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Context matters : a multilevel analysis of patterns of mobility to non-poor neighborhoods for poor renter households.

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CONTEXT MATTERS: A MULTILEVEL ANALYSIS OF

PATTERNS OF MOBILITY TO NON-POOR NEIGHBORHOODS

FOR POOR RENTER HOUSEHOLDS

By

Stacy M. Deck
B.S., Indiana University, 1984
M.S.S.W, University of Louisville, 1995

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Kent School of Social Work
University of Louisville
Louisville, Kentucky

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A Dissertation Approved on

April 6, 2010

by the following Dissertation Committee:

_____
Annatjie Faul, Ph.D., chair

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Gerard "Rod" Barber, Ph.D.

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Kevin Borders, Ph.D.

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Steven Bourassa, Ph.D.

_____
Jennifer Swanberg, Ph.D.

DEDICATION

This dissertation is dedicated to my dad

Dr. Joseph C. Deck

How I wish you could have lived to see this day.

It gives me comfort to know that as I walk in your footsteps

a part of you lives on in me.

ACKNOWLEDGEMENTS

There are so many people to thank. First, I am indebted to my dissertation committee. Each member of my committee is an individual with whom I enjoy spending time, and we all worked so well together. It was a real pleasure to be mentored by this group from whom I learned so much.

My chair, Dr. Annatjie Faul, is a social worker and researcher extraordinaire. She possesses a rare combination of true compassion, professional dedication and drive, intellectual curiosity and amazing intelligence, and she's also a lot of fun to be around. I admire Annatjie and aspire to these qualities. I entrusted this final leg of my doctoral journey to her care, knowing that she would guide me to the finish line. Along the way, I lost several people who are dear to me and she saw me through those times with such kindness. I appreciate the fact that she is as committed to my dissertation topic as I am.

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committed to serving on my committee. Kevin has a depth of skill as a teacher and policy analyst; conversations with him have honed my thinking and challenged me as an educator. He also let me know that he remembers what it is like to write and defend a dissertation. His support has meant a lot to me.

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parents—Joe and Betsy—were my first teachers, and they nurtured, challenged and encouraged me to be the best I could be. They modeled life-long learning, persistence, compassion and community service, and they provided unconditional love. I really think they believed that their children could do anything; they certainly made us believe that. Later in life, I gained a stepmom, Jo. She was a great support to my dad, and continues to be a loving presence in my life. She reminds me what my dad would be saying to me now if he could, and for that I am grateful. I am blessed with three siblings—Joe, Andy and Jennifer—who have grown up to be great friends. They and their spouses mean the world to me.

To my children, Becca, Jessica, Austin and Justin, I just want to say "I love you to the moon and back." None of them can remember a time that I wasn't in school. I certainly appreciate their patience as they had to share me with "the book" I was writing. My smart, loving, thoughtful daughters have been with me for the whole journey, and I was so lucky to gain the two sons I always wanted during my time in the doctoral program. Each of them has a bright future before them, and I look forward to seeing how they choose to use their talents to make the world a better place.

Finally, my husband Steve is truly the perfect partner for me. He promised at our wedding that his heart would be my shelter and his arms would be my home… that he would love, honor, nurture and sustain me through times of darkness as well as light. He has supported me, loved me unconditionally, and helped me to find life-balance through this whole process. I couldn't have asked for more.

ABSTRACT
Context Matters: A Multilevel Analysis of Patterns of Mobility to
Non-Poor Neighborhoods for Poor Renter Households

Stacy M. Deck

April 6, 2010

The goal of this longitudinal, multilevel study was to develop a better

understanding of poor renter households' mobility patterns by identifying the relative

importance of individual and contextual variables. Variability in neighborhood poverty

rates (NPR) was analyzed for 1564 poor, renter households living in 179 metropolitan

statistical areas (MSAs) across the continental U.S. during the 1990s. Household heads

were typically black (73%), middle age (mean=37 years) females (59%) who had 12 or

fewer years of education (77%). Each household completed three to nine Panel Study of

Income Dynamics (PSID) surveys. Using geocodes, census data were linked with survey

data to provide information about the NPR and metropolitan opportunity structure at each

survey occasion.

Multilevel modeling was used to analyze this hierarchically-structured data

(measurement occasions nested within households nested within MSAs).   While 58% of

variability in outcomes was due to between-household differences, 15% was due to

between-MSA differences (the remainder was between-measurement occasion

variability). Each of the three blocks of predictors significantly improved the model:

individual decisions (work, housing, fertility and marriage), personal characteristics

(race, age, gender and education) and MSA characteristics (segregation, housing, labor market and area poverty conditions).

Controlling for other predictors, race was the most important predictor, increasing a black household's NPR by over ten points and interacting with several other predictors. Being black amplified the negative effect of having more children, weakened positive effects of increased income and a better MSA opportunity structure, and interacted with MSA segregation to the disadvantage of black households. Increased education lowered the NPR. Across income levels, the average white household lived in a non-poor neighborhood while the average black household had an NPR nearly twice as high.

Living in public housing was associated with a 4.7 percentage point differential in NPR (compared to no assistance). Other forms of government-assisted housing also increased the NPR, but by less than one percentage point. Mobility lowered the NPR, as did becoming a homeowner.

Individual choices made a difference, but characteristics individuals were born with amplified or diminished effects of their efforts. The NPR was further influenced by housing type, tenure and mobility. Most importantly, metropolitan context mattered.

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CHAPTER I

PROBLEM STATEMENT

Since the 1970s, poverty in the U.S. has become increasingly concentrated in particular geographic areas (Bishaw, 2005). While the trend of a rising number of concentrated poverty tracts reversed in the 1990s, it appears that this is better explained as a redistribution of poverty households into somewhat less poor tracts than a phenomenon resulting from an actual abatement in poverty conditions (Jargowsky, 2003; Kingsley & Pettit, 2003). Until tract-level poverty data from the American Community Survey are released later this year, trends for the most recent decade are unknown. Given the weakness in the economy and labor markets, however, concern is emerging that neighborhood poverty rates will be higher in the most recent decade than they were in the 1990s and that the deconcentration trend will have reversed again (Erickson, Reid, Nelson, O'Shaughnessy, & Berube, 2008; Turner, 2009).

Since the 1990s, federal-level housing policy has focused on deconcentrating poverty; mobility programs and mixed-income redevelopment have been favored policy approaches. These approaches are grounded in theoretical assumptions that reduced isolation of poor households promotes increases in human and social capital (Joseph, Chaskin, & Webber, 2007). However, outcome studies for various housing policy and program initiatives have identified mixed results (Goetz, 2003; Orr et al., 2003; Popkin, Katz et al., 2004), and it appears that whether the program is voluntary makes a difference (Goetz, 2003).

Housing mobility program studies with experimental or quasi-experimental designs have enrolled volunteers (Orr et al., 2003; Rosenbaum, 1995). It is not clear whether results for these programs generalize to involuntary mobility programs since volunteers may have different motivations and responses, or different baseline characteristics, or both. Most recent evaluation studies of involuntary mobility programs have used a site-based (or multi-site) case study approach, and have simply described characteristics and conditions for movers (Goetz, 2003; Popkin et al., 2004). A clear understanding of the pathways through which both individual and contextual characteristics are related to movement out of poor neighborhoods is lacking.

What is needed to better understand social and geographic mobility patterns (locational attainment) for poor, renter households is a more robust modeling of change that incorporates individual characteristics and decisions, contextual conditions, and type of housing assistance within the same model. Also, use of a national sample would provide more generalizable findings, and would assist in understanding how metropolitan-level differences can affect policy outcomes. Findings related to the dynamics of mobility out of poor neighborhoods over time, and the individual and contextual variables that predict upward mobility, would be useful in resolving the debate over preferred approaches to poverty deconcentration. From this, evidence-based housing policy recommendations could be better formulated.

This dissertation study addresses the following main research questions: (a) *Do poor, renter households exposed to different metropolitan opportunity structures change differently over time in their locational attainment patterns?* and (b) *Do variations in individual decisions, personal characteristics and opportunity structures predict*

differences in locational attainment patterns? As an introduction, this chapter will

provide an analysis of the social problem of concentrated urban poverty with a particular

emphasis on intersections between the problem and housing policy solutions. Common

definitions for related constructs will be reviewed, and differentiation between causes,

correlates and consequences of spatially concentrated poverty and neighborhood effects

will be outlined. Following this analysis of the problem, a review of seminal theories

related to urban poverty will synthesize various perspectives. Recent federal housing

policy will be situated in its historical context, and the theory-based assumptions

underpinning this policy development will be discussed.

<center>**Problem Description**</center>

Poverty

Individuals and families are defined by the U.S. Census Bureau as being under the

poverty line or 'in poverty' if their income falls below a federally defined poverty

threshold. Developed in 1963, this standardized definition of poverty uses a threshold

equal to three times the value of an economy food plan adjusted for family size and

number of children or elderly persons in the family. A family's income is compared to

the poverty threshold to determine whether income is adequate. Since 1969, annual cost

of living adjustments have been made. Still, the current poverty thresholds are

controversial since they are believed to overestimate the poverty rate for families

receiving public assistance, and underestimate the poverty rate for working families.

Further, because poverty thresholds do not vary geographically, they fail to reflect

regional variability in the cost of living that is largely a reflection of differences in

housing costs.

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Various federal agencies and programs may use their own guidelines to define a household as being poor enough to receive assistance. For example, the U.S. Department of Housing and Urban Development (HUD) establishes eligibility for housing assistance using income limits calculated as a proportion of the area median family income. The cutting point varies geographically as well as by household size. Low income is defined as 80 percent or less of the area median family income and very low income is set at 50 percent. As this example demonstrates, the terms 'in poverty' and 'low-income' are not necessarily interchangeable.

Poverty rates are aggregated for population groups by the Census Bureau, and estimates can vary depending on the source of the data. For example, questions about income are more detailed in the Current Population Survey (CPS) than in the decennial census, which can result in lower (and perhaps more accurate) CPS poverty estimates (Bishaw, 2005). The official poverty rate in 2008 was 13.2 percent (39.8 million individuals in poverty) (DeNavas-Walt, Proctor, & Smith, 2009). However, the poverty rate was much higher for blacks (24.7 percent), Hispanics (23.2 percent) and children (19.0 percent).

Defining urban poverty levels adds a spatial component to the characterization of poverty. Rather than describing the economic well-being of individuals, subgroups of the population, or the overall population, measures of urban poverty describe the proportion of persons living in a particular geographic location that are in poverty. Over time, the U.S. has become progressively more urban and population density has increased dramatically. A change in poverty rates by area of residence can also be detected over time.

Historical poverty data by residence is available from the Census Bureau for 1959 and from 1967 onward. In 1959, the poverty rate was considerably higher in non-metropolitan areas (33.2 percent) than in metropolitan areas (15.3 percent). The poverty rate in central cities (15.8 percent) exceeded the rate for non-metropolitan areas (14.0 percent) for the first time in 1975. Since then, the highest poverty rates have been found in central cities, with the exception of 1986 when the poverty rates for central cities and non-metropolitan areas were essentially equal (18.0 percent and 18.1 percent respectively). In 2008, the national poverty rates were 12.9 percent inside metropolitan statistical areas (which include principal cities and their suburbs), 17.7 percent inside principal cities, 9.8 percent outside principal cities (i.e., in suburbs), and 15.1 percent outside metropolitan areas (DeNavas-Walt et al., 2009).

Spatially Concentrated Poverty

The area poverty rate is the proportion of households in a geographically defined space—for example, a neighborhood—that is below the federal poverty line. Poverty concentration refers to a condition of very high poverty in a particular area. Danziger and Gottschalk (1987) first defined concentrated poverty neighborhoods as clusters of census tracts in which the poverty rate is greater than or equal to 40 percent. Jargowski and Bane (1991) have argued against using an absolute cutting point, preferring instead to classify neighborhoods using both the area poverty rate and neighborhood characteristics (e.g., housing quality, unemployment rate, attributes of residents). Still, they note that classification using these characteristics generally matches the classification obtained through use of the 40 percent criterion. The Census Bureau has adopted the 40 percent cutting point to describe the most spatially concentrated poverty (Bishaw, 2005), and this

operationalization of concentrated poverty is prevalent in the literature. A 20 percent

cutting point is also commonly used to denote poor (but not concentrated) neighborhoods

(Bishaw, 2005; Massey, Gross, & Shibuya, 1994; Quillian, 1999; South & Crowder,

1997; Wilson, 1987).

Census tracts, which generally include around 4000 households, are typically used

as a proxy for neighborhood. However, there are shortcomings to this approach. For

example, census boundaries may not reflect residents' perceptions of neighborhood

borders (Coulton, 2005). Residents may conceptualize neighborhoods in both spatial and

social/functional terms, and delimitation of neighborhood boundaries can vary depending

upon which function (e.g., shopping, child care, recreation) serves as the frame of

reference (Briggs, 1997). Census tracts can encompass dissimilar areas that obscure

differences when aggregated, can change or vary over time (or fail to change when actual

neighborhood boundaries change), and may be too large to allow researchers to detect

changes or effects of social interventions (Coulton, 2005). Further, since decennial

census and American Community Survey data are derived from surveys of a sample of an

area's inhabitants, sampling error may result in smaller areas within a tract (particularly

those at the boundaries of concentrated poverty areas) being misclassified (Jargowsky &

Bane, 1991). Nonetheless, because tract-level census data are readily available, these

data are typically used to identify the area poverty rate. Since tracts are relatively small

statistical subdivisions, they are generally presumed to be homogeneous with respect to

residents' characteristics, economic status, and living conditions.

Census 2000 data indicate that 2.8 percent of the U.S. population (about 7.9

million persons) lived in census tracts with poverty rates at or above 40 percent (Bishaw,

2005). An additional 15.6 percent (43.9 million persons) lived in tracts with poverty rates between 20.0 and 39.9 percent. While these proportions of the general population are small, a large share of the metropolitan poor population is impacted by living in poor and very poor neighborhoods. In 2000, 26 percent of the metropolitan poor population lived in a neighborhood with a poverty rate of 30 percent or greater, and 12 percent lived in a neighborhood with a poverty rate at or above the 40 percent threshold (Kingsley & Pettit, 2003).

The proportion of residents in concentrated poverty tracts (at or above 40 percent) in 1999 was highest in the Northeast (3.4 percent of the population) and South (3.1 percent) (Bishaw, 2005). Nationally, children and minorities were disproportionately represented in concentrated poverty tracts, and residents were less likely than those in non-poor tracts to be married, have a high school diploma, be employed or own a home. Households tended to have more family members and were more likely to be headed by a single female. About one in four families in concentrated poverty tracts had an annual income of less than $10,000.

Goetz (2003) summarizes social pathologies associated with concentrated poverty including drug use, violent crime, poor school performance and high drop-out rates, teen pregnancy, under- and unemployment, an oppositional or 'ghetto' culture and other underclass attributes. An extensive literature on 'neighborhood effects' associated with high-poverty areas documents the above social problems as well as health disparities and low quality public services (Ellen & Turner, 1997; Erickson et al., 2008; Jencks & Mayer, 1990). Community-level impacts also result from poverty concentration including spillover of social pathologies into adjoining areas, higher costs of public

services, a diminished tax base, negative perceptions of the metropolitan area and flight of the middle class to the metropolitan periphery.

Poverty concentration is a relatively recent phenomenon. Jargowksy (2003) notes that between 1970 and 1990 the number of people living in concentrated poverty neighborhoods doubled. Abramson, Tobin and VanderGoot (1995) report that the mean dissimilarity index of the poor in the 100 largest U.S. metropolitan areas rose from 32.9 in 1970 to 36.4 in 1990 (an 11 percent increase). This indicates that by 1990, over 36 percent of those classified as poor (almost 6 million people) would have had to move to a different (non-poor) census tract to create an even distribution by class across the metropolitan areas. The rising dissimilarity index points to a trend of increasing class segregation in metropolitan areas.

The mean isolation index for these same cities rose from 19.5 percent in 1970 to 21.3 percent in 1990, a 9 percent increase (Abramson et al., 1995). Thus by 1990, the average poor person was living in a neighborhood in which more than one in five neighbors was also poor. Although segregation by race and ethnicity declined over this same time period, non-whites were still disproportionately represented in poor neighborhoods and for metropolitan areas in 1990, a high proportion of blacks in the general population significantly predicted increased isolation of the poor.

More recent reports on poverty concentration trends document a 24 percent decline (2.5 million persons) in the number of people living in concentrated poverty neighborhoods between 1990 and 2000 (Jargowsky, 2003; Kingsley & Pettit, 2003). All racial and ethnic groups experienced a decline in the proportion of poor persons living in concentrated poverty; while poor blacks still had the largest proportion living in high-

poverty neighborhoods in 2000, they also had experienced the steepest decline in this proportion between 1990 and 2000. Noting that the national poverty rate declined at a much more gradual rate over the ten-year period than did the number of concentrated poverty neighborhoods, Jargowsky concludes, "The implication is that there was a substantial change in the spatial organization of poverty during the 1990s" (2003, p. 4). He documents a decrease in the number of concentrated poverty neighborhoods in rural areas and central cities, but little change in suburban areas, and an increase in poverty in the inner ring (older) suburbs. It is also important to note that in spite of declining poverty concentration in central cities, 62 percent of all high-poverty tracts (poverty rate at or greater than 30 percent) in 2000 were in the central cities of the 100 largest metropolitan areas (Kingsley & Pettit, 2003). As of 2008, the average poverty rate in central cities was 17.7 percent compared to a national poverty rate of 13.2 percent in the same year.

Kingsley and Pettit (2003) suggest a number of reasons to view the 1990s reversal of the overall poverty concentration trend with caution. First, improved conditions in high-poverty neighborhoods may have simply mirrored generally improved economic conditions during the 1990s, and there were notable regional exceptions to the national trend (concentration of poverty increased in 17 of the 100 largest metropolitan areas). Second, the decline in the share of high-poverty tracts that were over 60 percent black was offset by an increase in predominantly Hispanic high-poverty tracts. Finally, while the number of persons in extreme-poverty neighborhoods (rate at or above 40 percent) and high-poverty neighborhoods (rate at or above 30 percent) declined in the 1990s, the number in middle-range poverty neighborhoods (10 to 29 percent poverty rate) actually

grew. In his introduction to a recent Brookings Institution report, *The Enduring*

Challenge of Concentrated Poverty in America, Bruce Katz noted that "progress remains

uneven, and may even have stalled during the current decade. Meanwhile, poverty is

spreading and may be re-clustering in suburbs, where a majority of America's

metropolitan poor now live" (Erickson et al., 2008, p. vii).

Galster (2005a) suggests that this shifting of the population from very poor to

medium poor neighborhoods can result in a negative net effect on metropolitan areas by

increasing the overall number of poverty neighborhoods and tipping new tracts into the

range (which he estimates at neighborhood poverty rates between 15 and 40 percent) in

which social dysfunction is propagated more rapidly (see also Galster & Zobel, 1998).

Kingsley and Pettit (2003) emphasize that it is important to look at the whole picture.

Focusing only on the decline in the number of the most concentrated poor neighborhoods

can obscure recognition of serious and ongoing problems in high- and medium-poverty

areas.

Etiology

William Julius Wilson (1987) is the most-cited author with regard to the increase

in concentrated poverty in the U.S. beginning in the 1970s. While Wilson notes that

discrimination rooted in the institution of slavery resulted in segregated housing patterns,

he suggests that racism is not the primary cause of concentrated poverty (despite the fact

that blacks and ethnic minorities are disproportionately affected). Rather, he points out

that the civil rights and open housing movements of the 1960s and 1970s resulted in

increased access to housing in the suburbs for middle class blacks. At the same time,

global economic changes and deindustrialization led to a labor market shift from

manufacturing to a service and information-based economy. Lower class blacks left behind in center cities were dependent on manufacturing jobs and had less access to new jobs in the suburbs. Black males were disproportionately affected by these shifts, and they became less attractive as potential marriage partners.

As a result of these demographic and economic shifts, center cities were increasingly occupied by unemployed and underemployed individuals, female-headed households, and populations isolated from the mainstream. The exodus of the middle class meant loss of businesses, community institutions, the tax base, and the positive normative influence exercised by these individuals. Wilson suggests that over time, increasing social isolation and disorganization led to the emergence of an urban underclass.

Not all agree with Wilson's de-emphasis of race. Fainstein (1996) contends that blacks are segregated from whites at all socioeconomic levels, and that Wilson's focus on a black underclass has only served to further pathologize minorities. Krysan and Farley (2002) suggest that blacks live in predominantly black neighborhoods not because of personal preference or racial solidarity but rather because they fear white hostility, and a recent study of the behavior of rental and real estate agents found that racial steering and differential treatment of minorities is still common across the U.S. (Turner & Ross, 2005). In *American Apartheid*, Massey and Denton (1993) argue that because the U.S. is a racially stratified society, with housing segregated by both race and class, downward shifts in the economy (as in the 1970s) result in concentration of individuals dually marginalized by race and class into smaller geographic areas. Since minorities are disproportionately poor, and therefore disproportionately represented in poor

neighborhoods, race and ethnicity must be considered as important variables that lead to poverty concentration (Dreier, 1996; Thompson III, 1998).

Concepts often associated with concentrated poverty and the urban underclass include housing policy discrimination, housing segregation, spatial mismatch of jobs and housing, social isolation, and social disorganization (Chapple, 2006; Dreier, 1996; Goetz, 2003; McDonald, 2004; Thompson III, 1998). Goetz's (2003) causal model for the concentration of poverty identifies four overarching antecedents: a) structural changes in the economy, b) government housing policy (e.g., historical concentration of low-income housing in poor and/or minority neighborhoods), c) discrimination/segregation, and d) disinvestment in cities. As will be discussed next, some also view intrinsic characteristics of poor persons themselves as a contributing or exclusive cause of poverty concentration.

<div align="center">

Theoretical Perspectives

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Figure 1 organizes three overarching perspectives related to the causes of concentrated poverty and associated housing policy responses. The natural order perspective observes poverty conditions dispassionately without assigning blame. The intrinsic etiology perspective blames the victim, while the extrinsic etiology perspective blames the system. Each perspective, and the progression from explanations of poverty to explanations of urban poverty, and finally, to explanations of concentrated poverty will be discussed. For each perspective, related housing policy approaches will be identified.

Natural Order Perspective

 Explanations of poverty (A1). The natural order perspective borrows from knowledge related to the evolution of plants and animals to describe evolution of the

Perspectives — 1 Explanations of poverty — 2 Explanations of urban poverty — 3 Explanations of poverty concentration — 4 Housing policy responses

"Geography of Opportunity"

A Natural order (no blame)

- A1: Social Darwinism
- A2: Human ecology; locational attainment model-spatial assimilation; residential preferences; neutral ethnocentrism
- A3: Suburbanization; polycentric cities; market-based sorting of land utilization; homogenous neighborhoods
- A4: Laissez faire policy

B Intrinsic etiology ('blame the victim')

- B1: Culture of poverty; deficient family structure; status attainment model; human capital; personal deficits & dependency; morality & personal responsibility
- B2: Alienation; loss of social bonds & collective socialization; contagion/ecological systems; social capital; locational attainment model-spatial assimilation
- B3: Social dislocation & spatial isolation; cultural ecology of inequality; neighborhood effects; urban underclass; segmented assimilation
- B4: Housing mobility programs; mixed-income housing development; inclusionary zoning; portable vouchers; scattered site public housing; service-enriched housing; communitarianism

C Extrinsic etiology ('blame the system')

- C1: Political economy; discrimination
- C2: Political economy of place/growth machine; locational attainment model-place stratification; political ecology of inequality; school segregation & inferior local institutions; housing market segmentation; discrimination
- C3: Shift to service economy; globalization; open housing; spatial mismatch; interaction of race & class segregation; contested space
- C4: Place-based community development; mixed-income housing development; fair housing laws; empowerment zones

Individual Level

Neighborhood Level

Community Level

Figure 1. Theoretical perspectives related to concentrated urban poverty.

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human social order. As such, this evolution is assumed to be natural and orderly, and observations are generally detached and uncritical. This perspective is rooted in social Darwinism, and was first articulated by Herbert Spencer in the second half of the 19th century. In *First Principles* (1862), Spencer outlined ways in which humans evolve, and used his synthetic philosophy to apply these principles to the fields of biology, sociology, psychology and ethics. Spencer was the first to use the term 'survival of the fittest,' suggesting that like plants and animals, humans also must adapt and evolve.

In *Social Statics* (1851/2006, p. 415) Spencer noted, "If they are sufficiently complete to live, they *do* live, and it is well that they should live. If they are not sufficiently complete to live, they die, and it is best they should die… the *average* effect is to purify society from those who are, *in some respect or other,* essentially faulty." From this perspective, poverty results from human weakness and deficiencies. The proper role, therefore, of society and government is only to protect personal and property rights. Any further response (e.g., providing social welfare assistance) interferes with the natural evolution of the human species.

Explanation of urban poverty (A2). Building on social Darwinism, the Chicago School of human ecologists explained that cities evolve through a process of natural population sorting accomplished through invasion and succession (Park, 1936; Park & Burgess, 1925/1984). Preferring a positivist approach, human ecologists simply observed patterns of population sorting in the urban setting without critique. They noted that competition for the most valuable land initially results in conflict but is resolved through assignment of each population subgroup (e.g., race, age, socioeconomic class) to the part of the city that maximizes its well-being while interfering least with other groups.

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In their Chicago 'laboratory,' Park and Burgess observed that businesses tended to be located on the most valuable land at the core, and that the city expanded outward in concentric circles. Ghettos and ethnic enclaves were located in the inner ring between the urban core and the ring of working class homes. Immigrants tended to settle in this transitional area, but moved toward the outer-ring suburbs as they assimilated and rose in socioeconomic class.

The spatial assimilation model of Alba and Logan's (1993) locational attainment theory resonates with this view that geographic mobility results from an adaptive assimilation process. The model suggests that individuals attain geographic proximity to the majority group through individual development (e.g., increases in education, income and/or fluency in English). (Note, however, that Alba and Logan's theory also includes a place stratification model, which will be discussed later.)

Finally, some explain segregated housing patterns as a harmless expression of personal preference. For example, Clark's (1991, 1992) telephone survey of residents in five U.S. cities found that non-Hispanic whites preferred to live in neighborhoods with an 80/20 ratio of whites to minorities, and that blacks preferred a 50/50 ratio. Clark concludes that all racial-ethnic groups have some degree of preference for homogeneity, and that the concept of white avoidance cannot fully explain segmented housing patterns. (Krysan and Farley (2002) coined the term 'neutral ethnocentrism' to describe this purported preference for homogeneity.) By extension, when racial and ethnic groups have high poverty rates, the above-described housing market segmentation naturally results in poor urban neighborhoods.

Explanations of concentrated poverty (A3). Concentrated poverty is an emergent phenomenon of the last 30 to 40 years. Neutral explanations include suburbanization, polycentric city forms, market-based sorting of land utilization and homogenous neighborhoods. As middle and upper-class persons gravitated to the suburbs beginning in the 1950s and 1960s, differences between high- and low-income neighborhoods were exaggerated and became more visible. Decentralization of social, economic and government centers and fragmentation into multiple 'centers' also tended to shift jobs to the margins of the metropolitan area. Land use, governed by the 'hidden hand' of the market, responded to supply and demand pricing, single-use zoning and the socially accepted 'right' to move to the best possible place that one's status permits. From the natural order perspective, the fact that increased mobility and residential options allowed individuals to exercise their choice to live in neighborhoods with others of similar status (race, class, wealth) is viewed as a harmless expression of preference.

Housing policy (A4). The associated housing policy response to the phenomenon of poverty concentration is *no response…* a hands-off approach. This laissez-faire stance has achieved political ascendancy since the 1980s. It is reflected in increased privatization of housing assistance and in the steep decline in the inflation-adjusted federal housing budget in recent decades.

Historical data on annual budget authority by agency are available from the U.S. Office of Management and Budget (http://www.whitehouse.gov/omb/budget/fy2011/ assets/hist05z2.xls). HUD's budget authority increased from $29.2 billion in 1976 to $61.81 billion in 2009. After adjusting for inflation, however, this represents a 43.9 percent decline. In fiscal year 2010, HUD's budget authority is $47.5 billion (equivalent

to $12.47 billion in 1976 dollars). In comparison, federal housing-related tax expenditures that benefit homeowners and wealthier individuals have grown since the 1970s (Millennial Housing Commission, 2002).

While HUD built over 755,000 public housing units between 1976 and 1982 (Western Regional Advocacy Project, 2006), production was all but terminated during the Reagan administration (Turner & Kingsley, 2008). Since then, only a small number of new public housing units have been built for elderly and disabled persons, and there has been a net loss of existing public housing units as a result of HOPE VI-funded demolition and revitalization projects (Turner & Kingsley, 2008). Although tenant-based housing vouchers and tax credit developments of below-market rental housing have been funded, less than one quarter of households eligible for housing assistance actually receive it (Turner & Kingsley, 2008).

Intrinsic Etiology Perspective

Explanations of poverty (B1). Intrinsic explanations of poverty identify individual- and family-level characteristics to explain why some people are poor. From this perspective, the spatial assimilation model of locational attainment theory (Alba & Logan, 1993) could be used to argue that increases in human capital result in upward mobility. (Conversely, individual-level deficits result in poverty.)

Lewis (1963/1998, 1970) identified 70 interrelated social, economic and psychological traits of persons living in a culture of poverty and observed intergenerationally transmitted patterns related to family structure, interpersonal relations, time orientation and value system. Importantly, Lewis situated his explanation of poverty within the economic framework of capitalism, describing these characteristics as

functional adaptations to marginalization. However, culture of poverty theory has been interpreted over time as indicating that poverty is caused by personal and family deficiencies.

Around the same time that Lewis was writing about the culture of poverty, the *Moynihan Report* (1965) was released. In it, Moynihan outlined emergent conditions in the black American family including unemployment, out-of-wedlock births, female-headed families, and welfare dependency. While he identified the undermining of the black family during slavery as a source of this problem, he also outraged many by referring to black families' increasing problems as a tangle of pathology. The public response was so heated that scholarly writing was largely silent on the topics of poverty and race for the ensuing twenty years.

In the meantime, however, others were focused on explaining social mobility processes. In developing their status attainment theory, Blau and Duncan (1967) used structural equation modeling to explore relationships among parental employment type and education level and children's education, employment and social status. They found that increased parental occupational prestige and education had a significant positive effect on children's education levels, and that children's education level was a significant predictor of first and subsequent job status. Parental occupational prestige also had a direct effect on children's occupational prestige, suggesting that higher status employment for parents created added opportunities for their children. In summary, Blau and Duncan's status attainment model suggests that education and parental influence make important contributions to a child's social mobility.

Entering the vacuum left by liberal writers after the *Moynihan Report*, and building on Blau and Duncan's work, Murray (1984) outlined an elaborate thesis focused on welfare dependency as the primary explanation for poverty and social malaise. Describing civil rights protections and the War on Poverty as failed social experiments, Murray suggested that affirmative protections and public assistance provide disincentives to obtaining an education and engaging in productive work. He detailed increases in social problems that he believed would otherwise have improved had poor individuals not been rewarded for dependency, and he advocated that the welfare state should be dismantled. While not as vehement in his indictment of the poor, Etzioni (1993) also suggests that social problems are rooted in moral deficiency and he believes that more social control should be exercised by institutions such as families, churches, schools and government.

More recently, multivariate analysis has allowed researchers to explore the relative importance of intrinsic characteristics and structural conditions as predictors of social and geographic mobility. A series of studies using a nationally representative data set to explore patterns of movement between poor and non-poor neighborhoods found that more education, higher income and being married increase the odds of leaving a poor neighborhood (Crowder & South, 2005; South & Crowder, 1997). In summary, the intrinsic perspective on causes of poverty suggests that social mobility is achieved by improving human capital, being disciplined and moral, and assimilating to the majority culture. As a corollary, failure to do so is often attributed to personal deficiencies, lack of determination, or both.

Explanations of urban poverty (B2). Around the turn of the century, sociologists explored the effects of urbanization on city-dwellers. Tönnies (1887/1957) contrasted the *gemeinschaft* (community) form of rural towns held together by bonds of common identity and close personal relationships and the *gesselschaft* (society) form of modern urban communities with their larger populations, more complex division of labor, more impersonal relationships and more formal social control. Simmel (1903/2002) described the city-dweller as lost in a sea of anonymity. Urbanization brought increased personal freedom and privacy, but also resulted in lost social connections, detachment, alienation and isolation.

These observations are important given later theory development related to social learning (Bandura, 1977), ecological systems (Bronfenbrenner, 1979) and social capital (Coleman, 1988). Social learning theory suggests that learning occurs through observing and modeling behaviors, attitudes and emotional responses of others. Similarly, ecological systems theory proposes that human development occurs in a social context, and that ecological systems (family, school, peers, childcare providers, workplace, neighborhood and subcultures) transmit roles, norms and rules that influence development. Social capital theory further specifies this influence by describing three forms of social capital: a) the extent of obligations/expectations and trustworthiness of the social environment, b) information channels within the social environment, and c) norms and effective sanctions. A community with a complex network of social interrelationships and appropriable social organizations is more likely to increase social capital, which is used to create human capital.

In *Bowling Alone* (1995), Putnam describes a pronounced decline in social capital since the 1960s. He cites evidence of increasing disconnection from family, friends, neighbors, networks and social organizations, looser community bonds, and more isolation. Etzioni (1993) argues that collective forces (social, political, historical, cultural and institutional) are needed to counterbalance recent excesses in individual rights, ungoverned behavior and lack of personal responsibility. His communitarian platform is founded on the assumption that overemphasis of personal rights has led to a breakdown of the moral order. In summary, from the intrinsic etiology perspective, urban space is the site for increasing disconnectedness; since humans require the normative and socializing influence of community, a breakdown in the social order is a matter of great concern.

Explanations of concentrated poverty (B3). Social isolation and social dislocation exacerbate neighborhood effects (Wilson, 1987). Massey's (1996) cultural ecology of inequality theory proposes that concentration of poverty (not urbanism per se) creates the social malaise observed in cities. He notes that in severely distressed neighborhoods, social problems are concentrated along with poverty conditions, which results in the emergence and perpetuation of deviant urban 'subcultures.' These subcultures are adaptive to intense poverty conditions, but they are also harmful to society and destructive to residents of poor neighborhoods. Massey notes that concentration of affluence is an equally destructive societal force because it too widens the social-spatial gap.

Some suggest that the social learning mechanisms discussed in the previous section explain how social dysfunction is created and perpetuated in concentrated poverty

neighborhoods as residents are socialized to maladaptive values, beliefs and actions that are inconsistent with the dominant culture. Jencks and Mayer (1990) describe five ways that the socioeconomic status of neighbors may affect people: a) collective socialization, b) competition, c) under-funded and ineffective neighborhood institutions, d) contagion and e) relative deprivation. Kasarda (1993) proposes that the social disadvantages of distressed and severely distressed neighborhoods constrain upward mobility and reinforce poverty. His study of concentrated poverty trends between 1970 and 1990 demonstrates that social problems worsened in distressed neighborhoods while they improved in non-poor neighborhoods during the same time period.

Ellen and Turner's (1997) review of the literature on neighborhood effects points to a need for more theory-building. They note that it is still unclear which neighborhood characteristics are the most important and that the mechanisms through which neighborhood conditions (like those proposed by Jencks and Mayer) influence individual outcomes are as-yet unspecified. They call for more research on the ways in which individual and family characteristics interact with (and potentially buffer or exacerbate) neighborhood effects.

Portes and Rumbaut's (1997) segmented assimilation theory may provide insight in this regard. They propose that the most effective assimilation strategy for immigrants facing structural barriers (e.g., racial discrimination, tight labor markets, etc.) is selective acculturation. Using this strategy, individuals assimilate to the dominant culture but retain a connection to their own language and culture that allows them to access parental social capital as well as support and social control provided by the ethnic community.

While this theory derives from study of assimilation patterns for ethnic immigrants, it may be useful in explaining mobility patterns of other marginalized groups as well.

Housing policy (B4). The intrinsic etiology perspective is not unlike the previous natural order perspective in its assumptions about causes of poverty concentration in urban settings. Both perspectives focus on individual-level characteristics and relationships. The difference lies in the prescribed response. The natural order perspective suggests that government assistance is an inadvisable form of social engineering. While still 'blaming' the individual, the intrinsic etiology perspective prescribes responses that increase human and social capital, encourage assimilation, and promote socialization to the norms of the dominant culture. Joseph, Chaskin and Webber (2007) suggest that recent housing policy in the U.S., and mixed-income development in particular, has its theoretical underpinnings in this perspective. Similarly, Briggs (1997) notes that housing mobility programs presume that direct or indirect benefits accrue to poor movers as a result of having more affluent neighbors.

Extrinsic Etiology Perspective

Explanations of poverty (C1). In contrast to the intrinsic perspective, which focuses on personal characteristics in the explanation of poverty, the extrinsic (or structural) perspective emphasizes power imbalance, structured inequality, constrained opportunity and discrimination. Marxian or political economy theory stresses processes of accumulation, production, consumption and class struggle in the capitalist economic system. Labor power is sold as a commodity to the capitalist class for wages. The wealthy capitalist class owns the means of production and organizes the work process to

produce a surplus. Its goals are profit-making and reproduction of itself, which are achieved through domination over the working class.

Castells' (1996) description of the new information- and technology-based network society echoes these themes of powerlessness and exclusion, and warns that particular people and areas of the globe are becoming particularly marginalized. In *American Apartheid*, Massey and Denton (1993) discuss the interaction of race and class discrimination. Describing the U.S. as a divided society, they propose that racism and segregation systematically create and perpetuate disadvantage, and are the root cause of disparities in wealth and income. In summary, the extrinsic perspective targets systems, environments and contextual factors as causes of poverty, and criticizes intrinsic explanations for blaming victims of structural inequality for their own impoverished condition.

Explanations of urban poverty (C2). Marxian theorists suggest that structural inequalities are particularly evident and potent in urban settings. Molotch (1976) proposes that cities are growth machines in which business and property owners, investors, attorneys, realtors and local institutions coalesce around a growth imperative to increase land values. Unbounded growth provides benefits for a powerful minority while generating social problems and pathologies for the marginalized majority. Logan and Molotch (1987) outline a political economy of place theory that sets use values of the poor (e.g., their patterned daily access to community services and institutions, informal support networks, security and trust, identification with home turf, agglomeration benefits and ethnic enclaves) against the exchange value of the land they occupy. For the wealthy and powerful, market-based real estate transactions generate profit; the poor and

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powerless are subject to displacement and usually have limited political and economic power to influence their own destiny.

Alba and Logan's (1993) locational attainment theory includes a place stratification model as well as the spatial assimilation model described earlier. Place stratification implies that some groups are not able to convert socioeconomic and assimilation gains into residence in the same neighborhoods as the majority group. In other words, there are differential returns on individual achievements. The authors' study of housing patterns in New York City supported this thesis for blacks in particular and also for certain ethnic groups. Alba and Logan conclude that more advantaged groups preserve social distance while marginalized groups have less favorable life chances and quality of life.

Similarly, Massey's (1996) political ecology of place theory suggests that political boundaries are drawn by those with power to compound the benefits and liabilities of class. Shifting the financing and delivery of social and public services to the local level obligates poor districts to pay for their own services. Because of the diminished tax base in these areas, services are often inferior. In turn, tax hikes and/or unaddressed inferior services promote middle class flight, which further amplifies the difference between rich and poor districts. Ellen and Turner's (1997) review of the neighborhood effects literature also suggests that poor quality neighborhood institutions are one mechanism through which social disadvantages are transmitted.

Massey and Denton (1993) document ways in which racially segmented housing is created through institutional practices, private behavior (prejudice) and public policies. Reporting on their recent study of treatment minorities received when they inquired about

housing at real estate or rental offices, Turner and Ross (2005) conclude that there is still a significant level of housing discrimination nationwide, and that geographic steering is an increasingly important (and subtle) strategy. Multivariate analyses of mobility patterns between poor and non-poor neighborhoods identify minority race as an important predictor that lowers the odds of leaving a poor neighborhood (even after controlling for socioeconomic status) (Crowder & South, 2005; South & Crowder, 1997).

Explanations of concentrated poverty (C3). Wilson (1987) emphasizes structural explanations (demographic and global economic shifts, deindustrialization) as catalysts for concentration of poverty. Kain's (1992) spatial mismatch theory suggests that when jobs moved to the suburbs, black workers isolated in center cities lost access to work and became poorer. Jargowsky's (1997) analysis of concentrated poverty trends in the 1970s and 1980s cites economic shifts, and changes in the labor and housing markets, class segregation, education and family structure as causes of concentrated poverty. He concludes that increasing isolation of poor households limited access to resources and opportunities and structurally constrained their integration with mainstream society.

Race cannot be ignored in a discussion of concentrated poverty. While not all residents of distressed neighborhoods are minorities, they are disproportionately represented (Kasarda, 1993). Given the rise in poverty among blacks in the 1970s and 1980s and the fact that blacks were living in segregated tracts, Farley (1991) argues that it was inevitable that the proportion of residents in poverty in black tracts would rise and that new black tracts would cross the 40 percent threshold. Massey and Denton (1993) also emphasize the role of race and class segregation in compounding the effects of a rise in poverty. In summary, from the extrinsic perspective, structural factors predispose

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certain groups to living in poverty neighborhoods, and limit their access to social and residential mobility.

Housing policy (C4). Housing policy associated with the extrinsic etiology perspective focuses on modifying the context in which poor households exist. Such policy targets the metropolitan opportunity structure, its structural constraints, and discriminatory systems that limit the potential for social, economic and spatial mobility. Examples of structural interventions include community and neighborhood development, fair housing protection laws, and mixed income housing development (although the latter is also influenced by thinking from the intrinsic etiology perspective). James Spencer (2004) classifies anti-poverty policies in the U.S. over the past century according to their focus on place versus people, and their use of supply-side versus demand-side interventions. He discusses seven federal-level initiatives targeting place. Of these, most were first implemented in the 1960s and 1970s, and only two (increasing local access to public transit and creation of empowerment zones) were initiated during the 1990s.

Integrative Theories

Recent theory-building has sought to synthesize intrinsic and extrinsic causal perspectives. For example, Alba and Logan's (1993) development of locational attainment theory using data from households in New York City found support for complementary spatial assimilation and place stratification models. Similarly, Massey (1996) suggests that both cultural and political ecologies of inequality contribute to increased poverty concentration world-wide. Finally, noting weaknesses of prior theories in their ability to explain housing discrimination and urban poverty of blacks, Galster (1991) recommends a synthetic conceptual framework, and specifies an econometric

simultaneous equation model to more accurately describe causal relationships among family structure, economic structure, spatial mismatch, inner city education, labor discrimination, housing discrimination and black poverty.

U.S. antipoverty policy has typically focused exclusively on one end of the causal continuum or the other. James Spencer (2004) suggests that the debate over people-versus place-based antipoverty policies can be sharpened by also considering the relative merits of supply-side versus demand-side approaches. His historical review of antipoverty policy finds that most federal programs have either combined supply-side and people-based approaches (e.g., AFDC/TANF, earned income tax credit), or demand-side and place-based approaches (e.g., enterprise and empowerment zones). While there has been some tendency toward integration in recent years, Spencer notes that the preference for one strategy over the other is associated with the political party affiliation of the seated President and the majority party in Congress (and their interaction). He concludes, "In general, proponents of either people-based or place-based policies have dominated the urban poverty debate. This tension has led to a fragmented and piecemeal approach to spatially concentrated poverty that focuses on either people or places and does not best serve the poor" (p. 545). The final section of this chapter will review federal housing policy over the last 70 years, noting contradictions that have generated the research questions for this dissertation study.

Housing Policy

Historical Context

Stratification of housing by race/ethnicity and class represents an important mechanism by which poor persons and minorities become spatially and socially isolated.

Housing policies that enforce non-discrimination and regulate the availability and location of affordable housing are a potential antidote to concentrated poverty and its associated negative outcomes. Over the past century, a wide variety of federal programs and laws have addressed housing-related issues and needs to varying effect.

During the Great Depression era, federal agencies and programs were established to shore up the financial system and protect homeowners. Transfer of funds from the federal to the local level for the purpose of ensuring safe and adequate housing began with the Federal Housing Act of 1937, which provided federally-funded public housing for the first time. In the beginning, public housing generally made affordable dwellings available for the working poor, but over time it served increasingly disadvantaged persons.

Following World War II, the economy and the population boomed. The GI Bill made homeownership possible for millions of families and the federal interstate highway program encouraged suburbanization, which in turn magnified spatial segregation by race and class. In 1949 and 1954, amendments to the Housing Act of 1937 created funding streams for revitalizing cities through slum clearance, urban redevelopment, urban renewal, and low-interest loans to non-profit, private-sector affordable housing developers. Von Hoffman (2000) notes contradictions inherent in these initiatives. Referring to the Housing Act of 1949, he states, "Through its public housing program, the act provided housing for low-income families; through its urban redevelopment program, it cleared slums and destroyed affordable housing units" (p. 299). Because the public housing construction program was never fully funded, urban renewal demolition

initiatives during this era resulted in a net loss of affordable housing units (Listokin, 1991).

The Civil Rights Act of 1964 shifted the focus to fair and equal access to housing, and consistent with other Great Society initiatives, housing policy in the 1960s and 1970s emphasized equalizing opportunity by linking social, economic and physical problems of blighted neighborhoods and developing multi-faceted strategies to address them. Greater availability of low-interest loans for affordable housing construction and operating expenses created new housing options for low- to moderate-income families whose incomes exceeded the public housing eligibility limit. Yet, public housing also was increasingly criticized for being poorly maintained, inadequately managed, and sited in an inequitable manner.

Housing Mobility and Deconcentration Initiatives

Discrimination lawsuits initiated geographic mobility programs. The Gautreaux Program resulted from a 1969 class-action lawsuit alleging that the Chicago Housing Authority (CHA) and HUD had discriminated against mostly-black public housing residents by siting public housing in poor minority neighborhoods. The case was appealed to the Supreme Court, which ruled in favor of the residents in 1976. CHA was ordered to provide 7,100 housing vouchers to help black residents in public housing or on the waiting list to move to neighborhoods that were less than 30 percent minority or revitalizing. Program evaluators found that participants who moved to the Chicago suburbs (middle-income white neighborhoods) were more likely than those who relocated within the city to leave public assistance and experience gains in employment, education and social integration (Rosenbaum, 1995; Rosenbaum & DeLuca, 2000).

Other early strategies to disperse low-income housing included scattered site public housing, inclusionary zoning and fair-share affordable housing agreements (Goetz, 2003). The Section 8 program, begun in 1974, provided another mechanism for increased geographic mobility through portable vouchers (now called Housing Choice vouchers) that provide government assistance to low-income renters in market-based housing.

The 1980s brought increased emphasis on government-private partnerships, and a conservative swing in the political pendulum favored strategies such as home ownership programs, emphasis on rental assistance recipients' movement to self-sufficiency, and conversion of public housing to mixed income and market-rate housing. Goetz (2003) describes a second generation of housing mobility strategies, which included settlement agreements in housing discrimination cases patterned after the Gautreaux case, new mobility programs (both voluntary and involuntary), and mixed income housing development.

The Moving to Opportunity (MTO) mobility program was a HUD-sponsored voluntary mobility program begun in 1994 in five U.S. cities. Encouraged by Gautreaux results, HUD officials tested a mobility intervention for public housing residents by randomly assigning program volunteers to one of three groups: a) intensive housing counseling plus movement to a neighborhood with a poverty rate less than 10 percent (the experimental group), b) standard housing counseling plus a Section 8 voucher that could be used to move to a location of the resident's choice (the Section 8 group), and c) remaining in public housing (control group). In an early study of MTO outcomes, Orr et al. (2003) found a positive impact of MTO movement to a non-poor neighborhood on

personal safety, housing quality, adult and teen girls' mental health, and teen girls' school outcomes and risky behavior. However, there were negative effects on boys' behavior and no statistically significant effect on adult employment and children's educational achievement (only marginal improvement in school quality).

A later mixed-method study of MTO movers from Boston, Los Angeles and New York found that 53 percent of the experimental group and 39 percent of the Section 8 group did not succeed in finding a rental unit where they could use their vouchers, and about two thirds of those who did lease up had made one or more additional moves by 2002 (Kingsley & Pettit, 2008). Improvements in neighborhood poverty rate were eroded for some of the multiple-movers. Even after moving to neighborhoods that were safer and less-poor, families often did not gain access to better skills or jobs (Cove, Briggs, Turner, & Duarte, 2008; Ferryman, Briggs, Popkin, & Rendon, 2008).

Outcomes for other second generation programs have also been mixed. In Yonkers, New York, families were randomly selected to move to scattered-site public housing in middle class neighborhoods as part of a court-ordered mobility program (Fauth, Leventhal, & Brooks-Gunn, 2008). Seven years after relocation, 85 percent of the movers were still living at their original placement. The group that moved was more likely than the comparison group (demographically similar families who were not selected to move) to live in safer neighborhoods with higher levels of collective efficacy, which they define as "a shared sense of mutual trust and solidarity (i.e., social cohesion) and a willingness to community members to work together for the common good (i.e., informal social control)" (p. 120). The movers were also more likely to be employed and those who had stayed in low-poverty neighborhoods were in better physical health.

In contrast, Goetz (2002, 2003, 2004) studied outcomes for poor households in Minneapolis-St. Paul, and reports that mobility and redevelopment programs were opposed by immigrants who lost their ethnic enclave and localized services, by some blacks who suspected gentrification and profit motives in the redevelopment of an historically black neighborhood in a desirable location (i.e., near the business district), and by suburban interest groups with not-in-my-backyard exclusionary agendas. He found that most movers did not move to low-poverty neighborhoods, but rather made moves to proximate poor tracts. One-third of movers ended up in high poverty/high minority neighborhoods.

Dreier (1996) indicts mobility programs as having a hidden agenda to break up minority neighborhoods. In a case study of Chicago's Cabrini-Green mixed-income redevelopment, Bennett (1998) found that housing quality improved, but the experiment produced questionable social outcomes. He notes that the original residents did not appreciate the implication that they needed to be 'fixed,' and they questioned whether there would still be a place for them in the new development. He also observes that it is unclear how developers planned to foster a cohesive sense of community among the mix of new residents. Finally, Briggs (1997) recommends that more assessment of mobility programs is needed in order to determine whether these programs have costs as well as benefits for movers, whether benefits are contingent on the amount of direct contact or interaction with affluent neighbors, what kinds or domains of benefits are achieved (some benefits such as better schools and services may not depend on interaction with neighbors), and what is the effect of time on the evolving social processes implicit in the transmission of benefits. Briggs also cautions that for those who move short distances,

social ties to the old neighborhood may be stronger than social ties to the new neighborhood.

Recent Trends

By the 1990s, poverty deconcentration had become a formal HUD priority (Cuomo, 1998). With increased awareness of the negative effects of concentrated poverty following publication of *The Truly Disadvantaged* (Wilson, 1987), political emphasis on intrinsic causes of poverty, an associated assumption that income mixing would provide a positive normative influence on the poor, and a desire to privatize assisted housing, mobility programs and mixed-income redevelopment became preferred housing policy strategies. Increasingly, movement out of public housing was involuntary as HUD changed income eligibility guidelines for public housing to allow families with higher incomes to live in public housing, lifted the one-for-one replacement requirement for redeveloped/demolished housing, and directed local public housing officials to reduce the concentration of poverty. Market-rate conversions and 'vouchering out' of displaced residents became common practice.

The HOPE VI program provided a federal funding stream for public housing redevelopment. The National Commission on Severely Distressed Public Housing (1992) had reported to Congress that an estimated six percent of public housing units nationwide (86,000 units) were in extremely poor condition and unsafe for residents. The Commission's recommendations included a) physical improvements, b) management improvements, and c) community services to address residents' needs. Congress authorized the HOPE VI program in 1992. Its stated objectives are to:

1. Improve the living environment of public housing residents through demolition, rehabilitation and replacement of obsolete public housing projects;

2. Contribute to improvement of the surrounding neighborhood;

3. Provide housing that will avoid or decrease the concentration of very low income families; and

4. Create opportunities for residents to achieve self-sufficiency.

In 1996, HUD set a goal to demolish 100,000 of the most severely distressed public housing units nationwide, and by 2003, reported that it was on target to achieve that goal (U.S. Office of Management and Budget, January 26, 2007). As of 2009, 155,000 public housing units had been demolished, but only 50,000 units of public housing had been rebuilt (Couch, 2009).

HOPE VI outcomes are even more ambiguous than those for predecessor mobility initiatives. As articulated in the first program objective, HOPE VI was intended to improve the living environment for public housing residents. Yet, because sites have been redeveloped as mixed-income, lower-density developments, it is not clear that the original residents have always benefited, and a side-effect of these initiatives has been a net reduction in the number of affordable housing units.

While studies indicate that 60 to 70 percent of original HOPE VI project residents want to return to the redeveloped site (Cunningham, 2004; Popkin et al., 2004; Popkin et al., 2002), the average site manager's expectation is closer to 50 percent (U.S. General Accounting Office, 2003). Actual return rates have varied with estimates ranging from less than ten percent to as much as 75 percent (Comey, 2007). The Urban Institute's

panel study of residents from five HOPE VI sites where revitalization projects began in 2001 found that by 2005, 65 percent of respondents had relocated, two thirds of them to private rental housing subsidized with a Housing Choice voucher and one third to a different public housing unit (Buron, Levy, & Gallagher, 2007).

Some reported HOPE VI outcomes are good. For example, one study found that about two-thirds of HOPE VI movers reported their new housing was good or excellent, and 75 to 85 percent said it was better than their old housing. Yet despite movers' perceptions of improvement, the new housing was still of lower quality than housing for the average poor household nationwide (Buron, Popkin, Levy, Harris, & Khadduri, 2002; Comey, 2004). Urban Institute panel study participants who used vouchers to move to market rental housing were found to be better off in terms of housing and neighborhood quality as well as perceived safety than those who moved to another public housing unit (Buron et al., 2007). Nearly half of those who used vouchers to move ended up in non-poor neighborhoods, as compared to only 12 percent of those who relocated to another public housing unit. On the other hand, Buron and colleagues have also found that some who moved with vouchers struggled to keep up with rent. Fearing eviction from their private market housing if they missed rent payments, they instead fell behind on utility bills or could not afford food (Buron et al., 2007).

The Urban Institute's HOPE VI tracking study (a 2001 point-in-time survey of original residents of eight HOPE VI sites) and interim results of the HOPE VI panel study both indicated that about 40 percent of movers ended up in new neighborhoods with a poverty rate greater than 30 percent, and that many encountered gang, drug and crime problems in their new neighborhoods (Buron, 2004; Buron et al., 2002). The

tracking study found that only 50 percent of movers were employed, about a third were

on disability, about a third received welfare, half reported multiple job barriers, 39

percent were in fair/poor health, 40 percent had difficulty paying rent and utilities, and

half had problems affording food (Buron et al., 2002).

Panel study interviews in 2005 revealed that residents who had left public housing

were living in safer neighborhoods, felt less anxious, and noticed improved behavioral

outcomes for their children (Popkin & Cove, 2007). On the other hand, regardless of

whether they ended up in public housing or voucher-assisted rental housing, respondents

were in strikingly poor health and their rates of depression, chronic illness and death

exceeded comparison rates for black women nationally (Manjarrez, Popkin, & Guernsey,

2007). While 29 percent of working age panel study respondents who had been

interviewed in 2001, 2003 and 2005 reported being employed at all three waves, nearly as

many (24 percent) had not been employed at any wave, and intermittent employment was

common among the rest. Poor physical and mental health, lacking a high school

education and child-related problems were barriers to employment, and on average

employment rates had not improved as a result of relocation (Levy & Woolley, 2007).

Finally, it appeared that families with multiple, complex barriers (referred to as 'hard-to-

house' families) were disproportionately likely to have remained in public housing where

their outcomes were poorer (Popkin & Cove, 2007; Theodos, Popkin, Guernsey, &

Getsinger, 2010).

Popkin, Katz et al. (2004, p. 24) note that "the question of what has happened to

the original residents of the revitalized HOPE VI developments has become a major—

and contentious—focus of concern… Unfortunately, there is only limited information

about how these residents have fared…" Program evaluation has mostly been done at the local level or through multi-site case studies. Unlike the MTO program, which used an experimental design to test program effects, or the Gautreaux program, which was effectively a quasi-experimental design, there has been no randomization of HOPE VI participants and no control group with which to compare their outcomes. These design issues limit generalizability of results and increase the likelihood of selection effects (Briggs, 1997).

Uniform outcome measures for original residents of HOPE VI sites were never developed at the federal level. Further, sites often have not tracked original residents effectively (Popkin et al., 2004). These 'lost' households result in missing administrative and survey data that can bias reported outcomes. While some studies have used a longitudinal design—for example, the Urban Institute's HOPE VI panel study—most are point-in-time studies. This has limited researchers' ability to compare pre- and post-move outcomes, and to explore individual and contextual characteristics that predict better post-move outcomes.

Buron et al. (2002) suggest that HOPE VI may work better under certain contextual conditions. Given varying individual outcomes for original residents of the same site (Buron et al., 2002; Levy & Kaye, 2004), it is also plausible that individual-level characteristics contribute to HOPE VI movers' outcomes. Finally, Goetz (2003) finds that involuntary movers have had poorer outcomes than those who volunteered to move. As housing policy initiatives have evolved from small voluntary programs (e.g., Gautreaux and MTO) to programs that trigger large-scale relocation, movers' perception of the circumstances surrounding their move may have taken on increasing importance.

The future of the HOPE VI program has been in question for several years. While Harvard's Ash Center for Democratic Governance and Innovation awarded the HOPE VI program its Innovations in American Government Award in 2000, the Office of Management and Budget (OMB) subsequently concluded that the program is not performing and ineffective (January 26, 2007). OMB program evaluators noted that HOPE VI is more expensive than other programs serving the same population; that redevelopment projects have been protracted and sometimes inadequately managed or unambitious; and that there has been insufficient oversight of cost, schedule and performance results. On the other hand, advocates argue that there are still tens of thousands of severely distressed public housing units, that demolishing and replacing them would cost less over the long time horizon (e.g., 20 years) than either substantial rehabilitation or replacement, and that positive outcomes *on average* for original residents justify continuation of the program (Turner, Woolley et al., 2007).

The Bush administration discouraged any further funding of HOPE VI, but in 2003, Congress reauthorized the program through 2006 and since then has continued to fund the program at around $100 million per year in its annual housing appropriations bill. In 2000, HUD published general guidance requiring HOPE VI grantees to provide community and supportive services for residents of the original public housing site. Congress added tenant protections in its 2003 reauthorization bill.

In 2008, the House of Representatives passed H.R. 3524, the HOPE VI Improvement and Reconciliation Act of 2007, which would have required one-for-one replacement of demolished public housing units (with a limited waiver provision) and ensured that residents of the original public housing site have the option to return to the

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redeveloped site without being required to meet screening or eligibility requirements that are more stringent that those which applied to their original public housing unit. The bill also mandated five additional core components as threshold criteria for considering funding applications (evidence of severe distress, resident involvement and services, relocation plan, fair housing compliance and green development), and it required funded projects to provide long-term (up to two years) comprehensive relocation assistance.

A bill by the same title had previously been introduced in the Senate in 2007 (S. 829). The Senate version of the bill was weaker on tenant protections and did not mandate the core components defined in the House version of the bill, but unlike the House version it did require collaboration with neighborhood schools. The Senate bill never left the Committee on Banking, Housing and Urban Affairs and has not been reintroduced in the 111th Congress.

