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Residential Trajectories: Optimal Alignment and the Structure of Residential Mobility Over the Life Course

Marc Davis Bolan

A dissertation submitted in partial fulfillment of the
requirements for the degree of

Doctor of Philosophy

University of Washington

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Program Authorized to Offer Degree: Sociology

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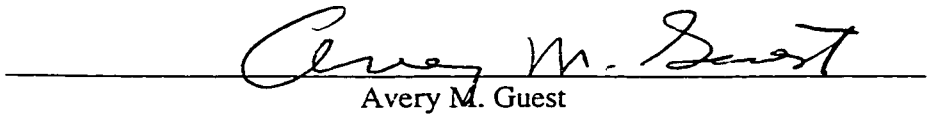

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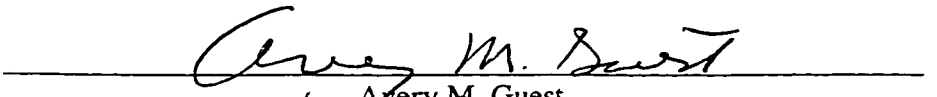

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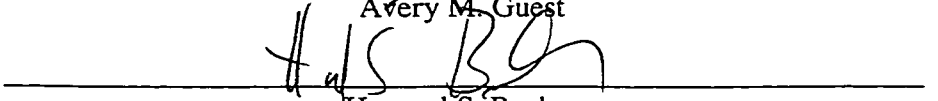

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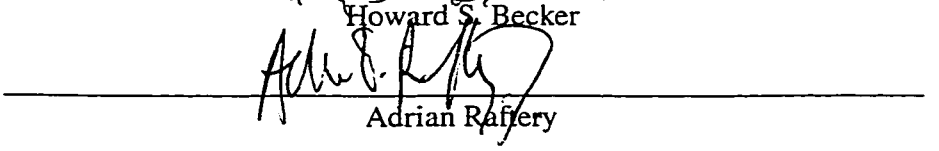

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Abstract

RESIDENTIAL TRAJECTORIES: OPTIMAL ALIGNMENT AND THE STRUCTURE OF RESIDENTIAL MOBILITY OVER THE LIFE COURSE

by Marc Davis Bolan

Chairperson of the Supervisory Committee:
Professor Avery M. Guest
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Drawing from an intersection of different theoretical perspectives and methodological innovations, this study examined the residential careers that individuals follow over the course of their lives. This investigation utilized sequence analysis methods such as Optimal Alignment in conjunction with hierarchical clustering techniques to identify and describe individuals' patterns of longitudinal residential movement over the life course. Consistent with the tenets of the Life Course paradigm, this study shows that individuals' residential trajectories unfold in a manner similar to the progression of occupational, educational, or household compositional "careers".

In this study I constructed a set of 25 stable and non-stable residential trajectories characterized by individuals' longitudinal movements across types of places. Simple bivariate and more sophisticated multivariate logistic regression analyses showed that the prevalence of distinct trajectories varied across different socio-demographic and compositional sub-groups. In particular, younger, more educated Whites exhibit more complex pathways, and individuals who engage in marital shifts over the life course demonstrate less stability. These findings build on the many conclusions drawn from prior studies of housing and migration careers. Further analysis of the contrast between the "place" and "geographic" dimensions of residential histories suggest the presence of a subset of more educated individuals who maintain attachments to types of places that transcend geographic constraints.

The conclusions of this analysis highlight the importance of using alternative approaches such as Optimal Alignment to understand patterns and processes of residential mobility. The discussion provides the ground work necessary for researchers to apply such methods to a variety of questions about mobility, migration, destination choice, and immigration.

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ACKNOWLEDGMENTS

I would like to acknowledge and thank a number of individuals whose assistance has been invaluable throughout this project. First, I would like to thank Pete Guest who served as my advisor on both my thesis and dissertation projects, and has shared my interests in questions about the urban community and the places we live in. At all times Pete was there when I needed an idea or a suggestion, and I most appreciate his willingness to let me search and explore questions without letting me go too far astray.

My other committee members – Howie Becker, Judy Howard, and Adrian Raftery – provided guidance and insight in many ways. I am especially indebted to Adrian for introducing me and helping me understand more about the ways that we sociologists utilize complex methods, and to Howie for showing me that there is a whole world of observation out there that must be accounted for!

I would also like to acknowledge Kate Stovel for her interest in my project and the application of these methods. We spent many hours in offices and bars hashing out the details of my analysis, and over this time I gained both a good friend and a confidant.

Last, I would like to thank the many friends and colleagues at the University of Washington who have shared the trials and tribulations of graduate education in the Sociology Department. To those who have finished and moved on – toast!! To those still striving for their goal – there is light at the end of the tunnel!!

DEDICATION

I dedicate my dissertation to my parents who provided me with great genes and lots of love and support, to my partner Deb who survived my foray into graduate school unscathed, and to our "kids" Zack and Sadie who always kept the back room warm on cold winter nights!!

CHAPTER 1: INTRODUCTION TO PROJECT

Contemporary research associated with the emerging Life Course paradigm often focuses on how individuals travel through different pathways across the age-differentiated life span. This perspective suggests that individuals' lives "unfold" in structured or patterned ways as they get older and pass through various life course stages. An important and interesting way of exploring such pathways and describing this "unfolding" process involves examining the residential trajectories that individuals follow over their lifetimes.

I believe that it is important to examine the places where an individual resides at different stages of their life much like we examine the occupational positions individuals occupy at different stages. In some sense, the goal is to describe how individuals demonstrate a residential "career" as they get older. It follows that if we are interested in the changes and transitions in such careers over the life course, we must understand more about the nature of residential movement processes as individuals grow older, marry, build families, change jobs, and so on. While there is a rich body of literature on the processes of occupational change and career development over time (see overview in Rosenfeld 1992), the literature on migration and residential career processes is limited and often restricted to the study of longitudinal processes of residential mobility or housing tenure change. In this study I intend to enhance our understanding of lifetime sequential residential movement processes by first using an alternative approach of conceptualizing individuals' residential careers through the development of residential trajectories, and second, modifying the geographic scale of prior longitudinal analyses by focusing on processes of movement across different sectors of the residential landscape (i.e., across rural, suburban, and urban boundaries).

To date, most cross-sectional and longitudinal studies of residential mobility and migration have focused on how elements of an individual's life course influence the likelihood of making transitions such as moving in/out of a specific residence, changing housing tenure, or migrating to/from specific origins and destinations. There are numerous cross-sectional studies of the residential mobility decision making process that have highlighted the role of demographic lifestyle factors in conjunction with residential satisfaction (Speare 1974; Speare, Goldstein and Frey 1975), institutional constraints (Landale and Guest 1985), environmental conditions (Michelson 1977), housing characteristics (Deane 1990; McHugh, Gober and Reid 1990), and

neighborhood characteristics (Lee, Oropesa, and Kanan 1994; South and Deane 1993) in shaping considerations about moving and mobility behaviors.

Likewise, there are longitudinal studies that have explored how current demographic life cycle factors, in combination with ongoing life course transitions such as getting married, having a child, or getting a new job, influence the likelihood of changing a residential situation. A wide range of studies have focused on the impact of educational attainment (Bailey, 1993), changes in household types and family composition (Clark, Deurloo, and Dieleman 1994; Davies-Withers 1997), and occupational status (Odland 1997) on decisions to engage in initial and subsequent moves or change housing tenure. Recently, South and Crowder (1997) have examined how race, in conjunction with demographic, socioeconomic and ecological factors, affects the decision to move across the city-suburb landscape at various stages of the life course. In addition, some studies have addressed the interdependent nature of life course processes and examined how the timing in transitions such as marriage (Mulder and Wagner 1993) and household organization or occupational changes (Odland 1997; Odland and Shumway 1993) impact the likelihood and timing of changes in a residential situation.

Since that the primary emphasis of these studies is on how life transitions/events are related to concurrent life transitions/events, they provide insight about the types of transitions that affect the possibility of making residence shifts at any given time point. However, it is difficult to use these studies to describe and illustrate the various pathways that individuals can travel across the residential landscape over a long period of time. In other words, while it is possible to conclude that individuals with particular demographic characteristics (i.e., more educated or non-married) are more/less likely to engage in subsequent moves at various points of their adult lives, it is more challenging to use these findings to describe the sequence of movements that these individuals follow over an extended period of time. To address this second question we must treat the whole residential sequence, rather than each singular transition event, as the outcome measure. Then it is possible to examine the individual and household life-course characteristics that may account for why different types of individuals are more/less likely to follow particular trajectories.

The emphasis of this study is on the exploration of full residential trajectories rather than examination of mobility transitions at different points in the life course. I believe that this shift in focus is consistent with the basic tenets of the Life Course perspective (Elder 1994) and enhances our understanding of how individuals' lives "unfold" over time. In the research literature, the life

course is viewed as a "sequence of culturally defined age-graded roles and social transitions" (Caspi and Bem 1990), and the primary focus of study is on the "transitions embedded in life trajectories that give them distinct form and meaning" (Elder 1994). A central question of the Life Course paradigm addresses the ways different aspects of an individual's life "unfold" as they get older and pass through different stages of their lives. While the majority of life course migration and mobility studies have sufficiently examined the determinants of, and interdependencies between, the transitions that constitute this "unfolding" over time, few have attempted to examine the complete trajectory. It is likely that the nature of this "unfolding" over time is expressed not only through the connections between subsequent transitions, but more clearly via the temporal sequence of stages an individual passes through from the start to end.

A second prominent theme of the life course paradigm is the idea of the "social meaning of age", and the notion that our understanding of age is influenced by our perceptions of the roles individuals adopt, and the transitions they engage in, at different points of the life course (Elder 1985, 1994). There is a tendency in the social sciences literature, as well as in contemporary rhetoric, to describe individuals' lives in terms of the careers they follow and the roles they take over time. Many of our normative expectations of how individuals lives unfold over time express beliefs about the behaviors that people should engage in, as well as the roles that people should take on at different stages. Our expectations are naturally longitudinal in character, and typically express our perceptions of the sequence of events and transitions individuals follow from "start" to "finish". For example, the expectation of a typical academic career is that an individual will complete a Ph.D. program in 5-10 years, move to an assistant professor position for 5-10 years, receive tenure and move to a associate professor position for 5-10 years, receive a full professor position, and then eventually retire. Clearly, not everyone who completes the first stage (completion of the Ph.D. program) follows the same sequence of stages and, in fact, many follow other systematic career trajectories comprised of a divergent set of transitions. In order to explore how potentially disparate careers unfold over time, it is necessary to use a methodology that describes and categorizes whole trajectories, and to examine the characteristics that might explain why an individual is more or less likely to follow such a trajectory over time.

Given the emphasis on such normative expectations, it seems reasonable that there exist many assumptions about the possible paths individuals can travel through the residential landscape. While we know that many individuals are "residentially stable" (e.g., stay in the suburbs over their entire lifetime), there are many who traverse the residential landscape in

diverse ways; some of whom follow complex paths from the initial origin to present destination (e.g., five years in the city, three years in the suburb, two years back in the city, three years in a rural town, etc.). If we can identify some of the common trajectories that individuals follow over their lifetime, then we have the ability to examine the characteristics of individuals who follow divergent paths, and perhaps make sense of the different ways that such residential careers unfold. Such an analysis should provide insight on individuals' preferences for residences over time, their evolving attachments to different types of places, and could highlight the role of housing dynamics in shaping the migration decision process at different stages of the life course.

The process of examining residential trajectories has been aided by the emergence of enhanced longitudinal data sources and methodologies for the analysis of sequential data. The data for this project comes from the Panel Study of Income Dynamics (PSID) for the years 1968-1985. The PSID is a nationally representative sample of households that started with 5000 families – 3000 from a cross-sectional sample and 2000 from a low-income sample – in 1968 and has followed the original 5000 as well as households formed from the original families over the next 30 years. The sample of respondents is tracked both at a household and individual level, and subsequently there is detailed demographic, socioeconomic, life cycle, and contextual data on individuals for up to 18 consecutive years. In addition, since the original heads of household started in the panel study at various ages, and newer families have formed over the course of the data collection, I have the ability to describe the sequences across cohorts of individuals starting and ending at different stages of the life course.

In this study I have detailed geographic and census based data on heads of households for the survey years 1968-1985. This data includes geographic indicators from as large as **state of residence** to as small as **census tract** for each head of household in a survey year. It is possible to link the geographic indicators to census extract files thus allowing researchers to describe both the geographic and demographic characteristics of an individual's place of residence. In my study census place-level geographic indicators were used to construct a geographic type of place continuum that describes an individual's residence along a nine category scheme ranging from a Small Rural to Large Metropolitan Large City location. Using this scheme, it is possible to describe the sequence of places an individual has lived in for as many as 18 consecutive years. So, for example, one individual might have the following residential sequence: first six years (i.e., 1968-1973) in a Large City (e.g., Seattle, WA), next 10 years (i.e., 1974-1983) in a Small

Suburb (e.g., Carnation, WA), and last two years (i.e., 1984-1985) in a Small Town (e.g., Omak, WA).

As one would imagine, the shift in importance away from transitions to sequences or trajectories has direct implications on the analytic methods used in this study. When the analytic goal is to examine the probability of transition from step *a* to step *b*, stochastic models, including time series, Markov chains, or event-history models are adequate. These methods assess the likelihood of transitions between time 1 and time 2, estimate the time-to transition in the future, or examine the effect of a single previous transition on future outcomes. However, traditional event-history approaches, which focus on single-event transitions, are not well suited to the analysis of sequential data, since as a group these models are unable to retain the past complexity carried by individual sequences of events. In short, by focusing on the determinants of a *single transition* all these models ignore the highly scripted nature of many fundamental life course processes.

In contrast to stochastic models of specific transition probabilities, sequence analyses are useful for answering questions about the empirical structure of patterns of behavior. When we believe that the temporal order of different states embedded in the trajectory reflects a normatively structured pattern of human behavior, we must use a method that treats the *trajectories* as the units of analysis. This is what I do here, in order to explore the structure and composition of trajectories of movement through the residential landscape. The Optimal Alignment technique is a "whole sequence" method that enables us to examine whether common or regular patterns exist within a particular set of empirically observed sequences. If we determine that regularity exists in the sequential pattern, we can then ask questions about where such patterns came from and how such patterns may influence other structured patterns or social processes in the future (Abbott 1995).

Among social scientists, interest in methods designed to analyze sequential processes has grown in concert with the movement toward emphasizing the temporal context of events (Abbott 1995, 1998; Hareven 1978). Sequence-based modeling techniques, which move beyond the variable-based assumptions of standard regression models, make it possible to illustrate the true nature of scripted processes, and assess how shifts in the underlying social and historical context influence the structure of sequential patterns. Interestingly, while the Optimal Alignment approach has been utilized in social science applications for over ten years, there are still relatively few studies that incorporate this approach.

Optimal Alignment was first introduced to the social sciences by Andrew Abbott (1995), drawing from techniques used in the biological sciences for DNA sequence matching (Sankoff and Kruskal, 1983). The most prominent empirical applications of the Optimal Alignment technique in the study of the life course have examined occupational career patterns ranging from analyses of the typical careers of German musicians (Abbott and Hrycak, 1990), to the shift in career systems over cohorts of employees at the Lloyd's Bank in Great Britain (Stovel, Savage, and Bearman 1996). To date, the Optimal Alignment technique has not been utilized in any research studies examining longitudinal migration or residential mobility processes.

The goal of the Optimal Alignment algorithm is to examine whole sequences (i.e., ordered, temporal lists of elements), and calculate the resemblance in pairs of sequences. The advantage of this method lies in the ability to use information about the similarity and distance between sequences to identify "typical" or common longitudinal patterns of residence and then categorize individuals' residential trajectories into such typical patterns. In this approach, the distance between a pair of unique sequences represents the "cost" of transforming the second sequence into the first sequence (i.e., the process of making the first and second sequence identical). These "costs" are shaped, in part, by our assessments of the theoretical and empirical differences between locations along the type of place continuum. The algorithm computes a distance measure that represents the minimum cost of this transformation. The resulting pairwise dissimilarity matrix can be input into subsequent hierarchical clustering and multidimensional scaling algorithms.

In a sample of thousands of individuals with residential information across 18 consecutive years, it is conceivable that all individuals could demonstrate unique sequences of residence. The Optimal Alignment technique, in conjunction with corresponding clustering algorithms, allows us to reduce the number of possible sequences and classify individuals into patterned residential trajectories. For example, one of the trajectories that may emerge is Stable Small Rural (i.e., lives in a rural place for all 18 years). All individuals who have a residential sequence that most closely resembles this Stable Small Rural pattern will be included in this category. This will obviously include individuals who live in a small rural town like Omak, WA for 18 consecutive years, but might also include someone who lived in Omak for 10 years, Seattle for two years, and then Colville, WA, a second rural town, for six years.

There are four main objectives of this study. First, I intend to assess whether systematic life course patterns of movement throughout the residential landscape exist in the US population.

The expectation is that while all individuals could conceivably travel random and varied pathways across the residential landscape, it is more likely that large numbers of individuals either maintain a stable trajectory or follow structured paths that are consistent with some normative expectations about the character of residential mobility over the life course. The primary questions are whether it is possible to identify such patterns and whether such systematic patterns provide insight on the nature of life course processes.

The second objective is to evaluate the feasibility of using a method such as Optimal Alignment to identify and analyze life course residential trajectories. While these methods have been successfully applied to the study of occupational career patterns, they have not been utilized in the study of longitudinal migration processes. While the sequence of stages that many individuals follow in their occupational career reflects some kind of movement "up the hierarchy" (e.g., entry-level to supervisor to manager to director, and so on), there is no presumption of directional movement in residential sequences. This, in turn, could increase the complexity of assessing the costs associated with residential shifts at different stages of the trajectory. Moreover, unlike the traditional event-history methods used in many longitudinal migration studies, the sequence methods focus less on the likelihood of transitions, and more on the tenor and structure of the whole trajectory. The question remains whether looking at whole trajectories enhances our understanding of life course migration processes or simply mirrors the findings of studies based on more traditional methods.

The third objective is to identify the sociodemographic, economic, and life course correlates of different residential trajectories. The primary question is whether individuals with different characteristics, backgrounds, or access to opportunities follow distinct trajectories. While it is thought that younger individuals should follow more complex and diverse structured patterns, it will be interesting to assess how the likelihood of trajectories varies for those of different racial backgrounds, educational status, or childhood experiences. A secondary goal is to evaluate whether the demonstrated relationships are consistent among individuals who engage in concurrent shifts in other life course processes such as individuals who enter or leave a marital union during the concurrent time frame.

The fourth objective of the study is to explore the distinction between "type of place" and "geographic location", and examine how each in turn characterizes and defines the residential trajectories that individuals follow over the life course. While an individual's residential sequence provides a summary of the "types of places" he/she lived in over the life course, it tells

us little about the actual geographic locations of these places. For example, we know that an individual who spends the first 8 years in a Small Rural location and the next 10 years in a Large City location demonstrates a sequence that takes him/her from a Rural location to a City. It is possible that this individual lived in three small towns in three different states during the first eight years of the sequence, and then lived in four cities across four different states in the last ten years of the sequence. It is also conceivable that this individual lived in the same small town for the first eight years, moved to a large city, and subsequently resided in that city for the next ten years. Even though the residential sequence in these two scenarios is equivalent, the geographic movement reflected in the first scenario (i.e., seven different geographic places over the eighteen years) is quite different from the less transitory pattern exhibited in the second scenario.

Using the detailed geographic data from the PSID, it is possible to calculate the geographic distance an individual travels throughout the entire residential sequence. Thus, we can distinguish those who follow completely "stable" trajectories (i.e., never change "type of place" and stay in the same geographic location) from those who reside in the same "type of place", but move more freely around the geographic landscape (e.g., someone who resides in BIG CITY for 18 years, yet spends first eight years in Seattle, next five years in Los Angeles, and last five years in New York). It also allows me to distinguish those individuals who follow "non-stable" patterns (e.g., Rural -> Suburb -> City), yet reside within a restricted geographic region (e.g., all moves within the Seattle/Western Washington region) from those who cross both "type of place" and geographic boundaries (e.g., the Rural -> Suburb -> City person who moves from a Kansas rural town to Seattle area suburb to downtown San Francisco). These comparisons should provide insight on the processes by which individuals form attachments to both specific places and types of places over the life course, and further will allow me to test hypotheses that individuals form place attachments that transcend particular geographic locales.

In short, my dissertation will proceed as follows. Chapter 2 will discuss the relevant literature on residential migration and mobility processes, the Life Course paradigm, and processes of attachment to places. Chapter 3 will draw upon this literature to offer some conjecture and hypotheses on four research questions in concert with the objectives of this study. Chapter 4 will provide a description of the PSID data used in my study, a summary of how I used the geographic place data, and a discussion of the primary methodologies used in the study (i.e., Optimal Alignment, Cluster Analysis, Multinomial Logistic Regression, and Multivariate Logistic Regression).

The empirical analysis will be discussed in Chapters 5-7. In Chapter 5, I will provide a detailed description of how Optimal Alignment and Cluster Analysis were used to construct the population of residential trajectories. Chapter 6 will consider the question of the correlates of residential trajectories, and will provide a detailed summary of the results of several multinomial logistic regression models. Chapter 7 will address the distinctions between "place" and "geographic" stability and provide a detailed summary of a set of multivariate logistic regression models developed to identify the correlates of longitudinal geographic movement over the life course. Chapter 8 will provide some discussion and overview of the empirical findings, and the implications of such results, as well as some conjecture on the benefits of using the Optimal Alignment method in the study of longitudinal migration processes.

CHAPTER 2: BACKGROUND AND LITERATURE REVIEW

Residential Mobility and Migration

The study of residential mobility and migration processes has been guided by a number of research questions and theoretical concerns. Starting with Rossi's (1955/1980) study of how families used residential mobility to adjust to the changing housing needs accompanying life-cycle changes in family composition, researchers have focused extensively on the migration decision making process. Many perspectives have emerged over the last 30 years to address questions such as *who is likely to move*, *why do they move*, and *where do they choose to move to*. Consistent with Lee's (1966) theory of migration, many studies have examined the characteristics of those who either consider or engage in moves, the "push" and "pull" factors that influence the decision making process, and the intervening factors that shape the propensity to move.

The most well known model of residential mobility is Speare's residential satisfaction perspective (Speare 1974; Speare et. al. 1975). This approach draws from the earlier theoretical work of Wolpert (1965) who proposed that individuals assess the "place utility" of their present residential location and contrast it with the anticipated utility of a new location. In situations where the anticipated utility exceeds the present utility, individuals experiencing dissatisfaction or stress with the current environment are likely to move. Residential satisfaction, in this context, is viewed as an individual's position relative to his or her "stress threshold".

Speare's model predicts that an individual's satisfaction with their present residential location is a proximate determinant of mobility considerations. This residential satisfaction, in turn, is influenced by the individual's personal and life-cycle factors such as age, education, income, and household composition. This perspective also suggests that residential mobility should be viewed as a possible response to the residential dissatisfaction that may occur at different stages of the life course. The basic model has served as the framework for subsequent studies demonstrating how structural variables such as income, life-cycle status, sex, and community attachments have an independent impact on mobility thoughts and behavior (Bach and Smith 1977; Landale and Guest 1985; Newman and Duncan 1979).

The residential stress model has been extended to consider how housing characteristics and features of the neighborhood environment influence individual's assessments of residential satisfaction and considerations about moving. McHugh et. al (1990) incorporated housing

characteristics such as the degree of household crowding, age of the dwelling, and home/rental value in a study of mobility expectations and found that these variables, in conjunction with life-cycle factors, have a direct impact on owners' and renters' mobility expectations. Deane (1990) showed how individuals' housing adjustments both alleviate residential dissatisfaction and influence subsequent mobility patterns. In addition, Lee et. al (1994) demonstrated how measures of a neighborhood's objective and subjective context impact individuals' mobility expectations and behaviors, and suggested that individuals' perceptions of, and experience in, their residential environments may indirectly determine whether they move or stay. South and Deane (1993) further found that life-cycle, housing, and metropolitan area characteristics have a differential impact on patterns of White and Black residential mobility.

It has been commonly thought that the migration decision making process reflects a set of three stages: 1) the development of a desire to move, 2) the selection of an alternative destination, 3) the decision to move or stay in present location. (Speare, et. al. 1975) While there is a rich literature on the factors characterizing the first and third stages of the process, there have been fewer investigations of the process underlying destination choice. Since a core theme of my research is the question whether different types of individuals reside in particular destinations or different types of places, at various stages of the life course, it makes sense to address studies that illustrate destination choice processes. While I will offer some detailed discussion on the distinctions between the possible "destinations", or types of places, incorporated in this study in the section on place attachment, I do wish to briefly address some of the general conjecture on migration destination choice.

Roseman (1983) presents a useful framework for the study of migration destination selection processes. He suggests that individuals build up a "stock" of potential destinations over time through exposure, formation of ties, experience, and perceptions of job opportunities. He further suggests that places are added or deleted over time, and that, at any snapshot in time, individuals are really considering a limited number of options (e.g., 1-2 places). Actual destination choice is subject to place utilities derived from economic and non-economic factors associated with specific places and larger geographic areas. In other words, destinations chosen are often those places with the greatest location specific capital.

The concept of location specific capital – the attachments of ties to places acquired through a variety of processes such as past residential exposure – has been used to explicate various processes of destination selection and geographic movement (DaVanzo 1981; DaVanzo

and Morrison 1981). DaVanzo and Morrison (1981), for instance, argue that the maintenance of higher location specific capital with specific origins explains the return migration patterns of many individuals. Others, such as Williams and McMullen (1983), have shown that the development of location specific capital is important to understanding the movement to non-metropolitan areas of both return and non-return migrants. In the context of my study, this concept highlights the importance of considering the ties and attachments individuals form with "types of places" (e.g., cities, suburbs, etc..) in the process of identifying, and predicting the likelihood of, distinct longitudinal trajectories.

The expanding literature on the intersection of residential preferences and behavior also contributes to our understanding of destination selection processes. In concert with the dramatic shifts in population distribution trends experienced in the 1970's and 1980's, researchers started to consider the role of preferences for types of places in shaping movement in and out of urban, suburban, and rural areas. Surveys conducted in the 1970's highlighted a discrepancy between residential preferences and behaviors, and showed that many individuals living in urban and suburban areas preferred rural or small town residence within commuting distance of the city (Fuguitt and Brown 1990; Fuguitt and Zuiches 1975). This discrepancy was thought to be a contributing factor to the 1970's non-metropolitan turnaround or rural renaissance, and the implication was that individuals were starting to act upon, and better realize, their residential preferences (Wardwell and Brown 1980).

While there is little evidence that the residence-preference discrepancy has much of an impact on macro-level distribution trends, there is some belief that such preferences might influence micro-level decision making processes (Fuguitt and Brown 1990). For instance, Howell and Frese (1983) argue that the association between preferences and residence strengthens as individuals move from adolescence to adulthood, and that earlier moves can influence the residential preferences that shape subsequent life course moves. McAuley and Nutty (1982) showed that individuals' residential preferences change over the life course – e.g., young/unmarried individuals are more attracted to downtown convenience, while married individuals with children find suburban ownership settings more preferable – but that the likelihood of acting on such preferences declines as individuals pass through various stages.

The preference literature is informative to the study of residential trajectories in a number of respects. First, it illustrates that individuals' residential preferences can vary across sub-groups of the population, and can differ at various stages of the life course. The fact that many

minorities prefer to reside in cities, that men are more likely to prefer rural and small town places, or that families in the child rearing stage prefer suburban locations, in part, influences many of the normative expectations we hold about where different types of individuals should live at different times of their lives. Second, many studies suggest that the preferences constructed through residential experience early in the life course may affect residential movement patterns later in life (Howell and Frese 1983). Therefore, it is essential to consider individuals' early life residential experiences as a possible correlate of the pathways they follow. Last, this literature also points to the tenuous link between the types of places individuals "prefer to live in" and those they "actually live in". I believe this fact should not be overlooked, and reminds us that demonstrated stability to a type of place, or instability through movement between types of places, is not always reflective of changes in, or the maintenance of, distinct residential preferences.

At this juncture I wish to address some of what we know about movement across the various sectors (i.e., rural, suburban, urban) of the geographic landscape. Macro-level studies have shown that, in general, mobility is higher among younger adults (i.e., up to age 30), more educated individuals, whites and renters (Long 1988). In addition, we know that during the core period of my study – the 1970's – the United States experienced tremendous growth and movement to rural, non-metropolitan areas; this growth, though, was followed by a resurgence of the city and metropolitan areas in the 1980's. Moreover, there is substantial evidence of the growing suburbanization of Blacks and ethnic minorities (Schneider and Phelan 1993), as well as, the increasing back-to-the-city movement of middle class Whites (Laska and Spain 1980). Such trends portend the existence of a complex set of residential trajectories.

Macro and micro-level studies have explored a) the variations in residential mobility and migration patterns across urban, suburban, and rural destinations, and b) the sociodemographic, economic, and life cycle determinants of moves between types of residential locations. With respect to the first question, early research on intra-metropolitan mobility rates drew upon, and tested, the Abu-Lughod and Foley (1960) characterization of life cycle mobility preferences. Their scheme suggested that individuals at various life cycle stages have different household needs and aspirations, and thus prefer different metropolitan area residential locations. This categorization is presented in Figure 2.1.

Life-Cycle Stage	Housing Needs and Aspirations
Pre-Child	Cheap, central-city apartment
Child-bearing	Rental, single family dwelling near apartment zone
Child-Rearing	Owned single family suburban home
Child-launching	Owned single family suburban home, or higher status home
Post-child	Smaller, high quality home
Later Life	Institutional/Apartment/live with children

Figure 2.1: Life-Cycle Mobility Preference Scheme – Abu Lughod and Foley (1960)

Consequently, researchers turned their attention to the variations in mobility patterns among those in these distinct stages. Frey (1980), for instance, finds some predictable age variations in patterns of destination choice among movers, and illustrates that while younger adults prefer city locations, older adults preferred suburban locations. Long and Glick (1976) look more closely at household types and show that, for example, husband and wife (traditional) households exhibit lower rates of Suburb -> City mobility. Frey and Kobrin (1982) carry forward on this theme and show greater Suburb -> City mobility among non-traditional households (i.e., single households, or those without children)

Others extended this basic framework to examine variations in mobility patterns by race and socioeconomic status. Frey (1984) shows that while life course migration and destination selection patterns have become more similar over time across racial groups, we still observe greater Suburban selectivity for Whites prior to age 35 (i.e., the traditional White pattern), and greater Central City selectivity for younger and older Blacks (i.e., the traditional Black pattern). Additionally, there is evidence that the likelihood of city choice and movement from the suburbs to the city is inversely related to socioeconomic status and income (Nelson 1988; Nelson and Edwards 1993).

Of greater interest to the current analysis are the smaller set of studies that consider the individual and ecological determinants of movement across sectors of the residential landscape. Interestingly, the majority of these studies are restricted to processes of movement within metropolitan regions, and thus tell us only about patterns of city-suburb mobility (e.g., Marshall and O' Flaherty 1987). Some recent work by South and Crowder (1997) has raised the question of how demographic and socioeconomic factors such as age, race, household composition, education, and income affect the probability of city to suburb and suburb to city moves. Using

information from the 1979-1985 waves of the PSID, they find racial differences in the propensity of movement patterns (e.g., greater City -> Suburb movement for Whites, greater Suburb -> City movement for Blacks), and indicate that the effects of education and income can differ for Blacks and Whites. For example, higher educated Blacks have an increased likelihood of City -> Suburb movement in contrast to less educated Blacks, while increased income enhances the probability for Suburban stability among Whites and Blacks. This analysis is longitudinal in nature, encompassing 6 periods of possible mobility behavior in a pooled logistic regression model, and represents one of the first attempts to utilize information about residential environments in both the predictor and outcome measures.

Longitudinal Study of Residential Mobility and Migration

The first comprehensive examination of "residential histories" was presented in the 1964 Public Health monograph *Migration in the United States: An Analysis of Residence Histories*. In this study, Taeuber, Chiazze, and Haenszel (1964) used a survey of the residential histories of a representative sample of households in 1958 to examine the relationship between sociodemographic characteristics (e.g., age, gender, occupational status, race, etc..) and patterns of residential stability, residential movement, residential exposure, and migration distance. Since these histories were comprised of information about all places that individuals lived in for at least one year over their lifetime, they were able to construct various summary measures of an individual's residential history. Therefore, it was feasible to examine individuals of varying characteristics in terms of their total number of residences and moves, and their number and pattern of exposure residences; a measure that summarized information about the different size-of-place classes an individual resided in along with the duration of residence in these locations. Most analyses were based on simple frequencies and cross-tabulations, yet provided valuable insights on patterns of lifetime movement.

One particularly relevant aspect of this study involved the development of a set of migration sequences characterized by an individual's birthplace, current place of residence, number of lifetime moves, and character of intervening residence. An example of a sequence would be an individual born in a Farm location, presently living in a Farm area, who has moved two or more times over their lifetime, and primarily lived in a Non-Farm area during the period between birth and present. In the context of my study, I might say that his individual follows a

Rural -> City/Suburb -> Rural trajectory. While their migration sequences are relatively incomplete – i.e., they don't illustrate an individual's residential situation in each consecutive year – they do provide some insight on how individuals are distributed across various types of pathways.

In total they constructed a classification with 17 possible "trajectories". The most prevalent pathway involves Metropolitan birth, current residence in a Metropolitan area, one or more lifetime moves, and intervening residence in Metropolitan areas – i.e., stable Metropolitan residence. The least common trajectory involves Metropolitan birth, current Metropolitan residence, two or more moves, and intervening residence in Farm locations – i.e., City -> Rural -> City trajectory. Their analysis showed that individuals presently residing in farm/rural areas reported a limited variety of residential experiences, while those born in metropolitan areas tend to remain in such areas despite their high levels of mobility. A corresponding analysis classified these trajectories into four broad patterns of migration across farm, non-metropolitan, and metropolitan places: same type of residence, circular residence, urbanward (i.e., movement up the place hierarchy) and ruralward (i.e., movement down the place hierarchy). Shyrock and Larmon (1965) found that Non-Whites demonstrated greater urbanward movement, Whites demonstrated greater ruralward movement, though roughly 57% of the respondents maintained continuous residence in the same type of place.

With the advent of more sophisticated research methods and analytic techniques, and more detailed longitudinal data sources, interest in various forms of sequences of migration, housing and residence continued to grow. Using early PSID migration data, DaVanzo and colleagues (DaVanzo 1983; DaVanzo and Morrison 1981; Morrison and DaVanzo 1983) explore the way that particular migration sequences unfold under different circumstances. In their research they argue that ideas of *location specific capital* and *acquisition of information* influence the likelihood of return, repeat, and onward migration sequences. In a nutshell, migrants are expected to favor places with greater location specific capital, and migrants with more past mobility experience should have a greater ability to acquire information about potential destination areas. In some sense, with each subsequent move an individual learns more and more about the relocation process. Moreover, they suggest that repeat migration is often a "corrective act" for dealing with imperfect information about destinations (DaVanzo and Morrison 1981).

Drawing on these theoretical premises, they examine the likelihood of distinct sequences among those of different ages, educational background, and employment status. These factors are

considered indirect measures of the "soundness of migration information" (DaVanzo 1983). The results indicate that more educated individuals are more likely to move quickly onward to a new place and less likely to return to places they have lived in before, and that individuals with unemployment experience are more likely to engage in repeat and return moves. Individuals who engage in rapid return moves tend to be less skilled and educated, less risk taking, and more willing to make a quick corrective move (Morrison and DaVanzo 1983). While these studies offer little insight on the types of places encompassed in such distinct sequences, they do highlight some of the demographic and economic factors that influence an individual's ability and willingness to follow pathways to or from prior residential locations.

For the most part, the study of the longitudinal processes of residential mobility and migration has been carried forward by geographers. The study of housing careers turned our attention to the sequence of dwellings a household occupies during its history, and the associated life course housing consumption processes (Pickles and Davies 1985). The ways such careers proceed are often indicative of how shifts in household composition and life cycle characteristics over the life course result in changes in housing needs and consumption. Some even argue that housing careers typify distinct trajectories or directed paths oriented towards the search for the "ideal dwelling" (Clark and Onaka 1985; Pickles and Davies 1991). Michelson (1977), for example, believes that careers proceed through three stages: entry into the housing market with little experience, incremental movement towards the "ideal dwelling", and eventually attainment of this "ideal dwelling". In many respects, this progression constitutes an important type of life course career, potentially affected by, and influential of, other careers (e.g., educational, occupational, etc.)

In reality, housing careers are different from the types of trajectories I hope to explore. The elements of a housing career reflect an individual's housing tenure, rather than actual geographic location, at any given time. Thus, one person's housing career may be as follows: 6 years in rental housing, next 3 years in a second rental home, next 10 years in owned home, next 5 years in a different owned home, etc.. His residential career might be: 9 years in Seattle (the two rental situations), 10 years in Bellevue (the first ownership setting), and 5 years in Spokane (the second ownership setting). Nevertheless, the study of housing careers has provided some interesting insights on how measures such as income, education, household composition and stress, gender, and race influence the likelihood of residential changes at various stages of the life course.

Pickles and Davies (1985) use a multiple spell origin-destination model to show that education reduces the likelihood of mobility from an owner-occupied setting to a rental setting, while, as expected, age is negatively associated with the likelihood of any form of tenure change. They conclude that, in general, life-cycle changes in income and family composition have only a modest impact on the dominant effect of declining mobility with age (Davies 1991). Clark, Deurloo and Dieleman (1994) further examine the relationship between family life-cycle changes and housing consumption patterns. Using PSID data from 1970-1987, they examine household episodes starting in rental situations across different family types and find that Couple and Family households demonstrated the greatest mobility to ownership situations. In fact, over 25% of the Family episodes involved a move to ownership in contrast to only 4% of the Single or Single-Parent episodes. Their results also show that the likelihood of moves to ownership in Couple and Family households is higher for non-Blacks, more affluent, employed individuals residing in areas other than the Northeast.

More recently, Davies-Withers (1997) also used PSID data to test the effects of duration and state dependence on the likelihood of mobility for renters and owners. She considered the effects of different household types – living alone, couples, nuclear families, single-parent, other-family, and other-non family – in conjunction with life cycle changes in these types, on the likelihood of movement. The results indicated that, as expected, the hazards of moving were much higher for renters than owners, though household type has a much greater influence on patterns of mobility among owners.

Some of the earlier work of Deurloo, Clark and Dieleman (1990) looks at intersection of tenure change and the residential environment in the relocation process. They note that, for the most part, households tend to relocate within the same environments they started in (e.g., large cities, suburbs, etc..), and that variation in movement patterns is expressed through transitions across different dwelling types. Given that, they question whether characteristics of the environment and previous dwelling, in conjunction with household characteristics, explain how residential choices are made. Their analysis of the Dutch National Housing Survey from 1981-1985 indicated that most moves occurred within the same residential environment, though the greatest "out-movement" was the movement away from *growth centers* to owner occupied settings in suburbs. More detailed analysis of tenure choice demonstrated strong effects of income, household composition, age and prior rental costs on the choice of new environments. Deurloo et. al conclude that while the choice between renting and owning is primarily determined

by a household's socioeconomic characteristics, the choice of residential environment is principally determined by a household's socio-demographic characteristics. This tenure/environment dichotomy will be important in delineating the factors that shape residential pathways.

The literature in geography has also focused on individuals' migration or locational histories, and the interdependencies between such histories and other life course trajectories. In an analysis of locational histories, "alternative residential locations are treated as distinct states, and migration events, either interregional migration or residential relocation, amount to transitions between these locations or states." (Odland and Shumway 1993: 222) These states could represent different tenure situations, yet more often simply reflect different locations.

The questions addressed in the examination of locational histories typically focus less on the study of the actual places that individuals move to and from, and more on the synchronization and timing between locational and other life course transitions (Mulder and Wagner 1993; Odland 1997; Odland and Shumway 1993). I might be interested in a question such as *are those individuals who engage in multiple shifts in marital status likely to follow a more complex residential trajectory (e.g., City -> Suburb -> City).* In contrast, a typical question in a study of locational histories might ask *how soon after marriage will a household engage in a locational transition*, or *how likely is it that someone will engage in locational transition after a change in employment status*. While the focus is different, there are still some important insights to draw from this research.

Bailey (1993) examines the migration histories of young adults from the NLSY to show that migration is a selective process. Drawing upon the speculation that those who moved in the past are more likely to re-migrate, he shows that the hazard rate for movement is higher, and thus mobility is quicker, for males, Whites, married individuals, educated individuals, and those living in rural areas. He also demonstrates an intriguing pattern upon disaggregating initial from subsequent moves. While college educated individuals engage in earlier first moves than less educated individuals, the less educated folks are more likely to quickly re-migrate. The belief is that education provides the skills necessary for successful migration, and that educated individuals "make early migration decisions that require less corrective geographic behavior." (Bailey 1993: 322) Such a conclusion raises the speculation that over time educated individuals may demonstrate more stable and steady trajectories of movement.

Likewise, studies conducted by Odland and his associates (Odland 1997; Odland and Bailey 1990; Odland and Shumway 1993) have contributed to the discussion of interdependencies between migration, marriage and employment. Empirical models of the timing of distinct life course transitions have shown that the risk of moving is enhanced during periods when an individual is entering a marital union, or experiencing a time of unemployment (Odland and Shumway 1993). Further study of German birth cohorts suggests that marriage and migration are synchronized events, and provides some evidence that long distance migration patterns are more influenced by marital shifts than short distance patterns (Mulder and Wagner 1993).

There are two French studies that, in part, incorporate information on distinct geographic location in the study of the link between migration and other life course transitions. Courgeau (1990) adopts a Life Course approach to examine how marital status can impact migration to and from metropolitan areas over an individual's life. Using an analysis of transitions across four possible states – unmarried/metropolitan residence, unmarried/non-metropolitan residence, married/metropolitan residence, and married/non-metropolitan residence – he explores whether family composition affects migration behavior. There are some interesting conclusions in this study. First, the two factors that "push" unmarried individuals away from Non-Metropolitan areas are family size and profession. Those more likely to migrate to the city have more siblings and have a father who was employed as a farmer. Second, after marriage the likelihood of mobility to metropolitan areas is reduced for males and females. Third, educated men demonstrate a greater likelihood of movement to metropolitan areas to take advantage of educational and professional resources. Last, individuals who spent time earlier in their lives in metropolitan areas are more likely to return.

