DISSERTATION

SOCIOECONOMICS OF MODERN-DAY MIGRATION WITHIN THE UNITED STATES: DETERMINANTS AND ECONOMIC IMPLICATIONS ACROSS RACE AND ETHNICITY

Submitted by

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In partial fulfillment of the requirements

For the Degree of Doctor of Philosophy

Colorado State University

Fort Collins, Colorado

Spring 2022

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ABSTRACT

SOCIOECONOMICS OF MODERN-DAY MIGRATION WITHIN THE UNITED STATES: DETERMINANTS AND ECONOMIC IMPLICATIONS ACROSS RACE AND ETHNICITY

There have been, and continue to be, inequalities based on race, ethnicity, and gender. This dissertation explores the racial and ethnic gaps in internal migration within the U.S. in addition to wage outcomes as a result of these differences in internal migration decisions. It provides an overview of economic and sociology literature in addition to historical findings in order to further analyze differences in behaviors by race and ethnicity. Chapters 2 and 3 will explore how the determinants of internal migration and location characteristics differ between Black non-Hispanics, White non-Hispanics, and Hispanics using micro-level restricted-use American Community Survey (ACS) data. These chapters extend the discussion of internal migration by not only observing the relationship between economic and noneconomic factors with the propensity to migrate, but how the relationship differs across race and ethnicity within smaller geographies than have been explored in previous literature. Using the same data, the fourth chapter explores the relationship between the propensity to move or migrate and wages, in turn providing an additional explanation to the racial and ethnic wage gap.

ACKNOWLEDGEMENTS

This paper would not have been possible without the support from all faculty and staff at Colorado State University and Dr. Philip Pendergast and Dr. Jani Little of the Rocky Mountain Federal Statistical Data Research Center. I want to thank Dr. Anita Pena for being my advisor and pushing me to complete this work through working a full-time job and a pandemic. Weekly meetings to discuss progress, in addition to the added difficulty of only communicating regarding the data and regression output within the RDC has made this dissertation both challenging and rewarding. I also want to thank Dr. Philip Pendergast for guiding me through the restricted-use ACS data, helping troubleshoot, and helping me in completing the long disclosure process to get the regression output out of the RDC and into these chapters. I was met with many obstacles throughout the disclosure process including having to completely redefine my samples.

I want to personally give thanks to the rest of my dissertation committee as well. Dr. Stephan Weiler not only introduced me to the topic of regional economics and internal migration but helped me to build the foundation of this work. I would not be where I am today without the mentorship and friendship of Dr. Alex Bernasek. Lastly, I want to thank Dr. Joon K. Kim for opening my eyes into the importance of racial, ethnic, and cultural disparities historically and how previous studies can be used to help guide my current research.

My graduate school experience has been an amazing experience because of the work of the Economics Department at CSU, my classmates, and the never ending support from my family.

DEDICATION

I dedicate this paper to my younger self. A young Black girl who never imagined she would graduate from college, let alone complete a doctoral degree. This work is proof that I am enough.

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Chapter 1
Introduction

According to the Census Bureau, the rate of moves made by Americans was 11.2% in 2016 and in 2021 hit a 70-year low of 8.4% (Jordan 2016; Malone 2021). While the likelihood of moving within the United States has continuously fallen over the last decade, Americans are still migrating, and are motivated for different reasons. Residential movement and migration are a part of life as individuals move for work, move to be closer to family, or are forced to move due to political, socioeconomic, demographic, and environmental reasons. It is important to understand not only the determinants of residential movement and migration but the economic implications of these actions and how they differ across race and ethnicity.

The existing literature on internal migration can be separated into two categories. The first is determinants of migration, providing a quantitative and theoretical analysis pertaining to addressing the question of who migrates, why they migrate, and what factors influence this behavior. The other subset of literature focuses on the economic consequences of movement and migration. From this literature, one gains an understanding of the household and individual characteristics that can influence migration decisions in addition to the effects of location characteristics. There continues to be persistent disparities across race, ethnicity, gender, and sexual orientation worldwide. From historical internal migration patterns to differing family structure and discrimination, there likely will continue to be disparities in the rates at which households migrate within the U.S. across racial and ethnic groups. These differences and gaps in migration rates can be a result of established social networks, exclusionary and non-exclusionary discrimination, differing family structures, and differing preferences. These differences in the propensity to migrate can further provide these groups with different opportunities in life that could have economic consequences reproducing or reinforcing racial and ethnic economic disparities.

1.1 History of Internal Migration

Empirical and narrative literature on internal migration makes a distinction between two causes: forced and voluntary. Both historically and present day, forced migration can be caused by external factors such as natural and man made disasters, evictions, and other forms of displacement such as city development plans that require a household to leave their place of residence. The Dust Bowl is an example of a natural disaster that forced millions to leave their homes and migrate elsewhere within the U.S. The Dust Bowl took place near the end of the Great Depression, beginning in 1934 and lasting until 1937. Nearly ten years after the beginning of the Dust Bowl, nearly 2.5 million people had left their homes in regions most affected, with nearly 10% of those migrants ending up in California (Bouston et al. 2010). The Midwest experienced the most damage, in particular the agricultural ruin from the drought forcing individuals within the agriculture and farming sectors to leave their land and relocate. Bouston (2010) finds in his research that internal migration to metropolitan areas reduced work opportunities for existing residents, often leading to an increase in outmigration for existing residents on a quest to find work elsewhere.

