in the state of New Jersey. It was brought by a local chapter of the NAACP against Mount Laurel Township, a suburb on the edge of the Philadelphia metropolitan area (Hughes and Vandoren 1990). The suit contended that the township's zoning policy unconstitutionally excluded low-income housing within the municipality by allowing only single-family, detached housing. The case was actually heard in the New Jersey Supreme

Court twice, once in 1975 (Mount Laurel I) and again in 1980 (Mount Laurel II). In 1975, the Court ruled that all developing municipalities in New Jersey had an obligation to provide their "fair share" of the regions' low-income housing needs (Chall 1985-86), thus rendering exclusionary zoning illegal. Since the 1975 decision did not lead to the addition of low-income housing in many municipalities in New Jersey, the complaint reached the New Jersey Supreme Court again in 1980. This time the court handed down a unanimous decision supporting the challenge to exclusionary zoning practices (Chall 1985-86). This time, the Court imposed a "detailed enforcement mechanism intended to reduce the length of litigation and to encourage the provision of housing" (Chall 1985-86: 19). From that point on, exclusionary zoning was not only against the law in New Jersey, but there was also a mechanism for enforcing violations.

In a more recent study, Pendall (2000) analyzes the effect of exclusionary zoning and other land use controls on racial exclusion. His was the first quantitative study to examine "the entire 'chain of exclusion' from land use controls, through housing markets, to discriminatory outcomes" (Pendall 2000: 129). In this study, exclusive large-lot zoning or low-density-only zoning is hypothesized to restrict the supply of attached, rental dwellings and reduce housing affordability, thus leading to racial exclusion. The results of Pendall's regression analyses suggest that the connection between low-density-only zoning and racial exclusion is a real one. Jurisdictions with low-density-only zoning housed a fraction of both African Americans and Hispanics in 1980 (half and two-thirds, respectively) when compared to similar jurisdictions that permitted higher-density development. These same low-density-only communities also failed to gain as many black and Hispanics residents as similar jurisdictions allowing higher density development between 1980 and 1990. The municipalities allowing higher-density residential development saw increases of 20% African Americans and 14% Hispanics, compared to the low-density-only communities. Thus, the type of exclusionary zoning used in these municipalities—only allowing low-density residential development—did lead to racial exclusion. As demonstrated by Pendall's (2000) study, low-density-only municipalities did not see increases in their racial-ethnic diversity over time due to exclusionary zoning practices.

Redlining

An institutional practice known as “redlining” has also contributed to the development and maintenance of racially segregated neighborhoods. After WWII, the federal government’s Home Owners’ Loan Corporation (HOLC), under the purview of the Federal Housing Administration (FHA), initiated and institutionalized the practice of redlining, a discriminatory rating system used to evaluate the risks associated with making loans to buyers in particular urban neighborhoods (Seitles 1998). Neighborhoods were classified into one of four categories, with the majority of the loans being granted to houses in the top two categories. Black and other minority neighborhoods were placed in the fourth or least desirable classification. These minority areas were coded in red by loan officers; hence the term “redlining” was coined. Red areas were those within which the FHA would not grant mortgage loans. The effects of redlining were massive disinvestment, drops in property values, disrepair, deterioration, vacancy, and abandonment of properties in black (i.e. redlined) neighborhoods, as well as increased racial segregation. In fact, Jackson (1985) argues that the FHA blatantly used its field agents to “keep Negroes and other minorities from buying houses in white neighborhoods.”

Since the bulk of evidence available regarding the public policy theory of racial segregation are vignettes, it is difficult to determine the scope of the problem or how much any particular policy contributes to the overall incidence of observed racial residential segregation. However, the fact that courts from the local level all the way up to the Supreme Court have outlawed the use of discriminatory siting of public housing, racial restrictive covenants, exclusionary zoning, and redlining, recognizes the fact that minority residents were negatively affected by these policies.

The Interconnectedness of Causal Theories of Racial Segregation

Although researchers have dedicated a serious amount of time and energy toward empirically testing the validity of the above outlined theories of causes of racial residential segregation (Clark 1986; Downing 1987; Galster 1988b; Streitweiser and Goodman 1983; Yinger, Galster, Smith, and Eggers 1979), some efforts to determine which of these theories are more tenable have suffered from methodological issues whereby each of the potential causes of segregation is treated as exogenous. In other words, the causes of segregation have been treated as if they operate independently from one

another in a one-way causal path (Galster 1988a). Yet, Myrdal (1944b) argues that bidirectional causation is a better way to characterize patterns of race relations. It seems, then, that the appropriate way to view these theories is as individual components of a mutually reinforcing system of interconnections (Galster 1989; Galster and Keeney 1988). As such, no single factor explains the phenomenon of racial residential segregation individually (Clark 1986). When one does view these theories as mutually interconnected, it becomes very challenging to separate out cause and effect, which is an issue that many empirical examinations to date have had a hard time overcoming. Save for a handful of studies (Cutler and Glaeser 1997; Galster 1987; Galster 1991; Galster and Keeney 1988), most quantitative investigations of the causal pathways regarding racial residential segregation suffer from endogeneity bias in that they do not take into account the fact that some of the variables in their models have bidirectional causal pathways which indicate a mutually reinforcing relationship between the variables. The consequence of using such improperly specified models is that "ordinary regression techniques result in simultaneous-equations biases, which render both estimated coefficients and their standard errors biased and inefficient" (Galster 1991b: 91). The significance that this consequence has for extant research on the causes of racial residential segregation is that the results of many previous investigations that are considered to be authority on the topic could be called into question. For these reasons, it is apparent that additional research on the causes of racial segregation using simultaneous-equations modeling is warranted.

Before moving on to the next topic, I will quickly review the main points regarding the extent and trends involving racial residential segregation and its purported causes. First, trends in the extent of racial residential segregation have the longest history of empirical investigations into residential settlement patterns, beginning in the mid-twentieth century. Second, investigations into racial residential segregation began by making dichotomous comparisons between the residential patterns of black and white populations, then evolved to making polytomous comparisons of the residential patterns of multiple racial-ethnic groups, including blacks, whites, Asians, Hispanics, and others. Third, the extent of racial residential segregation rose steadily until 1970, and then declined between 1970 and 1990 (Krivo and Kaufman 1999). Rates of racial segregation remain alarmingly high, with significant differences occurring between metropolitan areas and regions of the country (with the Midwest and the Northeast tending to

have higher incidences of racial segregation than the South and West). Fourth, measurement and classification of racial residential segregation has changed over time from using the simple dissimilarity index to include multiple dimensions of segregation and the concept of hypersegregation.

The main points regarding the purported causes of racial residential segregation include the fact that there are multiple competing explanations of its causes (broadly falling within the two categories of objective differences and prejudice/discrimination). Those theories are: the class theory, the information theory, differing tastes in housing services, prejudice/preference, private discrimination, and public policy discrimination. The second point to take away from the discussion of the purported causes of racial residential segregation is the idea that viewing the causes of racial segregation as individualistic can lead to endogeneity bias and thus it is more appropriate to view the causes of racial residential segregation as a pattern of mutually reinforcing interconnections. The feedback effects of such a pattern of cumulative causation are best demonstrated with an example: white prejudice → white self-segregation → economic disparities between whites and minorities → reinforcement of white prejudice. In this example we see that each element of the system is causally linked to one another and are mutually reinforcing one another, creating a vicious cycle of white prejudice and minority segregation.

Now that trends in the extent of racial residential segregation, along with hypotheses about its purported causes, have been discussed, I will turn to a discussion of the extent of economic residential segregation in U.S. metropolitan neighborhoods. Since the literatures on racial and economic segregation developed on completely separate paths, the organization of the chapter subsections will be somewhat different in the following section than in the previous section of this review.

THE EXTENT OF ECONOMIC SEGREGATION IN U.S. NEIGHBORHOODS

Economic residential segregation refers to the phenomenon whereby individuals and families are spatially separated within neighborhoods by income or social class (Jargowsky 1996c). Studies of economic segregation typically compare two groups' residential patterns (usually poor and non-poor) across neighborhoods utilizing the dissimilarity index or the family of P* or isolation indices, but sometimes more than two groups are analyzed and other measures of segregation or inequality are utilized. Most studies use the census tract (as a proxy for neighborhood) as their unit of analysis, but

some look at economic segregation amongst other units of measurement such as between block groups or different types of municipalities. Essentially, researchers have studied economic segregation either in a general sense (by looking at two or more than two groups), in conjunction with racial residential segregation, or by looking at "specialized" types of economic segregation such as concentrated poverty or concentrated affluence. This review will consider all of these types of studies, as well as reviewing the purported causes of economic residential segregation.

The general consensus among scholars of economic residential segregation is that it is on the rise in U.S. metropolitan areas in recent decades (Fischer 2003; Massey 1996; Massey and Eggers 1993; Mayer 2001). However, rates of economic segregation are not nearly as high as comparable measures for racial-ethnic residential segregation. For example, Abramson, Tobin, and VanderGoot (1995) find that, even though racial-ethnic residential segregation declined from 1970 to 1990, segregation of poor and non-poor households (as measured by a dissimilarity index) increased. Jargowsky (1996c; 1997) also concludes that from 1970 to 1990 there was a trend toward increasing economic segregation, as measured by the "neighborhood sorting index".[3] Mayer (2001) uses variance as a measure of between and within tract income inequality and comes to the same conclusion. Increasing economic segregation, however, seems to be isolated to the most recent decades, given that several earlier studies found low levels of residential segregation by income (Denton and Massey 1988; Farley 1977; Farley 1991; White 1987).

There seems to also be some agreement that the increasing incidence of economic segregation can be attributed to the fact that neighborhoods that were previous classified as moderate income became either richer or poorer over time (Booza, Cutsinger, and Galster 2006). What appears to be happening is that poorer neighborhoods are tending to get poorer, richer neighborhoods are tending to get richer (Massey 1996; Massey and Eggers 1993), and middle income neighborhoods are getting either richer or poorer. Thus, we are seeing a bifurcation of the income distribution of neighborhoods (Galster and Booza 2007; Massey 1996; Massey and Eggers 1993). The consequence of all of these neighborhood changes is increasing economic segregation.

[3] The neighborhood sorting index is a variation of the correlation ratio or eta-squared.

When units of measurement other than the census tract are used, the findings concerning economic segregation are mixed. For instance, Hardman and Ioannides (2004a; 2004b) use neighborhood clusters delineated in the American Housing Survey to analyze within-neighborhood economic segregation in 1985 and 1993. These units of analysis are much smaller than census tracts, containing only about 10 housing units each. When analyzing income mixing in these "micro" neighborhoods, the authors document significant income mixing in the majority of urban areas that they study. Thus, they conclude that economic segregation is quite low when the phenomenon is examined at a more micro level than the municipality or census tract. Conversely, when the units of analysis utilized to study economic segregation are municipalities (such as central cities and suburbs), a large degree of economic segregation is generally present. Studies by Madden (1996; 2003) and Swanstrom et al. (2004) find that economic segregation between cities and their suburbs increased from 1970 to 1990 and remained high from 1990 to 2000.

The Interaction of Race & Income Segregation

Many studies examining economic segregation do so by considering its relationship with racial-ethnic segregation at the metropolitan scale (Charles 2001; Charles 2006; Denton and Massey 1988; Erbe 1975; Farley 1977; Fischer, Stockmayer, Stiles, and Hout 2004; Fischer 2003; Fong and Shibuya 2000; Iceland, Sharpe, and Steinmetz 2003; Immergluck and Smith 2002; Jargowsky 1996c; Logan, Alba, McNulty, and Fisher 1996; Logan, Stults, and Farley 2004; Massey and Eggers 1990; Massey and Eggers 1993; Massey, Gross, and Eggers 1992). The fact that so many researchers have looked at economic segregation in conjunction with racial segregation indicates just how intertwined these two social phenomena are. For instance, there is a high probability that minorities (who tend to be racially segregated already) will have incomes that fall below the federal poverty line, when compared to whites. Thus, the concentration of minorities into particular neighborhoods can also tend to concentrate poverty, as well.

A holistic interpretation of the studies linking race and economic segregation suggests that economic segregation interacts with racial-ethnic residential segregation in numerous ways, especially when it comes to blacks (Krivo, Peterson, Rizzo, and Reynolds 1998; Massey 1990; Massey and Eggers

1990; Massey and Eggers 1993; Massey, Gross, and Eggers 1992). First, to the degree that racial residential segregation is involuntary, blacks have lower economic segregation. That is, higher-SES blacks have their residential choices constrained by discrimination and thus end up less segregated from lower-SES blacks than their white counterparts are from lower-SES whites (Erbe 1975; Iceland, Sharpe, and Steinmetz 2003). Second, the high degree of racial residential segregation experienced by blacks sets a context wherein rising rates of poverty among blacks produces their intense concentration in particular neighborhoods (Massey and Denton 1993; Massey and Eggers 1990). Third, the residential segregation of economic groups can produce racial-ethnic segregation when there are differences in the distributions of income and wealth across racial-ethnic groups (Galster 1987; Galster 1991; Galster and Keeney 1988).

Although many of the above studies do not explicitly state this, these empirical examinations of the interaction of race and economic segregation can be viewed as evaluating the class theory of racial residential segregation. The fact that economic segregation among blacks is lower than that of other groups, as discovered by Erbe (1975) and Iceland, Sharpe, and Steinmetz (2003), indicates that economic disparities between blacks and whites are not primarily driving high levels of black-white residential segregation, and that other factors are at play. Further discussion of the relationship between racial segregation and economic segregation will follow in the section on hypothesized causes of economic segregation.

Concentrated Poverty

One aspect of economic segregation, concentrated poverty, has gotten the lion's share of study given that the ill effects of living in a neighborhood context of concentrated poverty are well documented (Abramson, Tobin, and VanderGoot 1995; Berube 2007; Dreier, Mollenkopf, and Swanstrom 2004; Greene 1991; Jargowsky 1997; Jargowsky 2003; Jencks and Mayer 1990; Massey, Gross, and Eggers 1992; Wilson 1987). Concentrated poverty "refers to the confinement of the poor to a subset of neighborhood locations rather than their dispersion across all parts of an urban area" (Greene 1991: 240). Thus, if a relatively high proportion of the poor in a metropolitan area tend to reside in census tracts with high poverty rates, then the poor are considered highly concentrated (Jargowsky and Bane 1991).

Operational definitions of what constitutes poverty concentration have varied from study to study, but in general, researchers tend to agree that poverty is considered concentrated if the proportion of people living below the federal poverty line meets or exceeds a threshold value somewhere between 20 and 40 percent. A recent article by Swanstrom, Ryan, and Stigers (2008), however, questions whether this operational definition of concentrated poverty is actually the best metric to be using or, alternatively, whether using a relative standard rather than the federal poverty line is more effective. They argue that in order to properly evaluate the contextual effects of concentrated poverty and to take into consideration the variations in the cost of living across metropolitan areas, researchers should use a definition of poverty that measures how far people are from the economic mainstream of their particular region or metropolitan area (Swanstrom, Ryan, and Stigers 2008). When the authors utilize this relative definition of the poverty line, they find that for a small sample of metropolitan areas between 1990 and 2000 a very different picture of the extent, trends, and geographic distribution of concentrated poverty develops than when the federal poverty line is used. Nevertheless, many of the studies reviewed here have utilized a threshold of the neighborhood population living below the federal poverty line as their metric.

Increased interest in studying neighborhoods of concentrated poverty began in earnest after the publication of William Julius Wilson's (1987) classic *The Truly Disadvantaged*. In this book, Wilson documents the growth of high poverty neighborhoods in Chicago and the conditions under which these types of neighborhoods develop. Furthermore, Wilson argues that the poor living in neighborhoods of concentrated poverty become isolated from job networks, role models, and mainstream institutions. Wilson's illumination of the issue of poverty concentration and the negative effects it has on residents' lives spurred further investigation into poverty concentration in other cities and metro areas.

In the work that followed after Wilson (1987), much was learned about concentrated poverty neighborhoods in U.S. metropolitan areas. For instance, Gephart (1997) points out that spatially concentrated poverty became an increasingly urban phenomenon in the last few decades of the twentieth century. Concerning the extent and growth of concentrated poverty neighborhoods, there has been abundant documentation that these types of neighborhoods increased substantially until 1990 (Abramson, Tobin, and VanderGoot 1995; Gephart 1997; Jargowsky 1994; Jargowsky 1997; Jargowsky

and Bane 1991; Kasarda 1993a; Massey and Eggers 1990). In 1990, more than 11 million Americans lived in concentrated poverty neighborhoods (Jargowsky 1994). Evidence suggests that during the 1990s concentrated poverty declined significantly (Jargowsky 2003; Kingsley and Pettit 2003). For instance, in 1990, 17 percent of the poor in metropolitan areas resided in neighborhoods of concentrated poverty. By 2000, that share had dropped to 12 percent. However, more recent evidence points to a reversal in that pattern during the 2000 decade (Kneebone and Berube 2008).

Studies of concentrated poverty have also determined that there is significant variation in the likelihood of one living in concentrated poverty by race (Jargowsky and Bane 1990; Massey and Eggers 1990). Minorities are much more likely to live in concentrated poverty, with blacks being the most likely, followed by Hispanics. According to Jargowsky and Bane (1990), in 1980, nearly two-thirds of the poor living in concentrated poverty were black and most of the rest were Hispanic. By 1990, about 14% of urban blacks and about 9.5% of urban Hispanics lived in extremely poor neighborhoods, whereas only about 1% of non-Hispanic whites lived in extremely poor urban neighborhoods (Jargowsky 1997).

Variation in the incidence of concentrated poverty also occurs by region of the country (Abramson, Tobin, and VanderGoot 1995; Gephart 1997; Jargowsky and Bane 1991). Concentrated poverty is generally highest in the Northeast and lowest in the West. Within these regions, there is also substantial variation in the incidence of poverty concentration by city (Jargowsky and Bane 1990). For instance, during the 1980s, New York City experienced a dramatic increase in concentrated poverty, while Boston (which is located within the same Northeast region as New York City) experienced a dramatic decrease in concentrated poverty over the same time period. One implication of the radical variation in concentrated poverty from one metro area to the next is that what appears to be a national trend of increasingly concentrated urban poverty could actually be being driven by large increases in only a handful of places (Jargowsky and Bane 1990).

In investigating the characteristics of concentrated poverty neighborhoods, Jargowsky (1996) examined data from the 1990 Census and found a surprising amount of social and economic diversity in these neighborhoods. So although some are quick to assign the residents of concentrated poverty

neighborhoods labels such as “underclass” (Ricketts and Sawhill 1988), it should be noted that not all residents of these neighborhoods engage in behaviors and lifestyles outside of the mainstream.

Galster, Quercia, Cortes, and Malega (2003b) recently investigated whether the poverty rates in concentrated poverty neighborhoods changed over time and what factors predicted this change. They found that extremely poor neighborhoods were as likely to see decreases in their poverty rates as they were to see increases in it. Thus, their future is not necessarily predetermined to remain in a state of concentrated poverty. Furthermore, the authors found that economic and demographic factors of the broader region within which poor neighborhoods are situated most strongly influence the future trajectories of these neighborhoods.

Concentrated Affluence

Another type of economic segregation, concentrated affluence, has received much less attention from researchers than concentrated poverty. The term concentrated affluence refers to the clustering of households with incomes in the upper part of the income distribution within particular neighborhoods. Operationally, concentrated affluence has been defined in a number of different ways by different scholars. A metric commonly used to determine whether a neighborhood is characterized by concentrated affluence is to assess its median income against some type of standard. For instance, several studies consider a neighborhood affluent if its median family income is at least four times that of the poverty rate (Fischer 2003; Massey and Eggers 1993; St. John 2002). St. John (2002) takes his measure a step further and defines concentrated affluence as a neighborhood with at least 50 percent of households having family incomes at least four times that of the poverty rate living in neighborhoods with median incomes meeting that same criterion. Others have used aggregate income standards to measure concentrated affluence, such as retaining only neighborhoods whose median household income falls within top 2 percent of the income distribution (Lee and Marlay 2007). Still others have developed aggregate indices of affluence that include not only measures of income, but also consider educational attainment, and employment in professional sectors (Sampson, Morenoff, and Earls 1999).

Like concentrated poverty, scholars of concentrated affluence tend to agree that its incidence is on the rise since about 1970 (Fischer 2003; Lee and Marlay 2007; Massey 1996; Massey and Eggers

1993; St. John 2002). People with the economic means to residentially segregate themselves and their families from others with lower incomes appear to be doing so more and more often. St. John (2002) estimates that in 1990, approximately 9 percent of all neighborhoods in the U.S. were affluent, with nearly 4 million households residing in these neighborhoods. According to Massey (1996) affluence is even more highly concentrated than poverty.

As with other types of economic segregation, there are variations in the rate of concentrated affluence by race and region of the country. According to St. John (2002), affluent blacks are much less likely to live in neighborhoods of concentrated affluence than their affluent white counterparts are. His analyses point to differences in median incomes of blacks and whites as a strong predictor of differences in black-white concentrated affluence, rather than black-white segregation, however. Lee and Marlay (2007) also found some surprising facts about the racial characteristics of the concentrated affluence neighborhoods they examined. They found that a surprising number of Asians and foreign born residents were present in the neighborhoods they analyzed. Thus, whites do not seem to be the only racial group enjoying the benefits of living in a neighborhood of concentrated affluence.

Lee and Marlay (2007) were also surprised by the geographic distribution of concentrated affluence neighborhoods. They expected to see clustering of concentrated affluence in the Northeast, but instead found concentrated affluence in all regions of the country, with the West seeming to benefit the most from recent patterns of growth and prosperity. They also found that rich neighborhoods were more likely to be found in suburban, rather than urban, locations. This finding, however, seems to fit with the ideas that most Americans have about the geographic location of rich neighborhoods.

Much less is known about the effects of living in concentrated affluence, as opposed to the abundance of scholarly literature on the effects of living in concentrated poverty. What has been posited is that living in concentrated affluence leads to greater collective efficacy for residents. By living in close proximity to one another, residents of rich neighborhoods are able to pool the advantages of their affluence (St. John 2002). Other studies have found benefits of living in affluent neighborhoods such as better health and better outcomes on a variety of child and adolescent outcomes (Brooks-Gunn, Duncan, Klebanov, and Sealand 1993; Sampson, Morenoff, and Earls 1999; Wen, Browning, and Cagney 2003).

However, it is evident that in order to fully understand the impact of increasing affluence concentration on the current state of social stratification in the U.S., further research is warranted (Massey 1996; Massey and Eggers 1993). Now that the extent of several different types of economic segregation has been discussed, I will move on to a discussion of the purported causes of economic segregation.

PURPORTED CAUSES OF ECONOMIC RESIDENTIAL SEGREGATION

As with racial residential segregation, there have been a multitude of hypotheses forwarded as explanations for the causes of economic residential segregation. It should be noted, however, that the majority of the literature on the causes of economic segregation tends to focus solely on the causes of concentrated poverty. Therefore, the bulk of the literature reviewed here takes that focus, as well. Decidedly fewer studies have considered the causes of concentrated affluence, however. Nevertheless, I will discuss some possible causes of it, as well.

Explanations of Causes of Economic Segregation in General

Some explanations of the causes of economic segregation in general include density, accessibility/land consumption trade-offs, differing preferences, high prices for new construction, and income inequality. Each of these theorized determinants of economic segregation will be discussed below.

Density

In an effort to examine the relationship between the built environment and socioeconomic equity, Pendall and Carruthers (2003) analyze the relationship between income segregation (as measured by dissimilarity and isolation indices) and the density of housing units in U.S. metropolitan areas. They find that the relationship between density and income segregation follows a quadratic function. That is, as density increases, first income segregation also increases, but then it begins to decrease as density continues to increase. These findings demonstrate that, counter to what is commonly thought about urban sprawl, low-density development at the urban fringe doesn't necessarily lead to increased income segregation. The authors contend that low-density development near the outer edges of metro areas loosens regional housing markets, allowing for gradual filtering of households into different neighborhoods. They also believe that low-density neighborhoods allow neighbors of differing

socioeconomic backgrounds to share space without necessarily feeling like they're sharing a neighborhood.

Accessibility/Land-Use Consumption Trade-offs

The accessibility/land-use consumption trade-off explanation of why income segregation occurs argues that higher income households are willing to trade-off accessibility to jobs in the central business district (CBD) for more land and larger houses at the urban fringe (Grigsby, Baratz, Galster, and MacLennan 1987). This argument was forwarded by both Alonso (1964) and Muth (1969) and then later by Mills (1972). The main contention of all three authors is that households disperse throughout the metropolitan area based on the premise of utility-maximization, which is constrained by their budgets. These arguments are based on the following assumptions: the farther a household lives from the CBD, the more the household will pay for commuting to jobs in the CBD. However, the price per unit of space (i.e. square footage) falls as the distance from the CBD increases because of decreased accessibility. Thus, higher income households tend to settle on the urban fringe since they prefer to have more land and space and don't mind paying more to commute to work, while lower income households settle closer in to the CDB in order to avoid having to pay large commuting expenditures.

The Alonso-Muth-Mills explanation of urban land use has been challenged by both Wheaton (1977) and Grigsby et al. (1987). Using an analysis of cross-sectional data, Wheaton (1977) analyzes the income elasticity of land consumption and income elasticity of the cost of travel, arguing that in order for the Alonso-Muth-Mills model to be correct, land consumption elasticity must exceed travel cost elasticity. His results indicate that the elasticities for both are very similar, and therefore the spatial bidding for land between different income groups looks almost identical. Grigsby et al. (1987) also point out that the Alonso-Muth-Mills model fails to consider the fact that other outcomes besides the rich living on the urban fringe and the poor living in the CBD are possible, or that other variables could be influencing income separation.

Differing Environmental Preferences

As an outgrowth of his critique of the Alonso-Muth-Mills model of urban spatial consumption, Wheaton (1977) suggests that a better explanation of the geographic distribution of income groups in

urban areas is spatial externalities (Grigsby et al. 1987). Spatial externalities refer to outward features that accompany the residential structure. These could include the immediate environment surrounding the home, nearby access to work, school, and shopping, an attractive package of municipal services, or any number of other neighborhood characteristics. The crux of Wheaton's argument, then, is that differing preferences for the surrounding environment and neighborhood characteristics between higher income and lower income households influences these different types of households to make different locational decisions. Support for the idea that consumers place more weight on environmental characteristics associated with a dwelling than on its size or accessibility to employment is provided by Richardson (1978). He points out that Ellis (1967) and Yamada (1972) both find that environmental preferences and externalities figure into residential decision making, in addition to public goods and local jurisdiction (Barr 1973; Ellickson 1971; Oates 1969). Moreover, an empirical examination of the trade-off model versus a model that incorporates environmental area preferences by Richardson and his colleagues finds that the preferences model provides a much better fit than the trade-off model (Richardson, Vipond, and Furbey 1974).

What seems to be missing from this explanation of urban residential settlement is how the "universal desire for a good living environment translates itself into geographic separation of income groups into neighborhoods that are fairly homogeneous with respect to socioeconomic status" (Grigsby et al. 1987: 14). Grigsby and his colleagues suggest that neighborhood income separation stems from the desire for higher income residents to live in neighborhoods that provide real or symbolic separation from lower-income groups. But why this separation tends to locate upper-income residents at the urban fringe and lower-income residents near the core isn't addressed by the environmental preferences model, and therefore the explanation doesn't fully explain the phenomenon (Grigsby et al. 1987).

The High Cost of New Construction

Grigsby et al. (1987) forward another explanation for why separation by income level occurs in metropolitan areas that takes into consideration the supply side of the residential real estate market: the high cost of new construction. They argue that a substantial proportion of the population is not in a financial position to be able to afford newly built dwellings, which are often located on the urban fringe.

Thus, these new homes are more likely to be occupied by upper-income households. New construction is more likely to occur at the urban fringe than in already developed sections of the urban area because developing on already built-up land is either undesirable or inordinately expensive (Grigsby, Baratz, Galster, and MacLennan 1987). As a consequence, richer households tend to locate on the urban fringe because their budgets allow them to do so, and lower-income households are often relegated to the more central regions of the urban area.

Income Inequality

According to a number of studies, income inequality increased substantially in the U.S. between 1970 and 1990 (Danziger and Gottschalk 1995; Karoly 1993; Morris and Western 1999). Coupled with this income inequality was an increase in economic segregation, leading some researchers to suggest that income inequality was a contributing cause of economic segregation (Durlauf 1996; Wilson 1987).

In an attempt to test this hypothesis, Mayer (2001) examines census data from 1970 to 1990 and finds support for the hypothesis. In this study, the author finds that as the statewide incidence of income inequality increased, economic segregation between census tracts within the same state also increased. These findings were not due to tracts becoming more economically homogeneous, however. Instead, it appears that the increase in economic segregation was mainly due to an increase in the variance of mean neighborhood income (with some neighborhoods experiencing increases in mean incomes and others experiencing decreases). Neighborhoods that saw declines in mean income consequently saw increases in their poverty rate, even though the variance of neighborhood income stayed the same. The results of this study suggest that the trend in concentrated poverty neighborhoods having considerable economic heterogeneity noted by Jargowsky (1996a) is not part of an overall trend towards more economically homogenous neighborhoods. The results also suggest that between-neighborhood economic mix could be an important explanatory variable in models that estimate the effect of within-neighborhood economic mix on outcomes.

Explanations of Causes of Concentrated Poverty

Some explanations forwarded for the causes of concentrated poverty include economic restructuring, class-selective migration, racial residential segregation, public housing policy, and

downward social mobility. Each of these theorized determinants of concentrated poverty will be discussed below.

Structural Economic Changes and Class-Selective Migration

One of the earlier theories forwarded for why concentrated poverty occurs is William Julius Wilson's (1987) theory that structural changes in the U.S. economy, coupled with the exodus of middle- and working-class blacks from inner city neighborhoods resulted in large numbers of poor minorities being left behind in those neighborhoods. This theory suggests that the relocation of industrial jobs from the inner city to the suburbs created a spatial mismatch whereby employment opportunities for low-income people were located far away from where they live. According to Wilson, the relocation of these industrial jobs led to increasing urban unemployment, which was disproportionately borne by low-income minorities who were less likely to be able to commute to jobs outside of the city or who were inadequately skilled to qualify for jobs that were located near them. Additional structural economic changes that contributed to concentrated poverty were the shift from goods-producing to service-producing industries, increasing labor market polarization into high-wage and low-wage sectors, technological innovations, recessions, and wage stagnation, all of which contributed to increasing unemployment for low-income blacks (Niemonen 2002) . Concurrent to the increase in low-income black unemployment in inner-city neighborhoods was the departure of black middle-class professionals from the inner city as opportunities for residence and employment in the suburbs became a reality.[4] The result of all of these phenomena, according to Wilson (1987), was the concentration of black urban poverty in the inner city. Although Wilson does recognize that the housing conditions of urban blacks are partly owed to past discrimination, he downplays the role of contemporary racism in the formation of concentrated poverty neighborhoods in his examination.

One critique that has been raised against Wilson's explanation of black concentrated poverty is that the hypothesized selective class out-migration he proposes is difficult to test empirically (Danziger

[4] Note that class-selective *out*-migration isn't the only type of neighborhood migration that could encourage poverty concentration. Tienda (1991) points out that class-selective *in*-migration could increase the poverty rate of neighborhoods if such neighborhoods attract poor in-movers. Wilson's argument doesn't exclude in-migration of the poor from his theory of concentrated poverty; he simply places more emphasis on out-migration of the middle-class (Massey, Gross, and Shibuya 1994).

and Gottschalk 1987). An additional critique of Wilson's argument that economic restructuring coupled with black middle-class out-migration created neighborhoods of concentrated poverty is the fact that he underestimates the significance that racial residential segregation has on the creation of these types of neighborhoods (Massey and Eggers 1990; Schill 1994). Massey and Eggers (1990) call Wilson's model "seriously incomplete" because of his exclusion of racial residential segregation as a factor in the explanation of concentrated urban minority poverty. In fact, Massey (1990) contends that in the absence of racial residential segregation, the economic dislocations of the 1970s to which Wilson refers would not have produced concentrated poverty to the extent that it occurred in later decades (Niemonen 2002). The effect of racial residential segregation on concentrated poverty is the topic to which I will turn next.

Racial Residential Segregation

As detailed in the section above on the extent of concentrated poverty, this type of economic segregation has been empirically linked to racial residential segregation by numerous studies. The contention that poverty concentration cannot be explained without taking the degree of racial residential segregation into consideration stems from a body of work associated with Douglas Massey and his colleagues. Their main argument for how this mechanism works is as follows. Racial residential segregation concentrates poverty by confining high rates of black poverty to a small number of neighborhoods with high concentrations of black residents and by restricting any increase in black poverty to geographically isolated ghettos (Massey 1990; Massey and Eggers 1990; Massey, Gross, and Eggers 1992).

In an investigation of the causes of the geographic concentration of poverty, Massey, Gross, and Shibuya (1994) use data from the Panel Study of Income Dynamics to analyze patterns of black and white mobility in and out of neighborhoods with differing economic characteristics. They find little support for Wilson's view that the out-migration of non-poor blacks is driving poverty concentration, or that poverty concentration can be attributed to the net movement of blacks into poverty. Instead, they find that residential segregation of blacks in urban housing markets is causing the geographic concentration of poverty.

Additional work by Massey and his colleagues has led to the premise that it is not racial residential segregation alone that is influencing the concentration of urban poverty, but rather the interaction of racial segregation with other structural factors (Massey 1990; Massey, Eggers, and Denton 1994; Massey and Fischer 2000; Massey, Gross, and Eggers 1992). For instance, results from statistical analyses by Massey (1990), Massey, Gross, and Eggers (1991), and Massey, Eggers, and Denton (1994) all indicate that black poverty concentration is most directly affected by an interaction between racial residential segregation and the black poverty rate. This is explained as occurring due to the fact that any increase in the black poverty rate is translated directly into geographically concentrated poverty because racial segregation restricts the increase in deprivation to a relatively small number of black neighborhoods (Massey, Eggers, and Denton 1994).

A more recent article by Massey and Fischer (2000) shows that powerful interactions between racial residential segregation and many structural economic factors were spatially isolating the poor. This argument differs from earlier racial segregation interaction explanations forwarded by Massey and his various colleagues in that Massey and Fischer (2000) contend that poverty concentration stems from an interaction between racial segregation and *any* structural shift that affects the income distribution and the spatial relation of income classes to each other. They hypothesize that as racial segregation rises, declining incomes, rising income inequality, rising economic segregation, and rising immigration are more strongly translated into the geographic isolation of the poor (Massey and Fischer 2000).

A critique of the Massey view of concentrated poverty is provided by Quillian (1999). Quillian contends that racial residential segregation can't explain the change in the number of extremely poor neighborhoods *over time*. This is evidenced by the fact that racial segregation declined slightly between 1970 and 1990, while the number of high poverty neighborhoods increased over the same time period (Farley and Frey 1994; Jakubs 1986). Thus, he argues that "the *timing of the increase* in black neighborhood poverty rates…cannot be explained by changes in racial segregation" (Quillian 1999: 7). However, Quillian (1999) also argues that although racial residential segregation may not be the most important factor in explaining increases in concentrated poverty over time, it does prove to be an important factor in explaining the existence of concentrated poverty neighborhoods.

Public Housing Policy

Based on the premise that public housing location increases poverty concentration by nature of the fact that low-income housing projects use poverty as an entry criterion (Hayes 1985), Massey and Kanaiaupuni (1993) model the effect that the location of public housing has on the degree of poverty concentration in Chicago neighborhoods. First, the authors predict the likelihood of a neighborhood receiving a public housing project based on the neighborhood's socioeconomic and racial composition. Second, they test their theory that the presence of public housing has continuing consequences for a neighborhood's socioeconomic composition. Here they argue that the presence of public housing concentrates a large number of poor people within a small geographic area and "thereby builds poverty concentration into the residential structure of certain neighborhoods" (Massey and Kanaiaupuni 1993: 112). Furthermore, the authors suggest that poverty concentration is not only structurally influenced by the presence of public housing (by the fact that tenants are required to be poor), but that concentrated poverty is also behaviorally influenced by the presence of public housing because the residential choices of others in the area are sometimes affected, as well. If the presence of public housing decreases the desirability to live in a particular neighborhood and therefore produces systematic out-migration of higher-income households, poverty could be increasingly concentrated over time.

Massey and Kanaiaupuni's findings indicate that: 1) housing projects were most likely to be built in neighborhoods with high proportions of blacks and low median income; 2) the presence of public housing had a very strong effect on poverty concentration, even after controlling for socioeconomic status, racial isolation, and housing conditions; 3) out-migration increases as poverty rate and proportion black increases, but the presence of a public housing project predicts more in-migration than out-migration; 4) contrary to Wilson's (1987) argument that middle class out-migration was a key factor influencing concentrated poverty, Massey and Kanaiaupuni's analyses found no significant relationship between the rate of net migration between 1970 and 1980 and a tract's poverty rate in 1980—movements out of higher poverty tracts did not appear to be class selective; 5) poverty concentration was strongly influenced by relative location to public housing. The authors conclude that, due to the findings delineated above, public housing represents a key institutional mechanism for concentrating the poor in geographic space, especially poor blacks. Moreover, unlike other sources of concentrated poverty such

as economic restructuring and racial residential segregation, concentrated poverty caused by public housing is structurally permanent.

Downward Socioeconomic Mobility

Another explanation that has been forwarded to explain the formation of geographically concentrated poverty is that of downward socioeconomic mobility. Jargowsky and Bane (1991) and Jargowsky (1997) both found that tracts whose poverty rate increased beyond 40% usually had population losses, mostly due to a shrinking number of non-poor residents. Greene (1991) also found a connection between population loss and increasing poverty rate. These findings all suggest that Wilson's thesis of class-selective out-migration may indeed be affecting the concentration of urban poverty. However, another possibility is that residents already living within moderately poor neighborhoods are experiencing declines in their economic status. Thus, the downward socioeconomic mobility of a neighborhood could be caused by the movement of some residents, but movement in or out of the neighborhood is not a necessary condition for downward socioeconomic mobility to occur. Quillian (1999) found just this type of mechanism occurring in his analyses. He found that increasing poverty rates in the 1980s due to economic recession had a strong effect on the increase in the number of extremely poor neighborhoods (Quillian 1999).

Massey, Gross, and Shibuya (1994) note that downward socioeconomic mobility among neighborhood residents can influence poverty concentration, however, they discuss this phenomenon as a mechanism that stems from persistent racial residential segregation. For instance, neighborhood poverty could increase if blacks living in racially segregated neighborhoods experience a net downward movement of their socioeconomic status. If a segregated group's poverty rate increases, the geographic concentration of black poverty follows axiomatically (Massey, Gross, and Shibuya 1994).

Explanations of Causes of Concentrated Affluence

Since concentrated affluence has only received a scant amount of scholarly research, there is significantly less literature in existence that considers its causes. In fact, of all of the articles reviewed in this chapter regarding concentrated affluence, not one of them addresses the forces influencing the development of such neighborhoods. Danziger (1996) speculates that inattention to the causes and

consequences of concentrated affluence is related to a lack of a common definition of concentrated affluence. Regardless, two possible explanations for concentrated affluence are discussed below. They include exclusionary zoning and bifurcation of the metropolitan income distribution. As neither of these explanations has been empirically examined in the scholarly literature, they should both be considered purely speculative.

Exclusionary Zoning

Some scholars suggest that land use controls such as minimum lot sizes, restrictions on rental housing, and other types of exclusionary zoning increase income segregation between urban and suburban areas (Orfield 2002; Rusk 1999). Since exclusionary zoning nearly exclusively takes place in suburban locations where property and real estate tend to be more expensive than in urban areas already, excluding certain types of land use could increase concentrated affluence by discouraging the in-migration of lower-income households into the community. If property and real estate are only attainable by households who have higher incomes it follows that affluence might be concentrated as a consequence of exclusionary zoning measures.

Bifurcation of the Income Distribution

Massey and Eggers (1993) hint at the idea that bifurcation of the income distribution may be encouraging concentrated affluence. They state that in most metro areas there was a marked decline in the relative number of upper-middle class families, accompanied by a simultaneous upward shift in the number of affluent families. Meanwhile, the proportion of lower-middle class families declined as the proportion of poor families increased. However, Massey and Eggers do not use changes in the income distribution to determine the concentration of affluence in a statistical model, and thus this hypothesized cause of concentrated affluence remains untested.

Causal Interconnectedness

As is the case with the multiple hypothesized causes of racial residential segregation, the hypothesized causes of economic residential segregation are not so easily separated out from one another. Similarly, the empirical investigations of the causes of economic segregation to date indicate

that no single hypothesized factor explains the phenomenon individually. There seems to be a combination of factors at work that are generating economically segregated neighborhoods.

Much like when dealing with the causes of racial segregation, one must properly specify models investigating the causes of economic segregation where bidirectional causality might be at work in order to avoid endogeneity bias. Since it is possible that some of the factors thought to cause economic segregation could be endogenous, cause and effect might be difficult to determine. Therefore, it is probably advisable that future investigations consider using simultaneous-equations modeling when probing the causes of economic segregation.