The second study considered the residential history of a cohort of individuals born between 1926 and 1935 from inside and outside Paris (Lelievre and Bonvalet 1994). In this analysis, the authors constructed some simple trajectories – movement outside the Paris region, movement passing through the Paris region, and movement that ended in the Paris region – to compare the occupational status and social mobility of individuals who follow different life course pathways. They find, for example, the prevalence of movement to or through Paris is higher among professional and clerical workers, and lower among farmers and unskilled workers. They additionally note that Paris regions tend to favor and support the presence of individuals who were socially mobile across the life course, thus exhibiting the strong link between social and residential mobility to urban areas.

In numerous ways, this collection of longitudinal studies illustrates the importance of examining migration and residential sequences. They typically suggest that the residential transitions individuals engage in, and the resulting pathways they follow, are subject to personal life cycle conditions, concurrent life course events and transitions, and factors associated with the residential environment such as housing market conditions or contextual features of places. They, unfortunately, provide a more muddled portrayal and examination of the kinds of sequences that individuals follow over the life course. In most instances it is difficult to use the results of a study to describe the types of pathways that individuals travel from an origin and destination. For instance, while I might know that the average White, male, professional is likely to move to a Suburban owner occupied location within 2 years of getting married, I have little idea on the typical residential pathway this individual might follow from age 18-49. This is a consequence of some of the limitations associated with the event-history type methods used in most of these analyses. I will comment on the distinctions between these traditional approaches and sequence methodologies in subsequent chapters.

The Life Course Paradigm

Over the last 20-30 the Life Course research paradigm has emerged as a systematic approach towards studying how aspects of individuals' lives unfold as they get older and pass through stages of the life course. We might think about the life course as a "sequence of socially defined events and roles that an individual enacts over time" (Giele and Elder 1998: 22), and as such focus our attention to the various careers or trajectories that individuals travel through over their lifetimes. With the increased focus on lifetime trajectories, it becomes essential to explore the social and developmental pathways that individuals follow over facets of the life course as related to occupational careers, changes in family composition or marital status, and changes in housing tenure or residential location. To that end, researchers consider questions about the existence and prevalence of structured pathways and the interdependence between the distinct pathways associated with the different aspects of the life course.

In my research I am interested in a particular aspect of the life course related to an individual's residential situation at various times of his/her life. The pathway of interest in this study is the residential trajectory, a form of "career" that links an individual's residential location across successive time periods into a sequence of elements. Any change from time period to time

period would represent a transition; Elder (1994) suggests that such "transitions embedded in trajectories give them distinct form and meaning". While an initial objective is to identify and describe the variety of distinct residential trajectories that individuals at different points of the life course follow over an extended time period, it is also known that individuals' processions through such residential careers do not operate in vacuum. In other words, the transitions that comprise individuals' residential trajectories affect, and are affected by, other life course trajectories and transitions related to occupation, family composition, income attainment, and housing tenure status. Hence, it is necessary to go beyond simple exploration and description of pathways and start to investigate the sociodemographic factors that shape the unfolding of these behavioral sequences.

Glen Elder (1985, 1994), an ardent proponent of the life course research perspective, notes some central themes of the paradigm that I believe are relevant to the study of residential trajectories. First, he suggests that we should think about the "social meaning of age" and how our understanding of age is influenced by our perceptions of the roles individuals adopt and the transitions they engage in at different ages or stages of the life course. If we consider the "things people should do at different ages" or the "social timing of roles", it will help us think about some of the normative patterns of movement that individuals might follow through the residential landscape that are consistent with such expectations. For example, one common notion about individuals as they enter the middle and later age stages is that they engage in a settlement process whereby they establish a long term residence in a preferred geographic location. The belief is that many individuals have engaged in past moves and explored different locations, and have come to a point in their lives where it is appropriate to establish consistent residence in a particular type of place. This would suggest that upon examining individuals in older age categories we should observe more stable patterns of residence.

Second, Elder suggests that we should consider the role of human agency in linking the individual life course to the broader social context. The main premise is that individuals make choices among options at different stages of the lives that shape the eventual life course, and subsequently we should examine how such selection processes influence the pathways that individuals follow through the residential landscape. To that end, it is necessary to consider the question of why would individuals decide to live in particular types of places at different stages of their lives, and moreover identify the factors that may open up or constrain the range of options that individuals may choose from at any of these stages.

A third important theme is that earlier life events can have an impact on subsequent life events. In other words, prior life transitions can shape future transitions and trajectories. In the context of this study, it therefore becomes important to consider the role of past residential experience (i.e., any information on individuals' residential locations or experiences prior to the start of the temporal sequence of residential situations) on the ways that subsequent movement patterns unfold over time. For instance, knowing something about the type of place or residential setting a younger sample member was raised in could provide insight on which types of people are likely to demonstrate more or less stable patterns at different points in the life course.

A fourth relevant theme associated with the life course paradigm is the belief that the social and historical context under which an individual comes of age or engages in particular transitions can have an influence on subsequent life course trajectories. There has been considerable research indicating that individuals' birth cohorts as well as the period over which individuals' lives progress can have an impact on individuals' attitudes, behaviors, transitions, and subsequent trajectories (see Elder 1974, 1979; Hareven 1982 for examples). Elder's studies of Americans growing up in the Great Depression and World War II periods are the most well known attempts to "join human lives with their times." The children of the Great Depression studies (Elder 1974), in particular, contrasted the life course experiences of two cohorts – the Oakland Growth cohort from 1920-1921 and the Berkeley Guidance cohort from 1928-1929 – who were born and raised in different economic conditions (e.g., time of prosperity vs. time of depression) and reached crucial life course ages at different social and historical periods (e.g., Oakland youth reached "adult age" shortly prior to World War II while Berkeley youth reach "adulthood" after WWII). The results showed that childhood economic deprivation can sustain long term impacts on individual's life chances as adults, and indicated that while those youths raised in situations that required greater responsibility (i.e., the Oakland youth prior to the depression) ended up more "competent" adults, Berkeley youths raised in a period of hardship expressed greater levels of self-inadequacy and helplessness as adults (Elder 1974, 1979). This, and other classic studies, highlight the importance of considering the intersection between age, social/historical period, and cohort effects in understanding the existence of structured pathways.

In this study I have an interesting sample with respect to such age, period, and cohort influences. Individuals vary in age at the start of their residential sequence (i.e., adults range from 18-75 in the first time period). This implies that they also vary in birth cohort (i.e., those 18 years in 1968 were born in 1950 cohort while those 50 in 1968 were born in the 1918 cohort),

though, unfortunately there is little information about the past adult residential experiences before the first time period of those in the older cohorts. Thus, while it would be enlightening to contrast the residential trajectories of individuals raised in different historical and social conditions during their first 20 years, I am only able to compare patterns of movement within a fixed social and historical period (i.e., 1968-1985). I should note that the large sample of individuals "coming of age" in the first time period of the sequence (i.e., in their teens or early twenties in 1968), represents an opportunity to explore the life course residential pathways of individuals just removed the context they were raised in.

I should further note that while the time period is fixed (1968-1985) it does represent an important period of social, historical and demographic transformation in the United States. In social and political terms, this period reflects a time where political ideology shifted towards more liberalism and then veered back towards social and fiscal conservatism by the end of our time frame. Moreover, the early years represent a time of growing social and civil unrest and a period where the United States was pulling away from an increasingly unpopular war. In terms of demographic changes, the late 60's and early 70's represents the end of the baby boom period and a time when the early baby boomers were starting to come of "adult age". Additionally, the decade of the seventies represent a time of dramatic changes in population movement patterns, most notably the substantial deconcentration of urban areas and cities, and the "renaissance" and growth of the rural, non-metropolitan outskirts. The presumption is that pathways demonstrated by individuals in different age segments during such a period differ considerably from the range of pathways exhibited 20 or 30 years prior, and perhaps, even from those that will be exhibited 20-30 years in the future.

A common approach to the study of the life course is the use of event-history analytic techniques to examine shifts between successive states within some continuous interval of time on the basis of a complete temporal record for a sample (Mayer and Tuma, 1990: 3). Event history methods are well suited to addressing questions about the nature of interdependence between different life transitions within the course of a trajectory. Many studies of housing or residential careers have used a such an approach to show how the occurrence of one life course event (e.g. getting married) influences the likelihood of engaging in a second life course event (e.g., moving or buying a house) at different stages of individuals' lives. Others have shown how the duration of "time" spent in one state (e.g. number of years as a homeowner) can influence the likelihood of making a change in the that state (e.g., move from Own to Rent).

These methods can also utilize longitudinal data to explore how an individual's demographic, socioeconomic, racial, and compositional characteristics at any stage of the life course can affect the likelihood of life transitions at a concurrent time point or in the future. For example, South and Crowder (1997) used a sequential logit regression procedure, in conjunction with person-year data on mobility intervals, to show how individual, community, and metropolitan level characteristics of White and Black PSID respondents influenced the probability of moving to Central City and Suburban destinations. The advantage of this approach lies in the ability to explore the moves of the same people at different ages under different conditions, rather than a sample of people at one snapshot in time.

The shortcoming of event-history approaches lies in their inability to identify, examine and describe full sequences of transitions. In instances where researchers are interested in assessing whether demonstrated life course pathways are empirically common or consistent with some normative expectations of the order in which life course events unfold, it is necessary to adopt an analytic approach that examines the whole sequence rather than the single transitions embedded within it. Likewise, if the overall structure or composition of a sequence of events is of more interest than the simple aggregation of transitions that make up the sequence, then one needs to use a method that preserves the temporal and ordinal structure of the sequence. Sequence based approaches such as Optimal Alignment are attempts to treat the whole sequence rather than the individual transitions as the unit of analysis, and are designed to explore whether regular, structured patterns exist in a set of many complex and unique pathways.

The use of sequence methods enables life course researchers to better describe the regular trajectories that individuals progress through during their lives. They, in turn, should provide a better picture of the process by which individuals get from point A (e.g., born in a city) to point B (e.g., end up in a different city). They allow researchers to address specific questions about "innovation" and assess whether the temporal ordering of social processes can depart from past tradition and become more institutionalized over time. In this instance, it is easy to use Optimal Alignment to determine the resemblance between ordered sequences of a specific process (e.g., banking careers) across different cohorts or time periods (see Stovel, et al 1996).

Place Attachment Literature

The study of the ways that individuals form attachments and connections to types of places and geographic locations represents an important avenue of research in my examination of individuals' residential trajectories. On the one hand, the study of such attachments can inform us about some of psychological and cognitive processes that individuals engage in over the course of making mobility decisions and choosing destinations throughout the residential landscape. As such, much of the place attachment literature offers insight on why individuals demonstrate patterns of either place stability or instability over the life course. On the other hand, research on the ways that individuals identify and associate with different types of communities and settlements provides the framework for distinguishing and comparing different place types. This research is particularly important to the process of assessing the "cost" of shifts across different types of places, and allows me base such cost estimates on the assumption that individuals identify with, or "attach" to different types of places in different ways.

The concept of place attachment has typically been associated with the discipline of environmental psychology, though scholars in a diverse range of disciplines such as sociology, geography, landscape architecture, urban planning, and anthropology have addressed how individual's attachments to various types of "places" emerge, change, and shape attitudes and behaviors. There has been considerable debate over the meaning of the actual term place attachment, though I believe that Rubenstein and Parmalee (1992) offer a useful definition that can serve as a framework for integrating ideas about place attachment into a study of migration patterns. They suggest that:

> Attachment to place is a set of feelings about a geographic location that emotionally binds a person to that place as a function of its role as a setting for experience. In other words, life experiences have an emotional quality that suffuses the setting to produce an affective bond with the place itself (p. 139).

This definition is useful in a number of ways. First, it identifies the object of attachment as a "geographic location" rather than people or features of environment. While it is clear that elements of a location such as *who lives there*, *what occurs there* or *what it looks like* shape the

nature of the attachment to the place, the emphasis is on the ties that link an individual to the specific part of geographic landscape that surrounds him or her. There are numerous studies of the nature of these attachments to "places" at varying scales of the physical environment such as specific homes or housing settings (e.g., Altman and Low 1992), types of institutions (see Rubenstein and Parmalee 1992), objective features of built environment such as plazas (Low and Altman 1992), cul-de-sacs and landmarks (Guest and Lee 1983), neighborhoods or communities (e.g., Gerson et. al. 1977; Guest and Lee 1983; Kasarda and Janowitz 1974; Sampson 1988), specific cities/towns (e.g., Cuba and Hummon 1992), and even geographic regions (Reed 1983).

Sociologists are most familiar with research on individual's attachments to particular sectors of the geographic and residential landscape. There is abundant research illustrating that individuals' urban neighborhood and community attachments are related to their demographic characteristics, features of the contextual setting, prior life course events and concurrent geographically bounded life experiences (Bolan 1997; Gerson et al. 1977; Guest and Lee 1983; Goudy 1982; Sampson 1988). Many of these studies show that residentially stable individuals with greater social and economic investments in the community who demonstrate more involvement in and sentiment with their "neighborhood" are more "attached" to their residential communities. Further studies have shown that such attachments can also be extended to specific cities or towns, aggregations of cities or towns, and large geographic regions. Cuba and Hummon (1992), for instance, found that Cape Cod residents maintain identities with "places" at varying levels – dwelling, community, and region – and that patterns of intercommunity spatial activity are related to greater expressions of regional identity and attachments.

An implicit underlying theme in this research is the notion that places, locales and environments are important to the ways in which individuals act, behave, think and affiliate. From a social-psychological point of view, one assumption is that individuals use identifications with places as a frame of reference for defining or situating their own self-identity (Proshansky et al. 1983). In other words, part of understanding "who I am" comes from our understanding of "where I am" and beliefs about "where I belong". This suggests that the process of forming attachments to places, locales, or environments may reflect individuals' attempts to construct an identity that connects them to particular types of environments. Likewise, it may reflect individuals' attempts to create a sense of belonging, or a feeling of "being at home" in different environments (Low and Altman 1992). In either instance, the question of interest in my study is

whether such self-identification and affiliation processes are exhibited in life course movements across different types of places.

Since this study focuses on types of geographic places along the rural-suburban-urban continuum, it is essential to examine the literature on individuals' attachments to and identifications with these various sectors of the geographic landscape. While there is a rich literature on the importance and significance of such "types of places" – i.e., cities, suburbs, small towns, rural farms, etc. – on the ways that individuals' attitudes and behaviors vary, and a wealth of study and conjecture on the characteristic and contextual distinctions between such disparate sectors of the geographic landscape, there is surprisingly little study of processes of attachment to "types of places". In other words, while there have been investigations of processes of attachment to a city or its neighborhoods, there have been less investigations of the processes of attachment or identification to "cities" as a type of place. I will address some of the more important studies that consider such distinctions.

One promising avenue of research that offers insight on individuals' attachments to and sentiments with "types of places" focuses on processes of identification with different residential locales. In a general sense, community identity research explores the ways by which individuals derive personal and social meanings from the places they are situated within for use in assessing and shaping their self-identity (Hummon 1982). Frequently, community identity studies consider how residents' biographical experiences within a locale impact a) how individuals develop a sense of identity to such a place, and b) how places take on symbolic aspects that reflect such identities. For instance, Cochrane (1987) has shown how the identities of long term residents in fishing communities are affirmed and reproduced through daily rituals, stories and collective interpretations of the landscape. Likewise, urban sociologists such as Suttles (1984) have demonstrated how large cities such as New York, San Francisco, and Los Angeles construct distinct place identities and provide a shared rhetoric for collective sentiments and identifications. The upshot of such research is that individuals, in part, incorporate characteristics of their residential locations in the process of defining their self-identities.

In his book *Commonplaces*, David Hummon (1990) carried this theme forward in a comprehensive examination of community ideologies and identities. Hummon shifts the focus away from the investigation of particular communities (i.e., specific urban neighborhoods, individual fishing communities) to the examination of different types of communities (i.e., urban places, suburbs, small towns, farm/rural locations). Using extensive interviews of residents of a

city, two suburbs, and a small town in the San Francisco Bay area. he explores how residents of different types of communities use local community imagery to interpret themselves and others. This study raises some interesting issues about the distinctions across types of places, and individuals' processes of identifying with and interpreting life within such places. I believe these issues are relevant to the study of residential trajectories.

Hummon argues that there are distinct "ideologies" associated with different forms of community. These ideologies reflect residents' expressions of life within a particular type of community, as well as their expressions of how life in other types of communities differs. For example, the "small town" is viewed by its residents and proponents as "the ideal community" – a quiet and safe place, an easy going place, a community where everybody knows each other, the best place for children and families, a place with moral vitality and community spirit, and a place with less moral decline. The Small Town ideology is further expressed via negative sentiments about life in cities (e.g., noisy, nectic, uncaring, full of problems, impersonal, etc..) and suburbs (invisible, similar to cities, too dense, etc..). In contrast, pro-urbanists and urban enthusiasts present an Urban Ideology whereby cities "provide diversity of residents and activities", "sustain liberal minded ideas and tolerance", "offer sources of opportunities and excitement", and "enhance expressions of personal freedom". In the eyes of the urban advocates, small towns are "cut off from contemporary life", "behind the times", "intolerant", or "oppressive", while suburbs are viewed as "vanilla", "uniform", "homogeneous", and "dull".

Hummon's work is important in two respects. First, the disparities across community types communicated through distinct ideologies provide a theoretical and substantive framework for estimating the "costs" of substituting different types of places. Optimal Alignment, as noted, relies on cost assessments to guide the process of transforming and matching unique sequences. In a study such as this one where there has been little consideration of the quantifiable differences between levels of each sequence element (i.e., place types), it is essential to draw on relevant research as a basis for cost decisions. Hummon's discussion of community ideologies points to some of the differences in the character or image of distinct types of places. Some of these distinctions might include variations in the pace or speed of daily life, the presence of crime, the conventional or unconventional attitudes maintained and expressed, and the existence of family and child oriented institutions. His research implies that types of places not only differ in size and space, but also along social, structural, and moral dimensions. Drawing on this work, I made the following assumptions about substitution costs:

- Large cities and urban places are extremely different from small towns and rural communities. This assumption seems consistent with the fact that many of the core elements of the Small Town and Urban ideologies reflect either comparisons to a community at the other end of the rural-suburban-urban continuum, or negative expressions of life within such communities.
- Suburbs are truly the "middle ground", and as such there should be more moderate differences between Suburbs and locations at the two ends of the continuum. One of the core themes of the Suburban ideology is the notion of the Suburb as the "best of both worlds, bringing together the best qualities of urban and rural areas." In terms of cost assessments, this suggests that the cost of an urban-rural substitution greatly exceeds the cost of either an urban-suburban substitution or a rural-suburb substitution.
- There are important distinctions between larger and smaller cities. Hummon finds that many urbanists use the term "small town" to refer to areas that would be considered small cities such as Eugene, OR and Champaign, IL. This suggests that individuals view differences in the character of places, in part, based on the actual population of the location, and also based on whether the location is thought to be "large" or "small".

Secondly, Hummon's research suggests many people construct self-identities and self-designations that reflect the presence of affiliations to particular types of communities. In other words, individuals characterize themselves as "urbanites", "city people", "suburbanites", "small town folk", and "country folk"; these characterizations provide insight on their attitudes, behaviors, interests, values, and qualities. If there are, indeed, individuals who espouse strong commitments to particular types of places (i.e., I am a city person and can't imagine leaving a city), then an important question becomes whether individuals demonstrate behaviors that manifest such commitments over time. So, for example, we may expect pro-urbanites to maintain stable residence in an urban area, and if they don't, then we could ask whether these commitments have changed, diminished, or remained constant.

A second question is whether shifts across types of places reflect changes in identities that occur as a consequence of life stage transitions, or are a result of processes separate from

individuals' identifications with communities. Some studies of mobility processes in the midst of life stage passages, suggest that changes in place identities are a routine part of the life cycle process (Cuba and Hummon 1993). Bellah et. al (1985) and Perin (1977), for example, have shown that significant transitions such as growing up, getting married, buying a house, and retirement are relevant to defining and transforming self-identities, and are typically accompanied by distinct movement patterns. Likewise, Fava and Desena (1984) found that the movement into cities by young suburban migrants was preceded by a period in which individuals reformulated their conceptions of cities and their identities as "city people". Cuba and Hummon (1993) further argue that migration at different life cycle stages can produce different patterns of place affiliation, which in turn can, impact the processes of identification with "home" and other geographic locations.

In her work on settlement identities, Feldman (1990, 1996) extends this conjecture on the link between mobility and place attachment processes. Using samples of residents from the Chicago and Denver metropolitan areas, she explores how individuals form and maintain attachments to types of settlements that transcend over time and space. The belief is that individuals' construct settlement identities – "patterns of conscious and unconscious ideas, feelings, and beliefs that relate the identity of a person to a type of settlement, and provide for the future dispositions for engagement with a type of settlement" – that allow them to maintain continuity in psychological bonds to places in the midst of significant residential mobility. The empirical results indicate the most individuals have salient settlement identities, and such attachments help explain past, present, and anticipated residential locations, as well as evaluations about alternative settlement types (Feldman 1990). In addition, Feldman asserts that residential mobility is not disruptive to the bonding process, but rather can reflect sustained settlement attachments, temporary relocations or reunions, or reorientations consistent with life course transitions.

This research raises some issues that are important to my study. First, it reaffirms the notion that individuals draw distinctions between different place or settlement types (Feldman 1994; Hummon 1990). Second, it suggests that moves across the landscape are not always a function of, or accompanied by, changes in place identifications. Third, it shows that individuals can maintain connections to "types of places" that transcend geographic space. Consequently, this implies that "residential stability" may be reflected through constant residence in a specific geographic location (e.g., Seattle metropolitan area) or constant residence in a type of settlement

(e.g., City). Therefore, it becomes important to understand the intersection of stability to both "type of place" and "geographic location" over the life course. Last, this research demonstrates that individuals can express attachments to types of settlement through multiple moves within the confines of such types. So, for instance, the Urbanite who moves 10 times over 20 years, yet remains in the "City" over this period is exhibiting "residential stability" and enhanced attachment to urban areas.

CHAPTER 3: RESEARCH QUESTIONS

While the primary intent of this study is to utilize an alternative analytic approach to identify and conceptualize structured patterns of residential movement, the abundant literature on residential mobility and place attachment raises some important empirical questions worth addressing. The first stage of my empirical investigation involves the construction of a set of residential trajectories through the application of Optimal Alignment. Once this population of residential trajectories is established, the second goal is to examine the prevalence of different pathways, and the demographic, life-cycle and life course factors that influence the likelihood of distinct trajectories. My study considers four empirical questions.

Question 1: Does the prevalence of residential trajectories vary at different stages of the life course?

The Life Course paradigm emphasizes the importance of age in understanding the transitions and trajectories individuals engage in over their lifetimes. Many of our expectations of the behaviors that individuals exhibit are inherently age graded; those at different ages are expected to engage in particular behaviors consistent with the stage of life they are situated in. For instance, younger adults are typically at a stage where it is likely that they will get married (for the first time), start to have children, work in less prestigious or financially rewarding jobs, and live in less affluent settings. Conversely, older adults are at a life stage where retirement, residence in more affluent settings, and exits from marriage (either as a result of divorce, separation or widowhood) are more common. If this is true, then it is reasonable to assume that the trajectories younger folks follow are distinct from those of middle aged or older adults.

The idea that housing needs and residential choices are linked to life-cycle stages was first expressed via the Abu-Lughod and Foley (1960) mobility preference scheme. Their categorization suggests that different preferences for housing tenure and geographic locations (e.g., owned single-family suburban home) emerge at various life-cycle stages (e.g., child-bearing stage). Empirical research drawing on this scheme indicates that particular patterns of residential movement are more/less likely for individuals at different ages (Frey 1980; Frey and Kobrin 1982; Long and Glick 1976; South and Crowder 1997). Likewise, the residential preferences literature suggests that individuals housing and locational preferences are related to shifts in age

and life-cycle stages (Dillman, Tremblay, and Dillman 1979; McCauley and Nutty 1982). Subsequently, we should expect those at different ages to follow different trajectories.

The general literature on migration patterns also shows that individuals are more mobile at different times of their lives. There is substantial evidence that younger adults move more, travel farther distances, and exhibit more rapid re-migrations than older adults (Glick 1993; Long 1988). Further analysis of migration rates has offered more insight on the relationship between age and mobility. Most studies show peak rates of movement prior to age 30, dramatic declines in the middle-age years (e.g., 30-45), and some slight increases as individuals approach retirement age (Long 1988; Miller 1977). Studies of migration sequences also indicate that repeat migration rates decline with age, though after 25 years old, the propensity to engage in return migration to an childhood origin is unrelated to age (DaVanzo and Morrison 1981). This suggests that younger individuals should be more mobile and potentially follow more complex residential trajectories.

I intend to test these speculations by examining the distribution of residential trajectories across age groups defined by an individual's age at the start of his/her residential sequence. A comparison of the likelihood of "stable" and "non-stable" trajectories offers insight on whether younger adults follow more complex patterns of longitudinal movement. It is expected that the likelihood of "non-stable" movement will be highest among those **age <=25**, and monotonically decline across the subsequent age groups. A second comparison will examine the distribution of "stable" and "non-stable" trajectories separately.

The first question assesses whether the preferred location of consistent residence (i.e., stability) differs across age groups. The assumption is that "stable" younger adults will be disproportionately more likely to reside in urban locations, middle age adults will tend to situate themselves in suburban locations, and older adults will tend to reside in rural areas. The second question considers whether the types of "non-stable" movement individuals engage in vary across groups. Since cities are the "preferred" location for adults it is thought that younger respondents will be more likely to follow trajectories that travel to or through urban locations, while older respondents will demonstrate trajectories with movement to or through suburban and rural locations.

Question 2: Does the prevalence of residential trajectories vary by race and educational attainment?

Earlier in this study I discussed some of the research that demonstrates the strong association between mobility behaviors and individuals' socio-demographic characteristics. Two factors shown to influence mobility and migration processes are race and educational attainment. The empirical evidence points to several distinctions in the mobility patterns of White and Blacks. Both macro and micro-level studies indicate that, in general, Whites are more mobile than Blacks (Long 1988; South and Deane 1993). However, some evidence suggests that such racial distinctions are not as apparent as first thought. For instance, the probability of making a household change over a one-year period is roughly similar – 18.2% for Whites vs. 20.1% for Blacks (Glick 1993). What does differ in this instance is the likelihood of local vs. non-local moves; Whites are more likely to move away from counties, cities, and metropolitan areas of origin. Additionally, summaries of longitudinal behaviors demonstrate similar rates of lifetime mobility (13.1 moves for Blacks, 12.9 moves for Whites), though consistent with the prior finding, a greater proportion of the White moves involve crossing county or state boundaries (Long 1988).

There are also differences in the destinations associated with the moves of White and Blacks. The fact that Whites are more likely to cross county or state boundaries, and are more likely to engage in longer distance moves, implies that Whites are more likely to reside in a larger number or range of different types of places. In addition, while there has been tremendous Black suburbanization through the 1980's and 1990's, for the most part Blacks continue to reside in urban areas, and are substantially less likely to move out of such areas (Schneider and Phelan 1993; South and Crowder 1997). South and Crowder's analysis of the PSID 1979-1985 found that even though the probability of annual movement was higher for Central City origin Blacks than Central City origin Whites (19.3% vs. 14.6%), the probability of movement to the suburbs was over three times higher for Whites (3.1% vs. 0.9%). This analysis also showed that the conditional probability of movement to the city among Suburban origin residents was higher for Blacks.

Therefore, I expect that Whites will demonstrate more complex trajectories than Blacks. While in one sense we might consider Whites just as stable as Blacks (i.e., same number of actual moves over time), in reality their movements are dispersed across a wider geographic area. Likewise, it is evident that suburban and rural areas are more "open" or "accessible" to Whites,

and Blacks opportunities to move and settle in many non-urban locations are still quite structurally constrained (Farley and Frey 1994; Logan and Alba 1993). To that end, I believe that "stable" Blacks will demonstrate higher levels of consistent residence in small and large city locations, while "stable" Whites will demonstrate disproportionately greater stable Suburban or Rural residence. Conversely, among individuals who follow "non-stable" trajectories, the likelihood of movement to or through an Urban location should be higher among Blacks, while the likelihood of movement to or through the Suburbs is higher for Whites.

The acquisition of education is hypothesized to have an impact on mobility and migration processes. The early empirical evidence indicated that overall mobility rates are greater for more educated individuals, and such individuals are more likely to engage in long distance moves (Greenwood 1975; Li 1981; Long 1988; Miller 1977). The belief is that education opens up individuals to greater employment and economic opportunities and raises their awareness of alternative residential locations. More recent investigations, though, have shown weaker effects of educational attainment on patterns of local residential mobility (South and Crowder 1997; South and Deane 1993).

Education is also thought to be a key mechanism in understanding longitudinal patterns of movement. The underlying premise of the early DaVanzo studies of migration sequences is that patterns of return, repeat and onward migration are a function of location-specific capital and acquisition of residential information. Individuals with greater education have the ability and skills necessary to obtain more "sound" information as a basis for migration decisions. In turn they make more "successful" moves, more onward moves away from initial origins, and more "corrective" moves – i.e., quicker moves out of inadequate settings (DaVanzo and Morrison 1981; Morrison and DaVanzo 1986). In his study of migration careers, Bailey (1993) echoes a similar theme. His analysis of the hazard rates of initial and subsequent migration indicated that while more educated individuals make quicker initial moves, they re-migrate at a lower and slower rate. He argues that "educated individuals make early migration decisions that require less geographic behavior (pp. 322)."

I expect that individuals with greater educational attainment will demonstrate more complex residential trajectories. Educated individuals possess the skills and knowledge to identify and adapt to different types of places, and the ability to take advantage of employment and economic opportunities in a wider range of residential locations. Furthermore, the evidence that more educated migrants engage in greater long distance migration and movement across

geographic boundaries suggests that the lifetime trajectories among such individuals should span across many different types of places.

Since it is believed that metropolitan areas provide the resources and opportunities commensurate with the needs and skills of educated people, it is likely that "stable" educated individuals will maintain consistent residence in urban or suburban locations while less educated "stable" individuals will maintain greater consistent residence in rural locations. Moreover, I anticipate that "non-stable" highly educated respondents will exhibit disproportionately higher levels of movement to City locations and away from Rural locations.

Question 3: To what extent is the likelihood of residential trajectories influenced by an individual's socio-demographic, geographic, life-cycle, and life course characteristics?

The conjecture raised in the discussion of the first two questions leads us to believe that the prevalence of residential trajectories will vary across different sub-groups of the population. Yet, while it is essential to explore such variations due to age, race or education, it may be more enlightening to examine whether such indicators, in conjunction with other socio-demographic and life course measures, help explain or predict the lifetime patterns that individuals follow. Such an analysis will provide some insight on how an individual's demographic characteristics (e.g., age, race, gender), past residential experience (e.g., measures of childhood residence), and concurrent life course transitions (e.g., measures of longitudinal variations in marital status or SES) shape the likelihood of residential pathways.

The residential mobility and migration literature illustrates the importance of incorporating a multivariate approach to the study of residential trajectories. In concert with the research discussed in questions 1 and 2, many studies demonstrate how the effects of age, race, or education are moderated or affected by the consideration of other predictors. Sandefur and Scott (1981), for example, found that the strong negative relationship between age and migration rates at ages 40 or less diminishes upon controlling for family life-cycle measures such as marital status and family size. Frey's analysis of lifecourse migration further showed that even with the growing racial similarity in destination selectivity, the positive relationship between age and suburban selectivity is still much stronger for Whites than Blacks (Frey 1984). In a more direct analysis of residential mobility, South and Crowder (1997) conclude that education increases the likelihood that Blacks will make a City -> Suburb move, yet has little effect on this movement among Whites. These findings are consistent with earlier investigations illustrating the

differential impact of life-cycle factors such as home ownership on the mobility behaviors of Blacks and Whites (South and Deane 1993).

While residential pathways might differ across socio-demographic groups, it is also conceivable, particularly in the case of younger respondents, that the residential situation an individual was raised in may have a lasting impact on movement processes. The empirical research has demonstrated the importance of location specific capital in destination choice and migration sequences (DaVanzo and Morrison 1981; Williams and McMullen 1983) It is often the case that individuals engage in return migrations to places where they have the greatest number of locational attachments. The place attachment literature further suggests that individuals establish ties to "types of places" beyond those established to specific locations. The speculation is that individuals raised in particular settlement type (i.e., small town, farm, suburb, or city) or a specific geographic region (i.e., Northwest, West, etc..) have built up capital in such locations, thus may be more likely to stay in, or revisit such locations during the course of a trajectory.

Interestingly, while one might assume that childhood experiences are more relevant for explicating the residential trajectories of younger individuals, some research on place attachments and cyclical migration among older individuals raises some important questions about the impact of childhood residential situations. McHugh and his colleagues (McHugh, Hogan, and Happel 1995; McHugh and Mings 1996), for example, use surveys and case studies of Arizona snowbirds to construct a set of life-course trajectories of "migration and place attachment." The elements of such trajectories include some evaluation of an individual's place of upbringing, movement from home during the young adult and middle age years in forms of travel or migration, seasonal migration patterns between multiple residences, and eventual retirement settlement choice. While this sample consists of a fairly unique subset of the population – older individuals with multiple residences – their attempt to describe the "journeys' that evolve over time for different individuals is quite informative. Their analysis points to a normative "still rooted" or "circular" trajectory whereby older individuals, after all their travel and migration experiences, still settle in places of their upbringing. Other trajectories include "pendular" or "footloose" patterns in which individuals drift away from home places over time. McHugh and Mings believe that "circumstances and experiences early in life set individuals on divergent paths that are amplified over the life course." (pp. 546). If this is true, then I might expect residential trajectories to vary among those raised in different kinds of childhood situations.

Since residential trajectories typify a longitudinal process, we should not neglect the role of other concurrent life course transitions and events in shaping the resulting pathways. However, introducing "life course" measures adds a layer of complexity to the multivariate models. To this point, all of the predictor variables represent individual measures that are fixed at the start of the sequence, and not expected to change over the course of the residential sequence. In contrast, the relevant life course measures such as marital status, SES, income, occupational status, or housing tenure status can change in conjunction with shifts in residence. In fact, the housing and locational careers literature has thoroughly demonstrated the interdependencies between such life course transitions and residential shifts (Davies-Withers 1997; Mulder and Wagner 1993; Odland 1997; Odland and Shumway 1993).

Subsequently, it is necessary to construct longitudinal measures of the transitions along some life course dimension (e.g., marital status change) in this study. Upon adopting this strategy, the empirical question becomes, in part, to what extent does the likelihood of residential trajectories differ among individuals who follow disparate life course careers. An examination of this question could involve comparing the probabilities of trajectories among those with "stable" marital status (i.e., always married or always single over the entire residential sequence) with individuals who shift their marital status over the course of the sequence.

The inclusion of concurrent sequence measures raises an interesting analytic challenge in the development of predictive models. We should expect that characteristics of an individual's life measured at roughly the same period as the residential situations that comprise the trajectories will have a much greater impact on the progression of such trajectories than an individual's characteristics at the onset of the trajectory. In other words, as the evidence suggests, an individual's transition from one place to another in the middle of the trajectory is probably more related to other life course changes in the same time period (e.g., entered a marital union or changing from renting to owning) than to his/her characteristics fixed years earlier (e.g., education or childhood residence). The concern is that the strength of the relationship between these concurrent life course trajectories may hide any important differences in the likelihood of trajectories across sample subgroups such as Whites vs. Blacks or College Educated vs. High School Educated. To address this concern, models will be developed for different "life course" subsets such as individuals who engaged in a marital shift or maintained a higher income status over the period of the residential trajectory. Thus, a secondary question is whether the effects of

the demographic and childhood experience measures differ among individuals who follow distinct marital and income careers.

Question 4: Are there distinctions in trajectories of residential movement defined in terms of "type of place" vs. "geographic location"? If so, what are the socio-demographic, life-cycle, and life course characteristics that shape patterns of stability/non-stability along these two dimensions?

The primary intention of this study is to construct and identify individuals' trajectories of movement across sectors of the residential landscape. This goal is in concert with empirical investigations that illustrate a set of normative expectations associated with the locational and residential preferences individuals exhibit at different life course stages. Yet, characterizing individuals' residential movements in terms of their shifts across "types of places" is only one way of portraying such trajectories. I could have conceivably constructed residential sequences defined on specific geographic places like US cities or metropolitan areas (e.g., Boston -> New York -> San Francisco), states (Washington -> Idaho -> Washington), or even locations inside a particular MSA (e.g., Seattle -> Bellevue, WA -> Duvall, WA -> Seattle). While the process of aligning and matching sequences, and constructing a set of empirically common trajectories would have been more arduous, such a method would have specified pathways of movement typified by both a residence's "type of place" and actual "US geographic location".

While this approach was not used, I was able to use the PSID geographic data to describe an individual's longitudinal residential history along both "type of place" and "geographic" dimensions. The residential trajectories represent structured patterns of movement across the rural/suburban/urban sectors of the environment regardless of the actual geographic location of such places. For example, three different individuals with a City -> Suburb residential trajectory could have followed these geographic pathways

A. 7 years in Seattle (City) -> 4 years in Kent, WA (Suburb) -> 3 years in Woodinville, WA (Suburb)
B. 4 years in Seattle (City) -> 3 years in Boston (City) -> 3 years in Somerville, MA (Suburb) -> 4 years in Wexford, PA (Suburb)
C. 7 years in Seattle (City) -> 7 years in Lynnwood, WA (Suburb)

An individual's residential trajectory represents the "type of place" dimension of the residential history. In the example above all three individuals are essentially the same in terms of the "types of places" they lived in over the course of the residential sequence. Moreover, they are

all demonstrating a form of "non-stable" movement across sectors of the rural/suburban/urban continuum. Yet, since I have detailed on the specific residential locations, it is possible to construct a distance measure. Using this distance measure I can assess whether individual's residential trajectories are exhibited over a restricted region or a wider swath of the geographic landscape. For example, individuals A and C demonstrate City -> Suburb movement within a relatively constrained region – the Seattle MSA. On the other hand, while individual B also demonstrates City -> Suburb movement, her movements are exhibited over a more dispersed geographic area. Hence, distance represents an approximation of the "geographic" dimension of the residential history. In our example, I might argue that individuals A and C exhibit more "stable" geography than individual B.

The studies of place, community and settlement identity outlined in the place attachment chapter indicate that individuals maintain connections and attachments to types of places, above and beyond, their actual geographic location (Feldman 1990, 1996; Hummon 1990, 1992). There is a belief that individuals' "place" ties transcend over geographic boundaries; to that extent, understanding an individual's residential history involves assessing lifetime movement within and between "types of places", and across specific geographic locations. As noted in the example above, it is distinctly possible that individuals who demonstrate "place stability" – i.e., stay in the same type of place over the entire residential trajectory – can engage in significant geographic movement across a dispersed area of the country. These individuals could maintain distinct settlement identities; their longitudinal movements are more of a function of the "types of places" they live in than of the specific geographic location of such places. In contrast, there are individuals who demonstrate "place instability" – i.e., make some patterned shifts across the type of place continuum over the course of the trajectory – whose moves are constrained to a more restricted geographic area. We might argue that their pathways are conditioned upon geography rather than type of place.

We are, therefore, presented with residential histories categorized along a 2 by 2 scheme: "place stability/instability" by "geographic stability/instability". The question at this point is whether the characteristics of those who fall into each of these categories differ. A strategy for addressing this question involves separating individuals who follow "stable" trajectories from those who follow "non-stable" trajectories, and using multivariate models to predict the likelihood of "stable" vs. "non-stable" geography in each subset. This approach will allow to me to contrast, for instance, stable urbanites whose settlement ties transcend geographic limitations

with stable urbanites who reside in constrained geographic locations. The speculation is that the characteristics of individuals in these four categories should differ. For example, if the formation of settlement identities that facilitate individuals movements into, adjustments within, new locations of a similar settlement type is a function skills and experience, we might expect more educated individuals to follow patterns of less stable geography. Similarly, if we believe that younger and more educated individuals are more willing to engage in long distance moves, then these individuals will be more likely follow non-stable geographic pathways.

CHAPTER 4: DATA AND METHODS

In this study I am using the Panel Study of Income Dynamics (PSID) survey of cross-sectional and low income respondents for the period of 1968-1985. The PSID is a nationally representative sample that started with 5000 families in 1968 (3000 in cross-sectional sample and 2000 in low income sample), and has followed the original 5000, as well as any families that formed from the original households, for almost 30 years. Recently, the Institute of Social Research at the University of Michigan has released geocoded address information on individuals across each of the survey years. In this study I have detailed geographic and census based data on heads of households for the survey years 1968-1985. This data includes geographic indicators as large as state of residence to as small as census tract for each head of household in a survey year, therefore allowing researchers to describe the geographic characteristics of an individual's place of residence.

While ideally I would be interested in examining geographic information on survey respondents across all 18 years (i.e., 1968-1985), some limitations associated with the survey necessitated modifying the analytic approach. In particular, during the process of reconstructing the geocode address data, the staff at the Survey Research Center found that some of the original address tapes from four earlier survey years (1969, 1975, 1977, 1978) had been overwritten or destroyed. While the documentation provided with the survey data suggests that the Survey Research Center engaged in the process of "imputing" address information for these missing years based on address information of the same individuals in prior and subsequent years, an investigation of the data files suggests that there was no imputation of geographic information. As a result, it was necessary to exclude these missing years from the analysis.

This missing data problem has consequences for the way I construct the residential trajectories. Without the missing years, an individual's residential history would represent a series of residential locations over consecutive years. If this were the case, we would know both the absolute number of years in the entire sequence (e.g., 1968-1985 = 18 years of data) and the interval between two consecutive elements in a sequence (i.e., 1 year). However, given the structure of the missing years of data, I decided to consider consecutive "time periods" rather than years. Therefore, while the longest possible trajectory spans 18 years (from 1968-1985), it consists of only 14 data points, covering residential data for 1968, 1970-1974, 1976, 1979-1985. Since many households are picked up mid-stream, this strategy means that sequences vary not

only in length, but also in the number of actual years they span. For instance, a 12 time period sequence starting in 1968 spans 15 years, while a 12 time period sequence starting in 1970 spans 14 years. Moreover, the real duration of consecutive sequence elements can differ, depending on where they fall in the sequence of residential locations.