With the inauguration of a new President on January 20, 2009, the swearing in of a new HUD Secretary (Shaun Donovan) six days later, and a Democratic majority in the Senate and House of Representatives, the future direction of U.S. housing policy is still emerging. Noting that the HUD is "committed to fulfilling its mission of increasing homeownership, supporting innovative and sustainable community development, and increasing access to affordable housing free from discrimination," President Obama requested a 10.8 percent increase in HUD funding in his fiscal year 2010 budget (Office of Management and Budget, 2009; U.S. Department of Housing and Urban Development, 2009, p. 73).

Table 1

Funding for Selected HUD Programs in Fiscal Year 2010

Program	FY2009 Actual (millions)	President's FY2010 Budget Request (millions)	FY2010 Appropriation (millions)
Tenant-based rental assistance	$16,817	$17,836	$18,184
Project-based rental assistance	$7,100	$8,100	$8,158
Public housing operating funds	$4,455	$4,600	$4,775
Community development block grants	$3,900	$4,450	$4,450
Homeless assistance grants	$1,677	$1,794	$1,865
HOPE VI program	$120	-0-	$200
Choice Neighborhoods grants	-0-	$250[a]	-0-

[a]Congress permitted up to $65 million from the HOPE VI appropriation to be used for a Choice Neighborhoods Initiative demonstration.

Table 1 provides a summary of President Obama's fiscal year 2010 budget requests for selected HUD programs compared to actual amounts in fiscal year 2009 (U.S. Department of Housing and Urban Development, 2009), as well as amounts Congress actually authorized in Public Law 111-117, the Consolidated Appropriations Act of 2010. Increases proposed by the President and upheld (or expanded) by Congress demonstrate a renewed commitment to affordable housing and community development. For its part, HUD has provided assurances that it will first address the housing and economic crisis, then demonstrate leadership in a) ensuring the availability of affordable housing, b) rebuilding urban and rural communities, and c) promoting energy efficient housing and sustainable, inclusive growth (U.S. Department of Housing and Urban Development, 2009).

The new administration's request to move funds from HOPE VI to a new Choice Neighborhoods initiative also may be a sign of a philosophical shift. In a July 2009 speech to the National Press Club, Secretary Donovan acknowledged the pros and cons of HOPE VI and explained that the next generation of revitalization projects should focus

not just on distressed housing projects but on the surrounding community as well. Commenting on the origins and evolution of public housing, he noted,

> The irony was, it wasn't that the housing units were substandard—not at first, anyway. Not in comparison to what they had replaced. It was the communities themselves that were substandard. With no semblance of walkability or human scale, the built environment and location conspired to disconnect residents from schools, jobs, transportation, and, above all, opportunity… If a century of housing policy has taught us anything, it's that if there isn't equal access to safe, affordable housing, there isn't equal opportunity. And if sixteen years of HOPE VI has taught us anything, it's that building communities in a more integrated and inclusive way isn't separate from advancing social and economic justice and the promise of America—it's absolutely essential to it. It's inseparable from the idea that, in America, our hopes and our dreams should never be limited by where we live. (pp. 3, 9)

Conclusion

In summary, poverty concentration in the U.S. increased considerably between 1970 and 1990. Between 1990 and 2000, the extreme concentration trend reversed, but this phenomenon was largely driven by a redistribution of poor households into medium-poor neighborhoods and older, inner-ring suburbs in particular. It remains to be seen whether the improvement will hold.

There are various theoretical perspectives explaining poverty, urban poverty and concentrated poverty. The intrinsic perspective suggests that individual-level qualities and characteristics are associated with poverty while the extrinsic perspective identifies

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constraints in the opportunity structure as the cause. Evidence suggests that both intrinsic and extrinsic factors make important contributions.

Housing is the mechanism that ties poor households to a particular geographic space, and thus housing policy can significantly influence the distribution of poor households in metropolitan areas. Since the 1990s, federal and local housing policy has focused on deconcentrating poverty by redeveloping poor neighborhoods and stimulating geographic mobility for poor households. In many cases, however, geographic mobility has not resulted in movement out of poverty.

Since evidence on whether it is more effective to focus on changing poor people or changing poor places is largely lacking, these policy decisions are often driven by values and theory-based assumptions about whether intrinsic or extrinsic factors make the more important contribution to causing and alleviating poverty. By seeking to develop a better understanding of the mobility patterns of poor renter households (with and without government assistance), and identifying the relative importance of individual and contextual variables in predicting their movement out of poor neighborhoods, this study can make an important contribution to theory advancement and policy development. The next chapter presents a review of the literature related to studies and theories of residential mobility and locational attainment as the foundation upon which this study builds.

CHAPTER II

REVIEW OF THE LITERATURE

One way out of a poor neighborhood is to move to a new home in a different, non-poor neighborhood (i.e., a neighborhood in which less than 20 percent of households fall below the poverty line). Of course, another possibility is for the neighborhood itself to rise out of poverty. In this case, residents—who may or may not be poor themselves—would then live in a non-poor neighborhood without having to relocate. The first part of this chapter focuses on movement out of poor neighborhoods that is achieved by actually moving to a new location. The alternative strategy, achieved through community development and/or poverty alleviation, will be addressed subsequently. In the final sections of the chapter, the conceptual model guiding this dissertation research will be described and variables will be operationalized.

According to the most recently available census data on geographic mobility in the U.S., 35.2 million persons (12 percent of the total population) moved between 2007 and 2008 (http://www.census.gov/population/www/socdemo/migrate/cps2008.html). Minorities were more mobile than whites, and renters were over five times more likely to have moved than homeowners. For those of working age, unemployed persons were more likely to have moved since the prior year (21 percent moved, as compared to 12 percent of employed persons and nine percent of those who were not in the workforce). Most moved only a short distance: 65 percent of movers stayed in the same county and an additional 18 percent moved within state. Regionally, Southerners had the highest

mobility rate, followed by those from the West, Midwest and Northeast in that order. Housing-related reasons for moving (e.g., wanting to own a home, a new or better home/apartment, better neighborhood/less crime, cheaper housing) were most common, comprising about 40 percent of all stated reasons.

In 2005, a national survey of a sample of American households (the Panel Survey of Income Dynamics) showed that 37 percent of respondents had moved in the prior two years (University of Michigan Institute for Social Research, 1968-2009). Regarding the reason for moving, the most common response category included mixed or ambiguous reasons (e.g., to save money, all my old neighbors moved away, retirement), followed by purposive consumptive reasons related to expansion of housing (e.g., more space, more rent, better place), and other house-related purposive consumptive reasons (e.g., wanting to own a home or getting married). Together, these reasons represented the primary explanations for moving for over two thirds of all movers in the survey sample. Clearly, Americans are a mobile population, but *why* do households move and what characteristics or conditions predict mobility? The following section will explore theories that explain residential mobility.

Mobility Theory

Intra-Urban Residential Mobility Theory

Models explaining mobility decision-making. Prior to the 1950s, most analysis of mobility was descriptive, and residential mobility was assumed to be tied to social mobility as households relocated to new homes that reflected their changing social class. Rossi's seminal work, *Why Families Move* (1955), was the first to explain the residential mobility process in social psychological terms and to explore the decision-making

process at the household level. In a survey of Philadelphia families, Rossi found that renters, younger households, larger families, and households with more complaints about their current housing were more likely to move. Complaints were related to size of the home, social and physical attributes of the housing environment, and cost.

Rossi surmised that in certain phases of the family life cycle, households are motivated to consider moving because of changes (e.g., householder age, household size) that create an imbalance between housing needs and actual housing conditions. For example, young and growing families are more likely to have expanding housing (space) requirements that trigger movement to a new residence while aging families may have 'too much' house. Rossi concluded that when family characteristics increase a household's mobility potential, and characteristics of the housing unit limit its ability to meet the family's needs, the family will be more eager (and likely) to move.

Morgan's (1973) re-examination of Rossi's (1955) analysis cautions against over-generalization. He notes that housing tenure may moderate the influence of household size on mobility; home owners with housing expansion needs may modify an existing property rather than moving to a new, larger home. Morgan's review of studies that followed Rossi's also cites contradictory findings related to the influence of age and family type on residential mobility. He notes, for example, that large families with younger heads are more mobile than large families with older heads. Morgan suggests that different contexts (e.g., urban versus rural) and class factors (e.g., social mobility aspirations, perceived class differences, education, and feelings about the current home) may influence mobility. He also observes that changes in disposable income may affect housing-related choices, and that this process may differ for renters and homeowners.

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Finally, he suggests that desire for housing stability may discourage mobility, and that there may be interaction effects for financial constraints, life cycle changes and stability preferences.

Brown and Moore (1970) expand on Rossi's (1955) rational behavior model of the mobility process by segmenting it into two phases. In the first phase, a household decides to look for a new residence. This decision is the culmination of a process of considering the place utility of the current residence. In other words, household members assess their satisfaction with the residence in terms of its ability to meet their immediate needs.

Stress results when the household environment does not meet members' needs, which can vary according to life cycle, socioeconomic characteristics, and so forth. Brown and Moore describe environmental stressors (e.g., residential and commercial blight, change in neighborhood racial/ethnic composition, relocation of industrial sites, changes in transportation technology), housing-related stressors (e.g., noise, overcrowding) and personal stressors (e.g., job change, promotion or relocation, change in income or class, change in family size or marital status, aging) that can lead to housing dissatisfaction. In response, household members may do one of three things: adjust needs, restructure the environment, or relocate. Thus, the first phase (evaluation) is a critical prerequisite for subsequent mobility.

In the second phase, household members actually decide whether and where to relocate. This decision results from a process of looking for and evaluating options within what Brown and Moore refer to as the action space, or the subset of locations which the household members know of and/or consider acceptable and about which they

have sufficient information to support their assessment. Sources of information include the media, specialized agencies, and displays, as well as personal networks, knowledge and experience. Considerations include accessibility, physical characteristics of the neighborhood, services and facilities, social environment, and attributes of the dwelling unit itself. However, depending upon the time frame in which the search must be completed, household members may focus on fewer criteria or use a subset of the criteria to filter options. Feedback from the search process is used to redefine criteria, or even to return to the first phase and re-evaluate satisfaction with the current dwelling. Ultimately, action results from a decision about how to resolve stress related to unmet needs.

Brummel's (1979) similar but more detailed model of intra-urban mobility uses consumer theory to explain in econometric terms how experienced place utility, aspiration place utility, needs and residential stress influence movers' behavior. Brummel conceptualizes mobility decision-making as a cognitive-behavioral process of choosing an optimal solution by evaluating options, considering preferences and constraints, and using tradeoffs to maximize satisfaction and/or utility. Experienced place utility is defined as "what the household has" (p. 339), and includes characteristics of the housing site, neighborhood and relative location as well as consumption of other goods. Attainable aspirations are defined as "what the household believes it could have through relocation" (p. 339); aspiration place utility is the value of these aspirations.

A perceived difference between experienced and aspiration place utility results in relative dissatisfaction or residential stress. Depending on the source and level of stress as compared to the household's stress threshold, a household may decide to modify the

current residence, change its needs, make an attitudinal adjustment, or move. This rational decision process also is influenced by constraints including minimum/maximum household needs (sensitive to life cycle changes), income limitations, psychic costs of dislocation (which strengthen with increased duration of residence), and inertia factors.

The decision process may also be affected by knowledge of alternatives, prices and consequences, and feedback loops can result in changed perceptions of experienced and aspiration place utility. Further, the residential environment, market situation (cost of housing and other goods), household situation (income and needs), preference structure, and residential stress threshold can change over time. Values and preferences may be sensitive to life cycle differences and income. In summary, Brummel's (1979) intra-urban mobility model explains mobility as resulting from interaction of time-variant push and pull factors.

Characteristics and conditions related to mobility. Building on empirical observations that mobility varies by age and life cycle stage, Speare (1974) explored household level characteristics to explain these phenomena. In a survey of Rhode Island residents, Speare found that residential mobility decreased with age. Couples were very likely to move in the year they married, and mobility rates remained higher during the early years of marriage than in other life cycle stages. Like Rossi (1955), Speare interprets this as an effect of increases in family size (births of children) and in disposable income early in the family life cycle. As children became school age, mobility decreased and for post-parenting married couples it was lower still. However, separation, divorce and death all triggered mobility.

Speare (1974) found age and life cycle stage to have important, independent effects on mobility. In the Rhode Island study, he found mobility differences within age categories according to life cycle stage, and also variance within life cycle categories by age. For example, mobility rates were lower for those who married and had children later in life than for those who started families at a younger age (perhaps due to older families having more financial resources).

Some studies conclude that increased family size *leads* to mobility (Rossi, 1955; Speare, 1974). However, another study identified greater mobility for childless couples younger than age 45, and found differences in the effect of children on mobility depending on their age (Long, 1972). To better understand the relationship between mobility and changes in family status or size (fertility), Powers and Thacker (1975) explored the direction of that relationship and examined the possibility that differences in socioeconomic status affect the mobility-fertility relationship.

In their study of mobility in a poor neighborhood in the Bronx, Powers and Thacker (1975) operationalized adequacy of current housing to include neighborhood and housing conditions as well as size of the dwelling. The authors found that those who had recently moved into the study area had lower fertility than long-term residents, and concluded that the recent movers "may be those most able to escape from less desirable neighborhoods contiguous to the study area. That is they had high enough incomes to pay increased costs in rent, and/or few children, giving them a wider selection of apartments" (p. 218). In other words, in the context of a tight housing market, high housing costs and low vacancy rates, Powers and Thacker suggest that limiting family size may lead to greater mobility for poor families.

In addition to life cycle factors, other conditions (i.e., housing tenure, duration of residence, employment status) also are related to mobility. Rossi (1955) found higher mobility rates for renters, and concluded that they move in order to achieve homeownership goals. Attachment and cumulative inertia may partly explain the observed relationship between mobility and duration of residence, but housing tenure also plays a role here. Speare (1974) found that longer duration of residence was related to decreased mobility for renters but not home owners. On average, mobility rates were four to five times higher for renters than for owners. When analysis was limited to those who had lived in the same home for 20 or more years, mobility rates were still two to three times higher for renters. Speare interprets these phenomena as effects of differences between owners and renters in the economic costs of moving. For renters, he proposes that over the short term there is less attachment to the rented home, but over time increased social ties decrease mobility. For home owners, inertia is more immediate (less dependent on duration of residence) due to higher costs of carrying a mortgage and of resale.

Speare (1974) also touches on differences in explanations for intra-urban mobility versus movement over longer distances. He notes that households that moved farther were likely to be motivated by job-related factors. Intra-urban movers generally stayed within the same labor market and were more likely to be motivated by other factors. It should be noted, however, that more recent research finds that job changes within the same employment market result in a higher level of residential mobility than previously assumed (Dieleman, 2001).

Migration Theory

Migration theory considers mobility on a larger (e.g., inter-urban or international) scale. In the fifteen years prior to Greenwood's (1985) review of the literature on models, theory and empirical studies of human migration, U.S. migration patterns changed dramatically. After 1970, population growth shifted from the West to the South, and from metropolitan to non-metropolitan areas as the population decreased in central cities and suburban expansion slowed. Greenwood attributes these changes in migration patterns to regional differences in age and family composition as well as differing employment opportunities, and declining advantages (for both businesses and households) of densely populated urban settings.

Contextual differences between sending and receiving regions (e.g., labor market conditions, employment composition, land and housing market conditions, state and local taxes, availability of public goods, and local amenities/conditions) influence decisions about whether and where to move. Greenwood (1985) points out that the recent availability of micro-data with disaggregated personal attributes has allowed researchers to estimate the relative contributions of personal and place characteristics resulting in increased attention to the importance of personal attributes, life-cycle events and family considerations. He notes that life-cycle events (e.g., marriage, divorce, completing school, entering the workforce, starting a career, birth and aging of children and retirement) as well as employment status, earnings, education, skill level, age, gender and health all influence individual and household decisions to move. As an example of family considerations, Greenwood cites empirical evidence that being married lowers the

probability of moving and explains that dual wage-earner families must consider the net effects of migration decisions on each employed spouse.

An understanding of the importance of employment status has also emerged from analysis of micro-data. DaVanzo (1978) found that unemployed individuals and families with heads who were looking for work were more likely than those with jobs to move from areas with high unemployment rates. Thus, Greenwood (1985) suggests that the effect of inter-regional differences in unemployment rates may depend on individuals' employment status. Multiple and/or return moves appear to be associated with younger age, less education and unemployment status, perhaps as a result of less time or ability to evaluate information about potential options accurately.

Greenwood (1985) recommends that more longitudinal studies are needed since the influence of factors such as age may be better explained in terms of career and family conditions that change over time. He also suggests that more research is needed on the relative importance of economic, job-related (e.g., wage, job growth and unemployment differences) and quality of life factors in explaining regional shifts in migration patterns over time. Finally, he proposes that characteristics of migrants (e.g., education) may interact with employment and earnings opportunities, and that more study of these relationships is needed.

Massey (1990) also describes interconnections among individual behavior, household strategies, community structures and national political economies that influence the migration process. He begins by summarizing four dimensions of disagreement among researchers regarding the study, modeling and conceptualization of migration. First, analysts disagree on the importance of temporal characteristics and on

whether migration can be accurately understood without a consideration of historical, social and economic changes. Second, researchers dispute whether individual decisions or structural conditions (i.e., geographic differences in wealth and opportunity) are the primary driver of migration patterns. This leads to a third, related disagreement over level of analysis. Should individuals, families, households, communities or regions be the focus of migration studies? Or does their potential interaction imply that individual-, household- and community-level variables all should be included in the same statistical model to account for the influence of context on individual decision-making? Finally, researchers disagree about causes and effects of migration. For example, does availability of jobs cause migration, or does migration cause job development, or is the relationship reciprocal (cumulative causation)?

Massey (1990) judges that "fragmentation has prevented analysts from recognizing key relationships among variables that affect one another across time and between levels of analysis, dependencies that are intrinsic to migration and build a strong momentum into the migration process. As a result, our theoretical understanding of migration is incomplete and inaccurate, providing a weak base for research and policy" (p. 4). Arguing that "migration decisions are made jointly by family members within households; that household decisions are affected by local socioeconomic conditions; that local conditions are, in turn, affected by evolving political, social, and economic structures at the national and international levels; and that these interrelationships are connected to one another over time," Massey concludes that researchers "must therefore construct multilevel data sets that include event history information compiled simultaneously at the individual, household, and community levels" (p. 5).

Massey (1990) notes that the rational cost-benefit evaluation model is the dominant way of explaining both internal and international migration. Using human capital theory, migration can be conceptualized as an "investment in human productivity" (p. 5), and the migration decision-making process can be understood as the weighing of anticipated gains from moving (e.g., probability of employment and expected income) against estimated returns in the home community (e.g., income) as well as the costs (real and psychological) of moving. Network connections to relatives or friends who have moved may also reduce the perceived and real costs of migration.

Massey's (1990) review of the literature cites influences on the migration decision process including an individual's age, education, marital status, work experience, unemployment, and characteristics of one's spouse or other household members. He notes, however, that structural factors (social and economic) affecting probability of employment and expected income are less often included in migration decision models. In particular, he cites evidence that differences in regional employment rates may be more important than wage and income levels. Massey also suggests that rational decision models often overlook contextual factors when "moves are not volitional but are structurally imposed by conditions beyond the individual's control, most commonly economic dislocations" (p. 7). In summary, he maintains that since individual decision-making is structured by contextual conditions, theory and empirical analysis must account for variables at different levels as well as their interaction.

Theorized Constraints on Mobility

The rational choice models of mobility and migration focus primarily on the individual and/or household as actors in an analytical decision-making process related to

movement. However, other actors (i.e., individuals, groups, institutions, systems) may also affect the decision process and its outcomes. This section will focus on factors that theoretically constrain social and residential mobility. In particular, social exclusion, place stratification, and housing discrimination will be discussed. Finally, a model situating rational decision-making within the geography of metropolitan opportunity will be described.

  Social exclusion. Social exclusion may constrain mobility. Somerville (1998) describes two prevailing meanings of social exclusion: exclusion from capitalist labor markets (through unemployment, insecure employment or doing unpaid work) and denial of social citizenship (stigmatization, oppression and/or institutional discrimination through economic, social and/or political processes of exclusion). Exclusion via any of these pathways results in isolation and "segregation from the formal structures and institutions of the economy, society and the state" (p. 762) and is equivalent to relational poverty. Somerville asserts that social mobility, or "mobility into and out of the labour market, into and out of poverty, or between 'deserving' and 'undeserving' social categories" (p. 763) is limited by social exclusion, which is socially constructed.

  According to Somerville (1998), social exclusion has three interrelated dimensions (economic/labor, legal/political and moral/ideological) and has been explained in structural terms (exclusion caused by structured inequality) and/or cultural terms (exclusion caused by attitudes and behavior of the excluded). He suggests, however, that the distinction between these explanations is not clear-cut, and that a holistic theory of interrelated processes may be more useful.

Somerville (1998) notes that "because of its fixed character, housing is particularly relevant for deciding the question of whether there is a connection between social mobility and spatial mobility, which could represent another possible source of social exclusion" (p. 772). Housing can be a mechanism for social exclusion in a number of ways. First, housing production can be structured so that there is a shortage of housing, its quality is poor, and/or its price, location or construction makes it inaccessible to certain segments of the population. Second, there may be social differentiation between different forms of housing tenure (e.g., poor households excluded from home ownership) and within tenancy categories (e.g., differences in ability to maintain an owned home or differences in quality, affordability, location or availability of rental housing), and certain marginalized categories of households may be at increased risk for exclusion (e.g., un- or under-employed, minorities, single parents). Third, spatial separation (by class or race) may be a mechanism for social isolation and exclusion. (Somerville notes that the relationship between housing tenure and class isolation is complex and depends on the local housing market.) Finally, low residential mobility may result in excluded groups (or a subpopulation of excluded groups) remaining trapped in excluded areas, and may ultimately lead to the development of an underclass. However, the processes which mediate underclass formation are not well understood. In summary, Somerville concludes that housing is a concrete expression of "the exclusionary effects arising from labour process organization, legal and political structures and action, and ideological formations" (p. 778).

Place stratification. Alba and Logan's (1993) theory of locational attainment proposes two models to explain minority proximity to non-Hispanic whites: spatial

assimilation and place stratification. According to the spatial assimilation model,
population subgroups are geographically distributed according to the degree of their
assimilation with the majority group. Individuals who acculturate and increase their
human capital (income, education, literacy) become socially mobile. This leads to
residential mobility to more advantaged places with increased amenities, which
ultimately results in complete, structural assimilation or desegregation. Conversely, this
individual-level explanation implies that segregation results from differing individual
characteristics (e.g., income).

The place stratification model explains why certain groups are less able to achieve
proximity to the majority group even after accounting for differences in acculturation and
human capital. According to this model, areas within metropolitan spaces are ordered
hierarchically according to quality of life and life chances for those who live there, and
minorities are geographically sorted according to their relative social positions. More
advantaged groups are invested in preserving this hierarchy of places and thereby
maintaining social distance from less advantaged groups. Mechanisms for maintaining
place stratification include individual and institutional actions (e.g., violence against
minorities, restrictive zoning, and racially segmented housing markets). Thus, "members
of some groups are not able fully to convert socioeconomic and assimilation gains into
residence in the same communities as the majority; in other words, the 'returns' on
individual achievements, such as income and English-language ability, may differ
substantially across groups. In effect, it 'costs' members of some groups more to achieve
desirable locational outcomes, if they are able to achieve them at all" (Alba & Logan,
1993, p. 1391).

Using 1980 census data from the suburban areas of New York City, Alba and Logan (1993) estimated separate regression models for locational attainment (residence in the same community as non-Hispanic whites, the advantaged group) by race/ethnicity, and found support for both the spatial assimilation and place stratification models. For whites and blacks, the place stratification model was supported by the finding that race is the most important determinant of proximity to whites; other individual characteristics made little contribution. The average white person lived in a suburb that was 83 percent white, and whites were likely to live in a white suburb regardless of their family, socioeconomic and assimilation characteristics. For blacks, the average racial composition of the area of residence was 55 percent white. Only blacks with very high income levels achieved significant differences in proximity to whites. Individual characteristics other than race (i.e., age, household structure, home ownership, household income, education, English language ability and immigration status) together explained only four percent of the variance in locational attainment for blacks.

In contrast, patterns for Asians and Hispanics appeared to correspond with the spatial assimilation model; individual characteristics explained more of the variance in locational attainment. Asian proximity to whites was increased by home ownership, high income and college education. Among Hispanics, those who were immigrants or had less English language ability achieved less proximity to whites, while homeowners and those with higher incomes and more education achieved greater proximity. However, certain ethnic categories of Hispanics—black Hispanics in particular—were less likely to achieve proximity to whites.

Logan, Alba, McNulty and Fisher (1996) subsequently extended this analysis to five major cities and their surrounding suburbs (New York-New Jersey, Chicago, Miami, Los Angeles-Long Beach, and San Francisco-Oakland) using individual- and tract-level data from the 1980 census. As in the previous study, separate equations were estimated for the four ethnic/racial subgroups. However, because integration is not necessarily a goal for all minorities, median tract-level household income was added as a new criterion variable. The authors state that the income measure provides a more direct indication of neighborhood socioeconomic status and resources. (It should be noted, however, that some have questioned the use of median neighborhood income or poverty rate as useful outcome measures since presence of high status workers, neighborhood racial makeup and welfare dependency rate may have more impact on residents' employment outcomes and child well-being (Briggs, 1997)).

In the Logan et al. (1996) study, home ownership, higher education and higher income were the most important predictors of neighborhood median household income across all ethnic/racial categories. However, the effect of these individual characteristics was greater for whites than for the other groups, and the effect was generally lowest for blacks. On the whole, cultural assimilation predictor variables (recent immigration and poor ability to speak English) were significant predictors of lower neighborhood income only for Hispanics. Non-Hispanic whites had more favorable outcomes than Hispanic whites, and non-black Hispanics had more favorable outcomes than black Hispanics, even after controlling for socioeconomic and acculturation differences. When background characteristics were controlled, whites were most advantaged in terms of neighborhood income, and blacks were least advantaged. However, the gap was smaller

in suburbs than in central cities. With equivalent background characteristics, Hispanics achieved nearly equal outcomes to whites. For Asians, outcomes were best for affluent households in the suburbs, and worst for poor households in central cities.

Income, education and home ownership were also important predictors of proximity to whites (Logan et al., 1996). However, for blacks, homeownership predicted *less* proximity to whites. Poor English language ability had a negative effect on proximity to whites, especially for Hispanics. As before, black Hispanics attained less proximity to whites than white Hispanics. Further, blacks in general achieved less integration with whites, and while being affluent and living in the suburbs closed the gap somewhat, the typical affluent, suburban black household lived in a neighborhood where the proportion of whites was about half that for the other groups. Assuming they were U.S. natives and spoke English well, living in the suburbs also helped the other minority groups achieve proximity to whites, especially if they were more affluent.

In summary, Logan et al. (1996) found that the assimilation process is different for blacks and other minorities. Socioeconomic advancement is an important predictor of both neighborhood income level and racial composition for all groups. However, the authors conclude,

> Non-Hispanic whites have undeniable advantages above and beyond their higher
> socioeconomic status. Hispanics are the one group for whom acculturation
> processes appear to have clear effects on the residential outcomes... Asian and
> black residential patterns are generally unrelated to acculturation. We cannot
> simply accept an assimilation model of locational attainment and dismiss the
> black experience as 'the American exception,' or propound a stratification model

in which the black experience is a prototype for every minority. Each group is distinct, and our theories should build from this variety of experience. (p. 453)

Housing discrimination. Galster's (1991) conceptual model of housing discrimination and urban poverty synthesizes competing explanations for high poverty rates among blacks in urban areas. According to the alternative theories Galster describes, high levels of black urban poverty could be caused by: 1) family structure (i.e., single parenting); 2) macroeconomic shifts from manufacturing to service-sector employment; 3) spatial mismatch (low proximity to jobs); 4) social-spatial isolation; 5) poor quality, segregated inner city education; and 6) labor discrimination in hiring, wages and promotion. Galster suggests that these explanations are interconnected, bi-directional and mutually supportive.

To test a synthetic conceptual framework including all the above explanations plus a seventh component of interest, housing discrimination, Galster estimated a simultaneous equation, econometric model using 1980 data from 59 U.S. metropolitan areas. His primary finding was that the amount of racial and economic isolation experienced by blacks had a strong direct effect on their likelihood of falling into poverty as well as an indirect effect through school effectiveness. These effects were as important as the effect of female headship, and appear to have had a stronger effect than the occupational mix or relative location of jobs in the metropolitan area. Galster concludes that housing discrimination substantially increases residential segregation, measures of school failure and poverty rates for blacks.

Geography of Metropolitan Opportunity

Galster and Killen's (1995) model of life decisions by youth (Figure 2) integrates intrinsic and extrinsic influences on decisions affecting socioeconomic status. Although the authors focus on youth, they note that many principles underpinning the model can also be applied to adult decision-making. The model depicts three sets of influences on life choices (middle top) that affect socioeconomic status: personal characteristics (left bottom), perceptions of opportunity (middle bottom), and the metropolitan opportunity structure (right bottom). The model also incorporates the role of geography, constraints of the metropolitan opportunity structure, and influences of the local social network on perceptions, values, aspirations, preferences and life decisions.
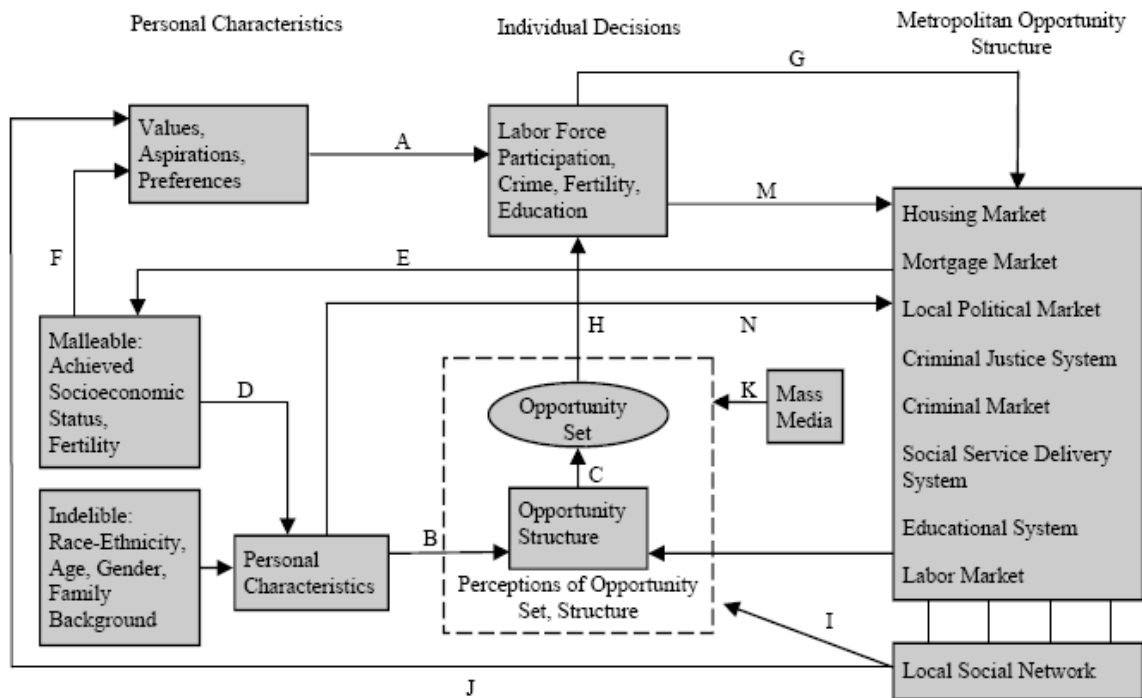
Figure 2. Galster and Killen's model of life decisions by youth.

Beginning at the bottom left of the model, personal characteristics (both malleable and indelible) influence life choices. There is a direct path from personal characteristics to the metropolitan opportunity structure (arrow N) which represents the influence of

individual-level attributes on one's participation in metropolitan elements such as the educational system, housing marking or labor market. There is a feedback pathway from the metropolitan opportunity structure back to malleable personal characteristics (arrow E) demonstrating that participation in elements of the metropolitan opportunity structure can result in changes in one's malleable personal characteristics (e.g., work and education may defer childbearing and increase socioeconomic status, housing status may affect education level and employment status).

Individual characteristics also influence perceived opportunities as well as personal values, aspirations and preferences. These, in turn, have an effect on life choices related to work, criminal activity, child-bearing and education. Arrows B→C→H depict the way in which evaluation of opportunities can moderate the influence of personal characteristics on decision-making; as individuals weigh options available to them, they factor in not just their own abilities and limitations but their estimation of the costs, benefits and feasibility of each option. The dashed line around opportunity set and structure represents a perceptual filter. Perceptions and interpretations are subjective. They are influenced by the media (arrow K); one's local social network of relatives, neighbors, friends and local institutions (arrow I); and the metropolitan opportunity structure. Each information source affects one's appraisal of life choices and chances.

Values, aspirations and preferences also influence an individual's life choices (arrow A). The path from local social network to values, aspirations and preferences (arrow J) represents a socialization process in which norms, values and expectations are transmitted by family, neighbors, friends and social institutions such as clubs, associations or religious institutions. The concept of neighborhood effects could be

situated along this pathway. Changes in malleable personal characteristics can also alter one's values, aspirations and preferences (arrow F).

Finally and importantly, there is a dynamic relationship between individual choices and the metropolitan opportunity structure. Differential outcomes of individual life decisions may result from differences in the opportunity structure and the way in which its markets and institutions (including the housing and mortgage markets) appraise an individual's personal characteristics. This may operate along a direct path (arrow M) or indirectly (arrows E→F→A). As an example of the latter path, frustrated attempts to make life-enhancing choices may result in diminished aspirations and changed values, which in turn lead to changes in life choices.

Individuals also can shape the metropolitan opportunity structure (arrow G). For example, an increased individual education level may generate more involvement in one's children's schools and heightened expectations of the education system. Groups of individuals may have a collective effect on the opportunity structure, and of course, this process could also operate in reverse. For example, as a community deteriorates, declining levels of employment and education may negatively influence community institutions and markets.

Summary of Mobility Theory

Dieleman's (2001) recent review of research on residential mobility identifies the following individual characteristics known to be associated with higher residential mobility in the Western world: younger age (adults between age 20 and 35 are most mobile), households in smaller dwellings and rental units, single-income households, and households that have recently formed or dissolved a family relationship or experienced an

educational or job milestone or event (e.g., changing jobs, beginning or finishing a stage of education). Because there is less government control of the housing market in the U.S., Dieleman notes that American mobility theory emphasizes market forces, economic influences and supply-side factors. Social aspects of mobility are also a focus.

Dieleman (2001) organizes various perspectives on causes of mobility according to whether they give attention to the household, metropolitan, national or international level. Mobility theory that focuses on the household level tends to emphasize individuals' behavior and choices with regard to housing and mobility. Focus on the metropolitan level incorporates characteristics of the housing market including housing tenure composition, turnover of the housing stock, and price level. At the national level, prevailing inflation and mortgage rates as well as demographic changes and economic fluctuation are believed to influence mobility. Finally, at the international level, varying housing policies, wealth disparities and differences in housing tenure structures may lead to mobility.

At the household level, Dieleman (2001) cites emergent theory-building around the process of joint decision-making in households with multiple family members, the psychological aspects of weighing options (especially when residential choices are constrained), and the influence of the circumstances or urgency of the move on the process of decision-making. The household level interacts with the metropolitan level in intra-urban moves. Dieleman notes that "conditions in local markets limit or widen the set of choices that households have when they initiate their housing search. The characteristics of local housing markets vary considerably within any one country and thereby shape the residential mobility process differently from place to place" (p. 257).

Within the U.S., there are significant regional variations in mobility behavior, and there is evidence that different levels of new construction, turnover rates, local price variations, interest rates and taxes, demographic and economic changes, city size, region and temporal factors all can influence mobility. Integrative, multi-level theories help to explain the person-place interaction.

In summary, Dieleman (2001) proposes that the frontier in mobility research "is most likely to be in the analysis of how the residential relocation behavior of persons and households interacts with the circumstances in local and national housing markets. The key question is how changes in circumstances over space and time influence the housing choice patterns of individuals and households… the study of how housing careers of households develop over time and space in interaction with changing economic, demographic, and fiscal circumstances offers ample scope for new insights in the residential relocation process" (p. 262).

Review of Recent Studies Related to Mobility

Recent mobility studies have focused on three key areas: 1) the relative importance of mobility predictors at multiple levels; 2) connections between racial disparities in mobility outcomes, housing market segmentation and poverty concentration; and 3) the merits and detriments of housing mobility and neighborhood revitalization programs. In the following section, these studies will be summarized. Connections among studies also will be explored.

Relative Importance of Mobility Predictors at Multiple Levels

Lee, Oropesa and Kanan (1994) focused on push and pull factors at the neighborhood level in an exploratory, cross-level study that controlled for individual

status variables and estimated effects of both objective (census-based) and subjective (self-reported) measures of neighborhood context on mobility. Consistent with theories that mobility is influenced by personal characteristics, older persons and homeowners were less likely to think about moving; persons with these characteristics as well as those who had lived in their neighborhood longer were also less likely to move. Objective and subjective neighborhood context variables were then added to the model and non-significant predictors were eliminated in stepwise fashion. In the final prediction model for mobility *thoughts*, being female and white, and living in a neighborhood with a vacancy rate at or above six percent, a greater number of neighborhood problems and more perceived physical neighborhood change increased mobility thoughts. Being older, owning a home, living in a neighborhood with a higher proportion of recent in-movers, being more sentimentally attached to the neighborhood and having a more positive appraisal of the neighborhood lowered the odds of thinking about moving. In the final model for *actual* mobility, however, only one objective context variable and none of the subjective context variables were significant predictors. Age, housing tenure and length of residence decreased mobility while thinking about moving and perceived neighborhood turnover increased mobility. The authors concluded that most of the influence of contextual variables is mediated by mobility thoughts.

While Lee et al. (1994) used conventional logistic regression analyses to estimate the impact of context, Seong Woo Lee (1999) suggests that multi-level modeling is more appropriate since it addresses concerns related to cross-level interactions, heterogeneity between geographic areas, and spatial dependency of household-level characteristics in data with a hierarchical structure. With 1990 census data for the 100 largest U.S.

metropolitan areas, Lee used individual- and metropolitan-level characteristics to predict residential mobility. He found that while mobility was driven primarily by individual-level characteristics (housing tenure, previous migration status and age in particular), there was sufficient inter-metropolitan variation to justify the addition of metropolitan-level predictors.

Age of housing made an important difference at both the individual and metropolitan level (S. W. Lee, 1999). Controlling for householder age, housing tenure, income, previous migration experience and other individual-level differences, households living in older housing were less mobile. While it is self-evident that new housing contains recent movers, S.W. Lee suggests that residents of older housing may be more settled, "aging in place" households (p. 3). At the metropolitan level, higher proportions of older housing predicted lower mobility; the author proposes that newer housing increases opportunities for movement.

Age of housing also interacted with household income in an interesting way (S. W. Lee, 1999); while income was not a significant individual-level predictor of mobility in this population prior to the addition of housing age variables, it became significant after these variables were added to the model. Partial correlations indicated that the effect of income was moderated by housing age: higher income was associated with residence in newer housing, and newer housing was associated with mobility. Controlling for housing age revealed an underlying negative relationship between income and mobility.

The effect of housing tenure (being a renter) varied significantly across metropolitan areas (S. W. Lee, 1999). While race was not an important predictor in

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models including both homeowners and renters, being a minority predicted lower mobility in renters-only analysis. Other individual-level predictors had similar effects for both groups. Addition of metropolitan market characteristics significantly improved the renters-only model; a higher proportion of older rental housing and higher market rents decreased mobility.

Margulis (2001) also explored the influence of metropolitan-level characteristics (housing traits, local government expenditures and school district qualities) on home buyer location decisions. Using data collected from various sources during the 1990s for the four-county Cleveland metropolitan area, Margulis tested Tiebout's (1956) theory that households (consumers) in metropolitan areas rationally consider costs and benefits (e.g., local goods and services, taxes) of residing in various municipal jurisdictions as they make household location choices within a metropolitan area.

Through conventional regression analyses, Margulis found limited variability in housing traits among the four Cleveland counties. However, other contextual characteristics including differences in amenities, aesthetics and school quality and their costs did predict mobility into particular locations. Margulis notes, however, that household socioeconomic characteristics are likely to have equal importance in determining location choice (i.e., choices may be constrained by affordability). The pull of public service quality was observed in smaller municipalities that are able to attract higher income households, maintain exclusivity and control costs of services. However, movers in Cuyahoga County (which includes Cleveland's central city) differentiated among relocation options only according to the size of the municipality. Margulis notes

that within Cuyahoga County, movers access the same school system, but the size of the municipality influences local tax rates.

Clearly, the choice of variables included in a multivariate model can affect the findings, and it is important to understand how variables influence one another and/or share variance in the dependent variable when interpreting a multivariate model. An emerging line of mobility research attempts to isolate and better understand the effects of a particular characteristic. Hansen and Gottschalk (2006), for example, focused on older persons and their mobility considerations and patterns. The authors found that even within an older (age 52 to 77) group, individuals are motivated by different reasons to move at different ages. However, consistent with householders in younger age categories, life changes and dissatisfaction with the housing unit caused elders to consider moving. The authors suggest that an observed gap between mobility intentions and actual mobility may be explained by barriers such as lack of acceptable alternatives, inability to cope with the stress of moving, and financial considerations that constrain elders from following through on mobility considerations.

Another study explored the relationship between gender, marital status and employment status and their effects on mobility (Swain & Garasky, 2007). This study of households in the PSID data set with two employed adults found that economic influences on mobility are not the same for husbands and wives. Wives are not likely to be tied-movers (i.e., experience personal economic losses in order to maximize family well-being), but husbands are likely to be tied-stayers (i.e., give up potential personal gains from moving to maximize family well-being). Thus, expected effects of gender

and employment-related factors on mobility may be moderated by the presence of an employed spouse.

In summary, studies reviewed in this section support the assertion that both individual and contextual variables influence mobility decisions and outcomes, and that their interrelationships can be complex. Context can make important contributions at both the neighborhood and metropolitan level. Furthermore, within- and between-level interactions are observed and should be tested.

Racial Disparities, Housing Market Segmentation and Poverty Concentration

The line of inquiry most closely related to this dissertation research includes a series of studies over the last two decades exploring cross-level influences on movement into and out of poor neighborhoods. These studies share a common objective of explaining the concentration of poverty in urban U.S. neighborhoods since the 1970s, and each has sought to isolate and understand the relationship between minority race and residence in increasingly poor settings. Some studies have been descriptive, but the most recent have used multivariate analysis to identify predictors of mobility into and out of poor neighborhoods.

Using survey data from the Panel Study of Income Dynamics (PSID) merged with census data, Massey, Gross and Shibuya (1994) tested three prevalent explanations of poverty concentration (and its disproportionate effect on blacks): a) class-selective out-migration of blacks from poor and very poor neighborhoods (Wilson, 1987); b) generally rising urban poverty and downward socioeconomic mobility (Jargowsky & Bane, 1991); and c) interaction of racially segregated urban housing with high and rising black poverty rates (Massey & Denton, 1993). For each of four groups (black/poor, black/non-poor,

white/poor, white/non-poor) and two time periods (early 1970s and early 1980s), Massey et al. compared the odds of moving into and out of each of five neighborhood types (non-poor white area, non-poor black area, poor black area, very poor black area, mixed area).

In actual mobility patterns, Massey et al. (1994) found support for each explanation. To test their *relative* importance, they applied transition probabilities derived from the PSID data under three types of simulated conditions. Setting black out-migration to zero resulted in average neighborhood poverty concentrations for blacks overall (and for poor blacks in particular) only slightly lower than the observed transition probabilities. Setting downward socioeconomic mobility to zero resulted in lower poverty concentration, but rates were not substantially different from observed transition probabilities. Eliminating racial segregation (by equalizing black/white destination probabilities such that blacks have an equal chance of entering white and mixed areas) had a much more significant effect on black poverty outcomes. The average black person's neighborhood poverty rate declined 42 percent. The average *poor* black person's neighborhood poverty rate declined 30 percent. The authors conclude that residential segregation constrains black residential mobility, and that as compared to the other two explanations, segregation was the most important cause of poverty concentration in black neighborhoods in the 1970s and 1980s.

Quillian (1999) responded to the Massey et al. (1994) study with a more precise exploration of mobility patterns that considered *net flows over time* of households into and out of particular neighborhood types. Using PSID data for three periods (early 1970s, early 1980s and late 1980s), he analyzed mobility flows to/from eight neighborhood types (white non-poor, white moderately/extremely poor, racially mixed,

black non-poor, black moderately poor, black extremely poor, non-metropolitan and non-tract metropolitan). Separate analyses were conducted for white poor and non-poor households as well as black poor and non-poor households.

Quillian's (1999) study included effects of four types of flows: a) actual household movement from one neighborhood type to another, b) switches to another neighborhood type caused by changes in the neighborhood poverty rate as opposed to household movement, c) upward or downward mobility from one poverty status group to another while remaining in the same neighborhood, and d) changes from one poverty status group to another concurrent with (in the same year as) an actual move to another neighborhood type. As compared to Massey et al.'s (1994) cross-sectional approach, Quillian's methodology decomposed the flows. Where two or more kinds of change offset one another, the Quillian approach makes this process apparent.

Consistent with Wilson's (1987) theory that concentrated poverty resulted from class-selective black mobility, Quillian (1999) found that blacks—non-poor blacks in particular—had a net positive flow into white non-poor neighborhoods over the time periods examined. In other words, movement in exceeded movement out, and over time this should have substantially increased the proportion of non-poor blacks in white neighborhoods. However, Quillian also found that as blacks moved into white non-poor neighborhoods, the net flow of whites out of these neighborhoods increased. Over time, these white non-poor neighborhoods became mixed or black neighborhoods. This phenomenon can explain why Massey et al. (1994) failed to find support for the Wilson theory. In fact, class-selective black migration and re-segregation were co-occurring, and the effects were offsetting.

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Quillian's (1999) analysis also showed that in all time periods, black and poor tracts tended to become poorer and blacker—not because people with these characteristics were moving in, but rather because these neighborhoods were emptying out. Changes in poverty status (i.e., increases in poverty rates for households that remained in the same neighborhood) were not driving the concentration of poverty except during the recession of the early 1980s. During those years, moderately poor black neighborhoods tended to become poorer, contributing to poverty concentration as Massey et al. (1994) suggest.

In summary, Quillian's (1999) decomposition of net flows provides a more detailed picture of the poverty concentration process that supports and synthesizes explanations previously seen as incompatible. He shows that over time, non-poor households have moved away from poor households, and white households have moved away from black households. Concurrently, jobs moved from inner city neighborhoods to the suburbs, and inner cities declined as magnets for black and poor in-movers. The combined effects of falling center city population and the net flows of the various population groups described above resulted in poverty concentration in inner cities.

In a second longitudinal study, Quillian (2003) focused on mobility dynamics in poor neighborhoods. He operationalized neighborhood poverty in two ways. Census tracts in which 20 percent or more of the population fell below the poverty line were classified as poor, and census tracts with a poverty rate at or above 40 percent were extremely poor. Using PSID data from 1979 to 1990 merged with census data, Quillian focused on length of exposure to poor neighborhoods to test for entrapment (Wilson, 1987). Four measures of exposure duration were analyzed: a) length of spells, b) levels

of recurrence (i.e., exit and re-entry), c) total immobility over a ten-year period, and d) total proportion of the study period spent in a poor neighborhood. Quillian notes that the last measure is the best approximation of entrapment as conceptualized by Wilson (1987). Patterns for poor neighborhood exposure were analyzed separately for white and black households; for extremely poor neighborhoods, only black neighborhoods were included because the PSID data set included too few white households in extremely poor neighborhoods.

For new in-movers, most stays in poor neighborhoods were of short duration (Quillian, 2003). About two-thirds of whites and half of blacks entering poor neighborhoods had spell durations of five years or less; about two-thirds of blacks in extremely poor neighborhoods stayed five or fewer years. However, blacks were substantially more likely to return to a poor neighborhood within five years of leaving (either through another move or neighborhood change). Measures of long-term rates of immobility and total levels of exposure over ten years capture the effects of both spell lengths and recurrence patterns. Quillian found that 72 percent of blacks in poor neighborhoods lived in the same or a different poor neighborhood ten years later, and of these, almost two-thirds were in a poor neighborhood for the entire ten-year period. Half of black households in extremely poor neighborhoods were in an extremely poor neighborhood ten years later, about 44 percent of these for the entire period. For whites, the pattern was different. Only 38 percent of those in poor neighborhoods were still in a poor neighborhood ten years later (but over two-thirds of them had been there for the entire period).

Analyses of overall exposure rates by race indicated that 60 percent of blacks but only ten percent of whites experienced at least one year of exposure to a poor neighborhood over a ten-year period (Quillian, 2003). Almost one in four blacks lived in a poor neighborhood for an uninterrupted ten years versus only two percent of whites. Logistic regression modeling with entry to/exit from a poor neighborhood as the dependent variable and duration, race, poverty status, and female headship as predictor variables indicated that poverty status and female headship were significant and important predictors. However, even after controlling for these characteristics, black race still predicted exposure to poor neighborhoods and was a more important predictor than income or family structure. Racial disparity in the likelihood and persistence of exposure to poor neighborhoods supports Wilson's notion of black entrapment in poor neighborhoods. Quillian notes that repeat spells were particularly a problem for black households and they were caused not only by return moves, but also by non-poor neighborhoods to which they escaped becoming poorer over time. He concludes that it is important to focus not only on households' ability to exit poor neighborhoods, but also on their ability to stay out over time.

A series of studies by South, Crowder and colleagues used regression analyses to explore racial differences in the residential mobility process (Crowder, South, & Chavez, 2006; Crowder & South, 2005; South & Crowder, 1997; South & Deane, 1993). In the first study, South and Deane (1993) merged Annual Housing Survey (AHS) data with census data, and estimated the relative effects of individual (demographic and life cycle), housing-related, neighborhood and metropolitan influences on residential mobility (operationalized as a change in residence of the head of household between 1979 and

1980). While the aggregate mobility rate for blacks and non-blacks was about the same, this masked an important contribution of race that became evident when other predictors were controlled. Given similar sociodemographic characteristics, South and Deane found that blacks were less likely than non-blacks to move. Metropolitan-level residential segregation was the most important contextual predictor of mobility for blacks; higher levels of segregation decreased blacks' mobility. However, lower homeownership rates among blacks also increased their mobility, offsetting the effect of metropolitan area segregation. The authors stress the importance of estimating effects of contextual factors that can influence households' *opportunity* to move as well as typically measured individual-level variables that motivate households to move.

Building on the 1993 study, South and Crowder (1997) used PSID data from 1979 to 1985 linked with 1980 census data to identify individual/household, neighborhood and metropolitan-level characteristics that impeded or facilitated movement between poor (area poverty rate at or above 20 percent) and non-poor metropolitan neighborhoods. In particular, they explored whether differences in sociodemographic and contextual characteristics explain racial differences in mobility. As in the prior study, they found that the absolute rate of residential mobility was approximately equal for blacks and whites originating in poor tracts. However, blacks in poor tracts were more likely than whites to move to another poor tract, and less likely to move to a non-poor tract. For those starting out in a non-poor tract, the proportion of black movers was slightly higher. However, while almost all white movers originating in non-poor neighborhoods moved to another non-poor neighborhood, only 53 percent of blacks ended up in a non-poor destination. Finally, the rate of black movement from non-poor to poor tracts was higher

than their rate of movement from poor to non-poor tracts. This finding of overall net movement into poor tracts replicates Quillian's (1999) observation.

Binary logistic regression analyses of predictors of movement between poor and non-poor neighborhoods provided support for various perspectives on causes of mobility. Consistent with human capital explanations, personal characteristics (e.g., education, employment, income) were associated with avoiding and leaving poor neighborhoods; receiving public assistance lowered the odds of moving out of a poor neighborhood and increased the odds of moving into one. Life cycle characteristics were also related to mobility. Being married improved outcomes while being a female head of household and having more children increased the risk of moving to or staying in a poor neighborhood. Being older or owning a home lowered the odds of leaving both poor and non-poor neighborhoods.

The effects of race and class were consistent with the place stratification model of mobility. The probability of black households' moving from poor to non-poor neighborhoods was only 36 percent of the probability for whites; being black also predicted movement from non-poor to poor neighborhoods. Originating in a poor tract with a higher proportion of poor or black households reduced the likelihood of moving to a non-poor neighborhood as did high levels of class and race segregation and a high overall proportion of black households in the metropolitan area. These same metropolitan characteristics also increased the risk of movement from non-poor to poor neighborhoods.

Finally, characteristics of the metropolitan housing market affected mobility. Living in a metropolitan area with a greater share of newly constructed housing and

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living in the West (which has fewer and smaller suburbs) increased the odds of moving from a poor to a non-poor neighborhood. High vacancy rates increased risk of movement from non-poor to poor neighborhoods (perhaps an effect of gentrification), and the odds of non-poor to poor neighborhood movement also varied by region of the country.

Some of the above relationships became non-significant in multiple logistic regression models. After accounting for other variables, only older age, owning a home, receiving public assistance, being black and living in the Northeast (as compared to the West) remained negative predictors of movement *out of* poor neighborhoods, and only getting married, having more education and having more income remained positive predictors. The authors make two salient comments about these results. First, they note that controlling for other independent variables reduced the effect of race, but did not eliminate it; this further supports the place stratification theory of constraints on mobility. They also note that multicollinearity may have weakened the ability to detect unique effects of metropolitan level characteristics in the multivariate model. In multivariate models of movement *into* poor neighborhoods, only female headship, black race and higher metropolitan area housing vacancy rate remained positive predictors; newer housing stock significantly predicted lower mobility from non-poor into poor neighborhoods.

Contrasting all three possible outcomes for residents of poor neighborhoods (remaining in the same neighborhood, moving to another poor neighborhood and moving to a non-poor neighborhood) also provided interesting findings. Outcomes were consistently less favorable for blacks than for whites even after accounting for other predictor variables. Being black significantly increased the likelihood of moving to

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another poor tract versus not moving, significantly decreased the odds of moving to a non-poor tract versus not moving, and for those who did move, made movement to another poor tract significantly more likely than movement to a non-poor tract. Age and homeownership decreased the odds of moving, but for those who did move out of poor neighborhoods, these variables had no effect on the odds of movement into a poor versus a non-poor neighborhood. Household crowding predicted higher odds of moving to a poor neighborhood than remaining in the same neighborhood or moving to a non-poor neighborhood. Living in a tract with a high proportion of poor or black households increased the probability of moving to another poor tract as compared to non-movement or movement to a non-poor tract. Finally, in metropolitan areas with high levels of class segregation, residents of poor neighborhoods were more likely to move to another poor neighborhood than to stay in the same poor neighborhood or move to a non-poor neighborhood.

Similarly, in multinomial analyses of mobility patterns for residents of non-poor neighborhoods, blacks had less favorable outcomes. Again, age and homeownership reduced mobility, but for those who did move from non-poor neighborhoods, these variables had no effect on movement into poor versus non-poor destinations. Household crowding predicted movement from non-poor neighborhoods to another non-poor destination (as contrasted with no movement) but did not increase the risk of movement into poor neighborhoods. Becoming unmarried through death or divorce increased the odds of movement out of non-poor neighborhoods, and for those who did move there was also increased risk of downward mobility. Losing a job also increased the odds of

moving from a non-poor to a poor neighborhood. As above, households in the West were more likely to have better mobility outcomes.

To further explore racial disparities, South and Crowder (1997) estimated prediction models separately by race. The effect of education on the odds of moving from a poor to a non-poor neighborhood was significantly more positive for blacks than for whites. However, even with comparatively more education, blacks were still less likely to leave poor neighborhoods. (A black head of household with 16 years of education had lower odds than a white household head with only eight years of education.) Residential segregation at the metropolitan level increased the odds for whites to move out of poor neighborhoods; the relationship was negative but non-significant for blacks. In comparison, a higher overall proportion of black households at the metropolitan level lowered the odds of moving out of a poor tract for blacks, but had no significant effect for whites. For blacks, a higher tract-of-origin poverty rate lowered the odds of moving out of a poor tract; for whites, the pattern was the reverse. Finally, regional differences in the odds of movement out of poor neighborhoods were detected only for whites. Thus, the authors conclude that while human capital and life cycle characteristics do help to explain mobility patterns, structural barriers faced by blacks as well as characteristics of the metropolitan housing supply also make important contributions.

Crowder and South's (2005) study was similar to their 1997 study but used PSID data from 1970 to 1997 and contextual data from the 1970, 1980 and 1990 censuses. Further, to estimate the effects of changing neighborhood and metropolitan-level conditions, they matched census tract boundaries across census years and used linear

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interpolation to approximate data for intercensal years. The main purpose of the follow-up study was to test Wilson's (1987) theory that race has become a less important determinant of mobility outcomes over time.

Crowder and South's (2005) finding that rates of black and white mobility between poor and non-poor neighborhoods have converged since 1970 (shrinking racial disparity) provides partial support for Wilson's theory. However, the drivers of this change were shifts in sociodemographic characteristics and metropolitan conditions (e.g., housing vacancy rates, new housing development). Interestingly, rising white mobility from non-poor into poor tracts contributed to the convergence, and the authors suggest that gentrification may plausibly explain this phenomenon. After controlling for changes in sociodemographic and metropolitan-level characteristics in a multivariate model, mobility opportunities for blacks were revealed to have improved only modestly. Black households still had higher mobility into poor neighborhoods even after accounting for differences in socioeconomic and other characteristics. On this basis, Crowder and South conclude that housing policy should focus not only on moving households out of poor neighborhoods, but also on retaining those movers in non-poor neighborhoods.

In the most recent of the related studies, Crowder et al. (2006) tested the potential for differences in household and parental wealth to be the underlying cause of racial disparities in mobility outcomes. In contrast to previous studies, this study used two dependent variables: a dichotomous variable for mobility and a ratio variable indicating the proportion of non-Hispanic whites in the destination neighborhood. In addition to the wealth-related variables of interest, demographic, life cycle, socioeconomic and geographic characteristics were also included as predictor variables.

In preliminary descriptive analyses, Crowder et al. (2006) found that regardless of race, renters were less likely to move to predominately white tracts than homeowners. Moreover, among movers with the same housing tenure characteristics, black movers were less likely to move to white tracts. Finally, as compared to non-Hispanic whites, blacks had less household and parental wealth on average, and were more disadvantaged on measures of socioeconomic status and human capital.

Multivariate analyses found influences of human capital and life cycle characteristics on mobility that were generally similar to findings in previous studies. A new predictor variable, residence in public housing, was also a negative predictor of mobility. Parental wealth was a non-significant predictor of mobility, and while the household wealth variable was significant and negative, it was a weak predictor of mobility. When other variables were accounted for in the multivariate model, the influence of race was attenuated. However, lower rates of homeownership among black households and the racial makeup of the origination neighborhood—not differences in wealth—were the primary drivers. Because blacks were more likely to be renters, they were also more likely to move. A higher proportion of whites in the origination neighborhood had an opposite effect on mobility for black and whites, making blacks more likely to move and whites less likely.

Multivariate linear regression models predicting the proportion of non-Hispanic whites in the destination tract also provided no support for the argument that differences in wealth explain different outcomes. Predictor variables were added in steps. In the first model, black race was shown to be a significant predictor of the proportion of white population in the destination neighborhood. In the second step, human capital, home

ownership and geographic context (percent white in origin tract and metropolitan area overall) variables were significant predictors, and together they reduced but did not eliminate the importance of race as a predictor. Of the set of predictors added in step two, racial composition of the origin neighborhood was the most important. The authors suggest that this finding may reflect same-race preferences for neighborhood composition, or the fact that when households move short distances, they are likely to move to proximate neighborhoods with similar racial composition.