Before moving on to a discussion of racial and economic diversity in neighborhoods, I will quickly summarize the pertinent points concerning economic residential segregation. First, it should be noted that researches have been studying economic segregation for a much shorter time than they have been investigating racial segregation. Second, inquiries into economic segregation tend to look at the phenomenon in general, in conjunction with racial residential segregation, or look at "specialized" types of economic segregation including concentrated poverty and concentrated affluence. Studies probing the relationship between racial residential segregation and economic residential segregation have determined that the two phenomena interact with each other in multiple ways, especially for blacks. Third, regarding the extent of economic residential segregation in general, most researchers agree that it has been increasing in U.S. metropolitan areas since the 1970s. Regarding the extent of concentrated poverty, it became more urban and increased until 1990, when it declined significantly. Recent reports indicate that concentrated poverty is again on the rise. There is significant variation in concentrated poverty by race, with blacks being the most likely group to live in concentrated poverty and whites being the least likely. Considerable variation also exists in concentrated poverty by region of the country, with the Northeast having the highest proportion of concentrated poverty neighborhoods and the West having the lowest proportion. Concentrated affluence has been much less studied than economic segregation in general or concentrated poverty. What is known about concentrated affluence is that it, too, is on the rise in recent decades. There also exists considerable variation in rates of concentrated affluence by race and region of the country.

As with racial residential segregation, there are multiple competing hypotheses regarding its causes. Purported causes of economic segregation in general include density, accessibility/land-use consumption trade-offs, differing environmental preferences, the high cost of new construction, and income inequality. Purported causes of concentrated poverty include class-selective migration, structural changes in the economy, racial residential segregation, public housing policy, and downward socioeconomic mobility. Hypothesized causes of concentrated affluence include exclusionary zoning and bifurcation of the income distribution. Similar to the situation with racial segregation, no single factor explains the phenomenon of economic segregation individually and one must be careful to model equations correctly to avoid endogeneity bias.

NEIGHBORHOOD DIVERSITY

To this point, the literature reviewed herein has focused on neighborhood separation by race and socioeconomic status. I will now turn my attention to literature that focuses on neighborhood sharing. First, I will look at the literature concerning racial and ethnic diversity in U.S. neighborhoods, assessing how diversity is measured, its extent, types of diversity, its correlates, and policies proposed and enacted to foster it. I will then look at the literature concerning neighborhood economic diversity, how it is measured, its extent, its correlates, and policies enacted to foster it. Lastly, I will examine the literature concerning the intersection of racial-ethnic and socioeconomic diversity in neighborhoods.

Racial Diversity in Neighborhoods

Despite all of the empirical documentation and focus on racially segregated neighborhoods, racially diverse neighborhoods do, in fact, exist in U.S. cities and metropolitan areas (Ellen 2000; Ellen 2007; Maly 2005; Nyden, Lukehart, Maly, and Peterman 1998a; Nyden, Maly, and Lukehart 1997; Saltman 1990). Although, as Nyden et al. (1998a) point out, these neighborhoods are the exception to what Massey and Denton (1993) refer to as “American apartheid.” Studying racial diversity in neighborhoods could lead to a deeper understanding of the “alternative models of living and interacting” occurring within these neighborhoods—a prospect that could prove to be valuable as the U.S. becomes more and more racially and ethnically diverse (Nyden et al. 1998a:1).

One issue that must be confronted when considering the existence of racially diverse neighborhoods is the degree of stability in the condition. In other words, once a neighborhood achieves some sense of diversity, does it continue to stay that way, or does it eventually revert back to some form of segregation? According to Nyden et al. (1998a), racially diverse neighborhoods are commonly viewed as inherently unstable. Community organizer and writer Saul Alinsky said that integration is the time between when the first black moves in and the last white moves out (Sanders 1970). What has come to be expected, then, is that once an all-white neighborhood begins to become racially diverse it will inevitably tip and become all-minority, as predicted by the tipping point hypothesis (Ottensmann 1995). Hence, racial integration is generally seen as a temporary, fleeting state. Therefore, it is important to consider the length of time that a certain level of diversity has existed when determining whether a neighborhood is indeed racially diverse. Researchers of racially diverse neighborhoods nearly universally take this caveat into consideration, as will be evident in the subsequent section.

Measuring Racial Diversity

As with other phenomena related to residential settlement and neighborhood mixing, operational definitions of what constitutes diversity or integration vary from study to study. However, any viable measure of diversity must include assessments of both static and dynamic aspects of the phenomenon (Bradburn, Sudman, and Gockel 1971; Galster 1998; Smith 1993). What this means is that one must consider the underlying or existing racial mix at a certain point in time (static aspect), as well as the stability of that racial mix over time (dynamic aspect).

In assessing the static dimension of neighborhood racial diversity, many researchers have used demographic group proportions as their metric of diversity (Clark 1993; Ellen 1998; Ellen 2000; Ellen 2007; Galster 1998; Lee 1985; Lee and Wood 1990; Lee and Wood 1991; Nyden, Lukehart, Maly, and Peterman 1998a; Nyden, Maly, and Lukehart 1997; Smith 1991; Wood and Lee 1991), others have used the entropy index (Modarres 2004)—which White (1986) argues is the best multi-group measure of diversity. Moreover, additional metrics have been proposed such as the Neighborhood Diversity index (Maly 2000; Maly 2005), which calculates a score indicating how close the neighborhood racial mix

approximates that of the city within which it is situated. Wong (1998) suggests using the presence of multi-ethnic families for determining a neighborhood's racial diversity status.

The dynamic dimension of neighborhood racial diversity, or the stability of a racially diverse neighborhood, has been measured by looking at arbitrary percentage point changes (Clark 1993; Ellen 1998; Ellen 2000; Lee 1985; Lee and Wood 1990; Wood and Lee 1991), where a neighborhood is considered stably diverse if its racial mix stays within a certain range delineated by the researcher over a specified period of time. In-flows of households have also been analyzed as a measure of the dynamic dimension of racial diversity (Galster 1990a; Saltman 1990). In this scenario, researchers deem a neighborhood stably diverse if there is active demand for housing in the neighborhood by homeseekers from multiple racial-ethnic groups when vacancies become available, such that the existing racial mix remains in place over time. Galster (1998) considers both in-flows and out-flows of households to and from diverse neighborhoods, arguing that focusing on in-flows only is inadequate to assess stability. Card, Mas, and Rothstein (2008a) evaluate neighborhoods' racial mixes compared to their corresponding city's racial tipping point to assess stability. Those neighborhoods that stayed below their predetermined tipping points remained stably diverse over time.

Approaches to Measuring Neighborhood Racial Diversity

The research literature has identified a number of differing approaches to measuring neighborhood racial diversity. The three major approaches are the absolute approach, the comparative approach, and the market approach. Each of these approaches will be discussed below.

The absolute approach to measuring neighborhood racial diversity determines whether the racial mix of the neighborhood corresponds to a predetermined range of racial composition (Galster 1998). Studies using this approach choose a somewhat arbitrary mix of racial proportions that the author(s) deem as "diverse" (Clark 1993; Ellen 1998; Ellen 2000; Ellen 2007; Lee 1985; Lee and Wood 1990; Wood and Lee 1991). For instance, Ellen (1998, 2000) adopts the criterion that a neighborhood contain between 10% and 50% black residents in order to be classified as integrated. Elsewhere, Galster (1998) uses the criterion that no one group constitutes greater than 75% of the population in order to be classified as integrated.

The absolute approach to measuring neighborhood racial diversity has been criticized as being atheoretical since many studies do not provide a rationale for why they chose the particular cut-off points that they did. However, as Galster (1998) argues, this approach conforms to the conventional wisdom that integration ultimately is a non-trivial amount of racial mixing. Additionally, Galster (1998) points out that this approach yields unambiguous cross-sectional and inter-temporal comparability where other approaches may be lacking.

The comparative approach to measuring neighborhood racial diversity determines how the racial mix of the neighborhood compares to that of a larger geographic area (Galster 1998). Studies using this approach deem a neighborhood diverse if its racial proportions closely correspond to that of the city, county, or metro area (Maly 2000; Nyden, Lukehart, Maly, and Peterman 1998a; Nyden, Maly, and Lukehart 1997; Saltman 1990; Smith 1998). Critiques that have been raised against this approach include the fact that the larger unit to which the neighborhood is being compared may not be diverse itself, and that the reference territory may not be constant across space or time (Galster 1998).

The market approach to determining neighborhood racial diversity assesses demand by both white and minority households for housing within a particular neighborhood as its operationalization of diversity. If both whites and minorities choose a neighborhood such that their choices maintain the housing market for each group, the neighborhood is considered stably diverse (Bradburn, Sudman, and Gockel 1971). Studies which utilize this conceptualization of neighborhood racial diversity analyze data on the in- and out-movement of households by race to assess the degree of diversity (Bradburn, Sudman, and Gockel 1971; DeMarco and Galster 1993; Galster 1998; Moore and McKeown 1968; Saltman 1990; Smith 1998).

The majority of empirical studies interested in assessing the degree of racial diversity in neighborhoods tend to use one or a combination of the approaches listed here. However, there also exists a qualitative body of literature that presents in-depth case studies of racially integrated communities (Goodwin 1979; Keating 1994; Maly 2005; Saltman 1990). According to Smith (1998), these case studies involve the prior selection of diverse communities in order to challenge the common belief that racially diverse places are inherently unstable. Since the current dissertation research has a

clearly quantitative focus, the literature reviewed also focuses on quantitative studies of neighborhood diversity.

Other Measurement Issues

A few additional considerations that should be acknowledged when discussing the issue of measuring racial diversity in neighborhoods include the unit of analysis and the racial-ethnic groups that are considered. As with most studies of neighborhood, the majority of studies related to racial diversity use the census tract as a proxy for neighborhood—as will the current study. However, it should be noted that other units of analysis are viable options when studying racial diversity. For instance, using block groups, which are smaller areal units nestled within census tracts, could give us a finer-grained portrait of neighborhood diversity. The use of block groups could, perhaps, help to determine whether a diverse census tract is indeed diverse throughout, or if it is actually composed of a number of smaller, segregated blocks.

Another issue regarding measurement and racial diversity involves the racial-ethnic groups under consideration. While the earliest studies of neighborhood racial diversity tended to focus on whites and blacks, the current generation of racial diversity studies generally includes the four main demographic groups identified by the U.S. Census: whites, blacks, Hispanics, and Asians. However, Modarres (2004) argues that choosing to use these four larger groups ignores the internal diversity that is present within these groups, leaving us with a limited understanding of integration. Thus, he recommends using distinctive cultural subgroups of the larger Asian and Hispanic groups such as Asian Indian, Filipino, Japanese, Chinese, Mexican, Puerto Rican, Cuban, etc. Modarres (2004) believes it is especially important to use these smaller subgroups when analyzing integration in areas that are highly demographically diverse, such as Los Angeles.

What the foregoing discussion on measuring neighborhood racial diversity should convey is that there is virtually no agreement on what is the most appropriate way to measure racial diversity within neighborhoods. This has led to a scenario in which the research findings related to neighborhood racial diversity are difficult to interpret and compare (Smith 1998). Both Maly (2000) and Ellen (2000) agree

that one contributing factor to dissimilar findings is the absence of standardized, problem-free techniques for measurement (Modarres 2004).

Now that issues related to how to measure neighborhood racial diversity have been discussed, it is time to turn to a discussion of what such studies have revealed about the degree of racial mixing in U.S. neighborhoods.

The Extent of Racial Mixing in Neighborhoods

Since rapid racial transition was considered to be the norm once minorities entered all-white neighborhoods, research on stable racially diverse neighborhoods didn't begin until quite recently. In the mid-1980s, several studies considering the possibility of stable neighborhood racial diversity and its correlates during the 1970s decade were published (Denton and Massey 1991; Lee 1985; Lee and Wood 1990; Lee and Wood 1991; Taub, Taylor, and Dunham 1984). Although these studies questioned the inevitability of racial turnover, stable racially diverse neighborhoods were still viewed as extraordinary (Ellen 2007).

Studies of racially diverse neighborhoods focusing on the 1980s decade found an increasing number of neighborhoods that could be classified as stably racially diverse (Ellen 1998; Ellen 2000; Nyden, Maly, and Lukehart 1997). As Ellen (2007:124) notes, the findings of these studies, taken together, indicated that "while not the norm, stable, integrated neighborhoods could no longer be considered an anomaly."

In looking at neighborhood racial diversity in the 1990s, Rawlings et al. (2004) found increased neighborhood mixing between blacks and whites and continued stability of diverse neighborhoods in 69 metro areas. In a smaller study of just 10 metro areas, Fasenfest, Booza, and Metzger (2004) considered Hispanics and Asians (in addition to whites and blacks) in their analysis of neighborhood racial-ethnic mixing and similarly found increasing neighborhood racial diversity. Ellen (2007) examines all U.S. metro areas in her analysis of neighborhood race mixing during the 1990s. Using an operational definition of 10-50% of the tract population being black, Ellen finds that over 20% of U.S. metropolitan tracts were identified as integrated in 2000. She finds that 80% of the tracts that were integrated in 1990 remained

so in 2000, indicating a relatively strong degree of stability. However, this growth in integrated neighborhoods is attributed to increased mixing of whites and non-black minority groups (Asians and Hispanics), rather than increased mixing of blacks and whites within neighborhoods.

The studies discussed above all use either the absolute approach or the comparative approach to studying racial diversity in neighborhoods. Taken together, they all indicate that stable, racially diverse neighborhoods have been increasing in frequency over the decades. Collectively, they place the extent of racially diverse neighborhoods somewhere between 7% and 20% of U.S. metropolitan neighborhoods. However, save for Ellen (2007), most of these studies suffer from the use of small sample sizes, and hence their findings are limited and not necessarily generalizable.

Studies using the market approach to studying neighborhood racial diversity tend to agree with the findings from the absolute and comparative approaches that racial diversity within neighborhoods is increasingly stable. For instance, Smith (1998) finds that a number of tracts in Florida that he identifies as integrated using a comparative approach also qualify as integrated using the market approach. In those tracts, population increased, with growth in both the black and white population.

Two Models of Racial Diversity

In order for our understanding of racially diverse neighborhoods to be more complete, we must look not only at the extent to which U.S. metropolitan neighborhoods achieve some degree of racial mixing, but also at the forces which have helped to foster such neighborhoods. In doing so, Nyden, Maly, and Lukeheart (1997) and Nyden, Lukeheart, Maly, and Peterman (1998a) identified two models of urban neighborhood racial diversity, which they label diverse-by-direction and diverse-by-circumstance communities. The difference between these two types of diverse neighborhoods is how each type arrived at its achieved level of racial diversity.

The diverse-by-direction neighborhoods are those in which integration was “a very conscious, directed, and goal-oriented act, with African-Americans and Whites generally working together both to promote the benefits of integration and to fight those entities that were perceived by the residents to be pushing the community toward segregation” (Nyden et al. 1998a: 7). In other words, these

neighborhoods became diverse as a consequence of the intentional actions of the residents, community organizers, and others. As a result, these communities developed organizations, social networks, and other institutions which focused directly on maintaining diversity (Nyden, Lukehart, Maly, and Peterman 1998a). These are the types of neighborhoods addressed in Saltman's (1990) book, *A Fragile Movement.* Because diverse-by-direction neighborhoods have developed the institutional structure necessary to perpetuate their diversity, this type of neighborhoods is viewed as quite stable.

The diverse-by-circumstance neighborhoods have come to be integrated as the result of processes that are not directly related to the actions of residents or community members (Nyden, Lukehart, Maly, and Peterman 1998a). Some of these processes might include gentrification, real estate market fluctuations, resident aging, revitalization projects, establishment of the community as an immigrant port of entry, and the development of affordable housing (Nyden, Lukehart, Maly, and Peterman 1998a). Although these communities did not initially seek out diversity, once they become diverse they start to see it as a positive attribute of the neighborhood and begin promoting it as such (Nyden, Lukehart, Maly, and Peterman 1998a).

The fact that several models of urban neighborhood racial diversity exist points to the fact that there are multiple pathways by which racial diversity may be achieved in neighborhoods (Nyden, Lukehart, Maly, and Peterman 1998a). In each case, the neighborhoods have leveraged a differing combination of internal and external resources in order to achieve and maintain racial diversity. Building on that idea, the next section will detail some of the factors that have been identified as being related to the existence of racially diverse neighborhoods.

Correlates of Stable Neighborhood Racial Diversity

Research into racially mixed neighborhoods has not only strived to document the existence and extent of these types of neighborhoods, it has also attempted to determine some of the factors that are associated with the presence of racially mixed neighborhoods. The point in trying to identify correlates of neighborhood racial diversity is that by determining what elements are related to racial diversity, public officials and community developers could try to encourage or increase the presence of the correlates in order to foster the development and maintenance of racially mixed neighborhoods. By identifying the

qualities that racially diverse neighborhoods share, we might be able to increase the number and stability of racially diverse communities.

However, that being said, it should be noted that only a handful of studies have attempted to identify the characteristics of racially diverse neighborhoods. This is most likely due to the fact that, until relatively recently, racially diverse neighborhoods were viewed as inherently unstable and thus studying their characteristics may not have seemed to be a worthwhile undertaking. Those studies that have investigated the correlates of racially diverse neighborhoods have identified a number of factors that are usually associated with these types of neighborhoods, although there tends to be some disagreement amongst these studies as to which factors are the most salient. It should be noted, as well, that some of these studies do not examine the characteristics of racially integrated neighborhoods, per se, but instead look at correlates of racial change or stability within those neighborhoods.

In her investigation of the correlates of racially diverse neighborhoods, Ellen (2000) conveys what earlier studies concerning neighborhood racial change have revealed. Some factors she identifies as important for determining the stability of racially integrated neighborhoods include the racial attitudes of the broader community (Schnare and McRae 1978), the relative incomes of blacks and whites in the neighborhood (where greater similarity yields greater stability), housing market discrimination, the degree of solidarity (especially the commitment of long-term white residents) in the neighborhood (Logan and Schneider 1984; Logan and Stearns 1981), demographic forces such as the relative growth rate of blacks and whites (Lee 1985; Lee and Wood 1991), and the share of owner-occupied housing (with greater proportions increasing the likelihood of stability) in the neighborhood (Schwab and Marsh 1980; Steinnes 1977; Sugrue 1996). Additional forces that could influence the pace of racial change in racially diverse neighborhoods, as identified by Ellen (2000) include the presence of children (especially those attending public schools), the location of the neighborhood within its metropolitan area, and the presence of large stabilizing institutions such as universities or military bases.

Some previous studies have suggested that the proportion of the black population in the neighborhood is an important indicator of future racial change in racially mixed neighborhoods. Specifically, those neighborhoods with higher proportions of blacks were more likely to experience

increases in their black population and concurrent losses in their white population (Denton and Massey 1991; Galster 1990b; Galster and Keeney 1993; Lee 1985; Logan and Schneider 1984; Logan and Stearns 1981; Schwab and Marsh 1980; Steinnes 1977; Taeuber and Taeuber 1965; White 1984). Card, Mas, and Rothstein (2008a) argue that so long as the proportion of black residents in a mixed neighborhood remains below a previously estimated (city-specific) tipping point, integration within that neighborhood will remain stable. However, Ellen (2000) finds that the share of black residents in the neighborhood may not be as important for the future stability of the neighborhood as it was prior to 1970. Additionally, in their simulation model of neighborhood racial change in Chicago, Ottensmann and Gleeson (1992) find that as long as the black population in the overall urban area (not the neighborhood itself) wasn't increasing, racially mixed neighborhoods would remain stable.

In their study of eight racially integrated neighborhoods in Chicago, Taub, Taylor, and Dunham (1984) find that contextual factors affect the stability of race mixing in those neighborhoods. Their findings suggest that a strong housing market in the neighborhood, attractive external amenities, the relative prosperity of black in-movers, active community associations, and a strong institutional presence (Gamm 1999) all increased the stability of racial mixing in their case study neighborhoods.

In their work studying neighborhoods that have maintained racial diversity over a significant period of time, Nyden and his colleagues identified a number of factors that were common amongst the neighborhoods that they determined were stably integrated (Nyden, Lukehart, Maly, and Peterman 1998a; Nyden, Lukehart, Maly, and Peterman 1998b; Nyden, Maly, and Lukehart 1997). Regardless of whether the neighborhoods had achieved diversity as a function of circumstance or intention, all of the neighborhoods that they studied had attractive physical characteristics, a mixture of diversity types (such as racial diversity in blocks with small pockets of homogeneity interspersed), the presence of "social seams" (locations where community interaction takes place such as grocery stores or churches), resident awareness of stable racial diversity, active community organizations and social institutions that contributed to the maintenance of racial diversity, efforts toward economic development, and common challenges such as age transition, blight, community safety, and school quality. While all of the racially diverse neighborhoods studied by Nyden's team shared the above qualities, they also note that there

were differences amongst these neighborhoods, as well. For instance, the degree of economic homogeneity differed, as well as the racial mix, the proportion of immigrants, and extent to which the housing stock varied within the neighborhood.

In his investigation into stably racially integrated tracts in Florida, Smith (1998) examines housing type, housing value, and median household income (with respect to the county within which each tract resides). He concludes that there is no particular pattern that differentiates racially integrated neighborhoods from their environments. He finds considerable variation in all of these variables between the tracts he identifies as racially integrated.

What the foregoing discussion on the correlates of racially diverse neighborhoods indicates, then, is that although some qualities seem likely to contribute to the stability of racial diversity within these neighborhoods (i.e. relative income of the different racial groups, overall racial attitudes, demographic forces, housing market characteristics, and the presence of institutions and community organizations), there really isn't much consensus as to which of these characteristics are the most salient. Therefore, further investigation into the variables associated with sustained racial diversity is warranted.

Public Policy Interventions for Fostering Racial Diversity

Since the presence of some sort of public policy encouraging diversity could also be associated with the degree of racial diversity in neighborhoods, the literature concerning these efforts and their effect on racial diversity will be reviewed here, as well. Collectively, policy interventions aimed at increasing racial diversity within neighborhoods are referred to as "pro-integrative" strategies which are administered by affirmative housing programs. These types of policies generally include race-conscious activities that are designed to expand housing choices and foster racial residential integration (Freiberg 1993).

Affirmative housing programs are operated by private non-profit organizations, governmental bodies, or public agencies and their areas of service can vary from a small neighborhood to an entire metro area or region (Freiberg 1993). Moreover, the activities that affirmative housing programs engage in vary considerably. However, these activities are generally limited to three categories: affirmative

marketing, affirmative housing search assistance, and financial incentives for diversity. Fair housing groups usually engage in one or more of these types of activities, details of which are provided next.

Affirmative marketing refers to activities designed to attract people from groups that are least likely to apply for housing in a particular area. Specific strategies that are used include special outreach efforts, advertising campaigns, and neighborhood tours. Affirmative housing search assistance refers to activities designed to assist individual homeseekers who are interested in moving to an area where their group is already underrepresented. Specific strategies utilized to achieve this goal are the provision of rental information, home buying counseling, and loan pre-qualification assistance. Financial incentives for diversity refer to activities that offer a monetary inducement to attract or assist people moving to areas where their race is underrepresented. Strategies used to achieve this goal include tax credits, providing low-interest mortgage loans, providing equity insurance to homebuyers, and providing bonus payments to rental tenants (Freiberg 1993).

One of the first affirmative housing programs to be attempted in the U.S. was the Gautreaux Assisted Housing Program, which was introduced above in the public policy theory of racial segregation section of this review. The Gautreaux program was operated by Chicago's Leadership Council for Metropolitan Open Communities, a private, nonprofit fair housing organization. The Gautreaux program was part of the relief ordered by the Supreme Court as a result of a lawsuit brought against the Chicago Housing Authority and HUD. Participants in the program were given the opportunity to live in predominantly white areas, using Section 8 vouchers. Participants were provided with comprehensive counseling, placement, and support (Davis 1993). The program ended in 1998, when it reached the target of placing 7100 families. After all was said and done, more than half of the participating families moved to affluent, white-majority suburbs.

Researchers evaluating the experiences of those who moved under the Gautreaux program have found generally positive outcomes for those who moved to more affluent suburbs with higher proportions of whites, particularly adults' employment outcomes and children's education and employment outcomes (Rosenbaum 1991; Rosenbaum 1995; U.S. Department of Housing and Urban Development 1979). Because of its documented success, the Gautreaux program spawned a number of similar assisted

housing programs across the country. It is interesting to note, as well, that although the Gautreaux program was initially started as a remedy to racial segregation, it was also viewed as a remedy to concentrated urban poverty[5] (Davis 1993). The fact that relocating black residents from populous slums to less dense suburbs would deconcentrate poverty is yet another demonstration of the interaction between race and socioeconomic status.

Sometimes, rather than relying on privately run housing assistance programs, municipalities have taken it upon themselves to make racial diversity a priority citywide. Examples of municipalities that have used such "integration maintenance" strategies[6] include Oak Park, IL and Shaker Heights, OH (North 1986; Polikoff 1986a; Polikoff 1986b). The strategies adopted by the two municipalities differ, but they share the same goals of desegregating homogeneous neighborhoods and encouraging market demand for housing by both whites and minorities in the same neighborhoods over time (DeMarco and Galster 1993). The Oak Park model uses one program, the Diversity Assurance Program, to help increase racial diversity in rental housing by providing financial assistance to multi-family building owners to help them rehabilitate their buildings. In turn, they list their vacancies with the Oak Park Regional Housing Center, which encourages racially diversifying moves for renters (Housing Oak Park 2007). Shaker Heights, on the other hand, utilizes a comprehensive plan that uses marketing, housing counseling, financial incentives, monitoring, and enforcement strategies to encourage sustained racial diversity within the city (DeMarco and Galster 1993). Evaluations of these two integration maintenance programs have found that they have both been successful in bolstering racial diversity in their respective communities (DeMarco and Galster 1993; Housing Oak Park 2007; Peterman 1982).

Bell and Parchomovsky (2000) suggest a number of market strategies that could be used to help quell racial turnover in diversifying neighborhoods. All of these strategies are designed to eliminate panic selling by whites when blacks begin to enter the neighborhood by neutralizing the economic incentives to

[5] In fact, the Gautreaux Assisted Housing Program was the impetus for a larger HUD program, Moving to Opportunity for Fair Housing, a program specifically aimed at deconcentrating urban poverty. This program will be reviewed below.

[6] As Freiberg (1993: 234-235) points out, the term "integration maintenance" is a somewhat misleading term in that it infers that assisted housing programs "emanate from strategies intended to 'maintain racial integration' or 'prevent resegregation' in areas that are racially diverse." He contends that his review of affirmative housing programs instead reveals a genuine diversity of origins and missions.

leave. First, they suggest the use of equity insurance to protect against declines in home values. Second, taxes on home sales are proposed. This would adjust for the relative value of selling the home and moving out of a racially changing neighborhood. Third, they suggest the use of institutional subsidies to would provide federal funds for parks, schools, community centers, and other basic infrastructure in neighborhoods with high real estate turnover in order to preserve real estate values in the neighborhood. Fourth, they recommend the use of regional growth control measures which would restrict the development of new suburbs, which would in turn restrict the potential for resegregation. Used together, according to Bell and Parchomovsky (2000: 2029), these techniques would "alter the payoff structure of white homeowners in racially changing neighborhoods." However, the authors draw this conclusion based on simulations they run, not on empirical evidence. Thus, it is still unclear whether or not these strategies, when used together, would actually yield these results when applied in a real-life scenario.

One type of policy that was attempted to help foster racial integration, but has since been ruled illegal, is referred to as "managed occupancy" or "racial occupancy controls." What these terms are actually describing are racial quotas. That is, households were selected to live in housing developments according to a predetermined racial mix. Thus, if the quota for that particular racial group was already filled, families with that racial background would be denied housing there, even if there were vacant units available (Lind 1986; Smolla 1986).

The Starrett City housing development in Brooklyn, NY was sued for using a managed occupancy scheme such as the one described above. In an effort to keep this large housing complex racially diverse, the management instituted racial quotas of 70% white and 30% minority. However, demand for units in Starrett City from minority homeseekers outweighed the number of units set aside for minorities. Although there were vacant units available, these units had been set aside for whites, and thus the minority households were turned away. Ultimately, the use of racial quotas by the Starrett City development was ruled illegal.[7]

[7] *United States v. Starrett City Associates*, 840 F.2d 1096 (2nd Cir. 1988).

In summary, the foregoing section points out that racially diverse neighborhoods do, in fact, exist. In measuring the extent of their presence, one must consider not just the static racial mix that is present, but also the longer-term dynamics of the state of racial mixing. In other words, does the racial mix remain stable over time? A review of the research literature reveals that operational definitions as to what exactly constitutes a diverse racial mix and its stability over time vary from study to study, along with the unit of analysis over which diversity is measured and the racial groups that are considered in the mix. Additional measurement issues include whether to take the absolute approach, the comparative approach, the market approach, or some combination of the three approaches.

Empirical investigations into the presence of racially diverse neighborhoods have revealed that the proportion of this type of neighborhood has been increasing steadily since 1980, and that in 2000 around 20% of U.S. metropolitan neighborhoods could be considered racially integrated. Two models have been developed to explain the emergence of racially diverse neighborhoods, each of which has a relatively self-explanatory moniker: diverse-by-circumstance and diverse-by-design. Researchers have used studies of the correlates of racially diverse neighborhoods to formulate these models. Affirmative Housing Programs (such as the Gautreaux program) use race-conscious marketing activities to foster neighborhood racial integration. Now that the literature on racial diversity in neighborhoods has been reviewed, I will move on to a discussion of income diversity in neighborhoods.

Income Diversity in Neighborhoods

Unlike the somewhat atypical nature of racially diverse neighborhoods, neighborhoods that are economically diverse are relatively commonplace in the metropolitan landscape. Perhaps because these types of neighborhoods are viewed as ordinary, the segment of the research literature that considers the mix of economic groups within neighborhoods is not as well developed as the segment that focuses on racially diverse neighborhoods. Regardless of the modest scale of this empirical literature, I will try to follow the same logic as I did when reviewing the literature on racial diversity in neighborhoods, where possible. First, I will discuss the ways in which neighborhood income diversity has been measured. Second, I will introduce the literature on the extent of income mixing in neighborhoods. Third, I will discuss what little is known about the stability of economically diverse neighborhoods. Fourth, I will

discuss the correlates of economically diverse neighborhoods. Lastly, I will consider the public policy interventions that have been introduced in an effort to increase income diversity in neighborhoods.

Measuring Income Diversity in Neighborhoods

When empirically investigating the degree of income diversity in neighborhoods, many of the same issues relating to measurement apply as when assessing racial diversity. However, one difference is that while the empirical literature generally considers the static mix of income groups, the stability of mixed income neighborhoods, or their dynamic aspect, has not been a major concern in the literature. Thus, there are only a handful of scholarly articles which consider the stability of mixed income neighborhoods. Perhaps this lack of focus on the stability of mixed income neighborhoods reflects the fact that one's income category is not always easily identified by others, as one's race might be. Therefore, rapid neighborhood change due to the influx of a concentration of households from different income groups than are already present in a given neighborhood is not as likely to occur than if a rapid influx of different-race households were to enter the same neighborhood.

As with measuring racial diversity in neighborhoods, measuring income diversity requires one to identify the unit of analysis over which diversity will be measured, as well as operationalizing income and determining what mix of incomes constitutes diversity. As far as units of analysis are concerned, some studies use the census tract to approximate neighborhood (Immergluck and Smith 2002; Immergluck and Smith 2003). Other authors use the block group, a smaller geographic unit than the census tract, to approximate neighborhood (Krupka 2005; Manning, Schweitzer, and Darnton 2004). Still others use an even smaller unit of analysis, the neighborhood cluster (Hardman and Ioannides 2004a; Hardman and Ioannides 2004b; Ioannides 2004; Ioannides and Seslen 2002). The neighborhood cluster consists of one "kernel" household which is randomly selected from the American Housing Survey and up to 10 of its nearest neighboring households. Thus, it is a much smaller unit of analysis than either the tract or the block group.

Another area which is crucial to the measurement of neighborhood income diversity but where there is also some disagreement in the literature is in how income itself is measured. Most studies rely on annual income data as reported to either the Census Bureau or other government agencies such as

HUD (Galster, Booza, and Cutsinger 2008; Hardman and Ioannides 2004a; Hardman and Ioannides 2004b; Manning, Schweitzer, and Darnton 2004). Others use Home Mortgage Disclosure Act (HMDA) data, which is reported to the government when an individual buys a home (Immergluck and Smith 2002; Immergluck and Smith 2003).

Depending upon the availability of data, some authors use household income as their measure, while others use family income. The difference between these two designations is that household income refers to the combined income of all of the working individuals in the residence who are 15 years old or older, regardless of whether the individuals are related to one another. Family income refers to the combined incomes of all of the related individuals in the household who are 15 years of age or older and worked during the previous year. Since some households consist of single persons (and families, by nature, do not) average annual family incomes are generally larger than average annual household incomes. In the research devoted to neighborhood income diversity, there doesn't appear to be any agreement as to which of these measures of income is more desirable. Thus, the exact measure of income varies from study to study.

In determining what mix of income groups constitutes diversity, the empirical literature also varies. Some authors rely on arbitrary cut-off points related to certain proportions of different income groups (Hardman and Ioannides 2004a; Hardman and Ioannides 2004b; Immergluck and Smith 2002; Immergluck and Smith 2003), or as it was presented in the section on racial diversity in neighborhoods, the absolute approach. Others use the comparative approach by deeming a neighborhood economically diverse if its income mix reflects that which is present in the greater urban area (Immergluck and Smith 2002; Immergluck and Smith 2003; Manning, Schweitzer, and Darnton 2004). Still others use statistical tests to determine diversity. For instance, Krupka (2005) uses the standard deviation of family income to assess diversity, whereas Ioannides (2004) utilizes log-likelihood estimations to assess neighborhood sorting and mixing. There are also studies which use index measures to assess diversity. Ioannides and Seslen (2002) use the Bourguignon decomposable inequality index, a measure which allows the total inequality of a population to be broken down into a weighted average of the inequality existing within subgroups of the population and the inequality existing between them (Bourguignon 1979). Galster,

Booza, and Cutsinger (2008) use the entropy index to analyze neighborhood income diversity. What should be readily apparent after reading the foregoing sections on measuring income diversity in neighborhoods is that, as with measuring racial diversity in neighborhoods, there is no set and agreed upon procedure for investigating this topic.

The Extent of Economic Diversity in Neighborhoods

Despite the disagreement in the literature on how to measure neighborhood income diversity, there is considerable agreement concerning the degree of income mixing in neighborhoods across America. From studies that examined only individual case study cities to studies that examined national datasets, the authors' findings support the fact that the majority of American neighborhoods are home to a great deal of income diversity (Dow 2003; Galster, Booza, and Cutsinger 2008; Hardman and Ioannides 2004a; Hardman and Ioannides 2004b; Hardman and Ioannides 2004b; Immergluck and Smith 2002; Immergluck and Smith 2003; Ioannides and Seslen 2002; Manning, Schweitzer, and Darnton 2004). A review of some of these studies and their main findings follows.

Ioannides and Seslen (2002) investigate the distribution of wealth and income in neighborhoods and contrast these with national income and wealth distributions using data from the American Housing Survey and the Panel Study of Income Dynamics. They assert that differences among individuals in terms of income may not necessarily imply differences in terms of wealth. Neighborhoods may be mixed in terms of people in different age groups, whose incomes differ because they happen to be on different points in the life cycle, but whose wealth differs by less. Housing value showed the smallest amount of mixing, followed by income, then total net wealth. Results show that individual sorting by both income and wealth results in partial but incomplete sorting in both characteristics.

Dow (2003) simulates an agent-based approach to housing choice throughout a city using a simulated auction market that allocates households to properties dynamically. He then estimates whether neighborhood externalities can result in a non-monotonic pattern of income distribution. Properties are ranked according to their desirability and households are simulated to move into the properties in 2 waves (each wave has the same income distribution). The author finds that when the rate of growth is fast, the distribution of people collapses towards the ideal (monotonic distribution) with some variation. There is

an uneven distribution of income at the start, but the effect diminishes over time. Dow concludes that neighborhood externalities can cause income mixing when the second wave of households is added slowly. In this case, the city tends to converge to a monotonic income distribution with each wave.

Ioannides (2004) utilizes several econometric models to estimate the extent of income mixing within micro-neighborhoods (clusters delineated by the American Housing Survey). He finds that renter neighborhoods show less mixing and that the higher the level of grouping of the data, the smaller the extent of sorting. These findings indicate the importance of accounting for neighbor selection because he finds that neighbors' incomes are dependent on those of their common neighbor. He concludes that there is income mixing in small neighborhoods, but that metropolitan areas are much less sorted than small neighborhoods.

Hardman and Ioannides (2004a, 2004b) assess income mixing at the micro-neighborhood level by utilizing clusters of eleven adjacent homes delineated by the American Housing Survey. They find (2004a) that many low income households are dispersed and that the income mix in U.S. neighborhoods is determined by the housing market, planning, and other elements of public policy. They conclude (2004b) that households that are most likely to live in neighborhoods with medians close to theirs are the richest, followed by the poorest households. They find evidence for "perfect sorting" (i.e., neighborhoods made up of concentrations of households all of whom have very similar incomes) in many neighborhoods at both extremes of the income distribution, so it is more likely that neighborhoods with median incomes near the center of the income distribution will be diverse.[8]

Galster, Booza, and Cutsinger (2008) use the entropy index to determine the degree of neighborhood income mixing in the 100 largest metro areas in the U.S. They find that most neighborhoods (91%) were highly economically diverse, although overall income diversity had declined over the previous two decades. They also find that low-income households, one of the focuses of the article, are as likely to be exposed to high income families as they are to low-income ones.

[8] Both Ioannides (2004) and Ioannides and Seslen (2002) find that the degree of income mixing increases as the level of aggregation increases from the neighborhood to the metropolitan area level.

The Stability of Mixed Income Neighborhoods

As was previously pointed out, there are not many studies that consider the stability of mixed income neighborhoods. Moreover, the few empirical studies that do exist have disparate findings. However, it should be noted that the studies that found stability in mixed income neighborhoods are both case studies of individual cities, while the study that found instability examined the entire nation.

Immergluck and Smith (2002) and Thomas et al. (2004) classify neighborhoods according to their internal income distributions, and then track neighborhoods longitudinally to assess the stability of their classifications.[9] Immergluck and Smith (2002) categorize neighborhoods in the Chicago area as either "highly restrictive", "moderately restrictive", "moderately diverse", "highly diverse", or "low-moderate income" based on the mix of lower and upper income residents in the neighborhood. They identify 72 moderately diverse neighborhoods and 21 highly diverse neighborhoods that were stable from 1993 to 2000. According to their schema, a neighborhood was considered stable if its income mix did not deviate more than plus or minus five percentage points over the study period. Their findings show a considerable degree of stability in the income mix of the neighborhoods they identify as mixed income.

Thomas et al. (2004) study mixed-income neighborhoods in Grand Rapids, MI. They define mixed-income neighborhoods as those reflecting the mix of incomes that exist in the greater urban area. They identify a total of 11 block groups for their study, and these neighborhoods were stable from 1990 to 2000 in their income mix.

Krupka (2005) looked at income mixing in U.S. neighborhoods from 1990 to 2000. He found that "economic forces at work in residence decisions, business location and/or public service provision do not allow extremely mixed neighborhoods to persist" (Krupka 2005: 29). He concludes that although income mixing appears to be unstable, the adjustment process seems to be a slow one.

Correlates of Mixed Income Neighborhoods

Several empirical studies have attempted to identify the correlates of mixed income neighborhoods. The logic in undertaking such an effort lies with the idea that if one understands the

[9] Berube and Tiffany (2004) undertake a similar exercise for cities.

characteristics that are associated with existing mixed income neighborhoods, those characteristics can be replicated or encouraged in neighborhoods wishing to increase income diversity.

In the Thomas et al. (2004) study of mixed-income neighborhoods in Grand Rapids, MI, they identified 11 neighborhoods that contained the same income mix as the larger urban area. In determining what characteristics these neighborhoods shared, they found that these 11 neighborhoods tended to have less vacant housing, less rental housing, lower median income than the metropolitan average median income, lower proportions of families in poverty, and fewer people of color.

Ioannides (2004), Krupka (2006), and Talen (2006) use multivariate techniques to probe the neighborhood correlates of neighborhood income diversity. Ioannides utilizes a national American Housing Survey sample of micro-neighborhoods and measures income diversity by the variance of the natural log transformation of household incomes there. Talen utilizes census tracts in Chicago and measures income diversity by an entropy index based on Census-reported income categories. Krupka (2005) measures income diversity of block groups using the variance of census-defined income group midpoints. Taken together, these studies find a greater likelihood of income mixing in neighborhoods with: more owner-occupants, families with children, and non-white households, higher densities, lower vacancy rates, older housing stock, and greater diversity of housing by tenure and values. The evidence on housing values is contradictory. Krupka finds that more diverse neighborhoods tend to be less stable in their mixture over the course of the 1990s.

Public Policy Interventions Encouraging Income Mixing

Several major federal initiatives have been undertaken in the past few decades to address the growing issues of concentrated poverty and the social ills engendered by it. Since the mid-1990s, policy makers and local developers have been particularly interested in using mixed-income strategies as tools for transforming failed public housing developments (Bohl 2000; Boston 2005; Briggs 1997; Brophy and Smith 1997; Epp 1996; Joseph, Chaskin, and Webber 2007; Khadduri 2001; Popkin, Buron, Levy, and Cunningham 2000; Popkin, Katz, Cunningham, Brown, Gustafson, and Turner 2004; Rosenbaum, Stroh, and Flynn 1998; Schwartz and Tajbakhsh 1997; Smith 2002; Turbov and Piper 2005; von Hoffman 1996).

There are two approaches to poverty deconcentration that have been attempted through federal policy: mixed income development and dispersal programs (Joseph, Chaskin, and Webber 2007).