The sample for this analysis consisted of 5474 individuals with 10 or more consecutive time periods of residential information. Each individual in the sample had to be a household head in one or more time periods. The decision to include individuals with variable length sequences was two-fold. First, I determined that 10 time periods should represent a long enough time frame to approximate a viable residential career. Second, many respondents either entered the panel study after the initial survey year (e.g., a child from a household who formed his/her own household in 1970), or left the panel study prior to the last survey year (e.g., a household head who dies in 1983). The majority of those who entered late were younger individuals at the early stages of the life course. Since I felt it was important to include a sizeable number of individuals starting their sequences at various points in the life course, I decided to allow shorter length sequences in the sample.

Since the address information for each survey year reflects information about the head of the household in that year, I computed the proper address for those individuals who were not the household head in that year. Using the PSID data it is possible to identify all the members of a household in a given year (e.g., head of household, spouse, any children, etc..). As such it is possible to obtain an individual's residential information in years when that individual was not the head of household. This is especially important for younger children who start in a parents household, grow to an age where they can start to make individual residential decisions -- in this study 18 years old -- and start their own household. The hypothetical family presented in Table 4.1 provides a better description of the process of identifying geographic information for each family member across time periods.

This approach raises some questions about the use of individual's demographic and contextual characteristics. The PSID consists of family and individual level data files. The "family" level data is collected from the head of the household in each year and includes detailed information on household composition, income, housing tenure, employment/occupation, mobility measures, and residential information. In reality, this data reflects either the characteristics of the household as a whole (e.g., contextual information such as the number of individuals living in the house or total household income), or the personal characteristics of the

Table 4.1: Hypothetical PSID Family – Residential Information

Status in Time Period 1	TP 1	2	3	4	5	6	7	8	9	10	11	12	13
Father	HH	HH	HH	HH	HH	HH	HH	HH	HH	HH	DC	DC	DC
Location	Sub	Sub	Sub	Sub	Sub	Sub	Sub	Rur	Rur	Rur	N/A	N/A	N/A
Mother	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	HH	HH	HH
Location	Sub	Sub	Sub	Sub	Sub	Sub	Sub	Rur	Rur	Rur	Rur	Rur	Rur
Son at 16	HM	HM	HM	HH	HH	HH	HH	HH	HH	HH	HH	HH	HH
Location	N/A	N/	Sub	Urb	Urb	Urb	Urb	Urb	Urb	Urb	Sub	Sub	Sub

Status Codes
HH – Household Head in Year
SP – Spouse in HH in Year
HM – Household Member in Year
DC – Deceased in Year

Location
Urb – Urban Location
Sub – Suburban Location
Rur – Rural Location
N/A – Not Available

Father – Household Head for 10 consecutive time periods, first 7 in a Suburban residence and last 3 in a Rural residence, and then deceased after Time Period 10. (residential sequence: 7 time periods Suburban, 3 time periods Rural)

Mother – Spouse/HH member with father in first 10 time periods, became household head of original family in 11th time period and stayed in Rural residence for last 3 time periods. (residential sequence: 7 time periods Suburban, 6 time periods Rural)

Son – No residential information for first 2 time periods when age < 18, household member with original family in 3rd time period, formed own household starting in 4th time period onward. (residential sequence: 1 time period Suburban, 7 time periods Urban, 3 time periods Suburban)

head of the household (e.g., individual information such as number of past occupations or state where he/she grew up). The "individual" level data is collected from every household member in each year. This is a more restricted set of information on an individual's demographic characteristics such as age, marital status, educational attainment, and employment status.

For those sample members who were the head of household in a given year, the information drawn from the "family" and "individual" level data files in that year will truly reflect either the whole household's, or their own personal characteristics. The situation differs for those who were not the head of household in a given year. In this instance all the information drawn from the "family" level file should be considered contextual or representative of the household as a whole. Conversely, all the information drawn from the "individual" file reflects his or her personal demographic characteristics. As such it is important to choose a set of variables from the "family" level file that accurately represent the contextual characteristics of the household rather than the characteristics of just its' "head".

A second challenge involved devising a strategy to utilize the extensive geographic information on individuals' residences in each sample year. The initial goal was to categorize an individual's residence along a place-type continuum using the geographic identifiers from the PSID Geocode Match files. I chose to focus on place type (rather than specific geographic place) for two reasons. First, I have shown some of the growing evidence that individuals may identify with *types* of communities, and that such identities may influence their attachments to, and behaviors within different types of communities and settlements (Feldman 1990; Hummon 1990). The second reason is more pragmatic; residential trajectories would be far too complex to analyze if I retained every location. In other words, it would be hard to conceptualize and compare sequence where an individual's residence is classified into one of possibly thousands of different geographic locations in each year.

In each year one could identify an individual's residential location at a level as large as their state of residence to as small as their census tract or BNA of residence. Given the plethora of geographic indicators, I constructed a strategy using information about a residence's a) census place designation in 1980, b) metropolitan statistical area (MSA) designation in 1983, c) census place population in 1980, and d) MSA population in 1983, to construct a nine category type-place continuum ranging from a Small Rural location to Large Metropolitan (LM) Large City (see Table 4.2).

Table 4.2: Place-Type Continuum

Code	Description of Type of Place	Examples	# of Places (1980) [b]	% Sample Time 1	% Sample Time 10
1	Rural /Non-Metropolitan Area <10K Population or Missing Population (SMALL RURAL)	Omak, WA Sistersville, WV Mendicino, CA	12,579 (55.8%)	18.6%	18.5%
2	Rural /Non-Metropolitan Area 10K+ Population (LARGE RURAL)	Walla Walla, WA Paris, TX Ames, IA	510 (2.3%)	5.8%	5.8%
3	Suburb/Small Metropolitan Area < 25K Population or Missing Population (SM SMALL SUBURB)	Cheney, WA Durham, NH Sonoma, CA	5,424 (24.1%)	9.8%	11.1%
4	Suburb/Large Metropolitan Area < 25K Population or missing population (LM SMALL SUBURB)	Des Moines, WA Ashland, MA Great Neck, NY	2,987 (13.3%)	9.0%	9.9%
5	Suburb/Large Metropolitan Area 25K+ Population (LM LARGE SUBURB) [a]	Renton, WA Walnut Creek, CA Mt. Lebanon, PA	519 (2.3%)	6.9%	8.5%
6	Central City/Small Metropolitan Area < 100K Population (SM SMALL CITY)	Yakima, WA Nashua, NH Sarasota, FL	310 (1.4%)	8.2%	7.9%
7	Central City/Small Metropolitan Area 100K+ Population (SM LARGE CITY)	Spokane, WA Austin, TX Charlotte, NC	94 (0.4%)	11.1%	10.7%
8	Central City/Large Metropolitan Area < 250K Population (LM SMALL CITY)	Everett, WA Cambridge, MA Marietta, GA	69 (0.3%)	2.3%	2.4%
9	Central City/Large Metro Area 250K+ Population (LM LARGE CITY)	Seattle, WA Pittsburgh, PA Chicago, IL	38 (0.2%)	28.3%	25.2%

a - A small percentage of the suburbs classified in category 5 are situated in Small Metropolitan Areas (some examples are Pekin, IL, Edison, NJ, and Miami, OH). Less than 10% of the Small Metropolitan area suburbs had a population of 25K+.

b – Source for classifying the 22,529 places was *1980 Census of Population and Housing: Geographic Identification Code Scheme – PHC80-R5 (1983)*

Small Metropolitan Area

- MSA/PMSA/NECMA with Population in 1980 of < 1 Million
- Examples: Tacoma WA, Stockton CA, New Haven CT, Worcester MA, Toledc OH

Large Metropolitan Area

- MSA/PMSA/NECMA with Population in 1980 of 1 Million or more (41 areas)
- Examples: Seattle WA, San Francisco CA, New York NY, Boston MA

I first separated on whether the location was in a metropolitan or non-metropolitan region because most standard definitions distinguish rural from suburban/central city based on whether the residence is situated in metropolitan region. Furthermore, taking into account the 1983 population size of the MSA allowed me to distinguish places situated in or around more prominent urban/metropolitan regions of the country such as New York. Seattle. or Los Angeles, from places near smaller and potentially less "urban" regions such as Tacoma, WA, New Haven, CT or Redding, CA.

The decision to define residences based on census place identification was two-fold. First, census places often coincide with what we would call cities, villages, boroughs or towns that have legally prescribed powers and functions. In addition, places are viewed as "concentrations of population" that "have a name, are locally recognized, and are not part of any other place" (United States Bureau of Census 1992: 9-1). Moreover, I believe that many individuals when asked to think about where they reside often fall back on a place level descriptor of their residence (e.g. I live in Seattle or I live in Omak WA) rather than a more obscure identifier such as their census tract or minor civil division. Since the goal of this study was to assess how individuals travel through the residential landscape, it seemed logical to define such places based on some criteria that individuals would best understand and evaluate (e.g., I live in Seattle which is an urban location, I live in Omak which is rural).

Second, the use of census place identifiers helps us distinguish suburban and urban places within metropolitan regions. Almost all of the 1983 metropolitan statistical areas have at least one "census designated central city". A "central city" is typically either the largest city in the MSA, or a city that meets a set of criteria associated with a combination of its population size, employment/residence ratio, and outcommuting rate. Using the census place designation for each residence, I can assess whether an individual's residence falls in the boundaries of a central city (i.e., urban) or the suburban territory outside the central city, but inside the metropolitan area.

While this distinction is a reasonable strategy for separating city and suburban locations, I must acknowledge some of the concerns that arise with the use of the central city as a distinguishing characteristic. First, since the process of defining metropolitan statistical areas varies somewhat in different regions of the country (e.g., New England), it is possible that central city places in one region may not receive a similar designation in a different region. Second, it is clear from examining some of the places designated as central city vs. suburban that assignments

vary some from our popular perceptions of the urban/suburban character associated with particular places. For instance, while Auburn, WA -- a census designated central city of roughly 26,000 residents in 1980 -- is commonly portrayed as suburb of Seattle, Bellevue, WA – a census designated suburb of more than 100,000 residents, is often viewed as a smaller "edge" city near Seattle. Therefore, it is evident that census assignments are not always consistent with common perceptions of what is urban, suburban and rural. For example, there are many Washingtonians who would refer to Pasco, WA, a census designated central city of less than 20,000, as a rural Eastern Washington farming community.

The decision to use 1980 census information and 1983 PMSA/SMSA definitions to classify locations between 1968-1985 was two fold. First, this ensured that demographic or administrative changes in a place over time would not result in changes in the categorization of this place along the geographic continuum within a residential trajectory. For example, the town of Ferndale, WA (a "suburb" of Bellingham, WA) is now considered metropolitan because of its inclusion in a metropolitan statistical area created in 1980, although in 1970 it was considered rural. If one of the respondents lived in Ferndale from 1968 to 1985, and I used both 1970 and 1980 census classifications, the sequence would indicate that the respondent had moved from a Large Rural place to a Small Metro Small Suburb simply because of changes in the administrative classification of that location. Hence my approach eliminates the possibility of shifts along the continuum based solely on changes in the place characteristics (i.e., one actually had to move to shift along the continuum).

Second, the use of the 1983 PMSA/SMSA definition allowed for the inclusion of new geographic areas that grew in population size or functional prominence between the 1970 and 1980 censuses. Between 1975 and 1983 the number of MSA's and NECMA's (New England County Metropolitan Areas)[1] increased from 250 to 314. This tremendous growth represented the emergence of newer geographic areas in primarily Southern and Western regions of the country that met the criteria for MSA designation.[2] Moreover, the boundaries of some existing metropolitan areas changed to include adjacent counties with increased population density or larger commuting flows. Many believe that the post 1980 census designations reflect a more

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[1] NECMA's represent county level approximations of PMSA/SMSA's in the six New England states where MSA's are defined based in cities and towns rather than county boundaries.

[2] The criteria for an area to be classified as a PMSA or SMSA: one or more counties that a) include a city of 50,000 or greater population, or b) have an urbanized area of 50,000 or greater population AND a total population of 100,000 or more.

accurate representation of the "metropolitan" areas of the United States, and sufficiently consider the tremendous 1970's decentralization of the population.

As noted earlier, I utilized a nine category place-type continuum in this study (refer to Table 4.2). The objective of such a continuum was to distinguish places on whether they were considered rural/suburban/central city, on whether they had a smaller or larger population, and whether they were situated in smaller or larger metropolitan statistical areas. A number of different schemes were tested, some with as many as 64 different categories, before the nine category scheme was adopted. The choices of population size and MSA size splits were also examined in depth, and the resulting criteria appeared to best represent distinctions in types of places within the rural, suburban, and urban sectors.

Since I was also interested in exploring the geographic distance traveled in residential trajectories, I obtained information on the longitude and latitude of individual's residences. Using a set of 1980 census geographic files it was possible to match the census place codes for each residence and obtain the degrees of longitude and latitude. In instances where the census place code did not match to the geographic files, the census county code for the residence was matched to a similar county-level geographic file and measures of the longitude and latitude from the central location of the county were obtained. Using the Great Circle Distances formula, I calculated an estimate of the distance in miles between individual's residences in subsequent time periods. From this information, I constructed the following measures:

Total Distance of Residential Sequence: a sum of the total miles traveled across the entire sequence (up to 14 time periods)

Average Miles per Place Change: the total distance divided by the number of times an individual changed their place of residence during the course of the trajectory[3]

Measures: Residential Trajectories and Independent Variables

An individual's residential sequence is a summary of the order of residential locations across 10-14 consecutive time periods. In each time period the specific place is categorized into

[3] A place change indicates that an individual moved from one census place to a second census place, and moves within a place such as within Seattle are not considered place changes even though it may involve a move of a few miles in distance.

one of nine different place-types ranging from 1 (Small Rural) to 9 (LM Large City). The resulting sequence is represented by a string of numbers varying from 10-14 elements. An example follows:

Individual A: 6 6 6 6 6 1 1 1 1 3 3 3 9 9 or 5(6), 4(1), 3(3), 2(9)[4]

First 5 time periods in a SM Small City (e.g., Yakima WA)
Next 4 time periods in a Small Rural (e.g., Omak WA)
Next 3 time periods in a SM Small Suburb (e.g., Prosser WA)
Next 2 time periods in a LM Large City (e.g., Seattle WA)

There are two dimensions that characterize an individual's pattern of longitudinal movement across the residential landscape. The first – "place stability" – is reflected in an individual's sequence of residential locations across the categories of the place-type continuum. A residential sequence can be considered either "stable" (i.e., individual remains in the same place-type across the entire trajectory) or "non-stable" (i.e., demonstrates at least one shift in place-type across the trajectory). Among those demonstrating "non-stable" sequences, the patterns of stability can vary dramatically. For instance, many individuals simply make one shift during the course of the sequence. While we call them "non-stable" it is possible that they maintain some "place stability" over a period of years in two different types of places. An individual with the sequence 7(9), 7(1), in some sense, maintains stable residence in a City for the first 7 time periods and in a Rural location for the next 7. Conversely, it is possible that for some the one shift occurs either earlier or later in the sequence making the trajectory appear almost "stable". For example, an individual with the sequence 12(5), 2(1) maintained a stable suburban residence for 12 time periods before making a shift to a rural location.

In contrast, "non-stable" individuals may also follow quite complex patterns of movement over their life course. There are many who make multiple shifts throughout the sequence, and a number who almost seem to bounce around the residential landscape. While some follow more systematic "non-stable" residential patterns (e.g., first 1/3 city, next 1/3 suburb, last 1/3 city), there are those who are clearly "unstable", shifting from place-type to place-type at

[4] This form of representing a trajectory was used to reduce the complexity of interpreting the potentially long sequences of elements. The number in the parentheses represents the coding of the residence on the nine category place-type continuum. The number immediately proceeding that represents the number of time periods spent in that "type of place". For example, 9(1) would indicate that the individual spent 9 consecutive time periods living in a Small Rural place.

various points of the sequence. For instance, an individual with the following sequence might be called "unstable" – 2(1), 1(5), 3(4), 2(6), 3(1), 1(9), 1(1). The process of using Optimal Alignment to reduce the large number of unique sequences to a manageable set of patterned trajectories facilitates our ability to distinguish those individuals who are truly "non-stable" from those who demonstrate consistent residence in the same type of place.

A second dimension is the notion of "geographic-stability". Using the distance variables previously discussed, it is possible to assess the extent to which an individual engaged in movement within or across different geographic regions of the United States. It is interesting to think about how this measure of distance intersects with assessments of "place stability". For example, individuals who demonstrate considerable "place stability" may conceivably also demonstrate "geographic instability" through a series of moves to big cities throughout the American landscape. An individual who lives in Seattle for 4 years, Boston for 5 years, Chicago for 2 years, and Los Angeles for 3 years demonstrates considerably greater movement throughout the country than the individual who lives in Seattle for 14 consecutive years, yet both individuals exhibit "stable" residence in an urban place-type. Additionally, we can imagine those individuals who demonstrate "non-stable" patterns on the place dimension yet vary considerably in their patterns of geographic movement throughout the country. For example, the individual who lives in Kirkland WA (a suburb of Seattle) for 4 years, Seattle for 5 years, and Kirkland for 5 years has traveled a considerably shorter distance over his/her trajectory than someone who lives in Kirkland for 4 years, San Francisco for 5 years, and Andover, MA (a suburb of Boston) for 5 years. Yet, once again both individuals follow a "non-stable" trajectory of Suburb -> City -> Suburb.

The initial challenge is setting the criteria to distinguish those who travel far enough over the course of their trajectory to be thought of as following a "non-stable" pattern of geographic movement. We might think of those who move across metropolitan areas or state boundaries as exhibiting less stable movement, though given the proximity of some places to MSA and state boundaries, even some of these moves are not very far in terms of actual distance. In this study, individuals either follow a pattern of "stable geography" or "non-stable geography" as defined by the *Average Miles per Place Change* over the course of the entire residential sequence. After considering a number of possible schemes, I established a split at 100 miles per place change as criteria for distinguishing stable and non-stable individuals. The assumption is that those who are geographically stable have for the most part engaged in moves within a relatively constrained

geographic region such as a metropolitan area or set of adjacent counties. Consequently, we can define an individual's residential history based on the two initial dimensions in a 2 x 2 scheme: "place stability" (stable vs. non-stable) by "geographic stability" (stable geography vs. non-stable geography).

A main objective of this study is to examine the possible correlates of different residential trajectories. Consequently, it is necessary to identify a set of predictor variables that reflect not only an individual's characteristics at the beginning or the end of the trajectory, but also his or her characteristics over the course of the entire sequence. While it is fairly straightforward to construct individual-level variables such as gender or race that are known at the onset of the sequence and remain unchanged, it is more challenging to create measures to represent characteristics that can vary over time such as an individual's marital status or housing tenure. The intention of the analysis is to consider how an individual's demographic, socio-economic, and household characteristics both at the onset, and over the progression of the sequence, shape the likelihood of different life course residential trajectories.

All of the demographic and geographic independent variables used in the multivariate analyses are drawn from the "individual-level" PSID data file and thus accurately reflect the characteristics of each individual in the sample. The demographic variables, with the exception of Education, reflect an individual's characteristics as of the first time period of the residential sequence. The geographic variables reflect the characteristics of the residential location that the respondent was raised in. For some individuals – i.e., those who are younger at the start of the sequence – these measures describe a respondent's residential surroundings slightly prior to the first time period of the sequence. Yet, for others – i.e., those who are older at the start of the sequence – they describe a residential situation experienced a number of years prior to the first time period of residential data.

The concurrent life course variables reflect measures of changes in other important elements of an individual's life course. One measure – marital status change – is drawn from individual-level data on whether the respondent was married or not married in each time period. The income status and income status change variables are constructed using household-level data, and as such represent changes in a respondents household situation from time period to time period. All of the independent variables are described in greater detail in Table 4.3.

Table 4.3: PSID Independent Variables

Demographic and Life-Cycle Measures

AGE: age of the respondent at the first time period of the residential sequence – four categories <=25 years old, 26-35 years old, 36-49 years old, and 50+ years old

RACE: race of the respondent – two categories: White and Non-White

GENDER: respondent's gender – two categories: Male and Female

EDUCATION: respondent's maximum educational attainment achieved across the entire course of the residential sequence – three categories: High School Degree or Less, Some College, College Degree or More

MARITAL STATUS T1: respondent's marital status in the first time period of the residential sequence – two categories: Married and Not Married

Childhood Residence Measures

REGION – AGE 16: geographic region where respondent was raised until age 16 – five categories: Northeast, North-Central, South, West, and Foreign

SIZE OF RESIDENCE – AGE 16: geographic place-type where respondent was raised until age 16 – four categories: Farm, Town/Suburb, City, and Other

Life Course Measures

MARITAL CHANGE: represents a pattern of marital status over the residential sequence constructed using information on the initial marital status and number of marital shifts over time – five categories: Stable Non-Married, Stable Married, Shift into Marriage, Shift out of Marriage, and Multiple Shifts

INCOME STATUS: represents pattern of family income – in constant dollars relative to 1983 – over the entire residential sequence – three categories: Low Income (i.e., average constant income across time periods in the bottom 25% of the income distribution), Moderate Income (i.e., average constant income across time periods in middle 50% of the income distribution), and High Income (i.e., average constant income across time periods in the top 25% of the income distribution)

INCOME STATUS CHANGE: represents any change in the constant income status from the first to the second half of the residential sequence based on a comparison of the average constant income in the first half vs. the average constant income in the second half – three categories: Downgrade (i.e., income status declines), Same (i.e., income status remains constant), and Upgrade (i.e., income status increases)

Methods of Analysis

At the onset, the Optimal Alignment algorithm is used to compute the distances between pairs of residential sequences. Since most sequence matching programs are suited for the analysis of a smaller number of cases, I selected a number of age-graded samples of 200-250 individuals this for this section of the analysis. In total there were eight distinct sub-samples; four were comprised of a random sample of 200 individuals from each of the age groups – <=25 years old at the start of sequence, 26-35 years old at the start of sequence, 36-49 years old at the start of sequence, and 50+ years old at the start of sequence. Since over 60% of all individuals maintained residentially "stable" sequences, it was necessary to also select a set of four random samples of "non-stable" individuals from each of the age groups to supplement the analyses. The dissimilarity matrices produced by the set of Optimal Alignment analyses were input into various hierarchical clustering algorithms in an attempt to group similar residential sequences into a coherent population of residential trajectories. I will discuss the details of the Optimal Alignment approach and various clustering algorithms shortly.

The process of constructing the population of residential trajectories is discussed in detail in Chapter 5. Simple summaries of the characteristics of trajectories and the prevalence of trajectories across different demographic sub-groups are based on analyses of **weighted** and **unweighted** frequencies and means. Since the full PSID sample is comprised of a cross-sectional and stratified low income sample, each respondent has both individual and household level sampling weights for each year in the panel study. While there is some uncertainty over the proper weights to use with longitudinal data, after consultation with the PSID staff I decided to weight an individual based on his or her "individual-level" sampling weight in the final time period of the residential sequence. Using this weighting scheme provides a better reflection of the true prevalence of residential patterns in a representative sample of US residents.

To examine the correlates of different residential trajectories, I incorporated a set of multinomial logistic regression models to estimate the impact of the set of demographic and geographic variables on the likelihood of following distinct residential trajectories (Liao 1994). A set of three "origin" models were developed for individuals who started their residential trajectories in either a city, suburban, or rural location. This strategy grouped individuals with similar residential "origins" and reduced the number of possible outcomes in each multivariate

model. Each of the "origin" models was also examined among subsets of individuals who varied on characteristics of concurrent life course processes (see more details in Chapter 6). For instance, the "city origin" was tested among those who engaged in some form of shift in marital status over the course of the residential trajectory. An analogous set of binary logistic regression models were used to examine the predictors of different trajectories as defined by the two dimensions, "place stability" and "geographic stability" (see more details in Chapter 7).

All of the multivariate analyses utilized unweighted data. This strategy allowed the inclusion of "non-sample individuals" into the multivariate analyses.[5] Moreover, since sampling weights are primarily a function of the independent variables used in the models, it is preferable to use an unweighted regression approach (Winship and Radbill 1994). The discussion of the results of the multivariate analyses in chapters 6 and 7 provides greater insight on how this approach was used to examine structured patterns of movement across place-types and particular geographic locales among those who start their trajectories in different sectors of the residential landscape.

Optimal Alignment and Cluster Analysis

The Optimal Alignment approach to the analysis of sequential data was first introduced to the social sciences by Andrew Abbott, drawing from techniques used in the biological sciences for DNA sequence matching (Sankoff and Kruskal 1983). The most prominent empirical applications of the technique in the social sciences have focused on occupational career patterns ranging from analyses of the typical careers of German musicians (Abbott and Hrycak 1990) to the shift in career systems over cohorts of employees at the Lloyd's Bank in Great Britain (Stovel, Savage, and Bearman 1996). The technique has also been utilized to examine a diversity of macro level social and political processes such as patterns of Morris dance sequences (Abbott and Forrest 1986), differences in the adoption sequences of welfare policies in developed nations (Abbott and DeViney 1992), and distinctions in the sequences of Black lynching patterns in counties of the Deep South (Stovel 1997). To date, Optimal Alignment has not been used in any studies of life course migration or residential mobility.

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[5] PSID respondents who were not members of, or born into, the original families receive individual weights of "0". These individuals would be excluded from any analysis that uses weighted data.

The basic premise of the Optimal Alignment approach is fairly straightforward – estimate the resemblance between two sequences of elements by minimizing the cost of transforming the first sequence into the second sequence (i.e., making the two sequences look identical). The operations available to perform such a transformation include: the insertion of an additional element into one of the sequences, the deletion of an element from one of the sequences, or the substitution of one element in a sequence with an element from the second sequence. The cost of each of these operations is established in advance; once the costs are established, the algorithm evaluates all possible solutions for each pair of sequences and returns the cost of the most efficient transformative path as the "distance" between the sequences. Pairs of sequences with small "distances" are similar to one another, while pairs with larger "distances" are more distinct. The end product of this process is a triangular matrix of the computed distances between all pairs of distinct sequences.

The following example illustrates how optimal alignment compares three hypothetical sequences:

POSITION	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Sequence 1:	4	4	4	4	5	5	5	5	6	6	6	6	6	1
Sequence 2:	3	3	3	3	3	5	5	5	5	1	6	6	6	6
Sequence 3:	3	4	4	2	2	5	5	6	6	6	6	6		

The goal of this example is to show how the optimal alignment method uses the set of operations to align and transform pairs of sequences. In the comparison of Sequences 1 and 2 we find discrepancies in elements 1-5, 9-11, and 14. We could utilize a transformation that entails a series of only substitutions. This would involve, for example, substituting the 3 3 3 3 in elements 1-4 of the second sequence for the 4 4 4 4 in the first sequence, along with other substitutions later in the sequence. The cost of each of these individual transformations (e.g., substituting a 3 for 4 in the second element) is set by the a-priori established costs of the different transformation operations. If we imagine that the cost of substituting one element for another is the difference in their numeric values ($S_{ij}=|i-j|$), then the minimum total cost of aligning the sequences is simply the sum of the individual operations; here the "distance" between the sequences would equal $(4*|3-4|)+(|3-5|) + (|5-6|) + (|1-6|) + (|6-1|) = 17$.

The algorithm could also conceivably try a transformation strategy that involves insertions, deletions, and substitutions. In this comparison we could delete the 1 in element 14 of Sequence 1, shift the remaining 13 elements to the right and then insert a 3 in the first element:

POSITION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Sequence 1:	4	4	4	4	5	5	5	5	6	6	6	6	6	1	(original)
Sequence 1a:	3	4	4	4	4	5	5	5	5	6	6	6	6	6	(after indels)
Sequence 2:	3	3	3	3	3	5	5	5	5	1	6	6	6	6	

After the insertion and deletion we have a situation where Sequence 1a and Sequence 2 are not aligned at only elements 2-5 and 10, thus requiring fewer substitutions. However, if the cost of using an insertion or deletion is high in part because we are adding essentially unknown elements to an established sequence, then using a combination of insertions, deletions, and substitutions likely produces a less cost efficient transformation.[6] Let's say that the cost of insertion or deletion (i.e., indel cost) in this example is 9. The distance between Sequences 1 and 2 using a combination of indels and substitutions would equal $(2*9) + (4*|3-4|) + (|1-6|) = 27$. In this case the most efficient transformation involves only substitutions, though there are instances where simple insertions or deletions can result in the most cost-efficient path of transforming two sequences of *equal length.*

In the comparison of two sequences of *unequal length* such as Sequences 1 and 3, the algorithm is forced to utilize at least some insertions or deletions:

POSITION	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Sequence 1:	4	4	4	4	5	5	5	5	6	6	6	6	6	1
Sequence 3:	3	4	4	2	2	5	5	6	6	6	6	6		

Once again there are a large number of alignment possibilities. We could use a series of substitutions at elements 1, 4, 5, and 8 to bring the first 12 elements of each sequence into perfect alignment, and then insert a 6 1 at the end of Sequence 3 to complete the alignment. This transformation would result in a cost of $(|3-4|) + (|2-4|) + (|2-5|) + (|6-5|) + (2*9) = 25$. In

[6] In many applications the cost of insertions and deletions are fixed at a value slightly higher than the highest substitution cost (see Abbott and Hrycak 1990).

contrast, we could insert a 4 at the start of Sequence 3, shift the 12 existing elements one position to the right and then insert a 1 in the 14th position (shown below in Sequence 3a).

POSITION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Sequence 1:	4	4	4	4	5	5	5	5	6	6	6	6	6	1	
Sequence 3:	3	4	4	2	2	5	5	6	6	6	6	6			
Sequence 3a:	4	3	4	4	2	2	5	5	6	6	6	6	6	1	(after insertions)

As shown in the comparison of Sequences 1 and 3a, this would place elements 1, 3-4, and 7-14 in perfect alignment and necessitate only three additional substitutions. Such a transformation would also result in a cost of (|3-4|) + (2*|2-5|) + (2*9) = 25. The key is that the algorithm tests many different transformations and chooses the pathway that minimizes the cost of making the two sequences identical.

Clearly, since the cost of the transformations determines the quantitative resemblance between pairs of sequences, the development of the cost scheme is integral to the matching process. Ideally, these costs reflect a combination of the researcher's theoretical assumptions about the inherent distinctions between the values or categories and an empirical assessment of the differences between values or categories in sequence elements. In applications such as this, where there are no accepted measures of quantitative differences between types of places to guide the estimation of the cost of substituting residential locations (e.g., Small Rural for Big City), researchers must rely on their own theoretical assumptions and whatever empirical data are available to facilitate this process. Thus, a challenge of Optimal Alignment is the development of a substitution scheme that accurately represents the analytic differences between states of a sequence. A related challenge is identifying an insertion/deletion cost that, when used in conjunction with the substitution matrix, creates reasonable measures of resemblance.

Substitution Costs

In order to use the Optimal Alignment algorithm it is necessary to develop a reasonable set of transformation costs. Constructing the appropriate cost for substituting one type of place for another is challenging since no one has yet conceived of a scheme for *quantifying* distinctions between types of places. Therefore, the costs used here reflect a combination of two different

considerations: (1) a theoretical understanding of distinctions in the *character* of places along the continuum; and (2) the empirical structure of transitions between different *place-types* in the PSID. Theoretically, the extent to which types of places differ is a function of perceived differences in the identity, characteristics, and physical/social environment of places with different sizes and relative location in the spatial landscape. Yet, differences between *place types* might also reflect the likelihood of population movement between different types of places.

The initial framework for the substitution cost matrix is my theoretical understanding of intrinsic differences in the *character* of places across our residential *place-type* continuum. I draw from the following observations:

1) The character of residential locations is related to absolute *population size*. Locations with small populations are different from those with large populations in terms of *amenities, available services, occupational opportunities, and likelihood of social interaction with others*. This observation implies that sheer differences in population size should influence substitution costs.
2) The character of residential locations is related to the level of *metropolitan influence*. It is thought that metropolitan areas of different size and prominence offer a different range and diversity of *services, occupational and economic opportunities across a consolidated region*. This suggests that communities situated in non-metropolitan or smaller metropolitan areas are different from those in large metropolitan areas. This implies assigning a high cost to substituting a non-metropolitan for a large metropolitan place, and a somewhat reduced cost to substituting either with a small metropolitan location.
3) The character of a residential locations reflect *distinct ideologies and identities* that residents and non-residents construct and maintain about urban, suburban, and rural communities in the United States (Hummon 1990). Interviews of residents in urban, suburban, and small town communities highlight the differences in individuals' perceptions of the quality of life in different places, and indicate that residents of one class of community often have negative perceptions about the character of other types of communities. This suggests that there is some substantial cost associated with crossing rural, suburban, and urban boundaries.

These observations suggest that substitution costs are a function of differences between places in terms of three dimensions: changes in population from less than 10,000 to more than 250,000, changes in "metropolitan influence" from a non-metropolitan to large metropolitan (i.e., MSA > 1 million) region, and movement across rural, suburban, and urban boundaries. Furthermore, substitutions that involve crossing these rural/suburban/urban geographic boundaries are perhaps costlier than substituting *place-types* within geographic sectors (e.g., within suburban boundaries). These principles yield a rank ordering of the nine categories of the *place-type* continuum with the highest overall cost associated with substituting a Small Rural for a Large Metropolitan Large City location.

To augment these theoretically derived principles, I examined the empirical distribution of transitions between types of place. If transitions from one *place-type* to another are particularly prevalent, this is evidence of a strong flow of persons from one type of place to another. Even if the character of these places is markedly different, they are linked together by the mobility stream, and therefore should have lower substitution costs.

Table 4.4 reports the distribution of transitions between types of place, considering *all* changes of *place-type* over the 14 possible time periods. Cell values represent the percentage of individuals who made the transition to each *place-type*, given a particular origin. For example, among those who were in a Large Rural location and changed *place-types*, 42.0% moved to a Small Rural location, while only 8.9% moved to a LM Large City. These percentages can then be compared with the overall (column) percentages to determine particularly strong or weak migration flows.

Table 4.5 summarizes the relative transition rates between different types of places. The transition ratios reported in this table are computed by dividing the percentage of individuals beginning in place-type *i* who move to place-type *j* by the percentage of *all* individuals who move to place-type *j*. For example, the percentage moving from Large Rural to Small Rural (42.0%) is divided by the overall percentage moving to Small Rural places (12.9%), resulting in a transition ratio of 3.24. Higher values indicate a greater than average likelihood of transition across place-types. In nearly every instance, the strength or weakness of the migration flow between two place-types is symmetric. In other words, when the transition ratio associated with moves from place-type *i* to place-type *j* is higher, we should expect the opposite ratio for moves from place-type *j* to place-type *i* to also be high.

Table 4.4: Likelihood of Place-Type Transition Across Time Periods

Origin – Time Period 1	Destination – Time Period 2: Small Rural	Large Rural	SM Small Suburb	LM Small Suburb	LM Large Suburb	SM Small City	SM Large City	LM Small City	LM Large City
Small Rural	N/A	29.6%	18.8%	6.9%	4.3%	8.6%	17.4%	1.9%	12.5%
Large Rural	42.0%	N/A	9.8%	6.8%	5.3%	11.1%	13.0%	3.1%	8.9%
SM Small Suburb	18.2%	4.8%	N/A	7.2%	8.1%	25.5%	21.8%	4.0%	10.4%
LM Small Suburb	8.8%	5.0%	10.7%	N/A	31.1%	6.3%	4.5%	5.7%	27.8%
LM Large Suburb	8.6%	3.0%	8.1%	32.9%	N/A	6.0%	7.2%	9.0%	25.3%
SM Small City	12.2%	8.6%	36.7%	9.4%	7.3%	N/A	14.1%	1.9%	9.7%
SM Large City	15.2%	8.4%	34.2%	7.4%	10.1%	10.9%	N/A	2.3%	11.6%
LM Small City	8.6%	5.0%	13.8%	18.6%	23.3%	4.3%	6.3%	N/A	20.2%
LM Large City	10.1%	4.4%	6.8%	30.4%	28.8%	6.4%	7.5%	5.7%	N/A
ALL	12.9%	7.9%	14.7%	14.0%	13.6%	9.2%	10.1%	4.3%	13.4%

Sample: only includes those who changed place category from one time period to the second time period

Table 4.5: Transition Ratios Across Time Periods

Origin – Time Period 1	Destination – Time Period 2: Small Rural	Large Rural	SM Small Suburb	LM Small Suburb	LM Large Suburb	SM Small City	SM Large City	LM Small City	LM Large City
Small Rural	N/A	3.76	1.28	0.50	0.31	0.94	1.71	0.45	0.94
Large Rural	3.24	N/A	0.67	0.49	0.39	1.21	1.29	0.72	0.67
SM Small Suburb	1.41	0.62	N/A	0.52	0.59	2.78	2.15	0.94	0.78
LM Small Suburb	0.68	0.64	0.73	N/A	2.28	0.69	0.45	1.33	2.08
LM Large Suburb	0.67	0.38	0.55	2.36	N/A	0.65	0.71	2.11	1.89
SM Small City	0.94	1.10	2.50	0.67	0.53	N/A	1.40	0.45	0.72
SM Large City	1.18	1.07	2.33	0.53	0.74	1.19	N/A	0.54	0.87
LM Small City	0.66	0.63	0.94	1.33	1.71	0.47	0.63	N/A	1.51
LM Large City	0.78	0.55	0.46	2.18	2.11	0.70	0.74	1.34	N/A

The examination of the transition-specific migration flows reveals several features that supplement our theoretical understanding of the distinctiveness of place-types. First, I observe relatively high rates of migration between suburban and central city locations within different sized metropolitan areas. Specifically, ratios are higher for transitions between Small Metropolitan Small Suburbs and Small Metropolitan City Locations, and between Large Metropolitan Suburbs and Large Metropolitan City locations. Second, we observe higher than average transition ratios for moves between rural locations and small metropolitan central city locations (for example, the transition ratio from Small Rural to Small Metropolitan Large City is 1.71). Third, in general the transition ratios for moves between rural and city places are higher than ratios for moves between rural and suburban places. Hence if similarity were based solely on transition-specific migration rates, rural places would be considered more similar to city locations than to suburban locations, a conclusion which is inconsistent with our theoretical understanding of the character of types of places.

The final substitution matrix (see Table 4.6) combines my theoretical assumptions with insights drawn from the transition analysis. Specifically, the empirical analysis of transition ratios demonstrated the ease of suburban-city movement within, rather than across, different sized metropolitan areas, so I increased the cost of suburban-to-city moves which cross the boundary between small and large metropolitan areas. Similarly, I adjusted our preliminary cost for substituting rural and small metropolitan urban locations to reflect relatively high transition rates between these place-types. I am confident that the final cost matrix represents a reasonable balance between my theoretical assumptions and empirical assessments of similarity across locations.[7]

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[7] In the process of developing this cost scheme, I repeatedly adjusted the relative balance between the initial theoretical model and the empirical migration rates, testing a number of alternative cost matrices. Consistent with past research, small variations in the individual costs (such as increasing the cost of moving from a Rural to Suburban location, or decreasing the cost of moving from a small to large metropolitan region) did not result in drastically different distance values (Abbott and Forest, 1986). Moreover, the conclusions drawn from analyses using the initial matrix based solely on "character" differences were very similar to those found using the final cost scheme. However, I did find that using a substitution matrix based solely on the empirical distribution of transitions limited the ability to identify consistent stable and non-stable patterns of movement, and produced heterogeneous clusters comprised of individuals with very different trajectories.

Table 4.6: Substitution Cost Matrix

	Small Rural	Large Rural	SM Small Sub	LM Small Sub	LM Large Sub	SM Small City	SM Large City	LM Small City	LM Large City
Small Rural	0.00								
Large Rural	0.30	0.00							
SM Small Suburb	0.90	0.60	0.00						
LM Small Suburb	0.90	0.60	0.30	0.00					
LM Large Suburb	1.20	0.90	0.60	0.30	0.00				
SM Small City	1.70	1.40	0.80	1.10	0.80	0.00			
SM Large City	2.00	1.70	1.10	1.40	1.10	0.30	0.00		
LM Small City	2.10	1.80	1.50	1.20	0.90	0.70	0.40	0.00	
LM Large City	2.40	2.10	1.80	1.50	1.20	1.00	0.70	0.30	0.00

Indel Costs and Sequence Length

A general rule of thumb for optimal alignment models is to fix the insertion and deletion (indel) costs at slightly above the greatest individual substitution cost in the matrix (Abbott and Hrycak 1990). This means that when sequences are of roughly equal length, most transformations will likely rely on substitution rather than insertion or deletion. When sequences are of substantially different length, however, inserting or deleting elements can contribute significantly to the overall distance calculation. In substantive contexts where distinctions in length are essential to the examination of different sequential patterns, this approach makes a great deal of sense. For example, Stovel et. al. (1996) utilize variations in sequence length to distinguish lifelong Lloyd's Bank employees from those with shorter tenures, and demonstrate changes in the likelihood of short and long tenure careers across successive cohorts. In the present application, however, variations in length are the result of truncated data rather than a reflection of substantively meaningful variation in career trajectories. Therefore, I would like to minimize the impact of length differences on our classification of trajectories. Consider the following example:

S1: (10 time periods of SM Small Suburb)	3 3 3 3 3 3 3 3 3 3
S2: (14 time periods of SM Small Suburb)	3 3 3 3 3 3 3 3 3 3 3 3 3 3
S3: (10 time periods of LM Large Suburb)	5 5 5 5 5 5 5 5 5 5

In this example, sequences S1 and S2 both exhibit a pattern of stable residence in SM small suburban locations; the two sequences differ only in length. The simplest alignment of the two sequences involves inserting four 3's in S1 (or deleting four 3's from S2). When the indel cost is fixed, the distance between S1 and S2 equals **(4*indel cost)/14)**. Given our substitution matrix, a typical fixed indel cost might be 2.7, which yield a distance of **0.77**. In contrast, aligning S1 and S3 involves the substituting all ten 5s for 3s (or vice versa). If substituting a 5 for a 3 costs 0.6 per substitution, this yields a distance of **(10*.6)/10 = .60**.