In the third step, addition of household and parental wealth variables did not improve the model. However, race and wealth interaction terms were significant when added in the fourth step. In separate analyses of black and white households, the authors found that increased wealth produced a significant but only modest increase in the proportion of white households in the destination neighborhood for blacks, especially renters. However, the effect of wealth was non-significant for non-Hispanic whites. Even accounting for the difference that added wealth can make in black households' potential for movement to neighborhoods with a higher proportion of whites, a racial disparity still remained. Thus, the authors conclude that differences in wealth cannot explain racially segregated housing patterns, and that white avoidance and discrimination are still plausible explanations.

Studies analyzing mobility patterns using PSID data generally contrast the experience of blacks and whites because the data set does not contain a sufficient number of households from other ethnic groups to support their analysis. Because Clark and Ledwith's (2005) longitudinal mobility study of Los Angeles County households included ethnic minorities and contrasted white and Latino households, it makes an

important contribution by addressing this gap in the literature. Surveys were conducted in 2002 using a stratified random sample of households in 65 neighborhoods with over-sampling of poor and very poor tracts. The objective of the study was to examine the relative effects of household and neighborhood characteristics on planned and actual mobility.

Mobility rates varied by ethnicity with lower rates for whites and Asians, and higher rates for Native Americans and blacks (Clark & Ledwith, 2005). Younger households were also more mobile. Interestingly, however, although Latino households were younger on average than the white households, they were less mobile. The authors suggest that lower average income for Latinos may have offset the effects of age. Still, they note that blacks also had lower average income, yet higher mobility. For more in-depth analysis of this question, the authors state they would have needed a larger sample.

Homeownership rates were highest for whites followed by Asians and lowest for Latinos followed by blacks and Native Americans (Clark & Ledwith, 2005). In general, housing consumption (operationalized as a function of the number of rooms in the housing unit relative to the size of the household) was inversely related to income, and consumption patterns varied by ethnicity. Latino households tended to have a greater number of members, experienced more crowding, and were classified as under-consumers of housing. Whites were over-consumers and experienced the least amount of crowding, while blacks were somewhat more crowded. Housing consumption among Asians appeared related to their country of origin with groups that had immigrated recently experiencing less economic well-being and more crowding.

In their multivariate analyses, Clark and Ledwith (2005) first used discrete time logit modeling to test the effects of age, housing tenure and life cycle events (marital status change and birth of a child) on the *probability of moving*. All but the birth of a child were significant predictors of mobility (the authors suggest that there may have been a lag between an infant's birth and moving to a new location that was not captured in their observations). Mobility was more likely for younger persons, renters and those who experienced a change in marital status. Contrasting models for whites and Latinos, the authors found that age was only a marginally significant predictor of mobility for the Latino subgroup, perhaps because the Latino sample was younger on average.

Clark and Ledwith (2005) also included age, housing tenure, and marital status, as well as ethnicity, income and crowding in a prediction model for *mobility intentions*. Crowding and homeownership were significant, negative predictors, and income was a significant positive predictor. The authors note that some variables typically associated with mobility (e.g., age and housing tenure) were not associated with consideration of moving, and suggest that their effect may be captured by other variables in the model. In a second step of the analyses, households' overall satisfaction with their neighborhood and their subjective perceptions of how safe and close-knit the neighborhood was were added to the model. While perceptions of safety did not significantly predict mobility intentions, overall satisfaction and the feeling of living in a close-knit neighborhood did reduce the odds of considering a move. Adding the block of neighborhood variables resulted in no change in the significance of variables in the first block or the sign of the coefficients, and the model was improved. Finally, a third block of variables was added; these variables were interaction terms that tested for differing effects of the neighborhood

variables depending on income and housing tenure. One significant effect was detected and the model was marginally improved. As income increased, the effect of living in a close-knit neighborhood on mobility plans was stronger. Contrasts of white and Latino prediction models for mobility intentions revealed a differing effect of crowding. White households with *too little* space were more likely than Latino households to consider moving, and Latino households with *too much* space were more likely than white households to consider moving.

In summary, for this population, demographic characteristics and housing consumption needs were the driving force in predicting mobility intentions and actual mobility. Disequilibrium between needs and actual consumption were associated with mobility, but this varied by ethnicity. Housing tenure and income were also important. Neighborhood variables made a contribution, but Clark and Ledwith (2005) conclude that "house trumps neighborhood in the planned decision making process" (p. 16).

Housing Mobility and Neighborhood Revitalization Programs

Briggs's (1997, 2005) critique of mobility research calls for mixed method approaches that can elucidate the process through which neighborhood context affects individual-level outcomes including mobility (as opposed to simply assuming, for example, that socialization or improved proximity to jobs lead to improved outcomes). The problem, he emphasizes, is that most mobility studies fail to distinguish between the direct effects of context and effects mediated by individual or social influences. Without an experimental design, many studies run the risk of confounding individual- and family-level factors with influences of the environment. (Even programs like MTO, which used a control group, relied on volunteer participants and risked selection bias.)

Findings related to the influence of context in one neighborhood, city or region may not apply in another location where contextual conditions and processes operate differently, and when contextual effects are identified it is often not clear what aspect of context is driving observed effects for which households, and most importantly, why. Finally, longitudinal studies of mobility outcomes are needed to understand the effects of these programs over time. In particular, Briggs (1997) expresses reservations about short-distance movers who maintain social proximity to the poor origination neighborhood, and he cites Quillian's (2003) study on exposure to poor neighborhoods to underscore his concern about "falling back" into poverty (Briggs, 2005, p. 4).

A longitudinal study of MTO participants in Baltimore (Clark, 2005) lends credence to these concerns. Citing positive outcomes reported in the MTO five-site interim summary report (Orr et al., 2003), Clark notes that this evaluation was based only on outcomes for the initial move; households "move again after their initial relocation, and those moves often undo the advantages of the initial residential move" (Clark, 2005, p. 15309). Not only may subsequent moves reverse gains, but Clark also points out that almost half of the MTO participants chose neighborhoods where poverty rates increased during the 1990s.

The Baltimore follow-up study compared participants' initial housing locations (moves occurring between 1994 and 1997) with their location in 2002 (Clark, 2005). Initial gains for the experimental group (in terms of reduction in neighborhood poverty rate as well as access to more integrated neighborhoods) were eroded by both subsequent moves and neighborhood change. Further, by 2002, initial differences between the experimental group (received special mobility counseling) and the regular Section 8

group (housing choices made independently) were no longer significant. Clark concludes, "Income and assets are critical and integral parts of the choice process, as are neighborhood composition preferences. Simply providing a housing voucher does not negate the powerful forces of concerns with neighbors, friends, and access to work in the choice process. Nor does it negate a tendency… for households to move short distances and often to neighborhoods with which they are familiar. The evidence of return to known and familiar neighborhoods is an indicator of the way in which housing choices are embedded in the larger urban structure" (Clark, 2005, p. 15312).

In response to the Clark study, Kingsley and Pettit (2008) reanalyzed data from the five-site Moving to Opportunity evaluation reported by Orr and colleagues (2003). Like Clark, they found that a large proportion of families in the experimental group had moved again after their initial move. Nonetheless, Kingsley and Pettit found that outcomes for the multiple movers in the experimental group were still better than those for the regular Section 8 group in terms of neighborhood poverty rate, minority concentration, social and housing conditions, and violent crime rate.

By analyzing longitudinal changes in tract-level poverty rates for census tracts in the five MTO cities, Kingsley and Pettit also discovered that lower-poverty tracts tended to become poorer during the 1990s while higher-poverty tracts tended to become less poor. Thus, over time, outcomes for MTO movers who initially went to lower-poverty neighborhoods would have tended to converge with outcomes for MTO movers who made less favorable initial moves. The authors conclude that while experimental group families who remained in their initial neighborhood had better outcomes than those who made multiple moves, the multiple movers in the experimental group still had more

favorable outcomes than the Section 8 group. They note that besides having been required to live in a non-poor neighborhood for at least one year, what made the experimental group different was that they had received relocation counseling and search assistance.

A study of a multi-ethnic sample of Housing Choice Voucher Program (HCVP) participants in Orange County, California (Basolo & Nguyen, 2005) corroborated some of Clark's observations but the researchers drew a different conclusion. Basolo and Nguyen refer to the HCVP as a "passive mobility program" (p. 303) because voucher holders choose where to use the voucher. Assuming the program should help participants gain access to better neighborhoods, the authors tested for constraints. They found that minorities had higher rates of mobility than non-Hispanic whites, and that movers generally lived in better neighborhoods. However, paired sample t-tests found no significant difference in pre- and post-move neighborhood conditions, and there was also no significant difference by race or ethnicity in the amount of change in neighborhood conditions as a result of moving.

Hierarchical linear regression analysis was then used to explore research questions about whether movers achieved better neighborhood conditions (operationalized with a six-item scale) than non-movers, and whether neighborhood conditions were associated with race and ethnicity net of other factors (gender, marital status, having children, age, education, household income and residing in Santa Ana where poverty is more concentrated). In a model with only sociodemographic characteristics as predictors, being married was a significant positive predictor of better neighborhood conditions while being Asian or black (as compared to non-Hispanic

white) and living in Santa Ana were negative predictors. Adding mobility status improved the model; the same sociodemographic predictors were significant and moving also significantly predicted better neighborhood conditions. Finally, the model was further improved by adding a measure of the amount of rent paid by voucher holders; rent amount was a highly significant and important predictor of neighborhood conditions. When the amount of rent was accounted for, all previously mentioned predictors except marital status and mobility were still significant (the effect of race/ethnicity strengthened). Additionally, being black and having more income became significant negative predictors for the first time, and being older and being a high school graduate became new significant positive predictors. Together, the variables in the final model explained 22 percent of the variance in neighborhood conditions.

In summary, for this population, after mobility, rent and sociodemographic characteristics were accounted for, minorities lived in worse neighborhoods. Asked to describe obstacles that impeded their mobility, minority participants in the study—and blacks in particular—were significantly more likely to state that there were too few homes to rent. Blacks and Hispanics were also more likely to state that landlords' reluctance to rent to Section 8 voucher holders was a problem. These constraints may explain why minority status predicted poorer neighborhood outcomes. Basolo and Nguyen note that "policy makers assume that given a choice and adequate information, voucher holders will move to neighborhoods with less poverty and overall better conditions" (p. 318). However, in addition to being constrained by ability to pay, this study suggests that structural barriers such as availability of units and landlord attitudes also affect outcomes, particularly for minorities.

While Clark (2005) also notes that the Section 8 voucher program's outcomes are limited by the inability of a large proportion of voucher holders to find a unit where they can use their voucher, he ultimately focuses more on householder's choices and less on structural constraints. In contrast, Basolo and Nguyen conclude, "The assumption that choice will result in deconcentrating poverty and minorities is not strongly supported by our data. Voucher holders in our sample face significant budget and supply constraints and, most likely, discrimination. The data suggest that some obstacles to mobility may affect minorities more than nonminorities" (p. 319).

There are also concerns about the impact of mobility programs—and assisted housing in general—on host neighborhoods. As described previously, some caution that mobility programs may exacerbate social problems at the metropolitan level by tipping receiving neighborhoods across a poverty threshold at which problems multiply more rapidly (Galster, 2002, 2005a, 2005b; Galster & Zobel, 1998; Kingsley & Pettit, 2005). Galster sets this possibility against what he perceives as limited evidence of housing mobility program effectiveness and inadequate understanding of how programs work when they do (Galster & Zobel, 1998).

Andersen's model (2002) of the connection between segregation and deprived neighborhoods conceptualizes neighborhood change and poverty concentration as a self-perpetuating, downward-spiraling process of deprivation and decay. In this model, deprived neighborhoods become magnets for poverty and social problems that repel people and resources. As poverty becomes more concentrated, both the place and the people within it are increasingly excluded. Rising social and spatial inequality promote further segregation, which in turn further concentrates poverty. Andersen explains that as

"visible signs of social and physical decay appear in neighbourhoods, and especially if they get a bad press, a rapid change will occur in how they are perceived by outsiders" (p. 155). Once labeled a bad place, such neighborhoods will be avoided by all but marginalized populations. Thus, the processes of social and spatial inequality are mutually reinforcing.

Freeman (2003), however, argues that a widely held assumption that assisted housing developments contribute to the concentration of poverty may be an example of stereotyping as opposed to having a basis in fact. Analysis of aggregated data can appear to support this idea, but Freeman argues that assisted housing is correlated with rather than a cause of concentrated poverty. Using PSID data linked with 1990 census data, Freeman examined in-migration and out-migration patterns for neighborhoods with assisted housing units. In bivariate analyses, there appeared to be a relationship between the presence of some forms of assisted housing, out-migration of neighborhood residents, and in-migration of poor residents. However, in multivariate models where characteristics of individuals and the neighborhood were accounted for, the presence of an assisted housing development typically did not exert a unique and added influence on migratory patterns. Freeman concludes that the results of his study are not consistent with the hypothesis that assisted housing developments cause poverty concentration.

A series of studies of changing conditions in an inner-ring suburb of Salt Lake City (B. Brown, Perkins, & Brown, 2003, 2004; G. Brown, Brown, & Perkins, 2004) provides promising evidence that the downward spiral described by Andersen (2002) can be reversed and that construction of affordable housing in a declining area can be the catalyst for a turnaround. The authors reframe the inertia of persons who are less likely

to move as place attachment. They found that place attachment was higher for home owners, long-term residents, minorities, those who perceived fewer incivilities (e.g., disorder, deterioration) on their block or their property, persons who were less fearful about crime in the area, and those who perceived a higher level of collective efficacy in the neighborhood (B. Brown et al., 2003). At the neighborhood level, blocks with more home owners, minorities, actual or perceived incivilities and less fear of crime had residents with higher place attachment on average.

The authors found that place attachment can be increased when improvements are made in a neighborhood (G. Brown et al., 2004). In the case they examined, a brownfields restoration project resulted in construction of a new, affordable subdivision in a blighted area. Subdivision in-movers increased average income in the area as well as the proportion of married residents and homeowners while still maintaining the ethnic diversity of the area. The new residents infused the area with higher levels of neighborhood confidence and place attachment. Importantly, this new construction of housing did not require demolition of any existing housing units so there was no net loss of affordable housing as is often the case in HOPE VI and other redevelopment projects.

In a follow-up study (B. Brown et al., 2004), the authors found evidence of spillover reductions in incivilities and crime after the new subdivision was built (although it should be noted that there was some increase in crime in areas more distant from the new development). This suggests further support for the notion that self-perpetuating declines fed by rising social and spatial inequality can be reversed with interventions that break patterns of segregation and isolation. The findings also substantiate claims that place-focused housing programs and policy can provide an effective alternative to

person-focused strategies by allowing residents to maintain and improve place attachments and promoting in-movement as opposed to the emptying out of distressed neighborhoods.

Noting that households' economic and social investments in their area of residence evolve over time, and that mobility experiences impact emotional and cognitive attachment, Bolan (1997, p. 16) utilized survey data from residents in and around Seattle, Washington, who participated in the 1978-1979 Seattle Community Attachment Survey to explore four micro-level types of pre-move influences on post-move attitudinal and behavioral attachment. These included: migration history, motivation for the move, time involved in the move, and spatial distance of the move. Measures of social position including age, education, marital status, having a child age six to 17, income and homeownership were used as controls.

For short-term residents (those who had been in their current residence for less than two years), adding the set of mobility experience variables resulted in a prediction model that explained more of the variance in attachment variables than the set of social position variables alone. Net of the influence of other predictor variables, those with a history of four to six moves were more satisfied with their current neighborhood than those with fewer moves (no significant difference for those with a history of more than seven moves). Those who chose their new residence because of housing needs (displacement, needing a home of different size or quality) or the neighborhood had a higher level of sentimental attachment to the new neighborhood and were more satisfied than those whose choice was based on family reasons (e.g., marriage, divorce/breakup/ death, proximity to family/friends, having a child). Respondents who moved six or more

miles were less sentimentally attached and less satisfied than those who stayed within the same census tract; those who moved from outside Seattle were also less sentimentally attached.

After controlling for social position, none of the mobility experience variables significantly predicted the number of organizations or associations in which residents participated. Those who moved for family reasons were less likely to interact with neighbors than those reporting any of the other reasons for moving to the new residence (housing, job, neighborhood/community). Respondents who moved for neighborhood or other reasons (e.g., transitional, chance, investment) reported knowing more neighbors by name than those who moved for family reasons. However, those who decided to move *from* their previous residence for reasons related to their housing needs or neighborhood reported knowing *fewer* neighbors by name than those who left for family-related reasons. For this reason, Bolan suggests that pull factors may be more important than push factors.

Those who moved one to five miles or from outside Seattle knew fewer neighbors by name than those who moved within the census tract, and those who moved six or more miles or were new to Seattle were also less likely to interact with neighbors. Bolan notes that since there were no differences between the groups on organizational participation, outsiders may have used more formal mechanisms to build social ties in new neighborhoods.

For the full sample (including households with longer terms of residence in their current home), the improvement in the model as a result of adding mobility experience variables declined. There were no longer any significant differences in attachment

predicted by number of moves and reasons for moving from the former residence. Those who spent longer looking for their new home reported knowing more neighbors than those who searched for five or fewer months; they were involved in more organizations than those who searched for one or fewer months. Respondents who moved for family reasons evaluated the neighborhood less favorably than those who moved for reasons related to housing needs or the neighborhood. They reported lower levels of sentimental attachment to the neighborhood than those who moved to the neighborhood because of characteristics of the neighborhood itself, and they knew fewer neighbors by name than those who moved for reasons related to housing cost, landlord reasons, or decision to buy/build/sell. Over time, within-tract movers had higher levels of sentimental attachment than longer distance movers or those returning from outside Seattle, and knew more neighbors than those returning from outside Seattle.

The fact that findings related to moving a shorter distance and for reasons explicitly related to the new home and neighborhood were sustained over time, and that spending longer in the search for new housing emerged as an important factor for longer-term residents, has housing policy implications. Those who are more familiar with an area and more intentional in choosing to live there appear to achieve higher levels of attachment that influence both their feelings about the neighborhood and their interaction with others. Movers who are displaced or must move quickly may have less attachment to their new homes.

Gentrification of revitalizing neighborhoods remains a concern in terms of displacement of poor residents, and Freeman (2005) addresses these apprehensions in his comparison of mobility patterns in gentrifying and non-gentrifying neighborhoods with

otherwise similar characteristics. Noting that gentrification is usually the presumed cause when a pattern of out-migration is observed for poor households in revitalizing areas, Freeman suggests that a benchmark indicator of typical mobility in similar non-gentrifying neighborhoods as well as information about movers' destinations is needed in order to draw more accurate conclusions.

Using PSID data from 1986 to 1999 and census data for 1980 and 1990, Freeman (2005) used discrete time logistic regression modeling to estimate the effect of living in a gentrifying neighborhood on the odds of moving or being displaced while holding constant other influences such as life cycle factors, housing conditions, length of residence, employment opportunities, income, household size, race/ethnicity, region of the country and year of move. He also used interaction terms to test whether gentrification had a greater impact on poor, renter households. Freeman found no statistically significant relationship between neighborhood gentrification and mobility after accounting for the influence of other predictor variables. Further, he found that the relationship between gentrification and displacement was at most modest (significant relationship but very small influence), and there was not a significantly elevated risk of mobility or displacement for poor renters. Similarly, there was a significant but small relationship between rent inflation and displacement, and no significant interaction effect for poor renters.

The odds of movement *into* a gentrifying neighborhood were higher for white, college-educated households with higher income, and lower for poor, black households with less education. Thus, Freeman concludes that neighborhood change is more

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strongly related to shifting characteristics of in-movers. Importantly, however, he also adds,

> The results presented here might tempt one to conclude that the lack of
> widespread displacement means that concerns about the disappearance of
> affordable housing are overblown. But the fact that lower socioeconomic status
> households are no longer moving into these neighborhoods implies a diminishing
> of housing opportunities for some. Households that would have formerly been
> able to find housing in gentrifying neighborhoods must now search elsewhere.
> Whether suitable conditions are available elsewhere will depend on the conditions
> of the particular housing market. But to the extent that there is a shortage of
> affordable housing, it would seem to matter little if those being affected are
> households who have to move because prices are increasing or households find
> some options closed off because prices are increasing. Moreover, although
> displacement may be relatively rare in gentrifying neighborhoods, it is perhaps
> such a traumatic experience to nonetheless engender widespread concern. (p. 488)

Newman and Wyly's (2006) mixed-methods study of gentrification in New York City echoes this cautionary observation. They warn that while it may be limited in scope or effect, displacement as a result of gentrification has contributed to increasing class polarization. Use of public data may underestimate displacement rates by omitting movers that relocate outside the study area, double up with other households, become homeless or enter shelters. Erosion of public housing and rent controls has further contributed to displacement. They note that urban restructuring may have a net negative impact on poor households that can only be observed over a longer time horizon and a

wider geographic space. Further, they describe strategies for remaining in gentrifying areas that were identified in qualitative interviews: 1) public interventions (e.g., rent control, assisted housing, inclusionary zoning) and 2) private strategies (e.g., poor householders compromising on quality/cost of housing or doubling up, informal housing arrangements, community organizing, affordable housing development). The authors emphasize that housing protection for poor households must accompany revitalization in order to protect against displacement.

Similarly, others caution of negative effects of gentrification, suggesting that there is a tendency to overemphasize positive aspects and ignore or miss negative consequences (Curran, 2007; Slater, 2006). In particular, renters and minorities may feel more vulnerable to displacement and less positive about neighborhood change (Sullivan, 2007). Along these lines, Lerman and McKernan (2007) suggest that creative use of financial instruments (e.g., tradable options on area rent price indices and insurance against local rent increases) can give low-income families a financial stake in neighborhood improvement and/or protect them from being priced out of a gentrified neighborhood. As a win-win proposition, the authors suggest that these financial instruments could also attract builders and developers to decaying neighborhoods by allowing them to hedge their risk.

Summary of Mobility Literature

Studies reviewed in this section have found that both individual and contextual variables influence mobility decisions and outcomes through complex interrelationships. Context can make important contributions at both the neighborhood and metropolitan level. In particular, mobility patterns vary by race/ethnicity. Structural constraints

appear to influence the mobility of minorities even after accounting for socioeconomic differences.

Changing conditions over time are important. Mobility may be an outcome of literal, geographic movement as well as shifting conditions at the individual and/or contextual level. Poor residents appear to be negatively affected by movement into neighborhoods that decline over time as well as by their tendency to return to poor neighborhoods; conversely, some poor households may find their circumstances improved through residence in revitalizing neighborhoods. However, it is unclear whether poor households generally benefit from neighborhood improvements since gentrification can result in displacement for some as well as a general trend toward increasing prices and a shortage of affordable housing opportunities at the metropolitan level. Thus, the leading edge for mobility studies is in modeling longitudinal changes in housing and neighborhood conditions and well as movement at the household level. The last section of this chapter will describe the theoretical framework for the dissertation study.

Conceptual Model

This study was based on a modified version of Galster and Killen's (1995) life decisions model (Figure 2). The model was adapted to show hypothesized influences on poor, renter households' locational attainment trajectories (residence in less poor neighborhoods over time). Figure 3 presents particular parts of the Galster and Killen model that were explored in this study as well as three additions to the model. Features of the model that were relevant to this study have been highlighted in red. (While other

features of the Galster and Killen model are still assumed to operate, they were not measured and analyzed in this study.)
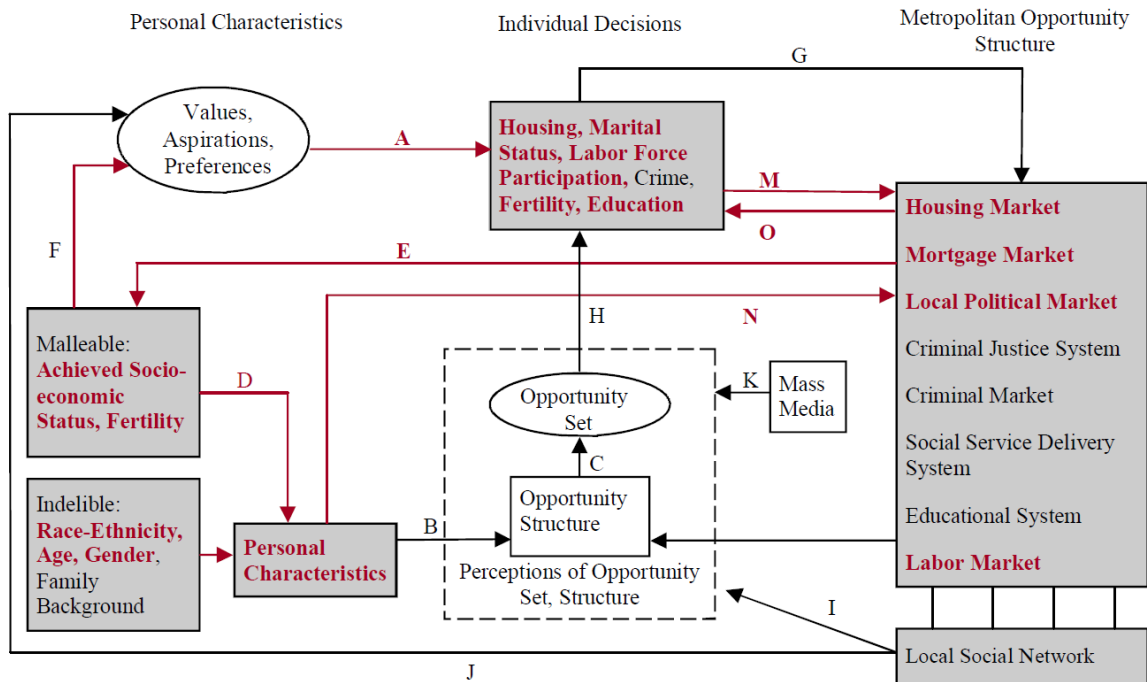

Figure 3. Focus areas of Galster and Killen's model of life decisions.

To adapt the model for a study focused on the locational attainment process, a new 'life choice' was added to the top middle box. The word 'housing' is used to represent an aspect of a household's locational attainment observed in their housing type, housing tenure and mobility. The criterion variable of interest in this study—residence in a less-poor neighborhood—was hypothesized to be influenced by housing-related choices as well as other individual decisions, personal characteristics and contextual conditions. Marital status also was added to the model as an important individual decision (presumably it was not included in the Galster and Killen model because they were focused on youth decision-making). Labor force participation, education and fertility are intrinsically related to locational attainment, and they were included in this study as life choices. (Education was reclassified as a malleable personal characteristic in this study

because repeated measures of the education variable were not available.). Galster and Killen's other life choice, crime, was not a focus of this study.

All of Galster and Killen's malleable and indelible personal characteristics except family background were included in this study as influences on life choices and outcomes. While values, aspirations and preferences presumably mediate decision-making, they were not measured or explicitly analyzed in this study. Similarly, subjective perceptions of opportunity are presumed to influence decision-making but were not operationalized in this study. Characteristics of the local social network were implicitly encompassed by the criterion variable (neighborhood poverty rate), but other characteristics of the local social network were not explicitly measured or modeled. Because this was a longitudinal study, living in a high-poverty neighborhood at earlier measurement occasions could plausibly have affected perceptions, values and decisions at later points in time. However, since the neighborhood poverty rate was the criterion variable in this study, it could not also be used as a predictor. Finally, the effect of the mass media on perceived opportunity was not included in this study.

Particular features of the metropolitan opportunity structure were selected for this study. Housing, mortgage and labor market conditions were included, but the criminal market was omitted. The 'political market' was interpreted as pertaining to elements of the political economy of a place (e.g., area poverty and segregation). Measures of the criminal justice, social service delivery and education systems were not included in this study. While they are assumed to impact individuals' life chances, their interrelationships are described by Galster and Killen (1995, p. 12) as "bound in an immensely complicated nexus of causal interrelationships." Therefore, for purposes of

clarity and simplicity these systems interrelations were not modeled in this study. Finally, to further simplify the model, only the effects of the predictor variables on the criterion variable were tested. Except for testing a few interactions, direct and indirect influences of predictor variables on one another were not quantified in this study.

A simplified model based on features and relationships selected from the Galster and Killen (1995) model is provided in Figure 4. The model depicts hypothesized relationships tested in this study. The boxes below the model diagram provide a key for interpretation of variables according to their level within the nested hierarchy of data elements in a multilevel model.
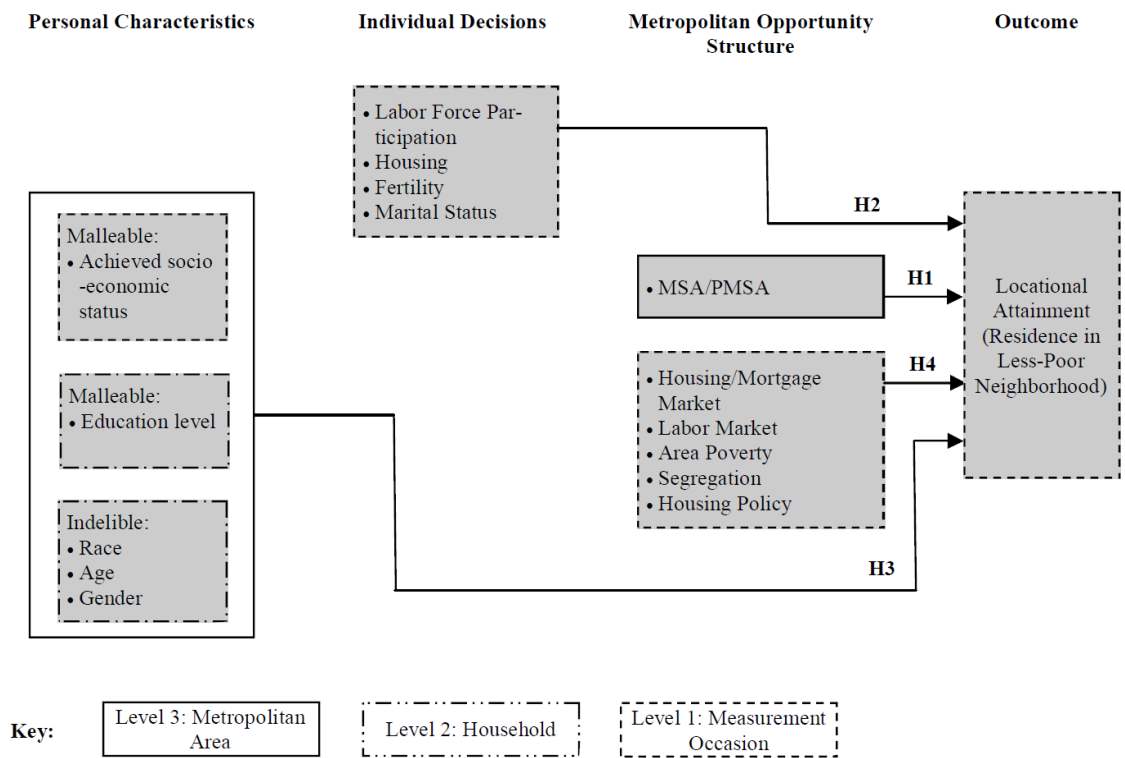
Personal Characteristics **Individual Decisions** **Metropolitan Opportunity Structure** **Outcome**

- Labor Force Par-
  ticipation
- Housing
- Fertility
- Marital Status

H2

Malleable:
- Achieved socio
  -economic
  status

- MSA/PMSA

H1

Locational
Attainment
(Residence in
Less-Poor
Neighborhood)

Malleable:
- Education level

- Housing/Mortgage
  Market
- Labor Market
- Area Poverty
- Segregation
- Housing Policy

H4

Indelible:
- Race
- Age
- Gender

H3

Key: Level 3: Metropolitan Area | Level 2: Household | Level 1: Measurement Occasion

Figure 4. Simplified locational attainment model.

Hypotheses to be tested in this study are identified in the above model:

- *H1: Poor renter households in different metropolitan areas will change differently over time in their locational attainment pattern with some locational attainment trajectories improving and some declining.*

- *H2: Poor renter households who make more facilitating individual decisions will show improved locational attainment trajectories over time.*

- *H3: Controlling for individual decisions, poor renter households with less marginalized personal characteristics will show improved locational attainment trajectories over time.*

- *H4: Controlling for individual decisions and personal characteristics, poor renter households living in metropolitan areas with more opportunities for locational mobility will show improved locational attainment trajectories over time.*

Hypothesized relationships of independent variables with the criterion variable are based on mobility theory and empirical findings of prior studies. Expected relationships are summarized in Table 2.

Table 2

Predictor Variables and Expected Relationship to Residential Mobility

Individual Decisions: Labor Force Participation	
Variable	Themes in Literature
Employment status, wages	Employment status, earnings and skill level influence mobility (Greenwood, 1985); single-income households are more mobile (Dieleman, 2001); husbands in dual-earner households are tied-stayers (Swain & Garasky, 2007); improvements in human capital increase locational attainment (Alba & Logan, 1993); entering the workforce, starting a career and retirement can trigger a move (Greenwood, 1985); job change, promotion or relocation can increase mobility (L. A. Brown & Moore, 1970; Dieleman, 2001); in

areas with a high unemployment rate, unemployed individuals are more likely to move (DaVanzo, 1978); job-related factors trigger longer distance moves (Speare, 1974); job changes can also trigger intra-urban moves (Dieleman, 2001); perception of improved opportunity for employment or income can trigger migration (Massey, 1990); being employed increases the odds of moving from a poor to a non-poor neighborhood, and receiving public assistance decreases the odds, even after controlling for other individual and contextual characteristics (South & Crowder, 1997); getting a job increases odds of moving from a poor to a non-poor neighborhood (South & Crowder, 1997)

Individual Decisions: Housing	
Variable	Themes in Literature
Housing tenure	Homeownership predicts higher neighborhood median household income (Logan et al., 1996); net of the effects of age, crowding, income, marital and minority status, homeownership lowers the odds of having plans for moving (Clark & Ledwith, 2005); homeowners are less mobile than renters (Crowder et al., 2006; B. A. Lee et al., 1994; Rossi, 1955; South & Deane, 1993); owning a home lowers the odds of moving even after accounting for age and life cycle events (Clark & Ledwith, 2005); homeownership has less effect on mobility for blacks than for whites (South & Deane, 1993); black renters are less mobile than white renters (South & Deane, 1993); owning a home decreases the odds of moving from a poor to a non-poor neighborhood even after controlling for other individual and contextual characteristics (Crowder & South, 2005; South & Crowder, 1997), but for those who do move from a poor neighborhood, housing tenure does not differentially affect the odds of moving to a poor versus a non-poor neighborhood (South & Crowder, 1997)
Housing assistance	Residence in public housing lowers the odds of moving (Crowder et al., 2006)
Mobility (length of residence)	Those with longer duration of residence are less likely to move (Crowder et al., 2006; B. A. Lee et al., 1994; South & Deane, 1993); duration of residence has a larger effect on mobility for renters than for homeowners (Speare, 1974); longer duration of residence has more effect on mobility for blacks than for non-blacks (South & Deane, 1993)

Individual Decisions: Fertility	
Variable	Themes in Literature
Number of children in household	Crowding increases thoughts about moving (Clark & Ledwith, 2005); the effects of crowding on plans for moving are different for Latinos than for whites (Clark & Ledwith, 2005); more people per household (crowding) increases mobility (Crowder et al., 2006; Rossi, 1955); poor families with fewer children may be more mobile (Powers & Thacker, 1975); change in family size can cause mobility (L. A. Brown & Moore, 1970; Greenwood, 1985; Rossi, 1955; Speare, 1974); if younger than 45, childless couples are more mobile (Long, 1972); large families with younger heads are more mobile

than large families with older heads (Morgan, 1973; Speare, 1974); having children in household decreases mobility (South & Deane, 1993); number of children is inversely related to mobility (Crowder et al., 2006); families with school-age children are less mobile (Long, 1972); having a greater number of children decreases the odds of moving from a poor to a non-poor neighborhood (South & Crowder, 1997); household crowding increases the odds of moving and also predicts higher odds of moving from a poor neighborhood to another poor neighborhood versus a non-poor neighborhood (South & Crowder, 1997); more persons per room increases the odds of moving from a poor to a non-poor neighborhood after controlling for other individual and contextual characteristics (Crowder & South, 2005)

Individual Decisions: Marital Status	
Variable	Themes in Literature
Marital status	Being married lowers the probability of moving (Crowder et al., 2006; Greenwood, 1985); couples are very likely to move in the year they marry (Speare, 1974); mobility is higher in early years of marriage (Speare, 1974); change in marital status increases mobility (L. A. Brown & Moore, 1970; Clark & Ledwith, 2005; Dieleman, 2001; Greenwood, 1985); separation, divorce and death trigger moves (Speare, 1974); divorced and widowed persons are more mobile than never married and married persons (South & Deane, 1993); becoming married increases the odds of moving from a poor to a non-poor neighborhood even after controlling for other individual and contextual characteristics (Crowder & South, 2005; South & Crowder, 1997)

Malleable Personal Characteristics: Achieved Socioeconomic Status	
Variable	Themes in Literature
Total family income	More income predicts higher neighborhood median household income, especially for non-Hispanic whites (Logan et al., 1996); controlling for age of housing unit reveals a negative influence of income on mobility (S. W. Lee, 1999); change in income or class can trigger a move (L. A. Brown & Moore, 1970); income limitations constrain mobility (Brummell, 1979); families with higher income are less mobile (South & Deane, 1993), but in a multivariate model that includes measures of household and parental wealth as well as demographic, life cycle, socioeconomic and geographic characteristics, family income and household wealth increase the odds of moving (Crowder et al., 2006); net of the effects of age, crowding, housing tenure, marital and minority status, higher income increases the odds of having plans for moving (Clark & Ledwith, 2005); higher income increases the odds of moving from a poor to a non-poor neighborhood even after controlling for other individual and contextual characteristics (Crowder & South, 2005; South & Crowder, 1997); an increase in income raises the odds of moving from a poor to a non-poor neighborhood (South & Crowder, 1997); having below poverty income significantly predicts exposure to poor neighborhoods (Quillian, 2003)

Malleable Personal Characteristics: Education Level	
Variable	Themes in Literature
Years of completed education	Human capital improvements increase locational attainment (Alba & Logan, 1993); more education predicts higher neighborhood median household income, especially for non-Hispanic whites (Logan et al., 1996); education level influences mobility, and multiple and/or return moves are associated with less education (Greenwood, 1985); completing school can trigger a move (Dieleman, 2001; Greenwood, 1985); more education increases odds of moving (Crowder et al., 2006); more education increases odds of moving from a poor to a non-poor neighborhood even after controlling for other individual and contextual characteristics (Crowder & South, 2005; South & Crowder, 1997); effect of education on movement from poor to non-poor neighborhoods differs by race (South & Crowder, 1997)

Indelible Personal Characteristics	
Variable	Themes in Literature
Race	Place stratification constrains mobility for racial/ethnic minorities (Alba & Logan, 1993; Logan et al., 1996); blacks are substantially more likely to return to a poor neighborhood within five years of leaving through another move or neighborhood change (Quillian, 2003); black exposure to/duration of residence in poor neighborhoods exceeds that for whites (Quillian, 2003); black race significantly predicts exposure to poor neighborhoods even after controlling for poverty status and female headship (Quillian, 2003); blacks and whites have equal mobility rates, but blacks are less mobile when demographic and life cycle variables are controlled (South & Deane, 1993); yet, a multi-ethnic California study found that Native Americans and blacks are more mobile than whites, Asians and Latinos (perhaps due to group differences in income or age) (Clark & Ledwith, 2005); when neighborhood context variables are controlled, whites are more likely than non-whites to think about moving (B. A. Lee et al., 1994); for renters, being a minority predicts lower mobility (S. W. Lee, 1999); blacks are less likely than whites to move from poor to non-poor neighborhoods even after controlling for other individual and contextual characteristics (South & Crowder, 1997); black households have higher odds of moving into poor neighborhoods and lower odds of moving out even after accounting for differences in demographic, socioeconomic, housing and contextual characteristics (Crowder & South, 2005)
Age	Mobility rates are highest in young adult years (Dieleman, 2001; Speare, 1974); mobility decreases with age (Crowder et al., 2006; B. A. Lee et al., 1994; Rossi, 1955; South & Deane, 1993; Speare, 1974); being older decreases the odds of moving even after accounting for housing tenure and life cycle events (Clark & Ledwith, 2005); mobility from poor to non-poor neighborhoods decreases with age even after controlling for other individual and contextual characteristics (Crowder & South, 2005; South & Crowder, 1997), but for those who do move from a poor neighborhood, age does not differentially affect the odds of moving to a poor versus a non-poor neighborhood (South & Crowder, 1997)

Gender	Gender influences decisions to move (Greenwood, 1985); female headship significantly predicts exposure to poor neighborhoods (Quillian, 2003); females are less mobile (South & Deane, 1993); when neighborhood context variables are controlled, females are less likely to think about moving (B. A. Lee et al., 1994); females are less likely than males to move from poor to non-poor neighborhoods (South & Crowder, 1997)

Opportunity Structure: Metropolitan Area Housing/Mortgage Market	
Variable	Themes in Literature
Homeownership	Poor or minority households may be marginalized through exclusion from homeownership opportunities (Somerville, 1998); housing tenure composition, turnover of housing stock, levels of new construction, price levels influence mobility (Dieleman, 2001);
Vacancy status	New housing construction increases mobility while an aging housing stock decreases mobility (S. W. Lee, 1999); housing production, pricing and location can decrease access for poor households (Somerville, 1998); high vacancy rates increase mobility for non-blacks but not blacks (South & Deane, 1993); living in a metropolitan area with a greater proportion of poor tracts and a greater proportion of housing units vacant lowers the odds of movement from a poor to a non-poor neighborhood after accounting for other individual and contextual characteristics (Crowder & South, 2005); a greater proportion of newly constructed housing in the metropolitan area increases the odds of movement from a poor to a non-poor neighborhood (Crowder & South, 2005; South & Crowder, 1997)

Opportunity Structure: Metropolitan Area Labor Market	
Variable	Themes in Literature
▪ Workforce characteristics (education) ▪ Professional employment opportunities ▪ Unemployment	Regional employment opportunity differences trigger migration (Greenwood, 1985; Massey, 1990); contextual differences such as labor market conditions and employment composition influence decisions about whether and where to move (Greenwood, 1985); in areas with a high unemployment rate, unemployed individuals are more likely to move (DaVanzo, 1978)

Opportunity Structure: Area Poverty	
Variable	Themes in Literature
▪ Median household income ▪ Per capita income ▪ Metropolitan area poverty rate	Living in a metropolitan area with a greater proportion of poor tracts lowers the odds of movement from a poor to a non-poor neighborhood after accounting for other individual and contextual characteristics (Crowder & South, 2005); living in a tract with a greater proportion of households in poverty lowers the odds of moving from a poor to a non-poor neighborhood after accounting for other individual and contextual characteristics (Crowder & South, 2005; South & Crowder, 1997)

Opportunity Structure: Segregation	
Variable	Themes in Literature
Segregation (white-black dissimilarity)	Housing discrimination increases residential segregation and poverty rates for blacks (Galster, 1991); place stratification constrains mobility for racial/ethnic minorities (Alba & Logan, 1993; Logan et al., 1996); residential segregation constrains black residential mobility and causes poverty concentration (Massey et al., 1994); over time, non-poor households have moved away from poor households, and white households have moved away from black households (Quillian, 1999); white movement out of neighborhoods as blacks move in causes them to become poorer and blacker over time (Quillian, 1999); over time, poor and black neighborhoods become poorer and blacker due to out-migration (Quillian, 1999); high levels of racial segregation decrease mobility, more of a barrier for blacks than for non-blacks (South & Deane, 1993); residential segregation by poverty status decreases the odds of moving from a poor to a non-poor neighborhood (South & Crowder, 1997); in metropolitan areas with high levels of class segregation, residents of poor neighborhoods are more likely to move to another poor neighborhood than to stay in the same poor neighborhood or move to a non-poor neighborhood (South & Crowder, 1997); residential segregation by race is associated with decreased odds of moving from a poor to a non-poor neighborhood, but after controlling for other individual and contextual characteristics the odds are higher for whites and not significantly different for blacks (South & Crowder, 1997)

Opportunity Structure: Housing Policy	
Variable	Themes in Literature
Housing policy (HOPE VI)	There has been a net loss of existing public housing units as a result of HOPE VI-funded demolition and revitalization projects (Turner & Kingsley, 2008); most original residents of a HOPE VI site relocate (Buron et al., 2007; Comey, 2007); some movers relocate to non-poor neighborhoods but others do not escape neighborhood poverty (Buron, 2004; Buron et al., 2007; Buron et al., 2002); 'hard to house' families are likely to remain in public housing (Popkin & Cove, 2007; Theodos et al., 2010); individual outcomes vary for original residents of the same HOPE VI site (Buron et al., 2002; Levy & Kaye, 2004); involuntary movers have poorer outcomes than voluntary movers (Goetz, 2003)

The next chapter will describe the plan for investigating the relative importance of these

variables in predicting locational attainment patterns for poor, renter households.

CHAPTER III

METHODOLOGY

Purpose of the Study

The overarching goal of this study was to develop a better understanding of the mobility patterns of poor residents of rental housing generally, and residents of government-assisted rental housing in particular. This research builds on the work of South and others (South & Crowder, 1997; South & Deane, 1993), using data from the Panel Survey of Income Dynamics (PSID) merged with census data as they did. It brings analysis forward to the 1990s, focuses on the social and spatial mobility of poor renters in particular, and explores the longitudinal impact of both housing assistance and metropolitan context in addition to individual characteristics and decisions.

An explicit goal of the U.S. Department of Housing and Urban Development (HUD) has been to reduce the concentration of poverty in urban areas and to shift from owning and operating public housing to providing rental vouchers to qualified low-income households (Cuomo, 1998; Donovan, 2009, July 14; National Commission on Severely Distressed Public Housing (U.S.), 1992). Because this study used a nationwide longitudinal data set, it provides important information about characteristics and conditions that predict mobility out of poor neighborhoods in a wide variety of metropolitan areas. Mobility patterns for all types of renter households were analyzed as well as specifically testing for the effects of particular types of housing assistance. Since the data set included repeated measures of the same households, it allowed for analysis of

trends in mobility patterns as federal housing policy shifted over time. This study also explored the housing policy assumption that providing vouchers for use in market-based rental housing (as opposed to multi-unit public housing facilities) results in better outcomes for poor families in terms of their neighborhood poverty rate.

A second main goal of this study was to identify the relative importance of individual and contextual variables in relationship to poor, renter households' locational attainment trajectory. This longitudinal study used multilevel modeling to analyze change trajectories. As such, it contributes to the understanding of the relative importance of factors at various levels over time while accounting for the hierarchical structure of the data.

Recent federal housing policy emphasis on relocating poor households to non-poor neighborhoods is grounded in human capital theory, human ecology theory, social learning theory and social capital theory (Joseph et al., 2007). In other words, it is assumed that relocation changes a household's social environment and provides greater proximity to mainstream (non-poor) opportunities and influences. This, in turn, is presumed to increase human and social capital and improve family and community outcomes. However, it is possible that outcomes vary from city to city and are conditioned on characteristics of the metropolitan opportunity structure. That is, a one-size-fits-all federal housing policy may 'work better' in some cities than in others (J. Walsh, personal communication, February 16, 2007). Further, it is possible that some households attain residence in less poor neighborhoods through changes in the neighborhood as opposed to actual movement to a new housing unit. Multilevel analysis

of longitudinal data that links contextual characteristics to household-level data allowed for exploration of such questions.

Research Questions

The main research questions were as follows: a) *Do poor, renter households exposed to different metropolitan opportunity structures change differently over time in their locational attainment patterns?* and b) *Do variations in individual decisions, personal characteristics and opportunity structures predict differences in locational attainment patterns?*

As noted in the previous chapter, hypotheses that were tested in this study are:

- *H1: Poor renter households in different metropolitan areas will change differently over time in their locational attainment patterns with some locational attainment trajectories improving and some declining.*

- *H2: Poor renter households who make more facilitating individual decisions will show improved locational attainment trajectories over time.*

- *H3: Controlling for individual decisions, poor renter households with less marginalized personal characteristics will show improved locational attainment trajectories over time.*

- *H4: Controlling for individual decisions and personal characteristics, poor renter households living in metropolitan areas with more opportunities for locational mobility will show improved locational attainment trajectories over time.*

Research Design

Besides being longitudinal in nature, the data analyzed in this study had a hierarchical structure. It included panel survey data from a random sample of U.S. households linked with census and other data for respondents' neighborhoods and metropolitan areas. As is depicted in Figure 5, repeated survey measurement occasions (Level 1) were nested within households (Level 2), which in turn were nested within metropolitan areas (Level 3). Multilevel modeling was the appropriate analytical methodology for this study because there were data elements at three levels within a hierarchical structure. This approach allowed for addressing questions related to individual change over time, differences between households in outcomes and in change over time, and differences between metropolitan areas in household outcomes and in change over time (Singer & Willett, 2003).
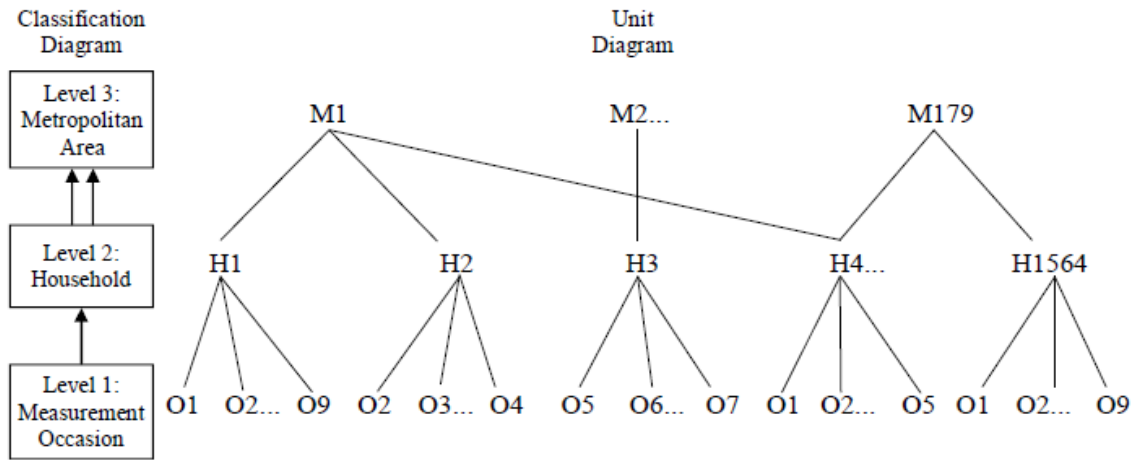
Figure 5. Multilevel structure and classifications.

On the left side of the above figure, the classification diagram depicts the nested structure of the data. A single arrow between Levels 1 and 2 indicates that repeated measurements (survey occasions) were nested within households and measurement

occasion data were unique to a particular household. The double arrow between Levels 2 and 3 indicates that this was potentially a multiple membership model. Households were nested within as many as four metropolitan areas (i.e., households that moved from one metropolitan area to another during the study period were influenced by more than one metropolitan area). To test a multiple membership model, weights were used to indicate the proportion of measurement occasions that households spent in each metropolitan area (Browne, 2009; Rasbash, Steele, Browne, & Goldstein, 2009).

The unit diagram on the right side of the figure provides examples of how Level 1 data (measurement occasions) and Level 2 data (households) data were clustered. There were 179 metropolitan areas represented in the study (Level 3). Each metropolitan area was home to from one to 100 of the Level 2 units (households). For example, Figure 5 shows that three households lived in metropolitan area M1, one household lived in metropolitan area M2, and two households lived in metropolitan area M179 during all or part of the study period. Household H4 is an example of a case that lived in more than one metropolitan area during the study period (both M1 and M179).

At Level 2, there were 1564 households represented in the study, and each of them had been surveyed on from three to nine occasions between 1990 and 1999. For example, the five households depicted in the above diagram were surveyed on nine, three, three, five and nine occasions respectively. Households H2, H3 and H4 are examples of cases that entered the study population after the first year of the study period and/or left the study population before the last year of the study period.

Use of multilevel modeling, as opposed to conventional multiple regression, avoided violation of the assumption of independence of errors (Tabachnick & Fidell,

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2001), and the consequent underestimation of standard errors and inflation of the Type I error rate (Kreft & de Leeuw, 2006). The independence of errors assumption would have been violated at Levels 2 and 3 by using conventional regression modeling since repeated measures of the same case came from the same household, and households from the same metropolitan area shared the same contextual influences (Goldstein, 1999). Therefore, correlated error terms would be expected.

Luke (2004, pp. 7-9) defines a multilevel model as "a statistical model applied to data collected at more than one level in order to elucidate relationships at more than one level… The goal of a multilevel model is to predict values of some dependent variable based on a function of predictor variables at more than one level." When separate variance components are included for each level, it is possible to model fixed and random effects at all levels, and to identify factors that account for between-group differences as well as the extent to which between-group differences are greater for certain types of groups (i.e., households or metropolitan areas) (Goldstein, 1999). In this study, for example, multilevel modeling allowed for analysis of whether there were between-metropolitan area differences in household-level locational attainment. In other words, did context (the geography of opportunity) matter? The study also provided an opportunity to explore between-household differences.

Because multilevel modeling can handle unbalanced designs and missing data (Luke, 2004), its flexibility was useful in this study. As noted above, the number of multi-year panel survey responses and the years in which these occurred varied across respondents. Further, as observed in Figure 5, varying numbers of households were

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clustered in the different metropolitan areas at Level 3. On average, each metropolitan area contained about ten households (median of three).

Data Sources

The primary source of data for this study was the Panel Study of Income Dynamics (PSID) (University of Michigan Institute for Social Research, 1968-2009). The PSID is a longitudinal survey that began in 1968. The original study population included a cross-sectional, national sample of approximately 3000 households in the 48 contiguous states of the U.S. These cases are referred to as the SRC (Survey Research Center) subsample. An additional national sample of approximately 2000 low-income households was drawn from the population of households that had participated in the U.S. Office of Economic Opportunity's 1966-1967 Census study, the Survey of Economic Opportunity. These cases are referred to as the SEO subsample. This subsample only included SEO families with heads of household under 60 who lived in Standard Metropolitan Statistical Areas (SMSAs) in the north and non-SMSAs in the south. Due to funding limitations, the SEO subsample was reduced in 1997, and the effect of that reduction on the population for this study will be discussed in the next chapter.

Following the initial PSID interviews in 1968, respondents were re-interviewed annually using a structured survey (in person or by telephone) until 1997. After 1997, the interview schedule changed to alternate, odd years. As household members formed new households over time (e.g., a child matured and moved to a new home, a couple divorced, etc.), these households became new cases and increased the number of survey respondents. By 2007, the data set included 8289 observations (households) and 5069

variables. (For this study, PSID households that were in poverty and living in rental housing in a metropolitan statistical area (PMSA/MSA) between 1990 and 1996 were selected and followed through 1999.)

The PSID data set provides weight variables that can be used to account for unequal selection probabilities for the subsamples, differential attrition across waves of the study and the sample reduction in 1997. However, weights are not available for families that were reinstated after being selected for removal as part of the 1997 sample reduction. Reporting on their analysis of PSID data, South and Crowder (1997, p. 1058) make the following observations about PSID weights:

> A problem arises with the use of weights for PSID respondents who were not members of, or children born into, the original panel families. These 'nonsample individuals' receive individual weights of '0' and are therefore excluded from weighted analyses. We prefer the unweighted analyses because they can include these nonsample individuals and thus maximize the effective sample size. Moreover, because the sampling weights are primarily a function of independent variables included in the models, the unweighted regression analyses are preferred (Winship & Radbill, 1994). In any event, weighted analyses that exclude individuals with zero weights produce substantively similar results.

Following South and Crowder (and using the same demographic and socioeconomic predictors: race, gender, age, years of school, number of children, income), sampling weights were not used in this study. While descriptive statistics should perhaps be viewed conservatively as a description of the study population, findings of multivariate analyses presumably are generalizable.

In the PSID user's guide, Hill (1992) outlines the multifaceted strategy used to assure data quality including comprehensive data editing and strategies to maximize response rates and reduce attrition bias. Annual response rates have generally exceeded 95 percent. However, attrition has had a cumulative effect over time. For example, Hill notes that by 1988 the response rate for 1968 household members was 56 percent. Even a small annual non-response rate could lead to attrition bias. To address this concern, a number of studies have assessed PSID data quality and generally support its representativeness, validity and freedom from non-response bias (Hill, 1992). Further, since this study used survey responses from 1990 and later, cumulative non-response concerns were minimized.

Most PSID data were publicly available in a de-identified online database that includes information related to demographics, education, employment history, income and housing (http://psidonline.isr.umich.edu). Geocode match files that made it possible to identify each respondent household's census tract and metropolitan area were obtained with institutional review board approval through a secure data use contract with the University of Michigan. Tract-level poverty data were available from the U.S. Census Bureau. Geographic identifiers from the PSID geocode match files were used to determine the area poverty rate for the tract in which each household resided at each annual interview. Data from the Long Form Summary Tapes Files for the 1990 and 2000 censuses were used.

Census data for 1990 was normalized to 2000 boundaries by downloading it from the Neighborhood Change Database (NCDB) (GeoLytics, 2003). This GeoLytics database standardizes tract boundaries so that tract-level poverty information for 1990 is

directly comparable to 2000 data. Census data for 2000 were obtained from the American FactFinder site of the U.S. Census Bureau (http://factfinder.census.gov). Using normalized tract boundaries also allowed poverty rates for intercensal years to be estimated using linear interpolation.

Metropolitan area data were drawn from publicly available data files at the American Communities website of the Lewis Mumford Center for Comparative Urban and Regional Research at the University of Albany, SUNY (http://mumford.albany.edu/census/data.html). These included information about segregation (white-black dissimilarity index) and metropolitan areas' opportunity structure (the Mumford Prosperity Index of metropolitan economic viability, which summarizes underlying employment, economic and housing indicators). Both the dissimilarity index and MPI index are compiled from census data. The same geocode matching process was used to link metropolitan area data to each household's survey responses. Finally, information related to funded HOPE VI demolition and revitalization projects in the metropolitan areas was obtained through personal communication with Dr. Ed Goetz at the University of Minnesota, Humphrey Institute of Public Affairs (July 27, 2007) and from the U.S. Department of Housing and Urban Development website (http://www.hud.gov/offices/ pih/programs/ph/hope6).

Sample Selection and Size

Level 3 (Metropolitan Level)

At the time of the 2000 Census, there were 331 metropolitan areas in the U.S. (Logan, 2002). In this study, 179 MSAs were represented. As will be discussed in the next chapter, two alternatives for grouping households at Level 3 were explored. The

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first was a multiple membership model that clustered households in one or more MSAs. The second approach was to link each household to just one MSA, the household's *first* MSA of residence during the study period (or its *initial context*). Because this alternative provided a more parsimonious model that fit the data equally well, this was ultimately the approach that was used for building the prediction models. (Details of this process will be provided in Chapter IV.)

Using the first MSA of residence as the unit identifier at Level 3 resulted in 151 units (MSAs) at Level 3. Within each of these MSAs, from one to 93 households were clustered (mean of 10.4 households, median of three). Forty-four MSAs (29.1 percent) were home to only one household. In the past, the presence of small clusters in multilevel models has precipitated concern about potential impacts on point and interval estimates. However, a Monte Carlo study that simulated 1000 data sets across 5760 conditions (including various proportions of singletons and various sample sizes at the higher level) found no substantial convergence problems, very low levels of statistical bias, Type I error rates close to the nominal alpha level, no effect on power with a large number of higher level units, and no consequential impact on fixed effects estimation for lower level predictors (Bell, Ferron, & Kromrey, 2008).