Mixed income development refers to the revitalization of the original public housing site by demolishing the old project and replacing it with a housing development aimed to attract middle- and high-income residents into market rate units, as well as some of the original low-income public housing residents into subsidized units (U.S. Department of Housing and Urban Development 2003). Thus, mixed income housing "attempts to attract higher income households to developments that are also occupied by the poor" (Schwartz and Tajbakhsh 1997: 71). Dispersal programs grant housing vouchers to low-income families under the condition that they use the vouchers in low-poverty neighborhoods (Varady and Walker 2003). These two types of approaches to poverty deconcentration are each exemplified by federal housing programs administered by HUD[10]. The Housing Opportunities for People Everywhere or HOPE VI Program is a federal grant program which provides funding for the demolition of distressed housing projects, which are then replaced with mixed income developments. The Moving to Opportunity for Fair Housing (MTO) Demonstration Program is a voucher program which allows low-income urban residents to relocate to privately owned housing in more economically advantaged neighborhoods. Each of these public policy initiatives for addressing neighborhood income mixing will be reviewed next.

The HOPE VI Program

The HOPE VI Program was created by Congress in 1992 to address the concerns of unlivable public housing, helping families achieve economic self-sufficiency, and to allow for public housing resident mobility (Clampet-Lundquist 2004b; Katz 2009). Although, as Katz (2009) argues, the goals of the program eventually shifted to include economic integration, deconcentration of poverty, and neighborhood revitalization. The program was a direct result of the National Commission on Severely Distressed Public Housing's effort to eradicate crumbling housing projects across the nation (Clampet-Lundquist 2004b; Katz 2009). Popkin and her colleagues (2004) point out that this program represents a

[10] The two programs to be discussed (HOPE VI and MTO) are simply individual examples of public programs aimed at mixed income development and dispersion of the poor. There are many other programs at the local, state, and federal level which encourage residential income mixing using a variety of forms.

dramatic change in public housing policy as well as being one of the most ambitious urban redevelopment efforts in our nation's history.

The HOPE VI Program works by granting funding to local public housing agencies to revitalize severely distressed projects. These grants are administered by HUD and are to be used for physical revitalization, management improvements, and support services for residents (Katz 2009). During the initial implementation process, HUD secretary Henry Cisneros extended the objectives of the program to include tearing down rather than rehabilitating distressed public housing, replacing demolished housing with smaller-scale, economically integrated housing designed to promote safety and social interaction, giving returning residents access to social support services that promote self-sufficiency, granting non-returning residents housing vouchers and other support services, and requiring local public housing agencies to pursue these efforts in conjunction with public, nonprofit, and for-profit entities (Katz 2009). Since its inception, the HOPE VI Program has enabled the demolition of over 63,000 severely distressed public housing units, with another 20,000 slated for redevelopment (Popkin et al. 2004). Many of the statutory changes to housing policy initiated by HOPE VI received permanent authorization in the Quality Housing and Work Responsibility Act of 1998, thus signifying a "full-scale overhaul of the public housing program" (Katz 2009: 27).

The HOPE VI Program could contribute to neighborhood income mixing in two ways. First, by replacing existing public housing projects, which are typically populated by concentrations of poor households, with mixed income developments, HOPE VI developments can have a direct impact on neighborhood economic diversity. Second, economic diversity could be increased in the low-poverty destination neighborhoods of non-returning residents by the introduction of poor households using vouchers to relocate.

Much of the literature devoted to the study of mixed income housing policies such as HOPE VI focuses on evaluating the feasibility and expected outcomes or benefits of such developments (Brophy and Smith 1997; Fraser and Nelson 2008; Joseph 2006; Joseph, Chaskin, and Webber 2007; Schwartz and Tajbakhsh 1997) as well as the impacts that these programs have had on residents (Clampet-Lundquist 2004a; Clampet-Lundquist 2004b; Crowley 2009; Kleit 2005; Popkin et al. 2004). For instance,

a small segment of the literature contemplates the ability of mixed income developments to address urban poverty (Berube 2006; Fraser and Nelson 2008; Joseph 2006; Joseph, Chaskin, and Webber 2007). These studies all suggest that, while low-income residents may benefit from certain aspects of living in a mixed income environment such as higher quality services and greater social control, the mere mixing of different income groups is not likely to improve the socioeconomic circumstances of low-income residents.

In assessing the feasibility of mixed income housing, Schwartz and Tajbakhsh (1997) find that each development is dependent upon local housing market conditions as well as the physical and demographic conditions of the development. Furthermore, Brophy and Smith (1997) find that successful mixed income developments must be well located and excellently designed and managed in order to attract market-rate renters with locational choices.

As far as impacts on residents are concerned, Popkin et al. (2004) find that of the original residents about twenty percent were living in revitalized HOPE VI developments, one-third had received relocation vouchers, about half moved to other public housing developments, and the remainder moved out of subsidized housing altogether. The fact that such a small fraction of original residents have been able to move back into the revitalized developments has been a major criticism of the HOPE VI Program (Crowley 2009). But Popkin et al. (2004) argue that not returning to the redeveloped site doesn't automatically mean that residents were worse off. In fact, the average tract poverty rate for those who received vouchers dropped from 61 to 27 percent (Popkin et al. 2004). Although HOPE VI has not had a big impact on racial segregation, relocated residents perceive substantial improvements in their neighborhood conditions. Improvements such as reductions in crime, improved mental health, better services and amenities, and better housing conditions were all cited as positive outcomes associated with residents who relocated after HOPE VI redevelopment (Popkin et al. 2004). However, residents who moved to the private market also reported new challenges such as difficulty paying rent and other bills and affording enough food.

One documented negative outcome of HOPE VI redevelopment on residents is the loss of social ties and support systems, which Popkin et al. (2004: 31) argue "may lessen residents' ability to cope with

material hardship." Indeed, the new residential situations that former public housing project residents find themselves in may hinder the development of new social ties due to lack of social interaction with neighbors (Clampet-Lundquist 2004a; Clampet-Lundquist 2004b; Kleit 2005). Moreover, Popkin and her colleagues (2004) point out that HOPE VI relocation disrupted social ties to networks of family and friends and access to formal support systems such as food banks, social service agencies, and clinics. The disruption of social ties ultimately left residents who relocated feeling less secure, uncertain of where to turn for help, lonely, and isolated (Popkin et al. 2004). But despite these negative aspects of the HOPE VI Program, it has successfully moved a substantial number of low-income families into better residential environments.

The MTO Demonstration Program

The Moving to Opportunity for Fair Housing (MTO) Demonstration Program is a housing mobility program which began in the mid-1990s in Baltimore, Boston, Chicago, Los Angeles, and New York City. Although these five cities had differences in the racial-ethnic composition of their MTO-eligible populations and in the nature of their housing markets, they all shared the characteristic of having large, distressed public housing developments in concentrated poverty neighborhoods (Orr, Feins, Jacob, Beecroft, Sanbonmatsu, Katz, Liebman, and Kling 2003). Thus, all of these cities had the potential to benefit from the deconcentration of urban poverty that MTO might provide.

The MTO demonstration program was authorized by Congress in 1992 as part of the Housing and Community Development Act (Goering, Feins, and Richardson 2003). According to Goering, Feins, and Richardson (2003), the program utilized an experimental design to "learn whether improved neighborhood opportunities can significantly affect the lives of low-income public housing residents" (pg. 3). MTO was explicitly aimed at economic deconcentration (Goering, Feins, and Richardson 2003), with income mixing within neighborhoods as its specific goal (Varady and Walker 2003).

Using a computerized lottery system, families who volunteered to participate in MTO in the five cities were assigned to one of three groups: the experimental group, the comparison group, or the control group. The experimental group consisted of families who were required to move from neighborhoods with poverty rates greater than 40% to neighborhoods with poverty rates no greater than 10%, using

traditional Section 8 vouchers. These families also received special, intensive counseling. The comparison group consisted of families who were provided with conventional Section 8 vouchers, but who were not limited in the type of neighborhood to which they could move. The control group consisted of families who were not provided with vouchers and who remained in their conventional public housing units (Del Conte and Kling 2001; Goering and Feins 2003; Goering, Kraft, Feins, McInnis, Holin, and Elhassan 1999; Orr et al. 2003; Varady and Walker 2003).

Implementation of the MTO demonstration program consisted of five administrative responsibilities. First, the public housing administrations in the five participating cities needed to conduct outreach to landlords and families. Second, families were enrolled and a waiting list was created. Third, families' eligibility was determined. Fourth, families were randomly assigned to one of the groups. Then, finally, families in the experimental group received the counseling treatment (Goering and Feins 2003; Goering et al. 1999).

In the five participating cities, 5300 families volunteered for the program. Of those, 4600 met the eligibility requirements and were randomly assigned to one of the three groups. According to Goering, Feins, and Richardson (2003) families stated things such as fear of crime, gangs, drugs, and victimization in their current public housing as reasons why they volunteered for the program. Families also wanted better housing and schools for their children. When compared to other public housing residents, MTO volunteer families were younger and poorer, with lower levels of labor force attachment and higher dependence on welfare (Goering, Feins, and Richardson 2003).

Preliminary results from the MTO demonstration program suggested that families saw improvements in safety, child and parent physical and mental health, and youth delinquency and behavior problems. However, residents in the experimental group didn't see any improvements in economic self-sufficiency (Del Conte and Kling 2001; Katz, Kling, and Liebman 2001). Interim results compiled by Orr and his colleagues (2003) found convincing evidence of real results for MTO-participating families in the domains of housing conditions and characteristics of the schools attended by participating families' children. But just as with the early results, there was no convincing evidence in the domains of

employment, earnings, household income, food security, and general economic self-sufficiency (Goering, Feins, and Richardson 2002; Goering, Feins, and Richardson 2003; Orr et al. 2003).

More recent analyses by Clark (2008), Comey, Briggs, and Weismann (2008) and Ferryman et al. (2008) suggest that the positive effects of MTO have been overstated in previous reports and that "claims for the MTO program as a whole need to be treated with a great deal more caution than they have been to date" (Clark 2008: 515). Specifically, Comey et al. (2008) find that only about one-third of families participating in the experimental group remained in low-poverty neighborhoods over time. Ferryman et al. (2008) find that MTO failed to provide families with access to high-performing schools.

Varady and Walker (2003) also point out that many families who moved under the MTO program found it difficult to form meaningful social relationships with their new neighbors and some children had problems adjusting to their new schools. It is these authors, however, that demonstrate MTO's biggest flaw. That is, when compared to the families who received conventional Section 8 vouchers, families who received intensive counseling and were required to move to low-poverty neighborhoods (the experimental group) performed no better on many of the outcomes that were investigated. In fact, unlike the conventional Section 8 program, the MTO demonstration program actually *limits* the residential choices of participating families, rather than expanding housing choice. So, although MTO did manage to improve the lives of some individual families, its usefulness in helping families gain economic self-sufficiency by moving them to lower-poverty neighborhoods remains to be seen.

Before moving on to a discussion of dual diversity in neighborhoods, I will briefly summarize the foregoing discussion of income mixing in neighborhoods. First, unlike racial diversity in neighborhoods, income mixing is relatively commonplace. However, although income mixing in neighborhoods is prevalent, concentrations of similar-income households within neighborhoods are also present in American neighborhoods (although not as prevalent as income mixing). When assessing income mixing in neighborhoods, many of the same issues concerning measurement must be confronted as when investigating racial mixing. Some correlates of income diversity in neighborhoods that have been identified in the empirical literature include lower levels of vacant and rental housing, fewer people of color, higher density, and the presence of older housing stock. Lastly, two public policy interventions that

have been undertaken to encourage income mixing in neighborhoods include the HOPE VI program and the MTO program.

DUAL DIVERSITY IN NEIGHBORHOODS

There are a handful of articles that examine both racial diversity and income diversity in neighborhoods (Freeman 2009; Immergluck and Smith 2002; Immergluck and Smith 2003; Talen 2006a; Talen 2006b; Vandell 1995). However, none of these articles take into consideration the intersection of both race and income; each of these articles examines income mixing and race mixing within neighborhoods separately. Thus, there is obviously a real paucity of literature that investigates the intersection of racial and income diversity in U. S. metropolitan neighborhoods. To date, only one quantitative study has been undertaken to try to identify neighborhoods that are both racially and economically diverse (Turner and Fenderson 2006). Since this study is similar to mine in a number of ways, including the units of analysis, the dataset used for the analyses, and the metropolitan areas of interest, this study will be carefully reviewed and critiqued here.

Like my study, the Turner and Fenderson (2006) report categorizes neighborhoods (proxied by census tracts) in the 100 largest U.S. metropolitan areas according to the degree of income and racial-ethnic mixing present within each one. In addition to analyzing race and income mixing in neighborhoods, the authors also take into consideration the country of origin of residents within census tracts (or, put differently, the proportion of foreign born residents within each tract)[11]. However, unlike my study, Turner and Fenderson choose to use a single set of national definitions for their neighborhood categories, rather than allowing the definitions to vary by city or metropolitan region. Moreover, these definitions of neighborhood categories consist of arbitrary cut-off points in the proportions of racial, ethnic and income groups that they represent. After describing Turner and Fenderson's findings, I will discuss the significance of the differences between my study and theirs, as well as distinguishing how my study will overcome the shortcomings of Turner and Fenderson's study.

[11] Since the results of Turner and Fenderson's (2006) examination of foreign born persons within tracts has no equivalent in my study, I will not review their findings on this particular variable.

When categorizing neighborhoods by their racial make-up, Turner and Fenderson use four exhaustive and mutually exclusive categories: predominantly white (population >90% non-Hispanic white); majority white (population non-Hispanic 50-90% white); majority minority (population 10-50% non-Hispanic white); predominantly minority (population <10% non-Hispanic white). After categorization, they find that more than half of the neighborhoods they analyzed (56.6%) were comprised of populations with significant numbers of whites, minorities, and immigrants, where no single racial or ethnic group dominates the minority population. However, on the flip side of that, there are also a number of tracts that remained majority white in 2000. In fact, this group of neighborhoods made up the largest single category, accounting for 43% of tracts. In most tracts that were classified as predominantly minority (12% of all tracts) or majority minority (20% of all tracts), the minority population is dominated by a single minority group, whereas in most predominantly and majority white tracts, the minority population tended to be mixed.

Geographic differences in the distribution of tracts by degree of racial mixing include differences between central cities and suburbs, as well as differences by region of the country. Suburban tracts are more likely to be predominantly white, while central city tracts are more likely to be either majority minority or predominantly minority. Regionally, the South and West have much lower shares of predominantly white tracts than in the Northeast and Midwest, while having substantially higher proportions of majority white and majority minority tracts.

In their categorization of neighborhoods by their income mix, Turner and Fenderson utilize five income ranges, based on income quintiles for all households nationwide. These categories include: very-low income (less than $20,000); low-income ($20,000 - $35,000); moderate-income ($35,000 - $60,000); middle-income ($60,000 - $100,000); and high-income (more than $100,000). Since the “circumstances of household in the lowest income group are of central importance to many researchers and policy analysts,” Turner and Fenderson adopt a categorization scheme that groups tracts based on their share of very-low-income households (Turner and Fenderson 2006: 18). Tracts are thus categorized into the following groups: less than 10% very-low-income; 10-20% very-low-income; 20-30% very-low-income; and more than 30% very-low-income. After categorization, they find that largest share of neighborhoods

falls into the 10-20% very-low-income category (making up about one-third of all neighborhoods). As far as income mixing is concerned, they find that tracts are far more mixed with respect to income than they are according to race, ethnicity, or country of origin. Geographically, the patterns of income mixing appear to be somewhat uniform across the nation.

Concerning the intersection of racial-ethnic diversity and income diversity within neighborhoods, Turner and Fenderson find clear relationships between race-ethnicity and income at the extremes. Tracts with high shares of very-low-income residents have higher shares of minorities, while tracts with low shares of very-low-income residents have higher shares of whites. But between those two extremes, the authors find a wide variety of racial-ethnic and income group combinations. In fact, they conclude that around 35% of tracts "exhibit substantial diversity with respect to race, ethnicity and income" (Turner and Fenderson 2006: 2).

The last effort that Turner and Fenderson undertake is an analysis of the stability of mixed tracts from 1990 to 2000. Since they are unable to examine changes in income diversity over this period of time, they only analyze stability and transition in tracts according to their racial and ethnic diversity. They find that the share of tracts that were predominantly white declined from 38% in 1990 to 26% in 2000. The biggest increase occurred in neighborhoods that were majority white but not dominated by either blacks or Hispanics. Nearly three-quarters of all tracts they analyzed, however, stayed in the same basic category of minority share over the decade, while one quarter shifted to a higher degree of diversity. Nearly no tracts shifted to a lower level of racial diversity over the decade.

Although this report by Turner and Fenderson offers a good starting point for analyzing the intersection of race-ethnicity and income in census tracts, the analyses contained within suffer from several methodological flaws that my study will attempt to avoid. For instance, the fact that Turner and Fenderson use constant definitions of diversity across all of the metro areas they analyze could be problematic. Using constant definitions doesn't allow for one to take into consideration the larger social context within which the neighborhood is situated (in this case, the metropolitan area). So if a neighborhood is situated within a metro area that has very low diversity to begin with, it would be quite difficult for any particular neighborhood within that metro area to achieve any level of diversity. To avoid

this pitfall, my study will utilize the entropy index, which takes into account the size of the racial-ethnic and income groups in question, in addition to measuring diversity in a tract as a proportion of the diversity present in the metro area. This approach takes the larger social context into account, while using arbitrary proportional cut-off points does not.

An additional flaw in Turner and Fenderson's (2006) report is the fact that their analyses don't allow for them to assess the stability or transition of neighborhoods that they determine are mixed both racial-ethnically and economically (i.e., dually diverse neighborhoods) from 1990 to 2000. My study will execute a thorough examination of the stability of dually diverse neighborhoods during the 1990 to 2000 decade, as well as looking at changes as far back as 1970.

Lastly, Turner and Fenderson do not attempt to assess any of the factors that contribute to the development and maintenance of dually diverse neighborhoods. An integral part of my study will be to analyze the multivariate correlates that are associated with the presence of dually diverse neighborhoods. Moreover, I will use a statistical design which will reduce endogeneity bias, an issue that has thwarted the usefulness of previous empirical investigations into the correlates of diverse neighborhoods.

MY CONTRIBUTIONS

The dissertation research described in detail in the next chapter will fill a gap in the scholarly literature on dually diverse neighborhoods, given the fact that there is such little evidence that this type of neighborhood actually exists. Although Turner and Fenderson (2006) execute an analysis of neighborhood sharing by both income groups and racial-ethnic groups, their analyses do not actually utilize a quantitative index measure of diversity that takes into account the diversity of the greater metropolitan region. Rather, their study relies on proportions of demographic groups in order to classify neighborhoods. My research will improve upon Turner and Fenderson's (2006) in classifying neighborhoods simultaneously by racial mix and income mix by using a proven and reliable multi-group measure of diversity (the entropy index), which has been deemed the superior measure of diversity by previous research (Reardon and Firebaugh 2002; White 1986).

An additional contribution that will be provided by this study is a baseline determination of the factors associated with the development and maintenance of dually diverse neighborhoods. Furthermore, the regression analyses will correct for a common flaw in previous quantitative research into neighborhood diversity, endogeneity bias. Since there have been no quantitative investigations into the determinants of dually diverse neighborhoods in the past, these regression analyses should be viewed as exploratory. Yet, the findings of these analyses could help to isolate factors that could be used by policymakers and community development leaders to help foster the growth of dually diverse neighborhoods.

CHAPTER 3

DATA & METHODOLOGY

The forthcoming chapter will detail the methodology that will be used to examine the extent to which dually diverse neighborhoods exist in U.S. metropolitan areas, the factors associated with their development, and the data I will use to assess these. The analyses will include descriptive portraits of the characteristics of dually diverse neighborhoods, as well as regression analyses to determine correlates of dually diverse neighborhoods. This chapter is organized as follows. I begin by reiterating the research questions that will serve as the impetus for the analyses, I will then continue by describing the parameters of the study, time frame, and units of analysis. I will then proceed to describing the data sources, variables of interest, diversity index measure, and neighborhood race and income typologies. Lastly, I will describe the statistical model that will be used to investigate the determinants of dually diverse neighborhoods.

RESEARCH QUESTIONS

The methods detailed in this chapter have the overarching aim of identifying dually diverse neighborhoods, describing their common characteristics, and identifying their determinants. Specifically, the following research questions will be addressed using the methodology delineated below:

1) To what extent do dually diverse neighborhoods exist in U.S. metropolitan areas?
2) Has their prevalence changed over the last 30 years?
3) Where are dually diverse neighborhoods most prevalent?
4) Are dually diverse neighborhoods stable over time?
5) What does the demographic profile of the typical dually diverse neighborhood look like?
6) What factors influence the emergence of dually diverse neighborhoods?

SPATIAL AND TEMPORAL PARAMETERS OF THE STUDY

This section will present the spatial and temporal parameters of the study. First, the timeframe that the study will encompass will be discussed, and then the spatial units of analysis will be described.

Temporal Parameters

The timeframe considered in this study is 1970 to 2000, with observations made in 1970, 1980, 1990, and 2000. This time period was selected for two reasons. First, prior to 1970 the requisite census tract data are either unavailable or cumbersome to employ.[12] Second, the dataset utilized, which will be described in detail below, was limited to observations in these four census periods. This dataset allows for comparisons between the different census time periods while keeping the same geographic boundary definitions at each point in time.

Spatial Parameters

Spatially, two types of units of analysis will be employed, one primary and one secondary. The primary units of analysis are the 100 largest metropolitan areas—Metropolitan Statistical Areas (MSAs) and Primary Metropolitan Statistical Areas (PMSAs)—in the United States, according to the 2000 Census (see Appendix A for a listing of these metro areas in rank order according to population in 2000). Advantages to using metropolitan areas as the primary units of analysis include the fact that they yield a reliable, adequately sized dataset upon which to run multivariate regressions, they encompass a representative regional sampling of the United States, and they yield a sample accounting for 61.4% (N=172,896,354) of the total U.S. population in 2000.

Following the work of Abramson et al. (1995), the metropolitan area was chosen as the primary unit of analysis because, by definition, its boundaries capture the widest range of income diversity of the constituent urban regions. An alternative approach used in other studies is to focus on central cities (Nyden, Lukehart, Maly, and Peterman 1998a; Nyden, Maly, and Lukehart 1997). However, with the decline of the central city population as a share of the region, especially in the Midwest and Northeast, it seems that central cities might not be the best unit of analysis because they provide only a limited glimpse of the metropolitan neighborhood diversity spectrum.

[12] Several data sets exist that contain tract level data for the period of 1940 to 1970, including the Elizabeth and Donald Bogue data series housed at the Inter-University Consortium of Political and Social Research (www.icpsr.org). However, using the data is cumbersome and more importantly, not all of the metropolitan areas included in this study are covered uniformly over time.

As with most units of geography used in the U.S. Census, metropolitan area boundaries can and do change over time.[13] Consequently, utilizing a constant geographic definition of metropolitan areas across the thirty-year timeframe would be artificial and inappropriate.[14] Instead, this study will use whichever boundaries were appropriate for the year in which particular data were measured for the 100 largest metropolitan areas (in 2000). What this means is that the boundaries of the metropolitan areas are allowed to change for each census, thus permitting the analyses to capture the full array of race and income diversity for the population then residing in each area. According to Abramson et al. (1995: 48-49) "the changing boundaries of metropolitan areas generally reflect real changes in the way the areas are organized and should be incorporated into the analysis." Hence, this study does not adjust for metropolitan area boundary changes during the time period under study.

The secondary unit of analysis that will be used in this study is the census tract, which will serve as a proxy for neighborhood. Selecting the census tract to approximate neighborhood has been standard practice in the study of neighborhood-level phenomena since the Census began making its data available to researchers and continues with more recent work (Abramson, Tobin, and VanderGoot 1995; Galster, Quercia, Cortes, and Malega 2003a; Galster and Mincy 1993; Jargowsky 1996c; Jargowsky 1997; Kasarda 1993b; Massey and Denton 1988a; Massey and Eggers 1990; Massey and Eggers 1993). In justifying the use of census tracts as the unit of analysis in neighborhood studies, Iceland, Weinberg, Steinmetz (2002) point out that census tracts generally contain 2500 to 8000 people, are defined with input on the local level, typically don't change from census to census (except to subdivide), and most importantly, are intended by the Census to represent neighborhoods. So, although using the tract as a proxy for neighborhood has not been embraced by all researchers of neighborhood dynamics[15], this

[13] Metropolitan areas have changed numerous times between 1970 and 2000—new ones have been created, some have expanded due to growth in outlying counties, others have been subdivided based on changes in commuting trends. The United States Office of Management and Budget (OMB) redefines metropolitan areas after each census as new data on population and commuting become available.

[14] One option would have been to include in subsequent years only those census tracts that constituted the 1970 sample of metropolitan areas, but this would have excluded areas of post-1970 suburban growth. Another option would have been to work backward from all tracts constituting metropolitan areas in 2000, but this would have produced many missing observations because not all areas of the country were tracted in 1970 and 1980.

[15] According to Massey and Denton (1988), census tracts possess the following flaws: 1) by definition, they are intended to be homogeneous in terms of race/ethnicity, income, occupation and housing; 2) there are disparities in the geographic size of tracts between central cities and suburbs because population rather than geography determines tract size—in areas where the population is less dense (e.g.

study will keep with the majority of past studies in using the tract as its operationalization of neighborhood.

In order for a particular tract to be considered for analysis, however, it had to meet certain criteria (Ellen 1998; Lee and Wood 1990):

- Total population of 500 persons or greater
- Group quarters population that is not more than 50% of the total population, and
- Having a reported family income distribution.[16]

Utilizing tracts with a population greater than 500 individuals provides a threshold value which helps ensure a robust sample size from each tract. Additionally, tracts with large group quarters populations (such as prisons, college dorms, and nursing homes) are irrelevant to this study and are thus excluded to prevent them from skewing the results. Finally and most importantly, tracts without income data were eliminated from the study, as this variable will be a key component of the analyses of the characteristics of dually diverse neighborhoods.

Despite its many analytical advantages, it must be noted that the census tract may not be the ideal unit of analysis for operationalizing "neighborhood" (Massey and Denton 1988a). Residents often conceive of several spatial scales of neighborhood, the smallest of which is their own block-face. Moreover, it is conceivable that census tracts are of a scale that internal segregation of different racial and/or income groups that is undetectable at the tract level may be possible. Hence, one must use caution when interpreting the results of analyses that use census tracts, recognizing that the calculated exposure of different groups to each other in the same census tract does not necessarily mean that these groups live on the same blocks or that they interact in a socially meaningful or sustained way.

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outlying suburbs) census tracts tend to be larger when compared to more dense tracts in central cities. Yet, Massey and Denton (1988: 299) also note that "switching down to blocks or up to tract groups will not eliminate any of the problems."

[16] To protect respondent confidentiality, certain demographic measures like income are suppressed under certain circumstances. Thus, for some tracts, total population and racial characteristics are reported, but no income statistics are available.

DATA SOURCES

The primary data source for this study is the Neighborhood Change Database (NCDB), which was created by GeoLytics in conjunction with the Urban Institute. The NCDB is a unique dataset, in that it contains census "long form" data from 1970, 1980, 1990, and 2000 which are normalized to tract boundaries as they were defined in 2000. The data are referred to as "long form" because they are derived from a sample of respondents who are asked more questions than the typical census respondent (thus making the survey instrument longer). In addition to variables provided in the short form version of the census (age, sex, race/ethnicity, and housing tenure), the long form data provide statistics on many variables of interest to this study such as income, labor force participation, marital status, migration, and citizenship, as well as more detailed housing data including current value and year the dwelling was built. The fact that the data collected at each census period are adjusted to 2000 boundaries allows for comparisons of directly corresponding geographic entities across time, a characteristic that will be essential to the quantitative model presented below.

In order to obtain some metropolitan-level income measures, several other data sources are needed, as NCDB only contains tract-level data. For 1970 and 1980, printed reports were used to obtain median family income data (U.S. Bureau of the Census 1973; U.S. Bureau of the Census 1983). For 1990 and 2000, median family income data at the metropolitan-level were obtained from the Census Bureau's FactFinder website (www.factfinder.census.gov).

VARIABLES OF INTEREST: INCOME & RACE-ETHNICITY

The two sets of variables providing the foundation for the study are the family income distribution and the distribution of racial-ethnic groups within census tracts. Determining the income and racial-ethnic mix of neighborhoods is the first step in identifying dually diverse neighborhoods. The following income and racial-ethnic typologies were developed in order to achieve this goal.

Variables Specifying Family Income Distribution

The family income distribution of a neighborhood is operationalized using a typology which places families within particular categories based on their income for the year prior to the census data collection

year. So for 1970, the family's income in 1969 is evaluated, for 1980, the family's 1979 income is considered, and so on.

The NCDB provides a grouped frequency distribution of family income for each decade by census tract. From these distributions, family income groupings based upon HUD income guidelines were calculated (U.S. Department of Housing and Urban Development 1996).[17]

Six, mutually exclusive income groups were specified for the study, based upon the area median income (AMI) for families for the particular metropolitan area:

- Very Low Income (VLI): families earning less than 50% of AMI
- Low Income (LI): families earning 50% - 79% of AMI
- Moderate Income (MI): families earning 80% - 99% of AMI
- High-Moderate Income (HMI): families earning 100% - 119% of AMI
- High Income (HI): families earning 120% - 150% of AMI
- Very High Income (VHI): families earning over 150% of AMI

Although these measures are not based upon the same criteria as the U.S. Census Bureau uses when considering poverty, the very-low and low-income groups generally measure the same end of the income distribution, albeit somewhat more expansively. This specification offers several advantages over the conventional use of the federal poverty line in creating a simple dichotomy of poor and non-poor households, however. First, implicit controls for regional and metropolitan differences in income levels and cost of living are included in the measures by providing a standard that is based upon each metro area's median income. Second, because income distribution categories are standardized across metro areas by relating each to its own AMI, straightforward comparisons among metros, both cross-sectionally and over time are possible.

While the grouped family income distribution found in the NCDB provides the necessary data to create these income categories, the fact that numerical boundaries of the six income groups defined by

[17] The HUD typology for income categories was used rather than the categories provided by the U.S. Census Bureau for two reasons. First, using the HUD typology does not require one to control for inflation, which is not only cumbersome but also has associated errors. Second, the categories that the Census Bureau uses have not remained constant over time which means income categories between 1970 and 2000 would have needed to be bridged. Instead, the HUD income typology provides a simplistic yet accurate measurement of income categories.

HUD guidelines did not match the grouped NCDB income distribution data had to be confronted. Based on U.S. Census procedures (DeNavas-Walt, Cleveland, and Webster Jr. 2003) , the income data were interpolated in the NCDB categories to obtain a reasonably accurate estimate of family counts within each category. For income ranges of $2,500 or less, linear interpolation was used. Pareto interpolation was used for larger income ranges.

Variables Specifying Racial/Ethnic Groups

The second set of foundation variables of the study is concerned with the racial-ethnic distributions within neighborhoods. Because of limitations of census data and subsequently NCDB data, some data manipulations were necessary in order to identify persons of Hispanic ethnicity.[18] The U.S. Census Bureau does not consider Hispanic a racial category, but rather an ethnic category, thus persons can be of any racial group and either Hispanic or non-Hispanic. Hence, data on two racial groups, white and black, are cross-tabulated with Hispanic ethnicity in order to separate out persons by racial group that are non-Hispanic and Hispanic. Hispanic persons, regardless of race, therefore, are treated as a separate demographic group in this study. Furthermore, the U.S. Census Bureau allowed respondents to select more than one racial category for the first time in 2000. Prior to this point in time, individuals were coded with only one racial category. In this study, only persons that identify with one racial group are considered.[19] Altogether, there are four mutually exclusive demographic groups in this study: white, black, Hispanic, and other.

Additional Demographic and Housing Variables

In addition to the primary variables, income and race/ethnicity, some additional key demographic variables are included in the study in order to describe the characteristics of dually diverse neighborhoods. Included in the demographic profiles of dually diverse neighborhoods are descriptive statistics on such variables as age distribution, housing type and tenure, mobility, and immigrant/national status. These variables were obtained directly from the NCDB.

[18] Since 1970, the Census Bureau has changed how racial characteristics are enumerated. Decadal changes have meant that racial categories are not completely comparable across censuses, but they are close. As a result, this study defines racial groups slightly differently than the Census Bureau does.
[19] Persons of multiple racial groups comprised a small amount of the total population of the 100 largest metro areas in 2000 (3.03%).

MEASURE OF NEIGHBORHOOD DIVERSITY

The index that will be utilized to assess neighborhood diversity in terms of race and income is the entropy index. A description of its qualities and formula for calculation are presented below.

Entropy

In order to assess the amount of income and race diversity present in the census tracts that comprise the sample, the multi-group entropy index (H) will serve as the primary summary measure, which was first introduced by Theil and Finizza (1971). The entropy index is an attractive measure of overall diversity in a neighborhood for several reasons. First, it allows for the comparison of more than two groups—a limitation that affects many other measures of segregation and diversity. Second, the entropy index is decomposable, which allows one to look at changes in the relative importance of each dimension over time (Fischer 2003). Because of these advantages, the use of the entropy index has been advocated for by many researchers as a principal measure of diversity (Fischer 2003; Iceland 2002; Reardon and Firebaugh 2002; Reardon and Yun 2001; White 1986; White 1987). The entropy index is calculated as follows:

$$H_i^* = \frac{H_i}{\ln M} = -\frac{\sum_{m=1}^{M} \pi_{im} \ln \pi_{im}}{\ln M}$$

Where:

π_{im} = proportion individuals in group *m* (*m* = 1, 2, … , *M*) in tract *i*

π_m = proportion individuals in group *m* (*m* = 1, 2, … , *M*) in whole metropolitan area

M = number of groups.

In this study, the entropy index is scaled such that scores range from 0 (least diverse) to 1 (most diverse).

CLASSIFYING DIVERSE NEIGHBORHOODS

Once an entropy score for both race and income were calculated for each tract in the sample, the tracts were then categorized into separate income and race typologies which convey the degree of

diversity present within the neighborhood. The details of these typologies and explanations of what they represent follow.

Income Diversity Typology

Using the income entropy scores for each census tract, a typology was created to quantify income diversity at the neighborhood level. The neighborhood income diversity typology has four categories (low diversity, moderate diversity, high diversity, and very high diversity). The bounds of each category are defined by the level of income diversity, which is measured by an entropy score:

- *Very High Diversity*: Entropy greater than or equal to 0.92
- *High Diversity*: Entropy greater than or equal to 0.87 and less than 0.92
- *Moderate Diversity*: Entropy greater than or equal to 0.69 and less than 0.87
- *Low Diversity*: Entropy less than 0.69.

Unlike the racial diversity typology which will be presented below, the economic diversity typology constitutes a smaller number of categories since preliminary screening of the data indicate a smaller degree of variation in the income entropy scores. What this means is that almost all of the neighborhoods in the sample displayed some degree of economic diversity. Due to this fact, I have chosen to leave out the "Not Diverse" category in the economic diversity typology given that less than 10% of the neighborhoods in any given decade fit this classification.

Each of the boundaries of the categories presented in the typology above is based on an archetypical situation. The approach was to specify a series of archetypes that offer an easily understood, intuitively appealing mixture of income groups, then to calculate an entropy score associated with this mixture. For example, to be highly diverse it is specified that a census tract must have at least as much diversity as one with the following composition: one income group (VLI, LI, MI, HMI, HI or VHI) comprising 30% of the tract population, one income group comprising 25%, one group comprising 20%, two groups each comprising 10% of the tract population, and one group comprising 5% of the tract population. Thus, in order for a neighborhood to be classified as very high diversity, there must be representation of families from each of the six income categories. The above described mixture translates into an entropy value of 0.92. Any neighborhoods meeting or exceeding this degree of diversity as embodied in this entropy score are thus categorized as "very high diversity." Similarly, the

threshold for receiving high-diversity classification is one income group comprising 33.3% of the tract population, four other groups at 16.7% each and one group not represented. The moderate-diversity neighborhood threshold is defined as one group comprising 50% of the tract population, three other groups at 16.7%, and two groups not represented, corresponding to an entropy score of 0.69. Any tract with less than this limited mixture is defined as a low economic diversity neighborhood.

When classifying neighborhoods according to their mixed income status, I will consider any neighborhood in the top two diversity categories (high diversity and very high diversity) an economically diverse neighborhood. Thus, any tract that has an income entropy score of 0.87 or greater will be considered economically diverse.

Race Diversity Typology

The same methods used to create the income typologies are also used to create race typologies. By creating archetypes of mixed race neighborhoods, six racial diversity categories are defined. Six race typology categories are utilized (as compared to the four that are used in the income diversity typology) so as to capture the finer graduations one would expect to find with racial data. Based on initial observations of the data, six categories provide the best measure of multi-group diversity. The categories are defined by the following entropy scores:

- *Very High Diversity*: Entropy greater than or equal to 0.79
- *High Diversity*: Entropy greater than or equal to 0.69 and less than 0.79
- *Moderate Diversity*: Entropy greater than or equal to 0.46 and less than 0.69
- *Low Diversity*: Entropy greater than or equal to 0.23 and less than 0.46
- *Very Low Diversity*: Entropy greater than or equal to 0.14 and less than 0.23
- *Not Diverse*: Entropy less than 0.14.

The boundaries of the categories are again based on archetypes created for each group. Each archetype defines the lower boundary for each category. Very high diversity neighborhoods are defined as ones in which one of the four racial groups comprises 50% of the population, one group represents 40%, and two groups comprise 5% each. In very high diversity neighborhoods all groups are represented in some fashion. To expect all four racial groups to be represented at the same level (25%) is somewhat unrealistic given that equal distribution of racial groups is rarely found in real world examples. Thus,

labeling a neighborhood where one group is no more than 50% of the population and all other groups are represented in some fashion as "highly diverse" seems reasonable. As for high diversity neighborhoods, they are defined as one group at 60%, two groups at 20% each, and one group not represented. Moderate diversity neighborhoods have one group at 80%, two groups at 10% each, and one group not represented. Low diversity neighborhoods are defined as one group at 90%, one group at 10% and two groups not represented. Finally, very low diversity neighborhoods are defined as one group at 95% of the population, one group at 5% and two groups not represented. Anything less than this minimal mix is defined as "not diverse."

The definition of racial diversity which includes at least three racial groups is intentionally stringent. A neighborhood in which two groups are equally present would only produce an entropy score of 0.50. However, if the same two groups are evenly distributed with more than 10% of a third group, the neighborhood would have a score above 0.69, the minimum threshold for moderate diversity. Thus, diversity defined as two groups being equally present is not sufficient for this study—a third group is required to be present.

When classifying neighborhoods according to their level of racial diversity, I will consider any neighborhood in the top two diversity categories (high diversity and very high diversity) of my race typology as racially diverse neighborhoods. This means that any neighborhood with a race entropy score greater than or equal to 0.69 is considered racially diverse for my purposes.

Dual Diversity

After obtaining both income entropy and race entropy scores and classifying neighborhoods according to these measures independently, it is then possible to classify neighborhoods according to their scores on both measures. It is the intersection of racial diversity and income diversity in neighborhoods that is of ultimate interest to this study, and thus, identifying dually diverse neighborhoods will require identifying neighborhoods that meet both of those qualifications. Therefore, neighborhoods with income entropy scores of 0.87 or greater (those classified as high diversity and very high diversity in the income typology) in addition to having race entropy scores of 0.69 or greater (those classified as high diversity and very high diversity in the race typology) were categorized as dually diverse.

The foregoing discussion describes the general approach that will be taken to identify dually diverse neighborhoods and their demographic characteristics. Census tracts are the basic unit of analysis for the investigation of neighborhood race and income diversity. Though they have their limitations, the operational advantages of using tracts outweigh the disadvantages.

For census tracts in the 100 largest metropolitan areas in 2000, I will analyze a host of income, race, demographic, housing, and other characteristics using an appealing, quantitative means of delineating the income and racial diversity of neighborhoods. These analyses will be based on entropy scores for the distribution of race and income groups defined consistently across metro areas and over time. The aforementioned data and procedures for categorizing neighborhoods will be used to determine the prevalence, trends and geographic patterns of dually diverse neighborhoods in the United States. The next section will turn to a discussion of the regression model that will be utilized to assess determinants of dually diverse neighborhoods.

MULTIVARIATE REGRESSION MODEL

In order to determine predictors of the incidence of dually diverse neighborhoods, this study will employ multiple regression analysis, using the same sample of large metropolitan areas as described above, with minor exceptions.[20] The exploratory analyses are guided by the conceptual model conveyed in Figure 3.1, below.