This cost scheme suggests that S1 and S3 are more similar to each other than are S1 and S2, even though the substantive patterns for S1 and S2 are literally identical (i.e., individuals with stable residence in a SM Small Suburban place). Clearly, the fixed indel cost is drawing sequences together on the basis of similar lengths, rather than similar patterns. To minimize this

effect we developed a strategy of *variable* indel costs that uses fixed indel costs for pairs of sequences of equal length, and a reduced indel cost -- roughly ¼ of the fixed cost -- for pairs of sequences of varying length. Returning to the example above, the indel will remain fixed at 2.7 for pairs of sequences of equal length, but will fall to .45 when sequence length varies. Upon using these modified specifications, the distances better reflect obvious resemblance within the sequential patterns.

Cluster Analysis

As noted, the output distance matrix generated by the Optimal Matching algorithm represents the input data for clustering algorithms. Typically, agglomerative hierarchical clustering methods such as the single or average linkage, or the Ward's minimum variance method, are used with distance or proximity data to partition the data into meaningful subgroups. (Fraley and Raftery 1998). In this study I utilized the Ward minimum variance method which is designed to minimize the within-cluster sum of squares across all partitions of the data while concurrently maximizing the distance between the different cluster groupings at any level of the cluster hierarchy. The advantage of this method over other single or average clustering methods lies in its ability to produce spherical clusters of similar volume, and to restrict the possibility of chained or elongated cluster solutions.

Realistically, cluster analyses should be thought as of a technique for guiding the development of a set of residential trajectories rather than a tool for predicting the existence of particular groupings of residential sequences. In this instance, the approach facilitates the process of reducing the large number of unique, complex sequences to a manageable set of structured trajectories based on some assumptions about the similarity and resemblance across groups of sequences.

We must also remember that traditional methods of hierarchical clustering suffer from two distinct shortcomings. First, there is considerable uncertainty over the proper method to use, and quite often the use of different methods such as single-linkage, average-linkage, or Ward's minimum variance can produce very different cluster solutions with the same data. Frequently, the results of a cluster analysis represent the interpretation and amalgamation of solutions generated by a number of methods, and it is possible that no one method really provides the best fit for the data. Second, there is no established statistical procedure for assessing the proper

number of clusters to represent the structure of the data. While there are a number of different heuristics for guiding the choice of clusters (see Milligan and Cooper 1985 for an overview of procedures) few, if any, draw from the principles of probability theory and statistical modeling. Too often the selection of the number of clusters is driven by theoretical and subjective assessments of the proper solution for the particular data.

Recently, a new approach to hierarchical cluster analysis was developed that addresses these persistent shortcomings. The EM algorithm for Model-Based cluster analysis is designed to incorporate information about the underlying probability distributions in distance data with the properties of Bayesian model selection in an attempt to evaluate the proper clustering technique for the specific data and guide the selection of the number of clusters (see Fraley and Raftery 1998). Since the characteristics of clusters can vary across three dimensions – orientation, volume, and shape – the algorithm is constructed to test the fit of six different Gaussian models that represent combinations of levels of these dimensions (see Banfield and Raftery, 1993). The algorithm uses assessments of the Bayesian Information Criterion, or BIC statistic, to guide the choice of the proper parameterization of the model with the proper number of resulting clusters. This approach has been utilized in a number of natural science and medical applications (e.g., Banfield and Raftery 1993; Celeux and Govaert 1995; Dasgupta and Raftery 1998 to name a few), and seems appropriate for studies of social and temporal processes.

I attempted to use Model-Based cluster analysis in this study. Presently this method is designed for rectangular multivariate data structures. As such it was necessary to transform the proximity data output from the Optimal Alignment algorithm into a series of dimensions that typify the differences in the characteristics of the sequences using a Multidimensional Scaling (MDS) algorithm. The objective of the MDS algorithm is to assess whether there is a coherent multidimensional structure present in the distance matrix data, and identify the multiple coordinates that best describe this structure. MDS solutions of anywhere from 3-7 dimensions were produced for each of the samples across the age groups and tested in the subsequent EM clustering algorithm.

Unfortunately the process of transforming from "proximity" to "variable based" data using the MDS algorithm resulted in cluster solutions that were inconsistent with my expectations and with the results of the more traditional approaches. The MDS technique identified some dimensions that highlighted less substantively important distinctions between sequences (e.g., length of sequence) and failed to detect other more substantively important distinctions such as

the ordering of patterned shifts between city and suburban areas. Subsequently, the EM method produced a set of distorted clusters. At this juncture, the Model Based clustering approach is being modified to incorporate proximity data, and the expectation is that this method offers greater promise for integrating Optimal Alignment and cluster analyses in the future.

CHAPTER 5: POPULATION OF RESIDENTIAL TRAJECTORIES

The process of constructing a population of residential trajectories involved utilizing optimal alignment in concert with methods of hierarchical clustering in the analysis of the eight age-graded samples of sequences. First, I calculated a set of pairwise distance matrices across each of the eight samples using the indel and substitution cost schemes previously described. Next, I identified unique groups of common residential patterns based on a variety of cluster analyses (using Ward's minimum variance method) conducted across each of the samples. Within each sample I selected a cluster solution which a) restricted the population of trajectories to a manageable size for subsequent analyses; b) produced no clusters composed of only a single observation; and c) included a number of relatively homogeneous "non-stable" clusters. There has been much conjecture over the proper techniques for choosing the number of clusters (for an overview see Milligan and Cooper 1985). However, I did not utilize one of the various "heuristics" for cluster choice, but rather allowed the previously noted constraints and my theoretical assumptions to guide the choice of cluster solutions.

Tables 5.1-5.8 report the preferred cluster solutions revealed in each of the eight age-graded samples. In each analysis, a robust solution of 13-15 clusters was chosen to reflect a summary of the various sequential patterns demonstrated among individuals in a particular sample. In each instance, the "within cluster" distance (i.e., average distance between two individuals in the same cluster) was substantially lower than the "between-cluster" distance (i.e., average distance between an individual and any individual assigned to a different cluster). T-tests indicated that in each of the samples the overall "within-cluster" distance was significantly different from the overall "between-cluster" average.

Even the most coherent clusters are composed of sequences which are similar in general (i.e., all sequences follow a **rural -> city** trajectory), but different in detail (i.e., the timing of the shift from **rural -> city** or the length spent in specific place types varies across unique sequences). Therefore, in order to characterize each cluster in each sample we need a way to identify a representative sequence for that cluster. The "typical" sequence is defined as the sequence with the *lowest average within-cluster distance*. An example demonstrating the process of identifying the "typical" sequence is shown in Figure 5.1:

Cluster 1 (Small Metropolitan City -> Suburb) n=5

Sequences

S1: 6 6 6 6 6 6 3 3 3 3 3 3
S2: 6 6 6 6 6 6 6 5 5 5 5 5
S3: 7 7 7 7 7 5 5 5 5 5 5 5
S4: 1 6 6 6 6 6 6 3 3 3 3 3 3
S5: 6 6 6 6 6 6 3 3 3 3 3 3

Symmetric Distance Matrix – calculated distance between each pair of sequences

	S1	S2	S3	S4	S5
S1	--	0.392	0.517	0.142	0.040
S2	0.392	--	0.208	0.350	0.404
S3	0.517	0.208	--	0.556	0.529
S4	0.142	0.350	0.556	--	0.104
S5	0.040	0.404	0.529	0.104	--
Average within-cluster Distance	**0.273**	**0.339**	**0.452**	**0.289**	**0.269**

Typical Sequence – S5 **6 6 6 6 6 6 3 3 3 3 3 3 or 6(6),7(3)**
minimum distance = 0.269

Figure 5.1: Identifying "Typical" Sequences

An examination of the cluster solutions indicates considerable variation in the heterogeneity present within particular clusters in a sample. For example, in the analysis of the **age <=25** random sample shown in Table 5.1, there are some clusters that are tight or more homogeneous where the average "within-cluster" distance is low, and many of the individual sequences are substantively similar to each other and the "typical" sequence. An instance of a homogenous cluster is cluster #1 – "Stable SM Small City". The unique sequences demonstrated by the 14 individuals classified as "Stable SM Small City" are:

3(6), 1(3), 7(6)	14(6)	14(6)
10(6)	13(6)	14(6)
13(6)	14(6)	13(6)
10(6)	11(6)	2(3), 8(6)
14(6)	12(6)	

Table 5.1: Cluster Analysis – Random Age <=25

SAMPLE: Random Age <=25	N	Typical Sequence	Average Within Cluster Distance	Average Between Cluster Distance
Cluster				
1 – "Stable SM Small City"	14	13(6)	0.08	0.88
2 – "Stable SM Small Suburbs"	16	14(3)	0.16	0.83
3 – "Stable LM Small Suburbs"	13	14(4)	0.26	0.81
4 – "Stable Small Rural"	31	12(1)	0.12	1.18
5 – "Stable SM Large City"	14	14(7)	0.24	0.99
6 – "Stable LM Large City"	44	13(9)	0.19	1.19
7 – "Stable LM Large Suburbs"	7	14(5)	0.21	0.80
8 – "Stable Large Rural"	11	14(2)	0.22	1.01
9 – "SM City -> Suburbs"	8	6(6), 7(3)	0.41	0.82
10 – "LM City -> Suburbs"	12	6(9), 5(5)	0.39	0.93
11 – "Stable LM Small City"	6	11(8)	0.29	0.97
12 – "LM Suburbs -> City"	8	1(9), 6(4), 5(9), 2(4)	0.50	1.01
13 – "Rural -> SM City"	4	5(2), 7(6)	0.51	0.96
14 – "Rural -> Suburbs"	7	5(1), 9(4)	0.48	0.92
15 – "SM City -> Rural"	5	6(6), 8(1)	0.52	1.03
OVERALL **	200		**0.24**	**1.02**

** T-Value = 43.98 df=199 $p < .001$

Table 5.2: Cluster Analysis – Random Age 26-35

SAMPLE: Random Age 26-35	N	Typical Sequence	Average Within Cluster Distance	Average Between Cluster Distance
Cluster				
1 – "Stable SM Small Suburbs"	21	14(3)	0.10	0.88
2 – "Stable SM Small City"	13	14(6)	0.10	0.92
3 – "Stable Small Rural"	34	14(1)	0.12	1.32
4 – "Stable LM Suburbs"	25	14(4)	0.23	0.89
5 – "Stable LM City"	47	14(9)	0.11	1.25
6 – "Stable Large Rural"	10	14(2)	0.33	1.08
7 – "Stable SM Large City"	18	14(7)	0.16	0.98
8 – "SM Suburbs -> City"	8	1(6), 6(3), 7(6)	0.46	0.95
9 – "SM City -> Suburbs"	7	5(6), 1(7), 1(6), 7(3)	0.42	0.89
10 – "LM City -> Suburbs"	9	6(9), 8(5)	0.37	0.99
11 – "LM Suburbs -> City"	3	1(9), 1(4), 3(5), 9(9)	0.36	1.17
12 – "SM City -> Rural"	3	6(7), 1(6), 7(2)	0.59	1.08
13 – "LM City -> Rural"	2	9(9), 5(1)	0.97	1.12
OVERALL **	200		**0.20**	**1.08**

** T-Value = 43.78 df=199 $p < .001$

Table 5.3: Cluster Analysis – Random Age <=36-49

SAMPLE: Random Age 36-49	N	Typical Sequence	Average Within Cluster Distance	Average Between Cluster Distance
Cluster				
1 – "Stable Small Rural"	29	14(1)	0.05	1.33
2 – "Stable LM Large City"	52	14(9)	0.06	1.26
3 – "Stable LM Small Suburbs"	17	14(4)	0.09	0.93
4 – "Stable SM Small Suburbs"	26	14(3)	0.15	0.95
5 – "Stable SM Large City"	17	14(7)	0.08	1.07
6 – "Stable SM Small City"	12	14(6)	0.05	0.98
7 – "Stable LM Large Suburbs"	16	14(5)	0.24	0.89
8 – "Stable Large Rural	11	14(2)	0.16	1.12
9 – "Stable LM Small City"	5	14(8)	0.06	1.07
10 – "LM Suburbs -> City"	4	5(4), 9(9)	0.39	1.17
11 – "LM City -> Suburbs"	6	7(9), 7(4)	0.46	1.04
12 – "Suburbs -> Rural"	3	6(5), 8(1)	0.42	1.24
13 – "Rural -> City"	2	7(1), 7(7)	0.96	1.11
OVERALL **	200		**0.13**	**1.12**

** T-Value = 54.24 df=199 p < .001

Table 5.4: Cluster Analysis – Random Age 50+

SAMPLE: Random Age 50+	N	Typical Sequence	Average Within Cluster Distance	Average Between Cluster Distance
Cluster				
1 – "Stable SM Small Suburbs"	18	14(3)	0.05	0.85
2 – "Stable SM Small City"	12	14(6)	0.06	0.96
3 – "Stable Small Rural"	46	14(1)	0.06	1.22
4 – "Stable SM Large City"	15	14(7)	0.05	1.07
5 – "Stable LM Large City"	55	14(9)	0.07	1.32
6 – "Stable LM Large Suburbs"	14	14(5)	0.14	0.83
7 – "Stable LM Small Suburbs"	9	14(4)	0.11	0.84
8 – "Stable Large Rural"	9	14(2)	0.06	1.03
9 – "LM City -> Suburbs"	7	6(9), 7(5)	0.28	0.94
10 – "Stable LM Small City"	3	14(8)	0.33	1.12
11 – "Suburbs -> Rural"	2	7(4), 7(1)	0.13	1.04
12 – "LM City -> Rural"	2	7(9), 7(1)	0.23	1.17
13 – "SM City -> Suburbs"	3	1(9), 6(7), 7(4)	0.34	0.85
14 – "Rural -> SM City"	3	6(1), 1(9), 2(4), 1(9), 1(4)	0.58	1.09
15 – "SM Suburbs -> City"	2	10(3), 4(9)	0.56	0.96
OVERALL **	200		**0.10**	**1.11**

** T-Value = 57.03 df=199 $p < .001$

It is evident that these sequences are substantively similar, and in many instances identical. Thus, it is not surprising that the quantitative differences within the set of sequences are small. A contrasting case is cluster #9 "SM City -> Suburbs" where the "within-cluster" distance is substantially higher, and there is greater diversity across the eight individuals in this group:

5(7), 1(3), 4(5)	6(6), 6(3)	7(6), 7(5)
5(7), 9(5)	1(1), 6(6), 7(3)	6(6), 7(3)
5(6), 3(4), 3(6)	1(3), 1(7), 1(3), 3(7), 1(3), 1(7), 3(3)	

Although the sequences appear more dissimilar than those in cluster #1, there is still a general pattern of a shift from a SM City location to a Suburban location roughly halfway through the course of the residential sequence that is characteristic of each of the individual sequences. Moreover, the "between-cluster" distance is relatively high suggesting this composite subgroup is empirically distinct from the set of other cluster classifications.

In general, clusters of "stable" sequences are typically more homogenous than those composed of "non-stable" sequences. This is especially true in the four random samples, and, to some extent, accurate in the analyses of the "non-stable" samples. Yet, one must remember that every sequence in the "non-stable" samples is, by definition, composed of at least one shift in "place-type" over the course of the sequence. Thus, the more "stable" clusters in these samples represent groups of individuals whose patterns are the most similar to complete stability, such as those who deviate from a completely stable pattern in only one time period (e.g., 5(1), 1(9), 8(1)). The composition of cluster #2 "Small Rural" in the age <=25 Non-Stable Sample analysis (see Table 5.5) indicates the range of patterns demonstrated in such a cluster:

2(1), 2(4), 8(1)	1(2), 13(1)
1(2), 13(1)	4(1), 3(2), 4(1)
8(1), 1(3), 2(1)	1(1), 6(2), 7(1)
1(1), 1(3), 8(1)	1(6), 2(4), 1(6), 10(1)
1(2), 13(1)	2(2), 2(1), 1(2), 9(1)
3(7), 2(1), 1(7), 3(1), 1(3)	1(1), 2(3), 8(1)
2(6), 1(3), 7(1), 2(3)	3(9), 2(2), 8(1)

3(1), 2(3), 7(1)	1(1), 1(7), 1(3), 1(2), 6(1)
7(1), 1(3), 4(1)	9(1), 1(2), 4(1)
10(1), 3(9)	4(2), 1(3), 6(1)

Tables 5.1-5.4 show the cluster solutions in the four age-graded random samples. All of the solutions included a cluster for each of the nine possible stable residential trajectories (e.g., Stable SM Small City, stable LM Large Suburb, etc.). In addition, another 4-6 non-stable clusters emerged in each analysis, reflecting trajectories with a single shift across the rural-suburban-urban continuum (e.g., first 7 time periods in LM Large City and last 7 time periods in Small Rural). For the most part, these non-stable trajectories contained intra-metropolitan shifts across urban and suburban boundaries. These typical patterns suggest that it is empirically rare that individuals simultaneously cross urban-suburban boundaries, and move between small and large metropolitan areas. [8]

It further appears that the most homogeneous set of groupings are observed in the oldest age segments. The overall average "within-cluster" distance is smallest in the **age 36-49** and **age 50+** samples (0.13 and 0.10 respectively), and likewise, a higher percentage of the individuals in these age categories are classified into the more "stable" clusters (85% and 78% respectively). This is consistent with the notion that older individuals are less likely to move, make shifts across the "place-type" continuum, and engage in complex patterns of longitudinal movement.

The results of the cluster analyses on the four age-graded non-stable samples are shown in Tables 5.5-5.8. These analyses support the existence of the non-stable trajectories identified in the random samples, and suggest the existence of several additional typical residential trajectories. Some of these new patterns involve single shifts not evident in the initial random sample analysis. For example, the analysis of the **age <=25** non-stable sample indicated the presence of a small "Suburb -> Rural" group that was not apparent in the **age <=25** random sample. The results also reveal the existence of more complex patterns involving multiple shifts across the rural-suburban-urban continuum. For example, in the **age <=25** and **age 26-35**

[8] Examples of crossing both urban-suburban boundaries, and from a small to large metropolitan area would involve moving from Seattle (a LM Large City) to Zillah, WA (a SM Small Suburb situated just outside Yakima, WA) or moving from Yakima (SM Small City) to Lynnwood, WA (a LM Small Suburb just outside Seattle). The probability of such movement is substantially less likely than the probability of intra-metropolitan movement from, for example, Seattle to Lynnwood or Zillah to Yakima.

Table 5.5: Cluster Analysis – Non-Stable Age <=25

SAMPLE: Non-Stable Age <=25	N	Typical Sequence	Average Within Cluster Distance	Average Between Cluster Distance
Cluster				
1 – "LM Small Suburbs"	22	2(5), 11(4)	0.21	0.82
2 – "Small Rural"	20	1(2), 13(1)	0.30	1.14
3 – "SM Large City"	27	2(1), 12(7)	0.39	1.00
4 – "LM City"	24	1(3), 13(9)	0.27	1.17
5 – "LM Large Suburbs"	15	3(5), 2(4), 8(5), 1(4)	0.37	0.82
6 – "LM City -> Suburbs"	12	6(9), 7(4)	0.32	0.93
7 – "SM Small Suburbs"	17	2(3), 1(5), 11(3)	0.38	0.88
8 – "City -> Suburbs"	9	1(3), 4(7), 9(5)	0.42	0.87
9 – "LM Suburb -> City"	12	4(4), 8(8)	0.36	1.03
10 – "Large Rural"	8	4(1), 9(2)	0.44	1.01
11 – "SM Small City"	14	2(3), 2(6), 1(3), 7(6)	0.35	0.91
12 – "LM City -> Rural"	4	6(9), 8(1)	0.35	1.15
13 – "Rural -> SM City"	5	5(1), 8(7)	0.45	1.05
14 – "Suburbs -> Rural"	7	1(1), 6(3), 3(1)	0.50	0.97
15 – "Rural -> City -> Rural"	4	4(1), 1(2), 1(1), 1(9), 1(1), 1(9), 1(1)	0.86	1.07
OVERALL **	200		**0.35**	**0.98**

** T-Value = 47.08 df=199 $p < .001$

Table 5.6: Cluster Analysis – Non-Stable Age 26-35

SAMPLE: Non-Stable Age 26-35	N	Typical Sequence	Average Within Cluster Distance	Average Between Cluster Distance
Cluster				
1 – "SM City -> Suburbs"	16	3(7), 11(3)	0.29	0.93
2 – "Rural -> Suburbs"	7	7(2), 7(4)	0.47	1.07
3 – "Rural -> SM City"	7	5(1), 9(7)	0.36	1.09
4 – "LM City -> Suburbs"	26	6(9), 8(4)	0.42	0.97
5 – "LM City"	32	1(8), 13(9)	0.33	1.16
6 – "Small Rural"	27	2(2), 12(1)	0.32	1.24
7 – "LM Suburbs"	29	1(5), 13(4)	0.34	0.93
8 – "LM Suburbs -> City"	12	1(9), 1(4), 3(5), 9(9)	0.50	1.12
9 – "LM City -> Rural"	5	8(9), 3(1), 1(7), 1(9)	0.45	1.13
10 – "LM City -> Rural"	10	5(9), 9(2)	0.46	1.07
11 – "SM City"	12	1(6), 6(7), 1(6), 6(7)	0.38	0.97
12 – "SM Suburbs -> City"	12	1(6), 6(3), 7(6)	0.43	0.95
13 – "Rural -> City -> Rural"	2	4(1), 5(9), 3(1), 2(2)	0.54	1.21
14 – "City -> Suburbs -> City"	3	1(5), 3(9), 3(3), 5(7), 2(5)	0.71	1.04
OVERALL **	200		**0.38**	**1.06**

** T-Value = 52.40 df=199 $p < .001$

Table 5.7: Cluster Analysis – Non-Stable Age 36-49

SAMPLE: Non-Stable Age 36-49	N	Typical Sequence	Average Within Cluster Distance	Average Between Cluster Distance
Cluster				
1 – "LM City -> Suburb"	19	6(9), 8(5)	0.36	0.92
2 – "Rural"	32	5(1), 1(2), 8(1)	0.25	1.19
3 – "LM Large City"	26	13(9), 1(4)	0.29	1.21
4 – "LM Small Suburbs"	19	13(4), 1(3)	0.31	0.82
5 – "Suburbs -> Rural"	12	9(4), 5(1)	0.39	0.96
6 – "SM City"	19	3(6), 10(7)	0.37	0.99
7 – "SM City -> Suburbs"	12	6(7), 8(3)	0.36	0.88
8 – "LM City -> Rural"	8	5(9), 9(1)	0.60	1.04
9 – "LM Large Suburbs"	14	8(5), 1(4), 5(5)	0.34	0.81
10 – "SM Small Suburbs"	7	1(2), 13(3)	0.24	0.88
11 – "LM Small City"	10	1(4), 13(8)	0.21	1.05
12 – "SM Suburbs -> City"	11	6(3), 7(6)	0.44	0.95
13 – "LM Suburbs -> City"	6	9(5), 5(8)	0.35	0.91
14 – "SM City -> Rural"	5	6(6), 8(2)	0.38	0.90
OVERALL **	200		**0.33**	**1.00**

** T-Value = 44.27 df=199 $p < .001$

Table 5.8: Cluster Analysis – Non-Stable Age 50+

SAMPLE: Non-Stable Age 50+	N	Typical Sequence	Average Within Cluster Distance	Average Between Cluster Distance
Cluster				
1 – "LM City -> Suburb"	25	6(9), 8(5)	0.33	1.05
2 – "SM Small Suburbs"	19	1(6), 13(3)	0.40	0.88
3 – "Suburbs -> Rural"	13	7(4), 7(1)	0.30	0.97
4 – "Rural"	29	8(1), 2(2)	0.32	1.06
5 – "SM City"	28	13(6), 1(7)	0.37	1.04
6 – "LM Small Suburbs"	21	5(4), 1(5), 8(4)	0.33	0.83
7 – "LM City -> Rural"	4	3(9), 11(1)	0.14	1.12
8 – "LM City"	30	13(9), 1(8)	0.48	1.23
9 – "LM Suburbs -> City"	11	5(4), 9(9)	0.38	1.12
10 – "LM Large Suburbs"	18	1(4), 13(5)	0.27	0.83
11 – "SM City -> Rural"	12	7(7), 7(1)	0.40	1.10
12 – "SM City -> Suburbs"	14	6(6), 8(3)	0.47	0.94
13 – "Rural -> Suburbs"	7	7(1), 7(5)	0.30	1.01
14 – "SM Suburbs -> City"	8	10(3), 4(7)	0.49	0.93
15 – "Rural -> City"	11	8(1), 6(7)	0.50	1.14
OVERALL **	250		**0.37**	**1.02**

** T-Value = 62.37 df=249 $p < .001$

samples we find small clusters with the following distinct patterns: a) rural -> city -> rural; and b) city -> suburb -> city. Further analysis of the general "city -> suburb -> city" pattern indicates unique trajectories for those living in smaller vs. larger metropolitan areas. Thus, in subsequent analyses I constructed two different "city -> suburb -> city" trajectories to retain these distinctions across the size of the metropolitan area.

Recall that the objective of the initial alignment analysis was to construct a *population* of typical residential trajectories, using the variety of patterns revealed in the smaller samples. This population should include all general trajectories that were similar across the four age groups as well as any unique patterns that emerged in particular age classes. However, in order to conduct our subsequent classification of residential sequences, we need to summarize each trajectory in the population with a single typical sequence. Where typical sequences are identical across age groups this presents no problems. Yet, where the same *general* pattern emerges in two or more samples, but the *details* of the typical sequence differ, it was necessary to choose the average or most common pattern.[9] Furthermore, I standardized the length of each typical sequence in the population of trajectories to the average sequence length of 13 elements since there is no theoretical reason to think that some residential scripts are shorter than others.

Assignment to Residential Trajectories

Integrating the typical sequences from all the samples results in the 25 residential trajectories shown in Table 5.9. This family of residential trajectories represents a wide range of sequential patterns; in total there are nine completely stable trajectories (ranging from Stable Small Rural to Stable LM Large City), 12 non-stable trajectories consisting of one shift across the rural-suburban-urban continuum, and four non-stable trajectories consisting of multiple shifts across the continuum. Only one of the multiple shift trajectories involved any movement in or out of a Rural location (#22), and there are no trajectories that illustrate consistent movement up or down this continuum (e.g., City -> Suburb -> Rural). There are two similar residential trajectories (#13 and #20), distinguished only by the timing of the transition, that represent

[9] For example, it is unclear whether the "best" typical sequence for the general LM Suburb to City pattern is **6(5), 8(9); 7(4), 7(9);** or **8(5), 6(9)**. In this instance I have selected the central pattern of **7(4), 7(9)** to represent the typical LM Suburb -> City trajectory. Additional analyses indicate that slight modifications in the specifications of the typical sequence – e.g., using **6(5), 8(9)** rather than **7(4), 7(9)** – do not alter the assignment of individuals to different residential trajectories.

Table 5.9: Population of Residential Trajectories

Category	Residential Trajectory	Typical Sequence	Example in Washington
STABLE			
1	Stable Small Rural	13(1)	Omak
2	Stable Large Rural	13(2)	Walla Walla
3	Stable SM Small Suburbs	13(3)	Cheney
4	Stable LM Small Suburbs	13(4)	Sumner
5	Stable LM Large Suburbs	13(5)	Renton
6	Stable SM Small City	13(6)	Yakima
7	Stable SM Large City	13(7)	Spokane
8	Stable LM Small City	13(8)	Everett
9	Stable LM Large City	13(9)	Seattle
NON-STABLE			
10	SM City -> SM Suburb	6(6), 7(3)	Yakima -> Selah
11	LM City -> LM Suburb	7(9), 6(4)	Seattle -> Woodinville
12	SM City -> Rural	6(6), 7(1)	Richland -> Dayton
13	LM City -> Rural (long city)	9(9), 4(1)	Seattle -> Roslyn
14	Suburb -> Rural	6(4), 7(1)	Puyallup -> Mossyrock
15	SM Suburb -> SM City	6(3), 7(6)	Prosser -> Kennewick
16	LM Suburb -> LM City	5(4), 8(9)	Bothell -> Seattle
18	Rural -> LM City	6(1), 7(9)	George -> Seattle
19	Rural -> LM Suburb	6(1), 7(4)	Onalaska -> Yelm
20	LM City -> Rural (long rural)	4(9), 9(1)	Seattle -> Sequim
21	Rural -> SM City	5(1), 8(7)	Colville -> Spokane
22	Rural/City/Rural	5(1), 4(9), 4(1)	Anacortes -> Seattle -> Sequim
24	Suburb/City/Suburb	4(4), 3(9), 6(4)	Buckley -> Seattle -> Puyallup
25	SM City -> LM Suburb	6(7), 7(5)	Tacoma -> Federal Way
26	LM City/Suburb/LM City	4(9), 4(5), 5(9)	Seattle -> Renton -> Seattle
27	SM City/Suburb/SM City	4(7), 4(3), 5(7)	Spokane -> Mead -> Spokane

patterns of movement from LM Cities to Rural locations. An example of movement across towns and cities in the state of Washington, consistent with each trajectory, is shown in the table to provide a sense of the range of possible pathways that individuals could follow over the life course.

Using the Optimal Alignment algorithm I classified each of the 5474 individuals into one of 25 residential trajectories. Rather than calculating distances between all pairs of sequences in a small sample, I calculated the distance between each empirical sequence and each of the 25 typical sequences, thereby *substantially* reducing the computational intensity of the task. Using these distances, I assigned each individual's residential career to the closest typical trajectory (see Stovel et. al., 1996 for a similar strategy). Thus, if an individual with the following sequence – 6(9), 2(5), 6(4) – was most empirically similar to the typical sequence 7(9), 6(4) in trajectory #11, then he/she was classified as following a "LM City -> LM Suburb" pattern.

While this approach classifies individuals in terms of the "closest" pattern, there were some concerns with the assignment process. First, there were instances where shorter length stable sequences (e.g., 10(9)) were assigned to closer "non-stable" groups. This occurred, in part, because of the shortcomings associated with the indel costs noted in Chapter 4. To correct this problem, all individuals with completely stable sequences were forced into one of the nine stable trajectories.

Second, I noticed that many individuals who made more than two shifts across the place-type continuum over the full time period were still being placed into a stable trajectory. Likewise, there were individuals who had spent less than 50% of the time periods in the place category that they were subsequently assigned to (e.g., individuals who spent only 6 of 14 time periods in a Large Rural place yet were assigned to the Stable Large Rural pattern). These seemed like questionable assignments, and thus I adopted a strategy that took into account the percentage of time periods spent in different size categories among individuals originally assigned to a "stable" pattern, and reassigned individuals if this percentage dropped below a specific criterion. This modification resulted in a shift of 297 individuals, or 5.4% of the total sample. The steps in this reassignment process are as follows:

1. Use the minimum assignment strategy to identify all individuals originally assigned to a "stable" trajectory

2. For each of these individuals identify their closest "non-stable" trajectory (i.e., look for the minimum distance between that sequence and any of the 16 "non-stable" trajectories)
3. Compute the percentage of the whole sequence spent in a Rural place (category 1 or 2), a Suburban place-type (categories 3-5), and a Central City place (categories 6-9). For example, an individual with the sequence 8(1), 4(9), 2(1) spent 10 out of 14 or 77% of the time periods in a Rural place.
4. Among those originally assigned to a Stable Rural trajectory (#1 or #2), examine the percentage of sequence spent in a Rural place. If this percentage was less than 80%, then the individual is reassigned to his/her closest "non-stable" trajectory.
5. Among those originally assigned to a Stable Suburban trajectory (#3-5), examine the percentage of sequence spent in a Suburban place. If this percentage was less than 80%, then the individual is reassigned to his/her closest "non-stable" trajectory.
6. Among those originally assigned to a Stable City trajectory (#3-5), examine the percentage of sequence spent in a Central City place. If this percentage was less than 80%, then the individual is reassigned to his/her closest "non-stable" trajectory.

Third, there were a number of individuals who demonstrated sequences that were substantively and empirically distinct from any of the established patterned trajectories. These individuals typically followed more complex transitional sequences comprised of multiple shifts across the place-type continuum (e.g., 3(1),2(4),5(9),2(1),1(4)). The alignment analyses indicated that these individuals were "quantitatively distant" from all of the 25 patterned residential trajectories, even after the initial reassignment process. Since the goal was to identify and examine groups comprised of individuals following similar structured patterns of residential movement, it was not appropriate to include these individuals simply on the basis that their pattern was closest to a given typical sequence. The criteria for assigning an individual to a separate, residual "non-patterned" group is shown below. This process was conducted after the initial reassignment of sequences.

1. If an individual is assigned to a <u>stable trajectory</u> and has a minimum distance to the typical sequence in that trajectory greater than 0.40 (over two standard deviations beyond

the average value for all stable trajectories), then calculate the distance to the closest non-stable trajectory.

2. If the distance to the closest non-stable trajectory is greater than 0.45, then assign to the Non-Patterned trajectory. If the distance to the closest non-stable trajectory is less than 0.45, then assign to that non-stable trajectory.
3. If an individual is assigned to a non-stable trajectory and has a minimum distance to the typical sequence in that trajectory greater than 0.50 (roughly two standard deviations beyond the average value for all non-stable trajectories), then assign to the Non-Patterned group.

Summary of Residential Trajectories

Table 5.10 presents selected characteristics of respondents in each of the residential trajectories. Overall, 78.0%, or 4270 of the 5474 individuals were classified into one of the nine stable trajectories. The most common stable trajectories are those with demonstrated patterns of stability within LM Large City (22.3%) or Small Rural (15.5%) locations. Roughly 18.4% followed non-stable trajectories over time. The most common forms of non-stable movement involved intra-metropolitan shifts from City to Suburbs (e.g., SM City -> Suburb or LM City -> Suburb). Roughly 2.2% the of demonstrated trajectories were comprised of multiple patterned shifts across the place-type continuum (e.g., Suburb/City/Suburb). The remaining 3.6%, or 198 individuals were classified into the non-patterned group.

As expected, we observe the greatest sequence homogeneity in the nine stable trajectories. For each of the stable trajectories, the average distance from any one sequence to that group's typical sequence is less than .100, while, in contrast the average is over three times higher in most of the non-stable trajectories. Again as expected, the most heterogeneous groups are those with the most complex sequences (e.g., those reflecting multiple shifts across the rural-suburban-urban continuum such as LM City/Suburb/LM City).

Yet, even within the more homogenous clusters, a fraction of the sequences involve two or more place-type shifts. Interestingly, among these "stable" groups the likelihood of multiple shifts is 20% or higher in the Large Rural, LM Large Suburbs, and LM Small City trajectories, and less than 11% in some of the larger groups such as Small Rural and LM Large City. The fact that "stable" does not necessarily mean absence of movement across the continuum suggests that

even some residential sequences that involve shifts in place type are closer to the pure "stable" trajectories than to any of the other typical patterns. I would speculate that such individuals are demonstrating a pattern of stable commitment to a particular place type regardless of the temporary deviations away from complete stability. For example, it seems reasonable to classify an individual who spends the first seven time periods in city, shifts to a suburb for 1 time period, and then shifts back to the city for 6 time periods as someone demonstrating a commitment to residence in an urban location.

Table 5.10 also reports both the lifetime number of residential moves and actual geographic place/county changes among individuals following different trajectories to emphasize that place-type stability is often distinct from geographic mobility. For instance, while members of the Stable LM Large City group have a homogeneous set of residential careers as typified by the low average distance to typical sequence (0.61) and the low percentage with 2+ shifts in place-type (8.3%), their geographic mobility is quite distinct from that of members of the other stable groups. While this group of urbanites moves more than any other stable group (an average of 2.35 moves over a 13 time period sequence), they have the fewest changes in census place or county – 0.37. Clearly, attachment to a particular city can be exhibited via multiple intra-city moves during the course of a residential career.

In contrast, while the level of homogeneity observed in the stable SM Small Suburbs trajectory is similar to that observed among stable LM Large City residents – e.g., the average distance to typical sequence is 0.61 in both instances – these individuals are more stationary in terms of their actual number of moves (1.29 vs. 2.35), yet more transitory in terms of place/county changes (0.64 vs. 0.37). In fact, those classified into each of the stable suburban trajectories demonstrate a pattern of lower actual mobility, but greater movement across specific geographic locations. This suggests that attachment to a suburban place-type may involve movement in and out, rather than within, different suburban locations.

As noted the non-stable trajectories are clearly comprised of a more heterogeneous set of patterned sequences. Trajectories with higher rates of movement and shifts across specific geographic locations include the four multiple shift trajectories, the Rural -> City trajectories, and the LM City -> Rural (long city) trajectory. Interestingly, one of the most homogeneous non-stable trajectories – LM City -> LM Suburb – also demonstrates the least actual geographic mobility.

Table 5.10: Summary of Residential Trajectories

Residential Trajectory	% of sample (unweighted)	Average Distance to Typical Sequence	% with 2+ shifts in place-type	Average Number of Moves [a]	Number of Changes in Place or County
STABLE TRAJECTORIES					
Stable Small Rural	15.5%	.056	10.8%	1.81	0.78
Stable Large Rural	4.5%	.070	20.8%	1.96	0.79
Stable SM Small Suburbs	7.6%	.061	10.5%	1.29	0.64
Stable LM Small Suburbs	6.9%	.076	18.5%	1.69	1.21
Stable LM Large Suburbs	5.1%	.093	23.8%	1.89	1.36
Stable SM Small City	5.9%	.067	13.3%	2.01	0.53
Stable SM Large City	8.4%	.067	12.2%	2.13	0.49
Stable LM Small City	1.8%	.083	21.6%	2.07	0.81
Stable LM Large City	22.3%	.061	8.3%	2.35	0.37
NON-STABLE TRAJECTORIES					
SM City -> SM Suburb	2.3%	.287	53.6%	3.48	2.28
LM City -> LM Suburb	3.2%	.274	41.6%	2.99	1.99
SM City -> Rural	0.7%	.289	63.4%	3.57	2.59
LM City -> Rural (long city)	0.4%	.286	52.2%	4.40	2.57
Suburb -> Rural	1.9%	.304	60.4%	3.36	2.67
SM Suburb -> SM City	1.7%	.282	59.3%	3.62	2.66
LM Suburb -> LM City	1.6%	.299	58.1%	3.65	2.43
Rural -> LM City	0.3%	.253	52.6%	3.85	1.95
Rural -> LM Suburb	1.2%	.304	60.6%	3.81	2.80
LM City -> Rural (long rural)	0.6%	.302	54.3%	3.21	2.14
Rural -> SM City	0.9%	.296	50.0%	3.91	2.54
Rural/City/Rural	0.1%	.337	100.0%	5.63	3.71
Suburb/City/Suburb	0.7%	.322	100.0%	4.09	3.64
SM City -> LM Suburb	1.4%	.321	50.6%	3.28	2.40
LM City/Suburb/LM City	0.9%	.333	100.0%	4.39	3.06
SM City/Suburb/SM City	0.5%	.316	100.0%	5.12	3.35
NON-PATTERNED GROUP	3.6%	.577	84.8%	5.01	3.97
Overall	100.0%	.127	23.9%	2.38	1.13

a – standardized to reflect average number of moves over a residential sequence of 13 time periods

Distribution of Residential Trajectories by Age

A primary question in this study is whether the prevalence of residential trajectories varies at different stages of the individual life course. There is substantial evidence indicating that the likelihood of engaging in moves or making a transition from one location to another declines after age 30, and that individual's behaviors at different ages are characterized by residence in particular types of geographic locations (Frey and Kobrin 1982; Long 1988). Table 5.11 describes the prevalence of each residential trajectory across the four age segments of interest in this study: age <=25 (at start of sequence), age 26-35, age 36-49, and age 50+. For simplicity, I have consolidated the 25 distinct trajectories into a more manageable set of 12 combined trajectories reflecting general patterns of movement across the rural-suburban-urban continuum.

As expected, younger respondents are more likely to demonstrate "non-stable" residential trajectories than older respondents. Over 30% of the **age <=25** individuals followed a "non-stable" pattern of movement in comparison to 12% or less in the oldest age segments. In addition, roughly 4% of the **age <=25** individuals followed a multiple shift trajectory; nearly 4 times greater than observed in the oldest age segments. Furthermore, the percentage of **age <=25** individuals classified into the non-patterned group (i.e., individuals demonstrating especially complex residential sequences) is substantially greater than observed in any of the remaining age segments.

To further understand the prevalence of movement patterns across age groups, it is necessary to separate individuals who followed a "stable" trajectory from those who exhibited a "non-stable" trajectory. Upon restricting the analysis to individuals demonstrating a "stable" trajectory over the life course (i.e., individuals classified into one of the first nine trajectories), I find that while younger respondents are more likely to maintain consistent residence in a Large City location, older respondents are more likely to maintain such residence in Suburban or Rural locations. The percentage of "stable" respondents who follow a Stable Large City trajectory is above 20% in the **age <=25** and **age 26-35** segments, and 17% or below in the remaining age segments. However, there is little evidence of a disparity in the likelihood of consistent residence in a Small City location.

Table 5.11 also shows that over 34% of the "stable" **age 50+** respondents maintained consistent residence in a Rural location. While this percentage is the highest across the four age

groups, it is interesting to note that the next greatest probability is observed in the youngest age segment, **age <=25**. We also find that consistent Suburban residence is more prevalent among individuals passing through the "middle age" of the life course, and less prevalent for the oldest respondents. Almost 39% of the "stable" **age 36-49** individuals followed a Stable Suburb trajectory in contrast to only 28.2% of the "stable" **age 50+** individuals. Such findings suggest that the chosen settlements of consistent long term stable residence can vary across different temporal stages of the life course.

The analysis of the distribution of individuals across the various non-stable trajectories also indicates some differences across age groups. First, it is evident that younger "non-stable" individuals are more likely to follow a residential trajectory that brings them from a non-urban to urban location over time. "Non-stable" **age <=25** individuals demonstrate the greatest likelihood of both Suburb -> City (18.5%) and Rural -> City (8.0%) movement, as well as the highest likelihood of following a Rural-Suburb/City/Rural-Suburb trajectory (6.0%).