The simulations did indicate that the robustness of confidence interval coverage for higher level predictors may be impacted if the sample size at the higher level is small and/or the proportion of singletons is high. However, this finding was not relevant to this study because no predictors at Level 3 were included in the model (metropolitan area characteristics were time-variant and therefore at Level 1). The authors note that their results are encouraging news for social science researchers who often encounter sparse

data structures because individual or household units are dispersed across a large number of geographical units (e.g., census tracts or metropolitan areas).

Level 2 (Household Level)

The following criteria were used to select cases from the PSID data set. First, only data from surveys completed between 1990 and 1999 were used. The study began in 1990 because it was in that decade that federal housing policy was changing in response to geographic poverty concentration. The study ended in 1999 because the latest available tract-level poverty rates—the criterion variable—were from Census 2000.

Second, for information related to individuals, only data pertaining to the person identified as the head of the household were used. (Since information on *all* family members is captured in the PSID data set, limiting the analysis to heads of household assured that data elements were unduplicated.) Also, only data for households with white and black heads of households were used. Originally, it was hoped that data from the PSID Latino sample, which was added in 1990 and 1992, also could be used. However, all PSID summary income variables are missing for the Latino sample from 1994 to 1997, and without those cases there were not enough non-white, non-black cases to analyze separately.

Third, to allow for longitudinal analysis of change and estimation of growth trajectories, only households that completed at least three surveys during the 1990 to 1999 interval were included (Singer & Willett, 2003). This means that although cases were *followed* until 1999, no new cases could be *added* after 1996. Because this was a study of poor, renter households, the eligibility criteria for entering the study in any of the years between 1990 and 1996 were a) having total family income below the federal

poverty threshold and b) being a renter (or in the case of those who did not pay rent, neither owning nor renting). After the first year of eligibility, households could remain in the study regardless of poverty status or housing tenure.

On the household level (Level 2), a total of 1564 households were included in the study. Survey information was available for each household on from three to nine measurement occasions. Some households entered the study after 1990 (newly eligible or newly formed households), and some dropped out before 1999 (attrition, not followed by PSID due to following rules for split-offs from original sample families). However, multilevel modeling can be used in situations where measurement occasions occur at different times and/or there are a different number of measurement occasions for particular cases (Luke, 2004).

Level 1 (Measurement Occasion Level)

In order to include data collected on a particular measurement occasion, the state, county and tract-level geocode data had to be available (otherwise the criterion variable, neighborhood poverty rate, would have been missing). Between 1990 and 1994, less than one percent of all PSID households are missing geocode information. Between 1995 and 1999, all have been geocoded.

The household also had to be living in an MSA (and an MSA geocode had to be available) in order to link the household to an MSA cluster at Level 3 and include time-variant predictors related to characteristics of the MSA. There were 292 measurement occasions with no MSA geocode. As a result of deleting these measurement occasions, 46 households that would otherwise have been included in the study were dropped because they no longer had at least three measurement occasions.

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The final data set included a total of 8650 measurement occasions across all 1564 households in all years. As previously described, each household in the study had data for at least three and as many as nine measurement occasions between 1990 and 1999. About 37 percent of households in the study had three or four measurement occasions, 28 percent had five or six measurement occasions, and 34 percent had seven or more.

Power Analysis

Statistical power is the probability of rejecting a false null and accepting a true research hypothesis. Power is affected by sample size (more power with larger samples), significance level (more power with lower significance level), effect size (more power with larger association or difference), type of hypothesis (more power with directional hypothesis), and variability (reasonably high variability in both predictor and criterion variables is desirable) (Rosenthal, 2001). With multilevel modeling, an additional consideration is the proportion of variance in the criterion variable that is between households (Level 2) and between metropolitan contexts (Level 3). This proportion of variance in multilevel modeling is referred to as the intraclass correlation. At least a small intraclass correlation of 0.05 should be present for adequate power (Kreft & de Leeuw, 2006).

Sample size in multilevel models refers to the number of units at each level. Simulation studies (Kreft & de Leeuw, 2006; Snijders, 2005) suggest that large samples are needed for adequate power in multilevel models, and the number of upper level units included is more important than the number at lower units. Kreft and de Leeuw recommend that at least 20 units are needed at the highest level to detect cross-level interactions when group sizes are large. In this study, there were 151 metropolitan

contexts at Level 3, 1564 households at Level 2, and 8650 measurement occasions at Level 1, suggesting sufficient power in terms of sample size.

As is the convention, significance levels for this study were set at 0.05, and the model sought to detect at least a medium effect size (0.04) and achieve at least 80 percent power. As will be discussed in the next chapter, significant small effect sizes were detected for many of the predictors, indicating that power was sufficient to detect even small effects. Most of the hypotheses related to the individual variables were directional, therefore resulting in more potential power. As is detailed in the next chapter, the different variables used in the model had sufficient variability, and intraclass correlations exceeded 0.05.

Operationalization of Variables

Unit and Time Identifiers

The data file for this study included unit identifiers for each of the three levels of analysis. At Level 3 (metropolitan level), the unit identifier was the geocode for the MSA. Households had a MSA geocode for each measurement occasion. The geocode for the first MSA of residence was used as the Level 3 identifier. At Level 2 (household level), the unit identifier was the case identification number. At Level 1 (measurement occasion level), the unit identifier was a number assigned to each of 8650 unique measurement occasions (sequential when the data file was sorted by case identification and survey year). The time identifier was the survey year in which particular measurements were obtained (0=1990, 1=1991… 9=1999).

Criterion Variable

  Locational attainment (measurement occasion level). Locational attainment
was measured at Level 1 (measurement occasion level) and was defined as achieving
residence in a less poor neighborhood (census tract) over time. This could have occurred
through an actual change of residence or through a change in a neighborhood's poverty
rate between measurement occasions. Table 3 presents the sources of data for the
criterion variable and its operationalization.

Table 3

Operationalization of Locational Attainment

Locational Attainment: Poverty Status of Neighborhood		
Variable	Data Source	Operationalization
Pctpoor: Neighborhood (tract-level) poverty rate	Census, Summary File 3 sample data (U.S. Census Bureau); PSID Geocode Match Data	• Tract-level poverty rate from census data matched to households at each measurement occasion using geocode for household address (FIPS codes for state, county and census tract) • 1990 census data normalized to 2000 boundaries using the GeoLytics Neighborhood Change database • Tract-level poverty rate values for 1991-1999 estimated using linear interpolation between known values for 1990 and 2000 from the decennial census

Predictor Variables

  Predictor variables at two levels were used. These included indelible personal
characteristic variables at Level 2 (household level), and time-variant individual
decisions, malleable personal characteristics and metropolitan opportunity structure
characteristics at Level 1 (measurement occasion level). Each of these categories of
predictors included several variables, which will be operationalized in the three sections
below.

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Individual decisions (measurement occasion level). Individual decisions were measured at Level 1 (measurement occasion level) using variables related to labor force participation, housing, fertility and marital status factors. Table 4 presents the sources of data for these variables and their operationalization.

Table 4

Operationalization of Individual Decisions

Labor Force Participation of Head of Household		
Variable	Database	Operationalization
Empcat: Employment status of head of household (1=employed, 2=unemployed, 3=retired, 4=disabled, 5=not employed by choice (keeping house, student), 6=other (workfare, prison, jail, DK or refused)	PSID, Main Family Data	• Used PSID B1 variable (survey question: We would like to know about what you do—are you working now, looking for work, retired, keeping house, a student, or what?) • In multivariate models, employed was reference category
Headinctrsqr: Head's wages, trimmed at 99th percentile, square root transformation	PSID, Main Family Data	• Includes earnings from wages, salaries and extra jobs
Housing Type for Household		
Variable	Database	Operationalization
Hten: Housing tenure (1= owns or is buying home, either fully or jointly; mobile home owners who rent lots included here; 5=pays rent; 8=neither owns nor rents)	PSID, Main Family Data	• Used PSID A15 Own/Rent or What variable (survey question: Do you own the home/apartment, pay rent, or what?) • No owners in first year of study because eligibility criteria specified renter to enter study (either pays rent or neither owns nor rents) • In multivariate models, owns or is buying was reference category
Assthsg: Housing assistance (0=no assistance; 1=public housing; 2=government subsidized housing)	PSID, Main Family Data	• Public housing: ○ Used PSID A30 and A34 In Public Ownd Proj? variables (survey question: Is this house/apartment in a public housing project, that is, is it owned by a local housing authority or other public agency?) ○ PSID survey contains skip pattern on housing questions: (1) respondents first asked whether they own, rent or what, (2) renters and those

who neither own nor rent then asked whether they live in public housing (thus two PH variables in PSID—one for renters and one for those who neither own nor rent)

- o If yes to either PSID PH variable, then coded housing assistance variable 1=public housing
- Government subsidized housing:
  - o Used PSID A31 and A35 Govt Pay Part/All Rent? variables (survey question: Are you paying lower rent because the federal, state or local government is paying part of the cost?)
  - o PSID survey contains skip pattern on housing questions: (1) respondents asked whether they own, rent or what, (2) renters and those who neither own nor rent then asked whether they live in public housing, (3) those *not in public housing* then asked about subsidized housing (thus two SH variables in PSID—one for renters and one for those who neither own nor rent)
  - o If yes to either PSID SH variable, then coded assisted housing variable 2=government subsidized housing
- No assistance: Cases not in public housing or government subsidized housing coded 0=no assistance
- Self-reported housing type data may have accuracy limitations (S. J. Newman & Harkness, 2002). To assess reliability, self-reported data were matched with data for same cases available only for 1990 to 1995 only in the PSID Assisted Housing (AHD) dataset (accessed with institutional review board approval through a secure data use contract with the University of Michigan). In the AHD, assisted housing type was coded by geocode match of households' addresses to HUD addresses.
  - o Findings for public housing:
    - § 30-53% of cases self-reporting PH not found in AHD dataset, 20-26% coded SH in AHD dataset, and 27-40% had coding matches; a small number (3-9 cases per year) were coded as PH in AHD dataset although they had self-reported no housing assistance
    - § Some respondents self-reporting PH actually may have been in SH but due to interview skip pattern respondents weren't asked whether in PH *or* SH; rather, only cases responding no to PH were asked about SH
    - § Unclear why 30-53% of self-reported PH cases were not found in AHD dataset at all (Shroder and Martin (1996) found that in the American Housing Survey, 20% of those who reported they were in assisted housing actually were not)
  - o Findings for government subsidized housing:
    - § 74-85% of cases self-reporting SH not found

in AHD dataset, 1-5% coded PH in AHD dataset, and 11-23% had coding matches; a small number (15-31 cases per year) were coded as in SH in AHD dataset although they had self-reported no housing assistance
- Unclear why most self-reported SH cases were not found in AHD dataset at all (Shroder and Martin (1996) found only 20% inaccurately reported assistance); perhaps cases self-reporting government assistance but not in AHD were in scattered site or Section 8 properties that were not included in the geocoded HUD address list
- Because AHD date were not available for entire study period, PSID self-reported information was used; it was unclear which source of information would have been more accurate
- In multivariate models, no assistance was reference category

Variable	Database	Operationalization
Moved: Mobility since prior survey (0=no, 1=yes)	PSID, Main Family Data	• Used PSID A38 Moved Since [Date]? variable (survey question: Have you (head) moved any time since [month of last interview] of [year of last interview]?) • In multivariate models, no move was reference category
MSA_Change: Moved to a different MSA since prior survey (0=no, 1=yes)	PSID Geocode Match Data	• Coded 1=yes if FIPS code for PMSA/MSA had changed since prior survey year • In multivariate models, no change was reference category

Fertility		
Variable	Database	Operationalization
ChildCat2: Number of children in household (0=0 children, 1=1-3 children, 2=4+ children)	PSID, Main Family Data	• Used PSID # Children in Family Unit variable (count of persons age 17 or less in the family unit whether or not actually children of the head of household or wife/partner) and recoded to three categories • In multivariate models, no children was reference category

Marital Status of Head of Household		
Variable	Database	Operationalization
Unmarried: Not married or permanently cohabiting (0=no, 1=yes)	PSID, Individual Data by Years	• Used PSID Marital Pairs Indicator variable to identify heads of household that were linked with another individual as a 'spouse' in a married or permanently cohabiting couple • Reverse coded this variable; persons not linked to a 'spouse' were coded 1=yes (unmarried) • In multivariate models, married was reference category

Personal characteristics (measurement occasion and household levels).

Personal characteristics were measured at Level 1 (measurement occasion level) and

Level 2 (household level). Malleable personal characteristics included achieved

socioeconomic status (family income measured at Level 1, the measurement occasion

level) and the head of household's education level (years of education measured at Level

2, the household level). It should be explained that education level was not at Level 1

(measurement occasion level) because the PSID survey only requests the head of

household's education level at the first interview and in the event of a change of

household for the head. While a head of household could have returned to school during

the survey period, a change in education level would most likely not have been captured

in the data collection process. Thus, in this study education did not vary across

measurement occasions.

Three indelible personal characteristics were measured at Level 2 (household

level). These were the head of household's race, age and gender. Table 5 presents the

sources of data for all malleable and indelible personal characteristics variables and their

operationalization.

Table 5

Operationalization of Personal Characteristics

Malleable Personal Characteristics: Achieved Socioeconomic Status		
Variable	Database	Operationalization
Faminctrsqr: Total family income in prior year, trimmed at 99th percentile, square root transformation	PSID, Main Family Data	• Includes taxable income of head and wife or permanently cohabiting partner, taxable prorated income of others in family unit, transfers of head and wife/partner and prorated transfers of others ○ *Taxable income* includes wages, farm income, unincorporated business income, bonuses, overtime, commissions, income from professional practice or trade, income from

farming or market gardening, income from roomers and boarders, income from rent, dividends, interest, trust funds, and royalties, alimony and income from other assets
- o *Transfer income* includes AFDC, SSI, other welfare, social security, VA pension, other retirement, pensions and annuities, unemployment, workers' comp, child support, help from relatives and other transfer income
- Values bottom coded at $1

Malleable Personal Characteristics: Education Level		
Variable	Database	Operationalization
EdCat: Years of completed education for head of household (0=missing, 1= <12, 2=12, 3=13+)	PSID, Individual Data by Years	- Used PSID Years Completed Education variable (treats GED as equal to 12) and recoded to four categories - Although this variable exists in each year, the question about completed education is not asked annually for heads (the information is carried forward unless a head becomes part of a new household) - For cases with more than one value over time (<3%), highest value used. Missing values (~3% with no education information in any year) coded 0 - In multivariate models, 13+ was reference category

Indelible Personal Characteristics		
Variable	Database	Operationalization
RaceBW: Race of head of household (0=white, 1=black)	PSID, Main Family Data	- Used PSID Race of Head (survey question: What is your race? Are you white, black, American Indian, Alaska Native, Asian, Native Hawaiian or other Pacific Islander?) - If race not coded consistently over time (< 3% of eligible cases), case was coded 'other' (and eventually dropped) - Latino sample could not be included due to missing summary income variables in 1994-1997 - All cases not white or black dropped due to insufficient number of other minorities to analyze separately (< 5%) - In multivariate models, white was reference category
Age1990: Head of household's age in 1990	PSID, Individual Data by Years	- Constructed variable equal to 1990 – value on PSID Year Individual Born variable - If year of birth was not coded consistently over time, the mode of recorded values was used - Because the relationship between age and the criterion variable was not linear, age-squared was also included in multivariate models

| **Gender:** Gender of head of household (0=male, 1=female) | PSID, Individual Data by Years | • Used PSID Sex of Individual variable
• In multivariate models, male was reference category |

Metropolitan opportunity structure (measurement occasion level). The metropolitan opportunity structure was measured at Level 1 (measurement occasion level) and operationalized with segregation, housing and mortgage market, labor market, area poverty and housing policy measures. For segregation (dissimilarity index) and metropolitan economic viability (Mumford Prosperity Index of housing, mortgage, labor and poverty measures) the mean of the 1990 and 2000 index values was used (i.e., these were overall measures of metropolitan statuses for the decade). However, because some households moved between MSAs during the study period, these variables were coded at each measurement occasion according to where the household was living at that time. This made them Level 1 variables. Table 6 presents the sources of data for all metropolitan opportunity structure variables and their operationalization.

Table 6

Operationalization of Metropolitan Opportunity Structure Characteristics

Metropolitan Opportunity Structure: Segregation		
Variable	Database	Operationalization
Dismean: Mean of 1990 & 2000 values on white-black dissimilarity index	White-Black Dissimilarity Index; PSID Geocode Match Data	• Used data from Lewis Mumford Center for Comparative Urban and Regional Research • The dissimilarity index measures whether one group is distributed across census tracts in a metropolitan area in the same way as another group ○ Value indicates proportion of members of one group that would need to move to a different tract in order for the groups to be equally distributed • Values range from 0-100; $\geq$60 considered very high segregation; 40-50 considered moderate; $\leq$30 considered fairly low • Households were coded at each measurement occasion using the geocode for household's metropolitan area (FIPS MSA/PMSA code)

Metropolitan Opportunity Structure: Housing and Mortgage Markets, Labor Market and Area Poverty		
Variable	Database	Operationalization

MPImean: Mean of 1990 & 2000 values on Mumford Prosperity Index	Mumford Prosperity Index (MPI); PSID Geocode Match Data	• Used data from Lewis Mumford Center for Comparative Urban and Regional Research
		• MPI is a standardized metropolitan region economic viability measure
		  o Data for 1990 taken from STF4a census files at census tract level, aggregated upward to match geographic boundaries of metropolitan regions in 2000; 1990 median and per capita income figures adjusted for inflation and represented in 2000 dollars
		  o Data for 2000 taken from SF3 census profiles for metropolitan regions
		• Underlying indicators included % owner-occupied housing units, housing vacancy (% unoccupied housing units), % college educated, % in management/professional occupations, unemployment rate, per capita income, median household income and poverty rate
		• Ranks for metro regions calculated by standardizing values (creating a z-score) for eight underlying economic indicators, reverse scoring indicators as needed so higher value means a better 'health' (economic viability), then summing and ranking
		• Higher MPI value means better 'health' (economic viability)
		• Households were coded at each measurement occasion using the geocode for household's metropolitan area (FIPS MSA/PMSA code)

Metropolitan Opportunity Structure: Housing Policy		
Variable	Database	Operationalization
HOPE6: Lived in an MSA with a HOPE VI project at or after year funding awarded (0=no, 1=yes)	Geocoded HUD list of HOPE VI Demolition and Revitalization Grants (by FY awarded); PSID Geocode Match Data	• Each HOPE VI project site coded with FIPS MSA/PMSA code for the metropolitan area in which project was located • Households matched to HOPE VI project list at each measurement occasion using geocode for household's metropolitan area (FIPS MSA/PMSA code) • Coded 1=yes if household lived in an MSA with a HOPE VI project funded in that year or prior • In multivariate models, no HOPE VI was reference category

Analysis

PASW Statistics, Version 18.0 was used for data management and preliminary

analyses (SPSS, 2009). After conducting household-level descriptive analyses using the

conventional horizontal data file, the file was restructured as a person-period (vertical) data file in which each household had multiple records, one for each measurement occasion on which the household completed a PSID survey. This vertical file was used for measurement occasion-level descriptive analyses. The vertical SPSS file also was uploaded into MLwiN, Version 2.13, a specialized multilevel software package that was used for building the multilevel models (Rasbash, Browne, Healy, Cameron, & Charlton, 2009).

Preliminary Analysis

Descriptive analyses were first used to explore and clean the data. After completing analyses to ensure that data were in correct form and to gain an understanding of the bivariate relationships among the criterion and predictor variables, preliminary analyses of household change over time were performed using graphing procedures described by Singer and Willett (2003). Specifically, patterns of change in locational attainment for a random five percent sample of cases were visually examined using empirical growth plots and smoothed trajectories of the criterion variable over time. Differences in households' growth patterns were noted, and these observed trends guided assumptions about the functional form of the trajectories and the plan for further analysis. Singer and Willett's (2003) approach to modeling change with longitudinal, multilevel data was applied.

Multilevel modeling using the iterative generalized least squares (IGLS) method of parameter estimation was then used to estimate a baseline (null or intercept-only) model (Kreft & de Leeuw, 2006). First, to confirm that multilevel modeling was needed, model fit statistics for three unconditional models (a conventional multiple regression

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model, a two-level multilevel model and a three-level multilevel model) were compared. Second, to determine whether a multiple membership model was needed, model fit statistics and variance components for a three-level model using *first* MSA of residence as the unit identifier were compared with model fit statistics and variance components for a three-level multiple membership model using a weighted combination of residuals for all MSAs to which a household had belonged. (Bayesian modeling using Markov Chain Monte Carlo (MCMC) methods was used to fit these models.) Finally, having confirmed that a three-level multilevel model using the first MSA of residence as the unit identifier was the preferred model, the model coefficients for that model were interpreted and variance was partitioned. All subsequent models were fit using the IGLS method of parameter estimation.

Random Intercept and Random Slope Models

Multilevel analysis was useful in answering the research questions associated with this study because it allowed for analysis of within-household differences that contribute to change in the criterion variable, as well as between-household and between-MSA (contextual) differences that contributed to change. With multilevel analysis, it was possible to explore the relative predictive value of variables at various levels within the nested hierarchy as well as the contribution of interactions between variables at different levels. For the initial three-level null model, the intercept value was permitted to vary around the mean for all three levels. (Thus, the null model is also called a random intercept model.) Residuals at all three levels allowed the variance to be partitioned among MSA variability, household variability and residual variability (variability of measurement occasions around their mean, which includes measurement error).

Intra-class correlations were examined to determine how much of the variance in the criterion variable was explained by between-group variation (i.e., between-MSA variability and within-MSA/between-household variability). This process was used to further confirm that multilevel modeling was the appropriate form of analysis because a sufficient amount of variability was coming from between-group differences and because units within these groups (i.e., households within MSAs and measurement occasions within households) were correlated with one another. Examination of variance components for the unconditional model also provided a preliminary understanding of what proportion of variability in the criterion variable was coming from each level.

Once the null model had been interpreted, an unconditional growth model was estimated by adding time as a predictor and allowing the effect of time to vary at all three levels. (The unconditional growth model is also called a random intercept, random slopes model.) This model specified a fixed or structural part (estimate of the hypothesized true change trajectory including intercept and slope) and a random or stochastic part (between-measurement occasions, between-household and between-MSA variability plus random measurement error). This model was used to confirm that between-group variation (i.e., between-MSA and within-MSA/between-household variability) in the rate of change in the criterion variable existed. Also, model fit statistics for the null and unconditional growth model were compared to confirm that the addition of time as a predictor improved the model. Finally, examination of the estimated coefficient for the time predictor in the unconditional growth model as well as the residuals at all three levels provided a preliminary understanding of the different ways that MSAs and households were changing over time.

Prediction Models

In the final phases of model building, the multilevel model was built "from the bottom up" (Luke, 2004, p. 22) beginning with Level 1 (measurement occasion) predictors pertaining to the household. Sets of predictor variables were added to the unconditional growth model in three blocks: individual decisions, personal characteristics and metropolitan opportunity structure characteristics. Variables within each block were added to the model together, and at each step (i.e., after the addition of each block), predictors that made a non-significant contribution to the model were removed. Within- and cross-level interactions among predictor variables were also tested.

This iterative process of model building continued until a final conditional model including significant predictors from all three blocks was estimated. The final model specified which individual decisions, personal characteristics and metropolitan opportunity structure characteristics best predicted the observed differences in intercept and rate of change between MSAs and between households. At each step, model fit was tested to assure an improvement in the model. Changes in the fixed and random parts of the model were examined to explore ways in which newly added predictors affected between- and within-group variability as well as the amount of remaining residual variability. Finally, parameter estimates in the fixed part of the model also provided information about which characteristics and conditions were the most important predictors of a household's neighborhood poverty rate (or locational attainment). The next chapter will provide details of each step of the analysis as well as results.

CHAPTER IV

RESULTS

The aim of this study was to develop a better understanding of the mobility

patterns of poor residents of rental housing. Specifically, the goal was to identify the

relative importance of individual and contextual variables in relationship to poor, renter

households' locational attainment trajectory. Findings related to the following research

questions will be described in this chapter: a) *Do poor, renter households exposed to*

different metropolitan opportunity structures change differently over time in their

locational attainment patterns? and b) *Do variations in individual decisions, personal*

characteristics and opportunity structures predict differences in locational attainment

patterns? This chapter will explain data preparation activities and preliminary analyses,

describe the study sample, detail the model building process and present the results. The

final chapter will discuss the implications of the study, describe its limitations and outline

ideas for future research.

Data Preparation and Preliminary Analyses

Retrieving and Merging Data

The first step was to obtain data from several sources and then to merge data

using common identifiers. Publicly available PSID data elements (individual decisions

and personal characteristics variables relating to households/heads of households) were

downloaded from the online PSID data center (http://psidonline.isr.umich.edu). Data

were compiled in ten separate files by survey year using 'relation to head equals head'

and 'sequence number is less than 21' (codes one to 20 are for individuals in the family unit at the time of the interview) as the selection criteria for extracting data so that information pertaining to individuals was retrieved only for those who were the head of household in the year of the interview.

Geocode identifiers were added to these files by retrieving 2000 census geocode match data (obtained directly from the University of Michigan Institute for Social Research by special agreement for use of sensitive data). The 2000 FIPS (Federal Information Processing Standards) codes for state, county, tract and (primary) metropolitan statistical area (PMSA/MSA) for each household at each survey occasion were merged into the annual survey data files. Data elements were matched on year and interview number (a PSID variable that uniquely identifies household records when used in combination with the year variable).

Census data on tract-level poverty (the criterion variable) were obtained from two sources. Data for 1990 (Long Form SF3 data normalized to 2000 boundaries) was retrieved from the GeoLytics census database (GeoLytics, 2003). Data for 2000 (Long Form SF3 data in 2000 boundaries) was retrieved from the online American FactFinder site of the U.S. Census Bureau (http://factfinder.census.gov). Tract-level poverty rates in 1990 and 2000 were calculated for each census tract in the study using a ratio of the number of persons below the poverty threshold to the number of persons for whom poverty status was determined. Linear interpolation was used to estimate tract-level poverty rates in the years between 1990 and 2000. These values were then merged into the annual survey data files by matching on year and the FIPS state, county and tract codes for each household.

The ten annual survey files were then combined into a single data file through an iterative merge process. First, cases in the 1990 file that met the study eligibility criteria were identified.   That is, if total family income was below the 1990 poverty threshold and the household either was renting, or neither owning nor renting, the case was retained; any other 1990 cases were deleted. Second, cases from the 1991 file that matched on case identification number with the eligible 1990 cases were merged into the file regardless of housing tenure or poverty status. (This provided longitudinal data for those cases.) Third, the remaining 1991 cases were screened for meeting the study eligibility criteria (i.e., cases with total family income below the 1991 poverty threshold and either renting or neither renting nor owning). If so, they were merged into the longitudinal data file (this added new cases); if not, they were deleted. Finally, steps two and three were repeated for each annual survey file. In other words, data were merged into the longitudinal file for any household already in the longitudinal file in previous years and for new cases meeting study eligibility criteria for the first time. (No new households could enter the study after 1996 because at least three survey occasions were required and survey interviews were not conducted in 1998.) This process resulted in a longitudinal data file with a case (row) for each household and repeated measures (columns) for each variable in each study year (1990 to 1997 and 1999).

In the last stage of data compilation, metropolitan characteristics variables (MPI Index, white-black dissimilarity value and HOPE VI indicator) were added to the longitudinal file. The MPI Index and dissimilarity values were retrieved from publicly available data files at the American Communities website of the Lewis Mumford Center for Comparative Urban and Regional Research at the University of Albany, SUNY

(http://mumford.albany.edu/census/data.html). For each of these variables, 1990 and 2000 values were averaged to provide summary measures for each PMSA/MSA. These were then merged into the longitudinal data file by matching on the FIPS PMSA/MSA code. Because households had an FIPS PMSA/MSA code in each survey year, each household had MPI Index and dissimilarity values for each survey year. Thus, although these were characteristics of metropolitan areas, they were Level 1 (not Level 3) variables because they were time-varying.

To code the HOPE VI indicator, geocoded addresses for HOPE VI projects were obtained from Dr. Ed Goetz at the University of Minnesota, Humphrey Institute of Public Affairs (personal communication, July 27, 2007). This list was matched with lists of funded HOPE VI demolition and revitalization projects available online from the U.S. Department of Housing and Urban Development website (http://www.hud.gov/offices/ pih/programs/ph/hope6). Additional projects were identified and geocoded, and the year each grant was awarded was recorded.

Matching on year and FIPS codes for state, county and tract, only 17 PSID households were identified in the longitudinal survey data file as having lived in a HOPE VI tract in or after the year prior to the award of a HOPE VI grant (the year prior was considered because households living in a HOPE VI tract presumably were impacted as soon as proposal development was publicized). Therefore, a different—albeit weaker— indicator of HOPE VI impact was coded in the longitudinal file. Any measurement occasion on which a household was living in an MSA with a funded HOPE VI project (in or after the year funding was awarded) was coded '1' on the binary HOPE VI variable;

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the remaining measurement occasions were coded '0.' Thus, this also was a Level 1 (not Level 3) variable because it was time-varying.

To finalize the longitudinal file, cases with fewer than three measurement occasions were deleted. The purpose of this step was to ensure that at least three data points per household would be used to estimates growth trajectories. Cases that were part of the PSID Latino sample (added to the original SEO and SRC cross-section subsamples in 1990 and 1992) were dropped because they had not been included in the 1994 to 1997 PSID Income Plus files (the source for individual and family income data) and all summary income variables for Latino cases would have been missing in those years.

After deleting the Latino sample cases, frequency counts for the race categories were examined. Out of 1699 cases, one case was missing race information and 76 cases (4.5 percent) had been coded inconsistently across years in the PSID annual data files. Twenty-eight inconsistent cases had been coded with a single race code in combination with NA/refused; for these, the available race code was used. The remaining 48 cases were recoded 'other' because a single race category could not be determined. This resulted in 1698 cases coded for race, and of these, 94.8 percent were either white or black. There were not enough non-white, non-black cases to analyze separately. Therefore, only white and black cases were retained, and this resulted in a final longitudinal file with 1610 households.

Creating the Person-Period Data File

Multilevel analysis requires that data be arranged in a vertical format (Singer & Willett, 2003). The longitudinal data file (horizontal layout with separate columns for each repeated measure of a variable) must be restructured to a person-period data file

(vertical layout with multiple records or rows for each measurement occasion). In the person-period file for this study, each household's growth record was arrayed vertically with information in up to nine rows. In other words, the person-period data file had fewer columns but more rows than the longitudinal data file.

The person-period data file had four kinds of variables: a) unit identifiers for MSAs, households and measurement occasions, b) a time indicator with values from zero to nine indicating the year in which information in a particular row was collected, c) the criterion variable measured on between three and nine occasions (rows) for each household, and d) predictor variables (indelible personal characteristics for a particular household had the same value in each row; time-variant personal characteristics, individual decisions and metropolitan characteristics could have a different value in each row pertaining to a household).

Data Screening

MSA identifier. Data investigation revealed 292 measurement occasions with no MSA geocode. This was because the value was not found (missing) or inappropriate (the household was not living in a PMSA/MSA on that measurement occasion). Because this variable was essential for identifying clusters at Level 3 (the metropolitan area level) and linking metropolitan characteristics to the households, all measurement occasions where the MSA identifier was missing were deleted.

For some households, there were enough other measurement occasions to retain the case. However, for 46 households, deleting measurement occasions missing on the MSA identifier left fewer than three measurement occasions. These cases were deleted. Thus, the final vertical file—and the study sample—included 1564 cases.

Current employment category. Beginning in 1994, PSID respondents were allowed three mentions in response to the survey question "We would like to know about what you do—are you working now, looking for work, retired, keeping house, a student, or what?" These were coded in three separate variables in the PSID annual data files. To create a single value for each year, the PSID coding protocol was used to prioritize multiple responses in the following order: layoff/sick/maternity leave, working now, looking for work/unemployed, retired, disabled, student, keeping house and other/ workfare/jail.

Categories were then further collapsed. Layoff/sick/maternity leave and working were combined into a category called employed. Student and keeping house were collapsed into a category called unemployed by choice. Finally, there were missing values (NA, don't know or refused) on nine measurement occasions and these were collapsed into the other category.

Head's wages. Survey data related to wages and salaries had already been cleaned by PSID staff. Missing values had been imputed or assigned using information from other questions in the employment section of the interview, cross-year information for the same individual, the cross-sectional distribution of the variable for other similar cases and interviewers' margin notes. When these strategies failed, PSID staff substituted the median of wage and salaries. For 1990 through 1992, a composite head's wages variable was already available in the PSID annual data files. For the remaining years, a composite variable was created by summing the amounts in two constituent variables, head's salary/wages and head's wages from extra jobs.

This variable was positively skewed due to a large proportion of measurement occasions in which the head of household had wages equal to zero as well as a small number of extreme values. To diminish the influence of outlying values, the top one percent of wage values in each survey year were substituted with the next highest wage value that was below the 99.0 percent cumulative frequency threshold. Even after trimming extreme values, the variable was still positively skewed so a square root transformation was used to normalize the distribution.

Total family income. PSID staff cleaned data related to family income and imputed or assigned missing values using information from other questions in the interview, information on the family from other survey years, the cross-sectional distribution of the variable for other similar cases and interviewers' margin notes. In some cases, missing values for particular income components were replaced with the median. At some measurement occasions, total family income was negative due to business or farm losses. As suggested in the PSID codebook, values were bottom-coded at one dollar. To diminish the influence of outlying values, the top one percent of total family income values in each survey year were substituted with the next highest income value that was below the 99.0 percent cumulative frequency threshold. Even after trimming extreme values, however, the variable was still positively skewed so a square root transformation was used to normalize the distribution.

Mobility. This variable from the PSID annual data files provides self-reported information about whether the household had moved since the prior interview. The value was missing on seven measurement occasions. In two cases, it was clear that the household had in fact moved since there was a large change in the neighborhood poverty

rate, and those measurement occasions were coded yes on the moved variable. On five other measurement occasions, the household's mobility status could not be determined with sufficient certainty, and those measurement occasions were deleted. In each case, the household to which the deleted measurement occasion belonged had three or more other measurement occasions so the household was retained in the study.

Housing assistance. A new variable was created with three categories: no assistance, public housing and subsidized housing. Households were coded at each measurement occasion based upon self-reported information provided in response to the PSID question sequence related to public housing and government assistance with rent. Households that had a) reported either paying rent or neither owning nor renting and b) replied affirmatively to the question 'Is this house/apartment in a public housing project, that is, is it owned by a local housing authority or other public agency?' were coded as living in public housing on the housing assistance variable. Households that had a) reported either paying rent or neither owning nor renting, b) stated they were *not* living in public housing, and c) reported paying no or lower rent because federal, state or local government paid all/part of the rent were coded as living in government subsidized housing on the housing assistance variable. All remaining measurement occasions were categorized as having no assistance. (In some cases, these were homeowners.)

One measurement occasion had been coded in the PSID annual data files as *both* living in public housing *and* receiving government assistance with rent. These categories should have been mutually exclusive due to the skip pattern in the interview that directed interviewers to ask about government assistance with rent *only* when the household did not live in a public housing project. This was evidently a PSID data entry error, so that

measurement occasion was deleted. (The household had five other measurement occasions so the household was retained.)

Number of children. This variable was available in the PSID annual data files as a continuous measure. Values for the study population ranged from zero to nine, but the distribution was positively skewed. On 46.8 percent of measurement occasions, households reported no children. The proportion of measurement occasions with one, two and three children were, 16.4, 17.4 and 10.8 percent respectively. On the remaining 8.6 percent of measurement occasions, the number of children was four or more. A categorical variable with three categories (zero, one to three, and four or more) was created since a one-way ANOVA with Tamhane's T2 post hoc test found no statistical difference in the mean neighborhood poverty rate for households with one, two and three children ($F(2.021, 218.493) = 19.987$, $p < 0.001$; mean difference (1, 2) = -0.00443 (0.00590), $p = 0.998$, mean difference (1, 3) = -0.01084 (0.00643), $p = 0.620$, mean difference (2, 3) = -0.00641 (0.00643), $p = 0.979$).

Education level. In general, the PSID education level question is not repeated for heads of household after their first survey (initially provided information is brought forward in subsequent years). However, if a head becomes part of a new household, the education level question is re-asked. Therefore, it is possible (but unlikely) for a head of household to have an education level that changes over time. Only 32 cases (2.0 percent) in the study sample were found to have education levels that increased with time. There were another eight cases (0.5 percent) in which a *lower* value was found in later years. All 40 cases were recoded with the highest value regardless of when it occurred. As a result, all cases in the study had a single, non-varying value for education level.

A categorical education level variable (< 12 years, 12 years, 13 or more years) was then created. There were 50 households (3.2 percent) with no value for education level in the PSID data file for any of their survey years. Unfortunately, it was impossible to estimate a value for these cases, so they were placed in a fourth category coded missing.

Age. In 123 cases (7.9 percent), the head of household's date of birth was not coded consistently in the annual PSID data files between 1990 and 1999. (However, the difference was two years or less for all but 39 cases.) To achieve a non-varying date of birth, the mode was substituted for heads of household with more than one value. (The mean of two modes was used for six bimodal cases; for five of them, the two dates were consecutive years and for the sixth, the two dates were three years apart.)

The variable was then recoded as age in 1990 by subtracting the year of birth from 1990. Three values of age 12 were verified since they appeared too young to be a head of household. However, these cases did not enter the study until 1994, 1996 and 1996 respectively. Thus, although they were 12 in 1990, they would have been at least 16 at the time of their first survey interview. A seemingly high value of age 102 was also verified by checking the original source of the PSID data.

The pairwise relationship between age and neighborhood poverty rate (the criterion variable) was checked using a scatterplot and fitted curve. The relationship was not linear, and a quadratic curve produced a better fit (indicating a curvilinear relationship between the two variables). Therefore, an age-squared variable was also created for use as a predictor along with the age variable.

Collinearity Diagnostics

Tabachnick and Fidell (2001) caution against including redundant variables in the same multivariate analysis, and recommend omitting one variable or creating a composite score when two predictors have a correlation of 0.70 or more. Table 7, a matrix of bivariate correlations among continuous and dummy coded predictor variables, shows that one pair of variables (head of household's income and family income) was strongly correlated and close to but under the 0.70 threshold. Both variables were provisionally retained to explore how they would perform in the multivariate model.

Table 7

Intercorrelations for Predictor Variables

	1 Head Inc	2 Fam Inc	3 Moved	4 Unmarried	5 Black	6 Female	7 MPI	8 Segregation	9 HOPE VI
1	1								
2	0.673***	1							
3	0.087***	N.S.	1						
4	-0.218***	-0.338***	N.S.	1					
5	-0.077***	-0.150***	-0.041***	0.142***	1				
6	-0.191***	-0.151***	-0.067***	0.564***	0.135***	1			
7	-0.042***	N.S.	N.S.	0.075***	0.081***	0.044***	1		
8	-0.063***	N.S.	-0.038***	0.022*	0.196***	0.048***	0.194***	1	
9	0.054***	0.121***	-0.070***	N.S.	0.135***	0.041***	0.257***	0.352***	1

$*p \leq 0.05$; $***p \leq 0.001$

Description of Sample

The final sample included 8650 Level 1 units (measurement occasions) for 1564 Level 2 units (households) in 151 Level 3 units (metropolitan areas). (As will be discussed later, each household's *first* MSA of residence—or *initial* context—was used for grouping Level 2 units (households) at Level 3. Taking into account households that subsequently moved to another MSA, 179 different MSAs were represented in the study.) For each Level 3 unit (initial MSA), there were one to 93 households and three to 541

measurement occasions. Forty-two Level 3 units (27.8 percent) contained ten or more

households, 65 (43.0 percent) contained two to nine households, and 44 (29.1 percent)

contained only one household. For each household, there were three to nine

measurement occasions. Table 8 provides the number and proportion of households for

each count of measurement occasions.

Table 8

Households by Number of Measurement Occasions

Households	Number of Measurement Occasions							
	3	4	5	6	7	8	9	Total
Count	307	276	244	199	268	95	175	1564
Proportion (% of total)	19.6	17.6	15.6	12.7	17.1	6.1	11.2	100.0

As described in the prior section on retrieving and merging data, cases entered

and left the study population on different schedules. Newly eligible cases were added

from 1990 to 1996 (cases could not enter the study after 1996 because they would not

have met the requirement of at least three measurement occasions). Cases left the study

population in various years due to attrition from the survey population. They may also

have been absent from the study population for one or more years due to failing to

complete a survey, residing outside a metropolitan area or having missing geocode

information in a particular year(s). Thus, measurement occasions were not consecutive

for all cases.

A large number of cases were lost in 1997 due to a PSID sample reduction. To

decrease data collection costs, the University of Michigan, Institute for Social Research

selected the original census (SEO) subsample for reduction by two thirds. Originally,

they had planned to cut any census subsample families that were related to families

chosen for deletion (i.e., they were linked to the same original 1968 sample family). An

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unexpected increase in funding allowed them to reinstate families chosen for deletion if they were headed by a black individual with at least one child under age 13 in 1996. (These families were given preference due to a particular interest in children and child development.) However, other linked families were not restored unless they also met the race and child age criteria.

Table 9

Year-to-Year Changes in Size of Study Population

Count	1990	1991	1992	1993	1994	1995	1996	1997	1999
New cases	619	183	169	203	225	103	57	0	0
Net loss of cases since year prior	0	21	15	69	72	65	68	453	77
Total	619	781	935	1069	1222	1260	1249	796	719

In Table 9, 'new cases' represents the number of cases meeting the study eligibility criteria for the first time in each year. 'Net loss' is equal to the number of cases *lost* since the prior survey year (attrition, being absent in the current year or sample reduction) minus the number of cases *added* since the prior survey year (newly meeting the eligibility criteria in the current year or reentering the study population after being absent in the prior year). 'Total' is the number of household surveys (measurement occasions) for each year (sum equals 8560). As can be observed in Table 9, there was generally an annual net loss of 80 or fewer cases. However, the net loss for 1997 was 453 household surveys (455 were lost due to the sample reduction, 14 due to attrition, 8 due to not living in an MSA and 9 due to insufficient/no geocode; 33 reentered the study after being absent in 1996).

Table 10 presents demographic characteristics of heads of household in the study population. Most heads of household were black and female. The average head of household was about 37 years old in the first year of the study. About eight in ten had no

post-secondary education, and over one third were not high school graduates (nor GED recipients).

Table 10

Level 2 Demographics of Study Population (All Households, N=1564)

Characteristic	N	%	$\overline{X}$	SD	Range
Race					
Black	1145	73.2			
White	419	26.8			
Age in 1990	1564		36.93	16.99	12-102
Gender					
Female	926	59.2			
Male	638	40.8			
Highest education level					
<12	604	38.6			
12	604	38.6			
13+	306	19.6			
Missing	50	3.2			

Table 11 provides a descriptive summary for the criterion and predictor variables across households and measurement occasions. At any point in time, most heads of household were single, and over time nearly half had no children. On average, the unemployment rate was high, and income was marginal. Some households moved into homeownership while they were in the study, but most remained renters, and across measurement occasions only about one third were in public or subsidized housing. In any particular year of the study, about one third of survey respondents had moved, but movement from one metropolitan area to another was rare. Respondents typically lived in poor neighborhoods located in fairly economically 'healthy' but highly segregated MSAs. HOPE VI funding began in 1993, and as more HOPE VI demolition and revitalization projects were funded over time, it was increasingly likely that households would be living in an MSA that had received HOPE VI funding.

Table 11

Level 1 Descriptive Statistics for Criterion and Predictor Variables (All Households/All

Measurement Occasions, N=8650)

Characteristic	N	%	$\overline{X}$	SD	Range
Tract-level poverty rate	8650		26.52	15.97	0.00-95.00
Employment status					
Employed	3839	44.4			
Unemployed	1424	16.5			
Retired	927	10.7			
Disabled	856	9.9			
Not employed by choice (keeping house, student)	1377	15.9			
Other (workfare, prison, jail, DK, refused)	227	2.6			
Head of household's wages (trimmed, square root transformed)	8650		49.84	56.78	0.00-275.68
Total family income (trimmed, square root transformed)	8650		95.65	49.74	1.00-304.26
Moved since last interview					
Yes	2813	32.5			
No	5837	67.5			
Change of MSA since last interview					
Yes	235	2.7			
No	8415	97.3			
Housing tenure					
Owns or buying home	647	7.5			
Pays rent	6727	77.8			
Neither owns nor rents	1276	14.8			
Housing assistance					
Public housing	2012	23.2			
Subsidized housing	834	9.6			
No assistance	5806	67.1			
Fertility					
No children	4045	46.8			
1-3 children	3864	44.7			
4+ children	741	8.6			
Marital status					
Unmarried	7141	82.6			
Married	1509	17.4			
MSA MPI Index (mean of 1990 and 2000)	8650		0.50	0.54	-1.98-3.21
MSA dissimilarity (mean of 1990 and 2000 white-black dissimilarity)	8650		65.34	11.97	26.22-87.04
HOPE VI project in household's metro area					
Yes	3271	37.8			
No	5379	62.2			

Individual Decisions Predictors

More detailed descriptive statistics for the individual decisions predictors are provided in Tables 12 and 13. As a reminder, households moved in and out of the study population on different schedules, so annual statistics can be used to assess trends in the overall data. However, since information is aggregated for different households in each year, summary statistics over time should not be interpreted as a direct representation of underlying overall household change trajectories.

Table 12

Sample Characteristics for Continuous Individual Decisions Predictor

Variable	Year	N	$\overline{X}$	SD	Median	Minimum	Maximum
	1990	619	26.55	33.49	0.00	0.00	109.54
	1991	781	35.02	41.47	10.00	0.00	141.42
	1992	935	38.49	46.01	14.70	0.00	158.11
	1993	1069	43.55	52.27	15.81	0.00	181.66
Head's Wages,	1994	1222	44.40	53.24	17.32	0.00	192.35
Trimmed, Square	1995	1260	53.73	57.65	36.86	0.00	198.10
Root Transformed	1996	1249	56.90	60.04	40.66	0.00	199.99
	1997	796	66.99	66.00	56.21	0.00	234.52
	1999	719	81.21	70.98	84.85	0.00	275.68
	Overall	**8650**	**49.84**	**56.78**	**29.55**	**0.00**	**275.68**

Table 13

Sample Characteristics for Categorical Individual Decisions Predictors (N=8650)

Variable	Year	Category	%	Category	%	Category	%
	1990		32.63		19.71		8.89
	1991		38.54		18.82		10.12
	1992		37.33		20.86		12.51
	1993		40.41		19.55		12.07
Employ-	1994	Employed:	44.60	Unemployed:	16.53	Retired:	11.21
ment	1995		45.63		14.76		12.14
Category	1996		47.72		12.97		10.33
	1997		52.51		14.57		9.67
	1999		58.55		11.82		7.09
	Overall		**44.38**		**16.46**		**10.72**
	1990		10.99	Not employed	26.17	Other	1.62
Employ-	1991		9.73	by choice	21.13	(workfare,	1.66
ment	1992	Disabled:	10.05	(keeping	17.22	prison, jail,	2.03
Category	1993		10.76	house,	16.09	DK or	1.12
(cont.)	1994		8.59	student):	14.48	refused):	4.58

	1995		10.48		13.49	3.49
	1996		11.05		14.89	3.04
	1997		7.79		12.94	2.51
	1999		9.18		11.27	2.09
	Overall		**9.90**		**15.92**	**2.62**
Mobility	1990	Moved:	42.97	No Move:	57.03	
	1991		38.92		61.08	
	1992		34.44		65.56	
	1993		29.84		70.16	
	1994		31.26		68.74	
	1995		28.17		71.83	
	1996		27.38		72.62	
	1997		29.65		70.35	
	1999		39.92		60.08	
	Overall		**32.52**		**67.48**	
MSA Change	1990	Changed MSA:	0.00	No Change:	100.00	
	1991		2.30		97.70	
	1992		2.57		97.43	
	1993		1.59		98.41	
	1994		2.78		97.22	
	1995		2.30		97.70	
	1996		3.04		96.96	
	1997		4.27		95.73	
	1999		5.70		94.30	
	Overall		**2.72**		**97.28**	
Housing Tenure	1990	Owns or is buying:	0.00	Pays rent:	75.61	Neither owns nor rents: 24.39
	1991		2.30		79.13	18.57
	1992		4.17		79.14	16.68
	1993		7.39		78.48	14.13
	1994		7.53		79.13	13.34
	1995		7.38		78.25	14.37
	1996		9.13		77.18	13.69
	1997		12.06		77.89	10.05
	1999		16.13		73.02	10.85
	Overall		**7.48**		**77.77**	14.75
Housing Assistance	1990	Public housing:	24.39	Subsidized housing:	10.18	No assistance: 65.43
	1991		25.10		9.35	65.56
	1992		25.45		8.98	65.56
	1993		23.76		10.66	65.58
	1994		24.39		10.31	65.30
	1995		21.90		9.37	68.73
	1996		21.38		9.53	69.10
	1997		21.36		9.55	69.10
	1999		22.25		8.48	69.26
	Overall		**23.24**		**9.64**	**67.12**
Fertility	1990	No children:	44.43	1-3 children:	44.91	4+ children: 10.66
	1991		46.35		43.92	9.73
	1992		47.27		43.85	8.88
	1993		48.36		44.06	7.58
	1994		48.69		43.62	7.69
	1995		49.84		42.54	7.62
	1996		49.16		43.39	7.45
	1997		39.20		51.01	9.80
	1999		41.72		47.98	10.29
	Overall		**46.76**		**44.67**	**8.57**

Marital Status	1990		15.51		84.49
	1991		17.16		82.84
	1992		16.90		83.10
	1993	Married/	16.74		83.26
	1994	permanently	18.25	Unmarried:	81.75
	1995	cohabiting:	18.10		81.90
	1996		17.45		82.55
	1997		17.96		82.04
	1999		18.08		81.92
	Overall		**17.45**		**82.55**

Personal Characteristics Predictors

Descriptive statistics for continuous personal characteristics predictors are provided in Table 14 and descriptive statistics for categorical personal characteristics predictors are provided and Table 15.

Table 14

Sample Characteristics for Continuous Personal Characteristics Predictors

Variable	Year	N	$\overline{X}$	SD	Median	Minimum	Maximum
Total Family Income, Trimmed, Square Root Transformed	1990	619	67.89	25.91	70.06	1.00	124.43
	1991	781	78.39	32.64	77.07	1.00	172.37
	1992	935	83.96	38.15	77.87	1.00	195.58
	1993	1069	87.85	45.53	82.97	1.00	218.01
	1994	1222	90.19	47.89	83.67	1.00	246.51
	1995	1260	99.71	50.66	93.21	1.00	256.90
	1996	1249	105.37	52.25	97.46	1.00	280.17
	1997	769	115.79	53.40	109.97	1.00	260.77
	1999	719	128.12	61.51	123.69	1.00	304.26
	Overall	**8650**	**95.65**	**49.74**	**87.38**	**1.00**	**304.26**
Age in 1990	1990	619	40.00	16.92	34.00	18.00	98.00
	1991	781	39.82	17.14	34.00	17.00	102.00
	1992	935	39.53	17.15	34.00	17.00	102.00
	1993	1069	38.49	17.10	33.00	14.00	102.00
	1994	1222	37.72	16.72	33.00	14.00	102.00
	1995	1260	37.25	16.82	33.00	14.00	102.00
	1996	1249	36.35	16.25	32.00	12.00	102.00
	1997	796	33.46	14.74	30.00	12.00	86.00
	1999	719	32.90	14.23	30.00	12.00	85.00
	Overall	**8650**	**37.31**	**16.59**	**33.00**	**12.00**	**102.00**

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Table 15

Sample Characteristics for Categorical Personal Characteristics Predictors (N=8650)

Variable	Year	Category	%	Category	%	Category	%	Category	%
Education Level	1990	Missing:	3.39	Less than 12:	48.14	12:	36.03	13+:	12.44
	1991		3.46		44.30		38.03		14.21
	1992		3.64		42.99		38.40		14.97
	1993		2.99		41.63		38.54		16.84
	1994		2.95		38.95		39.03		19.07
	1995		3.10		37.46		39.52		19.92
	1996		2.96		36.35		39.15		21.54
	1997		2.76		34.05		40.83		22.36
	1999		2.64		33.24		41.31		22.81
	Overall		**3.09**		**39.34**		**39.04**		**18.53**
Race	1990	Black:	81.74	White:	18.26				
	1991		79.90		20.10				
	1992		78.50		21.50				
	1993		75.77		24.23				
	1994		74.39		25.61				
	1995		74.13		25.87				
	1996		73.66		26.34				
	1997		73.49		26.51				
	1999		75.10		24.90				
	Overall		**75.86**		**24.14**				
Gender	1990	Female:	64.62	Male:	35.38				
	1991		62.87		37.13				
	1992		61.50		38.50				
	1993		60.99		39.01				
	1994		58.59		41.41				
	1995		58.97		41.03				
	1996		59.57		40.43				
	1997		62.94		37.06				
	1999		63.14		36.86				
	Overall		**60.99**		**39.01**				

Metropolitan Opportunity Structure Predictors

Descriptive statistics for the metropolitan opportunity structure characteristics predictors are provided in Tables 16 and 17.

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Table 16

Sample Characteristics for Continuous Metropolitan Characteristics Predictors

Variable	Year	N	$\overline{X}$	SD	Median	Minimum	Maximum
MPI Index	1990	619	0.48	0.51	0.51	-0.81	2.00
	1991	781	0.49	0.52	0.53	-0.81	2.02
	1992	935	0.50	0.53	0.47	-0.81	2.02
	1993	1069	0.50	0.54	0.47	-0.83	3.21
	1994	1222	0.51	0.55	0.47	-0.81	3.21
	1995	1260	0.51	0.56	0.48	-1.98	3.21
	1996	1249	0.51	0.55	0.47	-1.14	3.21
	1997	769	0.49	0.53	0.53	-1.14	3.21
	1999	719	0.49	.054	0.53	-1.14	3.21
	Overall	**8650**	**0.50**	**0.54**	**0.51**	**-1.98**	**3.21**
Dissimilarity	1990	619	65.99	11.59	67.43	29.68	86.10
	1991	781	65.96	11.51	67.43	31.65	86.10
	1992	935	65.68	11.70	67.12	28.24	86.10
	1993	1069	65.32	11.81	67.12	28.24	86.10
	1994	1222	65.12	11.73	67.12	28.24	86.10
	1995	1260	65.01	11.99	67.12	28.24	87.04
	1996	1249	65.00	12.06	67.12	26.22	87.04
	1997	796	65.26	12.57	67.12	26.55	86.10
	1999	719	65.28	12.91	67.12	26.22	86.10
	Overall	**8650**	**65.34**	**11.97**	**67.11**	**26.22**	**87.04**

Table 17

Sample Characteristics for Categorical Metropolitan Characteristics Predictor

(N=8650)

Variable	Year	Category	%	Category	%
HOPE VI	1990		0.00		100.00
	1991		0.00		100.00
	1992	Funded in	0.00		100.00
	1993	MSA in	27.13		72.87
	1994	current or	49.26	No HOPE VI:	50.74
	1995	prior year:	55.05		44.92
	1996		58.13		41.87
	1997		60.68		39.32
	1999		66.20		33.80
	Overall		**37.82**		**62.18**

Criterion Variable

The final set of three tables provides descriptive statistics for the criterion variable
as well as its bivariate relationship with the predictor variables. At each year of the

study, both the mean and median neighborhood poverty rate for surveys completed in that year indicated that the average family in the study lived in a poor neighborhood. On average, however, neighborhood poverty rates declined over time.

Table 18

Sample Characteristics for Criterion Variable

Variable	Year	N	$\overline{X}$	SD	Median	Minimum	Maximum
	1990	619	30.72	17.15	28.79	0.00	94.00
	1991	781	29.17	16.70	26.51	0.00	85.00
	1992	935	28.07	16.04	26.20	0.01	83.00
	1993	1069	27.32	15.88	25.67	0.01	84.00
Neighborhood	1994	1222	26.26	16.15	24.12	0.00	83.00
Poverty Rate	1995	1260	25.88	15.60	23.90	0.01	82.00
	1996	1249	25.03	15.31	22.84	0.01	85.00
	1997	769	24.12	15.30	21.27	0.01	86.00
	1999	719	23.64	14.88	21.34	0.00	95.00
	Overall	**8650**	**26.52**	**15.97**	**24.69**	**0.00**	**95.00**

Table 19

Relationships Between Criterion Variable and Continuous Predictors (Across All

Measurement Occasions, N = 8650)

Criterion Variable	Head's Wages Pearson's r	Total Family Income Pearson's r	Age in 1990 Pearson's r	MPI Index Pearson's r	Dissimilarity Pearson's r
Neighborhood Poverty Rate	-0.17***	-0.17***	0.03**	-0.03**	0.22***

***$p \leq 0.001$; **$p \leq 0.01$

Higher wages and family income were significantly associated with lower neighborhood poverty rates. There was a small but significant positive linear association between age and neighborhood poverty rate, and a small but significant negative association between the MPI Index value and neighborhood poverty rate (i.e., 'healthier' MSA associated with slightly lower neighborhood poverty). Finally, higher metropolitan area segregation was associated with higher neighborhood poverty.

Table 20

Relationships Between Criterion Variable and Categorical Predictors (Across All

Measurement Occasions, N = 8650)

Predictor Variable	N	Neighborhood Poverty Rate $\overline{X}$ (SD)	df	t	F	Post-hoc Comparisons
All measurement occasions	8650	26.52 (15.97)				
Employment						
Employed[a]	3839	23.88 (14.97)				a < b, c, d, e
Unemployed[b]	1424	29.47 (15.95)				a, c, f < b
Retired[c]	927	25.64 (15.22)				a < c < b, d, e
Disabled[d]	856	28.41 (16.94)	5, 8644		58.67***	a, c, f < d < e
Not employed by choice[e]	1377	30.88 (17.07)				a, c, d, f < e
Other[f]	227	22.72 (14.89)				f < b, d, e
Mobility						
Moved	2813	24.83 (15.44)	5783.46	6.97***		
No move	5837	27.34 (16.15)				
MSA Change						
Moved, new MSA	235	17.13 (13.04)	253.98	11.12***		
No change	8415	26.78 (15.96)				
Housing tenure						
Owns/buying[g]	647	19.96 (13.52)				
Pays rent[h]	6727	27.66 (16.06)	2, 8647		91.85***	g < i < h
Neither rents nor owns[i]	1276	23.83 (15.48)				
Housing assistance						
Public housing[j]	2010	34.84 (18.45)				
Subsidized housing[k]	834	25.71 (14.47)	2, 8647		393.74***	l < k < j
No assistance[l]	5806	23.76 (14.15)				
Fertility						
No children[m]	4045	25.18 (16.21)				
1-3 children[n]	3864	27.20 (15.74)	2, 8647		38.66***	m < n < o
4+ children[o]	741	30.29 (15.98)				
Marital status						
Married/cohabiting	1509	24.50 (15.92)	8648	-5.43***		
Unmarried	7141	26.95 (15.95)				
Education level						
< 12[p]	3403	28.88 (15.98)				
12[q]	3377	26.45 (15.54)	3, 8646		99.12***	r < q < p, s
13+[r]	1603	20.96 (15.07)				
Missing[s]	267	30.76 (17.78)				
Race						
Black	6562	30.00 (15.58)	4645.04	-44.99***		
White	2088	15.60 (11.68)				
Gender						
Female	5276	27.65 (15.77)	7074.48	-8.21***		
Male	3374	24.76 (16.11)				

HOPE VI				
Funded current or prior year	3271	28.05 (15.97)	8648	-6.98***
No HOPE VI	5379	25.59 (15.90)		

Note. One-way ANOVAs were used to test for significant differences in the neighborhood poverty level subgroup means for the employment, housing tenure, housing assistance, fertility and education level variables; Tamhane's T2 post-hoc test was conducted to determine which participation categories were significantly different. Superscript letters in the first column refer to the letters used for illustrating significant differences in the last column (titled "Post-hoc Comparisons"). Independent samples t-tests were used to test for significant differences on all other variables.