One will notice by examining Figure 3.1 that most of the variables in the regression model are expressed as changes from 1990 to 2000. This indicates that the model being utilized is a difference model. The use of such a specification enables me to model decadal changes in metropolitan level variables across the sample without being concerned with idiosyncratic characteristics that may be associated with individual metro areas. This type of specification assumes that such hard-to-measure idiosyncrasies are time invariant and therefore allows me to obviate the need to measure them. This point is more clearly demonstrated by the first-difference model formulas:

[20] Multivariate outliers were identified using the Mahalanobis distance procedure. Mahalanobis distance is defined as the distance of a case from the centroid of the remaining cases where the centroid is the point created by the means of all the variables in the regression (Tabachnick & Fidell, 1996). In this situation, cases with a chi-square value greater than 46.80 (df = 21) were excluded from the analysis. The 2 excluded cases were Portland-Vancouver, OR-WA PMSA and Ann Arbor, MI PMSA.

$$y_{it1} = \alpha_1 + \mathbf{x}'_{it1}\boldsymbol{\beta}_1 + \gamma_i + \varepsilon_{it1} \quad [1]$$

$$y_{it2} = \alpha_2 + \mathbf{x}'_{it2}\boldsymbol{\beta}_2 + \gamma_i + \varepsilon_{it2}, \quad [2]$$

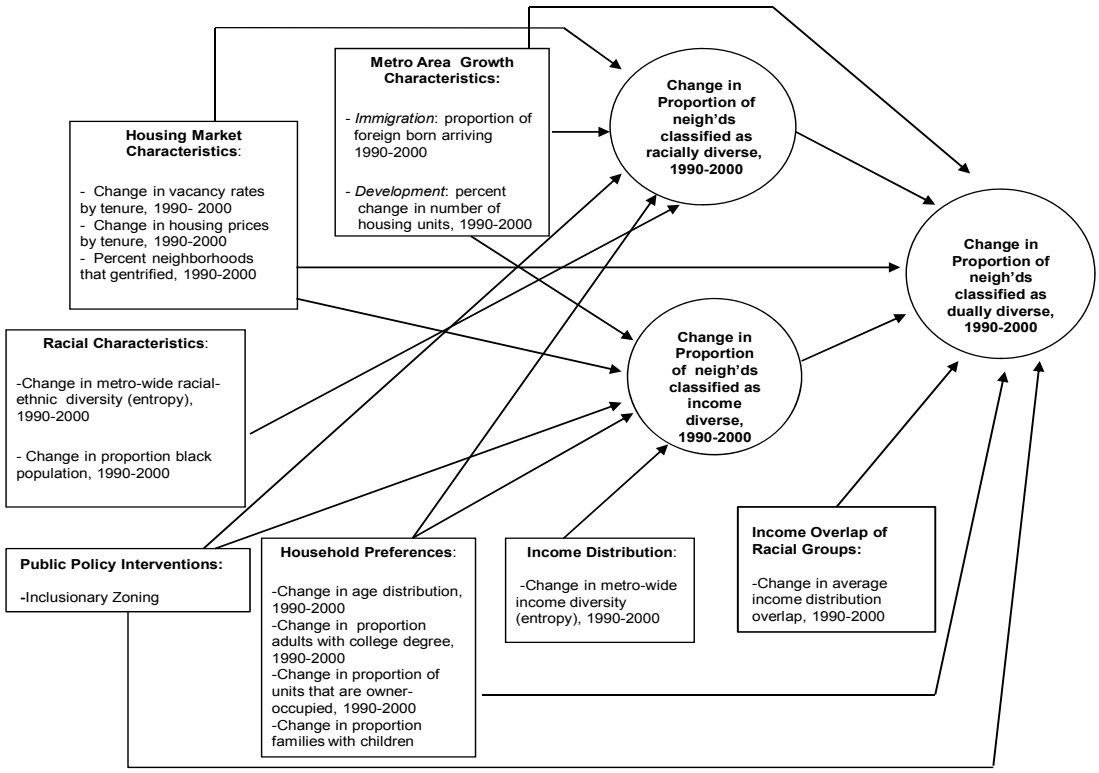
where y denotes the proportion of neighborhoods classified as dually diverse, i denotes the metropolitan area, t denotes time period (1990 and 2000, respectively), $\mathbf{x}_{it1}$ and $\mathbf{x}_{it2}$ denote a vector of explanatory variables in each equation, and ε_{it1} and ε_{it2} denote a random disturbance term in each equation. The term γ_i captures all unobserved, time-invariant characteristics of a metropolitan area that equally affect y_{it1} and y_{it2}. Now I seek an estimate of $\boldsymbol{\beta}$ (which is assumed to be time-invariant), but such will suffer from omitted variable bias because γ_i cannot be measured but may be correlated with $\mathbf{x}_i$. However, this problem can be solved by taking the difference between [2] and [1], obtaining the equation to be estimated in the regression analyses:

$$\Delta y_{it2} = \alpha_{12} + \Delta\mathbf{x}'_{it2}\boldsymbol{\beta} + \varepsilon_{it12} \quad [3]$$

where $\alpha_{12} = \alpha_2 - \alpha_1$ and $\varepsilon_{it12} = \varepsilon_{it2} - \varepsilon_{it1}$ and is assumed to have the standard statistical properties. My model thus consists of an equation explaining the changes from 1990 to 2000 in the proportion of dually diverse neighborhoods as a function of the changes in a variety of explanatory variables over the same period.

I am able to conduct my multivariate analyses which model changes from 1990 to 2000 by using a special tabulation of census tract data in the NCDB which holds the census tract boundary geographies constant from 1990 to 2000. Thus, I am ensured that I am examining neighborhood effects occurring over the decade within the same geographic area from one decadal census to the next.

Figure 3.1: Conceptual Model of the Determinants of Dually Diverse Neighborhoods



Ultimately, this study is interested in the incidence of neighborhoods within a metropolitan area that are classified as highly diverse in terms of both income and racial-ethnic composition. This set of neighborhoods is, of course the intersection of two larger sets of neighborhoods: those which are highly diverse in income and those which are highly diverse in racial-ethnic composition. Seven metropolitan area characteristics (or sets of characteristics) are presumed to be explanatory, as demonstrated in Figure 3.1: (1) income distribution characteristics; (2) racial characteristics; (3) household preferences; (4) metropolitan growth factors related to immigration and development; (5) housing market characteristics; (6) public policy interventions; and (7) overlap in the income distribution shared by the four racial-ethnic groups. Most variables or sets of variables may contribute to the incidence of dually diverse neighborhoods indirectly (by affecting the incidences of either income diverse and/or racially diverse neighborhoods) or directly (by affecting the degree to which income diverse and racially diverse neighborhoods intersect). In order to analyze direct and indirect effects of the independent variables on

the incidence of dually diverse neighborhoods, I will execute regression models using both proportion economically diverse neighborhoods and proportion racially diverse neighborhoods as dependent variables (estimating indirect effects), as well as executing a regression model using proportion dually diverse neighborhoods as the dependent variable. In each case, I will use the same set of predictors. Each of these metropolitan characteristic variables and the rationale for including them in the regression models, as well as predictions about how the variables are related are discussed below.

Income Distribution Characteristics of the Metro Area

The overall diversity embodied by a metropolitan area's family income distribution would be a key determinant of whether highly income diverse neighborhoods are rare or plentiful there. It is easy to see that if, for example, only four (or fewer) of the six income classes considered in this study were absent in a metropolitan area that no neighborhood there could qualify as very highly diverse under my income diversity typology criteria. At the other extreme, if each group represented precisely one-sixth of the total families in the metropolitan area, the mathematical possibilities for highly diverse neighborhood outcomes are maximized. Thus, the entropy of the metropolitan area's income distribution should be directly related to the observed incidence of highly income diverse neighborhoods.

Racial-Ethnic Diversity and Proportion Black

The diversity of the metropolitan area in terms of representation from the four racial-ethnic groups specified in the study (as measured by the entropy index) should be directly related to the incidence of racially diverse neighborhoods. The rationale is analogous to that advanced above for the case of income diversity—more diversity at the metropolitan level should increase the likelihood of diversity at the neighborhood level.

The effect of the share of the metropolitan population that is black on the incidence of economically diverse neighborhoods is less predictable. On the one hand, black-occupied neighborhoods have historically evinced greater income diversity, partly because discriminatory barriers in the housing market constrained the residential choices of higher-income minority families (Massey and Denton 1993; Wilson 1987). On the other hand, a larger black share may signal a greater threat to whites' demographic, economic, and political dominance and stimulate, in turn, exclusionary land use

regulations in white suburban enclaves. This would produce a lower incidence of income diverse neighborhoods (Pendall 2000).

Finally, metropolitan areas with higher shares of black populations should evince a lower incidence of racially diverse neighborhoods. One reason is the potential exclusionary land use reaction noted above, which is likely to have a disparate racial impact segregating whites from minorities. Another reason is because of all other groups' aversion to having black neighbors in substantial numbers (Zubrinsky and Bobo 1996).

Preferences of Households Related to Diversity in Neighborhoods

Unfortunately, no direct measures exist for a population's tolerance for economic and racial-ethnic diversity among their neighbors, and thus this study must rely on a set of proxies. It is posited that younger, childless[21], and/or college-educated families would likely be more tolerant of such diversity, based on opinion poll evidence (Farley, Jackson, Reeves, Steeh, and Krysan 1994; Zubrinsky and Bobo 1996). These predictions are supported by studies of actual in-migration behaviors (Ellen 2000). Families who own their dwelling are also likely to be less tolerant inasmuch as they are concerned about potential loss of their home equity in the face of potential neighborhood succession that may be foreshadowed by diversity (Ellen 2000). However, the relationship between these proxies and preferences is likely confounded by another correlate: mobility. Even though the above categories of families may be less averse to diversity they are also likely more mobile, thus, *ceteris paribus*, they may be more likely to move out in response to unwanted neighborhood diversity. As such, no firm predictions about the relationship between metro-wide changes in the age distribution (measured by a series of variables denoting proportions in various age categories), proportion of families with children, proportion of adults with a college degree, and proportion of households owning their own home, and the incidence of dually diverse neighborhoods are possible.

Metropolitan Growth Factors Related to Immigration and Development

Metropolitan areas experiencing strong inflows of foreign-born residents during the 1990s have become a widely publicized phenomenon. For a variety of economic, social, and political reasons these

[21] Since a measure of families without children isn't available in the NCDB, I use the proportion of families with children, expecting that these families will be less tolerant of diversity.

recent immigrants may be more likely to locate in ethnic enclaves with their national compatriots. Whether these enclaves evince a wider variety of income groups than neighborhoods inhabited by more settled immigrants is an empirical matter.

Faster-growing metropolitan areas[22] are likely to manifest fewer income diverse neighborhoods inasmuch as a greater share of neighborhoods will be represented by newly built subdivisions. These subdivisions are typically homogeneous in their housing types due to financial and technological reasons, often abetted by local land use regulations (Vandell 1995). Because, by definition, little time has elapsed since original construction and occupancy of these newer subdivisions, there will be less chance for qualitative changes in the housing stock or for occupants to "age in place," both of which can serve to increase the observed income diversity of the neighborhood over time. Contrary predictions can be made related to racial-ethnic diversity, however, inasmuch as newer developments tend to be less segregated (Farley and Frey 1994), perhaps because no group has been able to lay claim to an historical occupancy pattern that might subsequently shape housing demands in a racial fashion.

Housing Market Characteristics

It is complicated to predict how the tightness of the housing market (measured by vacancy rates in both the rental and sales markets) will relate to the incidence of dually diverse neighborhoods because one must consider its consequences on residential opportunities for those with fewer choices (typically minority and lower-income households) and more choices (typically white and higher-income households). On the one hand, tighter housing markets (i.e., lower vacancy rates) may make it more difficult for greater-choice groups to live in the sorts of homogeneous neighborhoods they may desire, thus abetting diversity. On the other hand, such tight markets could harm neighborhood diversity because families with generally fewer choices can now choose even fewer dwellings from a narrower array of available neighborhoods.

Predictions regarding the level of housing prices in a metropolitan area are equally ambiguous.[23] On the one hand, neighborhood diversity may be abetted if higher potential profits drive real estate

[22] Metropolitan area growth is measured by the proportion change in housing units from 1990-2000. I took the log 10 transformation of this variable to adjust for non-normality.
[23] The natural logarithm is taken of both rental prices and housing prices to ensure more normal distributions of these variables.

developers to turn to less conventional locations than large, greenfield suburban sites, producing thereby (through rehabilitation and/or infill construction) more diverse housing stocks in existing neighborhoods. On the other hand, a higher-cost market may inhibit neighborhood diversity because families with fewer choices now have even fewer options for leaving racially or economically homogeneous neighborhoods.

The tenure structure of a local housing market may also affect neighborhood diversity beyond its serving as a proxy for preferences. As homeowners age in place the relationship between current income and income at time of home purchase will likely get weaker, especially if they retire and pay off their mortgages. The implication is that, even if home values in a neighborhood are similar, the incomes of homeowner residents may be quite dissimilar in comparison to a neighborhood with a homogeneous rental stock.

As a final characteristic of the local housing market an index of gentrification produced by Lance Freeman (2005) was employed.[24] Combining census tract data with the Panel Study of Income Dynamics (PSID), Freeman created a dataset that identifies tracts that have gentrified from 1990 to 2000. Gentrification is based on five criteria: (1) census tract is located in the central city; (2) median household income is less than the 40th percentile of the metropolitan area at the beginning of the inter-censal period; (3) percentage of housing built over the past 20 years is less than that of the 40th percentile of the metropolitan area; (4) percentage increase in educational attainment is greater than that of the metropolitan area; and (5) there is an increase in real housing prices during the time period. It is expected that the greater the incidence of this sort of neighborhood dynamic, the greater incidence of dually diverse neighborhoods. This may be blunted, however, if the gentrification proceeded to the extent that wholesale displacement of existing families occurred (which cannot be measured).

Public Policy Interventions

In principle, an array of public policy interventions could also affect the incidence and stability of dually diverse neighborhoods. Three such policies that have been implemented in some states and municipalities are integration maintenance strategies, inclusionary zoning, and metropolitan-wide school desegregation plans. Integration maintenance strategies are policies that intentionally affect the racial mix of a neighborhood or jurisdiction. Some that have been used before include quotas (which are now

[24] Many thanks to Dr. Freeman for generously sharing this index.

only legal under very limited circumstances), bans on "for sale" signs as a means of avoiding panic and flight by white neighbors (Smith 1993), affirmative marketing techniques to increase competition among racial groups (Freiberg 1993), and municipal bans on solicitation by real estate agents in conjunction with support for non-profit housing assistance centers that give free advice only to people who want to make integrative moves. Unfortunately, for a variety of reasons it was impossible to operationalize integration maintenance policy interventions and, therefore, none of these predictors are included in the regression analyses.[25]

Inclusionary zoning requires that, for all new housing developments larger than a specified size, developers assign a minimum percentage of units to be sold or rented below market price for a specified period of time. This type of policy intervention would clearly favor the creation and maintenance of mixed income developments. Thus, this variable is operationalized by creating a dummy variable that indicates whether or not a metro area was bound by this policy. All of the metro areas in the sample that were located within the states of California, Massachusetts, and New Jersey were denoted as requiring inclusionary zoning. The Washington DC metro area was also included in the group of metros requiring inclusionary zoning because Montgomery County, MD (which requires inclusionary zoning) is a constituent municipality within that metro area.[26]

Proportion of Racial-Ethnic Overlap in Income Distribution of the Metropolitan Area

The degree to which families from different racial groups are able to rent or buy dwellings within the same neighborhood will be affected by how alike or different their annual incomes are. I estimate the degree to which economic circumstances are alike amongst the four different racial groups by calculating the proportion of the income distribution that is shared by all four of the racial-ethnic groups of concern to my study. The logic behind using this type of measure is that, presumably, since neighborhoods are

[25] There is no composite list of communities that engaged in integration maintenance activities during the 1990s. Even if such were available, it would be difficult to construct a meaningful, metropolitan-wide variable for this policy when, at most, only a few constituent municipalities were engaging in such.

[26] The following metro areas were flagged as requiring inclusionary zoning: Bakersfield, CA; Bergen-Passaic, NJ; Boston, MA; Denver, CO; Fresno, CA; Jersey City, NJ; Los Angeles-Long Beach, CA; Middlesex-Somerset-Hunterdon, NJ; Monmouth, NJ; Oakland, CA; Orange Co., CA; Portland-Vancouver, OR-WA; Riverside-San Bernardino, CA; Sacramento, CA; San Diego, CA; San Francisco, CA; San Jose, CA; Springfield, MA; Stockton-Lodi, CA; Vallejo-Fairfield-Napa, CA; Ventura, CA; and Washington, DC. To test the robustness of the findings for the inclusionary zoning variable, regressions were run both including and excluding Washington, DC as a metro area requiring inclusionary zoning, results of which will be reported in the next chapter.

mainly comprised of housing units that are valued near one another, racial mixing within neighborhoods is only possible if there is some convergence of incomes across the different racial-ethnic groups. This is a unique measure that hasn't been used in previous studies of neighborhood sorting.

The intuition behind using this index is to determine the proportional amount of area under the income category frequency distribution that is congruent for the four racial groups. One could imagine producing a histogram of the income distribution for one racial group and then superimposing the histogram for another racial group over the top of the first one to visually assess the degree to which income distributions overlap between the two racial groups. The areas that overlap between the two histograms would represent the degree of intersection between the two groups' income distributions. Since the total number of persons in each racial group within each income category will determine the height of the bars in the histogram, the degree of income overlap in any particular income category will be affected by the frequency that each racial group represents within the individual income categories.

The proportion of multi-racial income distribution overlap is calculated by determining the total area of congruence under the income category frequency distributions of six pairwise comparisons of the four racial-ethnic groups in my study.[27] The comparisons include: white-black, white-Hispanic, white-others, black-Hispanic, black-others, and Hispanic-others.

For any racial group in question, the area of each income category comprising the frequency distribution is calculated by multiplying the frequency of the particular racial group within the given income range (i.e., the height of the rectangle) by the dollar range (difference between the upper and lower boundaries, i.e., the width of the rectangle) of the income category in question. Summing these areas over all income ranges constituting the distribution produces the total area under the income distribution for the particular racial group. The proportion of income distribution areas that overlaps between the two groups comprising any given dyad is simply the ratio of the area for the smaller group to the area of the larger group.

I take the weighted average of the proportion of total income distribution overlap for the six dyads to produce the final measure. The weighting scheme applied to each dyadic comparison was the proportion that the two racial groups in question comprise of the total population being considered in the

[27] Detailed notes regarding the calculation of this variable are presented in Appendix B.

analysis (that is, all four of the racial groups' frequencies multiplied by three since each racial group is compared to another three times).

According to this schema, the theoretical maximum proportion of income distribution overlap of all of the groups is one if all four racial groups had exactly the same number of people in every income category. In this scenario, the total area under the income frequency distribution would be exactly the same for each of the four racial groups. At the other extreme, the value of the index would equal zero if there was no congruence between the areas of any of the racial groups in question. This could occur in a scenario where the frequencies of every income category in the income distribution had representation from only one of the four racial groups.

As for its effect on the incidence of dually diverse neighborhoods is concerned, if there is a high degree of overlap between the income distributions of whites, blacks, Hispanics, and Asians and others, I would expect to see more racial mixing within neighborhoods. Hence, the proportion of racial-ethnic overlap of a metropolitan area's income distribution should be directly related to the observed incidence of racially diverse neighborhoods and therefore indirectly related to the incidence of dually diverse neighborhoods. I would also expect, however, that multi-racial income distribution overlap will not be related to the incidence of economically diverse neighborhoods since income distribution overlap is a measure of how alike incomes are across racial-ethnic groups, while neighborhood economic diversity can be seen as a measure of income disparities within neighborhoods.

The variables introduced above are listed in Table 3.1, and represent operationalizations of the concepts portrayed in Figure 3.1. Descriptive statistics for each variable in the model are reported therein. Pre-analysis screening of the data did not reveal any problems with multicollinearity, univariate outliers or normality, unless footnoted above.

Table 3.1 reveals that mean vacancies for both rental and owned units decreased from 1990 to 2000, indicating a tightening of the housing market, on average over the study period. Not surprisingly, median values and rents both increased over the study period. There was also an increase in the average number of housing units in metro areas, which is again not surprising given population growth over the same time period. On average, the proportion of housing units present in 2000 that were built during the 1990s was around 20 percent. The mean proportion of the population that was black in metro

areas increased slightly from 1990 to 2000, but the overall racial diversity (measured by the entropy index) decreased. As far as public policy is concerned, 23 percent of the metro areas in my sample required inclusionary zoning. Concerning the age distribution of the sample, on average, adults age 35 to 44 made up the largest proportions (over 20 percent at both time periods). Adults under the age of 35 decreased over the study period, while those age 45 to 54 saw the largest increase of all of the age categories.[28] The mean proportion of college educated adults, homeowners, and families with children all increased over the study period. Although the amount of average overlap in the income distribution was somewhat low, it increased slightly from 1990 to 2000. Finally, descriptive statistics on the dependent variables indicate that, on average, the incidence of racially diverse neighborhoods increased, while the incidence of economically diverse neighborhoods declined, on average, over the study period. The mean incidence of dually diverse neighborhoods in the 100 largest metro areas increased slightly, on average, from 1990 to 2000.

[28] Adults age 55 and older served as the excluded or comparison group for the age distribution variables.

Table 3.1: Descriptives Statistics for Models Predicting Dual Diversity

		1990		2000		Change	
Variable	**N**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
Housing Market Characteristics:							
Proportion Vacant Owner Units	100	0.012	0.005	0.010	0.003	-0.003	0.005
Proportion Vacant Rental Units	100	0.032	0.012	0.023	0.008	-0.008	0.011
Median Value of Owner-Occupied Units	100	104811	59580	139217	66615	34406	25940
Median Rent	100	404.06	115.25	548.62	139.38	144.56	52.65
Natural Log of Median Value of Own-Occ Units	100	11.44	0.463	11.76	0.377	0.32	0.196
Natural Log of Median Rent	100	5.96	0.269	6.28	0.236	0.31	0.097
Percent Neighborhoods Gentrified, 1990-2000	98	-	-	-	-	7.35	6.265
Metro Area Growth Characteristics:							
Total Housing Units	100	608433	580130	687113	621320	78680	69491
Proportion Change in Housing Units, 1990-2000	100	-	-	-	-	0.19	0.154
Proportion of 2000 Foreign Born Entering during 1990s	100	-	-	-	-	0.44	0.094
Racial Characteristics:							
Proportion Population Black	100	0.12	0.086	0.13	0.090	0.01	0.011
Racial Entropy	100	0.29	0.108	0.25	0.087	-0.05	0.031
Public Policy Intervention:							
Inclusionary Zoning	100	-	-	0.23	0.423	-	-
Household Preferences:							
Proportion Population Age 18-24	100	0.14	0.016	0.12	0.018	-0.01	0.010
Proportion Population Age 25-34	100	0.24	0.023	0.19	0.023	-0.05	0.013
Proportion Population Age 35-44	100	0.21	0.015	0.22	0.013	0.02	0.010
Proportion Population Age 45-54	100	0.14	0.008	0.18	0.009	0.04	0.009
Proportion Population with a College Degree	100	0.28	0.055	0.33	0.062	0.04	0.016
Proportion Units that are Owner-Occupied	100	0.58	0.066	0.61	0.063	0.03	0.022
Proportion Families with Children	100	0.50	0.046	0.51	0.039	0.01	0.018
Income Distribution:							
Average Overlap in Income Distribution	100	0.021	0.015	0.026	0.015	0.004	0.003
Dependent Variables:							
Proportion Racially Diverse Neighborhoods	100	0.09	0.113	0.10	0.103	0.02	0.057
Proportion Economically Diverse Neighborhoods	100	0.73	0.083	0.69	0.076	-0.03	0.038
Proportion Dually Diverse Neighborhoods	100	0.057	0.088	0.065	0.076	0.01	0.045

USING SIMULTANEOUS-EQUATIONS MODELING TO AVOID ENDOGENEITY BIAS

In my literature review chapter, I point out that most previous studies of neighborhood sorting have suffered from bias introduced by including variables in statistical models that are endogenous. To review, an endogenous variable is one that has causal links leading to it from other variables in the model. In other words, endogenous variables have explicit causes within the model. When explanatory variables are endogenous, ordinary least squares results in biased and inconsistent estimates of the causal effect of the endogenous explanatory variable on an outcome (Bound, Jaeger, and Baker 1995). One way of correcting for endogeneity is the use of simultaneous-equations modeling.

The regression model that I execute may suffer from endogeneity bias if I include the variable measuring the proportion of multi-racial overlap in the income distribution. This variable's endogeneity stems from the fact that income distribution overlap and the incidence of dually diverse neighborhoods may be bi-directionally related to one another. In other words, it may be possible that income distribution overlap is a predictor of the incidence of dually diverse neighborhoods (as my regression model suggests), but it may also be possible that changes in dual diversity could lead to changes in income distribution overlap.

The fact that economic outcomes and neighborhood sorting (specifically racial residential segregation) are circularly related to one another has already been shown in earlier studies. As discussed in the literature review chapter, previous studies have shown that income disparities between different racial groups not only do not explain racial residential segregation, but that racial residential segregation could, in fact, lead to racial differences in income—which indicates a bi-directional or circular relationship (Massey and Fischer 2000). Using similar logic as this, but concerning myself with neighborhood diversity rather than segregation, it seems plausible that neighborhood diversity and economic outcomes (in this case income distribution overlap) might also be circularly related. In this case, though, rather than segregation causing differences in incomes, diversity may actually lead to more income overlap between races.

In any case, the endogeneity of the income distribution overlap variable may introduce bias to the statistical model and thus should be dealt with. In order to address this endogeneity, I will execute a

simultaneous-equations model to correct for the possibility of bias. Specifically, I will use two-stage least squares (2SLS) regression.

Using such a model entails identifying one or more variables that will stand in for the troublesome income distribution overlap variable. These "stand in" variables are referred to as instruments and the logic in using such a model will be explained forthwith. By identifying and including in my model a single variable or a vector of variables that are correlated with the troublesome income distribution overlap variable, but do not explain or have any direct association with my dependent variable, the incidence of dually diverse neighborhoods, I will presumably be removing the bias inherently introduced to the model by the inclusion of the income distribution overlap variable. Thus, using an instrumental variable approach to replace the troublesome income distribution overlap variable could help to reduce endogeneity bias. The goal for me in identifying an appropriate instrument, then, is to find a variable (or set of variables) that is correlated with income distribution overlap, but that is exogenous to the original model predicting the incidence of dually diverse neighborhoods.

The execution of two-stage least squares (2SLS) regression will allow me to replace my troublesome income distribution overlap variable with an instrument or combination of instruments. Here is how it works: in the first stage, the endogenous variable on the right-hand side of the equation (in this case, multi-racial income distribution overlap) is regressed on the "stand in" instrument or instruments, along with the other non-troublesome, exogenous predictors from the original model. In the second stage, the predicted values of average overlap of the income distribution estimated in the first stage regression are plugged into the equation in place of the biased endogenous income distribution overlap variable and the regression model is then estimated using normal OLS techniques (Angrist and Krueger 2001).

The first order of business in executing a 2SLS model is to identify a valid, powerful instrument or set of instruments. However, according to Murray (2006b), finding appropriate instruments can be quite challenging. It's possible that instrumental variables can either be themselves correlated with the regression's disturbance term (and therefore are invalid and do not remove bias) or they can be weakly correlated with the troublesome explanatory variable, and thus are not powerful (Murray 2006a; Murray 2006b).

In my search for a valid, powerful instrumental variable (or set of variables), I looked for measures that would be highly correlated with multi-racial income distribution overlap, but would not be theoretical predictors of the incidence of dually diverse neighborhoods. After considering a number of alternative variables, I found one variable, the number of outlet malls (in hundreds) in the metro area in 2000[29], which met both of these criteria.

Recent tests developed by Hahn and Hausman (2002) can be used to test the validity of instrumental variables when the 2SLS model is over-identified.[30] Unfortunately, I am unable to utilize these tests since I am using only one instrument and my model is perfectly identified. However, I am still confident in the validity of my instrument because I am certain of its correlation with change in income distribution overlap. I am also confident that my instrument, the number of outlet malls (in hundreds), is not a predictor of my dependent variable, the incidence of dually diverse neighborhoods. I believe that my instrument is exogenous to the original model because, relying on logic and intuition here, there should be no reason to believe that the number of outlet malls should be directly related to the proportion of dually diverse neighborhoods in a metro area.

As far as its correlation with my troublesome income distribution overlap variable is concerned, the bivariate correlation coefficient produced between the two variables was relatively low, but highly significant ($r = 0.277$; $p < .01$). The fact that the instrument performed well as a predictor of the change in proportion income distribution overlap in the first stage of the 2SLS regression, which will be discussed in the results chapter, also gives me confidence in its validity as an instrument.

ESTIMATING DIRECT & INDIRECT EFFECTS

As stated previously in the section describing the conceptual model, the predictors in the model could work directly or indirectly (through the incidence of either economically or racially diverse neighborhoods) to affect the incidence of dually diverse neighborhoods. In order to analyze both the direct and indirect paths, I will estimate 2SLS regression models for the direct effects of the independent

[29] This variable is measured in hundreds because the original scaling produced miniscule coefficients in the regression models. Thus the variable was rescaled by dividing each metro area's value by 100.
[30] Over-identification refers to the situation where one utilizes more instruments than endogenous variables for which one is controlling. For instance, if the original model contains one endogenous variable and one utilizes two variables as instruments to stand in for that endogenous variable, the model is over-identified.

variables on the change in proportion dually diverse neighborhoods and the indirect effects by estimating the effects of the independent variables separately on the change in the incidence of income diverse neighborhoods and the change in the incidence of racially neighborhoods.[31] Once all three of these models have been estimated, I will be able to determine the total effects (both direct and indirect) of all of the independent variables in my model on the change in the incidence of dually diverse neighborhoods.

Now that the data utilized and the methods by which I will investigate the incidence, trends, geographic patterns, stability, demographic patterns within, and correlates of dually diverse neighborhoods have been laid out, I will now turn my attention to the results of these investigations in the next chapter.

[31] I estimate 2SLS models for the indirect paths because I suspect that change in income distribution overlap is also endogenous in the models predicting changes in income diverse and changes in racially diverse neighborhoods. Thus, the predicted values of change in income distribution overlap estimated in the first stage of 2SLS will be used in the model predicting direct effects as well as those predicting indirect effects.

CHAPTER 4

RESULTS

The ensuing chapter will report the findings of the analyses described in the preceding chapter. Specifically, the answers to the six research questions that are the focus of this study will be systematically explained below. I will begin by describing the extent to which dually diverse neighborhoods exist in U.S. metropolitan areas and how their incidence has changed since 1970. I will then describe the geographic patterns that dually diverse neighborhoods exemplify. Next, I will discuss the stability of dually diverse neighborhoods over time. These results will be followed by a detailed demographic profile of the typical dually diverse neighborhood. Lastly, I will discuss the findings of the two-stage least squares regression analysis used to determine the correlates of dually diverse neighborhoods.

THE INCIDENCE OF DUAL DIVERSITY IN NEIGHBORHOODS, 1970 TO 2000

Since, by definition, a dually diverse neighborhood is one that is defined as having achieved a minimum level of diversity according to both income and race-ethnicity, I will begin this section by describing the extent of income diversity within neighborhoods and trends in income diversity since 1970, followed by a discussion of the extent of racial diversity within neighborhoods and its trends since 1970. Then, I will focus on the topic that is of most interest to this study, the intersection of these two types of neighborhood diversity.

Neighborhood Income Diversity, 1970-2000

Overall neighborhood income diversity patterns are discerned by examining entropy scores for census tracts across all 100 metropolitan areas (N=24,658 in 1970 and N=38,499 in 2000)[32]. In looking at these scores across the four decadal censuses, mean neighborhood income entropy steadily decreased over time from 0.915 in 1970 to 0.876 by 2000. While an income entropy score above 0.8 can still be considered very diverse, the trend shows a modest decline over the thirty year time period. Descriptive statistics for income entropy from 1970 to 2000 are portrayed in Table 4.1. Frequencies and

[32] The number of census tracts changes from decade to decade due to the addition of tracts based on increased population in metro areas and increased urbanization. Census tracts may also be merged or subdivided (at the discretion of the Census Bureau) depending upon the population residing within them.

percentages of neighborhoods broken down by the type of income diversity present, as determined by my neighborhood income diversity typology are portrayed in Table 4.2. According to Table 4.2, the percentage of economically diverse neighborhoods decreased over the study period, starting out at 79.3% in 1970 and ending at 66.2% in 2000.

Table 4.1: Income Entropy Descriptives, 1970-2000

Year	N	Minimum	Maximum	Mean	Std. Dev.
1970	24658	0.09	1	0.915	0.100
1980	28990	0	1	0.900	0.117
1990	32131	0	1	0.880	0.131
2000	38499	0	1	0.876	0.123

Table 4.2: Income Diversity Category Frequencies, 1970-2000

	1970		1980		1990		2000	
	Freq	Percent	Freq	Percent	Freq	Percent	Freq	Percent
Low Diversity (H < 0.69)	1132	4.6	1999	6.9	3066	9.5	3483	9
Moderate Diversity ($H \geq 0.69$ & < 0.87)	3963	16.1	5438	18.8	7078	22	9531	24.8
High Diversity ($H \geq 0.87$ & < 0.92)	3082	12.5	3721	12.8	4590	14.3	6173	16
Very High Diversity ($H \geq 0.92$)	16481	66.8	17832	61.5	17397	54.1	19312	50.2
Economically Diverse*	19563	79.3	21553	74.3	21987	68.4	25485	66.2

Note:
Economically Diverse neighborhoods are those with entropy scores of 0.87 or greater
(High + Very High Diversity)

Looking at income diversity in an aggregate manner such as this, however, may obscure interesting variations across differing neighborhood types, both in terms of levels and in the trends that neighborhood income diversity follows. Therefore, in order to elucidate the findings of the income diversity analyses a bit further, I also looked at income entropy scores for neighborhoods as classified by the median income of the neighborhood.[33] Table 4.3 shows mean entropy scores between 1970 and

[33] When classifying neighborhoods by their median income, I use the HUD income typology described in Chapter 3. Thus, if a neighborhood's median income falls within a given category, say Low Income (LI) or

2000 for all neighborhoods in the 100 largest metro areas as well as decadal entropy scores by neighborhood income type.

Table 4.3: Mean Income Entropy by HUD Neighborhood Type, 1970 to 2000

Neighborhood Type	1970	1980	1990	2000	Change*	Change as % of 1970
All Neighborhoods	*0.915*	*0.899*	*0.879*	*0.876*	-0.039	-4.26
Very-Low Income	0.658	0.651	0.636	0.662	0.004	0.61
Low Income	*0.884*	*0.889*	*0.886*	*0.887*	0.003	0.34
Moderate Income	*0.975*	*0.976*	*0.972*	*0.969*	-0.006	-0.62
High-Moderate Income	*0.967*	*0.971*	*0.965*	*0.958*	-0.008	-0.83
High Income	*0.875*	*0.892*	*0.886*	*0.884*	0.009	1.03
Very-High Income	0.658	0.685	0.678	0.685	0.027	4.10

Italics indicate Mixed-Income

* 1970 to 2000

In examining Table 4.3, one can see that regardless of the decade, and as would be tautologically expected, metropolitan neighborhoods at the extremes of the family income distribution (VLI and VHI) are by far the least diverse according to income, with entropy scores in the range of 0.636 to 0.685. VLI neighborhoods are the least income diverse, followed closely by VHI neighborhoods. By contrast, MI and HMI neighborhoods are the most diverse, with entropy scores in the extremely high range of 0.958 to 0.976. Interestingly, these most diverse neighborhoods (MI and HMI) have been decreasing their share since 1970, while the least diverse (VLI and VHI) neighborhoods have been simultaneously increasing. This decrease in the most diverse neighborhoods seems to be driving the aggregate results that were found—slight declines in overall neighborhood income diversity over the last thirty years.

Neighborhood Racial Diversity, 1970-2000

Analogous to the procedure for specifying economically diverse neighborhoods, I used entropy scores in defining racially diverse neighborhoods. The census tract racial entropy scores for the 100 largest metropolitan areas indicate that mean racial diversity has increased from 0.238 in 1970 to 0.463

Moderate Income (MI), for my purposes here the neighborhood is considered a Low Income or Moderate Income neighborhood, respectively.

by 2000. Although an entropy score below 0.5 is still considered to be less than (even moderately) integrated, it is interesting to note that racial diversity has increased tremendously since 1970. However, neighborhoods in the sample are still much less racially diverse than economically diverse (even though neighborhood income diversity is on the decline). Descriptive statistics for race entropy from 1970 to 2000 are portrayed in Table 4.4. All in all, 21.1% (N=8,134) of neighborhoods in the sample were classified as racially diverse in 2000. Frequencies and percentages of neighborhoods broken down by the type of racial diversity present, as determined by my neighborhood racial diversity typology are portrayed in Table 4.5.

Table 4.4: Race Entropy Descriptives, 1970-2000

Year	N	Minimum	Maximum	Mean	Std. Dev.
1970	24658	0	0.99	0.238	0.209
1980	28990	0	1	0.305	0.222
1990	32131	0	1	0.366	0.236
2000	38499	0	1	0.463	0.241

Table 4.5: Race Diversity Category Frequencies, 1970-2000

	1970		1980		1990		2000	
	Freq	Percent	Freq	Percent	Freq	Percent	Freq	Percent
Not Diverse (*H* < 0.14)	10958	44.4	8785	30.3	6793	21.1	3708	9.6
Very Low Diversity (*H* ≥ 0.14 & < 0.23)	3690	15	4665	16.1	4724	14.7	4653	12.1
Low Diversity (*H* ≥ 0.23 & < 0.46)	5615	22.8	7991	27.6	9351	29.1	10997	28.6
Moderate Diversity (*H* ≥ *0.46 & < 0.69)*	3434	13.9	5604	19.3	7625	23.7	11007	28.6
High Diversity (*H* ≥ 0.69 & < 0.79)	627	2.5	1206	4.2	2035	6.3	4150	10.8
Very High Diversity (*H* ≥ 0.79)	334	1.4	739	2.5	1603	5	3984	10.3
Racially Diverse*	961	3.9	1945	6.7	3638	11.3	8134	21.1

Note:
Racially Diverse neighborhoods are those with entropy scores of .69 or greater (High + Very High Diversity)

As with the income entropy scores, looking at aggregated data for all neighborhoods could obscure patterns that are occurring at lower levels of aggregation. Thus, I also provide racial entropy scores for the three decade period for neighborhoods, based on their racial-ethnic majority. [34] Table 4.6 shows the average racial entropy score between 1970 and 2000 for all neighborhoods in the sample and by neighborhood racial type.

Table 4.6: Mean Race Entropy by Neighborhood Type, 1970 to 2000

Neighborhood Type	1970	1980	1990	2000	Change*	Change as % of 1970
All Neighborhoods	0.238	0.305	0.366	0.463	0.225	94.5
No Majority	*0.774*	*0.791*	*0.813*	*0.839*	0.066	8.5
White Majority	0.203	0.266	0.324	0.406	0.202	99.3
Black Majority	0.313	0.329	0.338	0.404	0.091	28.9
Hispanic Majority	0.505	0.520	0.523	0.540	0.035	6.9
Other Majority	0.483	0.511	0.555	0.601	0.117	24.3

Italics indicate Mixed-Race

* 1970 to 2000

In examining Table 4.6, we can see that racial diversity increased for all types of neighborhoods over the thirty year period. However, the only types of neighborhoods that actually achieved the status of racially diverse according to my typology were those that had no racial majority. This finding makes sense given that all of the other neighborhoods had racial majorities that would preclude larger concentrations of other groups—making it difficult to achieve racial diversity. By contrast, white majority neighborhoods' mean entropy scores range from 0.203 to 0.406 between 1970 and 2000. While the difference between the two entropy scores represents nearly a 100% change, an entropy value of 0.4 is still considered only moderately diverse. Similarly, black majority neighborhoods' entropy scores increased by 28.9% between 1970 and 2000. With an entropy score of 0.404 in 2000, these black majority neighborhoods are only achieving a minimal level of diversity, as with white majority neighborhoods.

[34] Neighborhoods are categorized by racial-ethnic group majority by determining which racial group comprises more than 50% of the population. In cases where no one group is over 50%, the neighborhood is categorized as "no majority".

Overall, neighborhoods with no majority are the most diverse, as would be tautologically expected. These neighborhoods are followed by other majority and Hispanic majority neighborhoods in their degree of racial diversity. The greatest increase in diversity occurred in majority white neighborhoods, while very little change occurred in no majority and Hispanic majority neighborhoods. Finally, even though the entropy scores of majority-white and majority-black neighborhoods are nearly the same in 2000, majority-white neighborhoods increased their entropy scores nearly three times as much since 1970.

Dually Diverse Neighborhoods, 1970-2000

Now that we have a clear picture of the extent of economic diversity and racial diversity within the neighborhoods of the 100 largest metro areas from 1970 to 2000, I will now turn my attention to the neighborhoods that are of the most interest to this study: those that have managed to achieve high diversity according to *both* income and racial characteristics. When considering neighborhoods that meet these criteria in the 100 largest metro areas, I find that both the number and the share of dually diverse neighborhoods have grown considerably since 1970. Table 4.7 portrays the frequency and percentage of dually diverse neighborhoods in the 100 largest U.S. metro areas from 1970 to 2000.

Table 4.7: Frequency of Dual Diversity, 1970-2000

Year	N	Frequency	Percent
1970	24658	601	2.4
1980	28990	1268	4.4
1990	32131	2431	7.6
2000	38499	5632	14.6

As shown in Table 4.7, in 1970 there were very few dually diverse neighborhoods. Of the 24,658 total neighborhoods in the 1970 sample, only 2.4% (N=601) were classified as dually diverse. By 1980, the number and percentage nearly doubled to 4.4% (N=1,268) and the growth rate continued to almost double each decade thereafter. In 1990, there were 2,431 (7.6%) such neighborhoods. Finally, there were 5,632 (14.6%) dually diverse neighborhoods in the 100 largest metro areas in 2000. Table 4.8 indicates that there were considerable variations in the incidence of dually diverse neighborhoods among

metro areas between 1970 and 2000. Change in share ranged from a gain of 38 percentage points in the San Jose, CA to a decline of 1.3 percentage points in the Tucson, AZ. The average growth over thirty years was 10.4 percentage points across all metropolitan areas.