Second, older "non-stable" respondents demonstrate a greater prevalence of pathways resulting in movement to Rural areas. Among "non-stable" **age 36-49** individuals, we find that over 24% followed a trajectory of movement from a Suburb -> Rural location, over 3 times higher than observed in the younger age segments. The analogous percentage among **age 50+** individuals is also higher than average suggesting that the time after age 36 represents a period of substantial movement from the Suburbs to Rural settlements. I also find, though, a high likelihood of City -> Rural movement (14.2%) among "non-stable" individuals **age 50+**, suggesting that many older individuals do not engage in transition to the Suburbs before potentially settling in the Rural outskirts.

Distribution of Residential Trajectories by Race and Education

In this study I am also interested in whether the prevalence of residential trajectories varies across two key socio-demographic factors that have been consistently shown to influence residential mobility and migration patterns, race and educational attainment. Table 5.12 first contrasts the prevalence of the 12 combined residential trajectories among Whites and Non-Whites, and second, compares the likelihood of longitudinal movement patterns across three levels of educational attainment – High School or Less, Some College Experience, and College Degree or More.

Table 5.11: Distribution of Residential Trajectories by AGE

Combined Trajectory	IDS	<=25	26-35	36-49	50+	Overall
N of Cases with weight > 0		2053	886	1217	1032	5188
Weighted N of Cases **		46,890	19,097	27,091	27,628	120,706
Stable Rural	1,2	17.8%	19.8%	19.9%	29.6%	21.3%
% of stable		**28.1%**	**26.6%**	**23.6%**	**34.3%**	**28.4%**
Stable Suburb	3,4,5	19.6%	24.5%	32.8%	24.3%	24.4%
% of stable		**31.0%**	**33.0%**	**38.9%**	**28.2%**	**32.5%**
Stable Small City	6,7	13.2%	14.1%	17.3%	18.0%	15.4%
% of stable		**20.9%**	**19.0%**	**20.5%**	**20.9%**	**20.5%**
Stable Large City	8,9	12.7%	15.9%	14.4%	14.4%	14.0%
% of stable		**20.0%**	**21.4%**	**17.1%**	**16.7%**	**18.6%**
TOTAL STABLE		63.3%	74.3%	84.4%	86.3%	75.1%
City -> Suburbs (% of overall)	10,11,25	11.6%	8.8%	4.2%	4.4%	7.8%
% of non-stable		**38.4%**	**37.9%**	**33.9%**	**38.9%**	**37.9%**
City -> Rural (% of overall)	12,13,20	2.6%	2.7%	1.1%	1.6%	2.0%
% of non-stable		**8.6%**	**11.6%**	**8.9%**	**14.2%**	**9.7%**
Suburb -> City (% of overall)	15,16	5.6%	4.2%	1.9%	1.5%	3.6%
% of non-stable		**18.5%**	**18.1%**	**15.3%**	**13.3%**	**17.4%**
Suburb -> Rural (% of overall)	14	2.5%	2.0%	3.0%	1.9%	2.4%
% of non-stable		**8.3%**	**8.6%**	**24.2%**	**16.8%**	**11.6%**
Rural -> City (% of overall)	18,21	2.4%	1.4%	0.4%	0.4%	1.3%
% of non-stable		**8.0%**	**6.0%**	**3.2%**	**3.5%**	**6.3%**
Rural -> Suburb (% of overall)	19	1.6%	1.4%	0.8%	0.9%	1.2%
% of non-stable		**5.3%**	**6.0%**	**6.5%**	**8.0%**	**5.8%**
R-S/CC/R-S (% of overall)	22,24	1.8%	1.1%	0.0%	0.2%	0.9%
% of non-stable		**6.0%**	**4.7%**	**0.0%**	**1.8%**	**4.3%**
CC/Suburb/CC (% of overall)	26,27	2.2%	1.4%	1.1%	0.4%	1.4%
% of non-stable		**7.3%**	**6.0%**	**8.9%**	**3.5%**	**6.8%**
TOTAL NON-STABLE		30.2%	23.2%	12.4%	11.3%	20.7%
NON-PATTERNED GROUP		6.5%	2.5%	3.2%	2.4%	4.2%

** Data Weighted by Individual Weights in final year of sequence

The comparison of White and Non-White respondents indicates that minorities are more likely to demonstrate stable residential trajectories. Overall, 83.6% of the Non-White respondents follow one of the nine "stable" trajectories in contrast to only 73.6% of the White respondents. In addition, the percentage of Non-Whites in the non-patterned group is over 30% lower (3.0% vs. 4.4%), and the percentage who follow a multiple shift trajectory is also substantially lower (1.6% vs. 2.5%).

Focusing solely on the subset of individuals who follow a "stable" trajectory, it is evident that there are disparities in the Whites' and Non-Whites' patterns of stable residence. Most notably, the percentage of "stable" Non-Whites who maintain consistent residence in a Large City location is almost 4 times higher than that of Whites (47.5% vs. 13.3%). In fact, after combining both the Stable Small City and Stable Large City groups, I find that over 70% of the "stable" Non-Whites exhibit their residential stability in an urban area. This finding is not surprising and consistent with demographic evidence showing the large presence of minority groups in US urban areas at all stages of the life course. Conversely, "stable" Whites maintain constant residence in Suburban and Rural settings. The percentage of "stable" Whites in a Suburban area is over 3 times greater, and the percentage in a Rural area is over 66% higher than the corresponding "stable" Non-White group.

As noted, Whites are more likely to follow a "non-stable" trajectory than Non-Whites (22.0% vs. 13.4%). There are further differences in patterns of residential movement across the two groups upon examining only those individuals who follow a "non-stable" trajectory. First, "non-stable" Non-Whites demonstrate greater longitudinal movement between Rural and City locations. Almost 15% of the "non-stable" Non-Whites follow a City -> Rural trajectory, while 10.4% follow a Rural -> City trajectory. In each instance the likelihood is greater than observed among "non-stable" Whites. I should, note, though that such a pattern does not carry over to the observed prevalence of a R-S/City/R-S trajectory; "non-stable" Whites are more likely than "non-stable" Non-Whites to demonstrate such a multiple shift pattern (4.5% vs. 1.5%).

Second, "non-stable" Whites demonstrate greater longitudinal movement away from Suburban locations. The likelihood of Suburb -> City movement is slightly higher for Whites (17.7% vs. 13.4%), but of greater interest is the large disparity in the prevalence of a Suburb -> Rural trajectory across the two groups. "Non-stable" Whites are over 8 times more likely than "non-stable" Non-Whites to follow such a pattern (12.7% vs. 1.5%), and these results suggest

that, for the most part, minorities do not engage in a process of movement from Suburban to Rural areas. If this is true, then, at any moment in time, most of the minorities residing in a Rural location have either maintained constant residence in such a location for a long period of time, or followed a pathway that has brought them to such a location via an urban location.

Table 5.12 also indicates the prevalence of residential trajectories across the three educational attainment groups. As expected, more educated respondents demonstrate less stable and more complex patterns of longitudinal movement. As educational attainment increases, the percentage with "non-stable" trajectories increases from 14.6% to 29.1%, as does the percentage in the non-patterned group from 1.9% to 6.7%. Moreover, I find that the percentage of Some College and College Degree respondents who demonstrate multiple-shift trajectories is roughly 3 times that observed among the least educated individuals.

Once again, restricting the population to those individuals who follow "stable" trajectories provides insight on the spatial location of residential stability among different sub-groups. In this analysis, I find the greatest disparities in the prevalence of Stable Rural and Stable Suburban trajectories. Over 37% of the "stable" High School or Less respondents maintained consistent residence in a Rural location; roughly 50% higher than among those with Some College and almost twice that observed among the most educated respondents. In contrast, roughly 36-38% of the "stable" respondents in the two most educated segments maintained consistent residence in a Suburban location; over 40% higher than observed in the least educated population segment. While the likelihood of Stable Urban residence is more similar, it does appear that College educated respondents are more likely to exhibit their residential stability in a Small or Large City location.

The analysis of the "non-stable" individuals across the three education groups highlights some interesting patterns of life course movement. The "non-stable" movement of High School or less respondents, in general, reflects a shift to a Rural location. This group demonstrates the highest Suburb -> Rural movement among "non-stable" respondents (14.4% vs. 9.3% and 12.2%), and higher City -> Rural movement (10.3%). Additionally, this segment of the population demonstrates the lowest likelihood of multiple shift trajectories, suggesting that most residential movement among less educated individuals is exhibited via single patterned shifts over the life course.

In contrast, "non-stable" College educated respondents exhibit the greatest Suburb -> City and Rural -> City movement. Furthermore, they are over twice likely as the less educated

individuals to follow a R-S/City/R-S trajectory, though interestingly they demonstrate the lowest likelihood of following a City -> Rural (7.6% of the "non-stable" respondents) or City -> Suburb (33.0% of the "non-stable" respondents) trajectory. Individuals with Some College experience exhibit the highest levels of patterned movement from City -> Suburb (42.3% of the "non-stable" respondents) and City -> Rural (11.6% of the "non-stable" respondents) areas. They also demonstrate greater City/Suburb/City movement, indicating a return migration pattern within metropolitan regions that is not as apparent in the most and least educated segments. The lower levels of Suburb -> Rural (9.3% of the "non-stable" individuals) and Rural -> Suburb trajectories reaffirm the idea that much of the non-stable movement in this group is constrained with urban and suburban boundaries.

TABLE 5.12: Distribution of Residential Trajectories by RACE and EDUCATION

Combined Trajectory	IDS	White	Non-White	HS or Less	Some College	College or More
N of Cases with weight > 0		3194	1985	2388	1803	976
Weighted N of Cases **		103,662	16,932	45,045	44,417	30,877
Stable Rural	1,2	22.2%	15.6%	31.1%	17.9%	11.8%
% of stable		**30.2%**	**18.7%**	**37.2%**	**24.3%**	**18.4%**
Stable Suburb	3,4,5	26.9%	9.3%	21.9%	26.9%	24.5%
% of stable		**36.5%**	**11.1%**	**26.2%**	**36.4%**	**38.1%**
Stable Small City	6,7	14.7%	19.0%	15.0%	16.3%	14.5%
% of stable		**20.0%**	**22.7%**	**18.0%**	**22.1%**	**22.6%**
Stable Large City	8,9	9.8%	39.7%	15.5%	12.7%	13.5%
% of stable		**13.3%**	**47.5%**	**18.6%**	**17.2%**	**21.0%**
TOTAL STABLE		73.6%	83.6%	83.5%	73.8%	64.3%
City -> Suburbs (% of overall)	10,11,25	8.3%	5.2%	5.4%	9.1%	9.6%
% of non-stable		**37.7%**	**38.8%**	**37.0%**	**42.3%**	**33.0%**
City -> Rural (% of overall)	12,13,20	2.0%	2.0%	1.5%	2.5%	2.2%
% of non-stable		**9.1%**	**14.9%**	**10.3%**	**11.6%**	**7.6%**
Suburb -> City (% of overall)	15,16	3.9%	1.8%	2.7%	3.0%	5.8%
% of non-stable		**17.7%**	**13.4%**	**18.5%**	**14.0%**	**19.9%**
Suburb -> Rural (% of overall)	14	2.8%	0.2%	2.1%	2.0%	3.5%
% of non-stable		**12.7%**	**1.5%**	**14.4%**	**9.3%**	**12.0%**
Rural -> City (% of overall)	18,21	1.3%	1.4%	0.9%	1.1%	2.2%
% of non-stable		**5.9%**	**10.4%**	**6.2%**	**5.1%**	**7.6%**
Rural -> Suburb (% of overall)	19	1.2%	1.2%	1.1%	0.9%	1.8%
% of non-stable		**5.5%**	**9.0%**	**7.5%**	**4.2%**	**6.2%**
R-S/CC/R-S (% of overall)	22,24	1.0%	0.2%	0.3%	0.7%	2.3%
% of non-stable		**4.5%**	**1.5%**	**2.1%**	**3.3%**	**7.9%**
CC/Suburb/CC (% of overall)	26,27	1.5%	1.4%	0.6%	2.2%	1.7%
% of non-stable		**6.8%**	**10.4%**	**4.1%**	**10.2%**	**5.8%**
TOTAL NON-STABLE		22.0%	13.4%	14.6%	21.5%	29.1%
NON-PATTERNED GROUP		4.4%	3.0%	1.9%	4.7%	6.7%

** Data Weighted by Individual Weights in final year of sequence

CHAPTER 6: DETERMINANTS OF RESIDENTIAL TRAJECTORIES

An integral question of this study is whether patterns of sequential movement are related to variations in an individual's socio-demographic background, life-cycle characteristics, and life course experiences. The primary objective of this chapter is to assess whether the prevalence of residential trajectories varies across different socio-demographic characteristics such as age, education, race, gender, marital status and childhood residential situation. The intention is to see if the previously observed age, race, and education differences in the likelihood of residential trajectories remain when we consider other aspects of an individual's life. To that end, I have developed a set of multinomial logistic regression models designed to predict an individual's likelihood of following patterns of residential movement over the life course given his/her socio-demographic characteristics, and the "origin" of his/her trajectory.[10]

It is necessary to understand the "origin" of an individual's trajectory in order to accurately evaluate the likelihood of distinct residential trajectories. For example, individuals who started their sequence in a Large Metropolitan City presumably follow one of four possible structured pathways: stay in Large Metropolitan City over next 14 time periods (e.g., residential trajectory #9), make a shift to Suburban location over the course of the sequence (e.g., residential trajectory #11), make a shift to a Rural location (e.g., residential trajectory #13 or #20), or make a shift to a Suburb, then back to the Large Metropolitan City over the 14 time period span (e.g.. residential trajectory #26). Given the importance of the "origin" in defining the range of realistic residential trajectories, I separated the full sample into three sub-samples for subsequent analyses, 1) individuals with "City-Origin" trajectories (N=2650), 2) individuals with "Suburban-Origin" trajectories (N=1392), 3) individuals with "Rural-Origin" trajectories (N=1234). A set of multinomial logistic regression models was constructed in each of these samples.

In each instance I produced a "Main" and "Modified" model. The "Main" model considers only the effects of the demographic, life-cycle, and geographic predictors fixed at the initial time period of the sequence on the likelihood of residential trajectories. The determinants in the "Main" model include age, race, gender, educational attainment, region of childhood residence, size of childhood residence, and martial status in the first time period. The "Modified" model considers the role of concurrent life course processes on the likelihood of trajectories. I included measures of marital status change and income status along with the initial set of

determinants in each "Modified" model.[11] The key question addressed in the "Modified" model is whether any differences across demographic subsets (e.g., age groups or Whites vs. Non-Whites) persist upon incorporating indicators of other facets of the individual's life over the course of the trajectory.

The secondary objective was to examine whether the effects of such socio-demographic variables differed for individuals who followed unique trajectories with respect to other life course processes such as marital status and income attainment. A set of concurrent predictive models were run on three subsets of the "origin" samples a) individuals who entered a marital union during the course of the residential sequence (i.e., Shift into Marriage or Engaged in Multiple Marital Shifts) – **Enter Marriage**, b) individuals with a Low Income Status over the course of the residential sequence – **Low Income**, and c) individuals with a High Income Status over the course of the residential sequence – **High Income**. Preliminary analyses of the Income subsets indicated that both the sample size and number of individuals who demonstrate non-stable trajectories were relatively small in the Suburb-Origin and Rural-Origin populations. While I developed models for each of these populations, I will only comment on the **Low** and **High Income** models produced in the City-Origin population. The results of the analysis of these "life course sub-samples" should demonstrate the varying impact of age, education, race and gender on longitudinal movement processes among those who experience disparate life course transitions and experiences during the analogous time frame of the residential movements.

City-Origin Analysis: Overall Sample

I examined the likelihood of different residential trajectories among individuals who started their residential sequence in a Small or Large Metropolitan Central City. Using our full population of 25 residential trajectories as a benchmark, it is realistic to assume that these individuals can follow four basic trajectories: maintain consistent residence in the city (Stable City), engage in a patterned shift to a suburban location (City -> Suburb), engage in a patterned shift to a Rural location (City -> Rural), or engage in a patterned shift to a suburban location

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[10] All multinomial logistic regression analyses were conducted using Intercooled Stata version 5.0.

[11] I tested the multinomial logistic regression models with the Income Status Change measure instead of the chose Income Status measure. Using the change did not provide as insightful and robust results, and thus I decided to stick with the standard Income Status variable. In some sense, Income Status is a proxy for an individual's general "affluence" over the entire sequence.

followed by a subsequent patterned shift back to the city (City/Suburb/City). Individuals were categorized into these four groups based on their original assignments to one of the 25 residential trajectories:

Stable City Trajectories
6 – Stable SM Small City
7 – Stable SM Large City
8 – Stable LM Small City
9 – Stable LM Large City

City -> Suburb Trajectories
10 – SM City -> SM Suburb
11 – LM City -> LM Suburb
25 – SM City -> LM Suburb

City -> Rural Trajectories
12 – SM City -> Rural
13 – LM City -> Rural (long city)
20 – LM City -> Rural (long rural)

City/Suburb/City Trajectories
26 – LM City/Suburb/LM City
27 – SM City/Suburb/SM City

A comparison of the likelihood of City-Origin residential trajectories across the set of predictor variables is shown in Table 6.1. The weighted distribution of 2650 individuals across the four comparison groups is: Stable City (72.2%), City -> Suburb (19.3%), City -> Rural (5.0%), and City/Suburb/City (3.5%). Consistent with our preliminary analysis of the full population of residential trajectories, older respondents are substantially more likely to maintain stable patterns of residence than younger respondents. For example, individuals **age <=25** are roughly twice as likely as those **age 50+** to follow a City -> Suburb (27.4% vs. 11.2%) or City/Suburb/City (5.3% vs. 1.1%) pattern, and over 1.5 times more likely to follow a City -> Rural trajectory (6.1% vs. 4.0%). In addition, there are dramatic racial differences in the prevalence of residential patterns. For the most part, Whites are 2-3 times more likely to follow all forms of non-stable trajectories than Non-Whites.

I further observe some interesting patterns among those with differing levels of education. Individuals with less education (i.e., HS Degree or Less) are more likely to maintain stable city residence than those with some college background. Yet, while the most educated group (i.e., College Degree or More) demonstrates the greatest likelihood of City -> Suburb movement (23.2%), they are less inclined than individuals with only Some College Experience to engage in a City -> Rural move, or follow a multiple shift trajectory (i.e., City/Suburb/City). In

general, these results suggest that educational experiences beyond High School enhance the chances of movement away from the origin.

It also appears that patterns of longitudinal movement are related to an individual's childhood residential situation. Individuals raised in the South demonstrate the greatest likelihood of stability (76.3%), yet, interestingly, are also the most likely to engage in a City -> Rural transition over time. In contrast, individuals reared in the North-Central or the West demonstrate more City -> Suburb and City -> Rural movement, and are the most inclined to follow a City/Suburb/City pattern.

The size of the residence in which the individual was reared may have a long lasting impact on patterns of longitudinal movement. In this analysis, it is apparent that "Farm" respondents are not only the most likely to maintain stable city residence (75.7%), but also demonstrate the greatest City -> Rural movement of all the groups. "City" respondents, on the other hand, report the least stability in the city, and are the most likely to follow a City/Suburb/City trajectory. This suggests the presence of a process that draws those raised in a city back to their area of childhood residence after an initial shift away. Both findings point to the importance and significance of return migration to initial origins.

Not surprisingly, the likelihood of residential trajectories varies across Marital Status Change groups. As expected, individuals who enter martial unions or engage in multiple marital shifts demonstrate the greatest movement to Suburban or Rural locations, and the least urban stability. In the case of the City-Origin analyses, individuals who remain single throughout the sequence exhibit the greatest City stability. This result is consistent with the belief that urban settings represent the favored residential location for unmarried adults. We also observe some interesting patterns among those with distinct Income Status and Income Status Change patterns. The most affluent individuals are the least stable, and are substantially more likely to follow a pattern of movement to a Suburban location. Likewise, those who "upgraded" their income status over the course of the sequence are more likely to follow non-stable trajectories, particularly those pathways that carry them to the Suburbs, or through the Suburbs and back to the City.

The results of the City-Origin "Main" and "Modified" models are shown in Tables 6.2 and 6.3. These models consider the effects of our predictor variables on three contrasts: Stable City vs. City -> Suburb (85.0% vs. 15.0%), Stable City vs. City -> Rural (95.3% vs. 4.7%), and Stable City vs. City/Suburb/City (96.6% vs. 3.4%). The sample for analysis excludes those

Table 6.1: City-Origin Analysis – Likelihood of Residential Trajectories

	N	Wgt N	Stable City	City -> Sub	City -> Rural	City/Sub/City
OVERALL	2650	49060	72.2%	19.3%	5.0%	3.5%
Age						
<=25	1093	19826	61.3%	27.4%	6.1%	5.3%
26-35	497	8198	70.1%	20.4%	6.2%	3.3%
36-49	603	10318	83.2%	11.1%	2.8%	2.9%
50+	457	10718	83.6%	11.2%	4.0%	1.1%
Race						
White	1199	37616	67.7%	22.8%	5.6%	4.0%
Non-White	1445	11402	87.2%	7.8%	3.0%	2.0%
Gender						
Male	1373	28090	71.2%	20.2%	5.1%	3.6%
Female	1277	20971	73.6%	18.0%	4.8%	3.5%
Education						
HS or Less	1195	17135	80.4%	14.1%	3.9%	1.7%
Some College	975	18987	67.8%	21.2%	5.8%	5.1%
College or More	467	12740	67.8%	23.2%	5.3%	3.7%
Region - Until Age 16						
Northeast	347	9411	70.9%	21.0%	4.0%	4.0%
North-Central	547	13440	66.8%	24.3%	4.8%	4.1%
South	1303	15517	79.0%	12.8%	6.1%	2.1%
West	299	7078	67.7%	22.5%	5.0%	4.8%
Foreign	37	1031	62.4%	26.6%	4.0%	7.1%
Size - Until Age 16						
Farm	516	9045	75.7%	14.2%	7.7%	2.4%
Town/Suburb	866	18227	72.9%	20.7%	3.9%	2.5%
City	1182	19922	69.7%	20.5%	5.5%	4.8%
Other	25	645	66.2%	28.2%	0.0%	5.6%
Marital Change						
Stable Non-Married	649	8688	86.2%	10.3%	2.3%	1.2%
Stable Married	593	12373	79.1%	15.7%	4.7%	0.5%
Shift into Marriage	431	8798	55.5%	34.0%	6.1%	4.5%
Shift out of Marriage	430	8284	74.4%	17.0%	3.7%	4.9%
Multiple Shifts	547	10918	65.1%	20.4%	7.5%	7.1%
Income Status						
Low Income	609	6853	84.1%	10.9%	4.7%	0.3%
Moderate Income	1516	27288	72.7%	19.3%	4.6%	3.5%
High Income	525	14919	65.9%	23.1%	5.8%	5.2%
Income Status Change						
Downgrade	535	10566	77.7%	13.9%	4.9%	3.5%
Same	1648	29839	72.5%	19.5%	4.8%	3.1%
Upgrade	467	8656	64.6%	24.9%	5.5%	5.1%
Marital Status Time 1						
Not Married	1408	23230	70.1%	21.2%	5.0%	3.8%
Married	1242	25830	74.2%	17.6%	4.9%	3.3%

Table 6.2: City-Origin Analysis – Main Model

MAIN Model (N=2450)

	Stable City vs. City -> Sub			Stable City vs. City -> Rur			Stable City vs. City/Sub/City		
	B	SE		B	SE		B	SE	
VARIABLES									
Age (<=25 is reference)									
26-35	-0.448	0.181	**	-0.230	0.300		-0.287	0.358	
36-49	-1.031	0.196	***	-1.148	0.361	***	-1.071	0.427	*
50+	-1.349	0.225	***	-0.645	0.332		-1.140	0.481	*
Education (HS or Less is reference)									
Some College	0.194	0.150		0.613	0.266	*	0.513	0.319	
College or More	0.111	0.180		0.336	0.324		0.311	0.387	
Gender (Female=1)	0.003	0.132		0.159	0.228		0.297	0.263	
Race (White=1)	1.392	0.155	***	1.449	0.277	***	0.896	0.306	**
Region - Age 16 (South is reference)									
Northeast	0.149	0.192		-0.061	0.335		0.490	0.393	
North-Central	0.258	0.163		-0.077	0.287		0.309	0.353	
West	0.042	0.200		-0.065	0.334		0.724	0.366	*
Size of Residence - Age 16 (City is reference)									
Farm	0.105	0.191		0.478	0.292		-0.184	0.404	
Town/Suburb	0.200	0.139		-0.040	0.255		-0.332	0.294	
Marital Status T1 (Not Married is reference)	0.074	0.146		0.518	0.250	*	0.143	0.291	

Model Chi-Square = 302.75 df=39 Pseudo R-Square = .090

*** p < .001 ** p < .01 * p < .05

Table 6.3: City-Origin Analysis – Modified Model

MODIFIED Model (N=2450)

	Stable City vs. City -> Sub			Stable City vs. City -> Rur			Stable City vs. City/Sub/City		
	B	SE		B	SE		B	SE	
VARIABLES									
Age (<=25 is reference)									
26-35	-0.258	0.185		-0.042	0.308		-0.038	0.361	
36-49	-0.796	0.203	***	-0.881	0.374	*	-0.779	0.441	
50+	-0.975	0.239	***	-0.342	0.367		-0.757	0.515	
Education (HS or Less is reference)									
Some College	0.100	0.155		0.685	0.277	*	0.374	0.330	
College or More	-0.079	0.193		0.426	0.348		0.096	0.411	
Gender (Female=1)	0.151	0.151		0.311	0.274		-0.019	0.273	
Race (White=1)	1.249	0.160	***	1.495	0.290	***	0.721	0.320	*
Region - Age 16 (South is reference)									
Northeast	0.181	0.194		-0.101	0.336		0.527	0.398	
North-Central	0.252	0.167		-0.095	0.289		0.379	0.356	
West	0.056	0.202		-0.078	0.335		0.725	0.369	*
Size of Residence - Age 16 (City is reference)									
Farm	0.119	0.192		0.493	0.294		-0.148	0.407	
Town/Suburb	0.211	0.140		-0.024	0.257		-0.310	0.296	
Marital Change (Stable Married is reference)									
Stable Non-Married	-0.203	0.258		-1.574	0.497	**	1.564	0.726	*
Shift into Marriage	0.729	0.213	***	-0.176	0.378		1.850	0.683	**
Shift out of Marriage	0.226	0.233		-0.455	0.395		2.437	0.666	***
Multiple Shifts	0.210	0.218		-0.050	0.353		2.436	0.648	***
Income Status (High Income is reference)									
Low Income	-0.733	0.277	**	0.596	0.428		-1.065	0.539	*
Moderate Income	-0.262	0.159		-0.011	0.276		-0.551	0.322	

Model Chi-Square = 378.96 df=54 Pseudo R-Square = .113

*** p < .001 ** p < .01 * p < .05

individuals raised in a Foreign region or in an "Other" (i.e., responses other than City, Suburb, Town, or Rural) size of childhood residence, and consists of 2450 individuals.

There are significant differences in the likelihood of movement across the four age groups. These differences are most noticeable in the City -> Suburb model where those respondents **age <=25** are 2-3 times more likely than individuals **age 36+** to follow such a trajectory. The other trajectory models indicate that individuals **age 36-49** demonstrate significantly less movement to Rural locations than the youngest respondents, and that the likelihood of City/Suburb/City movement substantially declines after **age 35**. For the most part, these results carry forward in the "Modified" model upon controlling for changes in Marital Status and Income Status.

With respect to educational differences, it is evident that individuals with Some College experience are more likely than less educated respondents to follow both a City -> Rural and City/Suburb/City trajectory. However, positive effects do not emerge for the most educated respondents suggesting that the probability of longitudinal movement through such pathways peaks for those with moderate levels of educational attainment. Race, on the other hand, clearly emerges as a strong determinant of distinct residential trajectories in the "Main" and "Modified" models. Whites are 3-4 times more likely to follow City -> Suburb and City -> Rural trajectories than Non-Whites, and over twice as likely to follow a City/Suburb/City trajectory. These results reinforce the assumption that urban residential stability is the norm for Non-Whites regardless of age, educational background, and concurrent life course changes.

I observe little influence of an individual's childhood residential situation on the probability of movement. There is some evidence that the likelihood of City/Suburb/City movement is greater for those reared in Western regions, in contrast to those reared in Southern region. However, the increased prevalence of City -> Suburb movement in each of the non-Southern regions shown in the univariate summary appears to diminish in the multivariate model. In addition, the higher probability of City -> Rural movement among those reared in "Farm" locations does not materialize in the multivariate models, suggesting that the "pull" of the childhood origin diminishes some upon considering contemporary life course determinants.

The influence of "marriage" is illustrated in the "Main" and "Modified" models. The first model indicates that upon controlling for other demographic and geographic factors, individuals who were married at the first time period of the sequence are significantly more likely to follow a City -> Rural trajectory. The second model shows that patterns of martial change

shape the prevalence of residential trajectories. In particular, the results show a) an increased likelihood of City -> Suburb movement among individuals who shift into marriage, b) significantly lower City -> Rural movement among those who remain unmarried throughout the residential sequence, c) low City/Suburb/City movement among Stable Married individuals, and d) high probabilities of multiple shift trajectories for those who either leave a marital union or engage in multiple marital shifts.

There are also effects of Income Status pattern on the prevalence of residential trajectories. Low income individuals are significantly less likely to follow either City -> Suburb or City/Suburb/City trajectories than High Income respondents. In fact, the most affluent respondents exhibit rates of movement to, or through the Suburbs that are over twice as high as those exhibited by the least affluent individuals. As initially suspected, there are no apparent differences in the likelihood of City -> Rural movement across the income groups.

City-Origin Analysis: Enter Marital Life-Course Sample

Using a set of concurrent predictive models, I explored the possible determinants of residential trajectories in a sample of City-Origin respondents who either entered a marital situation or engaged in multiple marital shifts over the life course. The intent was to assess whether the correlates of residential pathways vary upon examining individuals with distinctive marital careers. There is plenty of research illustrating the strong association and interdependence between residential and marital transitions during the life course (see Courgeau 1990; Mulder and Wagner 1993; Odland and Shumway 1993 for examples). The question in this instance is whether the effects of measures such as age, race, education and childhood residence are present in a sample of individuals who engage in a distinct form of life course transitions during the residential trajectory.

The "Enter Marital" sample consists of 896 City-Origin respondents. The weighted probability of following each of the four residential trajectories is: Stable City (60.6%), City -> Suburb (26.7%), City -> Rural (7.0%), and City/Suburb/City (5.7%). A multinomial logistic regression model, shown in Table 6.4, was used to examine the following contrasts: Stable City vs. City -> Suburb (77.4% vs. 22.6%), Stable City vs. City -> Rural (93.3% vs. 6.7%), and Stable City vs. City/Suburb/City (93.9% vs. 6.1%).

In the first contrast – Stable City vs. City -> Suburb – there are some differences in the likelihood of non-stable residential movement across age groups. The youngest respondents, **age <=25**, demonstrate rates of City -> Suburb movement roughly twice as high as individuals in the **age 26-49** range. This pattern differs slightly from the overall "Modified" model where the probabilities of movement were similar up to **age 35**, and then declined dramatically from that point on. The present findings suggest that while marital shifts early in the life course (i.e. among younger individuals in their 20's and early 30's) may be accompanied by shifts to Suburban locations, the likelihood of this concurrent process declines when individuals reach their late 30's and early 40's. Interestingly, there are no effects of age on the likelihood of City -> Rural or City/Suburb/City movement among those who enter marital situations.

The strong impact of race present in the overall models continues to stand out in the Enter Marital models. For the most part Whites who exhibit marital shifts during the sequence are 2-3 times more likely to follow a non-stable trajectory away from the city than Non-Whites. The thought that engaging in marital transitions might facilitate Non-Whites movement out of cities, and bridge the disparity in the probability of movement between Whites and Non-Whites, does not bear out in this analysis. In other words, while marriage can be a conduit to Suburban movement for Whites, it is may not be for Non-Whites.

The influence of childhood residential situation on the likelihood of residential trajectories is similar to that observed in the overall models. Western respondents who entered marital situations are significantly more likely than their Southern comrades to engage in a City/Suburb/City trajectory. We also continue to see disparities across Income Status groups, and, in fact, the differences in the probability of City -> Suburb movement are even more pronounced in the Enter Martial sub-sample. High income City-Origin respondents who enter a marital situation over the course of the trajectory are significantly more likely to follow a City -> Suburb than moderate and low income respondents. The results indicate that while, in general, income attainment increases the chances of movement to the Suburbs during the residential career, the cumulative effect of income attainment and marital shifts on the likelihood of movement is apparent only among the most affluent respondents.

For the most part the results in the Enter Marital sample mirror those obtained in the overall analysis. There are some variations in the effects of age and income status noted above, and some indication that educational attainment differences present in the full sample diminish some among those who enter marital situations. It is evident that the correlates of residential

Table 6.4: City-Origin Analysis – ENTER MARITAL Model

ENTER MARITAL Model (N=896)

	Stable City vs. City -> Sub			Stable City vs. City -> Rur			Stable City vs. City/Sub/City		
	B	SE		B	SE		B	SE	
VARIABLES									
Age (<=25 is reference)									
26-35	-0.642	0.301	*	-0.146	0.464		0.099	0.497	
36-49	-0.938	0.391	*	-0.290	0.537		0.177	0.545	
50+	-0.483	0.521		-0.931	1.066				
Education (HS or Less is reference)									
Some College	0.220	0.235		0.431	0.434		0.688	0.469	
College or More	0.286	0.275		0.465	0.514		0.255	0.569	
Gender (Female=1)	-0.050	0.184		0.558	0.332		-0.183	0.345	
Race (White=1)	0.960	0.220	***	1.372	0.437	**	0.874	0.423	*
Region - Age 16 (South is reference)									
Northeast	0.253	0.268		0.079	0.515		0.857	0.540	
North-Central	-0.068	0.243		0.153	0.427		0.705	0.487	
West	-0.145	0.275		0.124	0.470		1.075	0.489	*
Size of Residence - Age 16 (City is reference)									
Farm	-0.013	0.311		0.755	0.459		0.112	0.551	
Town/Suburb	0.089	0.199		0.249	0.364		-0.125	0.385	
Income Status (High Income is reference)									
Low Income	-1.524	0.493	**	0.163	0.633		-0.452	0.749	
Moderate Income	-0.545	0.219	*	-0.480	0.390		-0.369	0.400	

Model Chi-Square = 139.93 df=42 Pseudo R-Square = .090

*** p < .001 ** p < .01 * p < .05

trajectories are similar among those who engage in marital career shifts over the course of the residential sequence.

City-Origin Analysis: Low Income Life-Course Sample

I further examined the correlates of residential trajectories in a sample of Low Income status City-Origin respondents. Recall that Low Income respondents represent those individuals with an average family income in the lower quartile of the distribution of income levels across the time periods of the residential sequence. In terms of constant income dollars (standardized relative to 1983), this is equivalent to less than $10,500-$11,000 per year. While we know that in the overall population the prevalence of non-stable trajectories is typically lower among the least affluent respondents, the question in this analysis is whether the determinants of longitudinal movement differ for those with potentially restricted and constrained residential choice and options. For example, we might speculate that movement, albeit less likely in general, is somewhat more prevalent for younger or more educated Low Income individuals. Perhaps it is also true that low income constrains the outward movement of Non-Whites more than Whites, or among those who were reared and still reside in particular regions of the country.

The Low Income sample is comprised of 560 City-Origin respondents. The weighted probability of the four different residential trajectories is: Stable City (83.8%), City -> Suburb (10.5%), City -> Rural (5.4%), and City/Suburb/City (0.3%). The multinomial logistic regression model in Table 6.5 examined two different contrasts: Stable City vs. City -> Suburb (94.6% vs. 5.4%) and Stable City vs. City -> Rural (96.9% vs. 3.1%). Since only seven Low Income respondents followed a City/Suburb/City, it was not feasible to examine the prevalence of multiple shift trajectories in this sample. I should comment that the composition of the Low Income, as expected, differs from the overall population. This sample is primarily comprised of older, females with lower levels of educational attainment. In addition, the sample is disproportionately comprised of minorities; roughly 80% of the actual respondents are Non-White.[12]

The results of the predictive models first indicate that there are few age disparities in the likelihood of residential movement within the Low Income sample. There is little evidence that

the smaller proportion of younger respondents (**age <=25**) are more inclined to engage in longitudinal movement away from Urban settings over the course of the residential sequence. I do, however, observe some effect of educational attainment on the prevalence of City -> Rural movement. The results show that individuals with Some College experience demonstrate significantly greater movement from City -> Rural than the least educated Low Income respondents. An investigation of the composition of this sample suggests that the most realistic comparison across educational groups exists between those with at least some college and those with only a High School Degree – i.e., there are very few Low Income respondents with College Education or more. These findings imply that the acquisition of even some post-high school educational training is an important mechanism for carrying less affluent City dwellers out to Rural locations over the course of the residential trajectory. This influence of education mirrors the findings of the overall "Main" and "Marital" models.

In addition, there are continued large disparities in the likelihood of residential trajectories across racial groups. Low income Whites are over five times more likely than low income Non-Whites to follow either a City -> Suburb or City -> Rural trajectory. The magnitude of these disparities is more striking than I observed in the overall population models, further highlighting some of the tremendous constraints upon Non-Whites ability to move from urban settings. This result reaffirms the argument that poor minorities remain restricted and concentrated in central city locations.

The patterns of movement across categories of the region of childhood residence measure show that the likelihood of City -> Suburb movement is reduced for Low Income individuals raised in the South. The significant effect for North-Central respondents, and the moderately strong positive effect for Northeast respondents suggest that less affluent City dwellers in non-Southern locations have a greater opportunity to follow pathways that carry them to alternative place-types. The independent effects of region of childhood residence were not apparent in the "Main" and "Modified", and therefore it appears that region has a distinct influence on the life course patterns of only the least affluent individuals. Conversely, there are no differences in the likelihood of City -> Rural movement across these groups. However, the probability of City ->

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[12] Recall that Whites and Non-Whites are weighted quite differently to reflect the PSID over-sampling of low income individuals and minorities. Thus, while less than 50% of the weighted cases in my Low Income sample are Non-White, more than 80% of the actual cases are members of a minority group.

Table 6.5: City-Origin Analysis – LOW INCOME Model

LOW INCOME Model (N=560)

	Stable City vs. City -> Suburb			Stable City vs. City -> Rural		
	B	SE		B	SE	
VARIABLES						
Age (<=25 is reference)						
26-35	0.441	0.670		-0.497	0.812	
36-49	-0.301	0.692				
50+	-0.068	0.675		-0.905	0.906	
Education (HS or Less is reference)						
Some College	-0.301	0.524		1.245	0.633	*
College or More	-0.025	0.888		0.878	1.281	
Gender (Female=1)	0.854	0.672		-0.263	0.696	
Race (White=1)	1.623	0.532	**	2.963	0.824	***
Region - Age 16 (South is reference)						
Northeast	1.253	0.674		-1.002	1.033	
North-Central	1.234	0.581	*	-0.980	0.795	
West	0.158	0.740		-0.914	1.342	
Size of Residence - Age 16 (City is reference)						
Farm	0.723	0.568		1.535	0.783	*
Town/Suburb	-0.091	0.515		0.409	0.800	
Marital Change (Stable Married is reference)						
Stable Non-Married	20.719	1.120	***	-0.929	1.410	
Shift into Marriage				-0.205	1.755	
Shift out of Marriage	20.599	1.202	***	-1.011	1.422	
Multiple Shifts	20.997	1.192	***	0.387	1.413	

Model Chi-Square = 91.82 df=48 Pseudo R-Square = .206

*** p < .001 ** p < .01 * p < .05

Rural movement is significantly higher among Low Income folks reared in "Farm" settings. This form of "return migration" remains an option for even the least affluent individuals

As we can see in the first model, there are inflated coefficients for the effects of the Marital Status Change categories. The high coefficients reflect, in part, the fact that almost none of the Stable Married respondents followed a City -> Suburb trajectory. Beyond the interpretation of the model coefficients, it is important to note that Low Income individuals who either engage in some type of shift in marital career or remain single over this career exhibit a substantially greater chance of following a pathway away from an Urban location. This pattern raises the speculation that Low Income married couples are strongly tied to both City dwellings and locations in general.

Overall, the core set of determinants of the residential trajectories exhibited by Low Income City-Origin respondents vary some from those present in the overall sample. The age differences diminish, perhaps due to the dramatic change in the sample composition, while some disparities across the childhood residence predictors start to emerge. There are similar effects of education, race and marital status change in this sub-sample, and for the most part, the correlates of residential pathways for the least affluent respondents correspond with those in the full City-Origin sample.

City-Origin Analysis: High Income Life-Course Sample

A second analysis examined the correlates of residential trajectories in a sample of High Income status City-Origin respondents. High Income respondents represent those individuals with an average family income in the upper quartile of the range of income levels across the time periods of the residential sequence. In terms of constant income dollars (standardized relative to 1983), this is equivalent to more than $31,000-$33,000 per year. The overall sample analysis demonstrated that the most affluent individuals exhibit the greatest non-stable movement away from City origins. In addition, the Low Income model discussed earlier identified the unique set of determinants of residential trajectories among the least affluent respondents. The question in this analysis is whether the set of determinants of longitudinal movement varies among the subset of individuals who exhibit the greatest movement and perhaps maintain the greatest residential choice and flexibility.

The High Income sample is comprised of 487 City-Origin respondents. The weighted probability of the four different residential trajectories is: Stable City (65.4%), City -> Suburb (23.4%), City -> Rural (6.3%), and City/Suburb/City (4.9%). The multinomial logistic regression model in Table 6.7 examined three different contrasts: Stable City vs. City -> Suburb (75.4% vs. 24.6%), Stable City vs. City -> Rural (92.5% vs. 7.5%) and Stable City vs. City/Suburb/City (94.0% vs. 6.0%). The composition of the High Income sample differs somewhat from the overall City-Origin population. The High Income respondents are disproportionately White males with higher levels of educational attainment.