In contrast, the Great Migration that took place from 1910 until 1970 is an example of voluntary migration. Tolnay (2003) explains that African Americans' Great Migration from the South to the North contributed to profound social, economic, demographic, and cultural changes in northern cities. Even after the Great Migration, the migration of Blacks continued. By 1950, 2.5 million southern born Blacks lived outside of the region and by 1980, nearly 4 million. Marks (1989) found that high skilled workers that were not employed in agriculture were more likely to migrate during this time. Post-World War II expanded employment opportunities for Blacks leading many to migrate in search of better opportunities and social acceptance. Vigdor (2001) found that more educated Blacks were more mobile, increasing the likelihood of migration. He suggested that there was an influx in educated Blacks migrating as they were better able to finance such a move.

1.2 U.S. Internal Migration

The propensity to migrate has steadily declined over the past decade as fewer households migrate within the U.S. and more stay within the same residence, county, or neighborhood. One reason for this decline could be the strength in the networks built within communities from past waves of migration, providing strong family or social networks that anchor households into a particular community. Enchautegui (2016) found that minority groups prefer to live in areas where their population's makeup skews towards that individual's race and ethnicity. This could be one factor in explaining the finding that Blacks and Hispanics are less likely to migrate than Whites. With monumental historical waves of migration, racially and ethnic diverse populations have migrated and formed communities, reducing the likelihood that these households will choose to live elsewhere. This sort of reasoning can also be used to explain why the overall propensity to migrate has declined with the establishment of close-knit communities.

Although there has been an abundance of research on internal migration, it is important to constantly update the findings as household and cultural behaviors continue to change. For instance, property taxes did not share a relationship with the propensity to migrate of Black households historically because these households either could not purchase a home due to discrimination or did not have the means to. Previous research included distance as a determinant of migration finding that as the distance of the move increased, the likelihood of migrating decreased. Distance has been used in gravity models and as a proxy for estimating moving costs and the opportunity cost associated with longer distance moves (Bunea 2012). Distance, however, has become less significant of a factor influencing migration as transportation and communications systems have expanded, improving migration information to households for decision making, and decreased transportation costs (Greenwood 1997). With an increased transparency in the economic and noneconomic costs of moving, households have more information in making informed decisions regarding whether to relocate and where to relocate to.

1.2.1 Internal Migration During the Great Recession

While life-stage and location specific amenities have been shown to impact the propensity to migrate within the U.S., it has also been shown that various macroeconomic indicators can also influence household migration decisions. Locations experiencing low or unfavorable economic activity may experience more out-migration while economically thriving locations might experience higher rates of in-migration. Greenwood (2014) explains that in periods of high unemployment, households relocate to locations with better economic opportunities, such as higher job growth and low unemployment, but what happens when the entire nation is experiencing low economic activity? During the Great Recession, high unemployment was so widespread that there were few locations to relocate to that had better economic opportunities (Johnson et al. 2017).

Although the Great Recession has been used to explain the continued decline in internal migration within the U.S., some studies have found that the recession played a small role in migratory behavior (Molloy et al. 2011). This is not to say that economic activity shares no relationship with migration rates, as numerous studies find internal migration to be pro-cyclical. Molly and Wozniak (2011) show that in periods of positive economic activity, households are incentivized to migrate in order to take advantage of economic opportunities elsewhere or stay in the same residence when already residing in a location that is economically thriving.

Contrary to this literature, Monras (2014) finds that the Great Recession did have an impact on internal migration, primarily in dissuading in-migration into negatively hit locations. From this research, we can gather that there exists a relationship between various economic indicators and migration decisions, such as unemployment reducing in-migration into a particular location. In analyzing internal moves and migration with the Current Population Survey, Cooke (2011) showed that changes in the rates of migration and differences in net migration existed during the Great Recession. It was found that 63% of the decline in county-to-county moves were attributed to the direct effects of the Great Recession. This could be driven, in part, by the decreased propensity of homeowners to move during are recession as homeowners are greatly impacted by the state of the macro economy (Cooke 2011). In addition, Johnson et al. (2017) found that “net migration losses

diminished, or shifted from a loss to a gain, in 67% of (the analyzed) counties during the recession and post-recession periods" (Johnson et al. 2017, 606).

The data used in the following chapters include the years of the Great Recession and will therefore incorporate some of these findings such as the impact that economic indicators can have on the propensity to move and migrate. In addition, it will be used to help explain sudden or abnormal changes in the propensity to move or migrate as we examine the trends of migration across race and ethnicity.