Table 4.8: Percent Dually Diverse Neighborhoods by Metropolitan Area, 1970-2000

Metropolitan Area	1970	1980	1990	2000	1970-2000 Change
Akron, OH PMSA	0.0	0.0	0.0	0.0	0.0
Albany-Schenectady-Troy, NY MSA	0.0	0.0	0.5	0.9	0.9
Albuquerque, NM MSA	1.9	4.0	5.6	16.5	14.6
Allentown-Bethlehem-Easton, PA MSA	0.8	0.0	1.3	5.1	4.2
Ann Arbor, MI PMSA	0.0	0.0	0.0	4.8	4.8
Atlanta, GA MSA	0.0	0.0	2.4	16.0	16.0
Austin-San Marcos, TX MSA	6.1	4.8	12.9	21.0	15.0
Bakersfield, CA MSA	3.6	9.5	5.7	22.4	18.8
Baltimore, MD PMSA	0.0	0.0	0.7	6.1	6.1
Baton Rouge, LA MSA	0.0	0.0	0.0	1.7	1.7
Bergen-Passaic, NJ PMSA	2.4	13.0	5.8	19.0	16.6
Birmingham, AL MSA	0.0	0.0	0.0	2.0	2.0
Boston, MA-NH PMSA	0.4	0.7	1.3	6.9	6.5
Buffalo-Niagara Falls, NY MSA	0.4	0.0	0.0	1.0	0.7
Charleston-North Charleston, SC MSA	0.0	1.1	0.0	9.7	9.7
Charlotte-Gastonia-Rock Hill, NC-SC MSA	0.0	0.0	0.4	15.3	15.3
Chicago, IL PMSA	1.9	4.5	4.9	12.1	10.2
Cincinnati, OH-KY-IN PMSA	0.0	0.0	0.0	0.3	0.3
Cleveland-Lorain-Elyria, OH PMSA	0.0	0.0	0.2	2.9	2.9
Columbia, SC MSA	0.0	0.0	1.0	2.7	2.7
Columbus, OH MSA	0.0	0.0	0.0	1.6	1.6
Dallas, TX PMSA	0.9	4.2	10.5	27.4	26.5
Dayton-Springfield, OH MSA	0.0	0.0	0.0	0.0	0.0
Denver, CO PMSA	0.4	0.8	2.5	9.7	9.3
Detroit, MI PMSA	0.1	0.2	0.3	1.8	1.7
El Paso, TX MSA	0.0	10.6	10.5	6.3	6.3
Fort Lauderdale, FL PMSA	0.0	0.6	6.3	28.5	28.5
Fort Worth-Arlington, TX PMSA	1.8	NA	4.9	20.2	18.4
Fresno, CA MSA	4.2	12.0	23.0	31.0	26.9
Gary, IN PMSA	7.5	5.3	3.4	8.1	0.5
Grand Rapids-Muskegon-Holland, MI MSA	0.8	0.0	0.7	5.4	4.5
Greensboro--Winston-Salem--High Point, NC MSA	0.0	0.0	0.0	17.5	17.5
Greenville-Spartanburg-Anderson, SC MSA	0.0	0.0	0.0	3.9	3.9
Harrisburg-Lebanon-Carlisle, PA MSA	0.0	0.0	0.8	5.1	5.1
Hartford, CT MSA	0.0	0.0	3.1	7.4	7.4
Honolulu, HI MSA	0.7	12.4	13.4	6.3	5.7

Houston, TX PMSA	5.9	9.1	18.2	27.8	21.8
Indianapolis, IN MSA	0.0	0.0	0.3	5.1	5.1
Jacksonville, FL MSA	0.0	0.7	0.6	13.3	13.3
Jersey City, NJ PMSA	4.5	15.1	27.9	41.3	36.7
Kansas City, MO-KS MSA	0.3	0.0	0.5	6.7	6.4
Knoxville, TN MSA	0.0	0.0	0.0	0.7	0.7
Las Vegas, NV-AZ MSA	1.4	3.4	10.1	31.4	29.9
Little Rock-North Little Rock, AR MSA	0.0	0.0	0.0	3.7	3.7
Los Angeles-Long Beach, CA PMSA	7.4	15.5	27.1	28.3	20.9
Louisville, KY-IN MSA	0.0	0.0	0.0	1.3	1.3
McAllen-Edinburg-Mission, TX MSA	0.0	0.0	0.0	0.0	0.0
Memphis, TN-AR-MS MSA	0.0	0.0	0.0	4.2	4.2
Miami, FL PMSA	3.8	10.7	15.6	15.5	11.7
Middlesex-Somerset-Hunterdon, NJ PMSA	NA	NA	5.7	22.8	NA
Milwaukee-Waukesha, WI PMSA	0.0	0.3	0.3	6.7	6.7
Minneapolis-St. Paul, MN-WI MSA	0.0	0.0	0.0	3.9	3.9
Mobile, AL MSA	0.0	0.0	0.7	0.7	0.7
Monmouth-Ocean, NJ PMSA	NA	0.0	3.6	6.3	NA
Nashville, TN MSA	0.0	0.0	0.0	8.8	8.8
Nassau-Suffolk, NY PMSA	0.7	1.6	7.2	13.3	12.7
New Haven-Meriden, CT PMSA	0.0	1.1	5.0	9.0	9.0
New Orleans, LA MSA	1.6	2.5	2.3	9.1	7.5
New York, NY PMSA	6.9	11.0	18.9	25.0	18.0
Newark, NJ PMSA	2.5	3.9	5.9	14.1	11.6
Norfolk-Virginia Beach-Newport News, VA-NC MSA	0.6	0.5	1.0	16.9	16.3
Oakland, CA PMSA	NA	NA	30.6	43.3	NA
Oklahoma City, OK MSA	0.0	1.2	3.4	15.4	15.4
Omaha, NE-IA MSA	0.0	0.0	0.0	0.9	0.9
Orange County, CA PMSA	0.9	3.4	16.2	29.4	28.4
Orlando, FL MSA	0.0	0.0	4.7	29.0	29.0
Philadelphia, PA-NJ PMSA	0.3	1.0	2.1	6.8	6.6
Phoenix-Mesa, AZ MSA	4.0	3.0	4.0	12.4	8.4
Pittsburgh, PA MSA	0.0	0.0	0.0	0.3	0.3
Portland-Vancouver, OR-WA PMSA	0.0	0.3	1.1	4.6	4.6
Providence-Fall River-Warwick, RI-MA MSA	0.0	1.0	2.2	2.8	2.8
Raleigh-Durham-Chapel Hill, NC MSA	0.0	0.0	0.0	12.7	12.7
Richmond-Petersburg, VA MSA	0.0	0.0	0.0	6.9	6.9
Riverside-San Bernardino, CA PMSA	8.5	10.5	26.8	35.0	26.5
Rochester, NY MSA	0.5	1.7	0.9	4.7	4.2
Sacramento, CA PMSA	11.0	13.3	13.2	27.0	16.0
Salt Lake City-Ogden, UT MSA	0.0	0.0	0.0	3.2	3.2
San Antonio, TX MSA	3.0	10.0	14.3	24.0	21.0
San Diego, CA MSA	5.7	10.4	17.1	28.8	23.1
San Francisco, CA PMSA	14.0	20.5	24.5	28.0	14.0
San Jose, CA PMSA	5.9	22.0	33.6	44.5	38.6

Sarasota-Bradenton, FL MSA	NA	0.0	0.0	4.2	NA
Scranton--Wilkes-Barre--Hazleton, PA MSA	0.0	0.0	0.0	0.0	0.0
Seattle-Bellevue-Everett, WA PMSA	2.3	3.5	4.0	13.6	11.3
Springfield, MA MSA	0.0	0.0	1.0	8.7	8.7
St. Louis, MO-IL MSA	0.0	0.0	0.0	0.6	0.6
Stockton-Lodi, CA MSA	15.9	16.9	22.9	40.3	24.4
Syracuse, NY MSA	0.0	1.1	0.0	0.5	0.5
Tacoma, WA PMSA	0.0	3.5	5.6	15.5	15.5
Tampa-St. Petersburg-Clearwater, FL MSA	1.3	1.2	2.5	12.9	11.5
Toledo, OH MSA	0.0	0.0	0.0	3.1	3.1
Tucson, AZ MSA	9.5	4.1	4.4	8.2	-1.3
Tulsa, OK MSA	0.0	0.0	0.5	9.7	9.7
Vallejo-Fairfield-Napa, CA PMSA	11.7	19.5	39.5	41.7	30.1
Ventura, CA PMSA	3.6	12.3	11.2	13.6	10.1
Washington, DC-MD-VA-WV PMSA	0.7	2.9	11.8	26.6	25.9
West Palm Beach-Boca Raton, FL MSA	1.2	2.2	2.0	14.2	12.9
Wichita, KS MSA	0.0	1.9	0.8	9.6	9.6
Wilmington-Newark, DE-MD PMSA	0.0	0.0	0.0	10.1	10.1
Youngstown-Warren, OH MSA	2.3	0.8	0.0	1.9	-0.4

What the foregoing descriptive statistics tell us, then, is that although dually diverse neighborhoods make up only about 15 percent of the total number of neighborhoods in the metro areas in my sample, their incidence has increased dramatically since 1970. For the most part, nearly all of the 100 largest metro areas saw steady increases in their shares of dually diverse neighborhoods over time, although the incidence of dually diverse neighborhoods by metro area varied considerably from 1970 to 2000.

In order to elucidate the overall patterns of neighborhood diversity that are occurring over the study period, Figure 4.1 presents the data for economically diverse neighborhoods, racially diverse neighborhoods, and their intersection (dually diverse neighborhoods) in Venn diagram format. These diagrams clearly show that over the study period the incidence of racially diverse neighborhoods has been increasing significantly, while the incidence of economically diverse neighborhoods has simultaneously decreased. The upshot of this increase in racially diverse neighborhoods over the study period is that the incidence of dually diverse neighborhoods has also increased over the study period. The frequency and percentage for each grouping of neighborhoods presented in the Venn diagrams are presented in Table 4.9.

Figure 4.1: Venn Diagrams of the Intersection of Economically Diverse & Racially Diverse Neighborhoods, 1970-2000

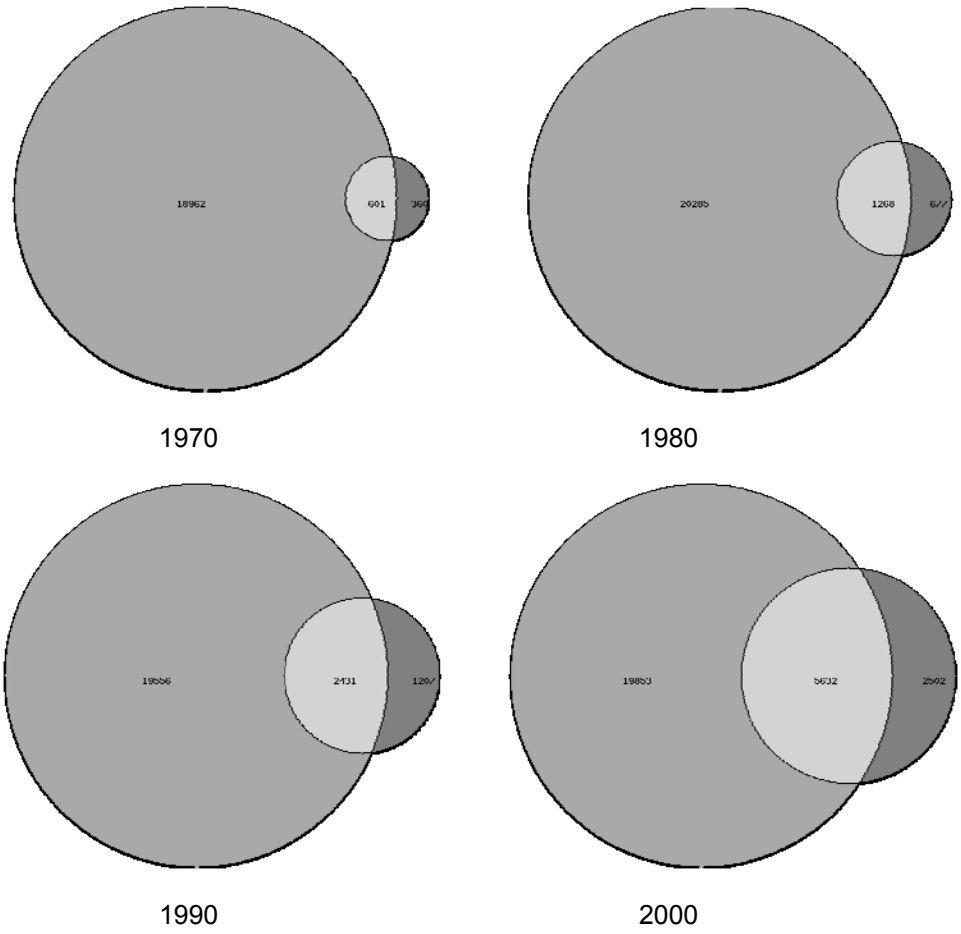


Table 4.9: Venn Diagram Values

	1970		1980		1990		2000	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
All Neighborhoods	24658	100	28990	100	32131	100	38499	100
Econ Diverse Only (not Dually Diverse)	18962	76.9	20285	70	19556	60.9	19853	51.6
Race Diverse Only (not Dually Diverse)	360	1.5	677	2.3	1207	3.8	2502	6.5
Dually Diverse (Both Econ Diverse & Race Diverse)	601	2.4	1268	4.4	2431	7.6	5632	14.6

The above figure and table both indicate that racially diverse neighborhoods that are not classified as dually diverse, as well as dually diverse neighborhoods themselves have been nearly doubling each decade. Hence, it seems as if the increase in dually diverse neighborhoods over the study period is being driven almost exclusively by the increase in racially diverse neighborhoods. It will be interesting to see whether or not these finding are borne out in the results of the regression analyses, which will be described later in the chapter.

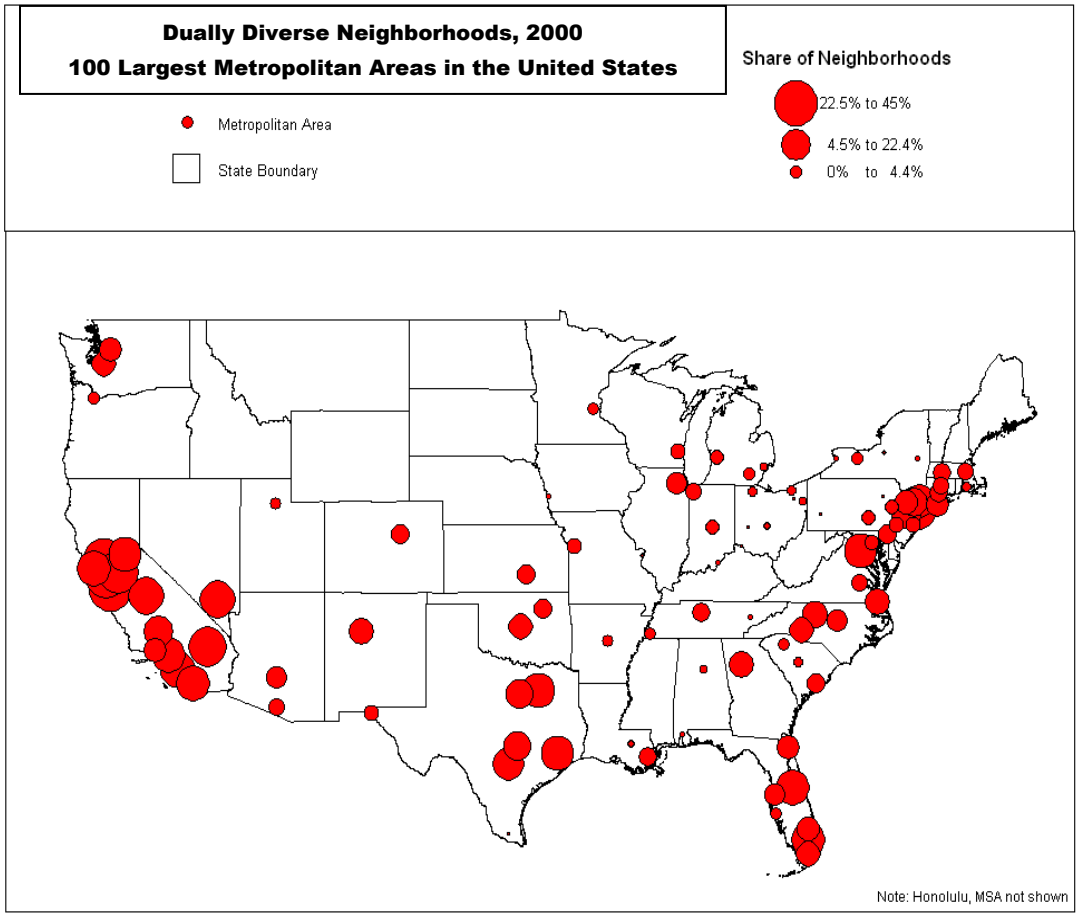
THE GEOGRAPHIC DISTRIBUTION OF DUALLY DIVERSE NEIGHBORHOODS

Now that we have an understanding of the prevalence of dual diversity in metropolitan neighborhoods, let's take a look at how these neighborhoods are distributed geographically throughout the United States and throughout metropolitan areas.

Geographically, there is wide variation in the share of metropolitan areas that dually diverse neighborhoods constitute. Unlike economically diverse neighborhoods (which varied from 49.8% to 92.3% across the sample) and racially diverse neighborhoods (which varied from 0% to 61.7%), the share of dually diverse neighborhoods across metropolitan areas ranged from 0% to 44.5% in 2000. The metropolitan areas of Akron, OH, Dayton, OH, McAllen, TX and Scranton, PA all contained no dually diverse neighborhoods. Conversely, Jersey City, NJ, Vallejo, CA, Oakland, CA and San Jose, CA all had over 40% of their neighborhoods classified as dually diverse. With the exceptions of Oklahoma City, OK

and Las Vegas, NV, most of the metropolitan areas with shares of dually diverse neighborhoods above that of the entire sample (i.e. their share of dually diverse neighborhoods is greater than 14.6%) are located near the edges of the continental United States. In fact, 23 of the metropolitan areas with shares of dually diverse neighborhoods above that of the entire sample are located in California, Texas, Florida or New Jersey. Figure 4.1 details the geographic distribution of dually diverse neighborhoods across the country, also highlighting the share of dually diverse neighborhoods present in these metro areas.

Figure 4.2: Geographic Location of Dually Diverse Neighborhoods



An interesting finding to note regarding the distribution of dually diverse neighborhoods throughout metropolitan areas is the fact that not all dually diverse neighborhoods are located within central cities. While metropolitan areas like Boston and New York do contain a majority of their dually diverse neighborhoods within the central city, others like Detroit and Chicago have a majority of their

dually diverse neighborhoods located in suburban areas. Overall, however, each metropolitan area tends to display its own geographic pattern and distribution of dually diverse neighborhoods—which tell its own individual story about the interaction of income diversity and racial diversity within that particular metro area.

THE STABILITY OF DUALLY DIVERSE NEIGHBORHOODS

Previous analyses reported here have shown that nearly 15% of all neighborhoods in the 100 largest metro areas are dually diverse in 2000 and that the incidence of this type of neighborhood has almost doubled each decade since 1970. But another issue that is of interest is how stable individual dually diverse neighborhoods are over time. This issue is particularly interesting since the tipping literature discussed in Chapter 2 suggests that racially diverse neighborhoods may be inherently unstable. In other words, racially diverse neighborhoods may only remain so for a short period of time before becoming resegregated. Given the fact that dually diverse neighborhoods are by definition racially diverse, one might suspect that dually diverse neighborhoods would be unstable, as well.

Since previously reported analyses rely on aggregate results, they do not account for changes in diversity in individual neighborhoods. Since data reported in the NCDB control for boundary changes to census tracts, I am able to unambiguously monitor changes in neighborhood racial and economic diversity across decadal censuses. The analyses reported in this section focus on data from the 1990 and 2000 decennial censuses (N=38,499).[35]

Analyses of the stability of dual diversity from 1990 to 2000 reveal that overall, dually diverse neighborhoods are fairly stable in terms of maintaining their dual diversity. Of the 2,949 tracts that were classified as dually diverse in 1990, 1,575 (53.4%) of these remained so in 2000. Thus, over half of dually diverse tracts were stable from 1990 to 2000. Moreover, although 46.6% of 1990 dually diverse neighborhoods saw a decrease in their diversity (either racially, economically, or both) by 2000, there was a net increase of 1,536 neighborhoods over the 1990 frequency that were newly classified as dually

[35] The frequency reported here is the total number of tracts in 2000. The boundary-adjusted portion of the NCDB data relates the 1990 data to the 2000 census tract boundary geographies, thus there are a larger number of census tracts reported in the 1990 analyses here than in earlier analyses presented using unadjusted 1990 data.

diverse in 2000. Hence, it will be interesting to see if these newer dually diverse neighborhoods show more or less stability than those classified as dually diverse in 1990. It will also be interesting to see how many of the stable dually diverse neighborhoods are able to maintain their status as such in 2010. These analyses should be possible in the near future with the release of recently collected 2010 Census data.

DEMOGRAPHIC PROFILE OF A DUALLY DIVERSE NEIGHBORHOOD

The current section will be concerned with providing a detailed descriptive portrait of a typical dually diverse neighborhood. Table 4.10 portrays descriptive statistics for the 100 metro areas in the study for a group of select demographic characteristics across all four decadal censuses.

Table 4.10: Average Percentages for Select Demographic Variables in Dually Diverse & All Neighborhoods, 1970-2000

	1970		1980		1990		2000	
Variable	Dual Div	All	Dual Div	All	Dual Div	All	Dual Div	All
White Population	42.8	79.0	44.7	74.9	44.2	69.8	42.2	62.6
Black Population	24.8	12.8	18.8	13.7	16.0	13.9	16.8	13.8
Hispanic Population	25.2	6.7	25.7	8.6	26.2	11.6	25.8	15.8
Other Population	7.3	1.5	10.9	2.8	13.7	4.6	15.1	7.8
Foreign Born Population	15.5	6.8	21.6	8.9	26.0	11.4	25.8	15.1
Age 5 to 17	23.7	25.8	20.2	20.0	18.1	17.7	18.9	19.0
Age 18 to 24	12.0	11.0	13.7	12.8	11.3	10.2	10.4	9.0
Age 25 to 64	45.6	45.5	47.4	47.1	53.3	52.8	54.0	53.3
Age 65 and Over	9.6	9.3	9.2	10.4	9.1	11.8	9.3	11.7
Housing Mobility**	53.1	48.1	54.8	48.3	54.4	47.8	52.5	46.7
Vacant Housing Units	4.5	4.6	5.7	6.2	7.1	8.0	5.1	6.6
Owner-Occupied Housing Units	39.9	59.6	44.1	60.6	46.1	60.5	51.2	63.2
Renter-Occupied Housing Units	60.1	40.4	56.4	40.1	53.9	39.5	48.8	36.8
Poverty Rate	15.5	10.7	14.4	11.2	12.9	11.7	12.5	11.6
Entropy (Income)	0.940	0.915	0.945	0.900	0.944	0.880	0.940	0.876
Entropy (Race)	0.774	0.238	0.779	0.305	0.789	0.366	0.797	0.462

** Percentage of the population that moved in the last 5 years.

Table 4.10 allows us to get a sense of what the demographic makeup of dually diverse neighborhoods looks like at each point in time, how it has changed over time, as well as comparing the mean values of these demographic variables for dually diverse neighborhoods with the mean values of all

of the tracts in the sample over time. What it indicates is that dually diverse neighborhoods have a mixture of households from different racial-ethnic backgrounds, which is to be expected given the nature of this type of neighborhood. Whites tend to make up the majority of the households (between 42% and 45%), with Hispanics following (around 26%), regardless of the decade examined. Moreover, the proportion of whites and Hispanics in the typical dually diverse neighborhood remained relatively steady across the study time period. The share of the population comprised of black households fell after 1970 and 1980 then steadied at around 16% in 1990, remaining around there in 2000. The presence of households with other racial-ethnic backgrounds more than doubled over the study period, starting at 7.3% in 1970 and increasing to 15.1% in 2000. The proportion of the population comprised of foreign born people increased steadily from 1970 to 2000, beginning at 15.5% in 1970 and increasing to 26% by 2000. Most of the population in the typical dually diverse neighborhood is between the ages of 25 and 64. The proportion of the population made up of people in this age bracket has increased over the study time period, beginning at 45.6% in 1970 and increasing to 54% by 2000. Simultaneously, the share of the population made up of children ages 5 to 17 steadily decreased over the study period. This share started in 1970 at 23.7% but ended up at 18.9% by 2000. In the first three decadal census periods dually diverse neighborhoods had a higher proportion of renter occupied housing units within their boundaries than owner occupied units. However, in 2000, there were slightly more owner-occupied units (51.2%) in dually diverse neighborhoods than renter-occupied units (48.8%). The poverty rate in dually diverse neighborhoods declined over the study period; what began at 15.5% in 1970 ended up at 12.5% in 2000.

When comparing the demographic character of dually diverse neighborhoods to all neighborhoods in 2000, there is a smaller share of whites and larger shares of blacks and Hispanics in dually diverse neighborhoods. Dually diverse neighborhoods also have a larger share of foreign born persons and a lower share of owner occupied housing units, on average, when compared to all of the neighborhoods in the sample.

More interesting than their overall differences in 2000, however, is how the shares of select demographics have changed since 1970. The share of whites has greatly decreased in all neighborhoods, while decreasing only slightly in dually diverse neighborhoods. Hispanics have increased

their share in both types of neighborhoods, but the smaller change occurred in dually diverse neighborhoods. As for blacks, their share increased in all neighborhoods but decreased by nearly 8 percentage points in dually diverse neighborhoods. Also, there was a larger increase of foreign born residents as well as owner occupied housing units in dually diverse neighborhoods than in the typical neighborhood. Thus, dually diverse neighborhoods may prove to be immigrant-dense neighborhoods.

Now that I have discussed the demographic character of dually diverse neighborhoods and noted how it differs from that of the rest of the neighborhoods in my study sample I will turn to a discussion of the results of the regression analysis I used to determine the correlates of dually diverse neighborhoods.

REGRESSION ANALYSIS RESULTS

This section will present the findings from the two-stage least squares (2SLS) regressions, which I utilized to help determine what factors are associated with the presence of dually diverse neighborhoods. I estimate both direct and indirect effects of the independent variables on the change in the proportion of a metro area's neighborhoods that are dually diverse, so results for all of these analyses will be reported in turn. The complete regression model and its logic and explanation were provided in Chapter 3. I will begin by describing the results of the first stage of the 2SLS regressions, then move on to describing the results of the second stages. Using the results of all three models allows me to estimate the total effects of the independent variables on the proportion of dually diverse neighborhoods; hence, a discussion of the total effects will follow the discussions on indirect and direct effects.

To refresh the reader's memory, the first stage of the 2SLS procedure entails estimating predicted values of the troublesome endogenous variable (change in income distribution overlap) by using an instrument (number of outlet malls [in hundreds]) and the remaining exogenous predictors from the original model. For this first stage estimate, the adjusted r-square was 0.346 and the *F*-statistic was 3.65 ($p = 0.000$). The coefficient for the malls (in hundreds) instrument was 0.045 ($p = 0.000$). These results indicate that, although the entire set of independent variables didn't account for a lot of variation in change in income distribution overlap (witnessed by the relatively low adjusted r-square), the instrumental variable performed well as a predictor of change in the average multi-racial income distribution overlap (witnessed by the high level of significance of the estimated coefficient). The relatively low *F*-statistic is

somewhat worrisome, given the fact that it could indicate that my instrument is weak. However, the high p-value of the *F*-statistic does support the fact that there is a relationship between my instrumental variable, the other exogenous predictors, and the degree of income distribution overlap amongst the four racial-ethnic groups in my study. These results support my belief in the validity of my outlet malls (in hundreds) instrument, but its power is questionable (Murray 2006a).[36] A full listing of the results from the first stage of the 2SLS is reported in Appendix C.

After obtaining an estimated value of change in average multi-racial income distribution overlap from the first stage, I then executed the second stages of the 2SLS regressions, inserting the estimated value in the place of the troublesome income distribution overlap variable in the models predicting changes in economically diverse neighborhoods, racially diverse neighborhoods, and dually diverse neighborhoods, respectively. Estimated parameters for the second stage of all three regression models are presented in Table 4.11. Each set of results is discussed in turn below.

Indirect Effects

The indirect effects of the predictors were estimated by analyzing how the independent variables performed in predicting the change in incidence of both racially diverse neighborhoods and economically diverse neighborhoods, respectively. Presumably, the independent variables could work indirectly to influence changes in dually diverse neighborhoods by causing changes in the underlying incidence of either racially diverse neighborhoods, economically diverse neighborhoods, or both. Given that dually diverse neighborhoods are the intersection of these two types of diversity, variables that significantly predict changes in either type of neighborhood diversity would be indirectly influencing changes in dual diversity. Here I will review the findings of the two models predicting proportions of income diverse and racially diverse neighborhoods, respectively.

[36] According to Murray (2006), the pitfalls of retaining a weak instrument in a 2SLS model include bias and reduction in standard errors. Thus, confidence intervals computed using parameters estimated for weak instruments can be misleading because the midpoints could be biased and the width could be too narrow, therefore undermining hypothesis testing. Since my instrument may be weak, I will need to interpret my findings with caution.

Table 4.11: Estimated Regression Parameters (Stage 2 of 2SLS)

	Dependent Variables Change in Incidence of Neighborhoods that are:		
	Econ Diverse	**Race Diverse**	**Dually Diverse**
Predictor Variables	Beta Coeff	Beta Coeff	Beta Coeff
Inclusionary Zoning dummy variable	-0.167	-0.179	-0.009
Percent Tracts Gentrified, 1990-2000	0.137	-0.092	-0.010
Change in Metro Income Entropy	-0.046	-0.052	0.023
Instrument for Income Distribution Overlap	-0.128	0.205*	0.017
Change in Proportion Owner Occupied Housing Units	-0.413*	0.225	-0.018
Change in Proportion Population Age 18-24	-0.201	-0.142	-0.005
Change in Proportion Population Age 25-34	-0.400*	-0.149	-0.132*
Change in Proportion Population Age 35-44	-0.206	-0.281	-0.077
Change in Proportion Population Age 45-54	-0.003	-0.170	-0.162**
Change in Proportion College Educated Adults	-0.211	0.134	-0.005
Change in Proportion Population Black	0.040	0.115	-0.001
Change in Metro Race Entropy	-0.057	-0.148	-0.042
Change in Proportion Vacant Rental Units	-0.425*	0.154	0.045
Change in Proportion Vacant Sale Units	0.035	0.188	0.012
Change in Log of Median Sale Value of Housing Units	-0.021	-0.110	0.124
Change in Log of Median Rent of Housing Units	0.274	0.123	-0.102
Change in Proportion Families with Children under 18	0.033	0.166	0.035
Proportion of 2000 Foreign Born Persons Entering during 1990s	-0.021	0.326**	0.048
Percent Change in 1990 Housing Units (log10 transformed)	0.022	0.032	0.002
Change in Proportion Income Diverse Neighborhoods	N/A	N/A	0.076*
Change in Proportion Racially Diverse Neighborhoods	N/A	N/A	0.923**
Adjusted R-square	0.096	0.145	0.901

Note: * indicates p < .05; ** indicates p < .01.
All Change values are expressed as differences between 1990 & 2000.

Neighborhood Income Diversity

In reviewing the results for the model predicting changes in income diverse neighborhoods, there are several findings that merit discussion. First, the overall model didn't perform well at all in predicting changes in proportion income diverse neighborhoods. The adjusted r-square for the model was only 0.096, indicating that only a minimal amount of cross-metropolitan variance in changes in the incidence of income diverse neighborhoods can be predicted by the set of independent variables being utilized (less than 10%). Such a low r-square points to the fact that there are probably excluded variables that have been left out of the model. Of the entire set of independent variables

entered into the model predicting changes in income diverse neighborhoods, only three of them proved to be significant predictors: change in proportion owner occupied housing units, change in proportion population age 25 to 34, and change in proportion vacant rental units. The relationships between these three predictors and the incidence of economically diverse neighborhoods all prove to be negative. That is, as the proportion of owner occupied housing units, vacant rental units, and people age 25 to 34 in a metro areas decrease, the proportion of income diverse neighborhoods there increases. The magnitude of the beta coefficients is nearly the same for all three variables, indicating a similar effect of all three variables on the proportion of economically diverse neighborhoods in a metro area. The proportion of vacant rental housing units has a beta coefficient of -0.425, which was slightly stronger than the other two variables. This indicates that as the proportion of vacant rental units decreases by one standard deviation, the proportion of economically diverse neighborhoods increases by 0.425 standard deviations, on average.

The fact that a lower proportion of owner occupied housing units in a metro area is associated with a higher incidence of economically diverse neighborhoods agrees with theory that suggests that homeowners are likely to be less tolerant of neighborhood diversity since they are likely concerned about potential loss of their home equity in the face of potential neighborhood succession that may be foreshadowed by diversity. Thus, homeowners concerned with falling home values may leave a neighborhood that they suspect is beginning to show signs of becoming more income diverse. In this way they may inadvertently contribute to the neighborhood being only temporarily economically diverse or even never becoming diverse. Aside from homeowners possibly choosing to leave an economically diversifying neighborhood, it is also a possibility that homeseekers looking to buy a home may avoid economically diverse or diversifying neighborhoods altogether during their home searches, for the same reasons mentioned above. However, since renters are less likely to be concerned about the future value of the dwellings that they occupy, the fact that a neighborhood is economically diverse may not deter them from choosing this type of neighborhood when searching for housing. The findings of the regression analysis seem to support this theory, as well, given that lower proportions of vacant rental units are associated with higher proportions of economically diverse neighborhoods. Thus, rental

dwellings in economically diverse neighborhoods seem to be either staying occupied longer, filling up faster when vacant, or both.

These findings suggest that the proportion of economically diverse neighborhoods will be higher in metro areas that have more rental dwellings than owner occupied ones, and where the rental market is tight. Perhaps this finding is reflecting the fact that a tighter rental housing market in a metro area may make it more difficult for homeseekers with greater choice and opportunity to live in the homogeneous neighborhoods they may desire. In this scenario, those who might usually want and be able to choose less economically diverse neighborhoods may have to "settle" for a dwelling in a more economically diverse neighborhood than they wish to because of a smaller supply of dwellings to choose from on the rental market.

The fact that lower proportions of people age 25 to 34 (when compared to people age 55 and older) are associated with lower proportions of economically diverse neighborhoods could be reflecting the fact that adults in the 25 to 34 age group are at a point in their life cycle in which they are buying their first homes and having children, both of which circumstances may influence them to choose metro areas that are less income diverse.

On another note, the estimated value of the instrumental variable for income distribution overlap wasn't significant in this model. This non-finding is suggesting that the degree to which incomes and population numbers overlap amongst the four racial-ethnic groups in the study is not related to the proportion of income diverse neighborhoods in a metro area. This finding is expected given the fact that income distribution overlap is a measure of the degree to which incomes amongst the four different racial-ethnic groups in my study are alike (as well as how alike their underlying population proportions are) and since economic diversity is a measure of differences in incomes, income distribution overlap doesn't seem as if it would be a predictor of economic diversity in neighborhoods.

Neighborhood Racial Diversity

The model predicting changes in the proportion of racially diverse neighborhoods also yielded a low adjusted r-square value (0.145), although it was slightly higher than the r-square for the model

predicting income diverse neighborhoods. Hence, there are probably excluded explanatory variables that I have left out of the model predicting neighborhood racial diversity, as it's only able to explain about 15% of the variation in the proportion of racially diverse neighborhoods in metro areas.

In this model predicting neighborhood racial diversity, there were only two variables that proved to be significant predictors. The proportion of foreign born persons entering during the 1990s was positively related to change in proportion racially diverse neighborhoods, indicating that as the proportion of recent-arriving foreign born persons increases, so does the proportion of racially diverse neighborhoods. This finding makes intuitive sense given that many of the immigrants entering metro areas in the past several decades have a diversity of ethnic backgrounds and many would presumably be categorized into racial-ethnic categories other than white. An abundance of foreign born people with disparate racial and ethnic backgrounds in a metro area appears to provide the raw material necessary to achieve racial diversity in neighborhoods. This finding confirms what was discovered in the descriptive statistics regarding the typical dually diverse neighborhood, in that the percentage of foreign born persons within dually diverse neighborhoods has steadily increased each decade since 1970.

Interestingly and as expected, the instrumental variable for income distribution overlap was significant in this model. It also proves to be positively related to change in proportion racially diverse neighborhoods. Thus, according to these findings, the proportion of racially diverse neighborhoods increases as multi-racial income distribution overlap increases. These results show that increases in income distribution overlap amongst the four racial groups are related to increases in the proportion of racially diverse neighborhoods in metro areas. This finding supports the idea that racial diversity will be increased when homeseekers with different racial-ethnic backgrounds have some congruency amongst their incomes and in their absolute numbers in terms of population within each income category. Especially given that it is often the case that neighborhood housing units are priced within a similar range, it seems that racial diversity is abetted when members of different racial groups have the same financial ability to purchase or rent units within the same price range. Since the results of the *F*-statistic in the first stage of my 2SLS model indicated that my instrument might be weak, these results must be interpreted in light of this. Thus, I cannot be certain that this finding is actually reflecting a true relationship between the

degree of income distribution overlap amongst the four racial-ethnic groups and the proportion of racially diverse neighborhoods in a metro area.

When examining the beta coefficients for the income distribution overlap instrument and the proportion of recent-arriving immigrants one will see that the proportion of immigrants recently arriving in a metro area has a stronger effect on the proportion of racially diverse neighborhoods there than income distribution overlap does. Since the beta coefficient for proportion foreign born arriving from 1990 to 2000 is 0.326, this indicates that as the proportion of immigrants arriving from 1990 to 2000 increases by one standard deviation, the proportion of racially diverse neighborhoods in a metro area increases by about one-third of a standard deviation, on average.

Taken together, the findings of the analyses of the indirect effects of the independent variables on dually diverse neighborhoods show that there are a handful of predictors that do, in fact, have an indirect effect on the incidence of dually diverse neighborhoods. These variables work by influencing changes in the underlying proportion of either racially or economically diverse neighborhoods, which as I will explain next, have a strong relationship with the proportion of dually diverse neighborhoods. More will be said about these indirect effects later in the chapter.

Direct Effects

The model predicting change in proportion dually diverse neighborhoods performed much better than the other two models estimating the effects of the independent variables on economic diversity and racial diversity. The adjusted r-square was 0.901, indicating that over 90% of the variation in proportion dually diverse neighborhoods is being predicted by the model. In all, there were four significant predictors in the model: change in proportion population age 25-34, change in proportion population age 45-54, change in proportion income diverse neighborhoods, and change in proportion racially diverse neighborhoods.

Both of the age-related variables are negatively related to proportion of dually diverse neighborhoods, so as the proportion of population in a metro area within those two age brackets decreases (as compared to older adults age 55 and up), the proportion of dually diverse neighborhoods

increases there. Although these were the only age category variables that were significant predictors, it's interesting to note that all of the age-related variables were negatively related to change in proportion dually diverse neighborhoods.

The beta coefficients for these two age bracket variables are similar to one another, with proportion of people age 45 to 54 having a slightly stronger effect on the proportion of dually diverse neighborhoods in a metro area. So, according to the beta coefficient, as the proportion population age 45 to 54 in a metro area decreases by one standard deviation, the proportion of dually diverse neighborhoods there will increase by 0.162 of a standard deviation, on average.

Since the relationship of these age-related variables with the dependent variable needs to be interpreted in light of the excluded category (adults over the age of 54), overall the results imply that the presence of more older adults in metro areas is related to higher proportions of dually diverse neighborhoods. Perhaps this finding is reflecting the fact that as older adults age in place, their neighborhoods become more racially and economically diverse around them. Perhaps such older adults are more connected and dedicated to staying in their neighborhoods if they've lived there for a long period of time. Furthermore, as older residents age they may be less able to move out of a diversifying neighborhood for a number of reasons and therefore they make up significantly higher proportions of the population within metro areas with high proportions of dually diverse neighborhoods, as compared to younger adults.

This finding also suggests that the forces that might repel younger adults from living in metro areas with dually diverse neighborhoods (such as fears about poor school quality and the idea that they are somehow protecting their children by living in homogeneous neighborhoods) don't apply to older adults. So while younger adults may be motivated to exercise their ability to move out of a diversifying neighborhood, it seems that these motivating forces are not necessarily affecting the older adults present in these neighborhoods in the same way.

The results regarding the younger age category variables run counter to the predictions made in the previous chapter. As a refresher, these variables were used to proxy preferences for living in diverse

neighborhoods, with theory suggesting that younger adults are more likely to be tolerant of neighborhood diversity. However, the results of the regression analysis indicate that just the opposite is the case—younger adults in all age categories other than those age 55 and older are less likely to live in metro areas with higher proportions of dually diverse neighborhoods.

As expected, the proportion of income diverse neighborhoods and the proportion racially diverse neighborhoods present in a metro area were significant predictors of the proportion of dually diverse neighborhoods. Intuitively, these findings support the fact that if the raw material needed to produce dually diverse neighborhoods is present in metro areas (i.e. economically diverse neighborhoods and racially diverse neighborhoods), the likelihood of the presence of their intersection, dually diverse neighborhoods, is increased.

Although both proportion income diverse neighborhoods and proportion racially diverse neighborhoods were significant predictors of dually diverse neighborhoods, proportion racially diverse neighborhoods is by far the larger contributor to the incidence of dually diverse neighborhoods. The beta coefficient for racial diversity was more than nine times that for income diversity, indicating that increased racial diversity is the main force driving increases in dually diverse neighborhoods. This finding agrees with the Venn diagram (Figure 4.1) analysis presented earlier in the chapter where increases in racial diversity within neighborhoods was shown to be the key mechanism operating on the increase in dually diverse neighborhoods over the entire study period. By referring back to Table 4.9, one can see that there is considerably more variation in the proportion of racially diverse neighborhoods present in the 100 largest metro areas over the study period than there is in the proportion of economically diverse neighborhoods, which is why the proportion of racially diverse neighborhoods appears to be so much more important as a predictor of dually diverse neighborhoods than the proportion of economically diverse neighborhoods.