The influence of age in the overall "Main" and "Modified" models carries over to the High Income sample analysis. High Income respondents **age <=25** are significantly more likely to follow a City -> Suburb trajectory than those **age 36+**, and demonstrate greater City/Suburb/City movement than the older affluent individuals. In contrast, the overall sample disparities in the prevalence of City -> Rural movement are not evident in the High Income analysis. The likelihood of shifts to Rural locations among affluent individuals is similar at various temporal stages of the life course.

There are no effects of education or gender on the probability of residential trajectories in this sample. Of greater interest, though, are the non-significant effects of Race in the City -> Suburb and City/Suburb/City models.[13] To this point we have consistently observed large disparities in non-stable movement among Whites and Non-Whites. This is especially true among the least affluent respondents where it is evident that Low Income Non-Whites are highly restricted to Stable City careers. The present analysis suggests that income attainment lessens some of these disparities. Even Non-Whites, traditionally excluded and restricted from entering Suburban locations, demonstrate commensurate levels of City -> Suburb movement upon achieving a certain level of affluence.

The differences in movement probabilities across categories of the Marital Status change variable are consistent with those observed in the overall sample analysis. High Income respondents who enter a marital union during the course of the residential sequence exhibit significantly greater City -> Suburb movement than Stable Married individuals, while all respondents who follow a career not typified by stable marriage report greater City/Suburb/City

[13] Overall 100, or 20% of the unweighted cases in the High Income sample were from a minority group. Since none of the Non-Whites demonstrated a City -> Rural trajectory, the model coefficient in the Stable City vs. City -> Rural contrast is skewed and therefore not reported in the tables.

Table 6.6: City-Origin Analysis – HIGH INCOME Model

HIGH INCOME Model (N=487)

	Stable City vs. City -> Sub			Stable City vs. City -> Rur			Stable City vs. City/Sub/City		
	B	SE		B	SE		B	SE	
VARIABLES									
Age (<=25 is reference)									
26-35	-0.064	0.319		0.358	0.555		-0.122	0.625	
36-49	-1.744	0.430	***	-0.880	0.663		-1.489	0.793	
50+	-1.266	0.535	*	-0.511	0.945				
Education (HS or Less is reference)									
Some College	0.254	0.406		0.001	0.713		0.202	0.883	
College or More	0.184	0.418		-0.144	0.721		-0.022	0.894	
Gender (Female=1)	0.185	0.318		0.502	0.566		-0.305	0.527	
Race (White=1)	0.491	0.360					0.845	0.766	
Region - Age 16 (South is reference)									
Northeast	0.328	0.370		-1.175	0.720		-0.743	0.901	
North-Central	0.509	0.334		-0.322	0.540		0.201	0.645	
West	0.292	0.394		0.107	0.575		0.377	0.682	
Size of Residence - Age 16 (City is reference)									
Farm	-0.062	0.401		-0.016	0.668		0.456	0.681	
Town/Suburb	-0.029	0.266		0.382	0.459		-0.136	0.558	
Marital Change (Stable Married is reference)									
Stable Non-Married	-1.500	1.085					2.994	1.344	*
Shift into Marriage	0.804	0.359	*	-0.004	0.733		2.344	1.172	*
Shift out of Marriage	0.675	0.446		-0.225	0.907		3.670	1.162	**
Multiple Shifts	0.350	0.372		0.694	0.590		3.034	1.108	**

Model Chi-Square = 129.76 df=48 Pseudo R-Square = .149

*** p < .001 ** p < .01 * p < .05

movement. In addition, there no differences in the likelihood of City -> Rural trajectories across these marital change groups.

Suburb-Origin Analysis: Overall Sample

I examined the likelihood of different residential trajectories among individuals who started their residential sequence in a Small or Large Metropolitan Suburban location. Given our population of 25 possible residential trajectories, individuals can conceivably follow four basic patterns over the course of the trajectory: maintain consistent residence in suburban locations (Stable Suburb), engage in a shift to a central city location (Suburb -> City), engage in a shift to a Rural location (Suburb -> Rural), or engage in a shift to a central city location followed by a subsequent shift back to the suburbs (Suburb/City/Suburb). Individuals were categorized into these four groups based on their original assignments to the 25 residential trajectories:

Stable Suburb Trajectories
3 – Stable SM Small Suburbs
4 – Stable LM Small Suburbs
5 – Stable LM Large Suburbs

Suburb -> City Trajectories
15 – SM Suburb -> SM City
16 – LM Suburb -> LM City

Suburb -> Rural Trajectories
14 – Suburb -> Rural

Suburb/City/Suburb Trajectories
24 – Suburb/City/Suburb

A summary of the characteristics of those 1392 respondents who follow these four distinct trajectories is presented in Table 6.7. The weighted distribution of individuals across the four comparison groups is: Stable Suburb (78.2%), Suburb -> City (11.6%), Suburb -> Rural (7.7%), and Suburb/City/Suburb (2.5%). First, I should note that the composition of the Suburb Origin sample differs dramatically from the City Origin sample discussed earlier. In particular, the Suburb Origin sample has a much larger proportion of Whites and males than observed in the City Origin sample, and likewise, a larger percentage of individuals raised in a non-Southern, "farm" childhood residential situation. In addition, this sample is comprised of a more heterogeneous mix of individuals with different educational backgrounds, and a larger proportionate representation of older individuals.

Once again, older individuals are more likely to maintain stable residence in suburban locations. Roughly 87% of those **age 36+** follow a Stable Suburb pattern, while virtually none of these individuals follow a Suburb/City/Suburb trajectory. Younger individuals are considerably more likely to demonstrate a Suburb -> City pattern, though there are no apparent differences in the probability of Suburb -> Rural movement across the four age groups.

Some intriguing patterns emerge upon contrasting the residential experiences of Whites and Non-Whites. While the likelihood of following a Stable Suburban trajectory is similar across racial groups (78.0% vs. 81.5%), the probability of different non-stable trajectories varies between the groups. In particular, Whites demonstrate a greater likelihood of Suburb -> Rural movement (8.0% vs. 2.0%), while conversely, Non-Whites demonstrate somewhat greater Suburb -> City movement (15.9% vs. 11.4%).

While there are only minor gender differences – females are slightly more likely to follow all three types of non-stable trajectories – there is clear association between educational attainment and probability of longitudinal movement. The prevalence of all types of non-stable residential movement differs dramatically when we contrast individuals with at least a college degree with those who achieved only some college or attained only a high school degree. Roughly 32% of the respondents with a College Degree or More followed a non-stable trajectory, and individuals in this group demonstrated the greatest likelihood of following each of the three non-stable pathways. In fact, almost 6% followed a Suburb/City/Suburb pattern in comparison to less than 2% of those in the less educated segments of the population.

The prevalence of longitudinal movement also varies across regions of childhood residence. Individuals raised in the Northeast demonstrate the greatest stability (85.7%) and subsequently are less likely to follow single shift trajectories away from Suburban locations. Respondents raised in the South demonstrate the least Suburban stability and are the most likely to follow a pattern of movement to a Rural location (11.7%). Western respondents are most interesting in the sense that while their probability of Stable Suburban residence is close to average, they demonstrate the greatest likelihood following a Suburb -> City pathway (17.8%), but the lowest likelihood of following a Suburb/City/Suburb pattern (1.0%). On the other hand, there are few distinctions between those reared in farm vs. town/suburb vs. city locations.

Patterns of residential movement seem to vary across marital groups. The likelihood of Suburb -> City or Suburb/City/Suburb movement is substantially higher among those who were single at the first time period. The comparisons across the Martial Change groups indicate less

Suburban stability, and greater movement to the City or Rural locations among those who either entered a marital union or engaged in multiple martial shifts over the course of the sequence. Likewise, we observe an increased likelihood of a Suburb -> City trajectory among individuals who remained unmarried through the course of the trajectory.

The patterns of longitudinal movement across those of varying income status differ dramatically from those observed in the City-Origin analysis. In the City-Origin analysis, levels of longitudinal movement away from the origin were typically highest among the most affluent respondents. In the Suburb-Origin analysis, it appears that individuals with moderate income levels exhibit the least Suburban stability and greatest likelihood of Suburb -> City and Suburb -> Rural trajectories. We also find that while the probability of Suburb -> City movement is similar for the most and least affluent segments, the Low Income individuals are almost twice as likely to demonstrate movement to a Rural location (9.3% vs. 5.1%). Conversely, almost no Low Income individuals followed the multiple shift trajectory.

The results of the "Main" and "Modified" models are shown in Tables 6.8 and 6.9. These models consider the effects of the predictor variables on three contrasts: Stable Suburb vs. Suburb -> City (86.0% vs. 14.0%), Stable Suburb vs. Suburb -> Rural (90.8% vs. 9.2%), and Stable Suburb vs. Suburb/City/Suburb (96.7% vs. 3.3%). The sample for analysis excludes those individuals with either a Foreign region of childhood residence or an "Other" size of childhood residence and consists of 1312 individuals.

In the "Main" model, age demonstrates significant negative effects on the probability of Suburb -> City and Suburb/City/Suburb movement. For example, respondents **age <=25** are roughly 3-4 times more likely than those **age 36+** to follow a Suburb -> City pattern. Likewise, the probability of Suburb/City/Suburb among the youngest respondents is over 5 times greater than the probability among those **age 36+**. While the significance declines slightly in the "Modified" model, age continues to demonstrate a strong impact on intra-metropolitan patterns of movement. Conversely, there are no age differences in the probability of Suburb -> Rural trajectories suggesting that the longitudinal movement to non-metropolitan areas of the place-type continuum is only moderately influenced by an individual's temporal progression through the life course.

Table 6.7: Suburb-Origin Analysis – Likelihood of Residential Trajectories

	N	Wgt N	Stable City	Sub -> City	Sub -> Rur	Sub/City/Sub
OVERALL	1392	37665	78.2%	11.6%	7.7%	2.5%
Age						
<=25	533	13764	66.7%	19.1%	8.5%	5.7%
26-35	248	6011	78.0%	13.5%	6.4%	2.1%
36-49	354	10199	87.1%	4.9%	8.0%	0.0%
50+	257	7691	87.3%	5.5%	6.8%	0.4%
Race						
White	1146	35732	78.0%	11.4%	8.0%	4.0%
Non-White	245	1925	81.5%	15.9%	2.0%	0.6%
Gender						
Male	921	25082	79.7%	10.8%	7.3%	2.2%
Female	471	12581	75.1%	13.2%	8.5%	3.2%
Education						
HS or Less	528	12109	81.5%	10.1%	7.6%	0.7%
Some College	520	14443	82.8%	9.4%	6.1%	1.7%
College or More	341	11053	68.4%	16.2%	9.8%	5.6%
Region - Until Age 16						
Northeast	408	14161	85.7%	5.8%	5.6%	2.9%
North-Central	350	10783	73.7%	14.1%	9.0%	3.2%
South	434	6917	71.6%	14.9%	11.7%	1.8%
West	138	3914	75.3%	17.8%	5.9%	1.0%
Foreign	10	249	61.8%	38.2%	0.0%	0.0%
Size - Until Age 16						
Farm	353	7923	78.7%	12.8%	7.8%	0.7%
Town/Suburb	542	16059	78.8%	10.5%	7.9%	2.8%
City	468	12883	77.9%	11.8%	6.8%	3.5%
Other	17	524	68.7%	25.8%	5.5%	0.0%
Marital Change						
Stable Non-Married	157	3884	77.3%	16.6%	4.2%	1.9%
Stable Married	502	12915	89.9%	3.7%	5.6%	0.8%
Shift into Marriage	253	7722	65.3%	18.5%	9.7%	6.5%
Shift out of Marriage	235	6709	81.2%	9.9%	8.9%	0.0%
Multiple Shifts	245	6435	67.6%	17.9%	10.3%	4.2%
Income Status						
Low Income	170	3107	82.0%	8.3%	9.3%	0.3%
Moderate Income	727	18547	72.9%	14.9%	9.6%	2.6%
High Income	495	16012	83.5%	8.4%	5.1%	2.9%
Income Status Change						
Downgrade	301	9230	76.6%	10.2%	11.3%	2.0%
Same	856	22763	81.2%	10.6%	6.2%	1.9%
Upgrade	235	5671	68.7%	17.8%	7.7%	5.8%
Marital Status Time 1						
Not Married	548	15425	69.8%	17.8%	8.1%	4.3%
Married	844	22238	84.0%	7.3%	7.4%	1.3%

Table 6.8: Suburb-Origin Analysis – Main Model

MAIN Model (N=1312)

	Stable Sub vs. Sub -> City			Stable Sub vs. Sub -> Rur			Stable Sub vs. Sub/City/Sub		
	B	SE		B	SE		B	SE	
VARIABLES									
Age (<=25 is reference)									
26-35	-0.416	0.261		-0.353	0.328		-0.409	0.492	
36-49	-1.087	0.281	***	-0.410	0.300		-2.742	1.052	**
50+	-1.198	0.323	***	-0.656	0.352		-2.396	1.056	*
Education (HS or Less is reference)									
Some College	-0.151	0.224		-0.198	0.273		0.028	0.542	
College or More	0.541	0.244	*	0.524	0.279		1.109	0.521	*
Gender (Female=1)	0.147	0.189		0.287	0.227		0.416	0.374	
Race (White=1)	-0.304	0.251		1.299	0.413	***	0.145	0.646	
Region - Age 16 (South is reference)									
Northeast	-0.932	0.292	***	-0.988	0.304	***	0.073	0.572	
North-Central	0.164	0.251		-0.347	0.282		0.571	0.555	
West	0.033	0.303		-0.553	0.391		-0.080	0.744	
Size of Residence - Age 16 (City is reference)									
Farm	0.109	0.237		0.208	0.299		-0.908	0.657	
Town/Suburb	-0.183	0.207		0.212	0.254		-0.722	0.386	
Marital Status T1 (Not Married is reference)	-0.465	0.207	*	0.104	0.257		-0.217	0.422	

Model Chi-Square = 166.99 df=39 Pseudo R-Square = .084

*** p < .001 ** p < .01 * p < .05

Table 6.9: Suburb-Origin Analysis – Modified Model

MODIFIED Model (N=1312)

	Stable Sub vs. Sub -> City			Stable Sub vs. Sub -> Rur			Stable Sub vs. Sub/City/Sub		
	B	SE		B	SE		B	SE	
VARIABLES									
Age (<=25 is reference)									
26-35	-0.253	0.263		0.051	0.337		0.087	0.496	
36-49	-0.844	0.292	**	0.071	0.322		-2.122	1.065	*
50+	-1.032	0.349	**	-0.303	0.398		-1.608	1.125	
Education (HS or Less is reference)									
Some College	-0.115	0.231		-0.047	0.281		0.123	0.564	
College or More	0.755	0.265	**	0.933	0.309	**	1.295	0.581	*
Gender (Female=1)	-0.204	0.213		0.093	0.271		0.182	0.419	
Race (White=1)	-0.333	0.259		1.363	0.420	***	0.255	0.682	
Region - Age 16 (South is reference)									
Northeast	-0.874	0.296	**	-0.945	0.309	**	0.119	0.582	
North-Central	0.209	0.255		-0.290	0.290		0.655	0.560	
West	0.070	0.309		-0.521	0.394		-0.105	0.751	
Size of Residence - Age 16 (City is reference)									
Farm	0.049	0.241		0.069	0.303		-0.983	0.664	
Town/Suburb	-0.190	0.210		0.213	0.257		-0.770	0.392	*
Marital Change (Stable Married is reference)									
Stable Non-Married	1.066	0.370	**	-0.555	0.534		0.394	0.874	
Shift into Marriage	0.939	0.300	**	0.495	0.352		1.039	0.619	
Shift out of Marriage	0.840	0.329	*	0.196	0.367				
Multiple Shifts	1.268	0.298	***	0.487	0.353		1.323	0.648	*
Income Status (High Income is reference)									
Low Income	0.218	0.397		1.075	0.476	*	0.064	0.878	
Moderate Income	0.619	0.232	**	0.922	0.276	**	0.222	0.425	

Model Chi-Square = 378.96 df=54 Pseudo R-Square = .113

*** p < .001 ** p < .01 * p < .05

In comparison, differences in the likelihood of unique trajectories are apparent upon contrasting the most and least educated segments of the population. College graduates are roughly 70-80% more likely to follow a Suburb -> City or a Suburb -> Rural trajectory than individuals with High School education or less, and over 3 times more likely to follow a Suburb/City/Suburb trajectory. Unlike the City-Origin models, there are no apparent differences between High School or less respondents and those with Some College experience. These contrasts remain significant in the "Modified" model suggesting that the influence of education persists regardless of the impact of other life course transitions.

There are some selected effects of Race across the three contrasts. While levels of Suburban stability and Suburb -> City movement are similar across racial groups, the "Main" and "Modified" models indicate that Whites are significantly more likely to follow a Suburb -> Rural trajectory than Non-Whites. The regression coefficients show that Whites are over 3.5 times more likely to follow a Suburb -> Rural trajectory. It is evident that movement down the place type hierarchy to non-metropolitan regions is a more realistic option for Whites who leave Suburban areas than Non-Whites.

An individual's geographic region of childhood residence maintains an impact on the probability of different patterns of movement. In particular, the model results indicate that those reared in the Northeast are significantly less likely than Southern respondents to follow either a Suburb -> City or Suburb -> Rural trajectory. In fact, Southern respondents are 2-3 times more likely then Northeastern respondents to follow a pattern that takes them across the urban-suburban-rural boundaries of the geographic landscape. Moreover, while not significant, there is evidence that Western respondents also demonstrate a lower probability of Suburb -> Rural movement over the residential trajectory. As expected, size of childhood residence has little impact on the probability of Suburb-origin trajectories.

The two models indicate that marital status is strongly related to patterns of intra-metropolitan area movement. In the "Main" model, those not married at time period 1 are significantly more likely to follow a Suburb -> City trajectory than married individuals. A similar process is evident when I consider the change in marital status. The "Modified" model shows that Stable Married individuals are significantly less likely than any of the other groups to engage in Suburb -> City movement, and that the greatest movement to such locations is exhibited by those who enter marital unions during the course of the sequence. In contrast, there

are no significant differences in the probability of Suburb -> Rural movement across these groups. It is possible that while life course shifts such as entering or leaving marriage can spur movement to the city, they don't increase the likelihood of movement to Rural locations.

As first noted in the univariate summary, there are some interesting effects of Income Status on the prevalence of residential trajectories. The "Modified" model shows that the probability of Suburb -> City movement is highest for those in the moderate income range, and roughly equivalent for the most and least affluent respondents. Similarly, after controlling for demographic, life-cycle and life course measures, the likelihood of City -> Rural movement among those in the Low and Moderate income ranges is significantly greater than observed among the most affluent Suburban respondents. The divergent probabilities of Suburb/City/Suburb movement between Low and High Income respondents demonstrated in the univariate summaries do not appear in the multivariate analyses.

Suburb-Origin Analysis: Enter Marital Life-Course Sample

A set of multinomial logistic regression models was used to explore the possible determinants of residential trajectories in a sample of Suburb-Origin respondents who either entered a marital situation or engaged in multiple marital shifts over the life course. The intent was to assess whether the correlates of residential pathways vary upon examining individuals with distinctive marital careers. The overall "Modified" model showed that the likelihood of non-stable residential movement from Suburban origins is higher among individuals who engage in marital shifts over the course of the residential sequence. The question in this analysis is whether the independent effects of age, race, education, childhood residence and income present in the overall models exhibit a similar influence in a sample of mobile individuals who make concurrent life course transitions.

The "Enter Marital" sample consists of 468 Suburb-Origin respondents. The weighted probability of following each of the four residential trajectories is: Stable Suburb (66.8%), Suburb -> City (17.8%), Suburb -> Rural (10.0%), and Suburb/City/Suburb (5.5%). A multinomial logistic regression model, shown in Table 6.10, was used to examine the following contrasts: Stable City vs. City -> Suburb (76.7% vs. 23.3%), Stable City vs. City -> Rural (86.6% vs. 13.4%), and Stable City vs. City/Suburb/City (92.1% vs. 7.9%).

The model results suggest some variations in the determinants of residential trajectories in the sample of individuals who entered marital unions during the course of the residential sequence. The strong influence of age in the overall sample lessens some in the Enter Marital sample. There are no significant differences in the likelihood of distinct residential trajectories across the four age segments. It is evident that marital shifts, regardless of when they occur over the life course, frequently translate into residential shifts.

On the other hand, the large disparities across educational attainment groups persist in the Enter Marital sample. Suburb-Origin respondents with a College Degree or More are 2-3 times more likely to follow Suburb -> City and Suburb -> Rural trajectories, and over 5 times more likely to follow a Suburb/City/Suburb pathway than the least educated respondents. It appears that the influence of education persists among those who engage in concurrent life course transitions. However, the limited effects of Race in the "Modified" model are not present in the Enter Marital models. In the full sample, Whites were over 3.5 times more likely to demonstrate movement to Rural locations than Non-Whites. In the present analysis, there are no significant differences in the longitudinal movement patterns of Whites and Non-Whites. This suggests that minorities who enter marital unions or engage in marital transitions retain the same opportunity as Whites to translate such shifts into residential shifts to alternative locations.

I also find that the size of childhood residence has a moderate impact on the likelihood of Suburb -> Rural movement. Interestingly, while we might expect that those reared in farm locations would be more likely to seek out and move towards Rural locations over the progression of their residential career, the current results indicate that those reared in a Town or Suburb actually demonstrate the greatest Rural movement. In other words, those individuals who enter a marital union, and who were reared in and started their trajectory in the same place (i.e., Suburbs), are more likely to follow pathways to non-metropolitan areas. This implies that City reared individuals with non-stable marital careers actually exhibit the greatest Suburban persistence. Perhaps the initial break that carries these City reared individuals to the Suburbs in the first place represents the greatest extent to which such individuals are willing to move about the urban-suburban-rural place continuum.

There are substantial differences in the prevalence of residential trajectories across income status groups. The higher levels of Suburb -> City movement among those with Moderate income levels is consistent with the findings in the overall sample. The higher Suburb -> Rural movement in this same segment mirrors the overall sample analysis, though there are no

Table 6.10: Suburb-Origin Analysis – ENTER MARITAL Model

ENTER MARITAL Model (N=468)

	Stable Sub vs. Sub -> City			Stable Sub vs. Sub -> Rur			Stable Sub vs. Sub/City/Sub		
	B	SE		B	SE		B	SE	
VARIABLES									
Age (<=25 is reference)									
26-35	-0.567	0.430		0.204	0.496		0.103	0.618	
36-49	-1.099	0.572		0.227	0.526		-1.029	1.081	
50+	-0.965	1.092							
Education (HS or Less is reference)									
Some College	-0.106	0.335		-0.264	0.455		0.285	0.702	
College or More	0.957	0.382	*	1.216	0.476	*	1.785	0.739	*
Gender (Female=1)	-0.329	0.279		0.528	0.339		0.307	0.436	
Race (White=1)	-0.488	0.358		0.784	0.570		-0.368	0.785	
Region - Age 16 (South is reference)									
Northeast	-1.130	0.425	**	-1.027	0.478	*	0.715	0.749	
North-Central	-0.285	0.363		-0.460	0.469		0.744	0.735	
West	-0.067	0.393		-0.866	0.626		0.100	0.947	
Size of Residence - Age 16 (City is reference)									
Farm	0.128	0.367		0.676	0.559		-0.829	0.831	
Town/Suburb	-0.243	0.293		0.908	0.441	*	-0.652	0.455	
Income Status (High Income is reference)									
Low Income	0.191	0.685		0.731	0.931		1.914	0.979	*
Moderate Income	0.992	0.324	**	1.516	0.441	***	0.519	0.494	

Model Chi-Square = 104.43 df=42 Pseudo R-Square = .112

*** p < .001 ** p < .01 * p < .05

disparities in this form of movement between the least and most affluent respondents. The Stable Suburb vs. Suburb/City/Suburb contrast indicates that movement is significantly greater for the least affluent Suburb-Origin respondents.

Rural-Origin Analysis: Overall Sample

I examined the likelihood of different residential trajectories among individuals who started their residential sequence in a Non-Metropolitan Rural location. Given our population of 25 possible residential trajectories, individuals can conceivably follow four basic patterns over the course of the trajectory: maintain consistent residence in rural locations (Stable Rural), engage in a shift to a central city location (Rural -> City), engage in a shift to a suburban location (Rural -> Suburb), or engage in a shift to a central city location followed by a subsequent shift back to a rural location (Rural/City/Rural). In reality, even though the Rural/City/Rural pattern is an important and viable residential trajectory, the number of individuals who follow such a trajectory is too small to include in the multivariate models. Since this group most resembles those who follow a Rural -> City pattern in the sense that they both exhibit a pattern of crossing from rural to urban landscapes, for the purposes of this analysis I chose to combine each into the general Rural -> City trajectory. Individuals were categorized into the three comparison groups based on their original assignments to the 25 residential trajectories:

Stable Rural Trajectories
1 – Stable Small Rural
2 – Stable Large Rural

Rural -> City Trajectories
18 – Rural -> LM City
21 – Rural -> SM City
22 – Rural/City/Rural

Rural -> Suburb
19 – Rural -> LM Suburb

A summary of the characteristics of the 1234 respondents who follow these distinct trajectories is presented in Table 6.11. The weighted distribution of individuals across the three comparison groups is: Stable Rural (88.7%), Rural -> City (6.1%), Rural -> Suburb (5.2%). At the onset, I should note some interesting characteristics of the Rural Origin sample composition.

First, as in the Suburb Origin sample, this group is comprised of much higher proportions of White and male respondents. In fact over ¾ of the sample is White, and roughly 2/3 is male. Second, the proportion of respondents who were reared in either the Northeast or West is substantially lower than observed in the other two samples. This is partly attributable to the fact that Northeastern and Western states tend to have a smaller percentage of non-metropolitan land relative to metropolitan land, and have larger percentages of individuals residing in either urban or suburban areas.

Older respondents are less inclined to follow non-stable patterns of longitudinal movement. There is a distinct split between those **age <=35** and individuals **age 36+** where the probability of Rural -> City or Rural -> Suburb movement declines substantially after this age period. I further observe some moderate differences in the likelihood of trajectories across Race and Gender categories. In contrast to the other analyses, it appears that Non-Whites demonstrate the greatest likelihood of movement away from stability. They demonstrate greater Rural -> City movement (8.4% vs. 5.9%) and Rural -> Suburb movement (5.0% vs. 6.7%). Similarly, females show slightly greater movement along both trajectories than males.

The most educated respondents exhibit the greatest longitudinal movement away from Rural locations. Over 15.3% of those with a College Degree or More traveled a pathway from Rural -> City while over 11% followed a Rural -> Suburb trajectory. In general, the probability of non-stable movement increases with greater education, though clearly, the likelihood of leaving a Rural location during the course of the trajectory is enhanced by the acquisition of a college degree.

The likelihood of residential trajectories also varies across different regions and sizes of childhood residence. The probability of movement to City locations is higher in Northeastern and Western regions, while the probability of Rural -> Suburb movement is somewhat greater among those reared in the Northeast. With regards to the size of childhood residence, those raised in Farm locations demonstrate the greatest probability of stability (92.7%) and subsequently less longitudinal movement to the City or Suburbs. The more interesting groups, though, are respondents reared in City and Town/Suburb locations. "City" respondents demonstrate average rates of Rural stability, and low rates of Rural -> City movement, yet the highest likelihood of movement to Suburban locations (8.4%). In contrast, "Town/Suburb" respondents are the least stable and report substantially greater movement to City locations (13.4% vs. an average of 6.1%). These results seem counter-intuitive and lead us to believe that individuals raised in

distinct sectors of metropolitan areas and presently living in Rural areas choose destinations different from their initial origins (e.g., "City" movers from Rural locations choose the Suburbs; "Suburb" movers from Rural locations choose the "City").

While there are some differences across the marital status groups, they are less salient than those observed in the City-Origin and Suburb-Origin analyses. Individuals not married at the initial time period demonstrate a greater probability of Rural -> City movement, and slightly greater movement to the Suburbs. Looking at the measure of Marital Status change, the probability of a Rural -> City trajectory is quite high for those who enter a marital union during the residential sequence, and low for those who remain married, or engage in a shift out of marriage. In many instances these are older individuals who experienced the death of a spouse. Likewise, the likelihood of movement to the Suburbs is highest among those who either shifted into marriage or engaged in multiple marital shifts.

The prevalence of residential trajectories varies somewhat across Income Status segments. In general, the probability of non-stable movement increases with Income Status. In fact, High Income respondents are over twice as likely to follow either a Rural -> City or Rural -> Suburb than Low Income respondents. The second measure of Income Status change suggests that individuals who upgraded their income status during the course of the residential sequence exhibit substantially more movement away from Rural locations over their lifetime.

The results of the "Main" and "Modified" models are shown in Tables 6.12 and 6.13. These models consider the effects of the predictor variables on two contrasts: Stable Rural vs. Rural -> City (93.7% vs. 6.3%) and Stable Rural vs. Rural -> Suburb (94.4% vs. 5.6%). The sample for analysis excludes those individuals with either a Foreign region of childhood residence or an "Other" size of childhood residence and consists of 1185 individuals. There are some significant differences in the likelihood of Rural -> City and Rural -> Suburb movement across age groups. Individuals **age <=25** are three times more likely than those **age 36-49** to follow a Rural -> City trajectory. The youngest respondents are also demonstrate a significantly higher probability of Rural -> Suburb movement than those in the **age 36-49** segment, and a substantively greater likelihood of similar movement than the oldest respondents (**age 50+**). It is interesting that the dramatic differences between the youngest and oldest respondents first shown in the univariate summaries are not as salient in the "Main" or "Modified" model. Perhaps the great disparity between these age groups is best accounted for by differences in education or marital status.

Table 6.11: Rural-Origin Analysis – Likelihood of Residential Trajectories

	N	Wgt N	Stable Rural	Rural -> City	Rural -> Suburb
OVERALL	1234	28959	88.7%	6.1%	5.2%
Age					
<=25	482	10264	81.2%	11.3%	7.5%
26-35	193	4414	85.9%	7.9%	6.3%
36-49	251	5717	94.4%	2.0%	3.6%
50+	308	8564	95.5%	1.7%	2.8%
Race					
White	899	25790	89.2%	5.9%	5.0%
Non-White	333	3108	84.9%	8.4%	6.7%
Gender					
Male	811	18430	90.2%	5.1%	4.7%
Female	423	10526	86.2%	7.9%	5.9%
Education					
HS or Less	694	14952	93.8%	2.9%	3.3%
Some College	354	8913	89.3%	6.0%	4.7%
College or More	181	4989	73.3%	15.3%	11.4%
Region - Until Age 16					
Northeast	82	2557	82.9%	10.4%	6.7%
North-Central	358	10910	89.8%	4.9%	5.3%
South	705	12685	90.2%	5.0%	4.8%
West	68	2328	84.1%	11.3%	4.6%
Size - Until Age 16					
Farm	720	15160	92.7%	3.7%	3.6%
Town/Suburb	270	6890	81.3%	13.4%	5.2%
City	208	5992	88.0%	3.6%	8.4%
Other	22	626	82.4%	5.6%	12.0%
Marital Change					
Stable Non-Married	169	4145	89.0%	7.3%	3.8%
Stable Married	441	9805	93.8%	2.4%	3.7%
Shift into Marriage	182	4297	78.2%	14.7%	7.1%
Shift out of Marriage	211	5080	93.6%	2.3%	4.1%
Multiple Shifts	231	5631	83.4%	8.5%	8.0%
Income Status					
Low Income	315	6515	94.0%	3.0%	3.0%
Moderate Income	757	17838	87.9%	6.6%	5.5%
High Income	162	4604	84.6%	8.7%	6.7%
Income Status Change					
Downgrade	191	5054	89.4%	7.8%	2.8%
Same	836	19585	90.6%	4.3%	5.1%
Upgrade	207	4319	79.6%	12.6%	7.8%
Marital Status Time 1					
Not Married	473	11115	83.1%	10.6%	6.2%
Married	761	17843	92.2%	3.3%	4.5%

Table 6.12: Rural-Origin Analysis – Main Model

MAIN Model (N=1185)

	Stable Rural vs. Rural -> City			Stable Rural vs. Rural -> Suburb		
	B	SE		B	SE	
VARIABLES						
Age (<=25 is reference)						
26-35	0.073	0.424		-0.393	0.420	
36-49	-1.119	0.571	*	-1.174	0.491	*
50+	-0.612	0.449		-0.800	0.428	
Education (HS or Less is reference)						
Some College	0.716	0.337	*	0.220	0.360	
College or More	1.606	0.361	***	1.456	0.353	***
Gender (Female=1)	0.384	0.272		0.202	0.296	
Race (White=1)	-0.873	0.370	*	-0.803	0.387	*
Region - Age 16 (South is reference)						
Northeast	1.086	0.482	*	0.761	0.497	
North-Central	0.229	0.375		0.154	0.370	
West	0.813	0.506		0.376	0.598	
Size of Residence - Age 16 (City is reference)						
Farm	0.181	0.442		-0.717	0.362	*
Town/Suburb	0.695	0.443		-0.389	0.391	
Marital Status T1 (Not Married is reference)	-0.756	0.330	*	0.097	0.327	

Model Chi-Square = 121.79 df=26 Pseudo R-Square = .120

*** p < .001 ** p < .01 * p < .05

Table 6.13: Rural-Origin Analysis – Modified Model

MODIFIED Model (N=1185)

	Stable Rural vs. Rural -> City			Stable Rural vs. Rural -> Suburb		
	B	SE		B	SE	
VARIABLES						
Age (<=25 is reference)						
26-35	0.066	0.416		-0.358	0.420	
36-49	-1.158	0.575	*	-1.135	0.501	*
50+	-0.607	0.486		-0.783	0.466	
Education (HS or Less is reference)						
Some College	0.803	0.363	*	0.217	0.371	
College or More	1.657	0.399	***	1.450	0.377	***
Gender (Female=1)	0.229	0.313		-0.081	0.336	
Race (White=1)	-0.898	0.379	*	-0.830	0.395	*
Region - Age 16 (South is reference)						
Northeast	1.063	0.488	*	0.776	0.497	
North-Central	0.248	0.377		0.142	0.372	
West	0.818	0.508		0.318	0.604	
Size of Residence - Age 16 (City is reference)						
Farm	0.179	0.447		-0.770	0.368	*
Town/Suburb	0.673	0.449		-0.458	0.397	
Marital Change (Stable Married is reference)						
Stable Non-Married	1.202	0.543	*	0.452	0.544	
Shift into Marriage	1.096	0.477	*	0.036	0.478	
Shift out of Marriage	-0.104	0.664		0.561	0.492	
Multiple Shifts	0.891	0.497		0.611	0.448	
Income Status (High Income is reference)						
Low Income	-0.075	0.556		-0.284	0.576	
Moderate Income	-0.424	0.397		-0.220	0.397	

Model Chi-Square = 131.25 df=36 Pseudo R-Square = .129

*** p < .001 ** p < .01 * p < .05

Likewise, educational attainment is correlated with greater movement to City or Suburban locations. The probability of Rural -> City movement is higher for those with either Some College or a College Degree or More. In fact, the most educated individuals are almost 5 times more likely than the least educated individuals to make a shift to a City location, and over 4 times more likely to make a shift to a Suburban location. The education differences persist in the "Modified" model, and it is reasonable to assume that education is one of the strongest correlates of longitudinal movement among those situated in Rural locations.

Once again there are racial differences in the probability of longitudinal movement away from Rural areas. In both models, Non-Whites demonstrate a greater likelihood than Whites of following the two distinct non-stable trajectories. Minority respondents are over twice as likely than Whites to follow either a Rural -> City or Rural -> Suburb pattern. This is the first instance where Non-Whites actually demonstrate less residential stability over time.

The initial differences based on the region and size of childhood residence illustrated in the univariate summaries diminish somewhat in the multivariate models. There is some evidence that those reared in the Northeast demonstrate a significantly higher probability of Rural -> City movement than those in the reference category (i.e., South). I further find a significant difference in the probability of Rural -> Suburb movement among those reared in "Farm" and "City" locations. As expected, "City" respondents are over twice as likely to follow a Rural -> Suburb trajectory. This shows the reluctance of "Farm" respondents to follow trajectories that carry them away from childhood origins, as well as, the intriguing process that illustrates "City" respondents' settlement in Suburban destinations.

A respondent's marital status at the first time period influences the likelihood of a Rural -> City trajectory. Holding constant the other demographic and life-cycle measures, non-married individuals are over twice as likely to follow a lifetime pattern that carries them away from Rural locations to City settings. The "Modified" model further enhances our understanding of the relationship between marital status and residential movement. The probability of Rural -> City movement is significantly higher for two distinct population segments: those who remain single over the course of the residential sequence and those who engage in a shift into a marital union over the course of the residential sequence. These patterns suggest that a) getting married can lead individuals into pathways towards the city b) even those not marrying (i.e., single individuals) are willing to follow pathways to the City, and c) being and staying married "holds"

individuals in Rural locations. In comparison, we find no significant contrasts between groups in the Rural -> Suburb model.

Rural-Origin Analysis: Enter Marital Life-Course Sample

A set of multinomial logistic regression models were used to explore the possible determinants of residential trajectories in a sample of Rural-Origin respondents who either entered a marital situation or engaged in multiple marital shifts over the life course. The intent was to assess whether the correlates of residential pathways vary upon examining individuals with distinctive marital careers. The overall "Modified" model illustrated that Rural -> City movement was substantially greater for those who engaged in such marital shifts, though there is little evidence of increased movement towards the suburbs among those with variable marital careers. The question in this analysis is whether the independent effects of age, race, education, childhood residence and income present in the overall models exhibit a similar influence in sample of non-metropolitan residents who demonstrate distinctive marital careers.

The "Enter Marital" sample consists of 394 Rural-Origin respondents. The weighted probability of following each of the three residential trajectories is: Stable Rural (81.6%), Rural -> City (10.9%), and Rural -> Suburb (7.5%). A multinomial logistic regression model, shown in Table 6.14, was used to examine the following contrasts: Stable Rural vs. Rural -> City (88.5% vs. 11.5%) and Stable Rural vs. Rural -> Suburb (92.0% vs. 8.0%).

There are some interesting effects of the predictors of patterns of residential movement in this sample. The significantly higher Rural -> City and Rural -> Suburb movement exhibited by the youngest respondents in the overall sample is not apparent among those who follow non-stable marital careers. This theme carries forward from the Suburb-Origin analysis and suggests that shifts in aspects of the life course start to take precedence over temporal shifts in the life cycle in determining residential choice and movement patterns.

The strong effects of educational attainment are consistent with the overall sample analyses. College educated individuals entering marital unions during the residential sequence exhibit rates of movement to either the City or the Suburbs roughly five times those demonstrated by the least educated respondents. In this instance, it is clear that the process of entering a marital union does not bridge the disparity in the likelihood of movement for those with lower levels of educational attainment. This seems to reinforce the notion that the acquisition of educational

skills and training, in part, is responsible for leading individuals on pathways away from Rural settings. Likewise, the differences across racial groups shown in the "Modified" model persist in the Enter Marital sample. Non-Whites are significantly more likely than Whites to couple marital shifts with movement across the urban-suburban-rural continuum.

In general, there are no other significant determinants of non-stable trajectories in this sample. The core set of predictors of movement among those follow non-stable marital careers is similar to that experienced in the overall sample analysis.

Table 6.14: Rural-Origin Analysis – ENTER MARITAL Model

ENTER MARITAL Model (N=394)

	Stable Rural vs. Rural -> City			Stable Rural vs. Rural -> Suburb		
	B	SE		B	SE	
VARIABLES						
Age (<=25 is reference)						
26-35	-0.299	0.695		0.271	0.649	
36-49	-1.361	1.095		-0.079	0.828	
50+						
Education (HS or Less is reference)						
Some College	1.337	0.530	*	0.077	0.549	
College or More	2.216	0.586	***	1.355	0.590	*
Gender (Female=1)	0.173	0.363		1.059	0.438	*
Race (White=1)	-1.019	0.505	*	-1.490	0.647	*
Region - Age 16 (South is reference)						
Northeast	0.943	0.729		1.188	0.857	
North-Central	0.178	0.513		0.841	0.645	
West	0.179	0.662		-0.222	1.159	
Size of Residence - Age 16 (City is reference)						
Farm	0.266	0.725		-0.787	0.667	
Town/Suburb	0.736	0.712		-0.269	0.640	
Income Status (High Income is reference)						
Low Income	-0.724	0.831		-0.866	1.071	
Moderate Income	-0.953	0.522		-0.080	0.680	

Model Chi-Square = 63.65 df=28 Pseudo R-Square = .138

*** p < .001 ** p < .01 * p < .05

CHAPTER 7: DETERMINANTS OF PLACE BY GEOGRAPHIC STABILITY

One of the goals of this study is to examine the distinction between "type of place" and "geographic location", and explore how each in turn shape the residential trajectories that individuals follow over the life course. As previously discussed, an individual's residential history is a composite of two dimensions. The first dimension, "place stability", is shown through the residential trajectories developed in this study. Thinking about this dimension as a two-fold measure, an individual can either maintain stable residence in a "place-type", or engage in patterned shifts across place-types over the course of his or her residential sequence. The second dimension, "geographic stability", is reflected through an individual's specific movements within the geographic landscape. An individual can demonstrate either "stable geography" through movement restricted to a small geographic region (e.g., movement within a specific metropolitan area), or "non-stable geography" via movement across a wider swath of the geographic landscape (e.g., movement that crosses county, state, or regional boundaries). To assess an individual's "geographic stability" it is necessary to evaluate the distance traveled during the course of the residential sequence.

The analyses in Chapters 5 and 6 examined the demographic, life-cycle and life course correlates of stable and non-stable movement across "place-types". I found that variations in "place stability" are related to factors such as age, race, education, childhood residential situation, marital status and income status. The intent of this chapter is to explore the intersection between the two dimensions of residential histories. The goal is to assess whether the factors that influence patterns of "geographic stability" are similar to those that shape "place stability", and whether they differ among individuals who follow stable vs. non-stable residential trajectories.