***$p \leq 0.001$

The neighborhood poverty rate differed significantly across the various employment status categories. Generally, employed heads of household were likely to live in less poor neighborhoods than heads who were retired; both were likely to live in less poor neighborhoods than heads who were unemployed, disabled, students or homemakers. Homeowners tended to live in less poor neighborhoods, as did movers (particularly if the move was to a different MSA). Households living in public housing were in the poorest neighborhoods on average, followed by those in subsidized housing and then those with no assistance. Large families tended to live in poorer neighborhoods than those with a smaller number of children, and those with no children lived in the least poor neighborhoods on average. Those with less education and those without a spouse/partner typically lived in poorer neighborhoods. As compared to whites, the average neighborhood poverty rate was much higher for blacks, and for women the average neighborhood poverty rate was somewhat higher than it was for men. Finally, when a household was in a HOPE VI MSA, their neighborhood poverty rate was higher on average.

The next sections describe the model building process. First, initial considerations related to the multilevel structure of the data are discussed. Following

that, the details of building several sub-models and the final model are described. Discussion of results is organized by the two research questions.

Model Building

Question One: Differences in Locational Attainment

Do poor, renter households exposed to different metropolitan opportunity structures change differently in their locational attainment patterns?

Hypothesis 1: Poor renter households in different metropolitan areas will change differently over time in their locational attainment patterns with some locational attainment trajectories improving and some declining.

Step one: Visual inspection of a collection of growth trajectories. An easy way to initially assess patterns of change in a study population is to graph actual growth trajectories for a sample of cases and visually inspect them (Singer & Willett, 2003).
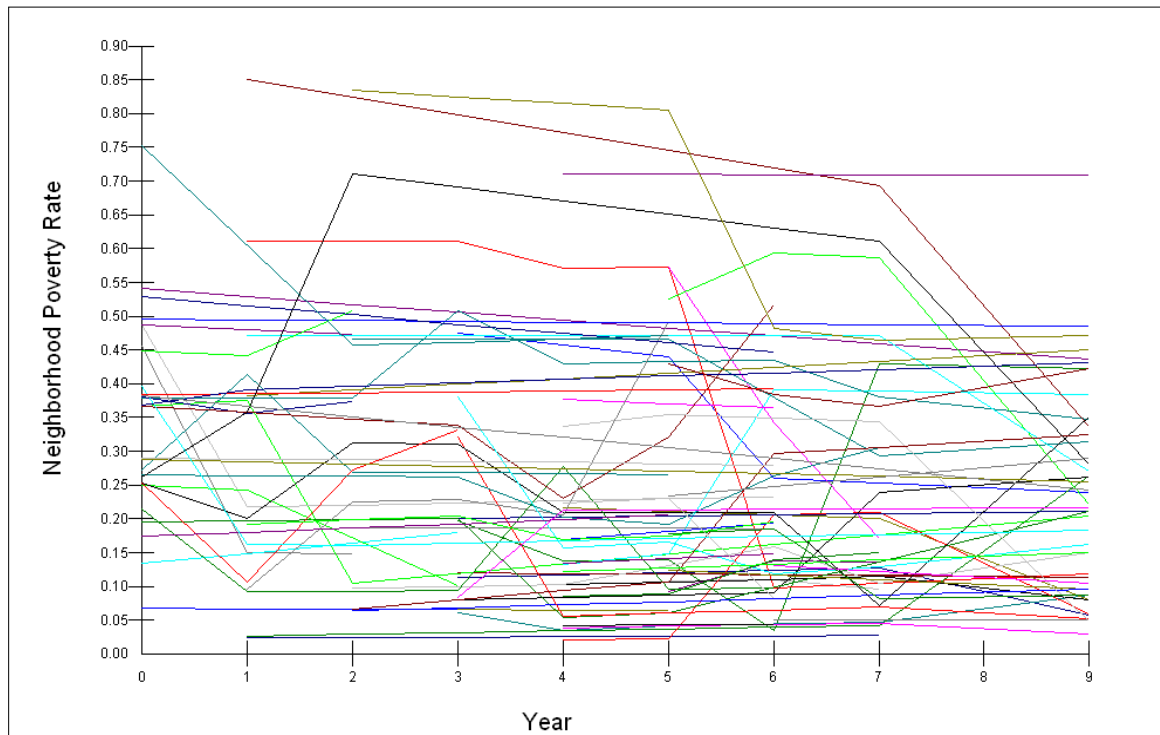
Figure 6. Collected growth trajectories for a sample of the study population.

In Figure 6, a five percent sample of cases was randomly selected from the 1564 households in the study population so that growth trajectories could be more easily differentiated. Even within a sample of only 80 households, different patterns of change are clearly visible in the varying shapes of the trajectories. At later phases in the analysis, estimated parameters were used to describe these differences with more precision.

Step two: Visual inspection of empirical growth plots. Values of the criterion variable were plotted for each of the 80 randomly selected households on each of their measurement occasions. These are presented in Figure 7. In these individual growth plots, several things can be observed. First, some households (e.g., case number 456) lived in concentrated poverty neighborhoods on all measurement occasions, while others (e.g., case number 658) lived in non-poor neighborhoods on all measurement occasions. Between these extremes, cases experienced quite a variety of neighborhood poverty conditions.

Second, households' initial status and direction of change varied. For example, case number 188 began in an extremely poor neighborhood, but experienced a dramatic change over time and was living in a non-poor neighborhood at the last measurement occasion. The neighborhood poverty rate also declined for case number 1118 but the change trajectory was not as steep. Although the household experienced improved neighborhood poverty conditions over time, the neighborhood was very poor from the beginning to the end of the trajectory. In contrast, the neighborhood poverty rate worsened for some households (e.g., case number 1239) and was largely unchanged for others (e.g., case number 1236).

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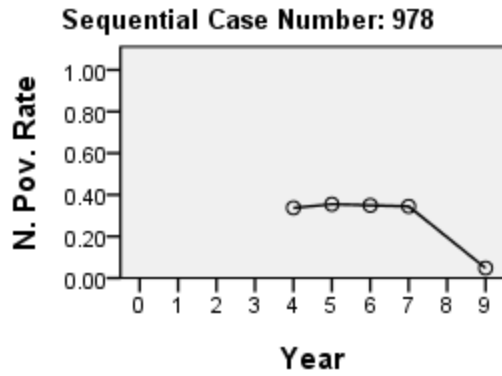
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Sequential Case Number: 186

Sequential Case Number: 187
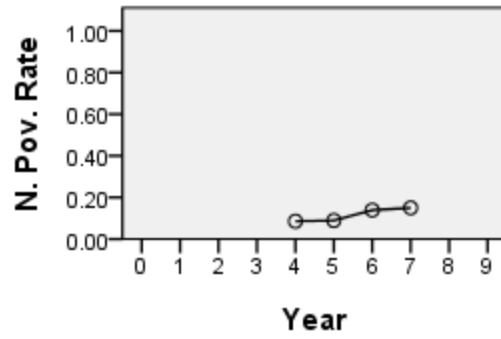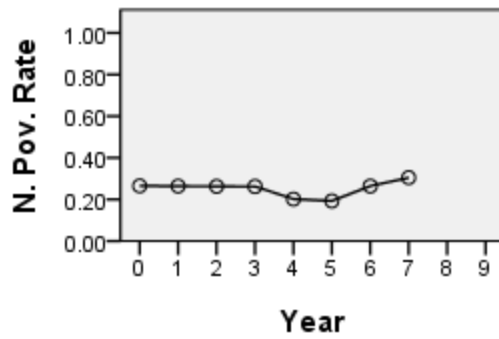
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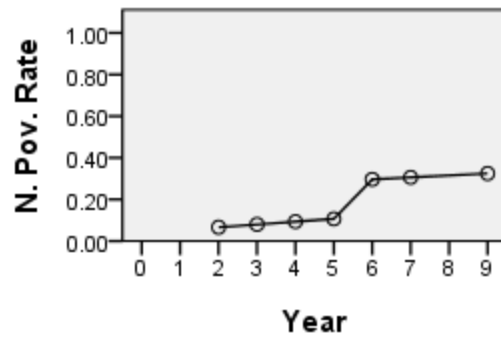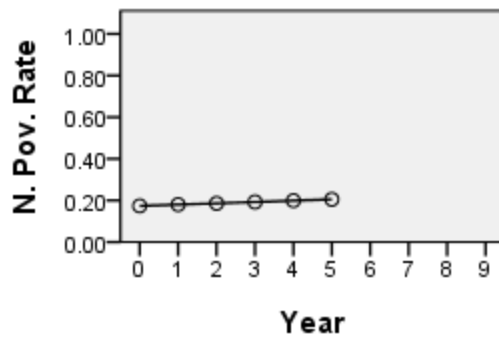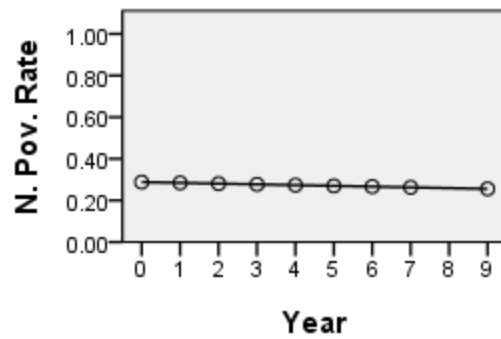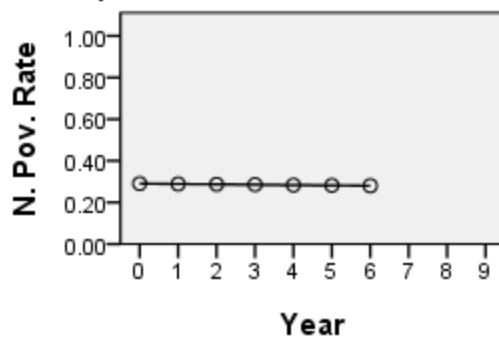
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Sequential Case Number: 194
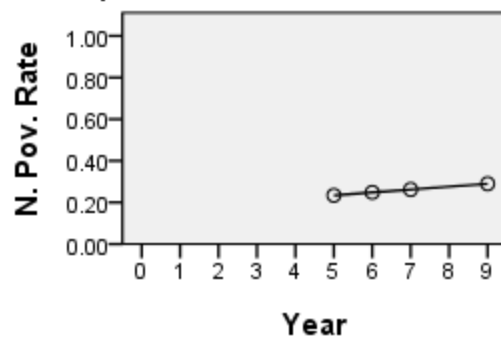
Sequential Case Number: 223

Sequential Case Number: 246

Sequential Case Number: 261

Sequential Case Number: 266

Sequential Case Number: 272

Sequential Case Number: 292

Sequential Case Number: 304

Sequential Case Number: 352

Sequential Case Number: 355

Sequential Case Number: 356

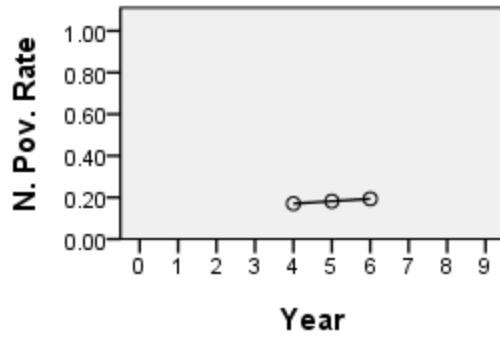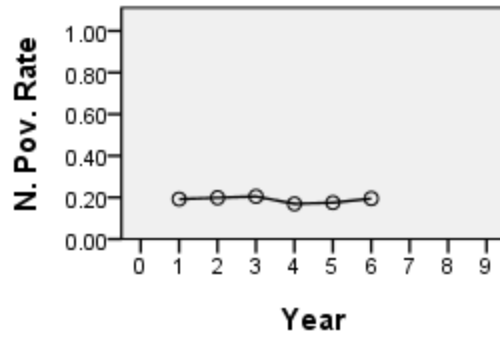Sequential Case Number: 360

Sequential Case Number: 395

Sequential Case Number: 413

Sequential Case Number: 416

Sequential Case Number: 439

Sequential Case Number: 450
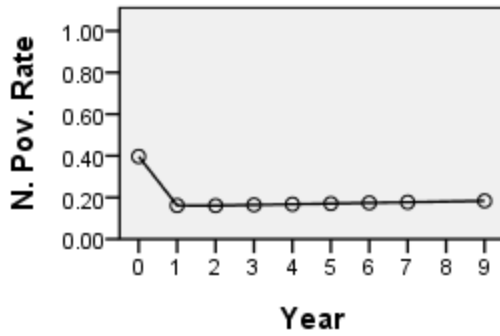
Sequential Case Number: 456

Sequential Case Number: 495

Sequential Case Number: 525

Sequential Case Number: 628

Sequential Case Number: 658

Sequential Case Number: 685

Sequential Case Number: 701

Sequential Case Number: 723

Sequential Case Number: 740

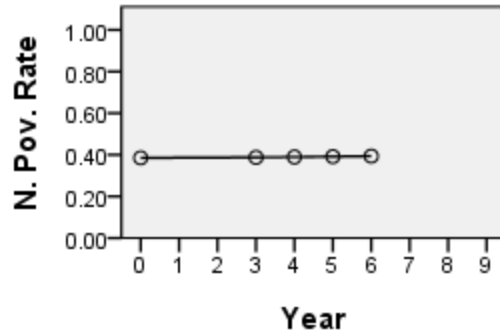Sequential Case Number: 812

Sequential Case Number: 846

Sequential Case Number: 892

Sequential Case Number: 911

Sequential Case Number: 922

Sequential Case Number: 929

Sequential Case Number: 949

Sequential Case Number: 978

Sequential Case Number: 999

Sequential Case Number: 1000

Sequential Case Number: 1012

Sequential Case Number: 1024

Sequential Case Number: 1026

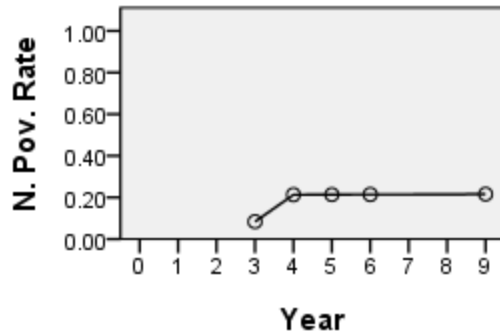Sequential Case Number: 1094

Sequential Case Number: 1099

Sequential Case Number: 1118

Sequential Case Number: 1125

Sequential Case Number: 1129

Sequential Case Number: 1171

Sequential Case Number: 1199

Sequential Case Number: 1205

Sequential Case Number: 1236

Sequential Case Number: 1239

Sequential Case Number: 1244

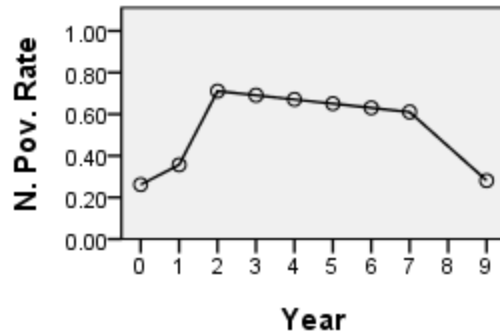Sequential Case Number: 1296

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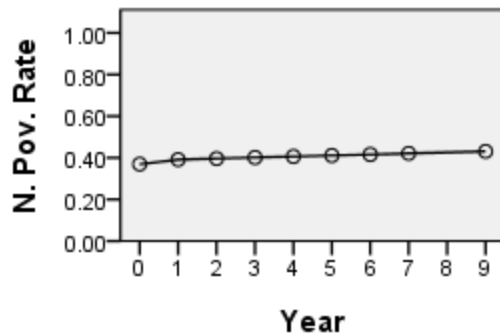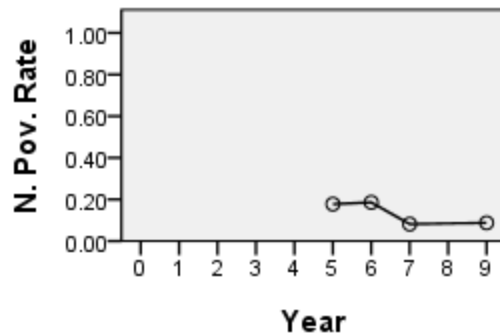
Sequential Case Number: 1344

Sequential Case Number: 1367

Sequential Case Number: 1391
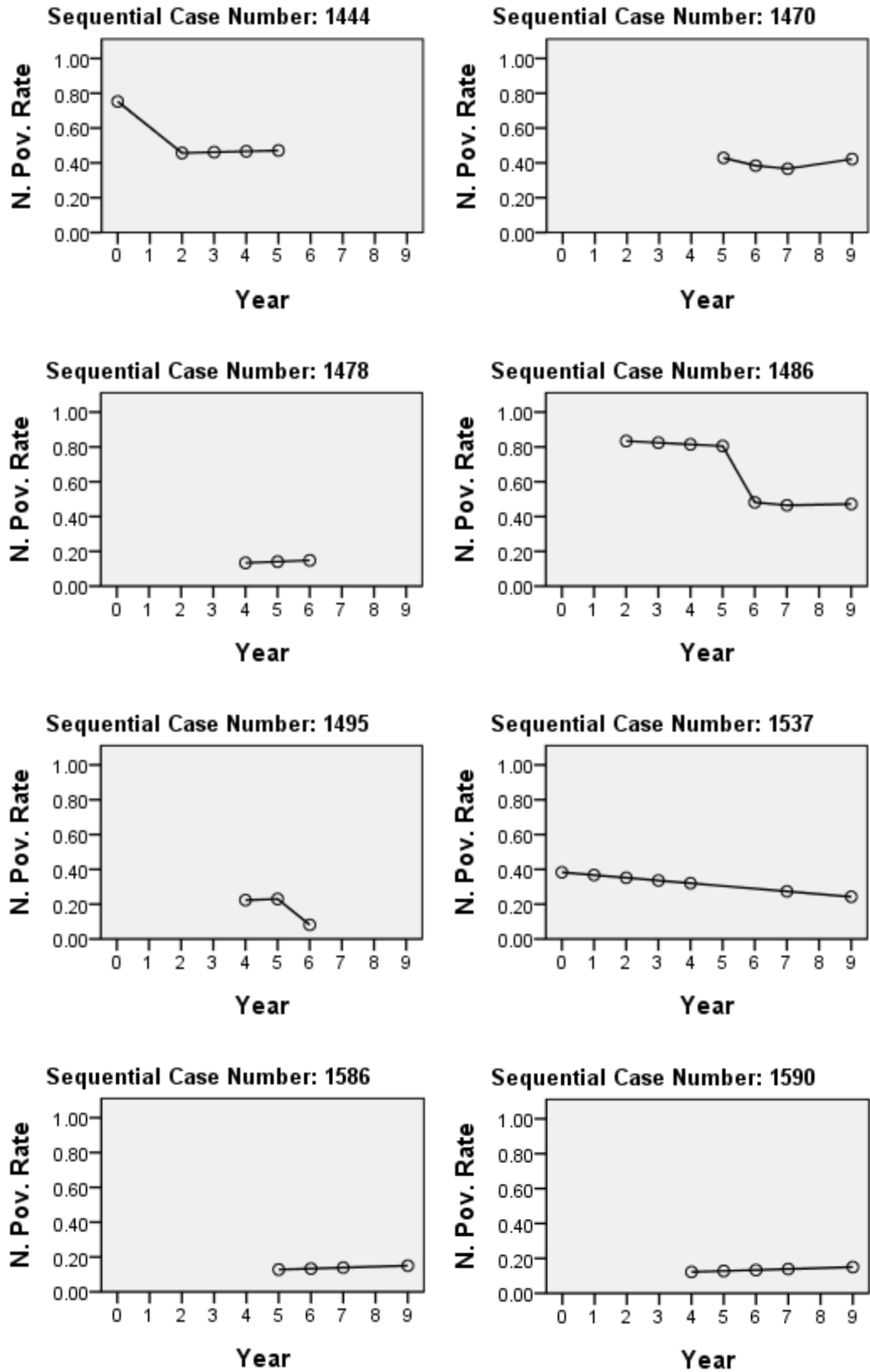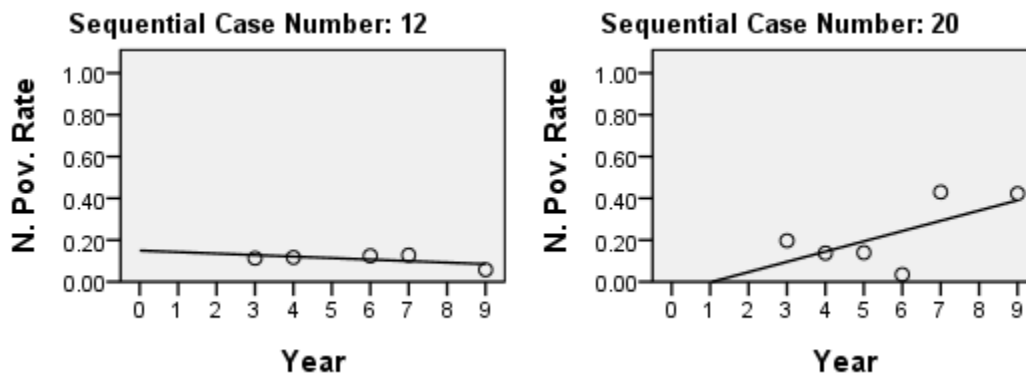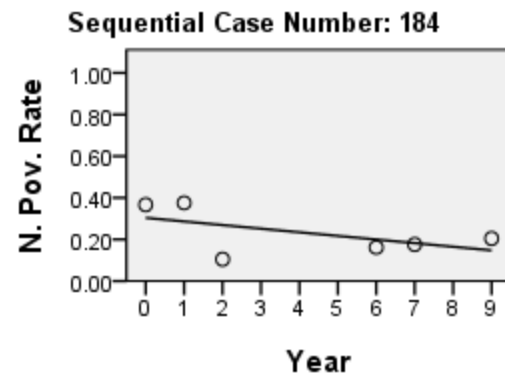
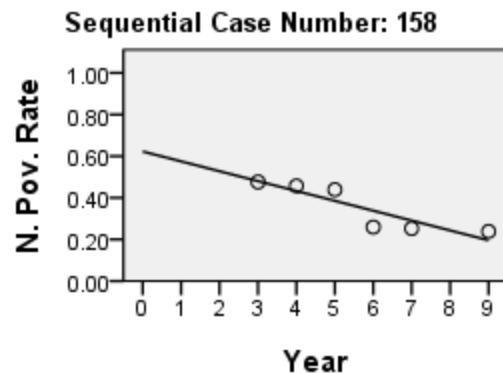Sequential Case Number: 1397

Sequential Case Number: 1431

Figure 7. Empirical growth plots for a sample of the study population.

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Finally, the shape of the empirical growth plot varied among households. For most, this was a smooth linear trajectory (as would be expected for households that did not move since intercensal tract-level poverty rates were estimated using linear interpolation between known values in 1990 and 2000). Others' trajectories changed in slope and/or direction of growth, usually as a result of a household's move to a different neighborhood or MSA. Bent trajectories could represent improving or worsening conditions (e.g., case numbers 978 and 1026), and the changes could be subtle or dramatic (e.g., case numbers 1367 and 1391).

Step three: Smoothing the empirical growth trajectories. Fitting separate parametric models to the data for each of the sampled cases assists in exploring the functional form of the change trajectories, reduces noise related to measurement error and makes it easier to compare households by intercept and slope (Singer & Willett, 2003). As seen in Figure 8, linear-change ordinary least squares regression models usually fit the underlying data for the sampled cases well. When the change was discontinuous (i.e., the trajectory was bent in one or more places), however, the assumption of linear change resulted in a poorer fitting line.

Sequential Case Number: 76

Sequential Case Number: 85

Sequential Case Number: 127

Sequential Case Number: 136

Sequential Case Number: 150

Sequential Case Number: 157

Sequential Case Number: 158

Sequential Case Number: 184

Sequential Case Number: 186

Sequential Case Number: 187

Sequential Case Number: 188

Sequential Case Number: 191

Sequential Case Number: 193

Sequential Case Number: 194

Sequential Case Number: 223

Sequential Case Number: 246

Sequential Case Number: 261

Sequential Case Number: 266

Sequential Case Number: 272

Sequential Case Number: 292

Sequential Case Number: 304

Sequential Case Number: 352

Sequential Case Number: 355

Sequential Case Number: 356

Sequential Case Number: 360

Sequential Case Number: 395

Sequential Case Number: 413

Sequential Case Number: 416

Sequential Case Number: 439

Sequential Case Number: 450

Sequential Case Number: 456

Sequential Case Number: 495

Sequential Case Number: 525

Sequential Case Number: 628

Sequential Case Number: 658

Sequential Case Number: 685

Sequential Case Number: 701

Sequential Case Number: 723

Sequential Case Number: 740

Sequential Case Number: 812

Sequential Case Number: 846

Sequential Case Number: 892

Sequential Case Number: 911

Sequential Case Number: 922

Sequential Case Number: 929

Sequential Case Number: 949

Sequential Case Number: 978

Sequential Case Number: 999

Sequential Case Number: 1000

Sequential Case Number: 1012

Sequential Case Number: 1024

Sequential Case Number: 1026

Sequential Case Number: 1094

Sequential Case Number: 1099

Sequential Case Number: 1118

Sequential Case Number: 1125

Sequential Case Number: 1129

Sequential Case Number: 1171

Sequential Case Number: 1199

Sequential Case Number: 1205

Sequential Case Number: 1236

Sequential Case Number: 1239

Sequential Case Number: 1244

Sequential Case Number: 1296

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Sequential Case Number: 1391

Sequential Case Number: 1397

Sequential Case Number: 1431

Sequential Case Number: 1444
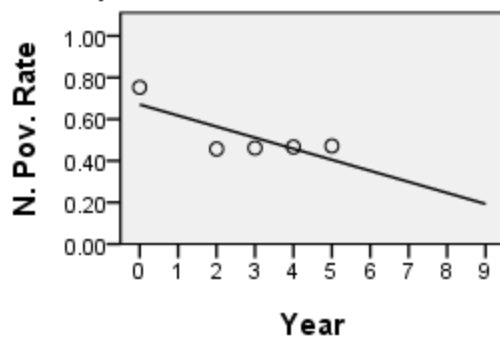
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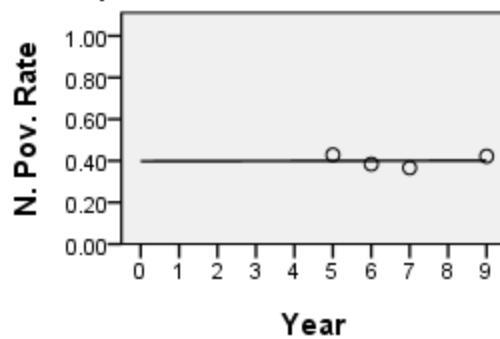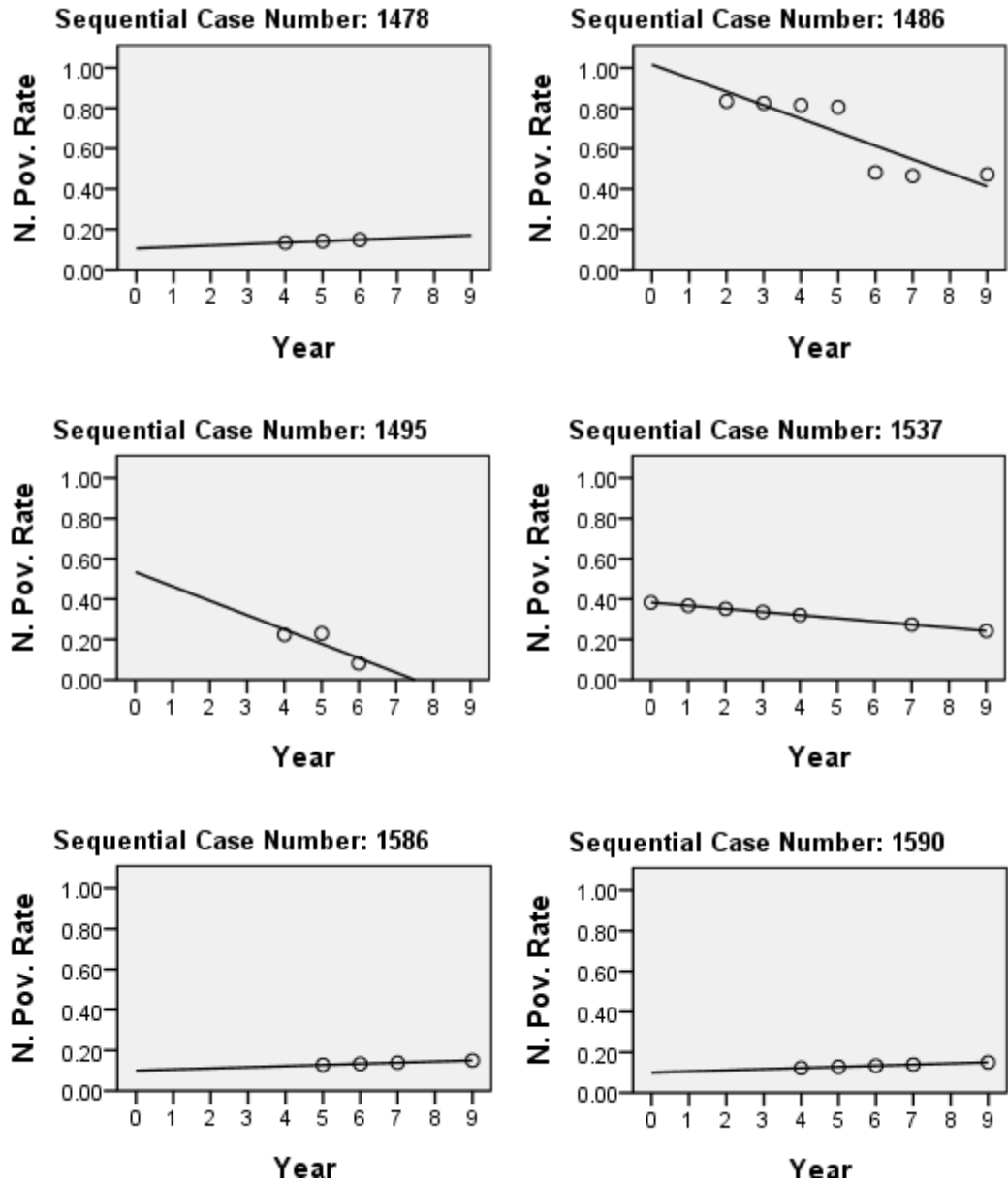
Figure 8. Fitted linear regression lines for a sample of the study population.

Where the discontinuity in a growth trajectory is for an identifiable reason (e.g.,

the household moved), non-linear change can be modeled using a Level 1 predictor that

identifies why and when the shift occurred (Singer & Willett, 2003). In this study, the

time-varying, dichotomous 'moved' variable served this purpose. Figure 9 shows how

coding the 'moved' indicator yes in 1996 improves the fit of the estimated linear growth

trajectory for case number 1486. In some cases with multiple changes in both elevation

and slope (e.g., case numbers 922 and 1391) the fit would be poorer, but cases with such

a complex growth trajectory were uncommon. Therefore, a linear functional form of the

change trajectory was assumed for multivariate model building and the 'moved' indicator

was included as a predictor to improve the fit for discontinuous trajectories.
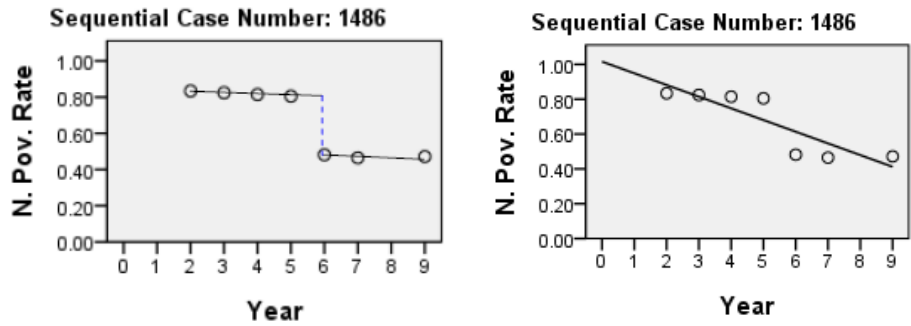
Figure 9. Elevation differential on movement to a different neighborhood.

Step four: Using multilevel modeling to estimate baseline models. As

demonstrated in the previous section, linear trajectories generally appeared to fit the

underlying data for a household well. Indeed, ordinary least squares regression could

have been used to estimate an intercept and slope value for the entire population of

households, and adding predictors to the linear regression model would have improved

the fit.
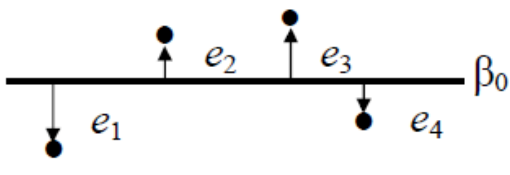
However, this approach would have ignored the nested structure of the data,

leading to underestimated standard errors and increased risk of Type I errors. Therefore,

the next step was to build a multilevel model. The intercept-only (or null) model

provides parameter estimates of intercept variance, and the unconditional growth model

provides parameter estimates of slope variance. By allowing the intercept and slope to

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vary between households and MSAs, differing growth trajectories can be described more precisely, providing an improved answer to the first research question.

Assessing the need for a multilevel model. First, it was necessary to confirm that a three-level multilevel model provided a better fit to the data than a simpler two-level multilevel model or even a single-level regression model. If variance at the upper levels had been small (that is, had there been limited between-MSA and/or between-household variability), then a less complex approach to modeling would have been justified. For the purpose of comparison, three null (unconditional) models were estimated using households' first MSA of residence as the Level 3 unit identifier, households at Level 2, measurement occasions at Level 1 and neighborhood poverty rate as the criterion variable.

In the first model, only measurement occasions were permitted to depart from the mean neighborhood poverty rate. This is equivalent to a conventional intercept-only regression model, which is represented by the equation and diagram in Figure 10.

$$\text{pctpoor}_{ijk} \sim N(XB, \; \Omega)$$
$$\text{pctpoor}_{ijk} = \beta_{0i}\text{constant}$$
$$\beta_{0i} = \beta_0 + e_{0ijk}$$
$$\left[e_{0ijk} \right] \sim N(0, \; \Omega_e) \; : \; \Omega_e = \left[\sigma^2_{e0} \right]$$

Figure 10. Intercept-only regression model.

The second model, a two-level model, assumed a multilevel population structure with measurement occasions nested within households. Measurement occasions were permitted to depart from household means, and household means were permitted to depart from the overall mean. This multilevel model with two sets of residuals is represented by the equation and diagram in Figure 11.

$$pctpoor_{ijk} \sim N(XB, \Omega)$$
$$pctpoor_{ijk} = \beta_{0ij}constant$$
$$\beta_{0ij} = \beta_0 + u_{0jk} + e_{0ijk}$$

$$[u_{0jk}] \sim N(0, \Omega_u) : \Omega_u = [\sigma^2_{u0}]$$

$$[e_{0ijk}] \sim N(0, \Omega_e) : \Omega_e = [\sigma^2_{e0}]$$
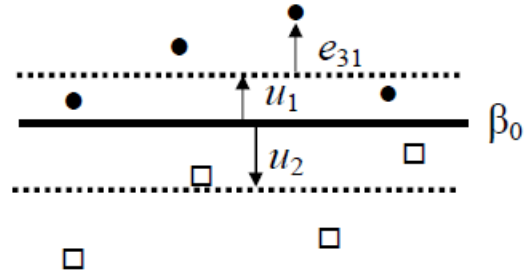
Figure 11. Two-level multilevel model.

The third model assumed a three-level structure with measurement occasions nested within households nested within MSAs. Thus, measurement occasions were permitted to depart from household means, household means were permitted to depart from MSA means, and MSA means were permitted to depart from the overall mean. This multilevel model with three sets of residuals is represented by the equation and diagram in Figure 12.

$$pctpoor_{ijk} \sim N(XB, \Omega)$$
$$pctpoor_{ijk} = \beta_{0ijk}constant$$
$$\beta_{0ijk} = \beta_0 + v_{0k} + u_{0jk} + e_{0ijk}$$

$$[v_{0k}] \sim N(0, \Omega_v) : \Omega_v = [\sigma^2_{v0}]$$

$$[u_{0jk}] \sim N(0, \Omega_u) : \Omega_u = [\sigma^2_{u0}]$$

$$[e_{0ijk}] \sim N(0, \Omega_e) : \Omega_e = [\sigma^2_{e0}]$$
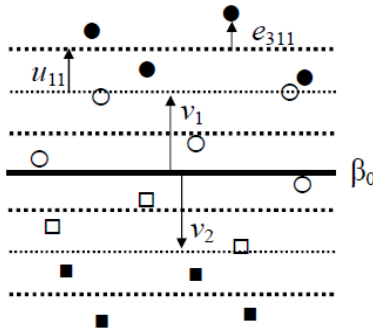
Figure 12. Three-level multilevel model.

Table 21 presents estimates of the intercept and variance components for the three models. Significant variance coefficients at Levels 2 and 3 provide evidence of between-group differences, while a significant variance coefficient at Level 1 indicates that unexplained variance in the criterion variable remains (within-household). In Model 1, the single variance component was highly significant. In Model 2, the addition of a second level reduced the amount of variability at Level 1 by accounting for correlated

Table 21

Comparison of One-, Two- and Three-level Null Models

	Null Model, random at L1	SE	χ^2 (*df*=1)	Null Model, random at L1 and L2	SE	χ^2 (*df*=1)	Null Model, random at L1, L2 and L3	SE	χ^2 (*df*=1)
Fixed Part									
Constant (β_0)	0.265212	0.001717	23866.21***	0.257870	0.003573	5207.52***	0.213051	0.007289	854.41***
Random Part									
Level 3: MSA									
constant/ constant (σ^2_{v0})							0.003854	0.000814	22.43***
Level 2: Household									
constant/ constant (σ^2_{u0})				0.018576	0.000717	670.32***	0.014666	0.000597	603.11***
Level 1: Measurement Occasion									
constant/ constant (σ^2_{e0})	0.025493	0.000388	4325.00***	0.006823	0.000115	536.22***	0.006821	0.000115	3543.73***
-2*loglikelihood:	-7192.301561			-14341.364287			-14552.884710		
LR						7149.06***			211.52***
Units: MSA	151			151			151		
Units: Households	1564			1564			1564		
Units: Measurement Occasions	8650			8650			8650		

***$p \leq 0.001$; criterion variable = neighborhood poverty rate

residuals of repeated measures of the same household; the Level 1 variance coefficient decreased from 0.025493 to 0.006823. Similarly, the addition of a third level in Model 3 reduced the amount of variability at Level 2 by accounting for correlated residuals of households within the same MSA; the Level 2 variance coefficient decreased from 0.018576 to 0.014666. These results support the notion that a multilevel model should be used to account for within-MSA and within-household clustering.

Differences between the models in goodness-of-fit were assessed for statistical significance using the likelihood ratio test. The likelihood ratio test statistic (LR) is equal to $-2 \log L_1 - (-2 \log L_2)$ where L_1 is the probability of obtaining the observed data if the simpler model is true and L_2 is the probability of obtaining the observed data if the more complex model is true. (For the test to be valid, the simpler model must be 'nested' within the more complex model. That is, all parameters in the simple model must also be included in the more complex model.) The LR test statistic is compared with a chi-square distribution (degrees of freedom equal to the number of additional parameters in the more complex model) to test the null hypothesis that LR equals zero (no difference between the models). Results of these tests indicated that the two-level model was a better fit to the data than the simple regression model, and the three-level model was better than the two-level model. Therefore, the three-level model was preferred for further analyses.

Assessing the need for a multiple membership model. The initial three-level model described above used households' first MSA of residence as the Level 3 unit identifier. Of the 1564 households in the study, 1394 (89.1 percent) lived in the same MSA on every measurement occasion. However, 147 households (9.4 percent) had lived

in two cities, 18 (1.2 percent) had lived in three cities, and five (0.3 percent) had lived in four cities over the course of their time in the study. For these cases, the population structure had three levels but was not hierarchical at the highest level. That is, measurement occasions were nested within households, but these households were members of more than one upper-level unit (MSA).

Multiple membership models can account for Level 2 units that are assigned to more than one Level 3 classification unit due to movements between units (MSAs) over time. The Level 2 units have a random effect for each classification unit to which they belong, and each Level 2 unit/classification unit pair is weighted such that the weights for each Level 2 unit—a household in this case—sum to one. This prevents Level 2 units belonging to more Level 3 units from being given extra influence in the model (Browne, 2009). For example, households that lived in only one MSA would have a weight of 1.00. Households that lived in two MSAs would have two weights, each equivalent to the proportion of measurement occasions that the household resided in each MSA. A household that was in MSA_1 on two survey occasions and in MSA_2 on three survey occasions would have a weight of 0.40 for MSA_1 and a weight of 0.60 for MSA_2. Similarly, households in three or four MSAs would have three or four weights respectively.

Although the proportion of households in the study that moved between MSAs was low, the possibility that a multiple membership model might fit the data better was explored. An iterative generalized least squares (IGLS) method of parameter estimation had been used to build the models discussed in the previous section. However, because a multiple membership model has a more complex structure, Bayesian modeling using

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Markov Chain Monte Carlo (MCMC) methods was required to fit the multiple membership model (Browne, 2009). To assess the fit of models estimated with MCMC methods, the Deviance Information Criterion (DIC) is used as a diagnostic. According to Browne (2009, p. 28),

> The DIC diagnostic is simple to calculate from an MCMC run as it simply involves calculating the value of the deviance at each iteration, and the deviance at the expected value of the unknown parameters ($D(\theta)$). Then we can calculate the 'effective' number of parameters (p_D) by subtracting $D(\theta)$ from the average deviance from the 5000 iterations ($\bar{D}$). The DIC diagnostic can then be used to compare models as it consists of the sum of two terms that measure the 'fit' and the 'complexity' of a particular model, $DIC = \bar{D} + p_D = D(\theta) + 2 p_D = 2\bar{D} - D(\theta)$.

Because the DIC is already penalized for model complexity (number of effective parameters), it is not compared to a frequency distribution. Rather, DIC values can be directly compared to one another. Models being compared do not need to be nested, and lower values indicate a better, more parsimonious model (Jones, 2007, September 10-12).

Table 22 compares the estimated intercept, variance components and model fit for the three-level null model using households' first MSA of residence as the Level 3 unit identifier and a three-level multiple membership null model incorporating a weighted combination of residuals for all MSAs to which a household belonged. So that the models could be compared, both were fit using the MCMC method.

Table 22

Comparison of Three-level Models With and Without Multiple Membership

	Three-level Null Model, 1st MSA at L3	SE	χ^2 (df=1)	Three-level Null Model, Multiple Membership	SE	χ^2 (df=1)
Fixed Part						
Constant (β_0)	0.214206	0.007141	899.82***	0.207167	0.007820	701.91***
Random Part						
Level 3: MSA						
constant/ constant (σ^2_{v0})	0.003920	0.000763	26.38***	0.004845	0.000986	24.15***
Level 2: Household						
constant/ constant (σ^2_{u0})	0.014702	0.000598	603.81***	0.014545	0.000587	613.09***
Level 1: Measurement Occasion						
constant/ constant (σ^2_{e0})	0.006825	0.000115	3493.55***	0.006824	0.000114	3578.24 ***
	-18593.62			-18593.51		
$D(\theta)$	-20029.95			-20029.09		
p_D	1436.33			1435.57		
DIC:	-17157.29			-17157.94		
Units: MSA	151			151		
Units: Households	1564			1564		
Units: Measurement Occasions	8650			8650		

***$p \leq 0.001$; criterion variable = neighborhood poverty rate

There were several limitations of using multiple membership classification. First, as can be observed in Table 22, the multiple membership model did not provide a substantially better fit to this data (DIC = -17157.94 for the multiple membership model versus DIC = -17157.29 for the model using first MSA of residence). Also, while the multiple membership model was expected to increase variance at Level 3, the change was in fact small. Finally, further exploration of the multiple membership model with time as

a predictor and random slopes and intercepts at any of the levels (results not reported here) resulted in out-of-range predictions of the criterion variable.

Use of the DIC diagnostic to compare models (as would have been required to assess goodness-of-fit as multiple membership model-building continued) is controversial (Jones, 2007, September 10-12; Spiegelhalter, Best, Carlin, & van der Linde, 2002). Since only a small proportion of households in this study had resided in more than one MSA, the marginal gain in goodness-of-fit and Level 3 variance did not justify the increased complexity of a multiple membership model. For these reasons, a three-level hierarchical model (with first MSA of residence as the Level 3 unit identifier) was used instead in all subsequent models. In other words, the population structure was defined henceforth as measurement occasions nested in households nested in their *initial context* (MSA) at the time of their first measurement occasion. Subsequent models were fit using the IGLS method of parameter estimation and compared using the LR test statistic.

As will be discussed later, predictors measuring time-variant characteristics of the MSA were available at Level 1 (measurement occasion level). These included the Mumford Prosperity Index (MPI) for metropolitan areas, a measure of white-black dissimilarity (segregation) for metropolitan areas, and a binary indicator of prior HOPE VI demolition or revitalization projects in the metropolitan area. Because these variables were coded at each measurement occasion based on where the household resided in that year, it was assumed that they would account for some of the variability in contextual influences over time and potentially compensate for loss of information about multiple contexts at Level 3 (metropolitan level). Additionally, a binary metropolitan change variable was used as a predictor (coded 'yes' at measurement occasions when the MSA

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for a household differed from the MSA at that household's prior survey occasion).

Although this indicator did not account for clustering within MSAs, it did add

information to the model about households that had resided in more than one MSA.

   Interpreting the three-level null model and partitioning the variance. Referring

to parameter estimates for the three-level null model reported in the last three columns of

Table 21, the intercept (grand mean for neighborhood poverty rate across all MSAs,

households and measurement occasions) was estimated to be 21.3 percent. In this

random intercept model, MSAs were permitted to vary around the intercept. That is,

MSAs with above- or below-average neighborhood poverty rates had intercepts above or

below the overall intercept (β_0) by a residual amount v_{0k} (the MSA random effect). The

residuals were assumed to follow a normal distribution with a mean of zero and variance

of σ^2_{v0} (between-MSA variance).

   Households also were permitted to vary around their MSA means by a residual

amount u_{0jk} (the household random effect, a departure from the MSA effect). That is,

households in neighborhoods with poverty rates above or below the average for their

MSA had intercepts above or below the intercept for their MSA. These household

residuals were assumed to have a mean of zero and variance of σ^2_{u0} (within-

MSA/between-household variance). Finally, measurement occasions were permitted to

vary around the household mean by an amount e_{0ijk} (the random effect at the

measurement occasion level, a departure from the household effect). They were above or

below the intercept for the household. Measurement occasion residuals were assumed to

have a mean of zero and a variance of σ^2_{e0} (within-MSA and household/between-

measurement occasion variance).

Significant variance coefficients at all three levels indicate that the average household's neighborhood poverty rate varied between measurement occasions, that households varied from one another and that MSAs varied from one another. Variance coefficients significantly greater than zero confirm that variation at all three levels can potentially be explained (reduced) by adding predictors to the model.

Total variance is the sum of between-MSA (Level 3) variance, within-MSA/between-household (Level 2) variance, and within-MSA and household/between-measurement occasion (Level 1) variance ($\sigma^2_{v0} + \sigma^2_{u0} + \sigma^2_{e0}$). Substituting estimated variance coefficients for the null model, total variance equals $0.003854 + 0.014666 + 0.006821 = 0.025341$. Variance partition coefficients (VPC) represent the proportion of total variance accounted for at each level. About 15 percent of the total variance ($0.003854 / 0.025341 = 0.152086$) was at Level 3 (between MSAs). Roughly 58 percent of the variance ($0.014666 / 0.025341 = 0.578746$) was at Level 2 (within MSAs/between households). The remaining 27 percent of the total variance ($0.006821 / 0.025341 = 0.269169$) was at Level 1 (within MSAs and households/between measurement occasions). In other words, households were more variable than measurement occasions, which in turn were more variable than MSAs.

The Level 3 intraclass correlation coefficient (ICC) describes the amount of within-MSA correlation. Said another way, it describes the similarity of measurement occasions in the same MSA. The Level 3 ICC is calculated as $\sigma^2_{v0} / (\sigma^2_{v0} + \sigma^2_{u0} + \sigma^2_{e0})$ or $0.003854 / (0.003854 + 0.014666 + 0.006821) = 0.152086$. About 15 percent of the overall variability in neighborhood poverty rates was between MSAs (and 85 percent was

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within MSAs). Randomly selected pairs of measurement occasions from the same MSA would have an expected correlation coefficient of 0.15.

The Level 2 ICC describes the amount of within-household correlation (or the similarity of measurement occasions within the same household). It is equal to $(\sigma^2_{v0} + \sigma^2_{u0}) / (\sigma^2_{v0} + \sigma^2_{u0} + \sigma^2_{e0})$ or $(0.003854 + 0.014666) / (0.003854 + 0.014666 + 0.006821)$ = 0.730831. About 73 percent of the overall variability in neighborhood poverty rates was at the MSA-household level (and about 27 percent was within households). Randomly selected pairs of measurement occasions selected from the same household were estimated to be strongly correlated with a coefficient of about 0.73. It is not surprising that repeated measures of the same household would be related to one another, and this evidence of autocorrelation at Level 1 underscores the appropriateness of the multilevel modeling approach in this study.

Finally, as noted above there was much more variability within MSAs than between them. Since repeated measures of the same household were very strongly correlated with one another, it stands to reason that most of the within MSA variability would be due to differences between households within the same MSA. The similarity of households within the same MSA is equal to $\sigma^2_{v0} / (\sigma^2_{v0} + \sigma^2_{u0})$ or $0.003854 / (0.003854 + 0.014666) = 0.208099$. In other words, the correlation coefficient for households in the same MSA was 0.21 meaning they were quite different from one another.

In summary, within-household effects were fairly stable (little difference in neighborhood poverty level between measurement occasions within the same household). There was more variability between MSAs and even more variability between households. Importantly, both household-level differences *and* MSA-level (contextual)

differences contributed to the overall variability in outcomes. Finally, the finding of correlation between lower level units (at Levels 1 and 2) also provides evidence that multilevel modeling was needed. Dependency among observations (and correlated error terms) would have violated an assumption of ordinary least squares regression. Had clustering been ignored, the standard errors of the regression coefficients would have been underestimated, and this would have increased the risk of Type I errors.

The differing amounts of variability at the three levels can be illustrated by using estimated variance coefficients to calculate 95 percent confidence intervals around the point estimate of the mean. The constant (or intercept value), 21.3 percent, is the estimated overall mean neighborhood poverty rate across all MSAs and households over the entire study period. Ignoring household and measurement occasion variability, the confidence interval for MSAs is $\beta_0 \pm 1.96 * \sqrt{\sigma^2 v_0}$, a range from 9.1 percent to 33.5 percent (21.3 ± 12.2 percent). (It should be noted that this is an estimate of metropolitan areas' mean neighborhood poverty rates *for poor renter households*, not an estimate of the general area poverty rate).

Including household-to-household differences widens the confidence interval considerably: $\beta_0 \pm 1.96 * \sqrt{\sigma^2 v_0 + \sigma^2 u_0} = 21.3 \pm 26.7$ percent. This extends the lower bound of the interval below the plausible value of zero percent and extends the upper bound to 48.0 percent. Finally, also taking into account measurement occasion variability widens the confidence interval only slightly: $\beta_0 \pm 1.96 * \sqrt{\sigma^2 v_0 + \sigma^2 u_0 + \sigma^2 e_0} = 21.3 \pm 31.2$ percent (a range from below the plausible lower limit to 52.5 percent).

Figure 13 plots and ranks 151 MSA-specific estimated residuals (one for each MSA) along with their respective 95 percent confidence intervals. The higher-ranked (worse outcome) MSAs had mean neighborhood poverty rates (for poor renter households) that were above the overall average across MSAs (the horizontal line at zero). Conversely, the lower-ranked (better outcome) MSAs had below-average rates. Confidence intervals varied according to the number of households within the MSA; MSAs with more households in the study had narrower confidence intervals.
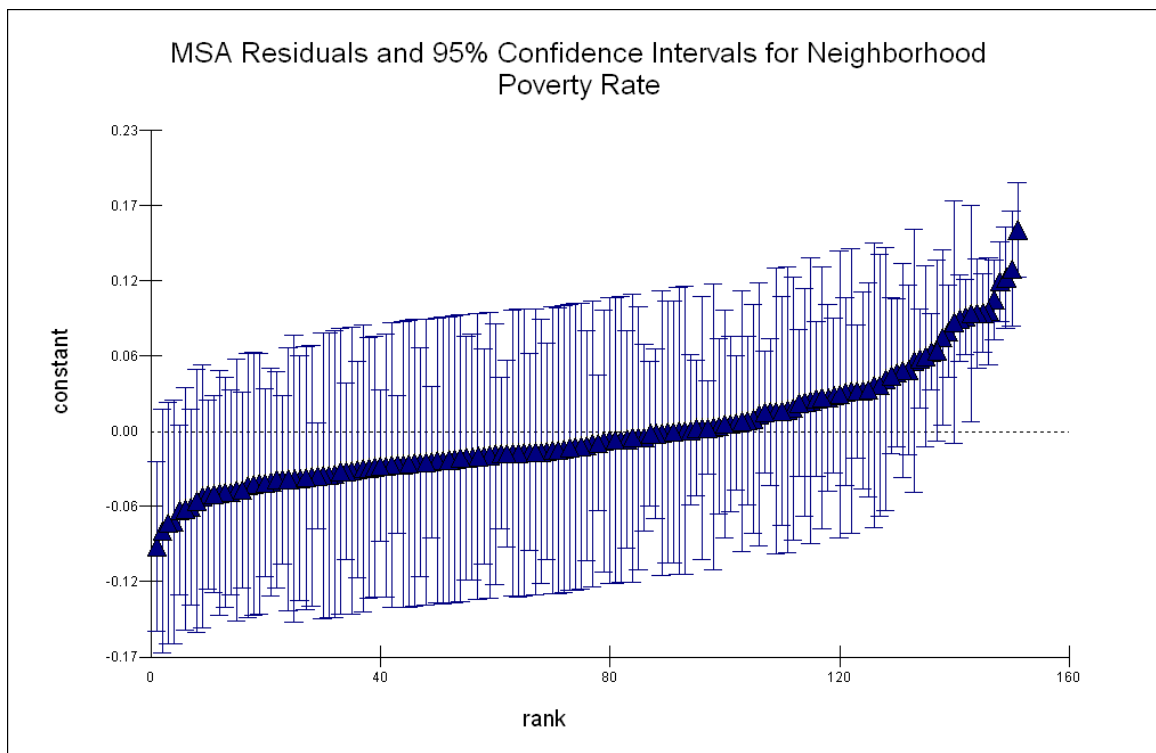
Figure 13. Ranked residuals for MSAs, null model

The highest ranked MSA (Chicago) added 15.4 percentage points to the grand mean neighborhood poverty rate while the lowest-ranked MSA (Boston) was 8.8 percentage points below the grand mean. Fifteen MSAs had statistically significantly higher group means in comparison to the grand mean (their confidence intervals did not

overlap the horizontal zero). Only one MSA had a group mean that was significantly

lower than the grand mean.

Some MSAs in the study contained a small number of households, so it is

unsurprising that many of the confidence bands were wide (in fact, most of the MSAs

with statistically significantly higher or lower group means were MSAs with a greater

number of households in the study. Therefore, making general observations about overall

between-MSA variability and the contribution of between-MSA differences to the total

variance is more appropriate than making direct comparisons of particular MSAs.
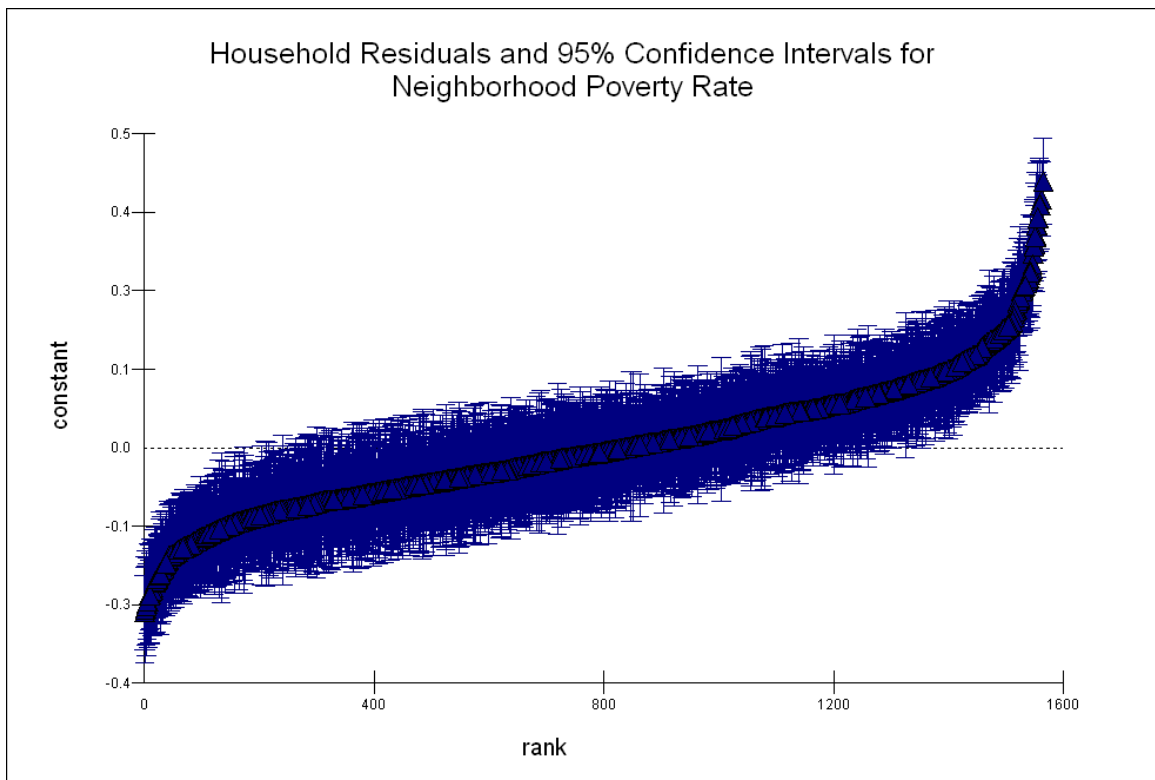
Figure 14. Ranked residuals for households, null model.

Figure 14 presents ranked residuals at the household level. Here, the large range

of outcomes among households is visually demonstrated. At one end of the continuum,

the highest ranked (poorest outcome) household was estimated to have lived in a

neighborhood (across measurement occasions) with a poverty rate nearly 46 percentage points higher than the group mean for that household's MSA. At the other extreme, the lowest ranked (best outcome) household was about 28 percentage points below its MSA mean.