Total Effects

The preceding discussion indicates that the apparent influence of some explanatory variables transpired indirectly through either the incidence of income diverse or racially diverse neighborhoods, while other variables appeared to act directly upon the joint incidence of these two types of diversity while

holding the incidences of economically and racially diverse neighborhoods constant. When direct and indirect effects are combined, the total effect is produced. Results of these calculations are provided in Table 4.12.

Table 4.12: Predicted Total Effects of Independent Variables on Dual Diversity

	Effects (Beta Coefficients)			
Independent Variable	Direct	Indirect (Econ Div)	Indirect (Race Div)	Total
Instrument for Income Distribution Overlap	-	-	0.205*	0.205
Change in Proportion Owner Occupied Housing Units	-	-0.413*	-	-0.413
Change in Proportion Population Age 25-34	-0.132*	-0.400*	-	-0.532
Change in Proportion Population Age 45-54	-0.162**	-	-	-0.162
Change in Proportion Vacant Rental Units	-	-0.425*	-	-0.425
Proportion of 2000 Foreign Born Persons Entering during 1990s	-	-	0.326**	0.326

Notes:

1.) * indicates p<.05; ** indicates p<.01.

2.) Independent variables are included in the table if they had at least one significant direct or indirect path.

3.) Total effects are the sum of significant direct and indirect beta coefficients.

What Table 4.12 demonstrates is that the predictor that had the strongest total effect on the proportion of dually diverse neighborhoods in a metro area is the proportion of the population between the ages of 25 and 34. When the proportion of people within this age group decreases by one standard deviation (as compared to adults over the age of 54), the proportion of dually diverse neighborhoods increases by more than half of a standard deviation, on average. This total effect is comprised of a combination of indirect negative effects through proportion economically diverse neighborhoods, as well as a direct negative effect on dually diverse neighborhoods.

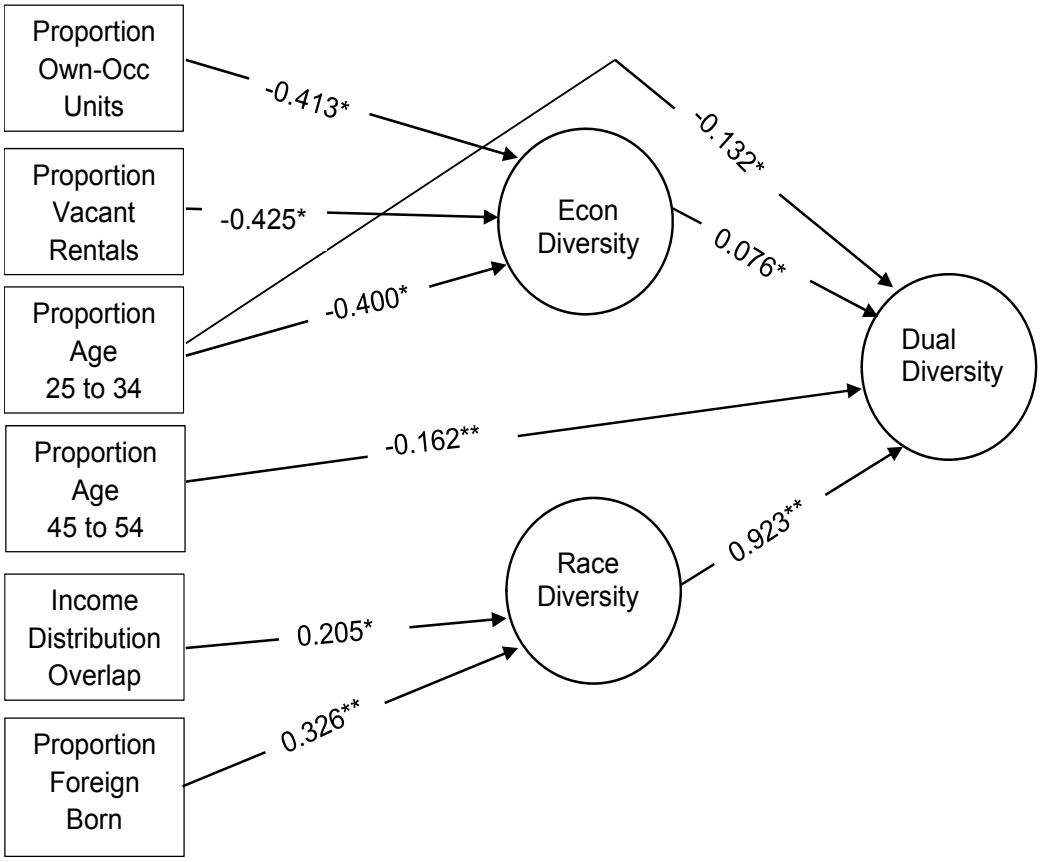
Both of the variables concerning housing market characteristics have relatively strong effects, as well. When the proportion of vacant rental units decreases by one standard deviation, the proportion of dually diverse neighborhoods increases by 0.425 standard deviations, on average. This effect transpires exclusively as a negative indirect effect through proportion economically diverse neighborhoods. Proportion owner occupied housing units is also negatively and indirectly related to proportion dually diverse neighborhoods through proportion economically diverse neighborhoods. Its effect, however, is slightly less than that of proportion vacant rental units.

The two predictors that transpire only indirectly through proportion racially diverse neighborhoods are the income distribution overlap instrument and proportion recent-arriving foreign born. Both of these variables have positive indirect relationships, but proportion foreign born has a stronger effect on proportion dually diverse neighborhoods.

The predictor with the weakest effect on dually diverse neighborhoods is the proportion population between the ages of 45 and 54. This is a direct negative effect, and this is the only predictor variable whose relationship with dually diverse neighborhoods transpires only directly. As the proportion of population in this age group decreases by one standard deviation, the proportion of dually diverse neighborhoods increases by only 0.162 standard deviations, on average.

In order to more clearly elucidate the findings of these path analyses, the results are also presented in graphic form in Figure 4.3. In this figure, the boxes on the left represent the independent variables while the circles represent the dependent variables (economic diversity and racial diversity are the intervening dependent variables, through which the independent variables can work to affect dual diversity). The arrows represent the relationships between the independent and dependent variables, with the values inside the arrows indicating the size and direction of the relationship (beta coefficient). One can clearly see from this figure that the proportion of population between the ages of 25 and 34 is the only predictor variable that has both direct and indirect effects on proportion dually diverse neighborhoods. We can also see that the proportion of the population between the ages of 45 and 54 is the only predictor with an exclusively direct effect on proportion dually diverse neighborhoods.

Figure 4.3: Path Model for Predictors of Dual Diversity



Note: * indicates p < .05, ** indicates p < .01.

What is also clear from this illustration is the fact that, of all of the variables in the complete model, the proportion of racially diverse neighborhoods is the strongest predictor of dually diverse neighborhoods. This variable, in turn, is influenced by the proportion of recently entering foreign born residents to a metro area and the degree of income distribution overlap amongst the four racial-ethnic groups in the study.

Non-findings

Although the three regression models collectively explain a good deal of the variation in the proportion of dually diverse neighborhoods in a metro area (particularly due to the increase in racially diverse neighborhoods, which are in turn influenced by increases in income distribution overlap amongst the four racial groups and influxes of foreign born persons), it was quite surprising that so many of the predictor variables proved to be insignificant in the models.

For instance, the one policy-related variable included in the models was a dummy variable indicating whether the metro area required inclusionary zoning. Inclusionary zoning was expected to be a positive predictor of income diversity in neighborhoods since its aim is to encourage income mixing within large housing developments. To test the robustness of the findings regarding inclusionary zoning, I also executed my regression models excluding Washington DC as a metro area requiring inclusionary zoning (since inclusionary zoning is only required in a portion of the metro area namely Montgomery County, MD). Regardless of how the variable was specified, however, inclusionary zoning never proves to be positively correlated with any type of mixing in neighborhoods, as predicted.

Several of the variables related to the housing market also proved not to be significant predictors of dual diversity (either directly or indirectly). Housing prices for sale units and rent levels do not seem to be related to neighborhood diversity (either economic or racial), according to my models. It was also surprising that the degree of gentrification wasn't related to the degree of dual diversity in metro areas. It was predicted that gentrification and dual diversity would be directly related to one another since the process of gentrification presumably involves people with higher incomes (and typically white) buying homes in neighborhoods with lower median incomes and perhaps higher proportions of minorities. It seemed likely, then, that gentrification could contribute diversity to neighborhoods where it was present, but that doesn't appear to be the case according to my regression results. Perhaps I was unable to identify an effect of gentrification on the incidence of dually diverse neighborhoods due to the fact that there just wasn't much variation in the presence of gentrified neighborhoods across my sample of large metro areas. For instance, the mean percentage of gentrified neighborhoods across the sample was only 7%. Also, over 14% of the cases had no gentrified neighborhoods present at all.

Some of the more surprising non-findings were the fact that neither the overall racial entropy nor the overall income entropy of the metro area was related to the proportion of dually diverse neighborhoods. It was predicted that higher racial entropy scores would be associated with higher proportions of racially diverse neighborhoods, and likewise, that higher income entropy scores would be associated with higher proportions of income diverse neighborhoods. These predictions were based on the intuition that if more race or income diversity was present at the metro area-level it would make

income or race mixing at the neighborhood-level more likely. However, what appears to be the case is that even if there is a good deal of racial and/or economic diversity at the metro-area level, this means nothing for neighborhood mixing if there is complete sorting (either by race, income, or both) occurring at the neighborhood level.

The other variable measuring racial characteristics, change in the proportion of the black population, also proved to be an insignificant predictor of dual diversity. It was predicted that changes in the black population might influence either increases or decreases in the proportion of economically diverse neighborhoods and that the proportion of racially diverse neighborhoods would be negatively affected by increases in the black population. None of these predictions proved to be operating within any of the regression models that I specify. This non-finding is particularly intriguing given the fact that increases in neighborhood racial diversity seemed to be the driving force in increasing the proportion of dually diverse neighborhoods in metro areas. Perhaps the gains in racial diversity that are driving the gains in dual diversity are being caused by the addition of minorities other than blacks to metro areas. This idea is supported by the fact that increases in foreign born populations in metro areas was a significant predictor of increases in the incidence of racially diverse neighborhoods. Perhaps this non-finding is demonstrating the theory introduced by Charles (2003) regarding the fact that members of all of the other racial-ethnic groups disliked having blacks as neighbors, but that other minorities are considered more acceptable neighbors across the board.

Other predictors that were expected to influence dual diversity but didn't were those related to preferences. The proportion of college educated adults was expected to be directly related to both economic diversity and racial diversity, since college educated people were expected to be more tolerant of both types of diversity. Also, proportion families with children was expected to be negatively related to the proportion of racially diverse neighborhoods in a metro area, since families with children would be expected to want to "protect" their children from racial diversity. However, neither of these variables proved to be significant predictors of any type of neighborhood diversity. Since both of these variables were serving as proxies for another underlying concept (personal preferences), though, these non-

findings could be pointing to the fact that these variables actually are not very good proxies for personal preferences for living in racially and economically diverse neighborhoods.

Finally, a measure of metro area growth, the proportional change in the number of housing units, also proved not to be a significant predictor of dual diversity. It was thought that this variable would be negatively related to neighborhood income diversity but positively related to neighborhood racial diversity. Since newer housing generally consists of dwellings valued around the same price point, economic diversity might be negatively related to the proportion of new housing. Yet, newer housing developments may also be more racially inclusive, leading to more neighborhood mixing by race. Although these predictions make intuitive sense, they do not operate as expected in the empirical models.

Taken together, the fact that so many of the independent variables in the models performed poorly indicates that the models predicting dual diversity are inadequately specified and should be reconsidered. Although I am able to determine that the most important predictor of dual diversity is racial diversity, I am only able to explain a small amount of the variation in racial diversity with the set of independent variables I utilize. The overarching concern, then, is that much of what is causing increases in racial diversity at the neighborhood level (aside from increases in multi-racial income distribution overlap and increases in foreign born persons) is largely unknown. Perhaps there are micro-level processes occurring in neighborhoods that simply are not being captured by looking at the phenomenon of dually diverse neighborhoods from a metro-level analysis. Such processes may involve things such as individual homeseekers purposefully choosing to live in racially diverse neighborhoods or certain neighborhoods becoming more desirable because of their affordability or because of some element of caché that are attracting residents from a variety of differing racial-ethnic backgrounds. Perhaps older neighborhoods with dilapidated housing units, which are likely located in city centers, are seeing regeneration once older unlivable dwellings are replaced with newer in-fill housing that attracts people from differing backgrounds, as well.

Endogeneity Bias Correction

The reason I executed a 2SLS regression model when predicting the incidence of dually diverse neighborhoods was to correct for possible endogeneity bias introduced by the multi-racial income

distribution overlap variable. Here I will discuss whether my models were able to successfully reduce bias when an instrumental variable specification was used.

In order to determine the magnitude of bias reduction netted by using a 2SLS specification, I ran ordinary least squares (OLS) models for my three dependent variables including the biased income distribution overlap variable as an independent variable. I then compared the coefficients for the income distribution overlap variable in the OLS models to its instrument in the 2SLS models. These coefficients are reported in Table 4.13, below.

Table 4.13: Coefficients from OLS & 2SLS Models

	Variable	
Model Predicting:	**Overlap**	**IV**
Economic Diversity	-3.48*	-2.024
Racial Diversity	4.67*	4.89*
Dual Diversity	0.428	0.333

Note: * indicates coefficient is significant ($p < .05$).

One will notice when examining Table 4.13 that the coefficients for the income distribution overlap variable in the OLS models and the instrumental variable in the 2SLS models are different from one another in all three of the models estimated. In the model predicting the proportion of dually diverse neighborhoods, the coefficient for the instrument is smaller in magnitude than the coefficient for the biased overlap variable, whereas in the model predicting proportion racially diverse neighborhoods the coefficient for the instrument is slightly larger in magnitude than the biased overlap variable. These changes in effect size probably indicate some degree of bias correction, but I cannot be certain given the likely weakness of my instrument based on the low *F*-statistic.

However, one probable indicator of bias correction is the fact that the biased income distribution overlap variable is significant in the OLS model predicting proportion economically diverse neighborhoods, but when the instrument is substituted in the 2SLS model, the variable is considerably smaller in magnitude and no longer significant. These findings most likely indicate that when the income distribution overlap variable is entered into the OLS model with the other independent variables with

which it is endogenous, the model erroneously produces a significant finding. In other words, it is not necessarily the income distribution overlap variable itself that is significant but perhaps its circular relationship(s) with one or more of the other independent variables or with the dependent variable itself. Thus, if one were to take the findings of the OLS model including the endogenous income distribution overlap variable at face value, without considering the fact that endogeneity may be at work, it would be possible to draw erroneous conclusions based on the results. Therefore, using the 2SLS approach to estimate the effects of income distribution overlap on the incidence of dually diverse neighborhoods appears to have been the correct approach to take to reduce the endogeneity bias introduced by the multi-racial income distribution overlap variable, even though the instrument may have been a weak one.

SUMMARY OF FINDINGS

Now that all of the research questions posed have been answered, I will quickly review the main findings of the study. Here is a summation of what I found concerning dually diverse neighborhoods based on the research questions I asked:

- While the incidence of economically diverse neighborhoods declined slightly over the study period 1970 to 2000, racially diverse neighborhoods increased enough to be the driving force underlying the dramatic increase in dually diverse neighborhoods since 1970.
- The incidence of dually diverse neighborhoods has nearly doubled each decade since 1970, beginning at just 2% of all neighborhoods in the 100 largest metro areas in 1970 and ending up at around 15% off all neighborhoods in 2000.
- Geographically, dually diverse neighborhoods are more likely to be found in metro areas that are near the edges of the continental United States. The states containing the most metro areas with high shares of dually diverse neighborhoods are California, Florida, New Jersey and Texas.
- Not all dually diverse neighborhoods are located in central cities; in fact metro areas such as Chicago and Detroit actually have more dually diverse neighborhoods located in their suburbs than in their city centers.
- Dually diverse neighborhoods are fairly stable from 1990 to 2000, with more than half of those classified as dually diverse in 1990 remaining so in 2000.

- Demographically, dually diverse neighborhoods have a mix of races and ethnicities, with households identified as Asian and other doubling in these types of neighborhoods since 1970. The share of foreign born households have increased significantly in dually diverse neighborhoods over the study period, while the share of children age 5 to 17 has declined. The presence of owner occupants has increased slightly, while the poverty rate in dually diverse neighborhoods simultaneously declined since 1970.
- Regarding my regression results, I was only able to identify and handful of variables out of my battery of independent variables that predicted the incidence of economically diverse and racially diverse neighborhoods, respectively. Owner occupancy, people age 25 to 34 (as compared to people age 55 and older), and vacant rental units were all negatively associated with the incidence of economically diverse neighborhoods, whereas foreign born residents and overlap in the income distribution amongst the four racial groups were positively related to the incidence of racially diverse neighborhoods. Neither of these regression models was able to explain a great deal of the variation in the dependent variable of interest, indicating that both probably need to be reexamined because there are likely explanatory variables that have been excluded from the models.
- My regression model predicting the incidence of dually diverse neighborhoods performed better than the other two models in explaining the variance in proportion dually diverse neighborhoods across the 100 largest metro areas. The results revealed that people age 25 to 34 and 45 to 54 (as compared to people age 55 and older) were negatively related to the incidence of dually diverse neighborhoods. The findings also indicated that the presence of economically diverse and racially diverse neighborhoods were also predictors of dual diversity, which was expected. However, the presence of racially diverse neighborhoods was the strongest predictor of the presence of dually diverse neighborhoods of all the predictor variables.
- The path model exploring the total effects of the independent variables on the incidence of dually diverse neighborhoods indicates that the predictor that had the strongest total effect on the proportion of dually diverse neighborhoods was the proportion of population between the ages of 25 to 34 in a metro area. This variable was negatively related to proportion dually diverse

neighborhoods which worked directly on the dependent variable, as well as working indirectly through the proportion economically diverse neighborhoods.

- Methodologically, the use of the 2SLS method most likely allowed me to control for endogeneity bias that was introduced into my models by the multi-racial income distribution overlap variable, even though my instrument may be a weak one.

Since the research questions have now all been answered, I will turn to a discussion of the implications of these findings in the following chapter, where I will also summarize and conclude the study.

CHAPTER 5

IMPLICATIONS AND CONCLUSION

This concluding chapter will discuss the implications of the findings of my study on the prevalence, geography, stability, and correlates of dually diverse neighborhoods in the largest 100 metro areas in the United States. I will also discuss how my findings fit in with what is already known about diverse neighborhoods (both economically and racially). Finally, I will point out ways that my study could be improved and next steps that should be taken in the pursuit of knowledge about dually diverse neighborhoods.

STUDY IMPLICATIONS

Since I asked a number of research questions about dually diverse neighborhoods, I will discuss the implications of the findings of these questions in turn. I will begin by discussing the implications of the changes in the prevalence of economically diverse neighborhoods, racially diverse neighborhoods, and dually diverse neighborhoods. Next I will discuss the implications of the findings of geographic location of dually diverse neighborhoods. I will then move on to discussing the implications of the stability analysis, ending with a discussion of the implications of the regression analysis results.

Implications of Extent of Neighborhood Diversity Analyses

The results of my analysis of the prevalence of economically diverse neighborhoods indicated that they are quite prevalent in the 100 largest metro areas, yet their prevalence has been declining since 1970. One of the more distinct findings was that neighborhoods with a majority of households in the tails of the income distribution (very low income and very high income) are becoming more common in the metropolitan landscape of neighborhoods. This suggests a bifurcation of neighborhoods according to income. The causes of this bifurcation are beyond the scope of this study, but would be an interesting topic to investigate (Galster and Booza 2007). What is clear, though, is that if economic diversity within neighborhoods continues on the same trajectory of decline that has been demonstrated in this study, we may well need to revisit the issue of economic segregation in the future. Perhaps continuing to institute

and even expanding the use of public policy interventions such as inclusionary zoning could help to stem the decline in neighborhood economic diversity that has been the trend since 1970.

As far as the implications of the results of my analysis of the prevalence of racially diverse neighborhoods are concerned, the main finding was that racially diverse neighborhoods have been steadily increasing since 1970. Moreover, this trend was found to be the key element driving the increase in dually diverse neighborhoods over the study period. This implies that if we value neighborhood diversity in terms of both income and race, we may want to focus our efforts on fostering racial diversity within our neighborhoods as a first step since racial diversity is such an important piece of the dual diversity puzzle. Perhaps this could be achieved by continuing and expanding public policy interventions related to pro-integrative strategies such as affirmative marketing, affirmative housing search assistance and financial incentives for diversity (Freiberg 1993).

Furthermore, according to my findings, if the growth in neighborhood racial diversity continues, we should expect dually diverse neighborhoods to continue to grow, as well. Thus, it will be interesting to see if the pattern of doubling in dual diversity from decade to decade that was documented in my study has continued when the 2010 Census data are released. Although dually diverse neighborhoods only made up around 15 percent of neighborhoods in 100 largest metro areas in 2000, the fact that their presence has increased so rapidly since 1970 is encouraging for the prospect of our country becoming less racially segregated in terms of residential patterns and thus the well-documented negative effects of racial residential segregation may, in turn, be reduced. However, although these signs point to a reduction in residential inequality in terms of race, it seems that economic residential inequality may be on the rise.

Implications of Geographic Location of Dually Diverse Neighborhoods Analysis

The results of my analysis of the geographic location of dually diverse neighborhoods across the country yielded the finding that many dually diverse neighborhoods are situated along the edges of the continental United States. Particularly, California, Florida, New Jersey and Texas all had high shares of dually diverse neighborhoods. More than likely, metro areas within these states probably serve as ports of entry for immigrants relocating to the United States. As I found in the regression results, recently-

arriving immigrants are an important factor in increasing the racial diversity of a metro area, and thus the dual diversity of neighborhoods within those metro areas. Clearly, these ports of entry are appealing to newly arriving immigrants for a number of reasons, but one of those reasons may simply be their geographic location. Perhaps we could encourage the dispersal of dually diverse neighborhoods throughout other parts of the country by making other metro areas more appealing to immigrants in areas such as the Great Plains, the Midwest, and the Mountain West. This only seems likely to occur if there are jobs, housing, and social supports in place to make moving to one of these areas a more viable option for newly arriving immigrants. Some more inland metro areas such as Atlanta, GA, Chicago, IL, and Louisville, KY seem to be on the right track as far as attracting newly arriving immigrants is concerned. All three of these metros added a significant proportion of their foreign born populations during the 1990s and all three also saw corresponding increases in their proportions of dually diverse neighborhoods.

Implications of Stability Analysis of Dually Diverse Neighborhoods from 1990 to 2000

The results of my stability analysis of dually diverse neighborhoods from 1990 to 2000 revealed that more than half of the dually diverse neighborhoods identified as such in 1990 remained so in 2000. So although some researchers have suggested in the past that neighborhood integration is simply a fleeting condition whereby neighborhoods are transitioning from being all-white to being all-minority occupied (Ottensmann 1995), my analyses indicate that transition is not actually the norm, but that stability is. Finding ways to convey the fact that dually diverse neighborhoods are more likely to remain diverse rather than transitioning might be a way to attract prospective residents to and keep existing residents in such neighborhoods. Additionally, owner occupants might be less likely to leave diverse or diversifying neighborhoods if their fears of losing home equity and neighborhood quality were offset by evidence that dually diverse neighborhoods are indeed relatively stable. Perhaps targeted information dissemination via real estate agents, newspapers, and the internet could help to spread the word that dually diverse neighborhoods are more likely to remain stable than to transition into less diverse scenarios.

Even though more than half of the dually diverse neighborhoods I identified in my sample remained stably integrated from 1990 to 2000, there were nearly half of them that did transition into less diverse situations (either economically, racially, or both) over the same period. With the release of the 2010 Census data coming soon, it will be interesting to see whether more dually diverse neighborhoods identified in 2000 were able to maintain their dually diverse status through 2010. If results of such future analyses don't show gains in stability, perhaps some targeted stabilizing efforts could be considered to help dually diverse neighborhoods to remain racially and economically integrated. These efforts might include things such as economic investment in neighborhood infrastructure, the addition of parks and other recreational activity centers, blight removal and beautification strategies, or the formation of neighborhood community groups that might help to foster a sense of neighborhood solidarity amongst residents.

Implications of Regression Analysis Results

The findings of my regression analyses of the predictors of neighborhood diversity according to income, race, and the intersection of these two types of diversity—dual diversity—reveal several significant relationships. Lower proportions of owner occupied dwellings, people age 25 to 34 (as compared to those over 54), and vacant rental dwellings in metro areas were all associated with higher proportions of economically diverse neighborhoods there. Lower proportions of people ages 25 to 34 and 45 to 54 (as compared to people age 55 and older) were associated with higher proportions of dually diverse neighborhoods. Higher proportions of economically diverse neighborhoods were also associated with higher proportions of dually diverse neighborhoods in metro areas, but by far the most important factor contributing to higher proportions of dually diverse neighborhoods in metro areas was the proportion of racially diverse neighborhoods there. Increases in neighborhood racial diversity, in turn, seem to be influenced by increases in the proportion of recently-arriving immigrants and growing congruency in both the raw population counts and the income distributions of the four different racial-ethnic groups in my study (as measured by the multi-racial income distribution overlap variable).

The implications of these findings, taken together, is that the story of how to increase the presence of dually diverse neighborhoods must really be one about how to increase racial diversity in

neighborhoods, since economic diversity seems to almost be a given in many metropolitan neighborhoods as of 2000. Since the results were able to identify two factors that are related to the incidence of racially diverse neighborhoods, namely immigration and income distribution overlap, future efforts to try to foster neighborhood racial diversity should focus on the importance of these two factors.

For instance, although the issue of immigration is certainly a contentious one in our modern society, it is clear that we would not have achieved the level of neighborhood racial diversity revealed in this study without the influx of foreign born residents into the country during the 1990s. Therefore, strategies aimed at trying to foster the further development of racially diverse neighborhoods in metro areas would be wise to consider how they might attract recently-arriving immigrants to these neighborhoods. As mentioned before, decent housing, jobs, and social services are the minimal requirements, but additional characteristics such as retail options, farmers' markets, and other neighborhood amenities could serve as attractive qualities for incoming foreign born residents.

The other variable that seems to be related to the proportion of racially diverse neighborhoods in a metro area is the income distribution overlap of racial groups. What this implies is that as the proportional numbers of people within the four racial-ethnic groups becomes more congruent, as they seem to be doing in many metro areas, and as the income distributions of these groups become more similar, racial diversity within neighborhoods will be a more likely outcome. Therefore, the simultaneous trends of increases in minority population and decreases in racial income inequality could be foreshadowing continued increases in racial diversity in neighborhoods.

In order to keep the trend of increased multi-racial income distribution overlap moving in a positive direction, perhaps some focused efforts aimed at minority students might be in order. For instance, disseminating information about the link between racial income equality and neighborhood racial diversity might encourage minority students to continue their education in order to achieve economic gains that would in turn allow them the ability to purchase or rent dwellings in diverse neighborhoods rather than being relegated to living in racially segregated neighborhoods.

Since it seems that most white households have accepted having at least some minority neighbors (Turner and Rawlings 2009), perhaps overcoming another barrier to entry into white neighborhoods, namely inability to pay for housing in these neighborhoods, might be a way to encourage more racial diversity within mostly white neighborhoods. Increased income distribution overlap amongst the four racial-ethnic groups may very well be a sign that minorities' ability to pay for higher quality housing is increasing along with their presence in metro areas.

Aside from neighborhood racial and economic diversity serving as significant indicators of dually diverse neighborhoods in metro areas, there were also two other predictor variables that proved to be directly related to the incidence of dually diverse neighborhoods: lower proportions of people age 25 to 34 and 45 to 54 (as compared to people age 55 and older). What these findings suggest is that higher proportions of older adults in metro areas, as compared to younger ones, are likely to yield more dually diverse neighborhoods. Given that our population is aging rapidly (for instance, the share of adults over the age of 54 has grown from around 22 percent in 2003 to around 25 percent in 2009 (U.S. Bureau of the Census 2003)), neighborhoods may become somewhat more dually diverse over time due to population aging without much additional intervention. Although aging in a population is inevitable, advances in biomedicine will continue to allow Americans to live longer and longer lives. This fact alone could help to increase the presence of dually diverse neighborhoods, according to my regression results.

It is interesting to note that decreases in the proportion of people age 25 to 34 (as compared to their over-54 counterparts) were both directly and indirectly (through the incidence of economically diverse neighborhoods) related to the incidence of dually diverse neighborhoods, yet I am unable to come up with a cogent explanation as to why the relative absence of people within this particular age group increases both economically and dually diverse neighborhoods. Certainly, there seems to be something intrinsically to do with this age group's relative absence in metro areas that leads to more economically and dually diverse neighborhoods, I am just not able to put my finger on what that is. It doesn't seem likely that the inherent qualities about the relative absence of this age group has to do with their likelihood of having young children or their preferences for living in diverse environments, since I controlled for both

of these factors. Thus, further investigations into the correlates of dually diverse neighborhoods would be well advised to further probe this puzzling relationship.

Policy Suggestions to Address the Multidimensional Nature of Dually Diverse Neighborhoods

In general, the findings of my analyses of the predictors of dually diverse neighborhoods have shown that, like racial residential segregation, neighborhood racial and economic diversity appears to be a multidimensional phenomenon with multiple underlying causal connections. Since I was only able to identify a handful of significant predictors of dually diverse neighborhoods from the battery of independent variables I utilized, there are clearly other factors that are related to their presence in metro areas that I haven't captured in my model. But whether or not all of the causal underpinnings of dually diverse neighborhoods are identified, it seems likely that any public policy interventions attempted in order to encourage the development and maintenance of dually diverse neighborhoods should also take a multi-pronged approach.

Several strategies that could be successful in helping to reduce the persistent causes of residential segregation, and therefore increase neighborhood diversity, have been suggested by Turner and Rawlings (2009). In order to address the tendency for some real estate agents to "steer" their clients to neighborhoods where their own race predominates, public policy should vigorously enforce existing fair housing laws. To counter real estate marketing practices and families' search strategies that limit information about the availability of diverse neighborhoods, public policy should be enacted to provide information and incentives to individuals who broaden their horizons and consider living in diverse neighborhoods. Since minorities are sometimes excluded from predominantly white neighborhoods with high housing costs because of generally lower relative average incomes and wealth than whites, the availability of affordable housing in non-poor neighborhoods should be expanded, along with the use of housing vouchers which enable low-income families to move to better neighborhoods. Targeted public investments to equalize neighborhood quality and services should be utilized in order to address the fact that many predominantly minority neighborhoods are deprived of needed public services and private investment, which in turn make those neighborhoods unattractive to homeseekers with an abundance of choices. Additionally, public investments should be targeted to maintain safety and quality in

neighborhoods with growing minority populations since white households tend to avoid neighborhoods with rising minority shares because they expect the neighborhoods to suffer from neglect and disinvestment. Taking a multidimensional approach such as this could help to overcome the both complex and subtle dynamics that sustain residential segregation today (Turner and Rawlings 2009). As a result, we could continue to see growth in dually diverse neighborhoods as the barriers to living in diverse neighborhood environments are surmounted.

LINKS TO RELEVANT THEORIES AND RESEARCH

The findings of my investigation into the extent, geographic location, stability, and predictors of dually diverse neighborhoods have a variety of connections to the scholarly literature on diverse neighborhoods. Additionally, my study builds on the extant knowledge about neighborhood diversity in that I have explored a topic that is not yet well understood—the intersection of racial and economic diversity in neighborhoods and its predictors.

Neighborhood Economic Diversity

When it comes to the research on neighborhood economic diversity, my study agrees with previous findings which provide evidence for a great deal of income diversity being present in American neighborhoods, both in 2000 and in earlier decades (Dow 2003; Hardman and Ioannides 2004a; Hardman and Ioannides 2004b; Hardman and Ioannides 2004b; Immergluck and Smith 2002; Immergluck and Smith 2003; Ioannides and Seslen 2002; Manning, Schweitzer, and Darnton 2004). However, most of these studies examine neighborhood economic diversity as a static state rather than assessing trends in economic diversity over time, as my study does. Since these previous studies weren't able to analyze trends in economic diversity from 1970 to 2000, as I am, their analyses fail to capture the fact that neighborhood economic diversity is, in fact, declining in U.S. metro areas (although it still remains relatively high), according to my findings. One study of neighborhood economic diversity that does assess trends in the phenomenon from 1970 to 2000 supports this finding (Galster, Booza, and Cutsinger 2008).

The results of my regression analyses regarding the predictors of economically diverse neighborhoods agree with the findings of Thomas et al. (2004) in their study of neighborhood income

mixing in Grand Rapids, MI. In determining what characteristics the neighborhoods they identified as economically diverse shared, they found that less vacant housing is an important indicator of economically diverse neighborhoods in Grand Rapids. Although my findings suggest that housing vacancies are specific to the rental segment of the housing market in determining the proportion of economically diverse neighborhoods in a metro area, the findings are nevertheless supportive of one another.

One point of departure between my regression findings and those of others, however, is the fact that some have found that the presence of more owner-occupied housing is a common characteristic in economically diverse neighborhoods (Ioannides 2004; Krupka 2005; Talen 2006a; Thomas, Schweitzer, and Darnton 2004), whereas I found that that less owner-occupied housing in a metro area was associated with more economically diverse neighborhoods there. Perhaps these divergent results are attributable to the fact that I examined metro area-level characteristics while these other studies examined neighborhood-level characteristics.

Neighborhood Racial Diversity

As with the literature on neighborhood economic diversity, my study findings on the extent and trends related to neighborhood racial diversity agree with what previous research has found. That is, stable neighborhood racial diversity has been steadily increasing over the decades (Denton and Massey 1991; Lee 1985; Lee and Wood 1990; Lee and Wood 1991; Taub, Taylor and Dunham 1984 Ellen 1998; Ellen 2000; Nyden, Maly and Lukehart 1997; (Fasenfest, Booza, and Metzger 2004; Rawlings, Harris, Turner, and Padilla 2004) Collectively, these studies place the extent of racially diverse neighborhoods somewhere between 7 percent and 20 percent of U.S. metropolitan neighborhoods. According to my study, racially diverse neighborhoods made up 21 percent of neighborhoods in the 100 largest metro areas. Thus, my work agrees with the extant knowledge about the degree of racial diversity in metropolitan neighborhoods in the U.S.

A link that my regression results have to existing research on racially diverse neighborhoods is that overlap in the income distributions of the different racial groups in my study appears to be related to the incidence of racially diverse neighborhoods in metro areas. Similarly, in her study of characteristics

related to the stability of racially diverse neighborhoods, Ellen (2000) identifies the relative incomes of blacks and whites in the neighborhood as an important factor for determining the stability of racially integrated neighborhoods (where greater similarity yields greater stability). Although our dependent variables aren't exactly the same in our analyses, my findings and those of Ellen's both support the notion that greater income equality amongst whites and minorities can be a catalyst for neighborhood racial diversity.

The class theory of racial residential segregation posits that high levels of racial segregation reflect real economic differences between blacks and whites (Charles 2003; Dawkins 2004; Massey and Denton 1993). Thus, if economic differences between whites and minorities declined, we would expect that racial residential segregation would also decline. The results of my regression analysis examining the predictors of racially diverse neighborhoods seem to support this notion. My results indicated that as the income distributions of whites and the other three minority groups become more congruent, the incidence of racially diverse neighborhoods increases in metro areas.

Although earlier studies of the correlates of racially diverse neighborhoods found that the growth in the proportion of black residents was an important factor in its future racial change trajectory (Lee 1985; Lee and Wood 1991), Ellen (2000) finds that the share of black residents in the neighborhood may not be as important for the future stability of the neighborhood as it was prior to 1970. Since I looked at the proportion of blacks in the overall metro area, I cannot compare my results directly to Ellen's, however, in general my results agreed in that the proportion of blacks in the metro area never proved to be a significant predictor of any type of neighborhood diversity.

Neighborhood Dual Diversity

With regard to the one prior study on dual diversity in neighborhoods, my results agree with the findings of Turner and Fenderson (2006) when they conclude that a substantial number of tracts exhibit diversity with respect to race, ethnicity and income. However, they conclude that 35 percent of tracts meet their requirements for classification as diverse according to both income and race-ethnicity, while I conclude that around 15 percent of neighborhoods in the same 100 metro areas are dually diverse. The discrepancy between our findings is surely due to the fact that Turner and Fenderson use different

definitions of diversity than I operationalize for my study. While they use a single set of national definitions of diversity based on arbitrary cut-off points of percentages of people within certain demographic categories, I utilize a statistical measure of diversity, the entropy index, which takes into account the larger social context within which neighborhoods are situated (in this case, the metro area). However, although our definitions of dual diversity differ, we come to similar conclusions: 1) racially diverse tracts are on the rise, 2) neighborhoods are more mixed according to income than they are according to race, and 3) a considerable proportion of tracts exhibit substantial mixing according to both racial and income characteristics (although they actually identify a higher proportion of dually diverse neighborhoods). Since Turner and Fenderson (2006) don't analyze the stability of the neighborhoods they identify as dually diverse, I am unable to compare my results to theirs on this aspect of the nature of dually diverse neighborhoods.

My Contributions

My contribution to the literature on diverse neighborhoods is that my study can serve as a baseline analysis of the predictors of cross-metropolitan variation in the incidence of dually diverse neighborhoods, as mine is the only study to date that has attempted to ferret out the correlates of them. The only other study that looks at the intersection of economic and racial diversity in neighborhoods thus far is a descriptive empirical examination of trends in the extent of these neighborhoods, but doesn't offer any explanation as to why these neighborhoods exist (Turner and Fenderson 2006). According to the current study, dually diverse neighborhoods are likely to be found in metro areas where both economically diverse and racially diverse neighborhoods are plentiful. Moreover, increases in the presence of dually diverse neighborhoods are driven most strongly by increases in racially diverse neighborhoods, followed by increases in the proportion of adults over the age of 55 in the metro area (as compared to younger adults).

Certainly there is still much more to be learned about dually diverse neighborhoods, since I found only a handful of significant predictors in the regression models that I executed. To that end, the next section will discuss the shortcomings of my study and future avenues for exploration.

STUDY LIMITATIONS AND SUGGESTIONS FOR FUTURE EXPLORATION

To date, not a lot of evidence exists regarding why diverse neighborhoods exist and how to foster their development. But, according to my findings, future investigations should include immigration, aging, and growing income equality amongst minorities and whites as probable explanatory factors in the existence of racially and dually diverse neighborhoods. Furthermore, future investigations should attempt to identify other factors besides the ones I controlled for that might contribute to the explanation of why diverse neighborhoods exist. Since I was only able to describe a small amount of the cross-metropolitan variance in the incidence of racially diverse neighborhoods in metro areas, the main identified predictor of dually diverse neighborhoods, there are clearly other factors at work that my study failed to identify. In particular, better operationalizations of policy-related variables such as inclusionary zoning, housing voucher programs, and other pro-integrative strategies that are operating in metro areas might strengthen the explanatory power of the statistical models estimated in the current study.

Although the research community doesn't yet agree on the most appropriate measures of neighborhood diversity and its stability, what does seem clear is that simultaneous equations modeling should be utilized in future quantitative investigations into the correlates of dual diversity in order to address thorny methodological issues such as endogeneity bias. In executing a simultaneous equations strategy for my statistical model, I was able to control for some of the endogeneity bias introduced by the income distribution overlap variable. However, a shortcoming of my instrument was the fact that it was only weakly correlated with income distribution overlap and thus my findings were somewhat suspect. Therefore, future explorations into the correlates of dually diverse neighborhoods using instrumental variables should look for more powerful instruments in order to strengthen confidence in the results of the analyses involving such instruments.

Some possible neighborhood-level independent variables that might be worthwhile to include in future investigations of the predictors of dually diverse neighborhoods are ones that have been identified in previous research as important indicators of neighborhood racial diversity. They include the institutional presence in neighborhoods (Ellen 2000; Taub, Taylor, and Dunham 1984) and the presence of "social seams" such as grocery stores and churches, and other physical characteristics of

neighborhoods (Nyden, Lukehart, Maly, and Peterman 1998b; Nyden, Maly, and Lukehart 1997). All of these predictor variables are measured at the neighborhood level, rather than at metropolitan level, as I used. This fact points out another area where my study could be improved. That is, the fact that I used variables measured at a higher level of aggregation (metropolitan-level) than what I was trying to predict (neighborhood-level) could have contributed to the low explanatory power of my models. Future investigations would be improved by using independent variables measured at the neighborhood level, or by using hierarchical statistical modeling techniques to estimate neighborhood-level processes based on metropolitan-level predictors.

Another avenue for future investigation could entail using a somewhat differently specified set of dependent variables for the regression analyses. Since much of the existing literature on the correlates of racially diverse neighborhoods analyze how independent variables are related to racial *stability*, it might be interesting to run similar analyses to those that I executed in the current study, but instead substituting the proportion of neighborhoods that remained stably diverse according to race, income, and their intersection from 1990 to 2000 as my dependent variables to see whether my findings agree with extant research on the stability of racially diverse neighborhoods. Moreover, when using stable racial diversity as the dependent variable one could investigate its relationship with the degree of diversity in the income dimension. By including a measure of income diversity in a model estimating predictors of neighborhood racial stability, one could determine whether more congruence in the incomes of different racial groups leads to more stability in racially diverse neighborhoods.