At the onset we must create a 2 X 2 scheme to represent the two dimensions of the residential history. Individuals categorized into one of the first nine residential trajectories are classified as having a "Stable Place-Type". Individuals categorized into one of the remaining 16 patterned trajectories are classified as having a "Non-Stable Place-Type". The same individuals are classified into one of two "geographic stability" categories. Using data on the average miles traveled per change in census place or county over the course of the entire residential sequence, I classified those with less than 100 miles per place change as having "Stable Geography", and those with 100 miles or more as having "Non-Stable Geography". The presumption is that individuals who are geographically stable have, for the most part, undertaken moves within a

relatively constrained geographic region such as a metropolitan area or a set of adjacent counties. In some sense, the 100 mile criteria is a fairly liberal estimate of "close" moves, though it does come close to the maximum distance an individual might travel within a single metropolitan statistical area.

Since Chapter 6 summarized the factors that distinguish individuals who follow "Stable" vs. "Non-Stable" residential trajectories, the goal of this chapter is to examine the factors that distinguish geographically stable from geographically non-stable individuals, controlling for their patterns of movement across place-types. The two primary questions are:

a) What are the demographic, life-cycle, and life course determinants of non-stable geographic movement among those who follow a **stable place-type** trajectory?
b) What are the demographic, life-cycle, and life course determinants of non-stable geographic movement among those who follow a **non-stable place-type** trajectory?

It seemed logical to once again use three sub-samples defined by the "origin" of the residential trajectory. A set of multivariate logistic regression models was developed for the City-Origin, Suburb-Origin and Rural-Origin samples.[14] As in Chapter 6, a "Main" and "Modified" model was developed to examine whether the effects of demographic and life-cycle measures change upon including concurrent life course factors in the model. A summary of the 2 by 2 place/geographic stability scheme for each sample is shown in Table 7.1.

City-Origin Stability Model

I analyzed patterns of geographic stability among those who started their trajectory in a City using a set of multivariate logistic regression models. The Stable Place-Type models (valid n=1943) examined the correlates of stable and non-stable geographic movement among stable Urbanites. The Non-Stable Place-Type models (valid n=507) examined the correlates of stable and non-stable geographic movement among those following a non-stable residential trajectory starting in a City location and concluding in a City, Suburban, or Rural location. A summary of the likelihood of stable and non-stable geographic movement across the set of predictor measures is shown in Table 7.2. These values represent the weighted probabilities of different types of

movement. The corresponding Stable and Non-Stable Place-Type models are presented in Table 7.3.

Overall, 16.6% of the stable Urbanites followed a pattern of non-stable geographic movement. These individuals may represent folks who form attachments to city locations that can transcend spatial and geographic constraints. In other words, drawing on the place attachment literature, they are individuals with distinct identifications with a particular type of settlement (i.e., the city). The univariate summary of movement patterns indicates that the probability of non-stable geographic movement is high among younger respondents (over 27% of the **age <=25** individuals demonstrate "non-stable geography'), and somewhat greater for Whites with higher levels of educational attainment (e.g., 26.5% of the College Educated individuals demonstrate "non-stable geography"). Furthermore, rates of geographic instability are higher for those raised in Western or North-Central regions of the country, and slightly higher for those reared in a City setting.

There is some evidence of a relationship between marital status and geographic stability. Stable Urbanites who either enter a marital union or engage multiple marital shifts demonstrate higher rates of geographic instability. Additionally, the likelihood of non-stable movement is higher for Stable Urbanites not married at the first time period (20.8% vs. 13.1%). There is also some indication of disparities across the Income Status groups. Interestingly, individuals with Moderate Income Status demonstrate greater geographic movement than the least and most affluent groups.

The "Main" and "Modified" models provide further insight on the determinants of geographic instability among Stable Urbanites. I first observe significant effects of age on geographic movement. In particular the youngest respondents are significantly more likely to move across geographic boundaries than individuals **age 36+**. I also find strong effects of both race and education in the Stable Place-Type model. Whites are over twice as likely as Non-Whites to follow patterns of geographic instability. The earlier City-Origin models (see Chapter 6) demonstrated that Non-Whites follow more stable trajectories than Whites. The present analysis suggests that Whites who are residentially stable in terms of "place-type" are still demonstrating greater mobility through moves across the geographic landscape. The positive effects of education indicate that stable educated Urbanites are substantially more geographically mobile than their less educated brethren. This finding is consistent with studies showing the

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[14] All multivariate logistic regression analyses were conducted using SPSS for Windows version 6.1.

Table 7.1: Place by Geographic Stability

City-Origin Sample		
	Stable Geography	Non-Stable Geography
Stable Place-Type	1831	343
Non-Stable Place-Type	272	204
TOTAL	2103	547

Suburb-Origin Sample		
	Stable Geography	Non-Stable Geography
Stable Place-Type	939	160
Non-Stable Place-Type	134	159
TOTAL	1073	319

Rural-Origin Sample		
	Stable Geography	Non-Stable Geography
Stable Place-Type	978	60
Non-Stable Place-Type	116	80
TOTAL	1094	140

Table 7.2: City-Origin Stability Analysis – Likelihood of Stable vs. Non-Stable Geography

	Stable Place-Type				Non-Stable Place-Type			
	N	Wgt N	Stable Geography	Non-Stable Geography	N	Wgt N	Stable Geography	Non-Stable Geography
OVERALL	2103	35432	83.4%	16.6%	547	13608	61.1%	38.9%
Age								
<=25	788	12148	72.9%	27.1%	305	7678	55.3%	44.7%
26-35	392	5743	86.9%	13.1%	105	2434	64.8%	35.2%
36-49	529	8581	89.5%	10.5%	74	1737	74.7%	25.3%
50+	394	8960	89.4%	10.6%	63	1759	67.9%	32.1%
Race								
White	812	25450	87.9%	12.1%	387	12166	60.9%	39.1%
Non-White	1285	9941	81.7%	18.3%	160	1461	63.0%	37.0%
Gender								
Male	1060	19991	84.3%	15.7%	313	8099	60.6%	39.4%
Female	1043	15442	82.1%	17.9%	234	5528	61.8%	38.2%
Education								
HS or Less	1036	13769	91.0%	9.0%	159	3367	78.8%	21.2%
Some College	736	12880	81.7%	18.3%	239	6106	61.2%	38.8%
College or More	322	8635	73.5%	26.5%	145	4105	46.1%	53.9%
Region - Age 16								
Northeast	254	6675	92.1%	7.9%	93	2736	62.3%	37.7%
North-Central	401	8984	78.0%	22.0%	146	4456	59.6%	40.4%
South	1113	12254	85.5%	14.5%	190	3263	57.0%	43.0%
West	212	4790	74.7%	25.3%	87	2287	64.5%	35.5%
Foreign	26	643	88.5%	11.5%	11	387	69.0%	31.0%
Size - Age 16								
Farm	426	6846	86.9%	13.1%	90	2200	61.6%	38.4%
Town/Suburb	675	13293	84.3%	15.7%	191	4934	63.3%	36.7%
City	933	13882	81.1%	18.9%	249	6040	58.8%	41.2%
Other	18	427	77.3%	22.7%	7	217	65.0%	35.0%
Marital Change								
Stable Non-Married	588	7493	85.2%	14.8%	61	1196	76.4%	23.6%
Stable Married	479	9788	89.9%	10.1%	114	2585	72.0%	28.0%
Shift into Marriage	283	4881	70.2%	29.8%	148	3917	55.7%	44.3%
Shift from Marriage	350	6163	88.3%	11.7%	80	2121	61.2%	38.8%
Multiple Shifts	403	7108	77.3%	22.7%	144	3810	54.5%	45.5%
Income Status								
Low Income	551	5761	87.2%	12.8%	58	1091	76.5%	23.5%
Moderate Income	1193	19834	81.8%	18.2%	323	7455	62.2%	37.8%
High Income	359	9838	84.3%	15.7%	166	5081	56.2%	43.8%
Inc Status Change								
Downgrade	441	8210	89.0%	11.0%	94	2356	69.8%	30.2%
Same	1325	21631	84.6%	15.4%	323	8208	62.5%	37.5%
Upgrade	337	5591	70.4%	29.6%	130	3064	51.1%	48.9%
Marital Status T1								
Not Married	1127	16276	79.2%	20.8%	281	6954	59.1%	40.9%
Married	976	19157	86.9%	13.1%	266	6673	63.2%	36.8%

Table 7.3: City-Origin Stability Analysis – Main and Modified Models of Non-Stable Geography

	Stable Place-Type Model (N=1943)						Non-Stable Place-Type Model (N=507)					
	Main Model			Modified Model			Main Model			Modified Model		
	B	SE		B	SE		B	SE		B	SE	
VARIABLES												
Age												
26-35	-0.376	0.216		-0.246	0.218		-0.527	0.279		-0.381	0.286	
36-49	-0.842	0.226	***	-0.671	0.232	**	-0.775	0.337	*	-0.588	0.341	
50+	-0.839	0.242	***	-0.773	0.256	**	-0.036	0.342		0.161	0.380	
Education												
Some College	0.302	0.175		0.397	0.180	*	0.866	0.253	***	0.955	0.264	***
College or More	0.696	0.212	***	0.874	0.227	***	1.185	0.288	***	1.296	0.313	***
Gender (Female=1)	0.041	0.154		-0.052	0.175		-0.079	0.198		-0.091	0.227	
Race (White=1)	0.790	0.174	***	0.891	0.182	***	-0.106	0.246		-0.044	0.253	
Region - Age 16												
Northeast	-0.659	0.276	*	-0.676	0.277	*	-0.205	0.301		-0.282	0.303	
North-Central	0.389	0.183	*	0.372	0.184	*	0.070	0.259		0.071	0.261	
West	0.346	0.221		0.340	0.222		-0.095	0.294		-0.102	0.297	
Size of Residence - Age 16												
Farm	0.068	0.213		0.059	0.214		-0.030	0.290		-0.119	0.298	
Town/Suburb	-0.125	0.167		-0.129	0.168		-0.001	0.215		-0.002	0.218	
Marital Status T1	-0.047	0.172					0.325	0.225				
Marital Change												
Stable Non-Married				-0.012	0.271					-1.054	0.479	*
Shift into Marriage				0.394	0.261					0.078	0.327	
Shift out of Marriage				0.051	0.275					0.245	0.361	
Multiple Shifts				0.038	0.262					0.254	0.325	
Income Status												
Low Income				0.680	0.293	*				0.672	0.455	
Moderate Income				0.384	0.213					0.089	0.231	
N	1943			1943			507			507		
Log Likelihood	-1348.7			-1339.8			-641.45			-630.63		

strong influence of educational attainment on the distance of moves (e.g., Long 1988; Miller 1977).

The region of childhood residence emerges as a determinant of geographic stability among stable Urbanites. Specifically, those raised in a North Central location report the greatest geographic instability, while those reared in the Northeast report greater geographic stability. Since for many of the individuals in this sample, the region of childhood residence is quite similar to the region of current residence, it is not surprising that Stable Northeast Urbanites are less inclined to travel greater distances. Cities in the Northeast are typically closer in proximity than those situated in other regions, and hence, those who leave a specific city during the course of the residential sequence (e.g., Boston) are likely to end up in a second city within close proximity (e.g., Providence, RI – 60 miles to the south). In other words, if most individuals stay in a given region over the course of the sequence, then individuals in the Northeast have a greater range of "close" cities to choose from than residents of the North Central or Southern regions.[15]

The "Modified" model indicates that the presumed differences across Marital Status change groups dissipate in the multivariate analyses. While shifts in marital status are clearly correlated with the likelihood of trajectories followed by those starting in a city (see results in Chapter 6), they have less impact on the process of geographic movement exhibited by Stable Urbanites over the course of the residential sequence. Conversely, some differences across Income Status groups appear in the multivariate analyses. Low Income respondents actually demonstrate more geographic instability than High Income respondents. In fact, the Low Income Status individuals are almost twice as likely to engage in non-stable geographic movement. This is an interesting result, and suggests that Low Income individuals are exhibiting more dispersed mobility over the life course than first thought.

The analysis of the geographic movement patterns of those who follow non-stable residential trajectories show some important effects of demographic and life course processes on the probability of geographic movement. Overall, 38.9% of those who follow a non-stable trajectory exhibit patterns of geographic instability. The likelihood of non-stable geographic movement is somewhat higher for younger respondents – e.g., almost 45% of the **age <=25** respondents exhibit "non-stable geography" – and is especially high among the most educated respondents – e.g., almost 54% of those with a College Degree or More demonstrate "non-stable

geography". Generally, there are few variations in the likelihood of movement across categories of the childhood residence measures.

Yet, there is some evidence that changes in concurrent life course processes are related to patterns of geographic stability. Similar to what we have observed in other analyses, geographic movement is higher among individuals who enter a marital union or engage in multiple marital shifts over the course of the sequence. An analysis of the Income Status variables indicate that the prevalence of "non-stable geography" is greatest among the most affluent respondents (e.g., 43.8% of the High Income respondents demonstrate "non-stable geography"), and among those who upgrade their income status over the course of the residential sequence.

The Non-Stable Place-Type models are presented in Table 7.3. The significant age effects in the "Main" model indicate that younger respondents typically exhibit more non-stable geographic movement. However, these effects diminish in the "Modified" model, suggesting that variations in Marital Status patterns and processes may account for some of the observed differences across age groups. The influence of educational attainment, on the other hand, is quite strong in both models. Upon controlling for demographic and life course determinants, College Educated individuals are over three times more likely than those with a High School Degree or Less to exhibit non-stable geographic movement.

This result is interesting given what we know about the prevalence of residential trajectories across educational groups. Recall that in the City-Origin analysis of different residential trajectories I found that education maintained a weak to non-existent impact on the likelihood of following a City -> Suburb, City -> Rural, or City/Suburb/City trajectory. In other words, the most and least educated respondents demonstrate similar rates of non-stable residential movement over the life course. The present findings suggest that those educated individuals who do follow such non-stable patterns are more likely to exhibit their movements across a wider swath of the geographic landscape. For many educated respondents a residential shift may involve not only a change in type of place, but also a substantial change in geographic location. In contrast, the residential shift away from a City among less educated individuals is typically constrained to alternative residential settings within a limited geographic region. This contrast exemplifies the belief that educational attainment enables individuals to maintain greater freedom of movement throughout the residential and geographic landscape.

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[15] A set of corresponding analyses indicate that region of childhood residence is closely aligned with the region an individual lives in throughout the course of the residential trajectory. This link is even present

The independent effects of the Marital Status and Income Status differ somewhat from what I observed in the univariate summary. There are few distinctions in the likelihood of non-stable geographic movement across the different life course categories. In fact, the only significant effect is the reduced likelihood of "non-stable geography" among individuals who remained unmarried over the course of the residential sequence. One might assume that individuals who remain unmarried have the greatest freedom or flexibility of movement, and thus might follow patterns that cross both "place-type" and "geographic" boundaries. However, these results suggest that the movements of single individuals who leave the City during the course of the trajectory are predominantly restricted to Suburban or Rural locations within close proximity to the origin. Interestingly, there is little impact of Income Status on the probability of geographic instability. Perhaps some of the previously noted distinctions across Income Status groups are best accounted for by differences in educational attainment. If so, then maybe it is education, rather than income attainment, that drives geographic mobility across place-types.

Suburb-Origin Stability Model

I analyzed patterns of geographic stability among those who started their trajectory in a Small or Large Metropolitan Suburb using a set of logistic regression models. The Stable Place-Type models (valid n=1011) examined the correlates of stable and non-stable geographic movement among stable Suburbanites. The Non-Stable Place-Type models (valid n=301) examined the correlates of stable and non-stable geographic movement among those following a non-stable residential trajectory starting in a Suburban location and concluding in a City, Suburban, or Rural location. A summary of the likelihood of stable and non-stable geographic movement across the set of predictor measures is shown in Table 7.4. These values represent the weighted probabilities of different types of movement. The corresponding Stable and Non-Stable Place-Type models are presented in Table 7.5.

Overall, 10.4% of the Stable Suburbanites demonstrated non-stable geographic movement across the US landscape. While the youngest respondents, **age <=25**, exhibit the highest rates of non-stable geographic movement (17.4%), in general, there is little variation in the prevalence of geographic instability across age groups. This differs from what I observed in the City-Origin analysis of Stable Urbanites. However, the likelihood of non-stable geographic

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among the oldest respondents in the sample.

movement does vary across other demographic and life course correlates. For example, Whites are almost three times as likely as Non-Whites to exhibit "non-stable geography" (14.3% vs. 5.2%), and likewise, the rates of geographic instability are especially high for the most educated Stable Suburbanites (i.e., College Degree or More – 22.2%).

With respect to measures of childhood residence, Stable Suburbanites raised in the Southern region report the lowest probability of geographic instability. In general, the suburbs are a less prominent feature of the Southern landscape; thus, it is not surprising that much of the Stable Suburban movement exhibited by these folks is constrained to smaller geographic areas. In contrast, while the differences are not dramatic, individuals raised in a Town or Suburban location report slightly greater geographic instability.

Patterns of geographic stability among Stable Suburbanites are also related to concurrent life course processes. Individuals who maintain a stable marital status (i.e., either remain single or stay married over the entire sequence) exhibit lower levels of movement, while, as expected, geographic movement is highest among those who enter martial unions. In fact over 25% of the Stable Suburbanites who enter into marriage over the course of the sequence follow patterns of "non-stable geography". There are fewer distinctions across Income Status groups. The probability of non-stable geographic movement is slightly lower for Low Income respondents, though we should note that this segment of the Stable Suburbanite population is relatively small.

The two Stable Place-Type models shown in Table 7.5 illustrate the influence of demographic, life-cycle and life course measures on the likelihood of geographic instability. There is a moderate effect of race on "non-stable geography" that abates some when I include the life course measures in the model. In contrast, there are highly significant differences across educational groups in the "Main" and "Modified" models. The significant positive effect of College Degree or More indicates that the probability of non-stable geographic movement is over twice as high among those with the greatest levels of educational attainment. This is consistent with the patterns exhibited in the City-Origin analysis, and further supports the contention that education provides the opportunity for less constrained movement across the geographic landscape. The non-significant contrast between those with a High School degree and those with Some College suggests that mobile geographic movement across different Suburban locations is a realistic option for only the most educated individuals.

While the effects are insignificant, there is some substantive evidence that levels of non-stable geographic movement are lower among those from Southern regions. Of greater interest,

Table 7.4: Suburb-Origin Stability Analysis – Likelihood of Stable vs. Non-Stable Geography

	Stable Place-Type				Non-Stable Place-Type			
	N	Wgt N	Stable Geography	Non-Stable Geography	N	Wgt N	Stable Geography	Non-Stable Geography
OVERALL	1073	29455	86.2%	13.8%	319	8208	44.7%	55.3%
Age								
<=25	354	9177	82.6%	17.4%	179	4586	47.7%	52.3%
26-35	190	4687	89.7%	10.3%	58	1323	39.0%	61.0%
36-49	305	8880	85.5%	14.5%	49	1318	45.9%	54.1%
50+	224	6711	89.5%	10.5%	33	981	36.8%	63.2%
Race								
White	884	27881	85.7%	14.3%	262	7852	45.0%	55.0%
Non-White	188	1569	94.8%	5.2%	57	356	37.9%	62.1%
Gender								
Male	724	20003	86.8%	13.2%	197	5081	43.8%	56.2%
Female	349	9453	85.1%	14.9%	122	3127	46.2%	53.8%
Education								
HS or Less	426	9873	90.2%	9.8%	102	2236	54.8%	45.2%
Some College	417	11965	88.1%	11.9%	103	2477	46.3%	53.7%
College or More	227	7558	77.8%	22.2%	114	3494	37.1%	62.9%
Region - Age 16								
Northeast	348	12141	85.2%	14.8%	60	2020	45.1%	54.9%
North-Central	254	7950	85.8%	14.2%	96	2833	46.6%	53.4%
South	322	4953	91.7%	8.3%	112	1963	41.9%	58.1%
West	101	2948	83.9%	16.1%	37	966	47.9%	52.1%
Foreign	6	154	45.5%	54.5%	4	95	34.7%	65.3%
Size - Age 16								
Farm	227	6236	88.9%	11.1%	76	1687	58.0%	42.0%
Town/Suburb	417	12648	84.1%	15.9%	125	3411	42.5%	57.5%
City	359	10037	86.8%	13.2%	109	2846	42.0%	58.0%
Other	12	360	90.0%	10.0%	5	164	100.0%	0.0%
Marital Change								
Stable Non-Married	123	3001	93.3%	6.7%	34	883	40.4%	59.6%
Stable Married	437	11615	90.9%	9.1%	65	1299	40.2%	59.8%
Shift into Marriage	165	5040	74.6%	25.4%	88	2681	53.2%	46.8%
Shift from Marriage	190	5446	87.7%	12.3%	45	1262	43.8%	56.2%
Multiple Shifts	158	4351	80.2%	19.8%	87	2082	38.9%	61.1%
Income Status								
Low Income	138	2549	93.8%	6.2%	32	558	55.0%	45.0%
Moderate Income	529	13529	85.6%	14.4%	198	5016	40.6%	59.4%
High Income	406	13377	85.3%	14.7%	89	2634	50.3%	49.7%
Inc Status Change								
Downgrade	230	7067	84.8%	15.2%	71	2163	44.6%	55.4%
Same	677	18494	87.1%	12.9%	179	4269	40.2%	59.8%
Upgrade	166	3894	84.3%	15.7%	69	1776	55.7%	44.3%
Marital Status T1								
Not Married	380	10770	81.9%	18.1%	168	4655	46.9%	53.1%
Married	693	18686	88.7%	11.3%	151	3552	41.8%	58.2%

Table 7.5: Suburb-Origin Stability Analysis – Main and Modified Models of Non-Stable Geography

	Stable Place-Type Model (N=1011)						Non-Stable Place-Type Model (N=301)					
	Main Model			Modified Model			Main Model			Modified Model		
	B	SE		B	SE		B	SE		B	SE	
VARIABLES												
Age												
26-35	-0.267	0.312		0.001	0.315		0.099	0.361		0.342	0.390	
36-49	-0.264	0.278		0.133	0.295		-0.033	0.403		0.166	0.433	
50+	-0.510	0.327		-0.080	0.366		0.659	0.463		0.874	0.526	
Education												
Some College	0.129	0.252		0.138	0.259		0.401	0.326		0.371	0.339	
College or More	0.717	0.267	**	0.796	0.295	**	0.926	0.331	**	1.170	0.368	**
Gender (Female=1)	0.139	0.219		0.101	0.253		0.039	0.256		0.035	0.300	
Race (White=1)	0.822	0.430		0.648	0.441		0.818	0.366	*	0.897	0.372	*
Region - Age 16												
Northeast	0.484	0.313		0.550	0.320		-0.386	0.371		-0.409	0.377	
North-Central	0.502	0.321		0.500	0.326		-0.328	0.326		-0.390	0.337	
West	0.592	0.378		0.609	0.381		0.070	0.432		0.016	0.447	
Size of Residence - Age 16												
Farm	0.291	0.284		0.243	0.290		-0.378	0.337		-0.408	0.345	
Town/Suburb	0.098	0.225		0.086	0.229		0.218	0.284		0.255	0.292	
Marital Status T1	-0.177	0.244					0.082	0.289				
Marital Change												
Stable Non-Married				-0.714	0.550					-0.296	0.571	
Shift into Marriage				0.960	0.323	**				-0.463	0.419	
Shift out of Marriage				0.373	0.344					-0.303	0.469	
Multiple Shifts				0.755	0.325	*				0.032	0.415	
Income Status												
Low Income				0.019	0.484					0.133	0.582	
Moderate Income				0.203	0.237					0.777	0.317	*
N	1011			1011			301			301		
Log Likelihood	-723.21			-704.42			-392.18			-381.87		

though, are the significant effects of Marital Status change measures in the "Modified" model. As expected, the likelihood of non-stable geographic movement is significantly greater among individuals who enter a marital union or engage in multiple marital shifts during the residential sequence. Both groups are over twice as likely than Stable Married respondents to follow patterns of "non-stable geography.

I further find that the moderate racial differences exhibited in the "Main" model diminish upon controlling for other life course processes. The implication is that any differences between Whites and Non-Whites in their likelihood of following more mobile movement patterns is moderated by more proximate indicators of shifts in marital status during the residential trajectory. These effects of marital status are more prominent than observed in the City-Origin analysis, and suggest that Stable Suburbanites who follow distinct marital careers can exhibit more or less flexibility of movement across the geographic landscape. Likewise, it is distinctly possible that Stable Married individuals have settled in a single Suburban location, subsequently limiting their likelihood of traveling across Suburban locations throughout the geographic landscape.

An analysis of individuals who follow a non-stable residential trajectory originating in a Suburban location illustrates the impact of demographic and life course factors on patterns of geographic stability. In total, 55.3% of these individuals exhibited a pattern of "non-stable geography" over the course of the residential sequence. This percentage is substantially higher than the comparable probability in the City-Origin analysis. The univariate summary of possible determinants highlights some of the distinctions in the probability of movement across different subsets of this population. The differences across racial groups are interesting and worth exploring further. It appears that Non-Whites are more likely than Whites to demonstrate non-stable geographic movement (62.1% vs. 55.0%); albeit, the sample of Non-Whites is relatively small. I also observe similar patterns of geographic stability across educational attainment groups. As in the City-Origin analysis, non-stable individuals with highest levels of education exhibit the greatest geographic movement.

While there are no differences across the region of childhood residence measure, there is some indication that individuals raised in either a Town/Suburb or City are more likely than those raised in Farm settings to follow patterns of both residential and geographic instability. In fact, only 42.0% of those raised in a Farm location exhibit patterns of "non-stable geography".

The analysis also shows some disparities in non-stable geographic movement across Marital Status groups. The distinctions illustrated in the Suburb-Origin sample vary from some of those demonstrated in the City-Origin. First, levels of geographic instability are actually lowest among those who entered a marital union during the sequence (46.8%). It is conceivable that Suburbanites who undertake a residential shift across place-types in concert with this shift in the marital career are more likely to demonstrate such residential movement within a constrained geographic area. Second, the level of geographic instability is relatively high (56.2%) for individuals who Shift out of Marriage during the residential trajectory. This suggests that for many who leave a marital situation – either through divorce, separation, or death of a spouse – residential shifts away from the Suburbs are frequently accompanied by more distant moves across geographic places.

There is evidence of a non-linear relationship between Income Status and geographic instability in this sample. The probabilities of non-stable geographic movement are lower for the most and least affluent respondents. Moreover, the probability of "non-stable geography" is highest among those who maintain the same Income Status over the course of the trajectory (59.8%).

The Non-Stable Place-Type models presented in Table 7.5 show some moderate effects of some of the determinants of "non-stable geography". In a reversal from what we observed in the univariate analyses, there is a significant **positive** effect for our measure of race. This tells us that when we control for other demographic and life course predictors, Whites demonstrate greater geographic instability than Non-Whites. While this finding is not surprising, and consistent with the belief that minorities have less residential flexibility than Whites, it does suggest the possibility of an interactive effect of race and educational attainment. As one can see, the education effect is strong and significant in the "Main" and "Modified" models. The results show that individuals with a College Degree are 2 ½ to 3 times more likely than High School educated individuals to follow patterns of geographic instability in concert with their movement away from Suburban origins.

While the expected differences across Marital Status categories do not emerge in the "Modified" model there are some distinctions across Income Status groups. In particular, the model shows that individuals with a moderate Income Status over the life course are over twice as likely than High Income respondents to exhibit non-stable geographic movement. I believe that this tells us more about the behaviors of more affluent individuals with Suburban origins, and

suggests that the high income respondents who follow patterns of movement away from Suburban places are more likely to constrain these movements to other place-types within a close proximity to the origin. This disparity across income groups was not present in the City-Origin analysis.

Rural-Origin Stability Model

I analyzed patterns of geographic stability among those who started their residential trajectory in a Rural location using a set of logistic regression models. The Stable Place-Type models (valid n=1052) examined the correlates of stable and non-stable geographic movement among stable Rural residents. The Non-Stable Place-Type models (valid n=133) examined the correlates of stable and non-stable geographic movement among those following a non-stable residential trajectory starting in a Rural location and concluding in a City or Suburban. A summary of the likelihood of stable and non-stable geographic movement across the set of predictor measures is shown in Table 7.6. These values represent the weighted probabilities of different types of movement. The corresponding Stable and Non-Stable Place-Type models are presented in Table 7.7.

Roughly 11.6% of the stable Rural residents exhibited patterns of non-stable geographic movement. In this analysis this would represent individuals who maintain residence in Rural areas, yet engaged in moves that brought them through more dispersed areas of the in non-metropolitan geographic landscape. The summary shown in Table 7.6 illustrates some of the possible effects of the demographic, life-cycle and life course determinants. First, there is clear negative association between age and geographic instability. In fact, the probability of "non-stable geography" is over four times greater among younger stable Rural respondents (**age <=25**: 19.7% vs. **age 50+**: 4.3%). Second, consistent with the analyses of Stable Urbanites and Stable Suburbanites, the most educated individuals demonstrate the highest rates of non-stable geographic movement. Over 25% of the Stable Rural College educated individuals have traveled pathways that have taken them to more distant non-metropolitan areas of the country. In addition, it appears that the tremendous increase in geographic movement is only present in the most educated segment suggesting that the acquisition of some college education is not a sufficient impetus for enhanced geographic movement across Rural regions. I should also note

that the large racial disparities displayed in the City-Origin and Suburb-Origin analyses are not apparent among Stable Rural residents.

Differences in the likelihood of non-stable geographic movement are apparent in our measures of childhood residence. It appears that levels of geographic instability are substantially lower for those raised in the Southern region (7.4%) and somewhat higher for those raised in the North-Central states (16.0%). This pattern is similar to that presented in the Suburb-Origin analysis, and suggests that Stable Rural Southerners either maintain consistent residence in a single place, or limit their non-metropolitan movements to a more geographically constrained region. The differences across the size of childhood residence measure are intriguing, and highlight the increased geographic movement of individuals raised in a Town/Suburb setting.

Life course Marital Status is also associated with patterns of geographic instability. Once again, individuals who enter a marriage or engage in multiple status shifts demonstrate the highest levels of non-stable geographic movement. A more interesting finding in this instance is the extremely low level of movement (4.4%) among those who shift out of marriage during the course of the trajectory. It is clear that Stable Rural residents who exit marital situations exhibit both residential and geographic stability within non-metropolitan locations. While this pattern is also true of Stable Urbanites and Suburbanites, it appears, at first glance, more striking for Rural inhabitants. On the other hand, the disparities across Income Status groups shown in the previous analyses are not as prominent in the Rural-Origin analysis. There is little evidence that geographic movement is associated with affluence in this sample of Stable Rural residents.

The two Stable Place-Type models are presented in Table 7.7. The models illustrate the significant effect of age on geographic movement, and the substantially lower rates of non-stable geographic movement among individuals **age 50+**. The regression coefficient from the "Modified" model shows that the youngest respondents are almost 5 times more likely to follow patterns of "non-stable geography" than the oldest respondents. There is some indication in the "Main" model of reduced rates of movement among those **age 36-49**, though the significance of this particular effect diminishes some in the "Modified" model.

Once again the impact of educational attainment on geographic movement is salient and strong. The models indicate that College Educated Stable Rural residents are over three times more likely to exhibit "non-stable geography" than their less educated brethren. I also find that gender has a moderate effect in the "Main" model that diminishes some when we consider marital change indicators in the "Modified" model. The results imply that females demonstrate greater

geographic movement over time, though given the findings of the "Modified" model, it is likely that such gender disparities are better explained by shifts in the marital careers of males and females.

The substantial differences among those raised in the different geographic regions noted earlier are illustrated in the multivariate models. The coefficients from the "Main" and "Modified" models indicate that both North-Central and Western residents are 2-3 times more likely to exhibit "non-stable geography" than Southern residents. The disparity may, in part, reflect that fact that North Central and Western regions have a larger proportion of Rural locations spread across a wider geographic territory. Though, it might suggest that individuals raised in such areas possess the ability to establish connections to Rural locations that transcend boundaries of specific places.

Last, I should note that neither measure of concurrent life course processes, Marital Status Change or Income Status, demonstrate a significant effect on patterns of geographic instability among Stable Rural residents. While it is possible that shifts in martial careers moderate some of the effects of age or gender in the "Modified" model, there is no indication that individuals who follow distinct marital careers are any more or less likely to exhibit movement over the geographic landscape.

The sample in the Rural-Origin Non-Stable Place-Type is relatively small (n=140). Earlier analyses of the population of residential trajectories showed that the proportion of individuals who follow a non-stable pathway from a Rural location to a City or Suburb is low, and especially small among older respondents. Thus, it is difficult to make substantive conclusions about the correlates of geographic instability in this subset of the population. I will, though, make some brief comments about the patterns of geographic movement in the Non-Stable Place-Type sample. The intent is not to convince the reader of the significance of these patterns, but rather to raise some speculations and questions that could be addressed further in a more comprehensive analysis of non-stable Rural inhabitants.

Overall, the percentage of Non-stable Rural residents who exhibit "non-stable geography" is relatively high. Over 65% of these individuals demonstrated lifetime place changes that, on average, exceeded 100 miles. We should expect this proportion to be higher in the Rural-Origin sample given that all residential shifts involve movement to sectors of metropolitan areas. Typically, the distance between the average rural location and the average city or suburban location is much greater than the distance between city and suburban locations.

While there are no significant determinants in either logistic regression model, there is some evidence of differences in the probability of non-stable geographic movement across the predictor variables. For instance, Whites demonstrate greater geographic instability than Non-Whites (68.0% vs. 50.3%); a finding that corresponds with the results in the City-Origin and Suburb-Origin analyses. Additionally, there are some potential differences across the educational attainment groups. The association in this instance differs slightly from what we observed in past analyses. While the most educated respondents continue to exhibit the highest "non-stable geography", I also find that the probability of geographic movement is enhanced in the least educated segment.

Although the numbers in each category are small, there is some indication that the likelihood of non-stable movement varies across the life course measures of marital status and income status. In the case of marital status change, it appears that Stable Married individuals demonstrate the highest levels of geographic movement, while Stable Unmarried individuals tend to stay close to the Rural origin. This is a contrast to the findings of the City-Origin and Suburb-Origin, and leads me to speculate whether the residential shifts of married couples away from Rural locations represent "true breaks" from rural origins. In other words, perhaps these folks are not only leaving Rural settings, but also breaking away from specific rural geographic regions. In the case of Income Status, the small numbers of less and more affluent respondents tend to exhibit greater non-stable geographic movement.

Table 7.6: Rural-Origin Stability Analysis – Likelihood of Stable vs. Non-Stable Geography

	Stable Place-Type				Non-Stable Place-Type			
	N	Wgt N	Stable Geography	Non-Stable Geography	N	Wgt N	Stable Geography	Non-Stable Geography
OVERALL	1094	25696	88.4%	11.6%	140	3240	34.5%	65.5%
Age								
<=25	391	8332	81.3%	18.7%	91	1931	35.1%	64.9%
26-35	172	3790	85.3%	14.7%	21	623	35.6%	64.4%
36-49	240	5375	90.6%	9.4%	11	321	34.0%	66.0%
50+	291	8179	95.7%	4.3%	17	385	30.6%	69.4%
Race								
White	807	22999	88.2%	11.8%	92	2791	32.0%	68.0%
Non-White	285	2639	89.5%	10.5%	48	469	49.7%	50.3%
Gender								
Male	731	16621	89.4%	10.6%	80	1810	33.9%	66.1%
Female	363	9076	86.6%	13.4%	60	1450	35.3%	64.7%
Education								
HS or Less	648	14019	92.0%	8.0%	46	953	35.6%	64.4%
Some College	311	7958	88.3%	11.7%	43	956	42.3%	57.7%
College or More	132	3658	74.6%	25.4%	49	1331	29.2%	70.8%
Region - Age 16								
Northeast	67	2119	87.1%	12.9%	15	438	31.5%	68.5%
North-Central	322	9800	84.0%	16.0%	36	1109	31.3%	68.7%
South	631	11448	92.6%	7.4%	74	1237	37.2%	62.8%
West	57	1957	86.7%	13.3%	11	371	40.2%	59.8%
Size - Age 16								
Farm	662	14052	90.0%	10.0%	58	1109	36.3%	63.7%
Town/Suburb	217	5603	83.9%	16.1%	53	1286	41.8%	58.2%
City	184	5272	88.5%	11.5%	24	719	22.1%	77.9%
Other	18	516	93.2%	6.8%	4	109	23.9%	76.1%
Marital Change								
Stable Non-Married	144	3687	87.7%	12.3%	25	458	50.2%	49.8%
Stable Married	416	9198	91.4%	8.6%	25	606	21.3%	78.7%
Shift into Marriage	145	3361	83.3%	16.7%	37	936	31.2%	68.8%
Shift from Marriage	196	4753	95.6%	4.4%	15	327	45.6%	54.4%
Multiple Shifts	193	4698	79.5%	20.5%	38	933	35.0%	65.0%
Income Status								
Low Income	289	6124	90.5%	9.5%	26	392	29.8%	70.2%
Moderate Income	665	15678	87.5%	12.5%	92	2160	40.4%	59.6%
High Income	140	3896	88.7%	11.3%	22	709	19.5%	80.5%
Inc Status Change								
Downgrade	172	4515	88.4%	11.6%	19	537	25.7%	74.3%
Same	756	17744	89.7%	10.3%	80	1841	37.4%	62.6%
Upgrade	166	3438	81.5%	18.5%	41	881	34.1%	65.9%
Marital Status T1								
Not Married	388	9241	84.5%	15.5%	85	1873	37.9%	62.1%
Married	706	16455	90.6%	9.4%	55	1387	30.1%	69.9%

Table 7.7: Rural-Origin Stability Analysis – Main and Modified Models of Non-Stable Geography

	Stable Place-Type Model (N=1052)						Non-Stable Place-Type Model (N=133)			
	Main Model			Modified Model			Main Model		Modified Model	
VARIABLES	B	SE		B	SE		B	SE	B	SE
Age										
26-35	-0.256	0.315		-0.095	0.315		-0.057	0.661	0.342	0.689
36-49	-0.586	0.319		-0.459	0.327		0.404	0.842	0.244	0.907
50+	-1.603	0.376	***	-1.587	0.415	***	0.136	0.711	-0.046	0.849
Education										
Some College	0.064	0.261		0.161	0.273		-0.627	0.512	-0.519	0.571
College or More	1.134	0.282	***	1.320	0.307	***	0.292	0.550	0.191	0.622
Gender (Female=1)	0.443	0.234		0.251	0.280		0.055	0.405	0.331	0.459
Race (White=1)	-0.018	0.333		0.136	0.345		0.485	0.551	0.682	0.586
Region - Age 16										
Northeast	0.888	0.439	*	0.953	0.444	*	0.436	0.747	0.380	0.782
North-Central	1.016	0.272	***	1.048	0.277	***	0.222	0.552	0.136	0.577
West	1.134	0.435	**	1.081	0.442	*	-0.231	0.759	-0.396	0.810
Size of Residence - Age 16										
Farm	-0.003	0.297		-0.021	0.304		-0.602	0.602	-0.655	0.634
Town/Suburb	0.091	0.330		0.094	0.339		-0.498	0.626	-0.516	0.645
Marital Status T1	-0.125	0.250					0.499	0.567		
Marital Change										
Stable Non-Married				0.229	0.441				-1.252	0.782
Shift into Marriage				0.321	0.357				-0.450	0.766
Shift out of Marriage				-0.435	0.454				-1.263	0.843
Multiple Shifts				0.558	0.340				-1.312	0.766
Income Status										
Low Income				0.761	0.441				-0.035	0.987
Moderate Income				-0.045	0.313				-0.845	0.640
N	1052			1052			133		133	
Log Likelihood	-639.27			-626.75			-166.41		-159.9	

*** p < .001 ** p < .01 * p < .05

CHAPTER 8: DISCUSSION AND CONCLUSION

In this dissertation I set out to integrate a number of different avenues of theoretical and analytic thought in the exploration of longitudinal life course behaviors. The ultimate objective of this study was to use an alternative methodological approach (Optimal Alignment), consistent with the spirit of the emerging Life Course paradigm, to describe and examine the residential pathways individuals travel over their lifetimes. It is reasonable to assume that temporal movement throughout sectors of the residential landscape is indicative of a form of residential or career. The past research has provided us with a clear picture of the factors that shape transitions or shifts in such careers at different stages, and the associations between shifts in other aspects of the life course and the residential transitions embedded in these careers. My current research builds upon past findings and indicates that a) there exists a set of common, structured residential trajectories of movement across various sectors of the geographic landscape, and b) the prevalence of such patterns can vary across different socio-demographic and compositional sub-groups. In that sense, this study has enhanced our understanding of longitudinal mobility patterns, and processes of residential destination selection.

The Life Course paradigm serves as a theoretical framework for this study of residential careers. The assumption is that disparate life course trajectories can "unfold" over time. Hence, the process by which individuals' lives carry them from location to location to location can be represented via a pathway that reveals itself over time. This implies that to really see this process evolve over time, it is necessary to conceptualize individuals' lifetime residential transitions as complete sequences rather than as an aggregation of individual transitions. Thus, understanding the temporal order of the residential settings individuals live in over a long period of time (e.g., 20 years), provides us with a picture of the typical trajectories that individuals follow as they get older and engage in other life course transitions.

In reality, while many individuals follow unique residential sequences, this analysis demonstrated that, in general, most individuals' residential careers unfold along a finite set of residential trajectories ranging from complete stability within a place-type, to **structured shifts** across multiple place-types. The empirical analyses summarized in Chapters 5 and 6 showed that the prevalence of distinct trajectories among those at different ages and at different stages of the

life course varies in a manner consistent with our normative expectations of lifetime residential behaviors.

The Life Course literature emphasizes the importance of the "social meaning of age" and "social timing of roles" (Elder 1985, 1994). In this study I find that, for instance, the likelihood of stability within particular place-types varies across age groups. In accordance with past empirical research and contemporary conjecture, younger individuals are more likely to exhibit stable Urban careers, middle age individuals (i.e., **age 26-49** at the start of the sequence) are more likely to exhibit stable Suburban careers, and older individuals are more likely to exhibit stable Rural careers. In addition, I observe that place instability is more common among younger individuals, and particular non-stable trajectories are prominent at different stages of an individual's life. For example, younger individuals "on the move" during the residential sequence are more likely to engage in shifts to City destinations than older respondents, while older individuals "on the move" are likely to demonstrate movement that either carries them away from the City, or between Suburban and Rural locations. The patterns exemplified in this analysis are consistent with cross-sectional and longitudinal studies showing the association between age and destination choice (Frey 1980, 1984; Abu-Lughod and Foley 1960).