   Estimating an unconditional growth model. As described previously, examination of empirical growth plots for a sample of households in the study suggested that households' neighborhood poverty rates changed over time. So far, the intercept-only null model has estimated the outcome *across* measurement occasions. Including time as a predictor in an unconditional growth model adds a slope prediction, which permits estimation of growth trajectories. Figure 15 presents the expanded equation wherein change in the criterion variable is modeled as a linear function of time. For predictor β_1, time, a fixed parameter and random variances and covariances at Levels 1, 2 and 3 were estimated.

$$\text{pctpoor}_{ijk} \sim N(XB, \ \Omega)$$
$$\text{pctpoor}_{ijk} = \beta_{0ijk}\text{constant} + \beta_{1ijk}\text{time}_{ijk}$$
$$\beta_{0ijk} = \beta_0 + v_{0k} + u_{0jk} + e_{0ijk}$$
$$\beta_{1ijk} = \beta_1 + v_{1k} + u_{1jk} + e_{1ijk}$$

$$\begin{bmatrix} v_{0k} \\ v_{1k} \end{bmatrix} \sim N(0, \ \Omega_v) \ : \ \Omega_v = \begin{bmatrix} \sigma_{v0}^2 & \\ \sigma_{v01} & \sigma_{v1}^2 \end{bmatrix}$$

$$\begin{bmatrix} u_{0jk} \\ u_{1jk} \end{bmatrix} \sim N(0, \ \Omega_u) \ : \ \Omega_u = \begin{bmatrix} \sigma_{u0}^2 & \\ \sigma_{u01} & \sigma_{u1}^2 \end{bmatrix}$$

$$\begin{bmatrix} e_{0ijk} \\ e_{1ijk} \end{bmatrix} \sim N(0, \ \Omega_e) \ : \ \Omega_e = \begin{bmatrix} \sigma_{e0}^2 & \\ \sigma_{e01} & \sigma_{e1}^2 \end{bmatrix}$$

Figure 15. Unconditional growth model.

   With the addition of time to the model, the intercept, β_0, is now interpreted as the grand mean when time equals zero (i.e., in 1990). β_1 is interpreted as the overall average amount of change in β_0 for each increment of one year. As in the baseline model, MSA

intercepts were permitted to vary around the grand mean by a residual of v_{0k}, household

intercepts were permitted to vary around MSA means by a residual of u_{0jk}, and

measurement occasions were permitted to vary around household means by a residual of

e_{0ijk}. Variance components σ^2_{v0}, σ^2_{u0} and σ^2_{e0} summarize the variability around each of

the means.

β_1 also has random variances at all three levels. At Level 3 (metropolitan level),

MSA slopes were permitted to depart from the average regression line (or from the grand

mean slope) by a residual of v_{1k}, and at Level 2 (household level), household slopes were

permitted to depart from MSA slopes by a residual of u_{1jk}. Variance components σ^2_{v1} and

σ^2_{u1} summarize the variability around each of the group slopes. Group intercepts and

slopes were also permitted to covary (σ^2_{v01} and σ^2_{u01}). Positive covariance coefficients

indicate that groups (MSAs, households) with *higher* intercepts or initial statuses also

have steeper slopes or change trajectories; negative covariance coefficients mean steeper

change trajectories for groups with *lower* intercepts. With estimates of intercept, slope

and variance parameters, separate linear growth trajectories (regression lines) can be

predicted for each household and MSA by calculating β_0 plus the residual for the

intercept and β_1 plus the residual for the slope.

The 'standard' specification of a multilevel model for change has a single error

term at Level 1, the measurement occasion level (e_{ijk}) (Singer & Willett, 2003). This

residual is the departure of an observed value on a particular measurement occasion from

a household's true change trajectory. A complex variance structure with more than one

Level 1 residual is used to correctly specify a model when the variation at Level 1 is non-

constant (Goldstein, 1999; Rasbash, Steele et al., 2009). An alternative error covariance

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structure models the Level 1 variation as a function of an explanatory variable. The

simple variance function with one random coefficient:

$\text{var}\,(e_{0ijk}x_0) = \sigma^2_{e0}x_0^2$ (which simplifies to $\sigma^2 e_0$ when x_0 is a constant)

becomes a complex variance function with two random coefficients plus their interaction:

$\text{var}\,(e_{0ijk}x_0 + e_{1ijk}x_1) = \sigma^2_{e0}x_0^2 + 2\sigma_{e01}x_0\,x_{1ijk} + \sigma^2_{e1}x_{1ijk}^2$

In this study, the variance at Level 1 was modeled as a quadratic function of time

due to non-constant between-measurement occasion variance over time. (Variance was

largest in years with the fewest measurement occasions, so presumably between-

measurement occasion residual variance was primarily a function of year-to-year

differences in the sample size.) Substituting variable names in the above equation, the

complex Level 1 variance was modeled as:

$\text{var}\,(e_{0ijk}\text{constant} + e_{1ijk}\text{time}) = \sigma^2_{e0}\text{constant}^2 + 2\sigma_{e01}\text{constant*time}_{ijk} + \sigma^2_{e1}\text{time}_{ijk}^2$

With a complex variance structure including three variance parameters at Level 1 (σ^2_{e0},

σ_{e01} and σ^2_{e1}), there was a statistically significant improvement in model fit ($\chi^2 = 203.74$,

$df = 1, p < 0.001$).

Level 1 residuals represent the departure of a measurement occasion from the

household's true change trajectory, and Level 1 residual variance represents the scatter of

a household's data points around the household's change trajectory (Singer & Willett,

2003). The variance component σ^2_{e1} cannot be described as an estimate of slope variance

(as for higher levels) because Level 1 units are a single point and by definition cannot

have a slope. Rather, when a complex Level 1 variance structure is modeled, the set of

variance components is more generally referred to as elements in a function that

describes how variations between Level 1 units (here, measurement occasions) change with respect to a predictor (time).

Table 23 presents a comparison of parameters and model fit statistics for the baseline null model and the unconditional growth (random slope) model with time random at all three levels. A statistically significant LR test statistic indicated that the unconditional growth model was the better model. The improvement in model fit suggests that neighborhood poverty rates changed over time and that the effect of time on the neighborhood poverty rate varied between groups. With the addition of random slopes to the model, total variance increased from 0.025341 to 0.034972, and the variance coefficient for the constant became larger at all three levels.

Table 23

Comparison of Null Model and Unconditional Growth Model

	Null Model	SE	χ^2 $(df=1)$	Unconditional Growth Model	SE	χ^2 $(df=1^{a})$
Fixed Part						
Constant (β_0)	0.213051	0.007289	854.41***	0.227527	0.008844	661.84***
Time (β_1)				-0.003331	0.000757	19.37***
Random Part						
Level 3: MSA						
constant/constant (σ^2_{v0})	0.003854	0.000814	22.43***	0.005121	0.001171	19.12***
time/constant (σ_{v01})				-0.000156	0.000074	4.47*
time/time (σ^2_{v1})				0.000009	0.000006	2.03
Level 2: Household						
constant/constant (σ^2_{u0})	0.014666	0.000597	603.11***	0.022754	0.001112	418.39***
time/constant (σ_{u01})				-0.001519	0.000134	127.60***
time/time (σ^2_{u1})				0.000296	0.000022	179.39***
Level 1: Measurement Occasion						
constant/constant (σ^2_{e0})	0.006821	0.000115	3543.73***	0.009386	0.000399	553.78***
time/constant (σ_{e01})				-0.001153	0.000091	160.48***
time/time (σ^2_{e1})				0.000234	0.000020	136.67***

-2*loglikelihood:	-14552.884710		-15620.662203	
LR				1067.78***
Units: MSA	151		151	
Units: Households	1564		1564	
Units: Measurement Occasions	8650		8650	

^aFor the model comparison, the LR statistic was compared to the chi-square distribution with $df = 7$.

$*p \leq 0.05$; $***p \leq 0.001$; criterion variable = neighborhood poverty rate

The fixed parameters estimate that the grand mean neighborhood poverty rate in 1990 was 22.8 percent and each additional year after 1990 resulted in a decrease of 0.3 percent. This equates to an overall decline of about three percentage points between the first and last years of the study to just below the 20 percent threshold that defines poor neighborhoods. Adding time to the model as a predictor resulted in a slightly higher intercept value. This is to be expected since the overall growth trajectory had a negative slope and the intercept now represents the *initial* average neighborhood poverty rate (grand mean in 1990) rather than the average value *across measurement occasions*.

Since MSAs were free to depart from both the overall intercept and overall slope, the fitted line for a given MSA differs from the average fitted regression line (across MSAs). The intercept variance for MSAs (0.005121) is the between-MSA variance for 1990. Thus, assuming a normal distribution, the middle 95 percent of MSAs could be expected to have mean poverty rates in 1990 between 8.7 and 36.8 percent ($0.227527 \pm$ $1.96* \sqrt{0.005121}$). The between-MSA variance in slope (0.000009) was non-significant, meaning that MSAs did not differ significantly in their rate of change over time; on average, their trajectory had a slope about equal to the grand mean slope.

The negative coefficient for the MSA intercept-slope covariance coefficient means that MSAs with above-average neighborhood poverty rates in 1990 were predicted

to have steeper-than-average (negative) slopes while MSAs with below-average

neighborhood poverty rates in 1990 were predicted to have flatter slopes. (The intercept-

slope correlation (ρ_{v01}) is cov(v_{0k}, v_{1k}) $/ \sqrt{\text{var}(v_{0k}) * \text{var}(v_{1k})} = \sigma_{v01}/\sigma_{v0}*\sigma_{v1} = $ -0.000156 /

$\sqrt{0.005121 * 0.000009}$ = -0.73.) Thus, over time the gap between the MSAs with the

highest and lowest neighborhood poverty rates for poor, renter households narrowed

(variance decreased).
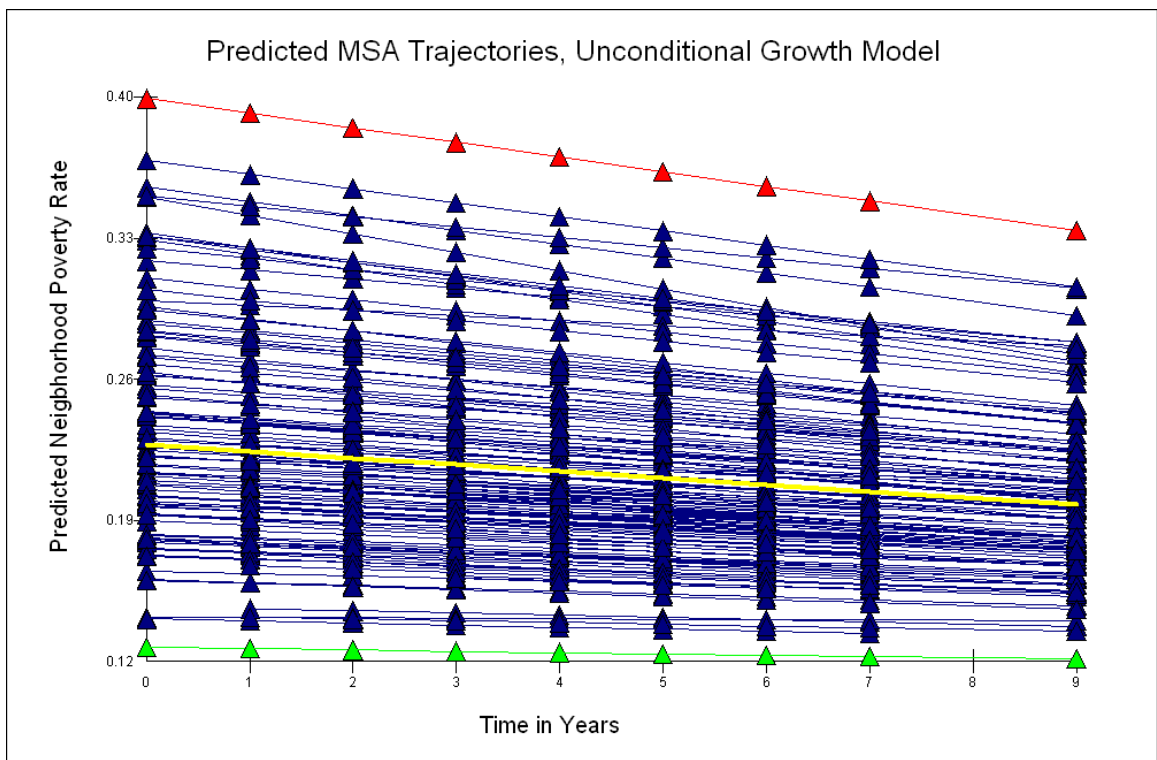
Figure 16. Predicted MSA growth trajectories (time only as a predictor).

In Figure 16, plots of predicted growth trajectories for the 151 MSAs visually

demonstrate between-MSA variability in the average neighborhood poverty rate for poor,

renter households as compared to the average regression line (yellow). The 'fanning in'

of MSA trajectories over time can also be observed. Figure 17 provides examples of the

negative correlation between initial status and rate of change. The MSA with the highest

estimated average neighborhood poverty rate in 1990 (Chicago, highlighted in red in the

top panel) was among the MSAs with steeper than average (negative) slopes (highlighted

in red in the lower panel). This MSA also is represented by the uppermost (red)

trajectory in Figure 16. Conversely, the MSA with the lowest estimated average

neighborhood poverty rate in 1990 (Boston, highlighted in green in the top panel) was

among the MSAs with flatter than average slopes (highlighted in green in the lower

panel). This MSA is also represented by the bottom trajectory (green) in Figure 16.

MSAs with average initial statuses tended to have average slopes as well (the MSA

highlighted in yellow, Fort Lauderdale, is an example).
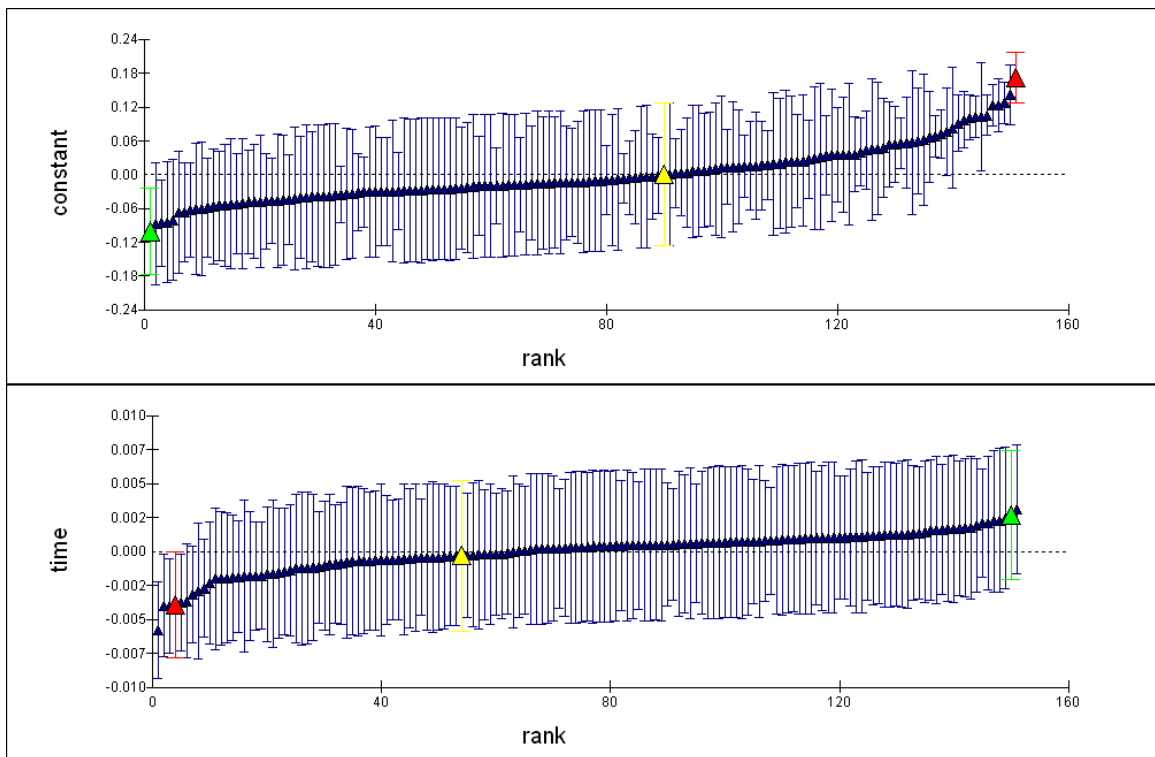
Figure 17. Ranked residuals for MSAs, unconditional growth model.

Households also were free to depart from both their MSA intercept and their

MSA slope. Thus, the fitted regression line for a given household differs from the fitted

line for that household's MSA. The intercept variance for households (0.022754) is the

between-household variance for 1990. Assuming a normal distribution, the middle 95 percent of households could be expected to have neighborhood poverty rates in 1990 as much as 32.7 percent points higher or lower than the overall mean (0.227527 ± 1.96 $\sqrt{0.005121 + 0.022754}$).

The between-household slope variance and intercept-slope covariance were both significant. The middle 95 percent of households could be expected to have year-to-year changes in their neighborhood poverty rate ranging from -3.8 to 3.1 percentage points ($-0.003331 \pm 1.96 \sqrt{0.000009 + 0.000296}$). Thus, while the overall trend was a decline in the neighborhood poverty rate, some households experienced an increase over time.

The negative coefficient for the household intercept-slope covariance coefficient means that households with above-average neighborhood poverty rates in 1990 were predicted to have steeper-than-average (negative) slopes while households with below-average neighborhood poverty rates in 1990 were predicted to have flatter slopes. (The intercept-slope correlation (ρ_{u01}) is cov(u_{0jk}, u_{1jk}) / $\sqrt{\text{var}(u_{j0k}) * \text{var}(u_{j1k})}$ = $\sigma_{u01}/\sigma_{u0}*\sigma_{u1}$ = -0.001519 / $\sqrt{0.022754 * 0.000296}$ = -0.59.) As for MSAs, the gap between households with the highest and lowest neighborhood poverty rates for poor, renter households generally narrowed (variance decreased) over time.
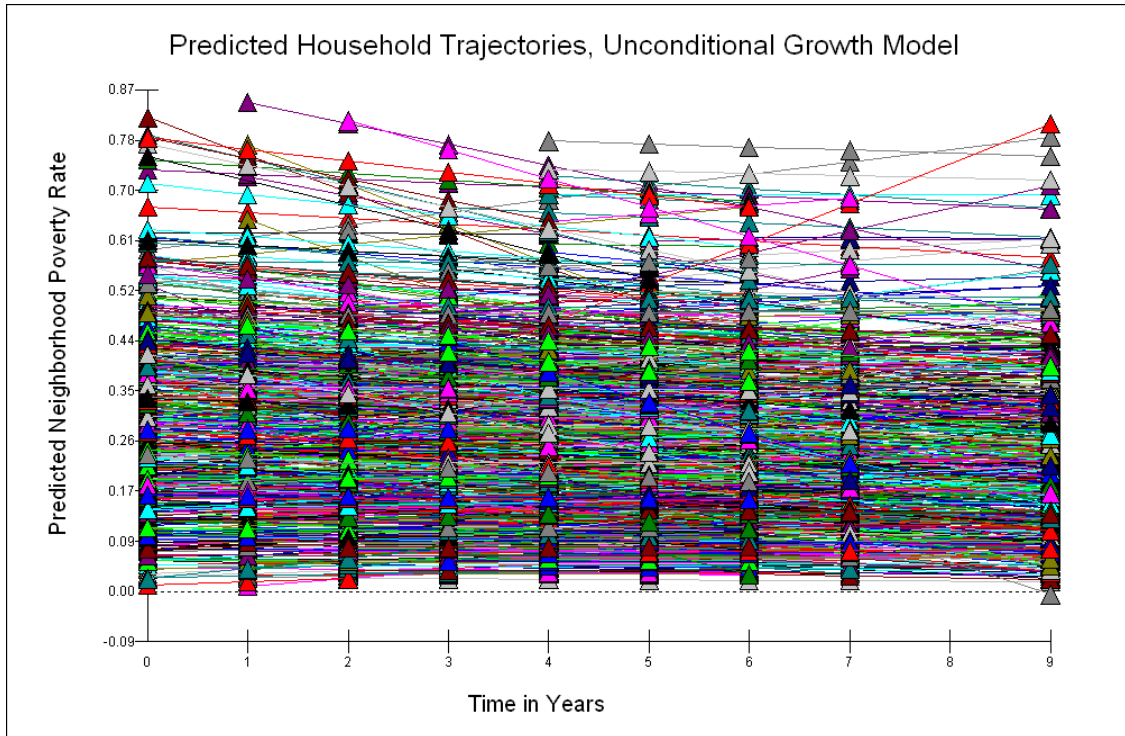
Figure 18. Predicted household growth trajectories (time only as a predictor).

Because of the larger number of households and their greater variability,

particular household trajectories are more difficult to perceive in Figure 18. However,

greater variability at Level 2 (household level) is apparent in this graph. Differences in

initial status, rate of change and direction of change in growth trajectories can also be

observed. Figure 19 provides examples of the negative correlation between initial status

and rate of change: the household in the poorest neighborhood as compared to its MSA

mean in 1990 (red) had the second steepest rate of change and the household in the least

poor neighborhood as compared to its MSA mean in 1990 (green) had a flatter-than-

average rate of change. In summary, households that started out in the poorest

neighborhoods had the steeper declines in poverty over time.
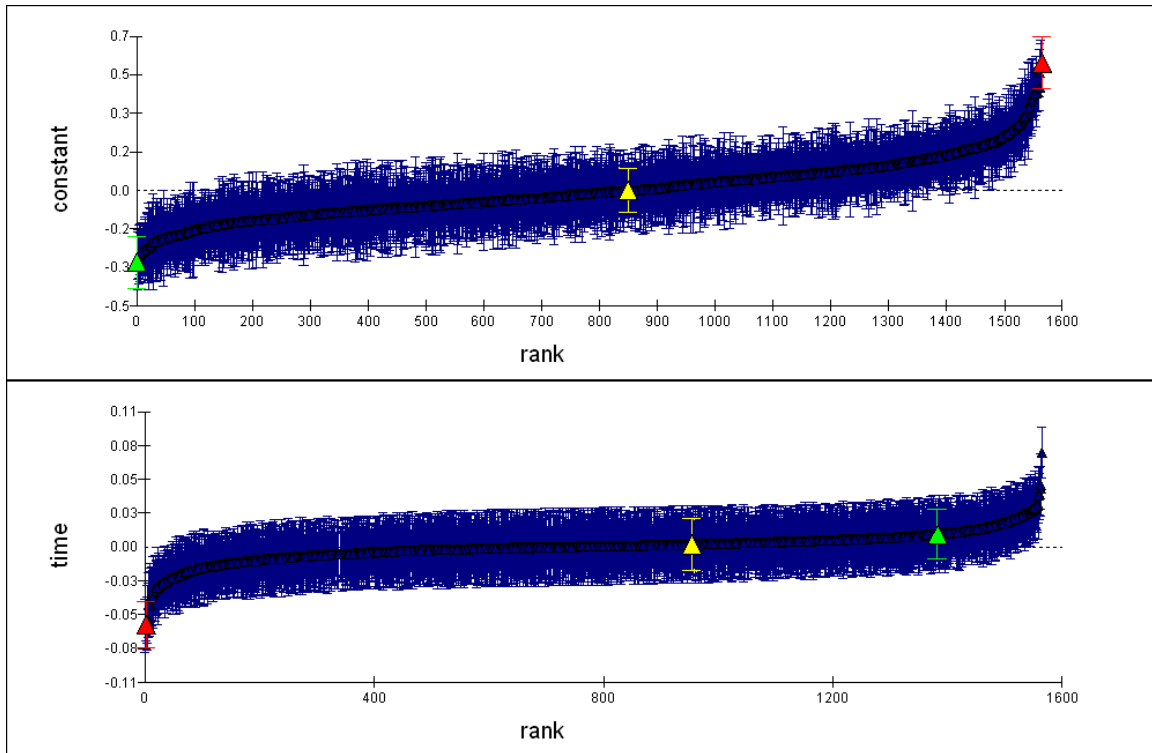
Figure 19. Ranked residuals for households, unconditional growth model.

Question Two: Relationship of Predictors and Locational Attainment

Do variations in individual decisions, personal characteristics and opportunity structures predict differences in locational attainment patterns?

Hypothesis 2: Poor renter households who make more facilitating individual decisions will show improved locational attainment trajectories over time.

Hypothesis 3: Controlling for individual decisions, poor renter households with less marginalized personal characteristics will show improved locational attainment trajectories over time.

Hypothesis 4: Controlling for individual decisions and personal characteristics, poor renter households living in metropolitan areas with more opportunities for locational mobility will show improved locational attainment trajectories over time.

Step Five: Using multilevel modeling to estimate effects of predictors. The null model and unconditional growth model provide baselines that can be used for comparison as predictors are added to the model. These initial models have accounted for clustering, provided a means for estimating the amount of autocorrelation within MSAs and households, quantified the extent of variation between units and established that fixed and random parameter estimates vary as a function of time. Fixed and time-variant characteristics of households and MSAs now can be added to the model to provide better-fitting estimates of growth trajectories by reducing residual variance (i.e., 'explaining' variance within and between units).

Individual decisions as predictors of neighborhood poverty rate. In this study, three blocks of predictors were tested: individual decisions, personal characteristics and metropolitan opportunity structure characteristics. The first block, individual decisions, included variables related to labor force participation (head of household's employment status and head of household's wages), housing (tenure and assistance), mobility (movement since last survey occasion and change of MSA since last survey occasion), fertility (number of children) and marital status. These were time-variant characteristics of the household measured at each survey occasion. Where the variable related to an individual state (e.g., employment or marital status), the status of the head of household was used.

The eight variables described above were added to the unconditional growth model together as a block. Single parameter hypothesis testing was used to identify particular variables that made a non-significant contribution to the model. On this basis, three predictors were removed from the model.

The first, marital status had only a weak bivariate correlation with the criterion variable. Thus, its failure to make a significant contribution to the multivariate model was unsurprising. The second, change of MSA, was an infrequent occurrence (coded 'yes' at only 2.7 percent of all measurement occasions) and was redundant with the other mobility variable, movement since last survey. Thus, while the change of MSA variable had a significant bivariate relationship with the criterion variable, it made a non-significant contribution to the multivariate model after accounting for other predictors (including movement since the last survey).

Finally, redundancy was also a problem for the two labor force participation variables. The head of household's wages variable measured the amount of earnings from wages and salaries *in the year prior* to the survey occasion. The employment status variable used six categories to describe what the head of household was doing *at the time of the survey*. When five dummy-coded employment status variables (unemployed, retired, disabled, keeping house/student and other, using employed as the reference category) were entered along with the other variables in the first block of predictors, only the coefficient for keeping house/student (i.e., not employed by choice) was significant. Since no or limited income was also measured by the head's wages variable, the other categories of the employment status variable were essentially superfluous. Further, because the head's wages variable captured employment-related information over a period of one year (both whether the individual was employed and how successfully in terms of earnings), whereas the employment status variable captured point-in-time information only (what the head of household was doing on the day of the survey interview), the quality of information was better for the head's wages variable.

Comparison of -2*loglikelihood values for a model with both labor force participation variables and a simpler model with only the head's wages indicated that the null hypothesis (no difference between the models) was supported (LR = 9.95, $df = 5$, $p = 0.077$). Therefore, the more parsimonious model using only the head's wages was preferred. The categorical employment status variable was dropped from the model.

Table 24 presents a comparison of parameters and model fit statistics for the baseline unconditional growth model with the model incorporating the five remaining individual decision predictors as fixed effects: head of household's wages, housing tenure (owns, rents, neither owns nor rents), housing assistance (no assistance, public housing, subsidized housing), movement since last survey and number of children (zero, one to three, four or more). The LR test statistic was compared with a chi-square distribution with eight degrees of freedom to test the null hypothesis that LR equals zero (no difference between the models). Results of this test indicated that the model with individual decisions as predictors was a better fit to the data.

Table 24

Comparison of Unconditional Growth Model and Growth Model with First Block of Predictors

	Unconditional Growth Model	SE	χ^2 ($df=1^a$)	Growth Model with Block 1 Predictors	SE	χ^2 ($df=1^a$)
Fixed Part						
Constant (β_0)	0.227527	0.008844	661.84***	0.199082	0.009951	400.25***
Time (β_1)	-0.003331	0.000757	19.37***	-0.002290	0.000764	8.99**
Head's income (sqrt transf.) (β_2)				-0.000080	0.000024	11.42***
Moved (β_3)				-0.008425	0.002068	16.59***
Pays rent (β_4)				0.019308	0.004370	19.52***
Neither owns nor rents (β_5)				0.009613	0.004933	3.80
Public housing (β_6)				0.048538	0.002990	263.47***

Subsidized housing (β_7)				0.011474	0.003901	8.65**
1-3 children (β_8)				0.008637	0.003724	5.38*
4+ children (β_9)				0.020559	0.006399	10.32**
Random Part						
Level 3: MSA						
constant/constant (σ^2_{v0})	0.005121	0.001171	19.12***	0.004896	0.001110	19.44***
time/constant (σ_{v01})	-0.000156	0.000074	4.47*	-0.000168	0.000072	5.40*
time/time (σ^2_{v1})	0.000009	0.000006	2.03	0.000010	0.000006	2.62
Level 2: Household						
constant/constant (σ^2_{u0})	0.022754	0.001112	418.39***	0.020657	0.001026	405.33***
time/constant (σ_{u01})	-0.001519	0.000134	127.60***	-0.001378	0.000124	122.59***
time/time (σ^2_{u1})	0.000296	0.000022	179.39***	0.000262	0.000020	165.29***
Level 1: Measurement Occasion						
constant/constant (σ^2_{e0})	0.009386	0.000399	553.78***	0.009352	0.000394	562.48***
time/constant (σ_{e01})	-0.001153	0.000091	160.48***	-0.001126	0.000089	160.47***
time/time (σ^2_{e1})	0.000234	0.000020	136.67***	0.000221	0.000019	131.51***
-2*loglikelihood:	-15620.662203			-15980. 617358		
LR:						359.96***
Units: MSA	151			151		
Units: Households	1564			1564		
Units: Measurement Occasions	8650			8650		

[a]For the model comparison, the LR statistic was compared to the chi-square distribution with $df = 8$.

***$p \leq 0.001$; **$p \leq 0.01$; *$p \leq 0.05$; criterion variable = neighborhood poverty rate

Addition of Level 1 predictors was expected to reduce the variance at Level 1 (measured by the σ^2_{e0} and σ^2_{e1} coefficients). As anticipated, there was a 0.4 percent reduction in the σ^2_{e0} coefficient: $(0.009386 - 0.009352) / 0.009386 = 0.003622$. Additionally, there was a 5.6 percent reduction in the σ^2_{e1} coefficient: $(0.000234 - 0.000221) / 0.000234 = 0.0555555$. In other words, accounting for individual decisions related to labor force participation, mobility, housing and fertility reduced within-

household, between-measurement occasion variability. Still, significant variance

component coefficients at Level 1 suggest that unexplained variability remained.

Besides reducing variability at Level 1, the addition of individual decision

predictors also resulted in reduced variability at Levels 2 and 3. This suggests that

households and MSAs had different distributions on this set of variables. Specifically,

between-MSA variability in initial status was reduced by 4.4 percent ((0.005121 –

0.004896) / 0.005121 = 0.043937) and between-household variability in initial status was

reduced by 9.2 percent ((0.022754 – 0.020657) / 0.022754 = 0.092160). Between-MSA

variability in rate of change actually increased by 11.1 percent ((0.000009 – 0.000010) /

0.000009 = -0.111111), but between-household variability in rate of change decreased by

11.5 percent ((0.000296 – 0.000262) / 0.000296 = 0.114865).

The increased between-MSA variability in rate of change may be an artifact of the

substantial reduction in variability at Level 2 since most of the original unexplained

variability was at Level 2. This can be accounted for by linkages between the parts of a

multilevel model: reduction in residual variance at one level can increase the residual

variance at another level (Singer & Willett, 2003). Once individual decisions were

accounted for, there was more variation between MSAs in their rate of change. It should

be noted, however, that even with an increase in residual variance, the σ^2_{v1} coefficient

(between-MSA slope variance) remained non-significant suggesting that MSAs did not

differ significantly in their rate of change over time.

Coefficients in the fixed part of the model indicate that after taking into account

the effects of all other predictors, increased income and mobility were associated with

residence in less poor neighborhoods. Controlling for other predictors, renters lived in

higher-poverty neighborhoods than homeowners. Similarly, taking other predictors into account, households receiving housing assistance lived in higher-poverty neighborhoods than those without housing assistance. Finally, after controlling for other predictors, families with more children lived in poorer neighborhoods.

Personal characteristics as predictors of neighborhood poverty rate. The second block of predictors, personal characteristics, included variables related to malleable and indelible characteristics of the household (or head of household). Changeable attributes included achieved socioeconomic status (household's total family income) and education level (head of household's years of education). Indelible personal characteristics included the race, age and gender of the head of household. These five variables were added as a second block to the growth model that already included individual decisions as predictors. Single parameter hypothesis testing was used to identify particular variables that made a non-significant contribution to the model. On this basis, two predictors were removed from the model.

The bivariate relationship between gender and the criterion variable was statistically significant, albeit very weak. However, gender did not make a significant contribution to the multivariate model that included the first and second blocks of predictors. On this basis, it was removed from the model.

Similarly, there was a significant but weak bivariate relationship between total family income and the criterion variable. Yet, after accounting for individual decisions (the first block of predictors), total family income did not make a significant contribution to the multivariate model regardless of whether other personal characteristics were also included in the model. Because there was a strong association between total family

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income and the head of household's wages, a model including all first block predictors *except the head of household's wages* and all second block predictors except gender was also tested. Under these conditions, total family income still failed to make a significant contribution to the multivariate model. Therefore, the head of household's wage variable was kept in the model, and total family income was removed.

Table 25 presents a comparison of parameters and model fit statistics for the baseline unconditional growth model, the growth model incorporating the five individual decision predictors, and the growth model adding personal characteristics as well as individual decisions as predictors. The latter model included the fixed effects of two predictors: head of household's education level (less than 12 years, 12 years, 13 or more years, education level missing) and head of household's age in 1990 (this variable was grand mean centered and an age-squared term was also included because the relationship between age and the criterion variable was non-linear). The model also included fixed and random effects for race (black, white) and interaction effects for race with the head of household's income as well as race with the number of children. The LR test statistic was compared with a chi-square distribution with twelve degrees of freedom to test the null hypothesis that LR equals zero (no difference between the models). Results of this test indicated that the growth model with personal characteristics and individual decisions as predictors was a better fit to the data.

With the addition of personal characteristics, variance at Level 1 (measurement occasion level) was reduced. There was a 0.9 percent reduction in the σ^2_{e0} coefficient: $(0.009352 - 0.009270) / 0.009352 = 0.008768$. Additionally, there was a 1.4 percent reduction in the σ^2_{e1} coefficient: $(0.000221 - 0.000218) / 0.000221 = 0.013575$. In other

Table 25

Comparison of Unconditional Growth Model and Growth Models with First and Second Blocks of Predictors

	Unconditional Growth Model	SE	χ^2 (df=1)	Growth Model with Block 1 Predictors	SE	χ^2 (df=1[a])	Growth Model with Block 1 & 2 Predictors	SE	χ^2 (df=1[b])
Fixed Part									
Constant (β_0)	0.227527	0.008844	661.84***	0.199082	0.009951	400.25***	0.135133	0.010744	158.18***
Time (β_1)	-0.003331	0.000757	19.37***	-0.002290	0.000764	8.99**	-0.003014	0.000764	15.56***
Head's income (sqrt transf.) (β_2)				-0.000080	0.000024	11.42***	0.000047	0.000043	1.20
Moved (β_3)				-0.008425	0.002068	16.59***	-0.007945	0.002070	14.73***
Pays rent (β_4)				0.019308	0.004370	19.52***	0.018407	0.004354	17.87***
Neither owns nor rents (β_5)				0.009613	0.004933	3.80	0.009009	0.004920	3.35
Public housing (β_6)				0.048538	0.002990	263.47***	0.046372	0.002972	243.42***
Subsidized housing (β_7)				0.011474	0.003901	8.65**	0.009566	0.003880	6.08*
1-3 children (β_8)				0.008637	0.003724	5.38*	-0.002955	0.007884	0.14
4+ children (β_9)				0.020559	0.006399	10.32**	-0.030930	0.019513	2.51
Education missing (β_{10})							0.070168	0.017856	15.44***
Education < 12 (β_{11})							0.042489	0.008451	25.28***
Education = 12 (β_{12})							0.023684	0.008124	8.50**
Black (β_{13})							0.102142	0.011302	81.68***
Age (grand mean centered) (β_{14})							0.000561	0.000248	5.12*
Age^2 (grand mean centered) (β_{15})							-0.000033	0.000009	12.87***
Black*Head's income (sqrt. transf.) (β_{16})							-0.000162	0.000051	10.26**
Black*1-3 children (β_{17})							0.010786	0.008800	1.50

	Est.	S.E.	Stat.	Est.	S.E.	Stat.	Est.	S.E.	Stat.
Black*4+ children (β_{18})							0.049896	0.020586	8.57**
Random Part									
Level 3: MSA									
constant/constant (σ^2_{v0})	0.005121	0.001171	19.12***	0.004896	0.001110	19.44***	0.000217	0.000538	0.16
time/constant ($\sigma_{v0\,1}$)	-0.000156	0.000074	4.47*	-0.000168	0.000072	5.40*	-0.000024	0.000048	0.25
time/time (σ^2_{v1})	0.000009	0.000006	2.03	0.000010	0.000006	2.62	0.000010	0.000006	2.51
Black/constant ($\sigma_{v0\,13}$)							0.000337	0.000667	0.26
Black/time ($\sigma_{v1\,13}$)							-0.000120	0.000068	3.08
Black/Black (σ^2_{v13})							0.003446	0.001378	6.26*
Level 2: Household									
constant/constant (σ^2_{u0})	0.022754	0.001112	418.39***	0.020657	0.001026	405.33***	0.017771	0.000914	377.86***
time/constant ($\sigma_{u0\,1}$)	-0.001519	0.000134	127.60***	-0.001378	0.000124	122.59***	-0.001289	0.000117	120.60***
time/time (σ^2_{u1})	0.000296	0.000022	179.39***	0.000262	0.000020	165.29***	0.000256	0.000020	162.27***
Level 1: Measurement Occasion									
constant/constant (σ^2_{e0})	0.009386	0.000399	553.78***	0.009352	0.000394	562.48***	0.009270	0.000392	559.61***
time/constant ($\sigma_{e0\,1}$)	-0.001153	0.000091	160.48***	-0.001126	0.000089	160.47***	-0.001108	0.000088	157.02***
time/time (σ^2_{e1})	0.000234	0.000020	136.67***	0.000221	0.000019	131.51***	0.000218	0.000019	128.43***
-2*loglikelihood:	-15620.662203			-15980. 617358			-16286.755839		
LR						359.96***			306.14***
Units: MSA	151			151			151		
Units: Households	1564			1564			1564		
Units: Measurement Occasions	8650			8650			8650		

[a]For the comparison of the unconditional growth model and the Block 1 model, the LR statistic was compared to the chi-square distribution with $df = 8$.

[b]For the comparison of the Block 1 and Block 2 models, the LR statistic was compared to the chi-square distribution with $df = 12$.

***$p \leq 0.001$; **$p \leq 0.01$; *$p \leq 0.05$; criterion variable = neighborhood poverty rate

words, accounting for personal characteristics related to education, age and race reduced within-MSA and household/between-measurement occasion variability. However, significant variance component coefficients at Level 1 suggest that unexplained variability remained.

As is to be expected with the addition of Level 2 predictors, including personal characteristics reduced the variability at Level 2 (household level). Specifically, between-household variability in initial status declined by 14.0 percent ((0.020657 – 0.017771) / 0.020657 = 0.139711). Between-household variability in rate of change decreased by 2.3 percent ((0.000262 – 0.000256) / 0.000262 = 0.022901). Said another way, an additional 14 percent of between-household differences in initial status and an additional two percent of between-household differences in rate of change were explained by education level, age and race.

Finally, Level 3 (metropolitan level) intercept and slope variances were reduced by adding personal characteristics predictors to the model. In an intermediate step (not reported in Table 25), education level, age and race were added to the model as fixed effects only. (That is, the random effect for race at Level 3 and the interaction terms were not yet included.) Between-MSA variability in initial status was reduced by 43.3 percent ((0.004896 – 0.002776) / 0.004896 = 0.433007). In other words, nearly half of the between-MSA intercept variance in the Block 1 model was explained by adding personal characteristics. This suggests a considerable amount of between-MSA variability on this set of variables.

Adding the personal characteristics predictors one at a time revealed that race was driving most of the reduction in variability. (With race as the *only* personal characteristic

in the model, between-MSA variance in initial status dropped from 0.004896 to 0.002916.) This indicates that MSAs varied from one another on race. Therefore, a random effect for race was added at Level 3. In other words, between-MSA residuals now incorporated an additional variance component for race and MSA fitted regression lines were permitted to depart from both the overall intercept and overall slope as a function of race as well as time.

Adding a random effect of race as well as time at Level 3 resulted in three new variance parameters (σ^2_{v13}, $\sigma_{v0\ 13}$ and $\sigma_{v1\ 13}$). Of the six Level 3 variance components, only the σ^2_{v13} coefficient (between-MSA intercept variance for blacks) was statistically significant. This suggests that there was significant variability among MSA initial statuses (intercepts) only as a function of race and not time, and there was no significant variability among MSA slopes (as a function of either race or time).

Holding constant all other fixed effects in the model (individual decisions, education and age), blacks in a particular MSA were expected to have a higher initial (1990) neighborhood poverty rate than whites in the same MSA. This is estimated by adding the coefficient for the fixed effect of race (10.2 percentage points) and the race-related MSA residual ($\hat{v}_{13k}$, which is a function of σ^2_{v13}, $\sigma_{v0\ 13}$ and $\sigma_{v1\ 13}$, the race-related variance parameters). The size of the race-related gap differed across MSAs. In 1990, the middle 95 percent of MSAs was predicted to vary by as much as about 11.5 percentage points around the predicted 10.2 percentage point black-white differential ($\pm 1.96 * \sqrt{0.003446} = 0.115057$). Some MSAs were predicted to have average neighborhood poverty rates for blacks that were substantially higher than the overall

average (across MSAs) for whites, but in other MSAs there was little if any predicted difference.
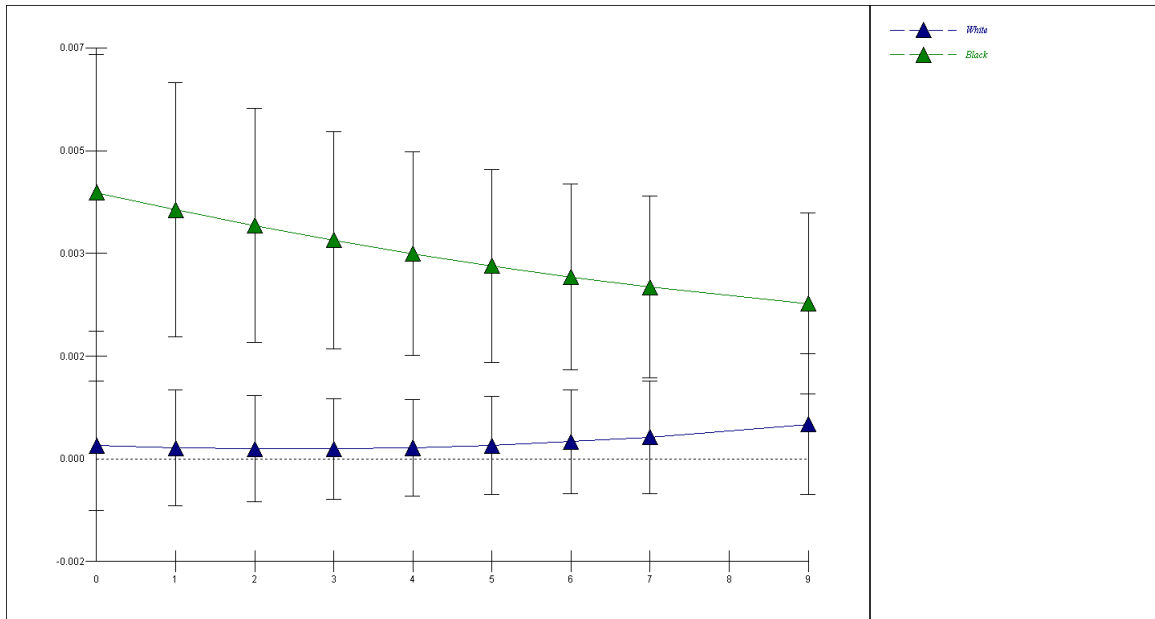
Figure 20. Level 3 variance as a function of race and time, growth model with block 1 and 2 predictors.

Figure 20 plots between-MSA variance as a function of race as well as time using parameter estimates for all six variance components. The Level 3 variance function was calculated as:

$$\text{var}(v_{0k}\text{constant} + v_{1k}\text{time}_{ijk} + v_{13k}\text{black}_{jk}) = \sigma^2_{v0}\text{constant}^2 + 2\sigma_{v0\,1}\text{constant*time}_{ijk} +$$

$$\sigma^2_{v1}\text{time}_{ijk}{}^2 + 2\sigma_{v0\,13}\text{constant*black}_{jk} + 2\sigma_{v1\,13}\text{time}_{ijk}\text{*black}_{jk} + \sigma^2_{v13}\text{black}_{jk}{}^2$$

This plot of variance function estimates along with their 95 percent confidence intervals visually demonstrates that for whites, between-MSA variability was not significantly different from zero. Although between-MSA variance for blacks decreased slightly over time, the estimated average MSA-level poverty rate for blacks was consistently and significantly above the average for whites as well as the overall average.

Coefficients in the fixed part of the model indicate that after taking into account the effects of all other predictors, having less education was associated with residence in higher-poverty neighborhoods. Controlling for other predictors, age had a curvilinear relationship with the criterion variable with increasing age initially associated with residence in higher poverty neighborhoods but later associated with residence in less poor neighborhoods. Even after accounting for all other individual decisions and personal characteristics, race was a highly significant and important predictor of neighborhood poverty rate; blacks were expected to live in much poorer neighborhoods than whites.

With the addition of race to the model, two cross-level interactions (race with head of household's income and number of children) resulted in changed estimates of the effects of income and fertility. For whites, income was no longer a significant predictor of neighborhood poverty rate, while for blacks more income was associated with lower neighborhood poverty rates. Having a large number of children (four or more as compared to none) was only associated with increased neighborhood poverty rates for blacks and having a moderate number of children (one to three as compared to none) was not a significant predictor for either race.

MSA characteristics as predictors of neighborhood poverty rate. The third block of predictors, MSA characteristics, included variables related to the housing/mortgage market, labor market, area poverty, segregation level and housing policy of the MSA. The first three characteristics were measured by the MPI Index, a standardized aggregate measure of a metropolitan area's 'prosperity' or economic viability; the mean of an MSA's 1990 and 2000 values was used to provide an overall value for the decade. MSA racial segregation was measured by the MSA's mean white-black dissimilarity value for

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1990 and 2000. Housing policy related to HOPE VI demolition and revitalization was measured with a dichotomous indicator coded 'yes' in or after any year in which a HOPE VI project was funded in particular MSA. Although these predictors are related to metropolitan area characteristics, they were Level 1 variables because they were coded at each measurement occasion by matching on the household's MSA of residence in that particular year.

These three variables were added as a block to the growth model with individual decisions and personal characteristics as predictors. Single parameter hypothesis testing was used to identify particular variables that made a non-significant contribution to the model. On this basis, one predictor was removed from the model.

About 38 percent of measurement occasions were coded 'yes' for the HOPE VI variable. On average, the neighborhood poverty rate was about 2.5 percentage points higher (across all measurement occasions) in HOPE VI MSAs than in non-HOPE VI MSAs. The bivariate relationship between the HOPE VI variable and the criterion variable was statistically significant, but very weak. However, it failed to make a significant contribution to the multivariate model (or even when added on its own to the unconditional growth model). Therefore, it was removed from the model.

The bivariate relationship between the white-black dissimilarity variable and the criterion variable was statistically significant, but moderate. Dissimilarity failed to make a significant contribution to the multivariate model when all Block 1, 2 and 3 variables (except HOPE VI) were included. It also did not make a significant contribution when added to the unconditional growth model on its own. Interestingly, however, the dissimilarity variable *was* significant when added on its own to the final Block 2 model.

This suggested that its relationship to the criterion variable might have been suppressed until personal characteristics such as race were accounted for. Testing the possibility that the effect of segregation was conditioned on the race of the head of household, a cross-level interaction effect was added to the model. With the race*dissimilarity interaction effect included, the fixed effect of the dissimilarity variable was significant and it retained its significance when the other Block 3 variable (MPI Index) was added back into the model. There was also a significant main effect of the MPI Index variable and of the interaction between the race and MPI Index variables. Thus, the final Block 3 model included the main effects of dissimilarity (grand mean centered) and metropolitan 'prosperity' (standardized and uncentered) plus their interactions with race.

Table 26 presents a comparison of parameters and model fit statistics for the baseline unconditional growth model, the growth model incorporating the five individual decision predictors, the growth model adding personal characteristics as well as individual decisions as predictors, and the final model incorporating metropolitan indicators in addition to the individual decisions and personal characteristics predictors. The LR test statistic was compared with a chi-square distribution with four degrees of freedom to test the null hypothesis that LR equals zero (no difference between the models). Results of this test indicated that the growth model with metropolitan characteristics as predictors was a better fit to the data as compared to the Block 2 model.

With the addition of the third block of predictors, Level 1 (measurement occasion level) variance was reduced. There was a 1.3 percent reduction in the σ^2_{e0} coefficient: $(0.009270 - 0.009152) / 0.009270 = 0.012729$. Additionally, there was a 2.3 percent reduction in the σ^2_{e1} coefficient: $(0.000218 - 0.000213) / 0.000218 = 0.022936$. In other

Table 26

Comparison of Unconditional Growth Model and Growth Models with First, Second and Third Blocks of Predictors

	Unconditional Growth Model (SE)	χ^2 (df=1)	Growth Model with Block 1 Predictors (SE)	χ^2 (df=1[a])	Growth Model with Block 1 & 2 Predictors (SE)	χ^2 (df=1[b])	Growth Model with Block 1, 2 & 3 Predictors (SE)	χ^2 (df=1[c])
Fixed Part								
Constant (β_0)	0.227527 (0.008844)	661.84***	0.199082 (0.009951)	400.25***	0.135133 (0.010744)	158.18***	0.149561 (0.011207)	178.09***
Time (β_1)	-0.003331 (0.000757)	19.37***	-0.002290 (0.000764)	8.99**	-0.003014 (0.000764)	15.56***	-0.003205 (0.000733)	19.10***
Head's income (sqrt transf.) (β_2)			-0.000080 (0.000024)	11.42***	0.000047 (0.000043)	1.20	0.000056 (0.000043)	1.69
Moved (β_3)			-0.008425 (0.002068)	16.59***	-0.007945 (0.002070)	14.73***	-0.007842 (0.002068)	14.38***
Pays rent (β_4)			0.019308 (0.004370)	19.52***	0.018407 (0.004354)	17.87***	0.018567 (0.004348)	18.24***
Neither owns nor rents (β_5)			0.009613 (0.004933)	3.80	0.009009 (0.004920)	3.35	0.009395 (0.004915)	3.65
Public housing (β_6)			0.048538 (0.002990)	263.47***	0.046372 (0.002972)	243.42***	0.046620 (0.002967)	246.81***
Subsidized housing (β_7)			0.011474 (0.003901)	8.65**	0.009566 (0.003880)	6.08*	0.009407 (0.003875)	5.89*
1-3 children (β_8)			0.008637 (0.003724)	5.38*	-0.002955 (0.007884)	0.14	-0.003517 (0.007846)	0.20
4+ children (β_9)			0.020559 (0.006399)	10.32**	-0.030930 (0.019513)	2.51	-0.028907 (0.019431)	2.21
Education missing (β_{10})					0.070168 (0.017856)	15.44***	0.066401 (0.017689)	14.09***
Education < 12 (β_{11})					0.042489	25.28***	0.041332	24.36***

	Model 1		Model 2		Model 3		Model 4	
					(0.008451)		(0.008375)	
Education = 12 (β_{12})					0.023684 (0.008124)	8.50**	0.023861 (0.008043)	8.8**
Black (β_{13})					0.102142 (0.011302)	81.68***	0.102058 (0.012055)	71.67***
Age (grand mean centered) (β_{14})					0.000561 (0.000248)	5.12*	0.000589 (0.000245)	5.77*
Age^2 (grand mean centered) (β_{15})					-0.000033 (0.000009)	12.87***	-0.000032 (0.000009)	12.24***
Black*Head's income (sqrt. transf.) (β_{16})					-0.000162 (0.000051)	10.26**	-0.000171 (0.000050)	11.55***
Black*1-3 children (β_{17})					0.010786 (0.008800)	1.50	0.011096 (0.008762)	1.60
Black*4+ children (β_{18})					0.049896 (0.020586)	8.57**	0.047931 (0.020502)	5.47*
MPI mean (β_{19})							-0.042331 (0.007404)	32.68***
Dissimilarity mean (grand mean centered) (β_{20})							-0.001138 (0.000336)	11.47***
Black*Dissimilarity mean (β_{21})							0.002145 (0.000547)	15.38***
Black*MPI mean (β_{22})							0.021279 (0.010598)	4.03*
Random Part								
Level 3: MSA								
constant/ constant (σ^2_{v0})	0.005121 (0.001171)	19.12***	0.004896 (0.001110)	19.44***	0.000217 (0.000538)	0.16	0.000000 (0.000000)	
time/constant ($\sigma_{v0\,1}$)	-0.000156 (0.000074)	4.47*	-0.000168 (0.000072)	5.40*	-0.000024 (0.000048)	0.25	0.000000 (0.000000)	
time/time (σ^2_{v1})	0.000009 (0.000006)	2.03	0.000010 (0.000006)	2.62	0.000010 (0.000006)	2.51	0.000007 (0.000005)	2.09

Black/constant ($\sigma_{v0\,13}$)					0.000337 (0.000667)	0.26	0.000000 (0.000000)	
Black/time ($\sigma_{v1\,13}$)					-0.000120 (0.000068)	3.08	-0.000096 (0.000054)	3.15
Black/Black (σ^2_{v13})					0.003446 (0.001378)	6.26*	0.003155 (0.000896)	12.40***
Level 2: Household								
constant/ constant (σ^2_{u0})	0.022754 (0.001112)	418.39***	0.020657 (0.001026)	405.33***	0.017771 (0.000914)	377.86***	0.017635 (0.000896)	387.78***
time/constant ($\sigma_{u0\,1}$)	-0.001519 (0.000134)	127.60***	-0.001378 (0.000124)	122.59***	-0.001289 (0.000117)	120.60***	-0.001297 (0.000116)	125.23***
time/time (σ^2_{u1})	0.000296 (0.000022)	179.39***	0.000262 (0.000020)	165.29***	0.000256 (0.000020)	162.27***	0.000256 (0.000020)	164.60***
Level 1: Measurement Occasion								
constant/ constant (σ^2_{e0})	0.009386 (0.000399)	553.78***	0.009352 (0.000394)	562.48***	0.009270 (0.000392)	559.61***	0.009152 (0.000389)	554.46***
time/constant ($\sigma_{e0\,1}$)	-0.001153 (0.000091)	160.48***	-0.001126 (0.000089)	160.47***	-0.001108 (0.000088)	157.02***	-0.001082 (0.000088)	151.82***
time/time (σ^2_{e1})	0.000234 (0.000020)	136.67***	0.000221 (0.000019)	131.51***	0.000218 (0.000019)	128.43***	0.000213 (0.000019)	124.15***
-2*loglikelihood:	-15620.662203		-15980. 617358		-16286.755839		-16343.106187	
LR				359.96***		306.14***		56.35***
Units: MSA	151		151		151		151	
Units: Households	1564		1564		1564		1564	
Units: Measurement Occasions	8650		8650		8650		8650	

[a]For the comparison of the unconditional growth model and the Block 1 model, the LR statistic was compared to the chi-square distribution with $df = 8$.

[b]For the comparison of the Block 1 and Block 2 models, the LR statistic was compared to the chi-square distribution with $df = 12$.

[c]For the comparison of the Block 2 and Block 3 models, the LR statistic was compared to the chi-square distribution with $df = 4$.

***$p \leq 0.001$; **$p \leq 0.01$; *$p \leq 0.05$; criterion variable = neighborhood poverty rate

words, accounting for contextual characteristics related to opportunity structure (metropolitan 'prosperity') and segregation reduced within-household, between-measurement occasion variability. Still, significant unexplained Level 1 variability remained in the final model.

Including metropolitan characteristics also reduced the variability very slightly at Level 2 (household level). Specifically, between-household variability in initial status declined by 0.8 percent (($0.017771 - 0.017635$) / $0.017771 = 0.007653$). Between-household variability in rate of change was unchanged. Significant variance component coefficients indicate that unexplained Level 2 variability also remained in the final model.

After the addition of the metropolitan characteristics, all of the Level 3 (metropolitan level) variance in initial (1990) status for whites had been explained (the intercept residual for whites was now estimated at zero). Accounting for contextual conditions reduced the between-MSA variability in initial status for blacks by 8.4 percent (($0.003446 - 0.003155$) / $0.003446 = 0.084446$). The Level 3 intercept variance coefficient for blacks was the only Level 3 variance component that remained significant in the final model. This suggests that while some of the between-MSA variability in outcomes for blacks was explained by the measured characteristics of MSAs (housing and employment markets, area poverty, segregation), some unexplained variability conditioned on race remained.

Coefficients in the fixed part of the model indicate that for whites higher levels of segregation had a small but negative effect on neighborhood poverty rates. For blacks, however, the effect was the opposite. For whites, higher levels of metropolitan

'prosperity' were associated with lower levels of neighborhood poverty. For blacks the direction of the association was the same, but the effect was attenuated.

Step six: Interpreting the final model. The equation for the fully specified three-level model is provided in Figure 21:

$$\text{pctpoor}_{ijk} \sim N(XB, \; \Omega)$$

$$\text{pctpoor}_{ijk} = \beta_{0ijk}\text{constant} + \beta_{1ijk}\text{time}_{ijk} + \beta_2\text{moved:Yes}_{ijk} + \beta_3\text{Pays rent}_{ijk} + \beta_4\text{Neither owns nor rents}_{ijk} +$$
$$\beta_5\text{Public Housing}_{ijk} + \beta_6\text{Subsidized Housing}_{ijk} + \beta_7\text{1-3 children}_{ijk} + \beta_8\text{4+ children}_{ijk} + \beta_9\text{headinctrsqr}_{ijk} +$$
$$\beta_{10}\text{Missing}_{jk} + \beta_{11}{<}\,12_{jk} + \beta_{12}12_{jk} + \beta_{13}\text{Black}_{jk} + \beta_{14}(\text{Age1990-gm})^\wedge 1_{jk} + \beta_{15}(\text{Age1990-gm})^\wedge 2_{jk} +$$
$$\beta_{16}\text{Black.headinctrsqr}_{ijk} + \beta_{17}\text{Black.1-3 children}_{ijk} + \beta_{18}\text{Black.4+ children}_{ijk} + \beta_{19}\text{MPImean}_{ijk} +$$
$$\beta_{20}(\text{Dismean-gm})_{ijk} + \beta_{21}\text{Black.}(\text{Dismean-gm})_{ijk} + \beta_{22}\text{Black.MPImean}_{ijk}$$

$$\beta_{0ijk} = \beta_0 + v_{0k} + u_{0jk} + e_{0ijk}$$
$$\beta_{1ijk} = \beta_1 + v_{1k} + u_{1jk} + e_{1ijk}$$
$$\beta_{13k} = \beta_{13} + v_{13k}$$

$$\begin{bmatrix} v_{0k} \\ v_{1k} \\ v_{13k} \end{bmatrix} \sim N(0, \; \Omega_v) \; : \; \Omega_v = \begin{bmatrix} \sigma_{v0}^2 & & \\ \sigma_{v01} & \sigma_{v1}^2 & \\ \sigma_{v013} & \sigma_{v1\,13} & \sigma_{v13}^2 \end{bmatrix}$$

$$\begin{bmatrix} u_{0jk} \\ u_{1jk} \end{bmatrix} \sim N(0, \; \Omega_u) \; : \; \Omega_u = \begin{bmatrix} \sigma_{u0}^2 & \\ \sigma_{u01} & \sigma_{u1}^2 \end{bmatrix}$$

$$\begin{bmatrix} e_{0ijk} \\ e_{1ijk} \end{bmatrix} \sim N(0, \; \Omega_e) \; : \; \Omega_e = \begin{bmatrix} \sigma_{e0}^2 & \\ \sigma_{e01} & \sigma_{e1}^2 \end{bmatrix}$$

Figure 21. Neighborhood poverty rate: Multilevel model with three levels.