It would also be interesting to add a qualitative component to the study in the future. For instance, a survey or in-depth interview of residents living in dually diverse neighborhoods could help to get at what may be important correlates of neighborhood racial and economic diversity such as people's racial attitudes (Schnare and McRae 1978), people's tolerance for diversity in their neighborhoods, and the degree of solidarity (especially the commitment of long-term white residents) in the neighborhood (Logan and Schneider 1984; Logan and Stearns 1981). Adding a qualitative component would allow the voices of the people living in diverse neighborhoods to add much needed detail and complexity to our knowledge about neighborhood dual diversity.

One additional aspect of the dynamics occurring in dually diverse neighborhoods that could be probed by conducting interviews or surveys would be determining whether they fit into either of the two models of neighborhood diversity proposed by Nyden and his colleagues (Nyden, Lukehart, Maly, and Peterman 1998a; Nyden, Lukehart, Maly, and Peterman 1998b; Nyden, Maly, and Lukehart 1997). Determining whether a sampling of the neighborhoods I identify as dually diverse fit into either of the two models, diverse-by-direction or diverse-by-circumstance, could help to elucidate which strategies used by those that were successfully diverse-by-direction could be replicated in other neighborhoods to increase diversity there.

CONCLUSION

Given that the presence of dually diverse neighborhoods in metro areas has been increasing rapidly since 1970, and that all signs point to further increases in the future, researchers, policymakers, and practitioners are going to need to continue to find new ways of understanding the patterns of diversity present in their communities and the consequences of these patterns. Particularly, the results of my study point out that it would be valuable for researchers and policymakers to make concerted efforts at understanding the nature and importance of dually diverse neighborhoods, as opposed to those that are simply racially or economically diverse, considering the fact that these neighborhoods have doubled their presence in metro areas each decade. Dually diverse neighborhoods are those that seem to offer the largest array of housing choices for the widest variety of people, regardless of their racial-ethnic background or socioeconomic standing. Furthermore, these neighborhoods may prove to be models for other communities that are looking for ways to accommodate the housing needs of people with varying racial-ethnic and socioeconomic backgrounds. Thus, policymakers and researchers would be well served to pay attention to the growing presence of dually diverse neighborhoods.

Regardless of the direction of future research into the nature, extent, and correlates of dually diverse neighborhoods, it is clear that much more research needs to occur before our understanding of such neighborhoods is anywhere near complete. Meanwhile, those of us concerned with the future health and prosperity of our neighborhoods, metropolitan areas, and society itself will continue to cheer the ongoing increases in diversity exhibited in our neighborhoods since 1970, given that these gains

suggest growing equality in access to housing opportunities for more Americans regardless of their race-ethnicity or socioeconomic status.

APPENDIX A:

100 LARGEST U.S. METROPOLITAN AREAS IN 2000, RANKED ACCORDING TO POPULATION

Rank	Name	Total Population
1	Los Angeles-Long Beach, CA PMSA	9,519,338
2	New York, NY PMSA	9,314,235
3	Chicago, IL PMSA	8,272,768
4	Philadelphia, PA-NJ PMSA	5,100,931
5	Washington, DC-MD-VA-WV PMSA	4,923,153
6	Detroit, MI PMSA	4,441,551
7	Houston, TX PMSA	4,177,646
8	Atlanta, GA MSA	4,112,198
9	Dallas, TX PMSA	3,519,176
10	Boston, MA-NH PMSA	3,406,829
11	Riverside-San Bernardino, CA PMSA	3,254,821
12	Phoenix-Mesa, AZ MSA	3,251,876
13	Minneapolis-St. Paul, MN-WI MSA	2,968,806
14	Orange County, CA PMSA	2,846,289
15	San Diego, CA MSA	2,813,833
16	Nassau-Suffolk, NY PMSA (4)	2,753,913
17	St. Louis, MO-IL MSA	2,603,607
18	Baltimore, MD PMSA	2,552,994
19	Seattle-Bellevue-Everett, WA PMSA	2,414,616
20	Tampa-St. Petersburg-Clearwater, FL MSA	2,395,997
21	Oakland, CA PMSA (5)	2,392,557
22	Pittsburgh, PA MSA	2,358,695
23	Miami, FL PMSA	2,253,362
24	Cleveland-Lorain-Elyria, OH PMSA	2,250,871
25	Denver, CO PMSA	2,109,282
26	Newark, NJ PMSA	2,032,989
27	Portland-Vancouver, OR-WA PMSA	1,918,009
28	Kansas City, MO-KS MSA	1,776,062
29	San Francisco, CA PMSA	1,731,183
30	Fort Worth-Arlington, TX PMSA (1)	1,702,625
31	San Jose, CA PMSA	1,682,585
32	Cincinnati, OH-KY-IN PMSA	1,646,395
33	Orlando, FL MSA	1,644,561
34	Sacramento, CA PMSA	1,628,197
35	Fort Lauderdale, FL PMSA	1,623,018
36	Indianapolis, IN MSA	1,607,486
37	San Antonio, TX MSA	1,592,383
38	Norfolk-Virginia Beach-Newport News, VA-NC MSA	1,569,541
39	Las Vegas, NV-AZ MSA	1,563,282
40	Columbus, OH MSA	1,540,157
41	Milwaukee-Waukesha, WI PMSA	1,500,741
42	Charlotte-Gastonia-Rock Hill, NC-SC MSA	1,499,293
43	Bergen-Passaic, NJ PMSA	1,373,167

44	New Orleans, LA MSA	1,337,726
45	Salt Lake City-Ogden, UT MSA	1,333,914
46	Greensboro--Winston-Salem--High Point, NC MSA	1,251,509
47	Austin-San Marcos, TX MSA	1,249,763
48	Nashville, TN MSA	1,231,311
49	Providence-Fall River-Warwick, RI-MA MSA	1,188,613
50	Raleigh-Durham-Chapel Hill, NC MSA	1,187,941
51	Hartford, CT MSA	1,183,110
52	Buffalo-Niagara Falls, NY MSA	1,170,111
53	Middlesex-Somerset-Hunterdon, NJ PMSA (2)	1,169,641
54	Memphis, TN-AR-MS MSA	1,135,614
55	West Palm Beach-Boca Raton, FL MSA	1,131,184
56	Monmouth-Ocean, NJ PMSA (3)	1,126,217
57	Jacksonville, FL MSA	1,100,491
58	Rochester, NY MSA	1,098,201
59	Grand Rapids-Muskegon-Holland, MI MSA	1,088,514
60	Oklahoma City, OK MSA	1,083,346
61	Louisville, KY-IN MSA	1,025,598
62	Richmond-Petersburg, VA MSA	996,512
63	Greenville-Spartanburg-Anderson, SC MSA	962,441
64	Dayton-Springfield, OH MSA	950,558
65	Fresno, CA MSA	922,516
66	Birmingham, AL MSA	921,106
67	Honolulu, HI MSA	876,156
68	Albany-Schenectady-Troy, NY MSA	875,583
69	Tucson, AZ MSA	843,746
70	Tulsa, OK MSA	803,235
71	Ventura, CA PMSA	753,197
72	Syracuse, NY MSA	732,117
73	Omaha, NE-IA MSA	716,998
74	Albuquerque, NM MSA	712,738
75	Tacoma, WA PMSA	700,820
76	Akron, OH PMSA	694,960
77	Knoxville, TN MSA	687,249
78	El Paso, TX MSA	679,622
79	Bakersfield, CA MSA	661,645
80	Allentown-Bethlehem-Easton, PA MSA	637,958
81	Gary, IN PMSA	631,362
82	Harrisburg-Lebanon-Carlisle, PA MSA	629,401
83	Scranton--Wilkes-Barre--Hazleton, PA MSA	624,776
84	Toledo, OH MSA	618,203
85	Jersey City, NJ PMSA	608,975
86	Baton Rouge, LA MSA	602,894
87	Youngstown-Warren, OH MSA	594,746
88	Springfield, MA MSA	591,932
89	Sarasota-Bradenton, FL MSA (6)	589,959
90	Wilmington-Newark, DE-MD PMSA	586,216
91	Little Rock-North Little Rock, AR MSA	583,845
92	Ann Arbor, MI PMSA	578,736
93	McAllen-Edinburg-Mission, TX MSA	569,463

94	Stockton-Lodi, CA MSA	563,598
95	Charleston-North Charleston, SC MSA	549,033
96	Wichita, KS MSA	545,220
97	New Haven-Meriden, CT PMSA	542,149
98	Mobile, AL MSA	540,258
99	Columbia, SC MSA	536,691
100	Vallejo-Fairfield-Napa, CA PMSA	518,821

Notes:

(1) Fort Worth was part of the Dallas SMSA in 1980

(2) Middlesex-Somerset-Hunterdon, NJ PMSA did not exist in 1970 and 1980

(3) Monmouth-Ocean PMSA did not exist in 1970

(4) Nassau-Suffolk, NY PMSA was part of New York, NY SMSA in 1970

(5) Oakland, CA PMSA was part of San Francisco SMSA in 1970 and 1980

(6) Sarasota-Bradenton, FL MSA did not exist in 1970

APPENDIX B:

CALCULATION OF WEIGHTED AVERAGE OF MULTI-RACIAL INCOME DISTRIBUTION OVERLAP VARIABLE

This appendix provides a detailed explanation of the calculation of the income distribution overlap variable utilized in the regression models. This measure estimates a weighted average of the proportion of area under the income category frequency distribution that is shared by the four racial-ethnic groups in the study (white, black, Hispanic, and Asians & others). The index is estimated using the following formula:

$$\Omega = \sum_{rr^*}^{6} \sum_{i}^{I} A_{i(rr*)} W_{(rr*)}$$

Where:

A = proportional area of intersection of income (the ratio of the area of the smaller racial group in the income category to the larger group—area equals the dollar range of income category *i* multiplied by N_{ri} [N_{ri} = frequency of racial group *r* in income category *i*]);

r = racial group in the comparison dyad with smaller frequency in the income category;

*r** = racial group in the comparison dyad with larger frequency in the income category;

I = number of income categories each decade (9 in 1990, 16 in 2000);

$W_{(rr*)}$ = weight applied for the two racial groups in the comparison dyad:

$$W_{(rr*)} = \frac{N_r + N_{r^*}}{3\ (\sum N_r)}$$

The first step in estimating the proportion of overlap in the income distribution shared by whites, blacks, Hispanics, and Asians and others starts with taking the frequencies of each of the four racial-ethnic groups within the income group categories provided by the NCDB dataset for all 100 metro areas in my study for both 1990 and 2000.[37] I then calculated the area within the income category rectangles

[37] For 1990, the income categories include (measured as income earned in 1989): Less than $5,000; $5,000 – 9,999; $10,000 – 14,999; $15,000 – 24,999; $25,000 – 34,999; $35,000 – 49,999; $50,000 – 74,999; $75,000 – 99,999; and $100,000 or more. For 2000, the income categories include (measured as income earned in 1999): Less than $10,000; $10,000 – 14,999; $15,000 – 19,999; $20,000 – 24,999;

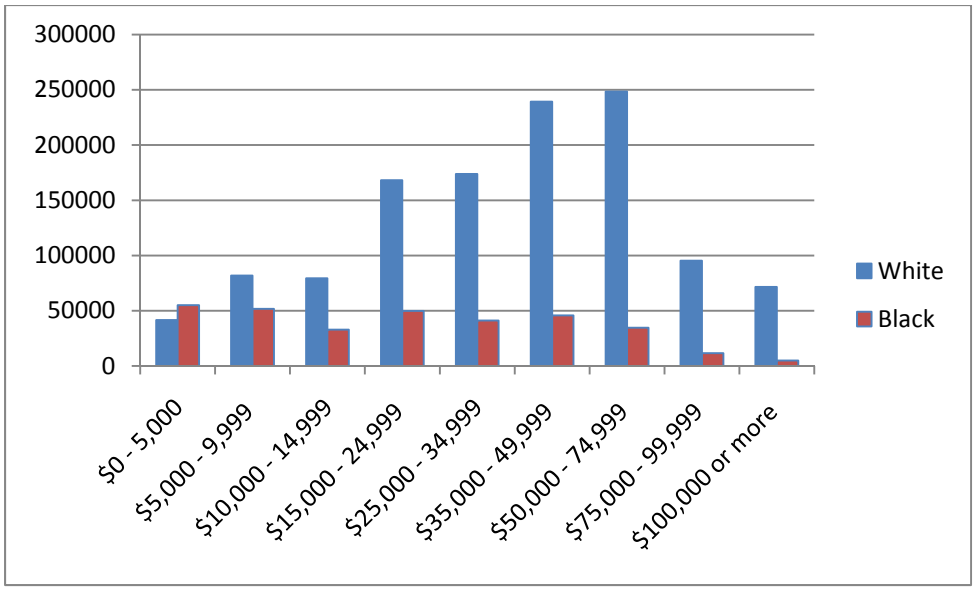
that was occupied by each of the of racial-ethnic groups. This was achieved by first determining the dollar range that each income category covered (this constituted the width of the rectangle), then multiplying that range individually by the frequency of all four groups in the study (these constituted the height of the rectangles for each racial group). As an example, the income category $10,000 – 14,999 has a range of 4,999. I took this value and multiplied it by the frequency of each racial-ethnic group to determine the area within that income category's rectangle occupied by each racial group. I did these calculations for each of the income categories in the 1990 and 2000 income distributions.

Once I calculated the area that each racial group occupied within each category of the income distribution for 1990 and 2000, I made pairwise comparisons of the racial groups to determine the proportion of income distribution that overlapped between each dyad. In all, I made six comparisons, as follows:

- White – Black
- White – Hispanic
- White – Asian & others
- Black – Hispanic
- Black – Asian & others
- Hispanic – Asians & others

I took the ratio of the area of the smaller group in the comparison dyad (determined by the frequencies) of the area of the larger group for each individual rectangle or income category. As an example, the figure below illustrates the income category frequencies for whites and blacks in Detroit in 1990.

$25,000 – 29,999; $30,000 – 34,999; $35,000 – 39,999; $40,000 – 44,999; $45,000 – 49,999; $50,000 – 59,999; $60,000 – 74,999; $75,000 – 99,999; $100,000 – 124,999; $125,000 – 149,999; $150,000 – 199,999; and $200,000 or more.



The side-by-side bars show the different frequencies for each group within the income category. For the $0 to 5,000 category, blacks have a higher frequency and thus they occupy more area within that income category rectangle than whites. For this income category, then, I took the ratio of the area whites occupy (their frequency times the range of the category—4,999) to the area that blacks occupy (their frequency times the range of the category—4,999). In the $5,000 to 9,999 category, however, whites have a larger frequency than blacks. For this income category I took the ratio of the area that blacks occupy to the area that whites occupy. I executed these comparisons for each racial group dyad for each of the income categories in 1990 and 2000.

Since the top income category was open-ended in both 1990 and 2000, I performed Pareto extrapolation to estimate the midpoint of the open-ended category. This estimated mid-point then served as the "best estimate" of what all of the households within this income category earned. I estimated a separate mid-point for each racial-ethnic group for each of the decades. This strategy was undertaken so that I could include these higher-income earning households in my income distribution overlap calculations. Without estimating a mid-point, I would have been unable to calculate the overlap variables for the top income category since I wouldn't have had actual income values for which to make my pairwise comparisons between racial groups.

According to Hout (Hout 2004) using Pareto extrapolation to solve the "top code" problem is a rigorous approach that "involves extrapolating from the next-to-last category's midpoint using the frequencies of both the next-to-last and last (open-ended) categories" using a formula based on the Pareto curve. The formula is:

$$M_{top} = L_{top} \frac{V}{V-1}$$

$$V = \frac{\ln(f_{top-1} + f_{top}) - \ln(f_{top})}{\ln(L_{top}) - \ln(L_{top-1})}$$

Where:

L_{top} = the lower limit of the top category;

L_{top-1} = the lower limit of the category below the top one;

f_{top} = the frequency in the top category;

f_{top-1} is the frequency in the category below the top one

Once the midpoints were estimated for each of the racial-ethnic groups for both decades, I performed a similar calculation as described above, multiplying the frequency of each racial group in the top income category by the mid-point minus the lower value of the top category (which gave me the range for the top income category). I then calculated the proportion of overlap between the each of the six comparison dyads for the top income category.

The next step in the process was to sum all of the values of the proportions of area in the income categories shared by each racial group comparison dyad. These summed values represent the total amount of income category frequency distribution area shared by each of the comparison dyads. Hence, these summations resulted in six values indicating the degree of intersection between the income distributions of the pairwise racial group comparisons.

After calculating the total proportion of income distribution overlap for each of the comparison dyads, I then created a single measure of the income distribution overlap shared by all four of the racial

groups by taking the weighted average[38] of all of the values of total proportional area overlap for the six pairwise comparisons. Once I had these individual income distribution overlap measures for both 1990 and 2000, I was then able to calculate the change in income distribution overlap between 1990 and 2000, the variable that is ultimately used in my regression analyses.

[38] Weighted by the proportion the two groups in the comparison dyad comprise of the total population making up the income distribution comparisons, as follows: $(N_r + N_{r^*}) / 3(\sum N_r)$. The numerator represents the 2 racial groups in the comparison dyad, while the denominator represents the total population of the income group comparisons overall—three times the summation of the frequencies of all four racial groups. The denominator is multiplied by three since each racial group is compared to another groups three times.

APPENDIX C:

REGRESSION RESULTS FOR FIRST STAGE OF 2SLS

MODEL SUMMARY

R	R Square	Adjusted R Square	Std. Error of the Estimate
.691[a]	0.477	0.346	0.00265

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.000	19	.000	3.650	.000[a]
	Residual	.001	76	.000		
	Total	.001	95			

COEFFICIENTS

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	-.008	.004		-2.219	.029		
Dummy variable indicating whether metro requires Inclusionary Zoning	-.001	.001	-.158	-1.454	.150	.585	1.710
percent tracts gentrified from 1990-2000	.000	.000	-.419	-3.868	.000	.587	1.703
Change in metro income entropy, 1990-2000	-.152	.072	-.333	-2.130	.036	.281	3.558

change in proportion owner occupied HUs, 1990-2000	-.001	.024	-.006	-.042	.966	.327	3.062
change in proportion adults age 18-24, 1990-2000	-.030	.041	-.095	-.721	.473	.397	2.521
change in proportion adults age 25-34, 1990-2000	-.074	.038	-.291	-1.934	.057	.304	3.292
change in proportion adults age 35-44, 1990-2000	-.116	.053	-.347	-2.197	.031	.275	3.636
change in proportion adults age 45-54, 1990-2000	-.028	.054	-.075	-.509	.612	.317	3.150
change in proportion of adults w/ college degree, 1990-2000	.038	.027	.183	1.389	.169	.396	2.526
change in proportion of non-Hispanic blacks, 1990-2000	.083	.036	.247	2.280	.025	.584	1.712
change in metro racial entropy 1990-2000	-.014	.013	-.134	-1.092	.278	.456	2.194
change in proportion vacant rental units, 1990-2000	-.005	.053	-.015	-.088	.930	.236	4.233
change in proportion vacant sale units, 1990-2000	.128	.108	.184	1.189	.238	.289	3.463
change in log of median sale value, 1990-2000	-.007	.003	-.409	-2.085	.040	.179	5.598
change in log of median rent, 1990-2000	.008	.006	.246	1.473	.145	.247	4.047

change in proportion of families w/ children under 18, 1990-2000	.015	.033	.080	.465	.643	.232	4.319
Proportion of 2000 foreign born persons entering during 1990s	.011	.003	.310	3.126	.003	.702	1.425
Percent change in HUs transformed (log10(X + 1.16))	.022	.007	.309	3.144	.002	.712	1.405
Malls_100s	.045	.012	.384	3.786	.000	.670	1.493

REFERENCES

Abrams, Charles. 1955. *Forbidden Neighbors: A Study of Prejudice in Housing*. New York: Harper & Bros.

Abramson, Alan J., Mitchell S. Tobin, and Matthew R. VanderGoot. 1995. "The Changing Geography of Metropolitan Opportunity: The Segregation of the Poor in U.S. Metropolitan Areas, 1970 to 1990." *Housing Policy Debate* 6:45-72.

Adelman, Robert M. 2005. "The Role of Race, Class, and Residential Preferences in the Neighborhood Racial Composition of Middle-Class Blacks and Whites." *Social Science Quarterly* 86:209-228.

Alonso, William. 1964. *Location and Land Use: Toward a General Theory of Land Rent*. Cambridge, MA: Harvard University Press.

Anderson, Elijah. 1990. *Streetwise: Race, Class, and Change in an Urban Community*. Chicago: The University of Chicago Press.

Andranovich, Gregory D. and Gerry Riposa. 1993. *Doing Urban Research*. Newbury Park, CA: Sage Publications.

Angrist, Joshua D. and Alan B. Krueger. 2001. "Instrumental Variables and the Search for Indentification: From Supply and Demand to Natural Experiments." *Journal of Economic Perspectives* 15:69-85.

Barr, J. L. 1973. "Tiebout Models of Community Structure." *Papers of the Regional Science Association* 30:113-139.

Bell, Abraham and Gideon Parchomovsky. 2000. "The Integration Game." *Columbia Law Review* 100:1965-2029.

Bell, Wendell. 1954. "A Probability Model for the Measurement of Ecological Segregation." *Social Forces* 32:357-364.

Bergstrom, T. C., D. L. Rubinfeld, and P. Shapiro. 1982. "Micro-based Estimates for Demand Functions for Local Public Expenditures." *Econometrica* 50:1183-1205.

Berube, Alan. 2006. "Comment on Mark Joseph's "Is Mixed-Income Development an Antidote to Urban Poverty?"." *Housing Policy Debate* 17:235-247.

Berube, Alan. 2007. "The Geography of U.S. Poverty and Its Implications." Pp. Testimony before the U.S. House Committee on Ways and Means, February 13.

Blau, Peter M. 1977. *Inequality and Heterogeneity: A Primitive Theory of Social Structure*. New York: Free Press.

Bobo, Lawrence and Camille Zubrinsky. 1996. "Attitudes on Residential Integration: Perceived Status Differences, Mere In-Group Preference, or Racial Prejudice?" *Social Forces* 74:883-909.

Boehm, Thomas P. and Keith R. Ihlanfeldt. 1991. "The Revelation of Neighborhood Preferences: An N-chotomous Multivariate Probit Approach." *Journal of Housing Economics* 1:33-59.

Bohl, Charles C. 2000. "New Urbanism and the City: Potential Applications and Implications for Distressed Inner-City Neighborhoods." *Housing Policy Debate* 11:761-801.

Booza, Jason C., Jackie Cutsinger, and George Galster. 2006. "Where Did They Go? The Decline of Middle Income Neighborhoods in Metropolitan America." Brookings Institution, Washington, DC.

Boston, Thomas D. 2005. "Environment Matters: The Effect of Mixed-Income Revitalization on the Socioeconomic Status of Public Housing Residents: A Case Study of Atlanta." Georgia Institute of Technology, Atlanta, GA.

Bound, John, David A. Jaeger, and Regina M. Baker. 1995. "Problems with Instrumental Variables Estimation When the Correlation Between the Instruments and the Endogenous Explanatory Variable is Weak." *Journal of the American Statistical Association* 90:443-450.

Bourguignon, Francois. 1979. "Decomposable Income Inequality Measures." *Econometrica* 47:901-920.

Bradburn, N. M., S. Sudman, and G. L. Gockel. 1971. *Side by Side: Integrated Neighborhoods in America*. Chicago: Quadrangle Books.

Briggs, Xavier de Souza. 1997. "Moving Up Versus Moving Out: Neighborhood Effects in Housing Mobility Programs." *Housing Policy Debate* 8:195-234.

Brooks-Gunn, Jeanne, Greg J. Duncan, Pamela K. Klebanov, and Naomi Sealand. 1993. "Do Neighborhoods Influence Child and Adolescent Development?" *American Journal of Sociology* 99:353-395.

Brophy, Paul and Rhonda N. Smith. 1997. "Mixed-Income Housing: Factors for Success." *Cityscape* 3:3-31.

Burgess, Ernest W. 1925. "The Growth of the City: An Introduction to a Research Project." in *The City*, edited by R. E. Park, E. W. Burgess, and R. D. McKenzie. Chicago: University of Chicago Press.

Card, David E., Alexandre Mas, and Jesse Rothstein. 2008a. *Are Mixed Neighborhoods Always Unstable? Two-Sided and One-Sided Tipping*: SSRN.

Card, David, Alexandre Mas, and Jesse Rothstein. 2008b. "Tipping and the Dynamics of Segregation." *Quarterly Journal of Economics* 123:177-218.

Chall, Daniel E. 1985-86. "Housing Reform in New Jersey: The *Mount Laurel* Decision." *FRBNY Quarterly Review* Winter:19-27.

Charles, Camille Zubrinsky. 2001. "Socioeconomic Status and Segregation: African Americans, Hispanics, and Asians in Los Angeles." Pp. 271-289 in *Problem of the Century: Racial Stratification in the United States*, edited by E. Anderson and D. S. Massey. New York: Russell Sage Foundation.

Charles, Camille Zubrinsky. 2003. "The Dynamics of Racial Residential Segregation." *Annual Review of Sociology* 29:167-207.

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

Choi, Seok Joon, Jan Ondrich, and John Yinger. 2008. "Changes in Rental Housing Discrimination Since 1989." *Cityscape: A Journal of Policy Development and Research* 10:301-330.

Clampet-Lundquist, Susan. 2004a. "HOPE VI Relocation: Moving to New Neighborhoods and Building New Ties." *Housing Policy Debate* 15:415-447.

Clampet-Lundquist, Susan. 2004b. "Moving Over or Moving Up? Short-Term Gains and Losses for Relocted HOPE VI Families." *Cityscape: A Journal of Policy Development and Research* 7:57-80.

Clark, William A. V. 1986. "Residential Segregation in American Cities: A Review and Interpretation." *Population Research and Policy Review* 5:95-127.

Clark, William A. V. 1991. "Residential Preferences and Neighborhood Racial Segregation: A Test of the Schelling Segregation Model." *Demography* 28:1-19.

Clark, William A. V. 1992. "Residential Preferences and Residential Choices in a Multiethnic Context." *Demography* 29:451-466.

Clark, William A. V. 1993. "Neighborhood Transitions in Multiethnic/Racial Contexts." *Journal of Urban Affairs* 15:161-172.

Clark, William A. V. 2008. "Reexamining the Moving to Opportunity Study and Its Contribution to Changing the Distribution of Poverty and Ethnic Concentration." *Demography* 45:515-535.

Clark, William A. V. and Mark Fossett. 2008. "Understanding the Social Context of the Schelling Segregation Model." *Proceedings of the National Academy of Sciences* 105:4109-4114.

Comey, Jennifer, Xavier de Souza Briggs, and Gretchen Weisman. 2008. "Struggling to Say Out of High-Poverty Neighborhoods: Lessons from the Moving to Opportunity Experiment." Urban Institute, Metropolitan Housing and Communities Center, Brief No. 6, Washington, DC.

Cowgill, Dennis O. and M. S. Cowgill. 1951. "An Index of Segregation Based on Block Statistics." *American Sociological Review* 16:825-831.

Crowder, Kyle. 2000. "The Racial Context of White Mobility: An Individual-Level Assessment of the White Flight Hypothesis." *Social Science Research* 29:223-257.

Crowder, Kyle, Scott J. South, and Erick Chavez. 2006. "Wealth, Race, and Inter-Neighborhood Migration." *American Sociological Review* 71:72-94.

Crowley, Sheila. 2009. "HOPE VI: What Went Wrong." in *From Despair to Hope: HOPE VI and the New Promise of Public Housing in America's Cities*, edited by H. G. Cisneros and L. Engdahl. Washington, DC: Brookings Institution Press.

Cutler, David M. and Edward L. Glaeser. 1997. "Are Ghettos Good or Bad?" *Quarterly Journal of Economics* 112:827-872.

Cutler, David M., Edward L. Glaeser, and Jacob L. Vigdor. 1999. "The Rise and Decline and the American Ghetto." *Journal of Political Economy* 107:455-506.

Danziger, Sheldon H. 1996. "Comment on "The Age of Extremes: Concentrated Affluence and Poverty in the Twenty-First Century"." *Demography* 33:413-416.

Danziger, Sheldon H. and Peter Gottschalk. 1987. "Earnings Inequality, the Spatial Concentration of Poverty, and the Underclass." *The American Economic Review* 77:211-215.

Danziger, Sheldon H. and Peter Gottschalk. 1995. *America Unequal*. Cambridge, MA: Harvard University Press.

Darden, Joe T. and Sameh M. Kamel. 2000. "Black Residential Segregation in the City and Suburbs of Detroit: Does Socioeconomic Status Matter?" *Journal of Urban Affairs* 22:1-13.

Davis, Mary. 1993. "The Gautreaux Assisted Housing Program." Pp. 241-253 in *Housing Markets and Residential Mobility*, edited by G. T. Kingsley and M. A. Turner. Washington, DC: The Urban Institute Press.

Dawkins, Casey J. 2004. "Recent Evidence on the Continuing Causes of Black-White Residential Segregation." *Journal of Urban Affairs* 26:379-400.

Del Conte, Alessandra and Jeffrey R. Kling. 2001. "A Synthesis of MTO Research on Self-Sufficiency, Safety and Health, and Behavior and Delinquency." *Poverty Research News* 5:3-6.

DeMarco, Donald and George Galster. 1993. "Pro-Integrative Policy: Theory and Practice." *Journal of Urban Affairs* 15:141-160.

DeNavas-Walt, Carmen, Robert W. Cleveland, and Bruce H. Webster Jr. 2003. "Income in the United States: 2002." U.S. Government Printing Office, Washington, DC.

Denton, Nancy A. 1994. "Are African Americans Still Hypersegregated?" Pp. 49-81 in *Residential Apartheid: The American Legacy*, edited by R. Bullard, C. Lee, and J. E. Grigsby. Los Angeles: UCLA Center for Afro-American Studies.

Denton, Nancy A. and Douglas S. Massey. 1988. "Residential Segregation of Blacks, Hispanics, and Asians by Socioeconomic Status and Generation." *Social Science Quarterly* 69:797-817.

Denton, Nancy A. and Douglas S. Massey. 1991. "Patterns of Racial Transition in a Multiethnic World: U.S. Metropolitan Areas, 1970-1980." *Demography* 28:41-63.

DiPasquale, D. and M. Kahn. 1999. "Measuring Neighborhood Investments: An Examination of Community Choice." *Real Estate Economics* 27:389-424.

Dow, Jr., James P. 2003. "Neighborhood Effects and the Distribution of Income in Cities." in *The Electronic Journal of Evolutionary Modeling and Economic Dynamics*.

Downing, P. 1987. "Segregation and Discrimination in Rental Housing: A Review of Selected Studies, Legal Cases, and Legislation." Pp. 773-826 in *Hearings before the Subcommittee on Civil and Constitutional Rights of the Committee on Judiciary, U.S. House of Representatives on H.R. 1158* Washington, DC.

Dreier, Peter, John Mollenkopf, and Todd Swanstrom. 2004. *Place Matters: Metropolitics for the Twenty-First Century*. Lawrence, KS: University Press of Kansas.

Duncan, Otis Dudley. 1957. "The Measurement of Population Distribution." *Population Studies* 11:27-45.

Duncan, Otis Dudley and Beverly Duncan. 1955. "A Methodological Analysis of Segregation Indexes." *American Sociological Review* 20:210-217.

Duncan, Otis Dudley and Beverly Duncan. 1957. *The Negro Population of Chicago: A Study of Residential Succession*. Chicago: The University of Chicago Press.

Durlauf, Steven N. 1996. "A Theory of Persistent Income Inequality." *Journal of Economic Growth* 1:75-93.

Ellen, Ingrid Gould. 1998. "Stable Racial Integration in the Contemporary United States: An Empirical Overview." *Journal of Urban Affairs* 20:27-42.

Ellen, Ingrid Gould. 2000. *Sharing America's Neighborhoods: The Prospects for Stable Racial Integration*. Cambridge, MA: Harvard University Press.

Ellen, Ingrid Gould. 2007. "How Integrated Did We Become During the 1990s?" Pp. 123-142 in *Fragile Rights Within Cities: Government, Housing, and Fairness*, edited by J. M. Goering. Lanham, MD: Rowman and Littlefield.

Ellen, Ingrid Gould and Margery Austin Turner. 1997. "Does Neighborhood Matter? Assessing Recent Evidence." *Housing Policy Debate* 8:833-866.

Ellen, Ingrid Gould and Margery Austin Turner. 2003. "Do Neighborhoods Matter and Why?" Pp. 313-338 in *Choosing a Better Life? Evaluating the Moving To Opportunity Experiment*, edited by J. Goering and J. Feins. Washington, DC: Urban Institute Press.

Ellickson, B. 1971. "Jurisdictional Fragmentation and Residential Choice." *American Economic Review* 61:334-339.

Ellis, R. H. 1967. "Modeling of Household Location: A Statistical Approach." *Highway Research Record* 207:42-51.

Emerson, Michael O., George Yancey, and Karen J. Chai. 2001. "Does Race Matter in Residential Segregation? Exploring the Preferences of White Americans." *American Sociological Review* 66:922-935.

Epp, Gayle. 1996. "Emerging Strategies for Revitalizing Public Housing Communities." *Housing Policy Debate* 7:563-588.

Erbe, Briggitte Mach. 1975. "Race and Socioeconomic Segregation." *American Sociological Review* 40:801-812.

Farley, John E. 1995. "Race Still Matters: The Minimal Role of Income and Housing Cost as Causes of Housing Segregation in St. Louis, 1990." *Urban Affairs Review* 31:244-254.

Farley, Reynolds. 1977. "Residential Segregation in Urbanized Areas of the United States in 1970: An Analysis of Social Class and Racial Differences." *Demography* 14:497-518.

Farley, Reynolds. 1991. "Residential Segregation of Social and Economic Groups among Blacks, 1970-1980." Pp. 274-298 in *The Urban Underclass*, edited by C. Jencks and P. E. Peterson. Washington, DC: The Brookings Institution.

Farley, Reynolds. 1993. "Neighborhood Preferences and Aspirations Among Blacks and Whites." Pp. 161-191 in *Housing Markets and Residential Mobility*, edited by G. T. Kingsley and M. A. Turner. Washington, DC: The Urban Institute Press.

Farley, Reynolds, Sheldon H. Danziger, and Harry J. Holzer. 2000. *Detroit Divided*. New York: Russell Sage Foundation.

Farley, Reynolds, Elaine Fielding, and Maria Krysan. 1997. "The Residential Preferences of Blacks and Whites: A Four-Metropolis Analysis." *Housing Policy Debate* 8:763-800.

Farley, Reynolds and William H. Frey. 1994. "Changes in Segregation of Whites from Blacks During the 1980s: Small Steps Toward a More Integrated Society." *American Sociological Review* 59:23-45.

Farley, Reynolds, Tara Jackson, Keith Reeves, Charlotte Steeh, and Maria Krysan. 1994. "Stereotypes and Segregation: Neighborhoods in the Detroit Area." *American Journal of Sociology* 100:750-780.

Farley, Reynolds, Howard Schuman, Suzanne Bianchi, Diane Colasanto, and Shirley Hatchett. 1978. "'Chocolate City, Vanilla Suburbs': Will the Trend Toward Racially Separate Communities Continue? ." *Social Science Research* 7:319-344.

Fasenfest, David, Jason Booza, and Kurt Metzger. 2004. "Living Together: A New Look at Racial and Ethnic Integration in Metropolitan Neighborhoods, 1990-2000." Brookings Institution, Washington, DC.

Ferryman, Kadija S., Xavier de Souza Briggs, Susan J. Popkin, and Maria Rendon. 2008. "Do Better Neighborhoods for MTO Families Mean Better Schools?" Urban Institute, Metropolitan Housing and Communities Center, Brief No. 3, Washington, DC.

Fielding, Elaine and Karl Taeuber. 1992. "Spatial Isolation of a Black Underclass: An American Case Study." *New Community* 19:113-127.

Fischer, Claude S., Gretchen Stockmayer, Jon Stiles, and Michael Hout. 2004. "Distinguishing the Geographic Levels and Social Dimensions of U.S. Metropolitan Segregation, 1960-2000." *Demography* 41:37-59.

Fischer, Mary J. 2003. "The Relative Importance of Income and Race in Determining Residential Outcomes in U.S. Urban Areas 1970-2000." *Urban Affairs Review* 38:669-696.

Fong, Eric and Kumiko Shibuya. 2000. "The Spatial Separation of the Poor in Canadian Cities." *Demography* 37:449-459.

Ford, W. S. . 1972. *Interracial Housing in Border City*. Lexington, MA: D. C. Heath.

Fossett, Mark. 2006. "Ethnic Preferences, Social Distance Dynamics, and Residential Segregation: Theoretical Explorations Using Simulation Analysis." *Journal of Mathematical Sociology* 30:185-274.

Fossett, Mark and Warren Waren. 2005. "Overlooked Implications of Ethnic Preferences for Residential Segregation in Agent-based Models." *Urban Studies* 42:1893-1917.

Fraser, James and Michael H. Nelson. 2008. "Can Mixed-Income Housing Ameliorate Concentrated Poverty? The Significance of a Geographically Informed Sense of Community." *Geography Compass* 2:2117-2144.

Frazier, E. Franklin. 1939. *The Negro Family in the United States*. Chicago, IL: The University of Chicago Press.

Freeman, Lance. 2009. "Neighbourhood Diversity, Metropolitan Segregation and Gentrification: What are the Links in the US?" *Urban Studies* 46:2079-2101.

Freiberg, Fred. 1993. "Promoting Residential Integration: The Role of Private Fair Housing Groups." Pp. 219-242 in *Housing Markets and Residential Mobility*, edited by G. T. Kingsley and M. A. Turner. Washington, DC: The Urban Institute.

Freund, David M. P. 2007. *Colored Property: State Policy and White Racial Politics in Suburban America*. Chicago: University of Chicago Press.

Frey, William H. 1979. "Central City White Flight: Racial and Non-racial Causes." *American Sociological Review* 44:425-448.

Galster, George , Roberto Quercia, Alvaro Cortes, and Ron Malega. 2003a. "The Fortunes of Poor Neighborhoods." *Urban Affairs Review* 39:205-227.

Galster, George and Jason C. Booza. 2007. "The Rise of the Bipolar Neighborhood." *Journal of the American Planning Association* 73:421-435.

Galster, George C. 1986. "More Than Skin Deep: The Effect of Discrimination on the Extent and Pattern of Racial Residential Segregation." Pp. 119-138 in *Housing Desegregation and Federal Policy*, edited by J. M. Goering. Chapel Hill, NC: University of North Carolina Press.

Galster, George C. 1987. "Residential Segregation and Interracial Economic Disparities - a Simultaneous-Equations Approach." *Journal of Urban Economics* 21:22-44.

Galster, George C. 1988a. "Assessing the Causes of Racial Segregation: A Methodological Critique." *Journal of Urban Affairs* 10:395-407.

Galster, George C. 1988b. "Residential Segregation in American Cities: A Contrary View." *Population Research and Policy Review* 7:93-112.

Galster, George C. 1989. "Residential Segregation in American Cities: A Further Response to Clark." *Population Research and Policy Review* 8:181-192.

Galster, George C. 1990a. "Federal Fair Housing Policy in the 1980s: The Great Misapprehension." Pp. 137-156 in *Building Foundations*, edited by D. DiPasquale and L. Keyes. Philadelphia: University of Philadelphia Press.

Galster, George C. 1990b. "Neighborhood Racial Change, Segregationist Sentiments, and Affirmative Marketing Policies." *Journal of Urban Economics* 27:334-361.

Galster, George C. 1990c. "White Flight from Racially Integrated Neighborhoods in the 1970s: The Cleveland Experience." *Urban Studies* 27:385-399.

Galster, George C. 1991. "Housing Discrimination and Urban Poverty of African-Americans." *Journal of Housing Research* 2:87-122.

Galster, George C. 1992. "The Case for Racial Integration." Pp. 270-285 in *The Metropolis in Black and White*, edited by G. C. Galster and E. W. Hill. New Brunswick, NJ: Rutgers University, Center for Urban Policy Research.

Galster, George C. 1998. "A Stock/Flow Model of Defining Racially Integrated Neighborhoods." *Journal of Urban Affairs* 20:43-51.

Galster, George C., Jason C. Booza, and Jackie M. Cutsinger. 2008. "Income Diversity Within Neighborhoods and Very Low-Income Families." *Cityscape: A Journal of Policy Development and Research* 10:257-300.

Galster, George C. and Erin Godfrey. 2005. "Racial Steering by Real Estate Agents in the U.S. in 2000." *Journal of the American Planning Association* 71:1-19.

Galster, George C. and Heather Keeney. 1993. "Subsidized Housing and Racial Change in Yonkers, New York." *Journal of the American Planning Association* 59:172-181.

Galster, George C. and W. Mark Keeney. 1988. "Race, Residence, Discrimination, and Economic Opportunity: Modeling the Nexus of Urban Racial Phenomena." *Urban Affairs Quarterly* 24:87-117.

Galster, George C. and Sean P. Killen. 1995. "The Geography of Metropolitan Opportunity: A Reconnaissance and Conceptual Framework." *Housing Policy Debate* 6:7-43.

Galster, George C. and Ronald Mincy. 1993. "Explaining the Changing Fortunes of Metropolitan Neighborhoods, 1980-1990." *Housing Policy Debate* 4:303-354.