The concurrent multivariate analyses further show that analogous life course transitions and potential role changes such as marital shifts are correlated with the likelihood of distinct residential trajectories. I typically find that individuals who got married, either via entering a marital union and staying in it over the course of the sequence, or via engaging in multiple shifts in and out of marriage, exhibit more non-stable movement than those remain married or single. In many instances, the age differences in the likelihood of residential trajectories diminish when I include the Marital Status Change measure in the multinomial model. This second finding is consistent with studies of the synchronization of life course events; Mulder and Wagner (1993) concluded that marriage-migration synchronization effects accounted for most of the age and sex differences in the likelihood of short-distance migration. My study indicates that such effects of marital transitions not only account for the variations in singular migration events, but also variations in the likelihood of long term pathways.

The impact of such life course transitions is especially evident in the City-Origin analysis (see Chapter 6). The multinomial models indicate an increased likelihood of City -> Suburb movement among those who entered into marriage, a pattern that is consistent with the belief that

processes such as getting married or starting a family draw individuals to Suburban locations (Long and Glick 1976; McCauley and Nutty 1982). The models also illustrate less movement to Rural locations among single individuals; this finding provides supporting evidence for the speculation that Cities, rather than Rural locations provide more opportunities for, and are the preferred residence for individuals with fewer family attachments.

I would like at this point to comment some on the use of Optimal Alignment in this study, and discuss some of the benefits and ramifications of using sequence analysis rather than more traditional approaches of explaining patterns of longitudinal movement. Subsequent to that, I will offer some insight on the empirical analyses, and the implications for the study of migration and place attachment processes.

A Comparison of Methodologies

If the theoretical framework of this study is the Life Course paradigm, then the "methodological" framework that best supports this perspective in a study of residential careers is sequence analysis. My research demonstrated that it is feasible to use sequence analysis, specifically Optimal Alignment, to identify and describe systematic residential trajectories. This analysis represents the first attempt to use such an approach to explicate longitudinal residential mobility and destination choice processes. Drawing upon some theoretically and empirically derived assumptions about the costs associated with residential transitions, I constructed a population of residential trajectories that reflects the structured pathways individuals follow across the geographic landscape over the life course.

A sequence approach, in contrast to more traditional single-event transition methods, enables us to model the regularity in structured life course processes. Since the unit of analysis is the full residential sequence, rather than the individual transitions embedded in this sequence, we have the ability to explore whether regular, complex patterns exist, and whether the presence of these patterns varies for those with different characteristics. These residential trajectories highlight the quantitative (i.e., issues of how many shifts occur in sequence) and qualitative (i.e., issues of the tenor, timing, and actual composition of shifts in the sequence) aspects of longitudinal mobility processes. A goal at this point is to assess what is achieved by adopting an alternative conceptualization of residential mobility processes.

The Optimal Alignment method facilitates the classification of individual's lifetime residential histories into a coherent and manageable set of residential trajectories. An intention of this study was to utilize a mechanism that enables the researcher to identify and recognize regular sequential patterns of movement across place-types. Consider, if you will, how one might go about constructing such residential trajectories given cross-sectional or incomplete longitudinal data on residential histories. Let's assume that we have residential data at two time points – i.e., the start and end of the period from 1970-1990. Using such information we could construct "pseudo-histories" that attempt to portray an individual's patterns based on their residential situations at the beginning and end of the sequence. So, for example, an individual who lived in a City in 1970 and 1990 might be classified as following a Stable Urban trajectory. Conversely, one who lived in a Suburb in 1970 and a City in 1990 is thought to have followed a Suburb -> City pattern.

However, as you can see, this strategy is problematic. In particular, such an approach ignores the complexities that may typify the pathway that takes an individual from the residential location in 1970 to the residential location in 1990. It is distinctly possible that the "Stable Urbanite" noted above maintained complete urban stability during the entire residential sequence. Yet, it is also conceivable that the same individual moved across several place-types between 1970-1990 and actually followed a rather complex pathway from a City origin to City destination. In this analysis I do have complete residential data and thus can construct complete sequences. Hence, it is crucial to use a method that is sensitive to the complexities of such unique pathways. A sequence approach is designed to consider complexities such as the tenor, timing, and composition of the sequences, and to utilize a set of theoretically and empirically derived assumptions to find regularity in this set of sequences.

The benefits in this study are two-fold. I have the ability to identify and describe multiple-shift trajectories (e.g., City -> Suburb -> City or Rural -> City -> Rural) and non-patterned groups, and I can demonstrate that the composition, tenor, and timing embedded in structured pathways can vary across different trajectories. For example, while in some typical sequences a shift occurs about halfway through the sequence (e.g., in trajectory # 11: LM City -> LM Suburb the structured shift occurs after the first seven time periods), in others it occurs roughly 1/3 the way into the full sequence (e.g., in trajectory # 20: LM City -> Rural the structured shift occurs after the first four time periods).

While Event-History and Markov chain models have the capacity to examine the probability of distinct residential sequences, they do not provide a clear mechanism for identifying regular, structured sequences of events. These methods enable the analyst to examine the likelihood of shifts across place-types (e.g., move from a City to a Suburb) at various points in the residential sequence given a set of proximate determinants and the probability associated with shifts earlier in the sequence. However, it is difficult to a) isolate a set of common, structured patterns, b) describe the composition and/or tenor of these careers, and c) categorize individuals into the most empirically similar residential careers. In a nutshell, Optimal Alignment provides a more accurate portrayal of an individual's residential history. A residential history is not simply an assessment of the probability of set of linked transitions, but rather a composite profile of the pathways that carries an individual from location to location.

Hence, an advantage of sequence methods is the ability to describe the presence of regular patterns. From a descriptive point of view, we have a better understanding of the likelihood of residential "stability" and "instability" in types of places. Nearly ¾ of the individuals follow "stable" careers. Not all individuals who demonstrate a "stable" pattern actually maintain complete stability to a place-type; some in fact have made a couple of temporary shifts away from the location of "stable" residence. Yet, the pattern of their residential history is one that most closely resembles complete stability.

The results further indicate that over 20% of the respondents follow trajectories that involve structured shifts across place-types; the most common trajectories are those that involve movement from a City to Suburb. In addition, I find that almost 2.5% follow trajectories that involve multiple structured shifts across the place-type continuum. It is important to remember that stability in this instance is not equivalent to non-mobility. The examination of the residential trajectories in Chapter 5 emphasizes this distinction by illustrating that actual residential mobility (i.e., number of actual moves during the sequence) is higher for those who follow certain stable residential careers (e.g., Stable Large City), and lower for others (e.g., Stable SM Small Suburbs).

The use of sequence analysis in my study, in turn, also enabled me to create a viable, summary measure of an individual's long term residential behaviors. To some extent, this study has outlined a sophisticated method of conceptualizing a dependent variable; albeit a variable that, theoretically, represents an individual's pattern of movement over an 18 year time period. It

is possible at this point to utilize such a measure to investigate the correlates on longitudinal movement over the life course.

An astute researcher might raise two important questions at this juncture: a) how might one use an outcome measure with such a range of possible values in a multivariate analysis, and b) since most of the non-stable trajectories reflect shifts in residence across only two place-types, how would such an analysis differ from one that utilizes cross-sectional data at two points in time? I will address each in turn.

Since one research objective was to use a multivariate model to examine the correlates of patterned trajectories, and most analytic approaches are restricted to the prediction of a finite set of outcomes, it was clearly necessary to reduce the number of response categories. In this study this was accomplished by first subdividing the sample based on the place-type origin of the trajectory (i.e., City, Suburb, or Rural), and second combining similar residential trajectories. While it is essential to realize that there are various unique City -> Suburb trajectories (i.e., trajectories #10, #11, and #25 shown in Table 4.9) that vary with regards to the metropolitan influence and population sizes of the component place-types, these trajectories were consolidated into a general "City -> Suburb" pathway to reduce the number of outcomes.

I would argue that even beyond the methodological necessity of combining similar outcomes, it is reasonable from a conceptual standpoint to consolidate trajectories in this manner. If we think about the nature and character of types of places, and how individuals interpret and identify with sectors of the residential landscape, we could argue that the labels "city/urban", "suburban" and "rural/small town" reflect the ways that the public views the residential landscape. In general, our conversations and discussions about "place" are laden with references to "living in a city" or "hating rural towns", rather than "living in the small suburbs surrounding a large metropolitan city" or "hating small cities situated in non-metropolitan areas". Thus, if the intent is to truly understand the correlates of structured movement across commonly accepted sectors of the residential landscape, then perhaps it is appropriate to use the general terms "city", "suburb", and "rural" instead of the specific place-types discussed in this study.

The second question raises the issue of whether the multivariate analyses in Chapter 6 vary from similar analysis on individual data at two points in time. Since many individuals in each of the origin sample exhibit movement across only two sectors over time, one might argue that my exercise is simply a sophisticated origin-destination analysis that could be accomplished

using data from the start and end of the residential sequence. I would counter, though, that using Optimal Alignment to create trajectories and categorize individuals into these trajectories allows me to consider the complexity of the residential sequence in the process of classifying individuals' histories into legitimate outcomes.

Let's remember that the residential trajectories reflect a summary of patterned shifts across the place-type continuum over time. The phrase "City -> Suburb" movement in this analysis suggests that the individual engaged in a patterned shift after a certain number of years from an urban to a suburban location. It further implies that such an individual exhibited some consistency of residence in a city (or cities) during the first half of the residential sequence and some consistency of residence in a suburb (or suburbs) during the second half. In the case of origin-destination data at two time points, we cannot be certain that the individual with a city origin and suburban destination exhibited any consistent commitment to one location or another for a period of time. In my analysis, I am assured that I am identifying correlates of structured, non-temporary, movement patterns, and describing the characteristics of those who make structured shifts in residential settings over the life course.

Empirical Findings and Implications for Study of Migration

The analysis of the distribution of residential trajectories by age (i.e., research question #1) indicates that younger respondents demonstrate greater residential mobility across place-types than older respondents. The likelihood of following a "non-stable" trajectory is substantially higher among individuals 25 years old or less at the onset of the sequence, and this probability drops off precipitously after 36 years old. As noted earlier, the "preferred" locations of stable and non-stable movement vary across age groups; younger respondents exhibit their residential stability in Cities, while older respondents exhibit their stability in Suburban and Rural locations. In general, these findings are consistent with the hypotheses drawn from past mobility studies (Frey and Kobrin 1982; Long 1988).

These age variations suggest that various residential trajectories manifest themselves at different stages of the life. As expected, younger respondents are more likely to exhibit patterns of non-stability across place-types over the course of the residential sequence. They demonstrate substantial diversity in such non-stable pathways, and engage in high levels of structured

movement which carry them to City locations. I also observe greater systematic movement to Suburban locations, particularly among younger White respondents. This pattern seems reasonable given that by the middle of the residential sequence, many of the youngest respondents have reached the family rearing stage where movement to Suburban locations becomes a more realistic and preferred option. Conversely, middle and retirement age is a period of greater stability, more so in non-urban locations, with some increased movement between Suburban and Rural areas among those who follow non-stable careers. These patterns correspond nicely with our established normative expectations of "where people live" at different times of their lives.

Let's recall that the patterns observed in this study reflect the mobility behaviors of individuals of different ages over a fixed period of time (1968-1985). For the most part, the results by age groups are in line with the expectations derived from the study of each of the component cohorts up to this time period. A more insightful analysis down the line might consider how the diversity in patterns expressed by those of similar age across different cohorts might vary. Perhaps, if we followed a sample of young people who started their sequence in 1999 for 20 years, we might find that the distribution of trajectories has changed, or that new structured pathways emerge that represent innovative trajectories. For instance, as cities grow and change to better accommodate the needs and desires of younger families or older retirees, it is distinctly possible that the prevalence of urban stability with such sub-groups (i.e., younger married couples and older retirees) might increase a newer cohorts reach adulthood or older cohorts reach retirement age. Likewise, if we believe that housing dynamics have changed and are continuing to change in a manner such that various sectors of the residential landscape are more accessible to those at different life course stages, we may find shifts in the prevalence of non-stable trajectories across age groups.

The analysis of the distribution of residential trajectories by race and education (i.e., research question #2) shows that the likelihood of stable and non-stable movement differs for Whites and Non-Whites, and for those with varying levels of educational attainment. As expected, Whites demonstrate more non-stable and complex pathways of residential movement than Non-Whites. Not surprisingly, the most prominent location of stable residence among Whites is the Suburbs while the most prominent location among Non-Whites is the Large City. In general, the results indicate that Non-Whites are still less likely to follow trajectories into

Suburban areas, though, interestingly, they are just as likely to follow non-stable pathways from Cities to Rural locations and vice versa. The greatest discrepancy in patterns of non-stable movement between Whites and Non-Whites is in the case of movement out of the Suburbs. Whites are substantially more likely to exit Suburban locations, in part, because they are more likely to be in such locations at the origin.

The concurrent analysis across educational segments demonstrates the strong association between educational attainment and longitudinal residential movement. As hypothesized, the most educated respondents exhibit the most complex patterns of movement. College educated respondents are over twice as likely as those with only a High School degree to follow a non-stable trajectory or to fall into the non-patterned group. Considering the question of the setting of stable residence, educated respondents are disproportionately more likely to exhibit their stability in City rather than Rural locations. However, the analogous examination of the distribution of non-stable pathways indicates that those with moderate levels of education exhibit somewhat more complex patterns of movement away from Cities.

The series of multinomial regression models described in Chapter 6 were an attempt to identify some of the correlates of residential trajectories. Since the full set of analyses and findings are discussed at length in Chapter 6, I will only comment briefly on some important conclusions derived from these analyses. First. age continues to influence patterns of residential movement, especially in the case of the examination of non-stable movement within metropolitan areas (i.e., City -> Suburb or Suburb -> City). The effects of age remain strong upon controlling for marital status change and income status, though they do diminish in some of the life-course sub-sample models.

Second, race has an impact on the prevalence of residential trajectories in the City and Rural-Origin models. As expected, Whites with City origins demonstrate greater non-stable movement to Suburban and Rural locations, and there is little evidence that such an effect is moderated by other demographic or life course indicators. Yet, I do find that there is little difference in the likelihood of non-stable trajectories among High Income Whites and Non-Whites, suggesting that perhaps the attainment of greater wealth and status allows Non-Whites to realize residential preferences, and engage in outward movement in a manner similar to the average White individual. The theoretical implications of this finding are important.

In a recent paper using similar PSID geocoded data, South and Crowder (1997) test some assumptions of the place stratification model (Alba and Logan 1991) in the study of city/suburban movements of Whites and Blacks. The place stratification perspective suggests that advantaged groups (i.e., Whites) are able to distance themselves from disadvantaged groups (i.e., Blacks) as a result of the structural constraints (e.g., housing discrimination, government practices, racial stereotypes, etc.) present in suburban locations that thwart the attempts of minorities to move to such locations. One hypothesis consistent with this model is that Blacks will have greater difficulty turning socioeconomic resources and achievement into the ability to move to the Suburbs. They found that some minorities can translate socioeconomic gain into movement to typically restricted areas of the residential landscape. Affluent Non-Whites have the ability to follow the same pathways as affluent Whites; albeit, the discrepancy between the racial groups remains salient among the least affluent respondents. The question at this point is whether moderate income minorities will have the opportunity to travel pathways similar to their White brethren as these structural constraints diminish over time. To answer such a question, one would need to explore the variations of the pathways exhibited by different cohorts of Whites and Non-Whites over different periods in time.

In contrast, race has an opposite effect on the prevalence of movement in the Rural-Origin analysis. Non-Whites who started their residential sequence in a Rural location are more likely than Whites to seek out either a City or Suburban destination. This pattern could be more indicative of the highly stable residential nature of Whites raised or situated in Rural locations. This effect is also present the Enter Marital sub-sample leading me to wonder whether the marital shifts of Non-Whites are typically accompanied by movement away from Rural confines. These particular results suggest that is a second set of mobile Non-Whites who have the capacity to seek out different residential settings over the life course.

Third, educational attainment is associated with non-stable movement in the Suburb and Rural-Origin analysis, yet has little impact on patterns of movement away from City origins. I find that College Educated folks are more likely to leave Suburban origins for both City and Rural destinations than less educated respondents, while the most educated Rural inhabitants are more likely to leave for City or Suburban destinations. In general, it is evident that educated individuals maintain the ability to seek out and take advantage of the amenities in different place-

types. It is further evident that educated individuals who start in either a Suburb or Rural location are more willing to search for such opportunities in alternative residential settings.

The strong association between educational attainment and longitudinal residential movement raises some interesting questions about the distribution of individuals across types of places. Over 30 years ago, Taeuber and Taeuber (1964) offered some insight on the relationship between intra-metropolitan migration patterns and the changes in the socio-economic composition of cities and suburbs. They find the most migrant streams are comprised of higher status individuals (i.e., more educated folks with more prestigious occupations), and that this "circulation of elites" across the metropolitan landscape results in a scenario whereby the socio-economic level of cities diminishes and the socio-economic level of suburbs increases over time. More contemporary research has continued to demonstrate the "educational selectivity in migration", i.e., the tendency for migrants to be more "talented, motivated and educated" than non-migrants (Greenwood 1988; Tucker 1981). Krieg (1992) has further extended this theme to demonstrate that flows of migrants across states can differ from flows of "human capital" across states. That is, while some places/states can gain through net-migration of individuals, they can lose in terms of "human capital" if the in-migrants are as a whole less skilled and educated than the out-migrants.

Let's attempt to incorporate this idea into the context of the present study. Even though my study involves a micro, rather than macro, level investigation of migration patterns, I believe it offers some insight on this process of the "circulation of elites". The first implication of the prior research is that, for the most part, educated individuals are those exhibiting most of the movement across the residential landscape. My study confirms that the most educated respondents tend to follow more complex pathways, and the concurrent analysis of place and geographic stability indicates that such respondents also travel pathways of substantially greater geographic movement over the life course.

The second implication of the past research is that the population composition of different locations can change as a consequence of this "circulation of elites". In my study, I believe we observe some patterns that raise into question the presumption that cities lose "human capital" via the out-migration of educated individuals over time. The suburb and rural origin models suggest that more educated respondents starting in such locales are more likely to seek other place-types (i.e., educated folks from outside the city are more likely to follow a path to the

city). In addition, the city-origin analysis suggests that individuals possessing differential levels of education or "human capital" are equally likely to exhibit stability to urban locations. Thus, we have a scenario where educated folks from the outskirts are coming to the cities, and the most educated city inhabitants are just as likely to stay in the city. This leads me to wonder whether the "educated elites" are concentrating more and more in urban locations. If this is true, then the concern becomes how the out-movement of "human capital" from non-urban locations – especially rural places – affects the socio-economic structure of such places. The present analysis suggests that many highly educated respondents do not follow pathways that carry them through rural locations. If they do happen to demonstrate "rural stability", it is probably not until later in the life course at a point where it is conceivable that they cannot contribute as much to the economic well being of the community.

To fully understand the correlates of residential trajectories it was necessary to develop models that controlled for concurrent measures of changes in the life course. Given the strong association and interdependence between shifts in marriage, family composition, income attainment and residential mobility over the life course (see Odland 1997; Odland and Shumway 1993; Mulder and Wagner 1993; Davies-Withers 1997 to name a few), it was prudent to explore whether the age, race and education effects diminished upon considering contemporary measures of life course transitions. For the most part, shifts in marital status influenced the likelihood of residential trajectories. Typically, individuals who entered a marital union over the course of the sequence were more likely to demonstrate non-stable movement than those remained married throughout the same period. This is especially evident in the higher Suburb -> City movement of those who engage in any form of marital shift, and the higher Rural -> City movement among those enter a marital union over the course of the sequence. Yet, variation in marital status is not always the precursor of non-stable movement. In fact, in the Suburb and Rural-Origin models, those who remain single (at any age) throughout the sequence are more likely to engage in shifts towards the City.

Many of the effects of the socio-demographic predictors persist in the "Modified" model (i.e., the model in which I control for marital status change and income status) and in the Enter Marital sub-sample models. While one might assume that measures of life course transitions that occurred concurrently to the residential shifts and transitions would best explain the probability of

distinct trajectories, I find that fixed characteristics such as age and race remain associated with the prevalence of trajectories.

It is possible that individuals at different ages, of different racial background, with different educational attainment levels, in reality, face only a finite set of possible career pathways. In other words, while it is conceivable that a less educated, Black respondent might exhibit a Stable Suburban career, it is unlikely that most individuals with such characteristics are presented with that option. To follow such a pattern this individual must a) start in a Suburban location – we know the probability of this is much lower for less educated minorities, b) be able to stay in the Suburbs – there is evidence that this is more difficult for less educated, potentially less affluent minorities. Similarly, the younger, highly affluent, married Suburbanite conceivably has a wide range of options to choose from, though realistically, if he/she remains married and wants to reside in a location that theoretically best suits the needs of more affluent, married couples, he/she will exhibit stability. The upshot is that socio-demographic and compositional characteristics may, in some sense, direct individuals towards a different set of pathways. This initial impetus towards different trajectories might explain the strong associations that exist upon controlling for concurrent life course measures.

The fourth research question considered the distinctions between place and geographic stability. A theme that has carried forward throughout this study is the fact that stability to place-types is not the same as residential stability, and, in fact, the intersection of these dimensions enable us to fully express an individual's residential history. The set of stability models described in Chapter 7 examined the correlates of "non-stable geography" among those who followed distinct residential trajectories. The Stable Place-Type models in the three samples explored the determinants of geographic mobility among City, Suburban, and Rural dwellers who essentially remained in the same place type over the entire sequence. The literature on place and settlement identity (see Feldman 1990; 1996; Hummon 1990; Proshansky, et. al. 1983) suggests that individuals form attachments to different sectors of the residential landscape, and that such attachments potentially transcend geographic constraints. These individuals are geographically mobile, yet exhibit this mobility to the same types of settlements.

Since this study does not incorporate information about individuals' motivations for moving or expressions of attachments to origins and destinations it is difficult to assess whether demonstrated stability within a particular place-type is truly reflective of an expressed type of

identity. To really understand whether pathways are indicative of expressions of attachments, it is necessary to evaluate whether the choices involved in moving or staying, or in considering various destinations in different place-types are reflective of an individual's attitudes and feelings about residence in particular locations. I do have the capacity in this study to show some of the characteristics of those who exhibit particular forms of stability and non-stability, and offer some speculation on what such patterns tell us about the expression of identities and attachments over time. While it might be a bit of a stretch to suggest that everyone who demonstrates urban stability across a wide swath of the geographic landscape (i.e., non-stable geography) possesses an "urban identity" exhibited through "trans-spatial bonds to cities", it is true that such folks have exhibited a bond or connection to a type of place via consistent residence in such a location over a long period of time. While we can't claim with confidence that such stability is an expression of "love for the city", we might argue that the city better provides for the needs and desires of an individual than other locations.

My analyses provide some insight on the characteristics of those who exhibit geographic mobility within particular place-types, and have contributed to the small, but growing, literature on the distance of moves. The likelihood of "non-stable geography" is somewhat greater for younger respondents, particularly when we look at the patterns of movement exhibited by younger "Stable Urbanites". Similarly, geographic movement across city locations is higher for White, more educated Stable Urbanites, suggesting that individuals with greater skills or experience have the capacity to take advantage of opportunities and the amenities offered in a wide range of urban locations. Conversely, less educated Urbanites are often limited to the opportunities present within a relatively constrained geographic region, while Non-Whites are quite often not able to engage in movements that carry them over greater distances. The strong influence of educational attainment on the likelihood of non-stable geographic movement within a given place-type is present in all three models, and is reminiscent of residential mobility studies that indicate a strong association between education and distance of moves (Long 1988; Li 1981; Miller 1977; to name a few).

One speculation is that educated individuals are not only better prepared or suited for possible geographic mobility, but have the skills and experience necessary to adjust and survive in a variety of geographic locations. Thus, educated individuals who possess an "urban identity" or preference for city life can express this identity or realize this preference in a range of

dispersed cities. In contrast, less educated respondents appear more constrained to particular geographic settings. It is likely that those with less training and experience are restricted, to some extent, to local labor markets, and thus to "realize urban preferences", one must essentially remain in one city rather than search out different cities.

This conjecture is interesting in light of the studies of migration distance. As noted, there are a number of studies that have shown the positive relationship between socio-economic status factors and migration distance (Hoffman and Ritchey 1992; Li 1981; McInnis 1971). A recent examination conducted by Hoffman and Ritchey (1992) considered the importance of contextual characteristics in explaining the nature of such a relationship, and finds that distance of migration is influenced by areal characteristics of locations and information flows, rather than individual characteristics. In other words, the differences in the distance of moves of more and less educated folks diminish upon controlling for the characteristics of the origins and destinations. The belief is that individuals possessing various levels of "human capital" engage in distant moves to seek out areas that represent an "improvement" over the origin. This "improvement" is reflected in longer distance moves to areas of greater wealth, better climate, more economic benefits, and higher welfare expenditures.

The question at this point, given the education differences shown in my study, is whether educated folks who exhibit urban stability and non-stable geography must travel farther than less educated folks to attain such "improvement". If it is true that moves reflect attempts to seek "better places", or, in many cases, better labor markets, it is distinctly possible that the most educated respondents must search for more and distant urban locations to achieve such ends. Conversely, less educated individuals can remain "closer" to the origin and still fulfill such desires for "improvement". This line of argument points to the importance of utilizing more detailed information on the characteristics of places in future investigations of trajectories.

Future Applications and Methodological Challenges

I have always viewed my study as very exploratory and descriptive in nature. While the multivariate models discussed in Chapters 6 and 7 provide some insight on the correlates and potential determinants of residential trajectories, the primary goal was to investigate whether it was possible to construct and describe a set of structured residential trajectories using the principles of sequence analysis. I believe that I have successfully achieved this goal, and, as in

any good exploratory study, the discussion of the methodological process and concurrent empirical results raises speculations on how to expand upon the findings of this study using the tools provided. Thus, I would like to comment on some of the potential applications of the procedure and process discussed in my study.

I should first mention that the study of residential trajectories should benefit substantially from enhanced availability of more residential data and more detailed geographic information on locations. My study was a first attempt to explore the existence of such pathways over a relatively short time period of activity (i.e., 18 years or 14 time periods).[16] Clearly, we will understand more about career processes as we continue to gather data over longer time periods. My suspicion is that with longer sequences we will still observe many of the pathways identifying in this analysis, though will also start to see more complex trajectories comprised of multiple shifts across the place-type continuum.

As noted earlier, this study, in many ways, outlined the creation of an important measure of an individual's residential history. I happened to use these residential trajectories as a dependent measure. However, it is also possible to utilize these residential trajectories to adjust our understanding of how past residential experience impacts subsequent mobility processes. Residential mobility studies have consistently demonstrated that individuals with greater past mobility are more likely to move in the future (Lansing and Mueller 1967; Morrison 1967; South and Crowder 1997). Traditionally, past mobility is measured in terms of the number of moves since age 18, or through some assessment of whether the individual moved in a specified time period prior to the survey year (e.g., yes/no moved in past 3 years). These trajectories, which retain both qualitative and quantitative aspects of residential mobility, make it feasible to assess how variations in the composition and scripted nature of such "past residential mobility" influences future behaviors and attitudes such as moving, getting married, having child and forming attachments to residential communities.

Let me illustrate an example of using the residential trajectory as an independent variable. In my previous work on processes of short and long term urban neighborhood attachment I examined whether levels of satisfaction, sentiment and involvement varied for those with

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[16] I should remind the readers at this point that I utilized PSID residential data with associated geographic information for the period from 1968-1985. Shortly after I obtained this data (at some cost and time expense!) the PSID staff completed the geocoding for all residential data up until 1995, thus adding another ten years. Rather than duplicating the process of data acquisition and conceivably delaying the completion of this project by a year or so, I decided to continue with the original data. Oh well!!

different "histories of migration" (Bolan 1997). My analyses indicated that the number of past moves had little effect on processes of attitudinal and behavioral attachment. However, it is conceivable that individuals with different residential histories might express varying levels of attachment over time. Maybe Stable Urbanites who settle in a new urban neighborhood have a greater ability to adjust to, and become attached to, their new environment, than those who previously lived in Suburban or Rural locations. Moreover, if the deleterious effects of chronic movement assumed by many are really true, then individuals with very complex trajectories or even non-patterned histories might have greater difficulty establishing attachments to a new setting. The construction of this set of residential trajectories provides a more accurate portrayal of an individual's "moving history" than simply a count of past moves.

Further explorations could also use the population of residential trajectories to illustrate the interdependent nature of life course sequential processes over time. It is reasonable to believe that for many individuals, residential sequences are closely intertwined with other life course patterns, including marriage, family composition, and home ownership. Hence, this study not only introduces the tools and methods to construct alternative life course sequences such as marriage or family structure trajectories, but also proposes a specific population of residential possibilities to test our speculations. Such an analysis would require a method that examines the concordance or correspondence between distinct career sequences.

The basic notion of using sequence methods to identify residential trajectories can be extended to facilitate enhanced study of other longitudinal migration and mobility processes. For instance, a researcher could attempt to construct trajectories based on more complex scheme of categorizing places – perhaps one that considers not only population and geographic characteristics, but also contextual characteristics of places such as income or home ownership levels. Moreover, we might modify our understanding of residential situations and define individuals' situations not in terms of "where one lives", but rather in terms of the composition of those in the household or the physical characteristics of the dwelling. The idea of identifying structured patterns of movement could also be applied to the study of specific populations such as immigrants and used to assess whether immigrants of different backgrounds follow similar patterns of movement across the US geographic landscape after entry into the country.

To some extent, there is a tradeoff associated with increasing the complexity of any place-type scheme. When I originally started this study, I was intent on using a scheme with 64

different place-types defined by population size, metropolitan size, rural/suburb/urban, and ownership status. I quickly found that the enhanced complexity can result in challenges in many aspects of the analytic process. For example, the construction of a substitution cost matrix is considerably harder, more time consuming, and potentially subject to greater theoretical bias upon using such elaborate scheme. Likewise, since the goal was to identify a reasonable number of patterned trajectories, upon constructing such a population it would be necessary to consolidate some of the unique sequences in a manner similar to what was accomplished in the current analysis. Thus, while delineating locations more and more shows greater distinctions between types of places, in a comprehensive analysis such as mine, you may end up sacrificing some of the detail in attempts to analyze empirically common patterns.

However, when the question of interest is oriented to the study of a specific group (e.g., Non-Whites) or within a specific metropolitan region (e.g., Seattle), such added complexity can be useful and insightful. For instance, my study showed the similarity in the prevalence of City -> Suburb movement of Whites and Non-Whites. There has been research indicating that when Blacks move to the Suburbs they choose suburban locations somewhat closer to the City than Whites. Thus, while both groups move to the Suburbs, the movements of Blacks are somewhat less distant and to areas bordering on the City. If we wished to explore the trajectories of Whites and Blacks who follow such a pattern over time it would be useful to construct a place-type scheme that not only delineates different types of cities and suburbs, but also one that incorporates information on the proximity of a suburban location to a city location. If the past speculation is true, then Blacks should be more likely to follow City -> Suburb trajectories that carry them to suburbs situated right on the outskirts of the cities, while Whites will be more likely to settle in Suburbs farther from the city, and adjacent to the Rural outskirts.

In short, this paper outlines a framework for others interested in using optimal alignment methods in their own investigations of scripted life course processes. I have discussed some of the methodological challenges associated with the optimal alignment approach such as the development of theoretically and empirically derived transformation costs, the integration of dissimilarity matrices from a set of sub-samples, and the utilization of concurrent hierarchical clustering techniques. I subsequently demonstrated the method's ability to identify common residential patterns from a population of complex sequences. Moreover, I have shown how to

incorporate the findings derived from a sequence based approach into more traditional multivariate analytic methods.

The process by which I identified specific place-types for sequence elements, constructed substitution costs across such place-types, chose typical trajectories from clusters of similar sequences, and categorized individuals into proper residential trajectories is analogous to the steps others will face when using this approach. For example, the scholar interested in evaluating the existence of household composition careers faces many challenging questions (e.g., What are the possible "states" of household composition? How do I quantify the differences between such states? How should the length of careers influence cost assessments?). Hopefully I have suggested some strategies for addressing and answering these difficult questions.

Future studies of longitudinal mobility processes will continue to benefit from innovations in sequential analytic and hierarchical clustering methods. In the past few years Andrew Abbott and his colleagues have developed Gibbs sampling methods designed to better identify and describe the sub-sequences and "turning points" embedded in careers. Likewise, Adrian Raftery and his colleagues at the University of Washington are presently developing hierarchical clustering methodologies designed to overcome the shortcomings of past clustering techniques. The hope is that integrating methods such as EM model based clustering with the quantitative distance data produced in Optimal Alignment analyses will enhance the always sticky problem of transforming the results of alignment procedures into a coherent, and accurate set of cluster groupings. While I unfortunately did not have the opportunity to take advantage of such innovations, I believe that this study represents a noble attempt to use an alternative methodology to address some long standing questions about processes of longitudinal migration and residential mobility processes.

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Master of Arts in Sociology, 1994 University of Washington
Thesis: *Migration Experience and Neighborhood Attachment*

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PUBLICATIONS

Bolan, Marc, 1997, "The Mobility Experience and Neighborhood Attachment." *Demography* Volume 34, 2, 225-237

Roffman, Roger, Joe Picciano, Lauren Wickizer, **Marc Bolan** and Rosemary Ryan, 1998, "Anonymous Enrollment in AIDS Prevention Telephone Group Counseling: Facilitating the Participation of Gay and Bisexual Men." *Journal of Social Science Research* Volume 23, 3 & 4, 5-22.

Roffman, Roger, Joe Picciano, **Marc Bolan** and Seth Kalichman, 1997, "Factors Associated with Attrition from an HIV-Prevention Program for Gay and Bisexual Males." *AIDS and Behavior* Volume 1, 2, 125-135.

Kalichman, Seth, Roger Roffman, Joe Picciano and **Marc Bolan**, 1997, "Sexual Relationships, Sexual Behavior, and HIV Infection: HIV Seropositive Gay and Bisexual Men Seeking Prevention Services." *Professional Psychology: Research and Practice* Volume 28, 4, 355-360.

Kalichman, Seth, Roger Roffman, Joe Picciano and **Marc Bolan**, 1998, "Risk for HIV Infection Among Bisexual Men Seeking HIV Prevention Services and Risks Posed to their Female Partners." *Health Psychology* Volume 17, 4, 1-8

WORKS IN PROGRESS

Bolan, Marc and Katherine Stovel "Residential Trajectories: Using Optimal Alignment to Reveal the Structure of Residential Mobility."

PROFESSIONAL EMPLOYMENT

1995-present: Organizational Research Services, Seattle WA **Research Consultant**

Research Reports (co-authored)

December 1997: Outcome Evaluation Report for School-Age Care Among Out-of School Time Programs – Submitted to the Seattle MOST Initiative and City of Seattle Department of Housing and Human Services (with Jane Reisman and Patty Molloy)

December 1997: Evaluation of Collaboration Building in Tacoma-Pierce County Family Support Centers – Submitted to Tacoma-Pierce County Health Department

September 1997: Program Evaluation of Pierce County Violence Prevention Projects 1994-1997 School Years – Submitted to Tacoma-Pierce County's Commission on Children, Youth and their Families (with Jane Reisman and Barbara Gurley)

February 1996: Neighborhood Conditions and Outcomes Report – Evaluation of the Safe Streets Prevention Partnership Neighborhood Mobilization Strategy – Submitted to the Tacoma Safe Streets Project

1994-1997: Innovative Program Research Group, Seattle WA **Data Analyst**
Participated in the data collection and analysis in a HIV-Prevention counseling program conducted through the University of Washington School of Social Work. Several research publications are noted above.

1993: MAC Specialists, Seattle WA **Research Assistant**
Participated in the design and analysis of a study of the market research strategies used by national and local transportation agencies.

1989-1992: First Deposit Corporation, San Francisco CA **Senior Project Analyst**

1987-1989: Epsilon Data Management, Burlington MA **Research Analyst**

TEACHING EXPERIENCE

1998: **Instructor:** Human Ecology (2 Quarters)
University of Washington – Department of Sociology
Topics: Ecological Complex, Urban Ecology, Population and Environment

1997-1998: **Instructor:** Urban Community (2 Quarters)
University of Washington – Department of Sociology
Topics: Urbanization, Urbanism, City/Suburbs, Urban Social Problems

1994-1997: **Instructor:** Sociological Research Methods (8 Quarters)
University of Washington – Department of Sociology
Topics: Basic and Advanced Statistics, Quantitative and Qualitative Methods

1993-1995: **Teaching Assistant:** Juvenile Delinquency (3 Quarters)
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Responsibilities: Writing/Grading Tests, Conducting Discussion Sections

1992-1993: **Teaching Assistant:** Introduction to Social Deviance (2 Quarters)
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Responsibilities: Writing/Grading Tests, Conducting Discussion Sections

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Recipient of University of Washington Dissertation Fellowship (1998-1999)
Recipient of Distinguished Graduate Student Award – Department of Sociology (1997)
Member of Population Association of America
Manuscript Reviewer for Demography

VOLUNTEER SERVICE

Organized and Coordinated a Soup Kitchen in the University District with other students affiliated with the Department of Sociology (1996-1998)

Tutored Adults with Literacy Difficulties through Project Read in San Francisco (1990-1992)

Coordinated Peer Group Fundraising Efforts for the Multiple Sclerosis Foundation of Pittsburgh (1986-1987)

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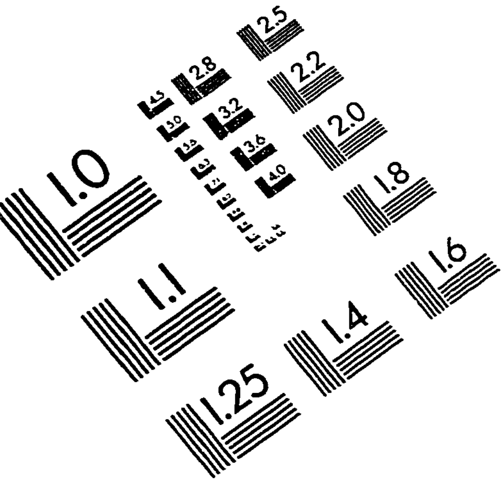
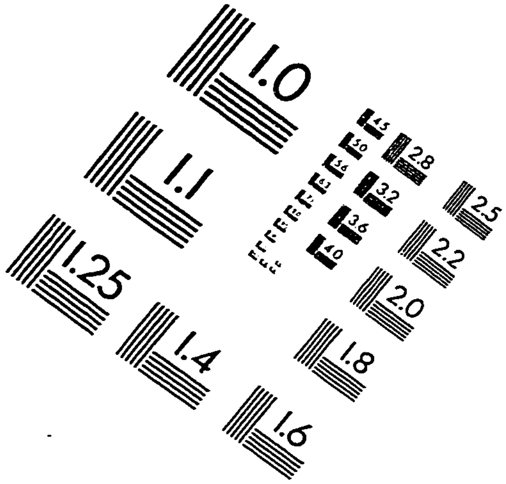
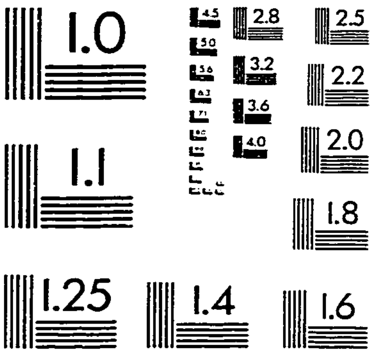
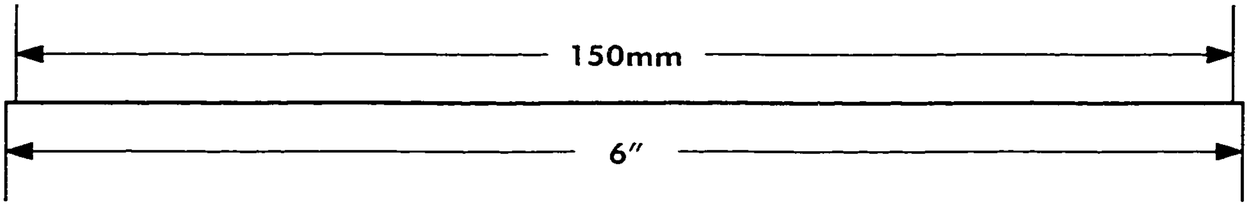
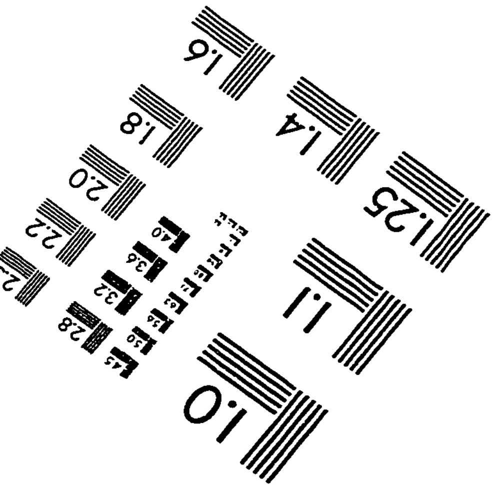
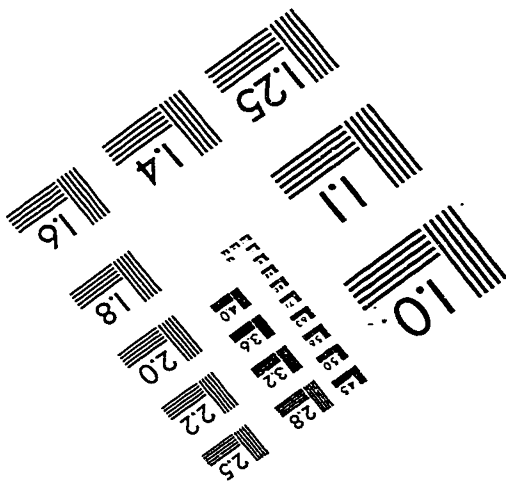
IMAGE EVALUATION TEST TARGET (QA-3)

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