Substituting parameter estimates reported in the eighth column of Table 26 results in the following prediction of neighborhood poverty rate:

$$\hat{Y}_{\text{PCTPOOR}} = 0.149561 - 0.003205X_{\text{TIME}} + 0.000056X_{\text{HEADINCTRSQR}} - 0.007842X_{\text{MOVED}} +$$

$$0.018567X_{\text{PAYS RENT}} + 0.009395X_{\text{NEITHER OWNS NOR RENTS}} + 0.046620X_{\text{PUBLIC HOUSING}} +$$

$$0.009407X_{\text{SUBSIDIZED HOUSING}} - 0.003517X_{\text{1-3 CHILDREN}} - 0.028907X_{\text{4+CHILDREN}} + e_0 + e_1 +$$

$$0.066401X_{\text{EDUCATION MISSING}} + 0.041332X_{\text{EDUCATION}<12} + 0.023861X_{\text{EDUCATION}=12} + 0.102058X_{\text{BLACK}}$$

$$+ 0.000589X_{\text{AGE1990-GM}} - 0.000032X_{(\text{AGE1990-GM})2} - 0.000171X_{\text{BLACK}}*X_{\text{HEADINCTRSQR}} +$$

$$0.011096X_{\text{BLACK}}*X_{\text{1-3 CHILDREN}} + 0.047931X_{\text{BLACK}}*X_{\text{4+CHILDREN}} + u_0 + u_1 - 0.042331X_{\text{MPIMEAN}}$$

$$- 0.001138X_{\text{DISMEAN-GM}} + 0.002145X_{\text{BLACK}}*X_{\text{DISMEAN-GM}} + 0.021279X_{\text{BLACK}}*X_{\text{MPIMEAN}} + v_0 + v_1$$

$$+ v_{13}$$

The intercept parameter (0.149561) provides an estimate of the neighborhood poverty rate in 1990 after controlling for all predictors in the final model (dummy coded and uncentered predictors equal to zero, grand mean centered predictors equal to the grand mean). Thus, an initial neighborhood poverty rate of about 15 percent was estimated for a household with a white, 37.3 year old (grand mean) head of household and no children. Other characteristics included:

- some post-secondary education (reference category = 13+)

- no earned income (wages) in the prior year

- homeowner (reference category)

- not in public or subsidized housing (reference category = no assistance)

- no move in the past year (reference category)

- MPI Index value of zero indicating average scores on all indexed indicators

- dissimilarity value of 65 (grand mean) indicating very high segregation

The slope parameter (-0.003205) provides an estimate of the year-to-year change in the neighborhood poverty rates after controlling for all predictors. A decrease of about 0.3 percentage points per year was predicted, which would be equivalent to a three point drop over the decade.

As has been discussed, there was between-MSA, between-household and between measurement occasion variability in neighborhood poverty rates. Some of this variability was explained by individual decisions, personal characteristics and metropolitan characteristics. These findings will be summarized in the following sections. Predictors generally will be discussed in the order they entered the model. However, because there was such a strong main effect of race as well as several

significant interactions with other predictors, race-related findings will be discussed first. Where appropriate, discussion of the effects of other predictors will include contrasts by race.

Race. After controlling for all other predictors, blacks were estimated to live in a neighborhood with a poverty rate 10.2 percentage points higher than whites. As an example, in 1990 a black head of household with advantaged characteristics (age equal to grand mean, no children, $22,500 of earned income in the previous year, some post-secondary education, homeowner, no housing assistance, moved in prior year, MSA dissimilarity value equal to grand mean and MPI Index equal to zero) would be predicted to live in a neighborhood with a poverty rate of 22.7 percent. With the *same* characteristics, a white head of household would be expected to live in a neighborhood with a poverty rate of 15.0 percent. In this scenario, race was the difference that predicted whether a household would reside in a poor or non-poor neighborhood.

Race interacted with earnings and family size. There were also race interaction effects with characteristics of the MSA. As will be discussed later, these *contextual differences* may have helped or hindered some black households from achieving residence in non-poor neighborhoods.

Head of household's income. Controlling for other predictors, each one unit increase in a white head of household's annual income was associated with an increase of 0.000056 in the predicted neighborhood poverty rate. However, because this parameter was non-significant, it is reasonable to conclude that for whites there was no effect of income on neighborhood poverty rate after accounting for the other predictors. For blacks, there was an interaction between income and race that moderated the effect of

income by a decrement of -0.000171. Taken together, these parameters predict that for blacks there is a net decline of 0.000115 in neighborhood poverty rate as income increases by one unit.

Because a square root transformation was used to normalize the income variable, 'units' of income are square root units (i.e., the square root of the raw value). For blacks, each increment of 50 square root units predicts a drop in the neighborhood poverty rate of 0.005750 (50 x -0.000115). For example, as a black head of household's earnings increase from $0 to $2500 (50 square root units), a 0.57 percentage point drop in the neighborhood poverty rate would be expected. Growing earnings from $2500 to $10,000 (100 square root units) would result in another 0.57 percentage point drop, and a rise to $22,500 (150 square root units) would result in yet another 0.57 percentage point drop. Thus, as compared to a black head of household with no earned income and all other predictors being equal, a black head of household with annual wages of $22,500 could be expected to live in a neighborhood where the poverty rate was about two percentage points lower (-0.000115 x 150 square root units = 0.001725 = 1.7 percent).

The head's income variable was measured in unadjusted dollars (that is, current dollars in the year of the survey occasion). Therefore, the value of a dollar was different depending on which year the earnings information was provided (effect of inflation). Because the parameter for the effect of income was estimated using unadjusted wages, the best way to interpret the effect is to use national earnings data at the midpoint of the study period (1994) as a benchmark.

Median earnings for female full-time, year-round workers in 1994 were $22,205; median earnings for males were $30,854 (U.S. Bureau of the Census, 1996). In 1994, the

poverty threshold for one person under 65 years old with no children was $7710. Thus, the hypothetical shift described above from no income to annual wages of $22,500 would represent movement above the poverty threshold for income, and for a woman it would indicate attainment of average earnings (across races). Even so, because being black was predicted to add over ten percentage points to the average neighborhood poverty rate for whites (all other things being equal), the change associated with even such a substantial earnings increase would not be likely on its own to produce a drop below the 20 percent threshold defining poor neighborhoods. In other words, human capital matters, but it occurs in a context.

Mobility. All else being equal, moving in the year prior to a survey occasion was associated with a 0.8 percentage point drop in neighborhood poverty rate. Figure 22 shows the effect of mobility on neighborhood poverty rate for whites and blacks. The following constraints were set for other model predictors: time set to 1990, age equal to grand mean (37.3 years), high school graduate with no post-secondary education, one to three children, head's income equal to grand mean, pays rent, no housing assistance, MSA dissimilarity value equal to grand mean and MPI Index equal to zero. Moving was associated with a decrease in the neighborhood poverty rate. Clearly, however, race had a larger influence.
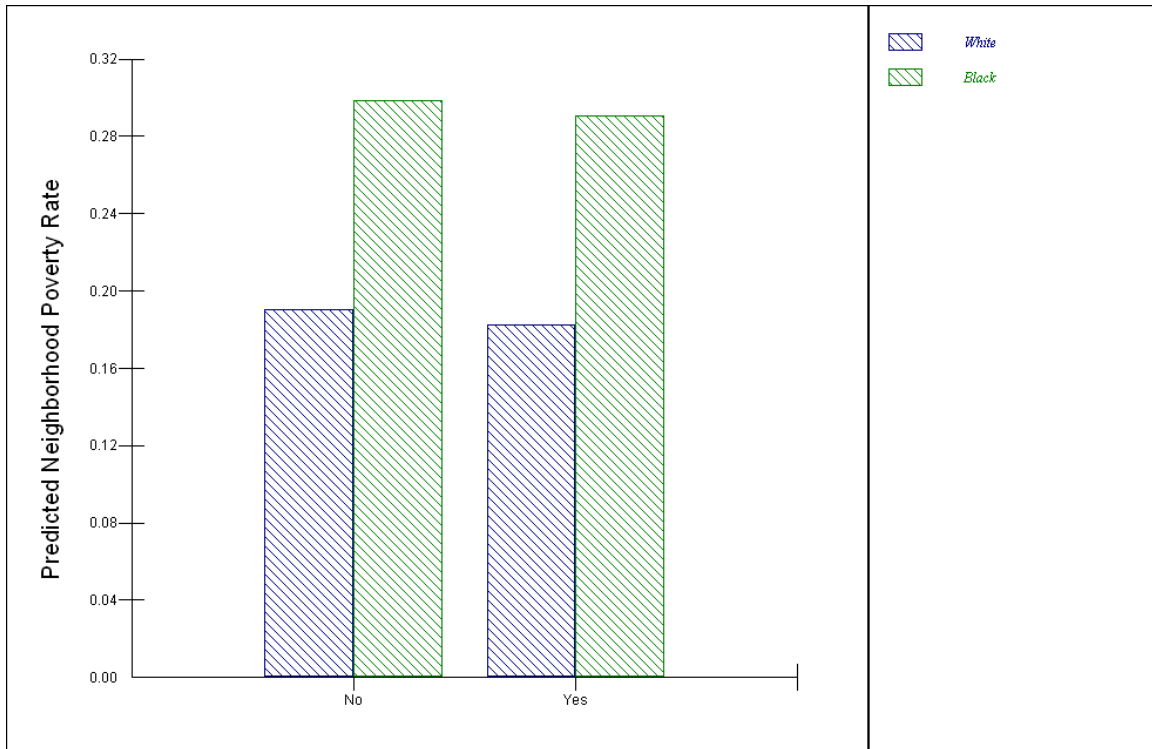
Figure 22. Predicted effects of mobility.

Housing tenure. After accounting for the effects of other predictors, renters were

predicted to live in neighborhoods with poverty rates 1.9 percentage points higher than

homeowners. (The difference between homeowners and those who neither owned nor

rented was non-significant.) Figure 23 shows the effect of housing tenure on

neighborhood poverty rate for whites and blacks.

The following constraints were set for other model predictors: time set to 1990,

age equal to grand mean (37.3 years), high school graduate with no post-secondary

education, one to three children, head's income equal to grand mean, no housing

assistance, no move in prior year, MSA dissimilarity value equal to grand mean and MPI

Index equal to zero. Renting was associated with a higher neighborhood poverty rate.

Again, however, race had a larger influence.
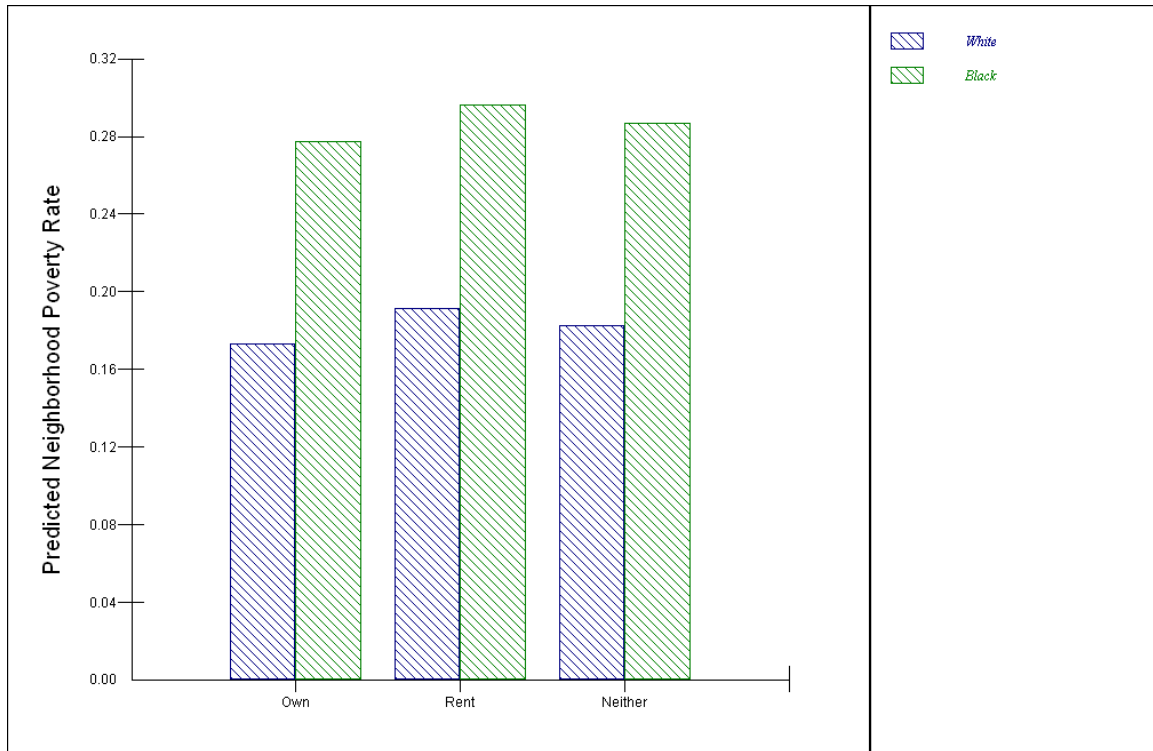
Figure 23. Predicted effects of housing tenure.

Across all measurement occasions, the proportion of homeowners was 7.5 percent and the proportion of renters was 77.8 percent. Nearly 12 percent of whites were homeowners and about 71 percent were renters. For blacks, the proportions were six and 80 percent respectively. In other words, whites were more likely to become homeowners during the study period. An interaction effect of race and housing tenure was tested, but after accounting for other predictors in the multivariate model, the interaction effect was non-significant.

Housing assistance. All else being equal, public housing residents were predicted to live in a neighborhood where the poverty rate was 4.7 percentage points higher than the rate for households with no housing assistance. Those who reported receiving a housing subsidy (federal, state or local government paying part of the cost but *not* in a public housing project owned by a local housing authority or other public

agency) were predicted to live in a neighborhood where the poverty rate was 0.9 percentage points higher than the rate for households with no housing assistance.

Figure 24 visually demonstrates the effect of housing assistance on neighborhood poverty rates for whites and blacks. The following constraints were set for other model predictors: time set to 1990, age equal to grand mean (37.3 years), high school graduate with no post-secondary education, one to three children, head's income equal to grand mean, pays rent, no move in prior year, MSA dissimilarity value equal to grand mean and MPI Index equal to zero. Residents in public housing were predicted to live in poor neighborhoods regardless of race, while residents in subsidized housing were predicted to live in neighborhoods with poverty rates similar to those for unassisted households.
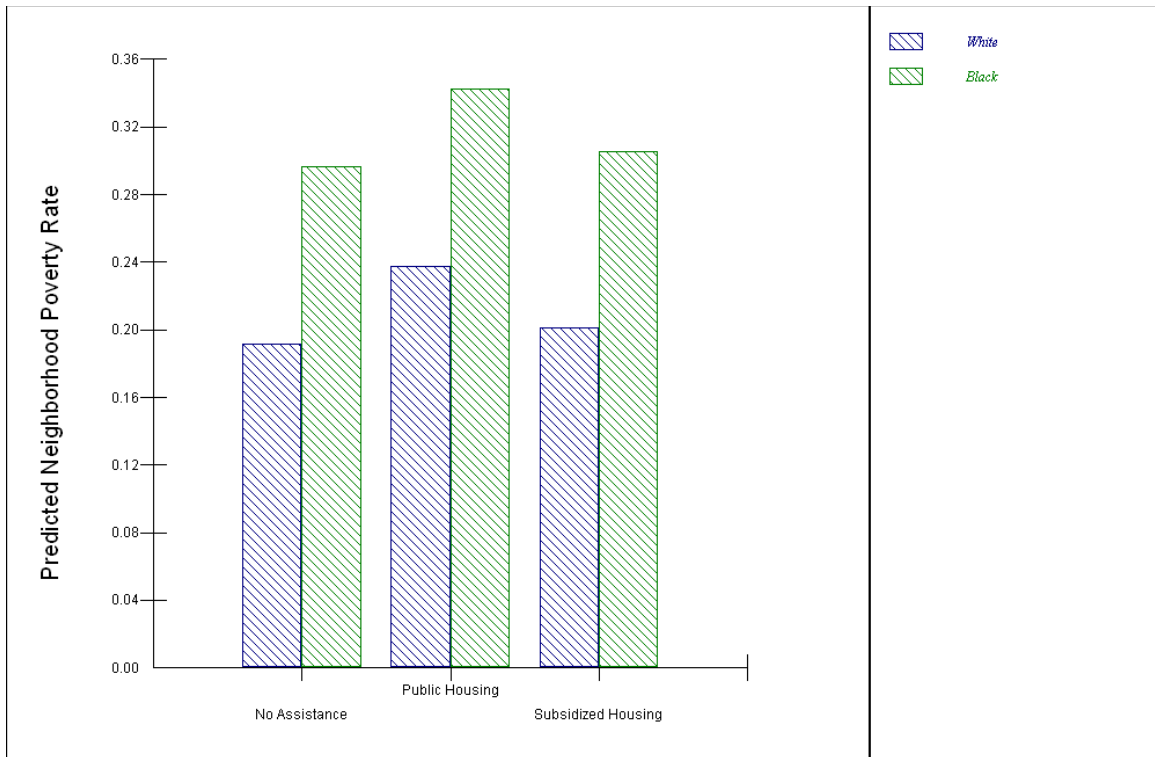
Figure 24. Predicted effects of housing assistance.

These patterns suggest that assisted housing recipients who were 'mainstreamed' (i.e., not in a public housing project) were able to achieve residence in lower poverty

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neighborhoods. The predicted poverty rate is *contemporaneous* with the type of housing assistance. In other words, it is an estimation of the neighborhood poverty rate at the time of residence in that type of housing and not a projection of future outcomes for residents of each type of assisted housing.

Finally, it is important to note that of the households receiving housing assistance (across measurement occasions), 70.7 percent of those measurement occasions were in public housing. For blacks, the proportion was slightly higher (72.4 percent), but for whites it was substantially lower (59.2 percent). In other words, whites receiving housing assistance were disproportionately less likely to live in public housing. An interaction effect of race and housing assistance type was tested, but after accounting for other predictors in the multivariate model, only a trend toward significance was observed and the interaction was not included in the model.

Fertility. Controlling for other predictors, there was no significant difference in neighborhood poverty rate for whites with moderate size families (one to three children) or large families (four or more children) as compared to families with no children (the estimated parameters were non-significant). For blacks, there was an interaction between race and number of children. While there was no predicted difference in outcome for blacks with moderate size families (as compared to those with no children), black families with four or more children were expected to live in a neighborhood with a poverty rate about two percentage points higher than the rate for black families with no children (-0.028907 + 0.047931 = 0.019024 = 1.9 percent). Across measurement occasions, the mean number of children for black household/measurement occasions was

significantly higher for blacks (1.39, SD = 1.59) than for whites (0.79, SD = 1.16, $t(4760.99) = -18.632$, $p < 0.001$).

Education. Higher levels of education for the head of household were associated with lower neighborhood poverty rates. Figure 25 visually demonstrates the effect of education on neighborhood poverty rate for whites and blacks. The following constraints were set for other model predictors: time set to 1990, age equal to grand mean (37.3 years), one to three children, head's income equal to grand mean, pays rent, no housing assistance, no move in prior year, MSA dissimilarity value equal to grand mean and MPI Index equal to zero. As education level changed from less than twelve years to high school graduate to some post-secondary education, the neighborhood poverty rate was predicted to decline.
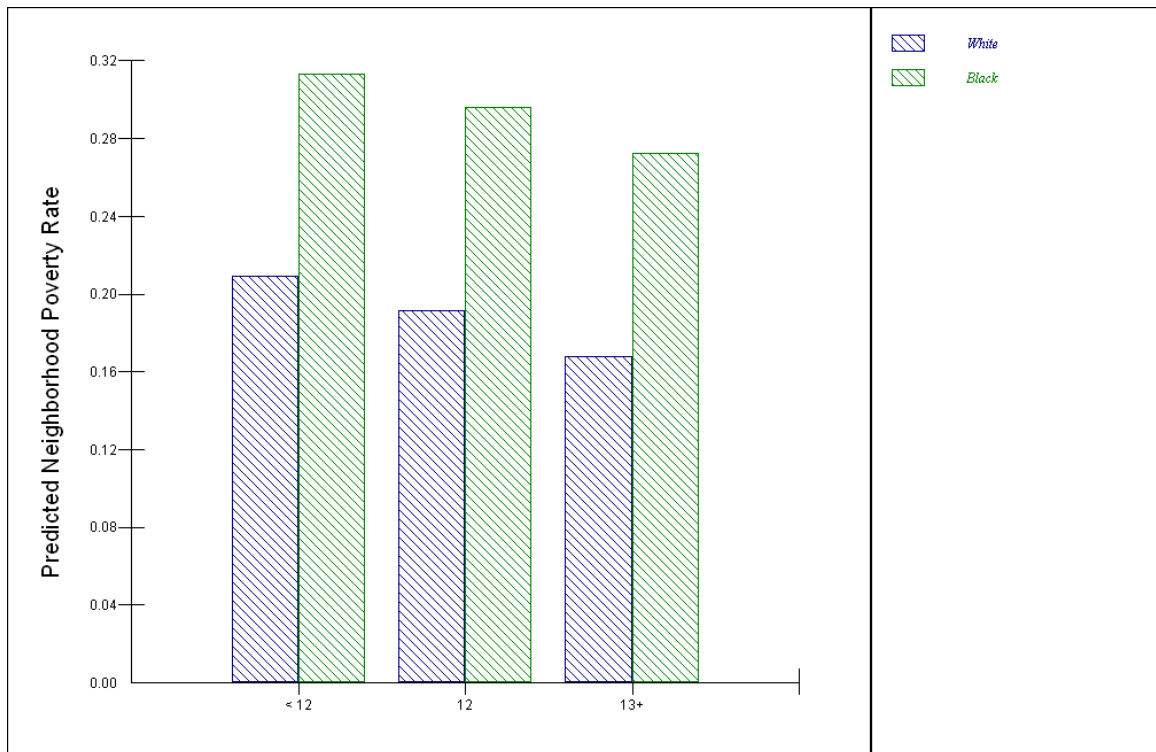
Figure 25. Predicted effects of education.

The mean number of years of education for black heads of household (10.77, SD = 2.98) was about one-half year less than for white heads of household (11.40, SD = 3.31, $t(3233.23) = 7.77$, $p < 0.001$). An interaction effect of race and education level was tested. However, after accounting for other predictors in the multivariate model, the interaction effect was non-significant.

Age. The relationship between age and neighborhood poverty rate was curvilinear. Figure 26 shows the predicted trajectory under the following conditions: time set to 1990, age range from the tenth to ninetieth percentiles (ages 20 to 68 in 1990), races aggregated, one to three children, head's income equal to grand mean, pays rent, no housing assistance, no move in prior year, MSA dissimilarity value equal to grand mean and MPI Index equal to zero. As can be seen in the graph, the neighborhood poverty rate was predicted to rise with age until heads of household were in their forties, then taper off and decline with advancing age.
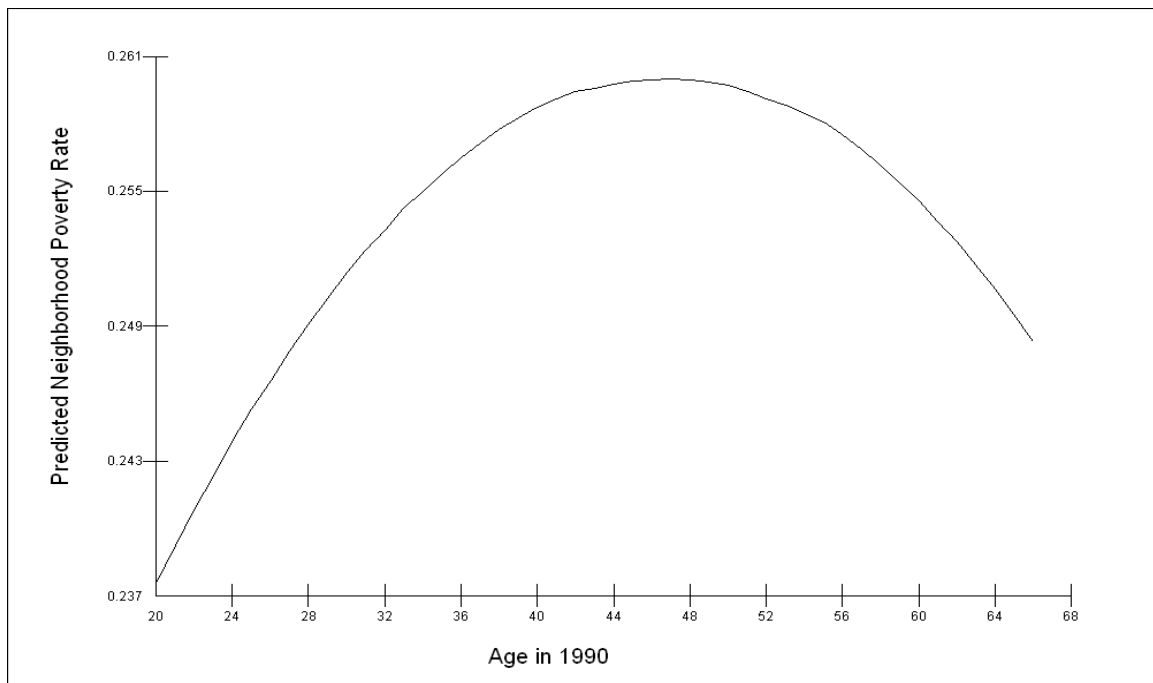
Figure 26. Predicted effect of age.

Metropolitan opportunity structure. The MPI Index is a standardized indicator that aggregates conditions related to housing (percent owner-occupied housing units, percent unoccupied housing units), employment (percent college educated, percent in management/professional occupations, unemployment rate) and economic status (per capita income, median household income and area poverty rate). Higher MPI values mean 'healthier' MSAs that ranked higher on the underlying indicators. Mean values for 1990 and 2000 were calculated for each MSA.

For whites, each one unit increase in MPI value was associated with a drop of 4.2 percentage points in a household's neighborhood poverty rate. For blacks, there was an interaction between the MPI and race variables that moderated the effect of the MPI value by an increment of 0.021279. The net effect for blacks was a drop of only 2.1 percent (-0.042331 + 0.021279 = -0.021052).
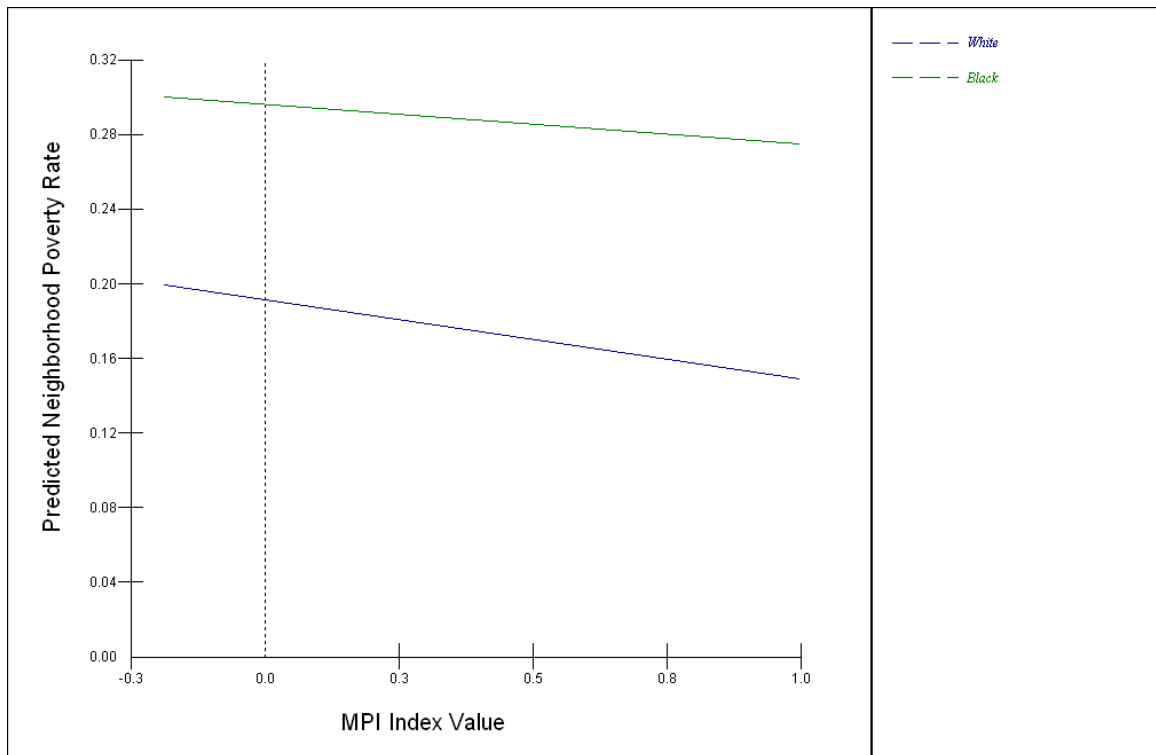
Figure 27. Predicted effect of MPI Index value.

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Figure 27 shows the predicted relationship between the MPI Index value and neighborhood poverty rate for whites and blacks under the following conditions: time set to 1990, age equal to grand mean, high school graduate with no post-secondary education, one to three children, head's income equal to grand mean, pays rent, no housing assistance, no move in prior year, MSA dissimilarity value equal to grand mean and MPI Index ranging from the tenth to ninetieth percentile (-0.189 to 0.998).

Assuming the same personal characteristics and individual decisions, blacks tended to live in much poorer neighborhoods. Both races were positively impacted by living in MSAs with better economic, employment and housing opportunity structures. However, the effect was stronger (steeper slope) for whites.

Segregation. Dissimilarity is a measure of how similarly two groups (in this case, whites and blacks) are distributed across census tracts in a metropolitan area. Values can range from zero to 100 and indicate the proportion of one group that would have to move in order to equalize the distribution (e.g., a value of zero means that the two groups are exactly evenly distributed and a value of 100 means the two groups are totally segregated from one another).

Higher levels of dissimilarity had opposite effects for white and black households. For white households, each increment above the grand mean for dissimilarity was associated with a 0.1 percentage point *decrease* in neighborhood poverty rate. For blacks, the effect of a one increment increase above the grand mean for dissimilarity was equal to the sum of the dissimilarity coefficient (-0.001138, value for whites) plus the coefficient for the black*dissimilarity parameter (0.002145). That is, a one unit rise above the grand mean for dissimilarity was associated with a one percentage point

increase in neighborhood poverty rate for blacks (-0.001138 + 0.002145 = 0.001007 =

0.1 percent).

Figure 28 shows the predicted relationship between the dissimilarity value and

neighborhood poverty rate for whites and blacks under the following conditions: time set

to 1990, age equal to grand mean, high school graduate with no post-secondary

education, one to three children, head's income equal to grand mean, pays rent, no

housing assistance, no move in prior year, MSA dissimilarity value ranging from the

tenth to ninetieth percentile (47.653 to 82.024) and MPI Index equal to zero. At the left

side of the horizontal axis in the above graph, a dissimilarity value of 47 represents

moderate segregation. Values of 60 and above are considered very high. Clearly, blacks

are predicted to live in poorer neighborhoods regardless of the dissimilarity value.

However, as segregation increases, the disparity widens.
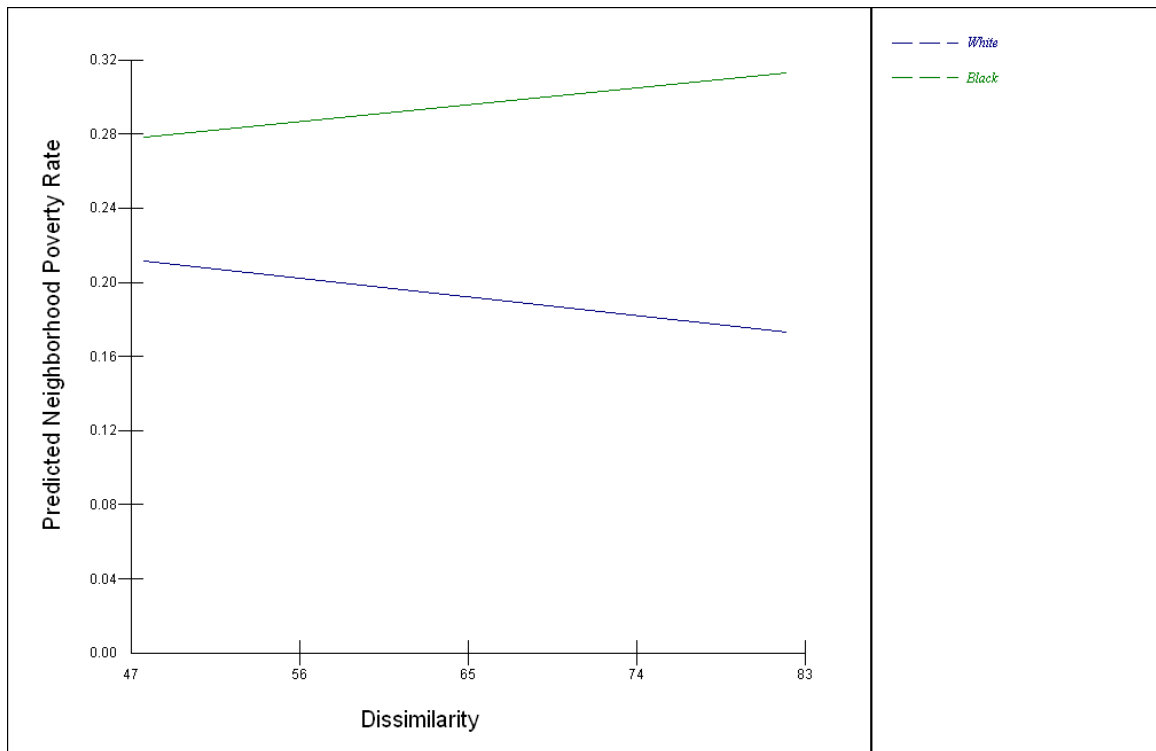
Figure 28. Predicted effect of segregation.

As an example of how segregation matters, the hypothetical example presented in the previous discussion of the race variable at the beginning of this section can be revisited. Recall the example of a white and black household with identical *advantaged* characteristics: age equal to grand mean, no children, $22,500 of earned income in the previous year, some post-secondary education, homeowner, no housing assistance, moved in prior year, MSA dissimilarity value equal to grand mean (65.3) and MPI Index equal to zero. In that scenario, the black household was predicted to live in a neighborhood with a poverty rate of 22.7 percent while the white household with the *same* characteristics was predicted to live in a neighborhood with a poverty rate of 15.0 percent.
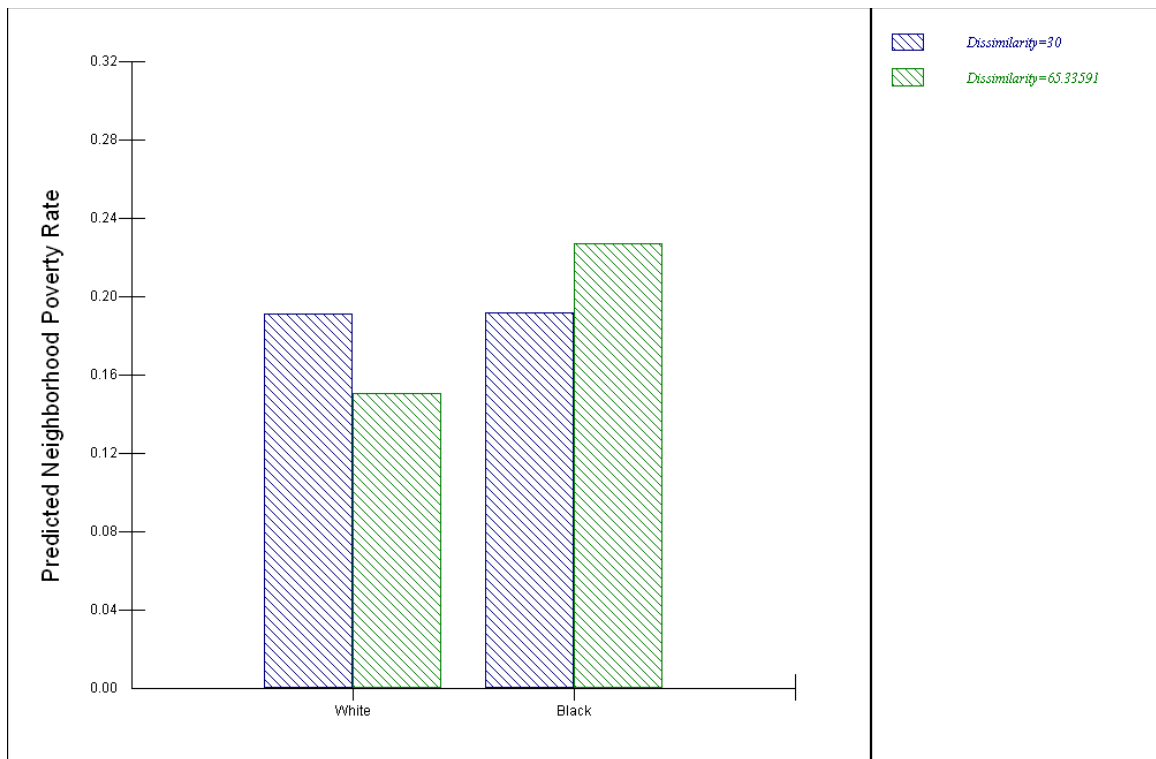
Figure 29. Comparative effects of MSA high and low segregation.

Assuming instead a dissimilarity value of 30 (the upper end of the 'fairly low' band of segregation values), there would have been *no expected difference* in

neighborhood poverty rates for the two households. (Figure 29 presents this example in graphic form.) By reducing segregation, and changing nothing else, both households now would be predicted to live in a neighborhood with a 19.1 percent poverty rate. That is, *both* would be in *non-poor* neighborhoods.

Summary

One of the strengths of multilevel modeling is that it allows a researcher to explore the nature of variance between units of interest as well as to predict outcomes for those units based upon what is known about them. To that end, this study has demonstrated both graphically and statistically that poor, renter households have differing locational attainment trajectories that can be explained by the choices they make, the characteristics they inherit and the context within which they are situated.   In the first chapter, various theoretical perspectives and their associated explanations of poverty—urban and concentrated poverty in particular—were reviewed. As to the question of whether the etiology of poverty (personal and spatial) is intrinsic or extrinsic, the results presented in this chapter suggested that an integration of these perspectives may better represent the lived reality of poor, renter households.

Specifically, the variance components in the unconditional growth model provided evidence of variability in the neighborhood poverty rate outcome between measurement occasions, between households and between MSAs. Most of the variability was within MSAs and between households. The addition of time as a predictor revealed that while there was little variability between MSAs in the way that outcomes changed over time, there was variability between households.

What characteristics or conditions are associated with this observed variability? Three types of influences were explored: individual decisions, personal characteristics and opportunity structure conditions. To first account for the effect of conditions for which individuals and households can assume personal responsibility, the individual decisions variables were entered into the model as a block. The model was improved, and variability was explained at all three levels. In particular, the greatest reduction in variability was at the household level (Level 2).

Characteristics related to employment, mobility, housing and family size helped to explain some of the differences between households in their initial neighborhood poverty status and in how that changed over time. Having more income contributed to improvement in neighborhood poverty conditions. Having more children was associated with living in a poorer neighborhood. On average, moving predicted a small amount of improvement in neighborhood poverty. Finally, housing-related conditions made quite a lot of difference in outcomes. Renters were predicted to live in poorer neighborhoods than home-owners, and public housing residents in particular lived in substantially poorer neighborhoods. In summary, conditions that are in theory at least partly within one's control—work, child-bearing, home ownership—mattered.

The second block of predictors, personal characteristics, assessed whether knowing the head of household's demographic traits could further improve the prediction model after having accounted for individual decisions. Adding these predictors as a block improved the model and resulted in another reduction in between-household variability. More noteworthy, however, was a large reduction in between-MSA variability almost entirely explained by the head of household's race. Once MSA

intercepts and slopes were permitted to vary by race, between-MSA variability was only significant for households with black heads. In other words, outcomes for white households were little affected by the metropolitan area, but for black households outcomes were driven in part by where one lived.

As a main effect, being black added over ten percentage points to the predicted neighborhood poverty rate even after accounting for individual decisions and other personal characteristics. Race also interacted with the income and family size variables. Once the interaction effects were included in the model, income and family size were no longer significant predictors for white heads of household. For black heads of household, more income predicted a small reduction in neighborhood poverty while having four or more children was associated with increased neighborhood poverty.

Controlling for other choices and traits, education and age made a difference for both races. As compared to heads of household with at least some post-secondary education, those with only a high school diploma or GED were predicted to live in a neighborhood with a poverty rate two percentage points higher, and those without a diploma or GED were predicted to live in a neighborhood that was four percentage points poorer. It should be noted that because of the way the PSID survey was designed, the head of household's education level was only recorded at the first interview making this a non-varying predictor. In reality, however, education levels can change over time and the importance of this predictor suggests that individuals who choose to continue their education could see improvement in their outcomes.

Age bore an interesting relationship to neighborhood poverty in that increasing age was associated with higher neighborhood poverty until middle age, at which time the

trend reversed. Mobility theory explains that middle-aged individuals are less mobile for a variety of reasons including the fact that work and children may tie them to a particular place. Financial responsibility for minor children and the need for a larger dwelling can also mean that young families have less money to spend for housing and must live in poorer neighborhoods in order to afford a dwelling sufficient to meet their needs.

Finally, the third block of predictors—metropolitan characteristics—assessed whether any of the variability in outcomes that remained after controlling for individual decisions and personal characteristics could be explained. Indeed, context matters. Households living in MSAs with healthier opportunity structures (that is, better economic, employment and housing conditions) were predicted to live in less poor neighborhoods. Segregation played a more important role, and the effect on neighborhood poverty outcomes was beneficial for whites but harmful for blacks.

The two metropolitan characteristics predictors helped to explain why race was such an important predictor of neighborhood poverty outcomes in the 1990s. Both interacted with race. While living in an MSA with a better opportunity structure lowered neighborhood poverty rates for both races, the effect was smaller for blacks. More importantly, the effect of segregation was *opposite* depending on one's race. While higher levels of segregation were predicted to increase neighborhood poverty for blacks, more segregation was associated with lower neighborhood poverty for whites.

In summary, unexplained variability still remained at Levels 1 and 2—and for blacks at Level 3 as well—after adding all available predictors to the model. Still, a considerable amount of within-MSA/between-household variability had been explained (a 22.5 percent reduction in initial status variability and a 13.5 percent reduction in rate of

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change variability). MSAs only varied on initial status, and with the addition of the three blocks of predictors all between-MSA variability had been explained for whites. While between-MSA variability remained for blacks, it had been reduced by 8.4 percent with the addition of information about the metropolitan opportunity structure and segregation.

Because individual and contextual influences were explored together in a multivariate model that accounted for the hierarchical structure of the data through use of multilevel model, these findings advance the understanding of factors related to neighborhood poverty. The final chapter will discuss the implications of this study in greater detail. Its strengths and limitations as well as ideas for future research also will be described.

CHAPTER V

DISCUSSION

Using national panel study data and a multilevel modeling methodology, this study has responded to the question of whether poor, renter households have differing locational attainment patterns, and if so, what conditions and characteristics best predict their outcomes. It demonstrated that poor, renter households' patterns of change did indeed vary during the 1990s. More importantly, the study elucidated the relative importance of the choices individuals and families make, the characteristics they inherit and the context within which they are situated as factors that contribute to their neighborhood poverty status.

Race was by far the most important factor associated with living in a poor neighborhood. Controlling for all other predictors, being black was estimated to increase a household's neighborhood poverty rate by over ten percentage points. Not only did race have a significant and strong main effect on the criterion variable, it also interacted with several other predictors. Being black potentiated the negative effect of having a large family. It weakened the helpful effects of increased income and of living in a metropolitan area that provided a better opportunity structure (i.e., more viability in terms of housing, job markets and area poverty). Race interacted with segregation at the metropolitan level to the disadvantage of black households. Finally, there was much more variability in outcomes for blacks depending on what city they called home.

Findings in this study related to the combined effects of race and segregation support previous arguments by Massey and others that when housing is segregated by race and class, dually marginalized families become concentrated in geographically delimited, high-poverty areas (Massey & Denton, 1993; Massey et al., 1994). Findings related to the joint effects of race and family size may also have their source in more limited housing options for minority households. An early mobility study by Powers and Thacker (1975) found greater movement into less poor areas for families with fewer children. The authors concluded that smaller families had a wider selection of apartments. In many metropolitan areas, public or subsidized housing units suitable for large families are difficult to find, and when options are further constrained by housing segmentation and/or discrimination, minority families may be more likely to remain in poor neighborhoods.

This study also found that while increased income lowered the predicted neighborhood poverty rate for blacks, the effect was non-significant for whites. Across income levels, the average white household in this study lived in a non-poor neighborhood while the average black family lived in a neighborhood where the poverty rate was nearly twice as high. In other words, the average white household was generally able to achieve residence in a non-poor neighborhood regardless of income. In contrast, even with income gains, the average black family may not have achieved similar locational attainment. Furthermore, while living in a more 'prosperous' metropolitan area (as measured by the MPI index) was advantageous to both blacks and whites, the effect was smaller for blacks. These results are concordant with South and Crowder's (1997) finding that being black lowers the odds of leaving a poor neighborhood even

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after controlling for socioeconomic status. Further, they lend support to Alba and Logan's (1993) place stratification model of locational attainment, which suggests that there are differential returns on individual achievement that prevent minorities from converting socioeconomic gains into residence in the same neighborhoods as the majority group.

Alba and Logan's (1993) spatial assimilation model of locational attainment, which proposes that individuals who increase their human capital become more socially and geographically mobile, also found support in this study. Not having completed any post-secondary education (i.e., having only a high school diploma or GED) added over two points to the predicted neighborhood poverty rate, and having less than a high school education/GED added over four points. As mentioned above, rising income lowered neighborhood poverty for blacks, but the effect was rather small; to achieve even a two-point drop in the neighborhood poverty rate required an income gain of over $32,000 (unadjusted for inflation).

While these results provide some support for an intrinsic explanation of poverty, this was tempered by findings related to the effect of the MPI Index variable. As the index value rose by one point (signifying better metropolitan economic viability, lower levels of area poverty, more housing and employment opportunities), a white household's predicted neighborhood poverty rate dropped by over four points and a black household's predicted neighborhood poverty rate decreased by over two points. In other words, the effects of individual human capital choices and efforts were enhanced or muted by the opportunity structure (or context) in which those endeavors occurred.

Finally, housing choices and opportunities made a difference in neighborhood poverty outcomes. The public housing indicator was highly significant and among the strongest predictors in the model. Living in public housing was associated with a 4.7 percentage point differential in neighborhood poverty rate (as compared to no assistance). It is important to remember that this is the effect *after accounting for* all other predictors; in combination with the effects of other predictors such as minority race, low education and income, and limited mobility, public housing residents were highly likely to live in concentrated poverty neighborhoods. Living in government assisted housing (but not in a public housing project) also increased the neighborhood poverty rate, but by a much smaller increment (less than one percentage point). Furthermore, mobility lowered the predicted neighborhood poverty rate, as did achieving homeownership. Over and above the effects of individual decisions, personal characteristics and contextual influences, housing-related conditions had an important relationship to locational attainment.

In summary, the choices individuals and households made mattered. However, the characteristics they were born with could amplify or diminish the effects of those efforts. Neighborhood poverty outcomes were further influenced by housing type, housing tenure and mobility. Finally, and perhaps most importantly, metropolitan context made a difference.

Housing Policy Implications

Public Housing

This study found that public housing residents tended to live in poorer neighborhoods than households with other forms of housing assistance. This lends support to the federal housing policy shift from owning and operating public housing

facilities to providing vouchers that can be used in the mainstream (private) rental market. Yet, in spite of over a decade of HOPE VI demolition and revitalization projects, experts suggest that distressed public housing still exists and that as an innovative public-private endeavor, HOPE VI mixed-income redevelopment continues to be a sound housing strategy for reducing the concentration of poverty in these housing projects (Turner, Kingsley, Popkin, & Abravanel, 2004). They caution, however, that the number of affordable housing units must be maintained or increased, that surrounding neighborhoods as well as original residents must benefit, and that public housing agencies must be held accountable for outcomes. Mixed income redevelopment on the original public housing site is generally supported—particularly if it does not result in a net loss of very low income housing—and there is also evidence that replacing lost affordable housing units with publicly-funded, scattered-site townhouses is a viable alternative (Fauth et al., 2008).

While immediate loss of affordable housing has always been a concern for low-income housing advocates, an emerging question relates to HOPE VI sustainability and potential conversion of affordable housing units over time. Abravanel, Levy and McFarland (2009, p. 3) explain that "what makes HOPE VI project redevelopment feasible from a financial and development perspective (creative mixed-financing; the involvement of private developers, owners and managers; and mixed-income and mixed-tenure complexes) also creates conditions that could challenge and undermine its sustainability." They emphasize that little is known empirically about how these public-private partnerships have been structured, whether they will remain viable over time, and whether the income stream will be sufficient to sustain the original mix of housing type

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and tenure, especially given that some of these units are not subject to public control. Others have cautioned that HOPE VI projects also need to plan for how supportive services will be sustained beyond the initially funded period (Parkes & Wood, 2001).

Another concern is that original HOPE VI residents who remain in public housing units (either due to relocation to another public housing site or remaining at the redevelopment site as it is demolished and reconstructed in phases) have increasingly complex barriers to self-sufficiency including mental, physical and age-related disabilities, substance addiction and high levels of unemployment (Theodos et al., 2010; Turner et al., 2004). These individuals may need more assistance with the relocation process as well as supportive services, case management, and in some cases, even permanent supportive housing. Theodos et al. (2010) describe an approach to assessing and classifying residents' need for intensive supportive services in order to manage costs while appropriately targeting interventions. They cite results from an enhanced services demonstration project in Chicago that suggest such an approach is feasible.

Mobility Programs

This study found that mobility predicted a small drop in the neighborhood poverty rate on average. Presumably, more than one move over time could have given a household an added advantage. However, in discussing the three-city study of the Moving to Opportunity (MTO) program, Kingsley and Pettit (2008, p. 10) note, "It is important to remember that the averages mask considerable variation… a significant number of the experimental households with multiple moves had relocated to higher-end communities… At the other extreme, an even larger number had moved back to highly distressed inner-city neighborhoods, and more fell in between." Similarly, examination

of empirical growth plots for a sample of households in this study showed that households with bent trajectories sometimes experienced improved outcomes as a result of moving and sometimes moved to poorer neighborhoods. The coefficient for the mobility predictor suggested an *average* drop in neighborhood poverty of about three quarters of a percentage point following a move, but observed values were both higher and lower than this prediction. Furthermore, like the MTO movers, some multiple movers in this study reversed their previous gains. Thus, while multiple moves can mean steadily improving conditions, they also can signal economic and/or housing insecurity (Coulton, Theodos, & Turner, 2009).

Relocation-only programs may be insufficient (Popkin, 2008). Results of the MTO experiment suggest that over the mid- to long term, households that receive relocation counseling, and are encouraged and helped to move to low-poverty neighborhoods have better outcomes than those who use (or attempt to use) housing vouchers without assistance. Some suggest that families should be assessed for 'readiness' to move and helped to relocate (Turner & Briggs, 2008). Specifically, movers need help identifying areas that offer opportunities for safety, employment, accessible transportation, and high-quality education and child-care providers.

Because MTO families often could not afford housing in neighborhoods that provided all the features they wanted, they had to choose between safety, stable rent, and access to employment and quality public institutions. Comey, Briggs and Souza (2004) suggest that mobility programs may be insufficient absent an adequate supply of vouchers, increased landlord participation, and supply-side strategies that enlarge the supply of affordable housing in safe, service-rich and economically viable

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neighborhoods. As well, movers need assistance in establishing relationships with landlords and housing agencies that will facilitate their use of housing vouchers, and they benefit from post-move counseling and ongoing support (Comey, Briggs, & Weissman, 2008).

To improve employment outcomes—which the MTO program has not as yet consistently achieved—relocation programs must direct movers to areas where employment opportunities and job growth exist. Again, providing the means (a voucher) and assistance to move (mobility counseling) may not be sufficient to produce desired outcomes. Housing experts suggest that mobility programs should help families build social and human capital in their new neighborhoods by linking them with neighbors as well as local services and institutions. To help mobility program participants move into the workforce, such programs also should provide employment counseling, training, placement services and access to resources such as transportation assistance, child care and health services (Cove et al., 2008). Evidence from the Family Self-Sufficiency (FSS) program available to HUD-assisted families documents the efficacy of an employment-focused case management program (Ficke & Piesse, 2004; Lubell, 2004), and HUD has encouraged HOPE VI grant recipients to integrate FSS participation with their Community Supportive Services (CSS) plans (U.S. Department of Housing and Urban Development, n.d.).

Housing Choice Vouchers

In this study, receiving a housing subsidy (i.e., federal, state or local government assistance with paying all or part of the cost of rent but *not* in a public housing project owned by a local housing authority or other public agency) was found to increase the

neighborhood poverty rate by 0.9 percentage points (as compared to households with no housing assistance). That said, neighborhood poverty outcomes were estimated to be substantially better for those in subsidized housing (presumed to include voucher holders) than they were for public housing residents. This suggests that Housing Choice vouchers are a better option for households needing assistance with housing. These results are concurrent with findings from Gubits, Khadduri and Turnham's (2009) analysis of data from an experimental design study on the effects of housing vouchers on welfare families. They found that accessing a voucher modestly lowered a household's neighborhood poverty rate and neighborhood minority concentration, and that the net improvement was greatest for households in public housing and other very poor neighborhoods, particularly for black families. Other studies have also provided evidence that households that use vouchers generally live in less poor neighborhoods than households in public housing (S. J. Newman & Schnare, 1997; Turner, Popkin, & Cunningham, 2000).

However, Buron, Levy and Gallagher (2007) caution that public housing residents with multiple risk factors (un- or underemployed, poor health, less educated) are less likely to successfully use vouchers (and more likely to remain in public housing). They found that HOPE VI movers who used a Housing Choice voucher to move from public housing to market rental housing often experienced multiple moves, had to make financial trade-offs to continue to afford their new housing (e.g., getting behind on utility payments or lacking adequate food), and faced an adjustment period as they transitioned to the private market (e.g., paying for utilities out of pocket, negotiating with a private landlord).

Both voucher holders and landlords are known to experience barriers to effectively using the Housing Choice voucher program due to its complexity (Gubits et al., 2009; Turner, Adams, Rohacek, & Eyster, 2007). Through qualitative interviews with voucher holders, Gubits et al. identified the following barriers to leasing up with a voucher: lack of money for moving expenses and security deposits, credit problems, and inadequate skills or experience to search for an apartment and complete the lease negotiation process. Not having a clear understanding of program rules and policies prevented some from finding housing and led others to let go of voucher-assisted housing. Finally, some found it difficult to meet the time limits for completing the lease-up process.

Turner, Adams et al. (2007) also outline obstacles on the supply side including onerous program regulations and landlord hesitancy to lease to voucher users. They recommend a) publicly available, evidence-based quality standards, b) direct assistance with the search and lease-up process, c) removing obstacles to landlord participation in the program, and d) subsidies for low-income housing development. In summary, housing assistance policies and procedures must be streamlined to make programs easier for both providers and recipients to use.

Fair Access to Affordable Housing

In 2005, nearly a quarter of U.S. renters were paying over half of their income in rent, and another 22 percent were paying between 30 and 50 percent of their income; only about one in five renter households received government assistance with rent, and over half of unassisted renter households had housing problems (Turner & Kingsley, 2008). Contributing factors include rising housing costs, an inadequate affordable housing

supply, regulatory barriers (zoning and land use controls), and insufficient funding for

housing assistance programs. Federal housing assistance is not an entitlement, and less

than one in four eligible families nationwide receives assistance.

Not only is access to affordable housing and/or housing assistance a nationwide

problem, but as this study demonstrated, fair access to affordable housing remains an

unreached objective. Turner and Rawlings (2009) suggest the following strategies to

increase neighborhood diversity and achieve fair housing goals: a) affirmatively enforce

increasingly subtle but ongoing violations of fair housing laws, b) use public education

and outreach to raise renters' and homebuyers' awareness of diverse neighborhood

options, c) reward construction of affordable housing in traditionally exclusive

neighborhoods (e.g., inclusionary zoning incentives, tax credits, etc.), d) reverse

disinvestment in distressed neighborhoods , and e) incentivize those who take a stake in

diversifying neighborhoods (e.g., help with down payments or low-interest loans when

homebuyers choose diverse neighborhoods, cover the risk of investing in diverse

neighborhoods with equity insurance, target diverse neighborhoods for service, amenity

and institutional investments, support community-building efforts, etc.). The authors

emphasize the importance of the federal government's role in providing "money,

mandates and leadership" in these efforts (p. 12).

Finally, an emergent literature showcases creative approaches to promoting

neighborhood diversity (both economic and racial/ethnic), affordable housing and

homeownership. These include providing low-income homeowners with mortgage

assistance vouchers similar to the Housing Choice vouchers that renters use (Olsen,

2007), empirically demonstrating the effectiveness of HUD's Family Self-Sufficiency

escrow program that helps assisted renters to save toward homeownership goals (Lubell, 2004), using tradable options or insurance to offset residents' and developers' risk in revitalizing neighborhoods (Lerman & McKernan, 2007), and shifting the balance of federal housing-related budget allocations that currently favor wealthy homeowners with tax breaks while providing low-income renters with inadequate assistance and no opportunity to build capital (Reynolds, 2007). Others suggest depoliticizing affordable housing development by quantifying shared benefits of quality affordable housing in terms of the resultant improvement in community-level health and education outcomes (Mueller & Tighe, 2007), making the process of choosing locations and configurations for affordable housing development more objective by using mathematical programming-based planning models to identify sites that optimize both social benefits and equitable distribution of costs (Johnson, 2007), and moving to evidence-based policy making (Dunworth, Hannaway, Holahan, & Turner, 2008).

Implications for Social Work Practice

Results of this study and others in this line of research have important implications for social workers. First, it is increasingly apparent that outcomes for public housing residents, Housing Choice voucher users and mobility program participants are better when individuals and families receive case management, counseling, and ongoing supportive services and resources. Social workers are professionally trained to fill eight particular roles: conferee, broker, mediator, advocate, therapist, case manager, group worker and community organizer (Wood & Tully, 2006). As such, they are ideally suited to assist families to improve their human and social capital, address barriers to self-

sufficiency and independent living, access resources, and make choices related to housing and mobility.