Galster, George C., Roberto Quercia, Alvaro Cortes, and Ron Malega. 2003b. "The Fortunes of Poor Neighborhoods." *Urban Affairs Review* 39:205-227.

Gamm, Gerald. 1999. *Urban Exodus: Why the Jews Left Boston and the Catholics Stayed*. Cambridge, MA: Harvard University Press.

Gephart, Martha A. 1997. "Neighborhoods and Communities as Contexts for Development." Pp. 1-43 in *Neighborhood Poverty: Context and Consequences for Children*, vol. 1, edited by J. Brooks-Gunn, G. Duncan, and J. L. Aber. New York: Russell Sage Foundation.

Goering, John and Judith Feins. 2003. "Choosing a Better Life? Evaluating the Moving To Opportunity Experiment." Washington, DC: Urban Institute Press.

Goering, John M. 1978. "Neighborhood Tipping and Racial Transition." *Journal of the American Institute of Planners* 44:68-78.

Goering, John M., Judith D. Feins, and Todd Richardson. 2002. "A Cross-Site Analysis of Initial MTO Demonstration Results." *Journal of Housing Research* 13:1-30.

Goering, John M., Judith D. Feins, and Todd Richardson. 2003. "What Have We Learned About Housing Mobility and Poverty Deconcentration?" Pp. 3-36 in *Choosing a Better Life? Evaluating the Moving to Opportunity Social Experiment*, edited by J. M. Goering and J. D. Feins. Washington, DC: The Urban Institute Press.

Goering, John M., Joan Kraft, Judith D. Feins, Debra McInnis, Mary Joel Holin, and Huda Elhassan. 1999. *Moving to Opportunity for Fair Housing Demonstration Program*. Washington, DC: U.S. Department of Housing and Urban Development.

Goodwin, C. 1979. *The Oak Park Strategy: Community Control of Racial Change*. Chicago: University of Chicago Press.

Greene, Richard. 1991. "Poverty Concentration Measures and the Urban Underclass." *Economic Geography* 67:240-252.

Grigsby, William, Morton Baratz, George Galster, and Duncan MacLennan. 1987. "The Determinants of Spatial Separation of Income Groups." in *The Dynamics of Neighborhood Change and Decline*, edited by W. Grigsby, M. Baratz, G. Galster, and D. MacLennan. Oxford, England: Pergamon Journals, Ltd.

Hahn, Jinyong and Jerry Hausman. 2002. "A New Specification Test for the Validity of Instrumental Variables." *Econometrica* 70:163-189.

Hardman, Anna and Yannis M. Ioannides. 2004a. "Income Mixing and Housing in U.S. Cities: Evidence from Neighborhood Clusters of the American Housing Survey." Tufts University.

Hardman, Anna and Yannis M. Ioannides. 2004b. "Neighbors' Income Distribution: Economic Segregation and Mixing in U.S. Urban Neighborhoods." *Journal of Housing Economics* 13.

Hardman, Anna and Yannis M. Ioannides. 2004b. "Income Mixing and Housing in U.S. Cities: Evidence from Neighborhood Clusters of the American Housing Survey." Tufts University.

Harvard Law Review. 1971. "Exclusionary Zoning and Equal Protection." *Harvard Law Review* 84:1645-1669.

Hayes, R. Allen. 1985. *The Federal Government and Urban Housing: Ideology and Change in Public Policy*. Stony Brook, NY: State University of New York Press.

Helper, Rose. 1979. "Social Interaction in Racially Mixed Neighborhoods." *Housing and Society* 6:20-38.

Helper, Rose. 1986. "Success and Resistance Factors in the Maintenance of Racially Mixed Neighborhoods." Pp. 170-194 in *Housing Desegregation and Federal Policy*, edited by J. M. Goering. Chapel Hill: University of North Carolina Press.

Housing Oak Park. 2007. "Housing Oak Park." Housing Oak Park, Oak Park, IL.

Hout, Michael. 2004. "Getting the Most Out of the GSS Income Measures." University of California, Berkeley, Berkeley, CA.

Hughes, Mark Alan and Peter M. Vandoren. 1990. "Social Policy through Land Use Reform: New Jersey's Mount Laurel Controversy." *Political Science Quarterly* 105:97-111.

Iceland, John. 2002. "Beyond Black and White: Metropolitan Residential Segregation in Multi-Ethnic America." *Social Science Research* 33:248-271.

Iceland, John, Cicely Sharpe, and Erica Steinmetz. 2003. "Class Differences in African American Residential Patterns in U.S. Metropolitan Areas: 1990-2000." in *Paper presented at the annual meetings of the Population Association of America*. Minneapolis, MN.

Iceland, John, Daniel H. Weinberg, and Erika Steinmetz. 2002. "Racial and Ethnic Residential Segregation in the United States: 1980-2000." U.S. Government Printing Office, Washington, DC.

Ihlanfeldt, Keith R. and Benjamin Scafidi. 2002. "Black Self-Segregation as a Cause of Housing Segregation: Evidence from a Multi-City Study of Urban Inequality." *Journal of Urban Economics* 51:366-390.

Immergluck, Dan and Geoff Smith. 2002. "Who's Buying Where? The Second of Two Reports on Home Buying and Neighborhood Change in the Chicago Area in the 1990s." The Woodstock Institute.

Immergluck, Dan and Geoff Smith. 2003. "Measuring Neighborhood Diversity and Stability in Home-Buying: Examining Patterns by Race and Income in a Robust Housing Market." *Journal of Urban Affairs* 25:473-491.

Ioannides, Yannis M. 2004. "Neighborhood Income Distributions." *Journal of Urban Economics* 56:435-457.

Ioannides, Yannis M. and Tracey N. Seslen. 2002. "Neighborhood Wealth Distributions." *Economic Letters* 76:357-367.

Jackson, Kenneth T. 1985. *Crabgrass Frontier: The Suburbanization of the United States*. New York: Oxford University Press.

Jahn, Julius A. 1950. "The Measurement of Ecological Segregation: Derivation of an Index Based on the Criterion of Reproducibility." *American Sociological Review* 16:825-831.

Jahn, Julius A., Calvin F. Schmidt, and Clarence Schrag. 1947. "The Measurement of Ecological Segregation." *American Sociological Review* 12:293-303.

Jakubs, John F. . 1986. "Recent Racial Segregation in U.S. SMSAs." *Urban Geography* 7:146-163.

Jargowsky, Paul A. 1994. "Ghetto Poverty Among Blacks in the 1990s " *Journal of Policy Analysis and Management* 13:288-310.

Jargowsky, Paul A. 1996a. "Beyond the Street Corner: The Hidden Diversity of High-Poverty Neighborhoods." *Urban Geography* 17:579-603.

Jargowsky, Paul A. 1996b. *Poverty and Place: Ghettos, Barrios, and the American City*. New York: Russell Sage.

Jargowsky, Paul A. 1996c. "Take the Money and Run: Economic Segregation in U.S. Metropolitan Areas." *American Sociological Review* 61:984-998.

Jargowsky, Paul A. 1997. *Poverty and Place: Ghettos, Barrios, and the American City*. New York: Russell Sage.

Jargowsky, Paul A. 2003. "Stunning Progress, Hidden Problems: The Dramatic Decline of Concentrated Poverty in the 1990s." The Brookings Institution, Washington, DC.

Jargowsky, Paul A. and Mary J. Bane. 1990. "Ghetto Poverty: Basic Questions." in *Inner-City Poverty in the United States*, edited by L. E. Lynn Jr. and M. G. H. McGeary. Washington, DC: National Academy Press.

Jargowsky, Paul A. and Mary J. Bane. 1991. "Ghetto Poverty in the United States, 1970-1980." in *The Urban Underclass*, edited by C. Jencks and P. E. Peterson. Washington, DC: The Brookings Institution.

Jencks, Christopher and Susan E. Mayer. 1990. "The Social Consequences of Growing Up In a Poor Neighborhood." Pp. 111-186 in *Inner-City Poverty in the United States*, edited by L. E. Lynn and M. G. H. McGeary. Washington, DC: National Academy Press.

Jones-Correa, Michael. 2000-01. "The Origins and Diffusion of Racial Restrictive Covenants." *Political Science Quarterly* 115:541-568.

Joseph, Mark L. 2006. "Is Mixed-Income Development an Antidote to Urban Poverty?" *Housing Policy Debate* 17:209-247.

Joseph, Mark L., Robert J. Chaskin, and Henry S. Webber. 2007. "The Theoretical Basis for Addressing Poverty Through Mixed-Income Development." *Urban Affairs Review* 42:369-409.

Karoly, Lynn A. 1993. "The Trend in Inequality among Families, Individuals, and Workers in the United States: A Twenty-Five Year Perspective." in *Uneven Tides: Rising Inequality in America*, edited by S. H. Danziger and P. Gottschalk. New York: Russell Sage Foundation.

Kasarda, John D. 1993a. "Inner-city Concentrated Poverty and Neighborhood Distress: 1970-1990." *Housing Policy Debate* 4:253-302.

Kasarda, John D. 1993b. "Inner-City Concentrated Poverty and Neighborhood Distress: 1970-1990." *Housing Policy Debate* 4:253-302.

Katz, Bruce. 2009. "The Origins of HOPE VI." in *From Despair to Hope: HOPE VI and the New Promise of Public Housing in America's Cities*, edited by H. G. Cisneros and L. Engdahl. Washington, DC: Brookings Institution Press.

Katz, Lawrence F., Jeffrey R. Kling, and Jeffrey B. Liebman. 2001. "Moving to Opportunity in Boston: Early Results of a Randomized Mobility Experiment." *The Quarterly Journal of Economics* 116:607-654.

Kaufman, Julie E. and James E. Rosenbaum. 1992. "The Education and Employment of Low-Income Black Youth in White Suburbs." *Educational Evaluation and Policy Analysis* 14:229-240.

Keating, W. D. 1994. *The Suburban Racial Dilemma: Housing and Neighborhoods*. Philadelphia: Temple University Press.

Khadduri, Jill. 2001. "Deconcentration: What Do We Mean? What Do We Want?" *Cityscape: A Journal of Policy Development and Research* 5:69-84.

King, Paul E. 1978. "Exclusionary Zoning and Open Housing: A Brief Judicial History." *Geographical Review* 68:459-469.

Kingsley, G. Thomas and Kathryn L. S. Pettit. 2003. "Concentrated Poverty: A Change in Course." The Urban Institute, Washington, DC.

Kirschenman, Joleen and Kathryn M. Neckerman. 1991. "We'd Love to Hire Them, But...: The Meaning of Race for Employers." Pp. 203-232 in *The Urban Underclass*, edited by C. Jencks and P. E. Peterson. Washington, DC: The Brookings Institution.

Kleit, Rachel Garshick. 2005. "HOPE VI New Communities: Neighborhood Relationships in Mixed-Income Housing." *Environment and Planning A* 37:1413-1441.

Kneebone, Elizabeth and Alan Berube. 2008. "Reversal of Fortune: A New Look at Concentrated Poverty in the 2000s." Brookings Institution, Washington, DC.

Krivo, Lauren J. and Robert L. Kaufman. 1999. "How Low Can it Go? Declining Black-White Segregation in a Multiethnic Context." *Demography* 36:93-109.

Krivo, Lauren J. and Ruth D. Peterson. 1996. "Extremely Disadvantaged Neighborhoods and Urban Crime." *Social Forces* 75:619-648.

Krivo, Lauren J., Ruth D. Peterson, Helen Rizzo, and John R. Reynolds. 1998. "Race, Segregation, and the Concentration of Disadvantage." *Social Problems* 45:61-80.

Krupka, Douglas J. 2005. "The Stability of Mixed-Income Neighborhoods in America, 1990-2000." Department of Economics, Georgia State University.

Krysan, Maria. 2002. "Whites Who Say They'd Flee: Who Are They, and Why Would They Leave?" *Demography* 39:675-696.

Krysan, Maria. 2008. "Does Race Matter in the Search for Housing? An Exploratory Study of Search Strategies, Experiences, and Locations." *Social Science Research* 37:581-603.

Krysan, Maria and Michael Bader. 2007. "Perceiving the Metropolis: Seeing the City Through the Prism of Race." *Social Forces* 86:699-733.

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

Kushner, James A. 1979. "Apartheid in America: An Historical and Legal Analysis of Contemporary Racial Segregation in the United States." *Howard Law Journal* 22:547-560.

Lee, Barrett A. 1985. "Racially Mixed Neighborhoods During the 1970s: Change or Stability." *Social Science Quarterly* 66:346-364.

Lee, Barrett A. and Matthew Marlay. 2007. "The Right Side of the Tracks: Affluent Neighborhoods in the Metropolitan United States." *Social Science Quarterly* 88:766-789.

Lee, Barrett A. and Peter B. Wood. 1990. "The Fate of Residential Integration in American Cities: Evidence from Racially Mixed Neighborhoods, 1970-1980." *Journal of Urban Affairs* 12:425-436.

Lee, Barrett A. and Peter B. Wood. 1991. "Is Neighborhood Racial Succession Place-Specific?" *Demography* 28:21-40.

Lewis Mumford Center. 2001. "Ethnic Diversity Grows, Neighborhood Integration Lags Behind." The Mumford Center, University at Albany, Albany, NY.

Lieberson, Stanley and Donna K. Carter. 1982. "A Model for Inferring the Voluntary and Involuntary Causes of Residential Segregation." *Demography* 19:511-526.

Lind, K. J. 1986. "Recent Legal Developments Affecting Residential Integration Programs." in *Urban Affairs Association Annual Meeting*. Cleveland, OH.

Logan, John R., Richard D. Alba, Tom McNulty, and Brian Fisher. 1996. "Making a Place in the Metropolis: Locational Attainment in Cities and Suburbs." *Demography* 33:443-453.

Logan, John R. and Mark Schneider. 1984. "Suburban Racial Segregation and Black Access to Public Resources." *Social Science Quarterly* 63:762-770.

Logan, John R. and Linda Brewster Stearns. 1981. "Suburban Racial Segregation as a Nonecological Process." *Social Forces* 60:61-73.

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

Madden, Janice Fanning. 1996. "Changes in the Distribution of Poverty across and within the US Metropolitan Areas, 1979-89." *Urban Studies* 33:1581-1600.

Madden, Janice Fanning. 2003. "The Changing Spatial Concentrations of Income and Poverty among Suburbs of Large US Metropolitan Areas." *Urban Studies* 40:481-503.

Maly, Michael T. 2000. "The Neighborhood Diversity Index: A Complementary Measure of Racial Residential Settlement." *Journal of Urban Affairs* 22:37-47.

Maly, Michael T. 2005. *Beyond Segregation: Multiracial and Multiethnic Neighborhoods in the United States*. Philadelphia: Temple University Press.

Manning, June Thomas, John H. Schweitzer, and Julia A. Darnton. 2004. "Mixed Income Neighborhoods: Issues of Assessment." in *Urban Affairs Association 34th Annual Meeting*. Washington, DC.

Marshall, H. 1979. "White Movement to the Suburbs: A Comparison of Explanations." *American Sociological Review* 44:975-994.

Marshall, H. and K. O'Flaherty. 1987. "Suburbanization in the Seventies: The 'Push-Pull' Hypothesis Revisited." *Journal of Urban Affairs* 9:249-262.

Massey, D.S. and N.A. Denton. 1993. *American apartheid: Segregation and the making of the underclass*. Cambridge: Harvard University Press.

Massey, Douglas S. 1990. "American Apartheid: Segregation and the Making of the Underclass." *The American Journal of Sociology* 96:329-357.

Massey, Douglas S. 1996. "The Age of Extremes: Concentrated Affluence and Poverty in the Twenty-First Century." *Demography* 33:395-412.

Massey, Douglas S. and Nancy A. Denton. 1987. "Trends in the Residential Segregation of Blacks, Hispanics, and Asians: 1970-1980." *American Sociological Review* 52:802-825.

Massey, Douglas S. and Nancy A. Denton. 1988a. "The Dimensions of Residential Segregation." *Social Forces* 67:281-315.

Massey, Douglas S. and Nancy A. Denton. 1988b. "Suburbanization and Segregation in U.S. Metropolitan Areas." *American Journal of Sociology* 94:592-626.

Massey, Douglas S. and Nancy A. Denton. 1989. "Hypersegregation in U.S. Metropolitan Areas: Black and Hispanic Segregation Along Five Dimensions." *Demography* 26:373-391.

Massey, Douglas S. and Mitchell L. Eggers. 1990. "The Ecology of Inequality: Minorities and the Concentration of Poverty 1970-1980." *American Journal of Sociology* 95:1153-1188.

Massey, Douglas S. and Mitchell L. Eggers. 1993. "The Spatial Concentration of Affluence and Poverty During the 1970s." *Urban Affairs Quarterly* 29:299-315.

Massey, Douglas S., Mitchell L. Eggers, and Nancy A. Denton. 1994. "Disentangling the Causes of Concentrated Urban Poverty." *International Journal of Group Tensions* 24:267-316.

Massey, Douglas S. and Mary J. Fischer. 2000. "How Segregation Concentrates Poverty." *Ethnic and Racial Studies* 23:670-691.

Massey, Douglas S., Andrew B. Gross, and Mitchell L. Eggers. 1992. "Segregation, the Concentration of Poverty, and the Life Chances of Individuals." *Social Science Research* 20:397-420.

Massey, Douglas S., Andrew B. Gross, and Kumiko Shibuya. 1994. "Migration, Segregation, and the Geographic Concentration of Poverty." *American Sociological Review* 59:425-445.

Massey, Douglas S. and Shawn M. Kanaiaupuni. 1993. "Public Housing and the Concentration of Poverty." *Social Science Quarterly* 74:109-123.

Massey, Douglas S., Michael J. White, and Voon-Chin Phua. 1996. "The Dimensions of Segregation Revisited." *Sociological Methods and Research* 25:172-206.

Mayer, Susan E. 2001. "How the Growth of Income Inequality Increased Economic Segregation." in *Northwestern University / University of Chicago Joint Center for Poverty Research, JCPR Working Papers*. Chicago.

McAuley, William J. and Cheri L. Nutty. 1982. "Residential Preferences and Moving Behavior: A Family Life-Cycle Analysis." *Journal of Marriage and the Family* 44:301-309.

Metcalf, George R. 1988. *Fair Housing Comes of Age*. New York: Greenwood Press.

Meyer, Stephen Grant. 2000. *As Long as They Don't Move Next Door: Segregation and Racial Conflict in American Neighborhoods*. Lanham, MD: Rowman & Littlefield.

Mills, Edwin S. 1972. "Markets and Efficient Resource Allocation in Urban Areas." *Swedish Journal of Economics* 74:100-113.

Modarres, Ali. 2004. "Neighborhood Integration: Temporality and Social Fracture." *Journal of Urban Affairs* 26:351-377.

Molotch, Harvey. 1969. "Racial Change in a Stable Community." *American Journal of Sociology* 75:226-238.

Molotch, Harvey. 1972. *Managed Integration: The Dilemmas of Doing Good in the City*. Berkeley: University of California Press.

Moore, M. and J. McKeown. 1968. *A Study of Integrated Living in Chicago*. Chicago: University of Chicago, Community and Family Study Center.

Morris, Martina and Bruce Western. 1999. "Inequality in Earnings at the Close of the Twentieth Century." *American Sociological Review* 25:623-657.

Murray, Michael P. 2006a. "Avoiding Invalid Instruments and Coping with Weak Instruments." *Journal of Economic Perspectives* 20:111-132.

Murray, Michael P. 2006b. "The Bad, the Weak, and the Ugly: Avoiding the Pitfalls of Instrumental Variables Estimation." *Social Science Research Network Working Paper No. 843185*.

Muth, Richard F. 1969. *Cities and Housing: The Spatial Pattern of Urban Residential Land Use*. Chicago, IL: University of Chicago Press.

Myrdal, Gunnar. 1944a. *An American Dilemma: The Negro Problem and Modern Democracy*, vol. Vol. 2. New York: Harper & Brothers Publishers.

Myrdal, Gunnar. 1944b. *An American Dilemma: The Negro Problem and Modern Democracy*, vol. Vol. 1. New York: Harper & Brothers Publishers.

National Research Council. 2002. *Equality of Opportunity and the Importance of Place: Summary of a Workshop*. Washington, DC: National Academy Press.

Nelson, Janai. 1996. "Residential Zoning Regulations and the Perpetuation of Apartheid." *UCLA Law Review* 43:1689-1730.

Nezlek, John B. and Linda E. Zyzniewski. 1998. "Using Hierarchical Linear Modeling to Analyze Grouped Data." *Group Dynamics: Theory, Research, and Practice* 2:313-320.

Niemonen, Jack. 2002. *Race, Class, and the State in Contemporary Sociology: The William Julius Wilson Debates*. Boulder, CO: Lynne Rienner Publishers.

North, W. 1986. *Passwords and Prejudice*. Chicago: National Association of Realtors.

Nyden, Philip, John Lukehart, Michael T. Maly, and William Peterman. 1998a. "Chapter 1: Neighborhood Racial and Ethnic Diversity in U.S. Cities." *Cityscape* 4:1-17.

Nyden, Philip, John Lukehart, Michael T. Maly, and William Peterman. 1998b. "Chapter 13: Conclusion." *Cityscape* 4:261-269.

Nyden, Philip, Michael T. Maly, and John Lukehart. 1997. "The Emergence of Stable Racially and Ethnically Diverse Urban Communities: A Case Study of Nine U.S. Cities." *Housing Policy Debate* 8:491-534.

Oates, W. E. 1969. "The Effects of Property Taxes and Local Spending on Property Values: An Empirical Study of Tax Capitalization and the Tiebout Hypothesis." *Journal of Political Economy* 77:957-971.

Orfield, Myron. 2002. *American Metropolitics: The New Suburban Reality*. Washington, DC: Brookings Institution Press.

Orr, Larry, Judith D. Feins, Robin Jacob, Erik Beecroft, Lisa Sanbonmatsu, Lawrence F. Katz, Jeffrey B. Liebman, and Jeffrey R. Kling. 2003. "Moving to Opportunity Interim Impacts Evaluation." U.S. Department of Housing and Urban Development, Office of Policy Development and Research, Washington, DC.

Ottensmann, John. 1995. "Requiem for the Tipping-Point Hypothesis." *Journal of Planning Literature* 10:131-141.

Ottensmann, John R. and Michael E. Gleeson. 1992. "The Movement of Whites and Blacks into Racially Mixed Neighborhoods: Chicago, 1960-1980." *Social Science Quarterly* 73:645-662.

Park, Robert Ezra. 1925. "The City: Suggestions for the Investigation of Human Behavior in the Urban Environment." in *The City*, edited by R. E. Park, E. W. Burgess, and R. D. McKenzie. Chicago: The University of Chicago Press.

Park, Robert Ezra, Ernest W. Burgess, and Roderick D. McKenzie. 1925. *The City*. Chicago, IL: The University of Chicago Press.

Patterson, Orlando. 1997. *The Ordeal of Integration: Progress and Resentment in America's Racial Crisis*. Washington, DC: Civitas.

Pendall, Rolf. 2000. "Local Land Use Regulation and the Chain of Exclusion." *Journal of the American Planning Association* 66:125-142.

Pendall, Rolf and John I. Carruthers. 2003. "Does Density Exacerbate Income Segregation? Evidence from U.S. Metropolitan Areas, 1980-2000." *Housing Policy Debate* 14:541-589.

Peroff, K. A., C. L. Davis, and R. Jones. 1979. "Gautreaux Housing Demonstration: An Evaluation of Its Impact on Participating Households." U.S. Department of Housing and Urban Development, Office of Policy Development and Research, Division of Policy Studies, Washington, DC.

Peterman, William A. 1982. "Integration, Resegregation, and Integration Maintenance." in *Urban Affairs Association Annual Meeting*. Philadelphia, PA.

Pettigrew, T. F. 1973. "Attitudes on Race and Housing: A Social Psychological View." Pp. 21-84 in *Segregation in Residential Areas*, edited by A. H. Hawley and V. P. Rock. Washington, DC: National Academy of Sciences.

Polikoff, Alexander. 1986a. "Sustainable Integration or Inevitable Resegregation: The Troubling Question." Pp. 43-74 in *Housing Desegregation and Federal Policy*, edited by J. M. Goering. Chapel Hill, NC: University of North Carolina Press.

Polikoff, Alexander. 1986b. "What's in a Name: The Diversity of Racial Diversity Programs." in *Issues of Housing Discrimination*. Washington, DC: U.S. Commission on Civil Rights.

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

Popkin, Susan J., Larry F. Buron, Diane K Levy, and Mary K. Cunningham. 2000. "The Gautreaux Legacy: What Might Mixed-Income and Dispersal Strategies Mean for the Poorest Public Housing Tenants?" *Housing Policy Debate* 11:911-942.

Popkin, Susan J., Bruce Katz, Mary K. Cunningham, Karen D. Brown, Jeremy Gustafson, and Margery Austin Turner. 2004. "A Decade of HOPE VI: Research Findings and Policy Challenges." Urban Institute and Brookings Institution, Washington, DC.

Quillian, Lincoln. 1999. "Migration Patterns and the Growth of High-Poverty Neighborhoods 1970-1990." *American Journal of Sociology* 105:1-37.

Quillian, Lincoln. 2002. "Why is Black-White Residential Segregation So Persistent? Evidence on Three Theories from Migration Data." *Social Science Research* 31:197-229.

Rawlings, Lynette, Laura Harris, Margery Austin Turner, and Sandra Padilla. 2004. "Race and Residence: Prospects for Stable Neighborhood Integration." Urban Institute, Washington, DC.

Reardon, Sean F. and Glenn Firebaugh. 2002. "Measures of Multigroup Segregation." *Sociological Methodology* 32:33-67.

Reardon, Sean F. and John T. Yun. 2001. "Suburban Racial Change and Suburban School Segregation, 1987-95." *Sociology of Education* 74:79-101.

Richardson, Harry W. 1978. *Urban Economics*. Hinsdale, IL: The Dryden Press.

Richardson, Harry W., M. J. Vipond, and R. A. Furbey. 1974. "The Determinants of Urban House Prices." *Urban Studies* 11:190-199.

Ricketts, Erol R. and Isabel V. Sawhill. 1988. "Defining and Measuring the Underclass." *Journal of Policy Analysis and Management* 7:225-316.

Roberts, J. Kyle. 2004. "An Introductory Primer on Multilevel and Hierarchical Linear Modeling." *Learning Disabilities: A Contemporary Journal* 2:30-38.

Roberts, Sam. 2008. "In a Generation, Minorities May Be the U.S. Majority." Pp. 1 in *The New York Times*. New York.

Rosenbaum, James E. 1991. "Black Pioneers: Do Moves to the Suburbs Increase Economic Opportunity for Mothers and Children?" *Housing Policy Debate* 2:1179-1213.

Rosenbaum, James E. 1995. "Changing the Geography of Opportunity by Expanding Residential Choice: Lessons from the Gautreaux Program." *Housing Policy Debate* 6:231-269.

Rosenbaum, James E., Linda K. Stroh, and Cathy Flynn. 1998. "Lake Parc Place: A Study of Mixed-Income Housing." *Housing Policy Debate* 9:703-740.

Ross, Stephen L. 2003. "Segregation and Racial Preferences: New Theoretical and Empirical Approaches." *Annales d'Economie et de Statistique* 71/72:143-172.

Rubinfeld, D. L., P. Shapiro, and J. Roberts. 1987. "Tiebout Bias and the Demand for Public Schooling." *The Review of Economics and Statistics* 69:426-437.

Rubinowitz, Leonard S. 1992. "Metropolitan Public Housing Desegregation Remedies: Chicago's Privatization Program." *Northern Illinois University Law Review* 12:590-670.

Rusk, David. 1999. *Inside Game, Outside Game: Winning Strategies for Saving Urban America*. Washington, DC: Brookings Institution Press.

Saltman, Juliet. 1990. *A Fragile Movement: The Struggle for Neighborhood Stabilization*. New York: Greenwood Press.

Sampson, Robert J., Jeffrey D. Morenoff, and Felton Earls. 1999. "Beyond Social Capital: Spatial Dynamics of Collective Efficacy for Children." *American Sociological Review* 64:633-660.

Sanders, Marion K. 1970. *The Professional Radical: Conversations with Saul Alinsky*. New York: Harper & Row.

Schelling, Thomas C. 1969. "Models of Segregation." *The American Economic Review* 59:488-493.

Schelling, Thomas C. 1971. "Dynamic Models of Segregation." *Journal of Mathematical Sociology* 1:143-186.

Schill, Michael H. 1994. "Race, the Underclass, and Public Policy." *Law and Social Inquiry* 19:433-456.

Schnare, Ann B. and C. Duncan McRae. 1978. "The Dynamics of Neighborhood Change." *Urban Studies* 15:327-331.

Schwab, W. A. and E. Marsh. 1980. "The Tipping Point Model: Prediction of Change in the Racial Composition of Cleveland, Ohio Neighborhoods, 1940-1970." *Environment and Planning A* 12:385-398.

Schwartz, Alex and Kian Tajbakhsh. 1997. "Mixed-Income Housing: Unanswered Questions." *Cityscape* 3:71-92.

Seitles, Marc. 1998. "The Perpetuation of Residential Racial Segregation in America: Historical Discrimination, Modern Forms of Exclusion, and Inclusionary Remedies." *Journal of Land Use & Environmental Law* 14:1-30.

Simkus, Albert A. 1978. "Residential Segregation by Occupation and Race in Ten Urbanized Areas, 1950-1970." *American Sociological Review* 43:81-93.

Smith, Alistair. 2002. *Mixed-Income Housing Developments: Promise and Reality*. Cambridge, MA: Harvard University, Joint Center for Housing Studies.

Smith, H. W. 1975. *Strategies of Social Research*. Englewood Cliffs, NJ: Prentice-Hall, Inc.

Smith, Richard A. 1991. "The Measurement of Segregation Change through Integration and Deconcentration, 1970-1980." *Urban Affairs Quarterly* 26:477-496.

Smith, Richard A. 1993. "Creating Stable Racially Integrated Communities: A Review." *Journal of Urban Affairs* 15:115-140.

Smith, Richard A. 1998. "Discovering Stable Racial Integration." *Journal of Urban Affairs* 20:1-25.

Smolla, R. 1986. "Racial Occupancy Controls and Integration Maintenance." in *Issues in Housing Discrimination*. Washington, DC: U.S. Commission on Civil Rights.

Sorensen, Annemette, Karl E. Taeuber, and Leslie J. Hollingsworth Jr. 1975. "Indexes of Racial Residential Segregation for 109 Cities in the United States, 1940 to 1970." *Sociological Focus* 8:125-142.

St. John, Craig. 2002. "The Concentration of Affluence in the United States, 1990." *Urban Affairs Review* 37:500-520.

Stack, Carol. 1974. *All Our Kin: Strategies for Survival in a Black Community*. New York: Harper & Row.

Steinnes, Donald. 1977. "Alternative Models of Neighborhood Change." *Social Forces* 55:1043-1057.

Streitweiser, M. and J. Goodman. 1983. "A Survey of Recent Research on Race and Residential Location." *Population Research and Policy Review* 2:253-283.

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

Swanstrom, Todd, Rob Ryan, and Katherine M. Stigers. 2008. "Measuring Concentrated Poverty: The Federal Standard vs. a Relative Standard." *Housing Policy Debate* 19:295-321.

Taeuber, Karl and Alma Taeuber. 1965. *Negroes in Cities: Residential Segregation and Neighborhood Change*. Chicago: Aldine.

Taeuber, Karl E. 1975. "Racial Segregation: The Persisting Dilemma." *The ANNALS of the American Academy of Political and Social Science* 422:87-96.

Talen, Emily. 2006a. "Design for Diversity: Evaluating the Context of Socially Mixed Neighbourhoods." *Journal of Urban Design* 11:1-32.

Talen, Emily. 2006b. "Design that Enables Diversity: The Complications of a Planning Ideal." *Journal of Planning Literature* 20:232-249.

Taub, Richard P., D. Garth Taylor, and Jan D. Dunham. 1984. *Paths of Neighborhood Change: Race and Crime in Urban America*. Chicago: University of Chicago Press.

Theil, Henri. 1972. *Statistical Decomposition Analysis*. Amsterdam: North-Holland Publishing Company

Theil, Henri and Anthony J. Finizza. 1971. "A Note on the Measurement of Racial Integration of Schools by Means of Informational Concepts." *Journal of Mathematical Sociology* 1:187-194.

Thernstrom, Stephan and Abigail Thernstrom. 1997. *America in Black and White: One Nation, Indivisible*. New York: Simon & Schuster.

Thomas, June M., John H. Schweitzer, and Julia A. Darnton. 2004. "Mixed Income Neighborhoods: Issues of Assessment." in *Paper presented at the annual meeting of the Urban Affairs Association*. Washington, DC.

Timberlake, Jeffrey M. and John Iceland. 2007. "Change in Racial and Ethnic Residential Inequality in American Cities, 1970-2000." *City & Community* 6:335-365.

Turbov, Mindy and Valerie Piper. 2005. *HOPE VI and Mixed Finance Redevelopments: A Catalyst for Neighborhood Renewal*. Washington, DC: Brookings Institution.

Turner, Margery Austin and Julie Fenderson. 2006. "Understanding Diverse Neighborhoods in an Era of Demographic Change." The Fannie Mae Foundation, Washington, DC.

Turner, Margery Austin, Fred Freiberg, Erin Godfrey, Carla Herbig, Diane K Levy, and Robin R. Smith. 2002. "All Other Things Being Equal: A Paired Testing Study of Mortgage Lending Institutions." The Urban Institute, Washington, DC.

Turner, Margery Austin and Lynnette Rawlings. 2009. "Promoting Neighborhood Diversity: Benefits, Barriers, and Strategies." The Urban Institute, Washington, DC.

Turner, Margery Austin, Stephen L. Ross, George C. Galster, and John Yinger. 2002. "Discrimination in Metropolitan Housing Markets: National Results from Phase I HDS 2000." U.S. Department of Housing and Urban Development, Washington, DC.

Turner, Margery Austin and Felicity Skidmore. 1999. *Mortgage Lending Discrimination: A Review of Existing Evidence*. Washington, DC: The Urban Institute.

Turner, Margery Austin, Raymond J. Struyk, and John Yinger. 1991. "Housing Discrimination Study: Synthesis." U.S. Department of Housing and Urban Development, Washington, DC.

Turner, Margery Austin and Ron Wienk. 1993. "The Persistence of Segregation in Urban Areas: Contributing Causes." in *Housing Markets and Residential Mobility*, edited by G. T. Kingsley and M. A. Turner. Washington, D.C.: The Urban Institute Press.

U.S. Bureau of the Census. 1973. "1970 Census of Population and Housing." Government Printing Office, Washington, DC.

U.S. Bureau of the Census. 1983. "1980 Census of Population and Housing." Government Printing Office, Washington, DC.

U.S. Bureau of the Census. 2003. "National Census Age Data."

U.S. Department of Housing and Urban Development. 1979. "Gautreaux Housing Demonstration: An Evaluation of Its Impact on Participating Households." Office and Policy Development and Research--Division of Policy Studies, Washington, DC.

U.S. Department of Housing and Urban Development. 1996. "Estimated Family Incomes for FY 1996." http://www.novoco.com/low_income_housing/resource_files/income_limits/med_income_memo_96.pdf.

U.S. Department of Housing and Urban Development. 2003. "Mixed-Income Housing and the HOME Program." U.S. Department of Housing and Urban Development, Community Planning and Development, Washington, DC.

University of Michigan Population Studies Center. 2008. "The Measurement of Residential Segregation." in *http://enceladus.isr.umich.edu/race/Measurement.html*.

Van der Laan Bouma-Doff, Wenda. 2007. "Involuntary Isolation: Ethnic Preferences and Residential Segregation." *Journal of Urban Affairs* 29:289-309.

Van Valey, Thomas L., Wade Clark Roof, and Jerome E. Wilcox. 1977. "Trends in Residential Segregation: 1960-1970." *The American Journal of Sociology* 82:826-844.

Vandell, Kerry. 1995. "Market Factors Affecting Spatial Heterogeneity among Urban Neighborhoods." *Housing Policy Debate* 6:103-140.

Varady, David P. and Carole C. Walker. 2003. "Housing Vouchers and Residential Mobility." *Journal of Planning Literature* 18:17-30.

Vigdor, Jacob L. 2003. "Residential Segregation and Preference Misalignment." *Journal of Urban Economics* 54:597-609.

von Hoffman, Alexander. 1996. "High Ambitions: The Past and Future of American Low-Income Housing." *Housing Policy Debate* 7:423-446.

Weaver, Robert C. 1944. "Race Restrictive Housing Covenants." *The Journal of Land & Public Utility Economics* 20:183-193.

Wen, Ming, Christopher R. Browning, and Kathleen A. Cagney. 2003. "Poverty, Affluence, and Income Inequality: Neighborhood Economic Structure and Its Implications for Health." *Social Science and Medicine* 57:843-860.

Wheaton, William C. 1977. "Income and Urban Residence: An Analysis of Consumer Demand for Location." *American Economic Review* 67:620-631.

White, Michael J. 1983. "The Measurement of Spatial Segregation." *American Journal of Sociology* 88:1008-1018.

White, Michael J. 1984. "Racial and Ethnic Succession in Four Cities." *Urban Affairs Quarterly* 20:165-183.

White, Michael J. 1986. "Segregation and Diversity Measures in Population Distribution." *Population Index* 52:198-221.

White, Michael J. 1987. *American Neighborhoods and Residential Differentiation*. New York: Russell Sage Foundation.

Wienk, Ronald E., Clifford E. Reid, John C. Simonson, and Frederick J. Eggers. 1979. "Measuring Discrimination in American Housing Markets: The Housing Market Practices Survey " U.S. Department of Housing and Urban Development, Washington, DC.

Wilkes, Rima and John Iceland. 2004. "Hypersegregation in the Twenty-First Century." *Demography* 41:23-36.

Williams, R. 1964. *Strangers Next Door: Ethnic Relations in American Communities*. Englewood Cliffs, NJ: Prentice-Hall.

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

Wolf, E. 1963. "The Tipping-Point in Racially Changing Neighborhoods " *Journal of the American Institute of Planners* 29:217-222.

Wong, David W. S. 1998. "Spatial Patterns of Ethnic Integration in the United States." *Professional Geographer* 50:13-30.

Wood, Peter B. and Barrett A. Lee. 1991. "Is Neighborhood Racial Succession Inevitable? Forty Years of Evidence." *Urban Affairs Quarterly* 26:610-260.

Woofter, Thomas J. 1928. *Negro Problems in Cities*. Garden City, N.Y.: Doubleday, Doran, & Co.

Wurdock, C. 1981. "Neighborhood Racial Transition: A Study of the Role of White Flight." *Urban Affairs Quarterly* 17:75-89.

Yamada, H. 1972. "On the Theory of Residential Location: Accessibility, Leisure, and Environmental Quality." *Papers of the Regional Science Association* 29:125-135.

Yinger, John, George Galster, Barton Smith, and Fred Eggers. 1979. "The Status of Research into Racial Discrimination and Segregation in American Housing Markets." H.U.D. Occasional Papers, 6, Washington, DC.

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

ABSTRACT

THE NATURE AND ORIGINS OF DUALLY DIVERSE NEIGHBORHOODS

by

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Degree: Doctor of Philosophy

This study investigates the extent to which neighborhoods that are both racially and economically diverse, hereafter referred to as dually diverse neighborhoods, exist within the metropolitan landscape of the United States and what factors contribute to the emergence of such neighborhoods. Using the Neighborhood Change Database, this study defines what a diverse neighborhood is and gives a descriptive portrait of the characteristics of these neighborhoods. The entropy index (H) is used as the measure of neighborhood diversity because of its ability to take into account the presence of more than two groups, unlike other more commonly used measures of segregation or diversity. Dually diverse neighborhoods are operationalized as those neighborhoods having an entropy score greater than or equal to 0.69 on the racial measure and an entropy score greater than or equal to 0.87 on the income measure, which corresponds to a neighborhood archetype that is an easily understood, intuitively appealing mixture of both income and racial-ethnic groups. Results indicate that the presence of dually diverse neighborhoods has nearly doubled each decade between 1970 and 2000 and that more than half of dually diverse neighborhoods maintained their integrated status from 1990 to 2000. Regression analyses probing the predictors of dually diverse neighborhoods in metro areas examine whether metropolitan income distributions, metropolitan racial-ethnic diversity, household preferences for neighborhood diversity, immigration and metropolitan growth, housing market characteristics, and public policy interventions are correlated with the incidence of dually diverse neighborhoods in metro areas. Findings suggest that the most important predictor of dually diverse neighborhoods is the incidence of racially diverse neighborhoods in metro areas. The incidence of racially diverse neighborhoods in metro areas is in turn influenced by the presence of recently-arriving immigrants and growing income

distribution congruence amongst the four racial-ethnic groups in the study. Implications for public policy are discussed, as well as a discussion of how this work compliments and expands the extant knowledge on diverse neighborhoods.

AUTOBIOGRAPHICAL STATEMENT

JACKIE M. CUTSINGER

Jackie M. Cutsinger received her bachelor's degree in Sociology and Psychology from the University of Toledo in 2000. She received her Master's degree in Sociology from Wayne State University in 2004. Ms. Cutsinger has collaborated on multiple scholarly journal publications on measuring and classifying urban sprawl, sprawl's impact on segregation, neighborhood thresholds and adjustment to external shocks, the social costs of concentrated poverty, income diversity in neighborhoods, and the disappearance of middle-class neighborhoods. Ms. Cutsinger taught statistics in the School of Social Work at Wayne State University, and currently works as a Project Manager at the Center for Urban Studies at Wayne State. Future research endeavors will continue to investigate the social impacts that neighborhoods have on their residents.