In the areas of community development and advocacy, social workers are trained and obligated by the Social Work Code of Ethics (National Association of Social Workers, 2008) to work at the interface between clients and community to promote self-determination, social diversity, and social justice. These skills and professional obligations naturally align with housing-focused, meso-level social work practice. As advocates for clients' and community members' autonomy, social workers should stand with residents of low-income housing in insisting that they are provided an opportunity to participate in decisions that affect them. As advocates for marginalized populations, social workers should work to ensure that all individuals and families have access to safe and affordable housing, that minorities have fair opportunities to live in all neighborhoods across a metropolitan area, and that individuals and families are not excluded from particular rental and ownership options based on race, ethnicity, national origin, color, sex, sexual orientation, gender identity or expression, age, marital status, political belief, religion, immigration status, and mental or physical disability. Finally, as social justice activists, social workers should bring to light situations where more powerful interests are displacing vulnerable populations from desirable locations or not-in-my-backyard agendas are preventing the development of local affordable housing options. Collaborative, empowerment approaches can also help at-risk groups to advocate for themselves and others like them.

One of the most important findings of this study is that over and above the effects of individual decisions and personal characteristics, housing policy and contextual

conditions contribute to locational attainment outcomes. One-to-one social work interventions with individuals, families and groups are necessary but insufficient to foster conditions that prevent poverty concentration and promote access to quality, affordable housing. For these goals to be realized macro-level actions are required: social workers must be involved in the political process and in policy practice. When social workers focus only on direct practice and fail to recognize that the person-*in-environment* approach is central to social work, they risk perpetuating oppressive systems and implicitly blaming the victim by failing to address the social and contextual realities that create or exacerbate clients' problems.

Implications for Social Work Education

A recent analysis of public opinion research from the late 1990s through 2003 on attitudes toward affordable housing found that while Americans view housing affordability in their own communities and nationwide as a "very troubling concern," the issue is likely to take a back seat to health care and jobs among priority issues (Belden, Shashaty, & Zipperer, 2004, p. 6). Further, in these surveys, respondents tended to respond differently depending on whether the need for affordable housing were described generally ("helping people to gain home ownership," "creating opportunity") versus specifically ("what type of housing is placed next door") (p. 5). Social work education has reflected this tendency to view housing as a second-tier issue, subordinating it to areas of clinical and policy work such as mental health, child welfare, crime and criminal justice, health care, developmental disability and aging.

A review of popular social work and social welfare policy texts found that while some devote a full chapter or section to housing (DiNitto, 2005; Karger & Stoesz, 2006;

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Popple & Leighninger, 2005), others devote considerably less space (and emphasis) to this area (Ambrosino, Heffernan, Shuttlesworth, & Ambrosino, 2005; Barusch, 2006; Gilbert & Terrell, 2005; Jansson, 2005; Popple & Leighninger, 2004). Further, because housing chapters or sections are often placed later in the book than first-tier issues, and because social work faculty often have less knowledge or experience in this arena, housing-related content often is not included in the course of study. Still, it is critical for direct practice social workers to understand the ways in which housing and neighborhood contexts influence health and mental health, employment, poverty, education and child welfare outcomes for their clients. It is also essential that community organizers and policy practitioners learn the history of housing policy in the U.S. as well as its current strengths and shortcomings.

Conclusion

Strengths of the Study

This study of locational attainment trajectories of poor, renter households contributes to poverty and housing policy research in a number of important ways. First, by merging panel survey data with tract-level census data, the study provides a longitudinal examination of neighborhood poverty outcomes for a large sample of households living in metropolitan areas nationwide. Second, multivariate analysis allowed for exploration of the relative importance of predictors related to individual decisions, personal characteristics and metropolitan context. Using multilevel modeling strengthened the analytical strategy by properly accounting for the hierarchical structure of the data, and extending the multilevel analysis to three levels provided an opportunity to model the variability between metropolitan areas as well as between households.

Finally, the large sample size in this study provided enough power to detect even small effects.

While each of these elements may be found alone or in more restricted combinations in prior studies, it is rare to find a housing policy study that is longitudinal, multivariate and national in scope. Further, as an analytical technique, multilevel modeling is relatively new to social research. Using three levels of analysis to explore contextual effects on individual or household growth trajectories is rarer still.

Limitations of the Study

Before concluding, the study's potential deficits should also be acknowledged. First, while the assumption that results would have been the same had case weights been used was supported by a direct test in a similar study using the same dataset (South & Crowder, 1997), the comparison was not made in this dissertation study. As stated in a previous chapter, descriptive statistics reported here should be viewed conservatively as a description of the study population; findings of multivariate analyses presumably are generalizable to the national population in the 1990s. However, it should be remembered that this study selected for poor, renter households at intake; for different sub-populations, different results could be expected.

Second, due to limited availability of data for other minorities in the PSID dataset, this study was limited to white and black heads of household. There is evidence to suggest that Latinos have become increasingly segregated in recent years and that the concentration of low-income Latinos in poor, minority neighborhoods may be rising (Turner, 2009). Unfortunately, this study could not model locational attainment patterns for this group. Recent case studies also suggest patterns of concentrated poverty in rural

areas, Appalachian communities, and Native American reservations (Erickson et al., 2008). While this study extended beyond the conventional focus on large cities and the Rust Belt region of the country, limiting the study to residents of metropolitan areas only prevented exploration of poverty concentration emergent in non-metropolitan areas.

Third, while there is evidence that dual-earner families may have different patterns of mobility (Swain & Garasky, 2007), this study limited analysis of individual characteristics and choices to the head of household. While marital status was not a significant predictor of neighborhood poverty once other variables in the model were accounted for, it is possible that including a second wage-earner's human capital characteristics might have contributed additional important information to the study. Further, using the head of household's race, age and gender as a proxy for the household's characteristics is an oversimplification of family composition. As an example, biracial couples might have had different mobility experiences and neighborhood poverty outcomes that would not have been detected in this study.

Fourth, endogeneity between housing tenure and income was a possibility in this study (i.e., homeowners would be expected to have higher income). Autocorrelation would imply that they effects of each predictor were underestimated. Inclusion of both predictors in the same model follows the convention in prior studies. Still, exploration of the possibility of substituting an exogenous instrumental variable that captures the effects of both predictors is recommended for future studies.

Fifth, while it was hoped that this study could explore the effect of HOPE VI revitalization and demolition projects on poor, renter households, there were an insufficient number of households living in those particular tracts to permit separate

analysis of their outcomes. Since HOPE VI has targeted the six percent of public housing units that were found to be severely distressed in the early 1990s, it is unsurprising—but nonetheless disappointing—that such an investigation could not be undertaken in this study despite the large national sample. A less robust analysis of the impact of HOPE VI projects on residents of metropolitan areas where those projects were located was attempted, but the metropolitan-level HOPE VI predictor was non-significant. Only about three in eight measurement occasions were coded 'yes' for HOPE VI and particularly in large metropolitan areas, it is possible that any direct impact of HOPE VI activity on another perhaps-distant neighborhood was too diluted to detect if, in fact, there were any effect at all.

Finally, for the sake of parsimony, as well as ease of analysis and interpretation, some assumptions were made about the structure of the data. While it was known that some households within some metropolitan areas were related to one another (by virtue of descending from the same original PSID sample family), no attempt was made to model this nesting of households within related families as this would have added a fourth level to an already-complex model. Still, it should be acknowledged that failing to statistically account for the possibility that some households shared experiences, characteristics and/or family history may have violated the assumption of independent within-metropolitan area observations.

Sparse data within some metropolitan areas in this study (i.e., singleton households) also may be a concern. While a recent simulation study found no substantial convergence problems, very low levels of statistical bias, Type I error rates close to the nominal alpha level, no effect on power with a large number of higher level units, and no

consequential impact on fixed effects estimation for lower level predictors (Bell et al., 2008), these simulations were conducted for two-level models. Published suggestions for the appropriate number of units to be nested at lower levels in multilevel models vary considerably. This is an area where more simulation studies are needed in order to draw more precise conclusions about the adequacy of unit size at each level.

Future Research

There are abundant possibilities for further studies in this line of research. These include a) follow-up studies using more recent PSID survey and census data, b) more precise modeling of discontinuous locational attainment trajectories, c) exploration of 'downstream' effects of various types of housing assistance, and d) more nuanced exploration of metropolitan level characteristics and conditions that are associated with neighborhood poverty outcomes.

First, PSID survey data are currently available through 2007; 2009 survey data have been collected but not yet released. The 2009 survey added new questions specifically about mortgage distress (foreclosure, falling behind on payments, mortgage modification and anticipation of future difficulty with mortgage payments), and that data may be valuable for an extension of analysis in this study through the most recent decade. Decennial census and American Community Survey data will be collected in 2010, and when these data are released, neighborhood poverty rates can be estimated through 2010. This will allow for replication of this study over another decade. In particular, periodicals such as the *Journal of Sociology and Social Welfare* are already calling for manuscripts that reconsider Wilson's (1987) race and poverty thesis in light of more recent history.

Second, this study accounted for discontinuities in an otherwise linear growth trajectory by using the 'moved' variable to model a change in elevation of the regression line. For ease of analysis and interpretation, more complex approaches to modeling discontinuous change (Singer & Willett, 2003) were not explored. These include the possibility of modeling discontinuities in slope as well as elevation, dividing time into multiple phases, using transformations to model nonlinear change, and representing change as a polynomial function of time.

Also, this study standardized time by using an indicator of the year in which survey information were collected. For this reason, one respondent's first and subsequent data collection points could occur in different years from another's. An alternative way to conceptualize growth trajectories would be to model change as a function of *elapsed* time since the initial survey. With this method, $time_1$ would always represent baseline conditions no matter what year a household entered the study, $time_2$ would always represent conditions one year later, and so forth. Using this approach would provide more direct information about average individual/household change trajectories beginning at baseline.

A third area for future study concerns another time-related issue. In this study, the effect of housing assistance was *contemporaneous* with the measured outcome. In other words, the coefficient for the housing assistance variable estimated the neighborhood poverty rate for a household *at the time* of living in that particular form of assisted housing. With more years of longitudinal data, it would be possible to create a lagged housing assistance variable that would provide information about 'downstream' or future effects of housing assistance.

Finally, while some studies have failed to detect effects of metropolitan-level characteristics or conditions due to problems with multicollinearity among predictors, this study was able to estimate the effects of metropolitan characteristics by using the MPI Index, a composite variable, plus a single indicator of metropolitan white-black segregation. No attempt was made to tease out the relative importance of the eight underlying employment, economic and housing indicators that comprise the MPI, but this more detailed information could be obtained from aggregate census data at the metropolitan level. In addition to the measure of segregation, it might also be useful to explore measures of isolation, both by race and by class. Finally, in their recent report, *Metropolitan Conditions and Trends: Changing Contexts for a Community Initiative* (2009), Hendey and Kingsley describe data sources and definitions for a large number of social and economic indicators at the metropolitan and county levels. Incorporating more of these measures—as well as tract-level predictors—might further reduce between-MSA variability by explaining with more precision what is driving contextual influences on households' neighborhood poverty outcomes.

Summary

As Box and Draper note in their book on empirical model-building (1987, p. 424), "Essentially, all models are wrong, but some are useful." Every good study elicits more questions, and every model is only a more or less rough approximation of reality. One of the main values of this study, however, is its clear elucidation of the importance of race and contextual influences in determining neighborhood poverty outcomes.

In this spirit of learning from the past in order to promote a more promising future, it is appropriate to conclude with the words of the newest U.S. Secretary of Housing and Urban Development (Donovan, 2009, July 14, p. 9):

Home. It is the foundation upon which all of us build our lives, raise our children and plan for our futures. It's the building block with which we forge neighborhoods and put down roots. If the crisis we find ourselves in today has taught us anything, it's that if there isn't equal access to safe, affordable housing, there isn't equal opportunity. And if sixteen years of HOPE VI has taught us anything, it's that building communities in a more integrated and inclusive way isn't separate from advancing social and economic justice and the promise of America—it's absolutely essential to it. It's inseparable from the idea that, in America, our hopes and our dreams should never be limited by where we live… Our goal today is to ensure that every child in America has the same opportunity. Let us rise to meet it.

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CURRICULUM VITAE

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E<small>DUCATION</small>

5/2010	Kent School of Social Work, University of Louisville (Louisville, KY)
	Ph.D., GPA: 4.0/4.0
	Dissertation topic: Context matters: A multilevel analysis of patterns of mobility to non-poor neighborhoods for poor renter households
12/1995	Kent School of Social Work, University of Louisville (Louisville, KY)
	Master of Science in Social Work, GPA: 4.0/4.0
	Field of Practice: Children and Families
	Method of Practice: Administration, Policy and Planning
5/1984	School of Education, Indiana University (Bloomington, IN)
	Bachelor of Science with Highest Distinction, GPA: 3.99/4.00
	International practicum placement: Brockworth, England

E<small>MPLOYMENT</small> H<small>ISTORY</small>

1997, 2002 - Date	Adjunct Faculty
	Kent School of Social Work, University of Louisville (Louisville, KY)
2001 - Date	Research Manager
	Kent School of Social Work, University of Louisville (Louisville, KY)
1995 - 2000	Social Work Educator/Project Specialist (7/95 – 12/00)
	Social Work Intern (1/95 – 7/95)
	Hospice and Palliative Care of Louisville (Louisville, KY)
1991 - 1994	Program Manager (11/92 – 12/94), Program Coordinator (5/91 – 11/92)
	Social Work Intern (5/93 – 8/93)
	Volunteers of America of Kentucky (Louisville, KY)

TRAINING

5/2008   Scientific Software International
Hierarchical Data Modeling with HLM 6
Training in hierarchical linear and nonlinear modeling with Steve
Raudenbush (University of Chicago) and Tony Bryk (Stanford University).

6/2005   Centre for Contemplative Dialogue
Mindful Leadership: The Path of Contemplative Dialogue
Completed training process for helping organizations, leaders and
individuals to respond more effectively to obstacles and challenges using
theory of learning organizations and skills of dialogue and contemplative
practice.

2/1999   American Medical Association Train-the Trainer Institute
Educating Physicians on End-of-Life Care (EPEC)
Certified to teach physicians and other medical professionals essential
clinical competencies in end-of-life care.

1989 - 1991   Archdiocese of Louisville Ministry Formation Program
Commissioned as lay minister at completion of two-year program of
educational, spiritual, service, and leadership development.
*Supervised ministry internship: Volunteers of America Family Emergency
Shelter*

AWARDS

2010   University of Louisville
Guy Stevenson Award for Excellence in Graduate Studies
University-wide doctoral degree recipient award for scholarship, leadership
and service.

2010   University of Louisville
Graduate Dean's Citation
In recognition of superior accomplishment in graduate studies including
publications, teaching excellence and professional service.

2010   Leadership Southern Indiana
Selected as member of 2010-2011 leadership cohort.

2008   Kent School of Social Work
Stan Frager Faculty Community Service Award
For outstanding volunteer contributions and dedicated service to the
community.

2008	Kent School Student Association, Kent School of Social Work, University of Louisville Faculty Appreciation Award
2008	City of D'Iberville, Mississippi Mayor's Certificate of Appreciation In recognition of commitment and dedication to the City of D'Iberville.
2008	D'Iberville Volunteers Foundation Certificate of Appreciation In recognition of outstanding contributions to the citizens of D'Iberville, Mississippi, in their Hurricane Katrina recovery.
1995	University of Louisville, Kent School of Social Work Field Practicum Award
1994	Volunteers of America Award for Outstanding Leadership and Service
1982, 1983, 1984	Indiana University Recognized at Founders Day ceremony for academic achievement.
1983	Indiana University, Board of Aeons Nominated for appointment as one of 12 student leaders on the Board of Aeons to advise the Office of the University President and his administrative colleagues.
1983	Indiana University, Vice Presidential Scholar One of 14 students university-wide selected for showing intellectual curiosity, superior potential and independent thought. Invited to serve on academic advisory board reporting to Vice President Kenneth Louis.
1981	National Merit Scholarship Corporation National Merit Scholar. One of 23 merit scholars in Kentucky/Southern Indiana.

CAREER EXPERIENCE

Kent School of Social Work, University of Louisville

Teaching
- Have taught the following Masters-level social work courses:
  - SW 698-02 & SW 397-09: Kent in New Orleans, the Gulf Coast and Points In-Between (Spring 2008)
  - SW602: Social Welfare Institutions, Policies and Services (Fall semesters 2002-2006)

- SW667: Negotiation, Mediation and Conflict Transformation (Spring semesters 2004-2006; Summer semesters 2005-2006)
- SW622: Issues in Policy and Service Delivery (Spring semester 2003)
- SW617: The Structural Approach to Direct Practice in Social Work (Fall semester 1997)
- Independently developed syllabi and course materials for SW667 and SW617; collaborated with policy sequence faculty on course development activities for SW602 and SW622
- Designed interactive websites for above courses; used simulation (standardized clients) and videography in practice skills courses
- Developed web-based, Masters level prerequisite courses in research, statistics and human biology
- Worked with student group and faculty colleagues to plan 3/2008 Alternative Spring Break service-learning trip and elective service-learning course
- Collaborated with faculty colleagues to develop Gulf Coast practicum
- Active participation in faculty affairs, curriculum development and evaluation
- Mentor to MSSW student, Sarah Seelye, as part of her practicum
- Demonstrated expertise in distance learning and multimodal adult learning methodologies

Scholarship
- Serve or have served as principal investigator, co-investigator, co-director or research staff on funded projects in the following areas:
  - Welfare reform
  - Homelessness
  - Aging
  - Interdisciplinary health care
  - Cancer
- Experienced in proposal development, contract negotiation, personnel management, budget oversight, human subjects protection, internal/external review processes, research design, research instrument development, and data collection, management and analysis including advanced multivariate statistical applications

Service
- Serve as founding member of Board of Directors, Emerging Workforce Initiative, Inc.
- Serve as member of Board of Directors, Louisville Coalition for the Homeless
- Serve on SAMSHA Grant Oversight Committee, Phoenix Health Center (Louisville)

- Active membership in Metropolitan Housing Coalition (Louisville)
- Elected Vice-Chair of the Floyd County (IN) Democratic Party (2009-2013)
- Volunteered as Hoosier Team Coordinator, Organizing for America
- Served on Steering Committee, Indiana Women United for Change
- Served or currently serving on the following Kent School committees:
    - Kent Teaching Group
    - Curriculum Committee
    - Outcomes Committee
    - Research Committee
- Provided faculty support and consultation to Kent School Student Association
- Served on the Human Subjects Protection Program Office's Social/Behavioral/Educational Committee to redesign SBE human subjects training
- Delegate to 3/2007 Gulf Coast Housing Summit sponsored by Mercy Housing and Human Development
- Organized 6/2007 and 3/2008 service-learning trips to Mississippi Gulf Coast and New Orleans
- Participated in Louisville Brownfields Redevelopment planning process
- Participated in West Louisville Visioning process
- Served as Quality Enhancement Plan (QEP) focus group facilitator in 2005

Current Grant/Contract Support

4/09 - 6/10   Kentucky Cabinet for Health and Family Services (Total: $417,381)
Systematic Analysis of Options to Increase TANF Work Participation Rates (Stacy Deck, PI; Gerard Barber, Co-PI)

Provide in-depth quantitative analysis of administrative data related to TANF utilization and work participation. Continue qualitative study of clients who do not meet work participation requirements. Consult in collection of data related to clients' work-related barriers and use multivariate analysis to identify predictors of non-participation. Conduct evaluation of employment training and placement services provider. Provide consultation, training and evaluation to improve case managers' proficiency in engaging clients and providing work-related counseling. Conduct process analysis to improve efficiency and effectiveness of family support service delivery system. Consult with local and statewide government leaders to promote achievement of TANF goals.

Role: Principal Investigator

4/09 - 6/10   Kentucky Cabinet for Health and Family Services (Total: $75,525)
<u>Increasing Food Benefit Program Satisfaction and Decreasing Error Rates</u>
(Stacy Deck, PI; Gerard Barber, Co-PI)

Conduct client satisfaction survey for Kentucky's Simplified Assistance for the Elderly (SAFE) food benefits program. Analyze statewide food benefits delivery system to identify factors that are contributing to increasing error rates and recommend strategies for bringing error rates into acceptable rages established by the federal government.

Role: Principal Investigator

Completed Grant/Contract Support

7/08 - 3/09   Kentucky Cabinet for Health and Family Services (Total: $270,460)
<u>Systematic Implementation and Evaluation of Options to Increase Work Participation Rates in Kentucky</u> (Gerard Barber, PI; Stacy Deck, Co-PI)

Conducted training and evaluation to improve case managers' proficiency in engaging clients and providing work-related counseling. Provided in-depth quantitative analysis related to clients with barriers to work participation. Conducted qualitative study of non-participating and disabled clients, and community professionals who serve this population.

Role: Co-Investigator (leadership role in proposal development, contract negotiation, budget management, human subjects review process, research design and analysis, and dissemination of findings; primary contact with state personnel; project oversight and personnel management); COMPLETED

7/07 - 6/08   Kentucky Cabinet for Health and Family Services (Total: $86,290)
<u>Implementation and Evaluation of KWP Client Engagement Training Program</u> (Gerard Barber, PI; Stacy Deck, Co-PI)

Utilized a blended learning methodology to train CHFS case managers and supervisors in the skills of engagement, case management and motivational interviewing. Used a longitudinal design to evaluate four levels of training outcomes.

Role: Co-Investigator (leadership role in proposal development, contract negotiation and budget management; consultant on curriculum development; full responsibility for training evaluation including development of data collection instruments, data management and analysis, and dissemination of findings; primary contact with state and local personnel; project oversight and personnel management); COMPLETED

9/07 - 6/08	U.S. Department of Health and Human Services (Subcontract with University of Kentucky for $100,000) <u>Ohio Valley Appalachia Regional Geriatric Education Center</u> (Arleen Johnson, PI; Gerard Barber, Director, University of Louisville site; Stacy Deck, Co-Director) Enhanced geriatric education through curriculum and faculty development, didactic and clinical programs, consultation and technical assistance, continuing and in-service education, information collection and dissemination. Focused on interdisciplinary transitions in responsibility for aging care and standardized patient training. Role: Co-Director, University of Louisville site (leadership role in providing interdisciplinary standardized patient training for students and professionals statewide; full responsibility for coordinating collaboration across four disciplines and five institutions; consultant on curriculum development; project oversight and personnel management); COMPLETED
7/01 - 6/07	Kentucky Cabinet for Health and Family Services (Total: $514,242 over 6 years) <u>Outcome-based Training Using the Internet</u> (Gerard Barber, PI; Stacy Deck, Co-Director) Developed curriculum to apply findings of welfare reform evaluation; created online training modules; consulted with CHFS Training Branch in development and implementation of multimodal approach to training; evaluated outcomes and consulted in redesign of training materials. Role: Co-Director; COMPLETED
1/06 - 12/06	Louisville Metro Department of Housing and Family Services (Total: $48,500) <u>Cost of Homelessness</u> (Gerard Barber, PI; Stacy Deck, Co-PI) Used quantitative and qualitative methodologies to explore utilization patterns of clients who are intensive consumers of homeless services. Role: Co-Investigator; COMPLETED
7/00 - 6/06	U.S. Department of Health and Human Services (Subcontract with University of Kentucky for $456,642 over 6 years) <u>Ohio Valley Appalachia Regional Geriatric Education Center</u> (Arleen Johnson, PI) Enhanced geriatric education through curriculum and faculty development, didactic and clinical programs, consultation and technical assistance, continuing and in-service education, information collection and dissemination. Focused on distance learning. Role: Joined project team as staff in 1/01; Co-Director of University of Louisville site beginning in 2002; COMPLETED

7/04 - 6/06	U.S. Department of Health and Human Services (Total: $512,028 over 2 years) <u>Kentucky Community-Based Geriatric Interdisciplinary Training and Self-Management Project</u> (Annatjie Faul, PI) Identified geriatric assessment best practices, taught these skills to social work and physical therapy students and professionals, and evaluated outcomes. Directed training team. Geriatric Education Center liaison. Role: Core Faculty & Distance Learning Specialist; COMPLETED
6/05 - 5/06	Centers for Disease Control (Total: $297,600) <u>Cancer as a Chronic Disease</u> (Mark Pfeifer, PI) Designed and evaluated a chronic disease management program tailored to the specific needs of women with breast cancer. Provided social work consultation and supervision. Took lead role in data analysis and dissemination of findings. Role: Core Faculty; COMPLETED
7/00 - 6/04	Kentucky Cabinet for Families and Children (Total: $1,146,720 over 4 years) <u>Kentucky Welfare Reform Evaluation</u> (Gerard Barber, PI; Stacy Deck, Co-PI beginning 2002) Analyzed outcomes for recipients and former recipients of welfare in Kentucky. Reported on outcomes related to program utilization, employment, education, family and child well-being, resource supports and effects of time limits. Primary author of monographs on employment; collaborator on other research and dissemination. Role: Joined research team as staff in 1/01; Co-Investigator beginning in 2002; COMPLETED

Hospice and Palliative Care of Louisville

Teaching
- Directed continuing education for social work, pastoral care and bereavement departments
- Developed competency-based education modules
- Oriented all new employees
- Served as Kent School practicum supervisor
- In charge of the Community Health Rotation for University of Louisville 3rd year medical students; taught communication and interpersonal skills
- Certified by American Medical Association as end-of-life care educator

Service	▪ Served on the following committees:
	▪ National Council of Hospice Professionals Social Work Section Executive Committee
	▪ National Council of Hospice Professionals Task Force on Social Work Competencies (co-chair)
	▪ Jefferson County Medical Society Community Health Committee
	▪ Kentucky United to Improve End-of-Life Care Coalition, Curriculum Committee (chair)
	▪ Served as Quality and Business Excellence (QuBE) evaluator (using Baldridge assessment criteria) for the Louisville Chamber of Commerce
Scholarship	▪ Coordinated the Hospice Discharge Study, funded by a grant from Lifespan Forum
	▪ Responsible for data collection and analysis
	▪ Collaborated with Kent School of Social Work faculty
	▪ Disseminated results at national conferences
	▪ Initiated data collection and internal evaluation of effectiveness of training for medical students
	▪ Lead author for monograph on competency-based social work education published by National Hospice and Palliative Care Organization
	▪ Extensive record of community presentations as well as regional and national conference presentations
Clinical Work	▪ Provided in-home consultation to patients, family members and professionals experiencing communication barriers that could be resolved with technology
	▪ Worked on interdisciplinary patient care team as social work intern; provided counseling, emotional support, information and referrals to terminally ill patients and their families

Volunteers of America of Kentucky

Administration	▪ Managed HUD-funded program serving former residents of emergency and transitional shelters with goal of breaking cycle of homelessness
	▪ In charge of services including:
	▪ Case management
	▪ Employment counseling
	▪ Financial assistance
	▪ Outreach

	▪ Served as interim manager of the Women's Center, a residential single room occupancy (SRO) facility for 15 single, homeless women
	▪ Responsible for budget management, internal/external reports, program development/documentation, public relations, grant writing, staff and volunteer management
	▪ Designed and implemented agency-wide Quality Assurance Program to evaluate 20 programs in Louisville and Lexington
	▪ Participated in agency budgeting, marketing and strategic planning processes
	▪ Planned and facilitated agency-wide management retreat
Teaching	▪ Hired, trained and supervised program staff and VISTA volunteer
	▪ Recruited, trained, supervised and retained a cadre of volunteer lay professionals to provide outreach to formerly homeless families and prevent their return to homelessness
	▪ Collaborated with the Coalition for the Homeless, University of Louisville School of Nursing, Spalding University School of Social Work and University of Louisville School of Education to provide "Interdisciplinary Outreach Team" practicum placements for students
	▪ Collaborated with the Better Homes Foundation to provide annual case management training conference for staff and students
Service	▪ Served on the following committees:
	▪ Volunteers of America Quality Assurance Committee
	▪ Louisville Coalition for the Homeless
	▪ Homeless Families Prevention Project SAFAH Grant Oversight Committee (chair)
	▪ Homeless Families Prevention Project Executive Committee
	▪ Homeless Families Prevention Project Steering Committee
	▪ Preston/Eastern Parkway Merchants Association
	▪ Coordinated Volunteers of America Holiday Giving Program
Scholarship	▪ Wrote policy and procedure manual for VOA Follow-Up Program
	▪ Collaborated with colleagues from local universities in creation of Interdisciplinary Outreach Team Manual for students
	▪ Wrote VOA Quality Assurance Manual, and developed forms and process for evaluating agency program
	▪ Edited and wrote a monthly by-line for agency newsletter
Clinical Work	▪ As program coordinator, provided in-home counseling and case management to formerly homeless families; provided advocacy and brokered services with community agencies; provided support and

crisis intervention for domestic violence victims and clients with emotional/developmental disabilities

- As program manager, continued to do intake interviews, care planning and crisis intervention while supervising case management provided by staff

PUBLICATIONS

Peer-reviewed Publications:

Faul, A., Yankeelov, P., Borders, K., **Deck**, S., Gillette, P., Nicholas, L., Pariser, D., Rowan, N. & Wiegand, M. (2009). Impact of geriatric assessment and self-management support on community dwelling older adults with chronic illnesses. *Journal of Gerontological Social Work.*

Rowan, N.L., Gillette, P. Faul, A.C., Yankeelov, P., Borders, K.W., **Deck**, S., Nicholas, L. & Wiegand, M. (2009). Innovative interdisciplinary training in and delivery of evidence-based geriatric services: Lessons learned. *Gerontology and Geriatrics Education.*

Deck Shade, S. & Barber, G.M. (2004). When and where you want it: Continuing education from a distance. *Gerontology & Geriatrics Education. 24.* 95-114.

Publications Under Review:

Negrey, C., **Deck**, S. & Barber, G. Working and not working on welfare: Employment and job search experiences of TANF recipients, Jefferson County, Kentucky. *Social Service Review.*

Head, B., Schapmire, T., Keeney, C., **Deck**, S., Studts, J., Hermann, C., Scharfenberger, J. & Pfeifer, M. The relationship between distress and quality of life in women recently diagnosed with breast cancer. *Psycho-Oncology.*

Publications in Progress:

Deck, S., van Zyl, R. & Barber, G. Work participation patterns for Kentucky welfare clients with identified work-related obstacles.

Deck, S., Negrey, C. & Barber, G. When welfare doesn't lead to work: Client characteristics, welfare utilization experiences and work participation histories of welfare clients who do not meet the work participation requirement.

Reports and Monographs:

Deck, S., van Zyl, R., Slevin, B., Morris, V. & Barber, G. (2010, January). *Work participation patterns for Kentucky welfare clients with identified work-related obstacles.* Louisville, KY: University of Louisville Kent School of Social Work.

Deck, S. (2009, November). *Northern and Southern Bluegrass Kentucky Works Program case management skills training: Post-training evaluation.* Louisville, KY: University of Louisville Kent School of Social Work.

Deck, S., Negrey, C. & Barber, G. (2009, October). *Kentucky TANF recipients in the Kentucky Works Program: A qualitative study.* Louisville, KY: University of Louisville Kent School of Social Work.

Deck, S. & Barber, G. (2009, August). *Findings from Kentucky's Simplified Assistance for the Elderly (SAFE) program participant survey.* Louisville, KY: University of Louisville Kent School of Social Work.

Deck, S., Barber, G. & Morris, V. (2009, May). *Systematic review of Kentucky Works Program participation patterns in Southern Bluegrass – A report to the Kentucky Cabinet for Health and Family Services.* Louisville, KY: University of Louisville Kent School of Social Work.

Deck, S. (2009, April). *Northern and Southern Bluegrass case management skills training evaluation: Case Management and Motivational Interviewing online course – A report to the Kentucky Cabinet for Health and Family Services.* Louisville, KY: University of Louisville Kent School of Social Work.

Deck, S., Barber, G. & Morris, V. (2009, March). *Systematic review of Kentucky Works Program participation patterns in Northern Bluegrass – A report to the Kentucky Cabinet for Health and Family Services.* Louisville, KY: University of Louisville Kent School of Social Work.

Deck, S. (2009, February). *Northern and Southern Bluegrass case management skills training evaluation: Kentucky Works Program advanced skills workshop – A Report to the Kentucky Cabinet for Health and Family Services.* Louisville, KY: University of Louisville Kent School of Social Work.

Deck, S., Barber, G. & Morris, V. (2009, January). *Non-participating/non-sanctioned clients in Jefferson County in May 2008: Analysis of 24-month Kentucky Works Program participation history – A special report to the Kentucky Cabinet for Health and Family Services.* Louisville, KY: University of Louisville Kent School of Social Work.

Deck, S., Barber, G. & Morris, V. (2008, December). *Systematic review of Kentucky Works Program participation patterns: Update – A report to the Kentucky Cabinet for Health and Family Services.* Louisville, KY: University of Louisville Kent School of Social Work.

Deck, S. (2008, November). *Jefferson County Kentucky Works Program case management skills training: Post-training evaluation – A report to the Kentucky Cabinet for Health and Family Services.* Louisville, KY: University of Louisville Kent School of Social Work.

Deck, S., Barber, G. & Morris, V. (2008, June). *Systematic review of Kentucky Works Program participation patterns: A report to the Kentucky Cabinet for Health and Family Services.* Louisville, KY: University of Louisville Kent School of Social Work.

Deck, S. (2008, May). *Jefferson County Kentucky Works Program case management skills training evaluation: Case Management & Motivational Interviewing online course – A report to the Kentucky Cabinet for Health and Family Services.* Louisville, KY: University of Louisville Kent School of Social Work.

Deck, S. (2007, December). *Jefferson County Kentucky Works Program case management skills training evaluation: Kentucky Works Program Advanced Skills workshop - A report to the Kentucky Cabinet for Health and Family Services.* Louisville, KY: University of Louisville Kent School of Social Work.

Deck, S. (2007, March). *Training evaluation: Advanced Kentucky Works Program case management skills training program - A report to the Kentucky Cabinet for Health and Family Services.* Louisville, KY: University of Louisville Kent School of Social Work.

Barber, G., **Deck** Shade, S., McAdam, D. & Daugherty, R. (2002). *Welfare reform: Overview of Kentucky's five-year experience.* Louisville, KY: University of Louisville, Urban Studies Institute and Kent School of Social Work.

Barber, G., Stone, R., **Deck** Shade, S. & Shiels, E. (2002). *Welfare reform: Impact of time limits on clients.* Louisville, KY: University of Louisville, Urban Studies Institute and Kent School of Social Work.

Deck Shade, S., Stone, R., Barber, G. & Daugherty, R. (2002). *Welfare reform: Special report on employment outcomes.* Louisville, KY: University of Louisville, Urban Studies Institute and Kent School of Social Work.

Barber, G., **Deck** Shade, S. & Borders, J. (2001). *Kentucky Transitional Assistance Program: 2001 statewide welfare reform evaluation – Administrative data analysis.* Louisville, KY: University of Louisville, Urban Studies Institute and Kent School of Social Work.

Barber, G., **Deck** Shade, S. & Borders, J. (2001). *State and regional program performance and outcome measurements.* Louisville, KY: University of Louisville, Urban Studies Institute and Kent School of Social Work.

Barber, G., McAdam, D. **Deck** Shade, S. & Schneider, E. (2001). *From welfare to work: Year 2001 panel study of families and children.* Louisville, KY: University of Louisville, Urban Studies Institute and Kent School of Social Work.

Deck Shade, S., Swinfard, P., Cameron, E., Hay, A., Johnson, S. & Perkins, M. (2001). *Competency-based education for social workers.* Alexandria, VA: National Hospice and Palliative Care Organization.

Non-refereed Publications:

Barber, G., Stone, R., **Deck** Shade, S. & McAdam, D. (2003). Welfare reform in Kentucky: A five-year evaluation by the Kent School of Social Work, University of Louisville. *Insights on Southern Poverty, 1*(2), 6-8.

Deck Shade, S. (Summer, 2000). Social workers as resource: What can we contribute to the field of professional ethics? *The Hospice Professional.* Alexandria, VA: National Hospice and Palliative Care Organization.

Deck Shade, S. (Summer, 1998). Role flexibility enhances access to care. *The Hospice Professional.* Alexandria, VA: National Hospice and Palliative Care Organization.

Deck Shade, S. (December, 1992) The journey of a homeless couple. *Family Places.* Louisville, KY: Volunteers of America of Kentucky.

Deck Shade, S. (August, 1992) Follow-up program breaks cycle of homelessness. *Family Places.* Louisville, KY: Volunteers of America of Kentucky.

Deck Shade, S. (July, 1992) Compassion communicates message of hope. *Family Places.* Louisville, KY: Volunteers of America of Kentucky.

Deck Shade, S. (September, 1991) It's a long journey. *Family Places.* Louisville, KY: Volunteers of America of Kentucky.

Deck Shade, S. (July, 1991) Working from the heart. *Family Places.* Louisville, KY: Volunteers of America of Kentucky.

Deck Shade, S. (June, 1991) Statistics… More than just numbers… People. *Family Places.* Louisville, KY: Volunteers of America of Kentucky.

Deck Shade, S. (May, 1991) Called to oneness. *Family Places.* Louisville, KY: Volunteers of America of Kentucky.

PEER-REVIEWED PRESENTATIONS

Deck, S., Head, B., Faul, A., Studts, J., Stone, R., Keeney, C., & Pfeifer, M. (May, 2008). *Predictors of Distress Thermometer ratings in breast cancer patients.* Poster presented at the Association of Oncology Social Workers 24th Annual Conference. Louisville, KY.

Deck, S., Faul, A., Yankeelov, P., Wiegand, M., Rowan, N., Nicholas, L., Gillette, P. & Borders, K. (February, 2008). *Engaging adult learners with a blended approach.* Paper presented at the Association for Gerontology in Higher Education's 34th Annual Meeting and Leadership Conference. Baltimore, MD.

Deck, S., Head, B., Faul, A., Studts, J., Stone, R., Keeney, C. & Pfeifer, M. (October, 2007). *Predictors of Distress Thermometer ratings in breast cancer patients.* Poster presented at the 2007 Research!Louisville Conference. Louisville, KY.

Deck, S., Head, B., Faul, A., Studts, J., Stone, R., Keeney, C. & Pfeifer, M. (September, 2007). *Predictors of Distress Thermometer ratings in breast cancer patients.* Poster presented at the 2007 Louisville Breast Cancer Update. Louisville, KY.

Gillette, P., Rowan, N., Faul, A., Yankeelov, P., Borders, K., **Deck**, S., Nicholas, L., Pariser, D. & Wiegand, M. (June, 2007). *Collaborative wellness intervention for older adults living in the community.* Paper presented at the 3rd International Conference on Fitness. Athens, Greece.

Krugler, J., **Deck**, S., Barber, G., Furman, C., Shawler, C. & Strickland, C. (April, 2007). *An interdisciplinary approach to comprehensive geriatric care using standardized patients.* Poster presented at the Annual Meeting of the Southern Group on Education Affairs. Louisville, KY.

Gillette, P., Wiegand, M., Pariser, D., Faul, A., Yankeelov, P., Rowan, N., Nicholas, L., Borders, K. & **Deck**, S. (February, 2007). *Interdisciplinary geriatric assessment and self-management intervention improves function in community-dwelling older adults.* Poster presented at the American Physical Therapy Association Combined Sections Meeting. Boston, MA.

Pariser, D., Wiegand, M., Rowan, N., Gillette, P., Faul, A., Yankeelov, P., **Deck**, S., Borders, K. & Nicholas, L. (February, 2007). *Qualitative analysis of physical therapist student reflections following an interdisciplinary geriatric service learning course.* Poster presented at the American Physical Therapy Association Combined Sections Meeting. Boston, MA.

Faul, A., Borders, K., Rowan, N., Yankeelov, P., Nicholas, L., **Deck**, S., Gillette, P., Wiegand, M. & Pariser, D. (January, 2007). *Geriatric Evaluation and Self-Management Services: Expanding evidence-based practice.* Paper presented at the 11th Annual Conference of the Society for Social Work and Research. San Francisco, CA.

Faul, A., Borders, K., Rowan, N., Yankeelov, P., Nicholas, L., **Deck**, S., Gillette, P., Wiegand, M. & Pariser, D. (November, 2006). *The use of technology to promote self-management among older adults.* Paper presented at the Gerontological Society of America's 59th Annual Scientific Meeting. Dallas, TX.

Deck, S., Faul, A., Yankeelov, P., Wiegand, M., Rowan, N., Nicholas, L., Gillette, P. & Borders, K. (November, 2006). *Engaging adult learners with a blended instructional approach.* Poster presented at the Gerontological Society of America's 59th Annual Scientific Meeting. Dallas, TX.

Head, B., **Deck**, S., Antle, B., Pfeifer, M., Keeney, C., Scharfenberger, J. & Studts, J. (October, 2006). *Use of the Distress Thermometer as an assessment tool for persons with breast cancer.* Poster presented at the 2006 Louisville Breast Cancer Update. Louisville, KY.

Head, B., **Deck**, S., Stone, R., Antle, B., Pfeifer, M., Keeney, C., Scharfenberger, J., Studts, J. & Faul, A. (September, 2006). *Use of the Distress Thermometer as an assessment tool for persons with breast cancer.* Poster presented at the 2006 Research!Louisville Conference. Louisville, KY.

Deck, S. (February, 2006). *Virtual communication.* Paper presented as part of a pre-conference institute, "Distributed Education: The Newest, the Coolest, and How to Make What You've Got Better," at the Association for Gerontology in Higher Education's 32nd Annual Meeting. Indianapolis, IN.

Johnson, A., **Deck** Shade, S. & McConnell, P. (April, 2004). *Cyber-learning: Designing Internet-based CE instruction for geriatric health care providers.* Paper presented at the 2004 Joint Conference of the American Society on Aging and the National Council on the Aging. San Francisco, CA.

Deck, S. (February, 2004). *Virtual communication.* Paper presented as part of a pre-conference institute, "Elements and Innovations in Distance Education: Teaching and Learning," at the Association for Gerontology in Higher Education's 30th Annual Meeting and Educational Leadership Conference. Richmond, VA.

Johnson, H.A., **Deck** Shade, S. & McConnell, P. (November, 2003). *Inventing the future: CE/CME individualized web-based instruction for geriatrics health providers.* Poster presented at the Gerontological Society of America's 56th Annual Scientific Meeting. San Diego, CA.

Stone, R., Barber, G. & **Deck** Shade, S. (August, 2003). *A validation of the screening tool for clients likely to reach the time limit.* Paper presented at the 43rd Annual Workshop of the National Association for Welfare Research and Statistics. San Diego, CA.

Barber, G., Stone, R., **Deck** Shade, S. & King-Simms, S. (August, 2003). *An analysis of the employment outcomes of ready-to-work (RTW) program participants.* Paper presented at the 43rd Annual Workshop of the National Association for Welfare Research and Statistics. San Diego, CA.

Faul, A., Barbee, A., Cloud, R., Frey, A., Holt, T., Moore, S., **Deck** Shade, S. & Yankeelov, P. (March, 2003). *The infusion of internet technology in the teaching of MSSW students: Valuable lessons learned.* Poster presented at the Council on Social Work Education's 49th Annual Program Meeting. Atlanta, GA.

Deck Shade, S. & Barber, G. (March, 2003). *Expanding business: The realities of Internet-based courses and continuing education programs in gerontology*. Paper presented as part of a pre-conference institute at the Association for Gerontology in Higher Education's 29th Annual Meeting and Educational Leadership Conference. St. Petersburg, FL.

Stone, R., **Deck** Shade, S. & Barber, G. (January, 2003). *The impact of Kentucky Works Program (KWP) participation on the employment outcomes of TANF leavers*. Poster presented at the 7th Annual Conference of the Society for Social Work and Research. Washington, DC

Stone, R., **Deck** Shade, S. & Barber, G. (August, 2002). *Outcomes of policies and programs that promote movement from welfare to work: The Kentucky experience*. Paper presented at the 42nd Annual Workshop of the National Association for Welfare Research and Statistics. Albuquerque, NM.

Deck Shade, S., Barber, G. & McAdam, D. (January, 2002). *Leaving cash assistance and family well-being*. Paper presented at the 6th Annual Conference of the Society for Social Work and Research. San Diego, CA.

Deck Shade, S. & Harrington, A. (June, 2000). *The hospice setting: A new counseling model*. Paper presented at the Kentucky Association of Hospices Partners for Quality End-of-Life Care Symposium and Exposition. Lexington, KY.

Deck Shade, S. & Harrington, A. (February, 2000). *The hospice setting: A new counseling model*. Paper presented at the National Hospice and Palliative Care Organization's 1st Annual Clinical Conference and Exposition. Nashville, TN.

Rotella, J., Edwards, L. & **Deck** Shade, S., (February, 2000). *Goals of care: Can we work together on this?* Paper presented at the National Hospice and Palliative Care Organization's 1st Annual Clinical Conference and Exposition. Nashville, TN.

Deck Shade, S. (October, 1999). *Advanced competency-based education for the social services*. Paper presented at the National Hospice Organization's 21st Annual Symposium and Exposition. Long Beach, CA.

Deck Shade, S. (October, 1999). *Communicating when the news isn't good* and *Physician-assisted suicide*. Master session presented at the National Hospice Organization's 21st Annual Symposium and Exposition. Long Beach, CA.

Deck Shade, S. (June, 1999). *Communicating difficult news*. Workshop presented at Kentucky Association of Hospices Annual Conference. Louisville, KY.

Deck Shade, S. (August, 1998). *Advanced competency-based education for the social services*. Paper presented at the National Hospice Organization's 2nd National Conference on Spiritual/Bereavement/Psychosocial Aspects of Hospice Care. Pittsburgh, PA.

Deck Shade, S. & Paton, R. (October, 1997). *Following up with discharged patients: Results of a qualitative study.* Paper presented at the 19th Annual Symposium and Exposition of the National Hospice Organization. Atlanta, GA.

Deck Shade, S., Paton, R. & Runnion, V. (November, 1996). *Following up with discharged hospice patients.* Paper presented at the 18th Annual Symposium and Exposition of the National Hospice Organization. Chicago, IL.

Deck Shade, S. (October, 1996). *Communication with the dying patient.* Paper presented at the Kentucky Association of Hospices 19th Annual Fall Conference.

INVITED PRESENTATIONS

Broadcast news programs:

Deck, S. (May 28, 2009). *Community organizing as a White House strategy.* Guest panelist on KCRW "To the Point" radio talk show. Santa Monica, CA.

Deck, S. (February 6, 2009). *Can President Obama organize America?* Guest panelist on KCRW "To the Point" radio talk show. Santa Monica, CA.

Deck Shade, S. & Mobley, C. (November 13, 2001). *Welfare reform.* Guest panelist on WFPL "State of Affairs" radio talk show. Louisville, KY.

Academic presentations:

Deck, S. (October 23, 2008). *Community organizing in the real world.* Guest lecture to SW301: Human Behavior in the Social Environment. Kent School of Social Work, University of Louisville, Louisville, KY.

Deck, S. (September 24, 2008). *Creating an Environment that Supports Critical Thinking in the Classroom.* Invited presentation to the Social Work Faculty, Kent School of Social Work, University of Louisville. Louisville, KY.

Deck, S. (August 26, 2007). *Overview of New Orleans Pre- and Post-Katrina.* Guest lecture to SW672: Advanced Social Work Practicum I, Kent School of Social Work, University of Louisville, Louisville, KY.

Deck, S. & Baker, K. (September 6, 2007). *Spatial dynamics of urban poverty and the person-in-environment approach to social work.* Guest lecture to SW301: Human Behavior and the Social Environment, Kent School of Social Work, University of Louisville, Louisville, KY.

Barber, G., Stone, R. **Deck**, S., Seelye, S., Borders, J. & Clark, A. (May 30, 2007). *Use and cost of homeless residential services in Metro Louisville during 2004 and 2005.* Invited presentation to the Coalition for the Homeless. Louisville, KY.

Deck, S. (May 29, 2007). *Louisville Metro: Housing and demographics.* Invited presentation to German exchange students and faculty at Kent School of Social Work. Louisville, KY.

Deck, S. (May 17, 2007). *Predictors of distress in breast cancer patients.* Invited presentation to the James Graham Brown Cancer Center Multidisciplinary Breast Cancer Clinic physicians and medical professionals. Louisville, KY.

Deck, S. (March 29, 2007). *Training evaluation: Advanced Kentucky Works Program case management skills training program.* Invited presentation to the Training Branch of the Kentucky Cabinet for Health and Family Services, Frankfort, KY.

Deck, S. (November 15, 2006). *Creative approaches to teaching critical thinking in the policy sequence.* Invited presentation to the Social Work Faculty, Kent School of Social Work, University of Louisville. Louisville, KY.

Deck, S. (October 5, 2006). *Applied research.* Guest lecture to SW769: Advanced Research Design and Analysis, Kent School of Social Work, University of Louisville, Louisville, KY.

Deck, S. (May 10, 2006). *Interdisciplinary teams: Enhancing communication and engaging conflict.* Invited presentation at Ohio Valley Appalachia Regional Geriatric Education Center Transitions in Chronic Disease Symposium, Louisville, KY.

Deck, S., Ramser, C. & Tully, C. (February 28, 2006). *The lyin', the rich and the 9th ward.* Invited presentation at Mardi Gras @ the Library: Perspectives on the People and Culture of New Orleans symposium, University of Louisville, Louisville, KY.

Deck, S. & Brosky, M. (August 16, 2004). *Hospice care in the United States.* Invited presentation to Chinese exchange students and faculty at Kent School of Social Work. Louisville, KY.

Deck Shade, S. & Johnson, A. (July 2, 2003). *Cyber CE: Internet based geriatric education.* Invited presentation at the Summer Series on Aging conference. Lexington, KY.

Barber, G., Stone, R. & **Deck** Shade, S. (April 8, 2003). *An analysis of the employment outcomes of ready-to-work (RTW) program participants.* Invited presentation to the Cabinet for Families and Children Research Symposium. Frankfort, KY.

Stone, R., Barber, G. & **Deck** Shade, S. (April 8, 2003). *A validation of the screening tool for clients likely to reach the time limit.* Invited presentation to the Cabinet for Families and Children Research Symposium. Frankfort, KY.

Deck Shade, S. (December 19, 2002). *K-TAP Outcomes.* Invited presentation to Lincoln Trail Region Kentucky Works Program meeting. Elizabethtown, KY.

Deck Shade, S. (November 13, 2002). *Communication and ethical issues at the end of life: An interactive program.* Panel discussant at Journey's End workshop. Louisville, KY.

Deck Shade, S. (October 29, 2002). *From welfare to work: Questions and answers.* Invited presentation to the Kentucky Works Program regional meeting. Owensboro, KY.

Deck Shade, S. (October 23, 2002). *From welfare to work: Questions and answers.* Invited presentation to the Kentucky Works Program regional meeting. Lexington, KY.

Deck Shade, S. (September 4, 2002). *Kentucky Works Program outcomes.* Invited presentation to the KIPDA region Kentucky Works Program meeting. Louisville, KY.

Deck Shade, S., Stone, R. & Barber, G. (April 16, 2002). *Kentucky Works Program and employment outcomes.* Invited presentation at the Cabinet for Families and Children Research Symposium. Frankfort, KY.

Rotella, J. & **Deck** Shade, S. (October 19, 2000). *Gaps in end-of-life care.* Workshop presented at Hardin Memorial Hospital Annual Ethics Seminar. Elizabethtown, KY.

Edwards, L. & **Deck** Shade, S. (October 19, 2000). *Last hours of living.* Workshop presented at Hardin Memorial Hospital Annual Ethics Seminar. Elizabethtown, KY.

Deck Shade, S. (September 21, 2000). *Communicating when the news isn't good.* Workshop presented at 2000 Kentucky Medical Association Annual Meeting. Louisville, KY.

Deck Shade, S. & Katz, L. (September 21, 2000). *Depression, anxiety and delirium.* Workshop presented at 2000 Kentucky Medical Association Annual Meeting. Louisville, KY.

Edwards, L. & **Deck** Shade, S. (September 21, 2000). *Goals of care.* Workshop presented at 2000 Kentucky Medical Association Annual Meeting. Louisville, KY.

Rotella, J. & **Deck** Shade, S. (September 21, 2000). *Next steps.* Workshop presented at 2000 Kentucky Medical Association Annual Meeting. Louisville, KY.

Webb, G. & **Deck** Shade, S. (September 20, 2000). *Advance care planning.* Workshop presented at 2000 Kentucky Medical Association Annual Meeting. Louisville, KY.

Deck Shade, S. (October 2, 1997). *Advanced competency-based education for the social services.* Invited presentation to the Missouri Hospice Organization Midwest Regional Conference. Lake Ozark, MI.

Community Presentations:

Deck, S. (September 8, 2008). *Preliminary remarks*. Introduction for Dr. Susan Rice, Senior Foreign Policy Analyst, Obama for America. New Albany, IN.

Pfeifer, M. & **Deck** Shade, S. (October 5, 2000). *Medical futility.* Invited presentation to Jefferson County Medical Society Bioethics Committee Seminar. Louisville, KY.

Deck Shade, S. (August 16, 2000). *Goals of care: Can we work together on this?* and *Communicating with the dying patient.* Invited presentations to the Baptist Hospital East Palliative Care Team. Louisville, KY.

Deck Shade, S. & Rotella, J. (July 12, 2000). *Communicating bad news.* Invited presentation to Family Health Centers Medical Staff. Louisville, KY.

Rotella, J. & **Deck** Shade, S. (July 7, 2000). *Whole patient assessment.* Invited Department of Family and Community Medicine Grand Rounds presentation at Jewish Hospital. Louisville, KY.

Edelen, B. & **Deck** Shade, S. (April 30, 1997). *How to talk with a dying patient and family.* Invited presentation to 9th Annual Care for the Dying and their Families Program. Louisville, KY.

Deck Shade, S. (April 27, 1995). *Communicating your professionalism.* Invited presentation to the Kentucky Home Health Association. Louisville, KY.

CONSULTING ACTIVITY

7/2004	Kentuckiana Regional Planning and Development Agency After consulting with senior staff to assess needs, developed and provided training in skills of documentation for social service providers. PAID CONSULTANCY
6/2003	University of Georgia at Athens Assisted in establishing a distance learning partnership and provided consultation on development of a geriatric education center proposal for funding.
12/2001 - 4/2003	Springdale Presbyterian Church Consulted with pastor, staff and church leadership; planned and facilitated year-long congregational discernment process that included congregation survey, two full-congregation events, retreats, small group work, development of learning and reflection materials, and monthly meetings of congregation vision committee. PAID CONSULTANCY

3/2003	Mid-Kentucky Presbytery
Consulted with General Presbyter; developed and facilitated two-day retreat to discern mission and organizational relationships between sub-units of presbytery. PAID CONSULTANCY
8/2002	Waldorf School of Louisville
Facilitated annual board/faculty/parent retreat and strategic planning meeting. PAID CONSULTANCY
4/2002	Institute for Research on Poverty
Invited to attend conference in which evaluations of nine state TANF programs were discussed.
1/1998 -
12/2000	National Council of Hospice Professionals Social Work Section
As member of Executive Committee, provided national leadership and input to the National Hospice Organization (NHO); responded to requests from national constituency for information, consultation and educational material review; contributed articles for the NHO publication, *The Hospice Professional*; and developed guidelines for competency-based education in hospice social work.
8/1998 -
12/2000	National Council of Hospice Professionals Section Task Force on Social Work Competencies
As co-chair, led national committee in writing monograph on competency-based education for social workers (published by National Hospice and Palliative Care Organization), recommended guidelines and standards, developed national resource network, and explored options for introducing online professional education through NHPCO.
5/2000	Missouri Alliance for Home Care
Provided two-day conference, "Core Competency Training for Social Workers" focused on 1) recognizing and treating depression, anxiety and delirium, and 2) using an integrated approach to counseling in health care settings. Target audience: social workers in home care, hospice and hospital settings. PAID CONSULTANCY
5/2000	Hospice and Palliative Care of Louisville, Senior Management Team
Invite to facilitate meeting to achieve consensus on strategic decisions related to information technology and management of information systems.
5/2000	Hospice and Palliative Care of Louisville, Short Length of Stay Performance Improvement Team
Invited to facilitate day-long strategic planning and problem-solving workshop.

Spring 2000	Hospice and Palliative Care of Louisville, Management Team
	Invited to consult with management team to develop group process training for managers in areas of group work logistics, dialogue and discussion, consensus building, and use of process evaluation tools.
2/2000	Hospice and Palliative Care of Louisville, Inpatient and Home Team Task Force
	Invited to co-facilitate day-long joint planning forum.
3/1999	Missouri Alliance for Home Care
	Provided two-day conference, "Core Competency Training for Social Workers" focused on ethical decision-making and responses to grief and loss. Target audience: social workers in home care, hospice and hospital settings. PAID CONSULTANCY
12/1998 - 1/1999	Hospice and Palliative Care of Louisville, Volunteer Department
	Invited to facilitate series of workshops to redefine department's mission, vision and strategic plan.

VOLUNTEERISM

10/2009 - Date	Emerging Workforce Initiative, Inc.
	Founding Board Member
3/2009 - Date	Floyd County Democratic Party
	Elected to four-year term as Vice-Chair. Member of Floyd County Democratic Party Central Committee. Support the Chair in fulfilling responsibility for county-level party affairs including supervising and assisting in the management of political campaigns. Responsible for performing duties of the Chair in his absence.
3/2009 - Date	Phoenix Health Center
	SAMHSA Grant Oversight Committee Member
11/2008 - Date	Organizing for America
	As local coordinator and community organizer, coordinate with local, state and national leadership to support the mission of this project of the Democratic National Committee. Responsibilities include scheduling and hosting events; recruiting, training and supervising volunteers; managing canvassing and phone banking; managing data entry; planning strategy for voter outreach and citizen education/activism; and acting as local community organizer.
6/2008 - Date	Coalition for the Homeless
	Board Member

9/2008 - Date	Indiana Women United for Change Member of statewide Steering Committee chaired by Lt. Gov. Kathy Davis, former First Lady Maggie Kernan, Vice Chair of the Indiana Democratic Party Cordelia Lewis Burks and former First Lady Judy O'Bannon.
Summer/Fall 2008	Campaign for Change As Hoosier Team Coordinator, coordinated with local and state campaign field organizers; scheduled and hosted events; recruited, trained and supervised volunteers; managed canvassing, phone banking and voter registration for seven precincts (6,698 voters/3,454 households); managed data entry; planned strategy for voter outreach; and acted as local community organizer.
Spring 2008	Obama for America Volunteered in primary election campaign (canvassing, phone banking, visibility captain, voter registration)
2005	Coalition for the Homeless Annual Homeless Street Count
2001 - 2002	St. William Church STARS Program Tutored in after-school program at Algonquin Kids Cafe
1998 - 2004	Waldorf School of Louisville Parent Council (Chair, 1999-2000; Development Committee, 2003)
1989 - 1992	St. Margaret Mary Church, Peace and Justice Committee
1989 - 1991	Visiting Nurse Association (provided advocacy, crisis intervention, problem solving support and companionship to elderly client)
1989 - 1990	St. Margaret Mary Church, Human Needs and Concerns Committee
1987 - 1990	March of Dimes WalkAmerica Event (team captain, member of city-wide planning committee)
1987 - 1990	Recording for the Blind (reader, monitor, recruited/trained volunteers)

MEMBERSHIPS

National Association of Social Workers, Social Welfare Action Alliance, Metropolitan Housing Coalition, Kentucky Academy of Science, Indiana Women United for Change, Kentuckians for the Commonwealth, Develop New Albany