1.3 Causes and Consequences of Differences in Internal Migration Patterns Across Race and Ethnicity

For the past hundred years, discrimination and racism have impacted employment opportunities for minorities, opportunities to accumulate wealth and increase income, in addition to the right to equal education. Housing is not immune to such discrimination. The U.S. Census found that between 1980 and 2000 Blacks were highly likely to experience residential segregation, relative to Whites, Hispanics, and Asians. Most recent evidence discovered that Black-White segregation has decreased over the last decade and a half but there continues to be high rates of segregation within many U.S. metropolitan areas. Even with the passing of the Fair Housing Act and its later amendments housing discrimination continues. While most recent studies suggest declining rates of housing segregation within the U.S., one must consider the increased difficulty of measuring instances of discrimination and the possibility of a shift from exclusionary discrimination (which is easier to detect) to non-exclusionary discrimination.

While race and ethnicity can play an important role in housing discrimination, familial status can create an additional discriminatory factor. While Blacks and Hispanics are most vulnerable to discrimination within the housing market, Blacks and Hispanics with children are even more likely (McLanahan et al. 2008). Previous literature across various disciplines emphasize the importance of familial structure on the well-being of households in addition to their decision making process and preferences. Diversifying family structure is a significant mechanism in continued inequalities

across race, ethnicity, and gender within today's society. Because of the differences in family structure across race and ethnicity, family structure can further exacerbate racial inequalities. As family structure varies by race and ethnicity, scholars argue that "racial and ethnic groups in which two-parent families are less common may have developed different models of childrearing and social support, which rely less on the nuclear family and more on extended kin networks" (McLanahan et al. 2008, 269). All forms of discrimination can carry heavy implications to the everyday experiences of groups affected in addition to their psychological states that influence their decision making. Housing discrimination, intimidation, and harassment can significantly impact personal preferences and the propensity to migrate. Lower instances of discriminatory practices could provide an anchoring effect for minorities, decreasing the propensity to migrate, while higher rates of discrimination would push minorities out of a particular place incentivizing them to migrate to a place where they feel more accepted.

1.4 Overview

In the following three chapters, an empirical analysis of both economic and noneconomic determinants of internal migration within the U.S. between 2007 and 2015 across race and ethnicity are examined, in addition to the wage consequences due to differences in the propensity to migrate and its effects on the racial wage gap. Chapter 2 investigates how the propensity to migrate differs for White non-Hispanics, Black non-Hispanics, and Hispanics in the U.S. and how the determinants of migration differ for individuals in the above racial and ethnic groups.[1] Both economic and non-economic household and location characteristics are analyzed providing a more complete picture of motivations and preferences of internal migration. According to the data, Blacks experience higher rates of migration than White households while Hispanic households are consistently migrating at lower rates, but when controlled for various household and location characteristics, minorities have a lower propensity to migrate than White households.

[1]Previous iterations of this paper included Asians but with the added difficulty of using restricted-use ACS data and requirements regarding the sample size of each racial and ethnic group, Asians have been excluded from this analysis.

Chapter 3 analyzes the determinants for short versus long moves, paying more attention to the type of movement or migration. Migration is defined as household moves to at least a different county while residential moves are defined as moves within county. This chapter takes a closer look at who is moving within the same county as opposed to another county and what individual and location characteristics influence this decision. Chapter 4 takes the results from the previous two chapters to provide theory in building a model that measures the relationship between internal migration and wages. When controlling for known variables that affect wages such as educational attainment, experience, and occupation, how does the propensity to migrate impact this?

These next three chapters together provide an in-depth analysis on residential movement and migration within the U.S. across different racial and ethnic groups and how the difference in the propensity to migrate further influences wage differences. They contribute to the migration literature by analyzing both economic and noneconomic determinants of internal migration by drawing from literature of different disciplines, such as sociology and history and empirically studying how the effects differ across races and ethnicity. These chapters also contribute to wage discrimination literature as it provides an additional dimension to understanding differences in wages across race and ethnicity, potentially providing additional insight into some of the unexplained variation in wages. Together, these chapters tell a story of internal migration, determinants of migration and movement, and how these differences in migratory patterns can have economic consequences enforcing racial and ethnic disparities.

Chapter 2
Determinants of Interstate Migration: How Economic and Noneconomic Factors Differ Across Race and Ethnicity

2.1 Introduction

While the propensity to migrate within the U.S. population overall has continued to decrease over the past couple of decades, relocation may be necessary at different points in the life cycle. Households relocate for many reasons such as better financial or cultural opportunities, returning to a childhood home or closer to family, or to get away from a current living situation. Understanding what motivates migration and what potential migrants are looking for in residential locations provides valuable information in analyzing demographic, economic, and social outcomes. Using 2007 to 2015 micro-level restricted-use data published by the American Community Survey (ACS) combined with state- and county-level data, this chapter explores the relationship between economic and noneconomic location and household characteristics. Moves within county are considered residential movement, while movement outside of the original county are considered migration. Using a Heckman corrected probit model, the characteristics are used to explain the following two step problem,

1. Whether or not a household has decided to migrate

2. Whether the household has decided to stay within state or migrate to a different state

After analyzing the determinants of migration and type of migration for the sample as a whole, the sample is separated by three racial and ethnic groups: Black non-Hispanic, White non-Hispanic, and Hispanic in order to answer the following questions,[2]

[2]For simplicity, all chapters will refer to Black non-Hispanics as Black and White non-Hispanics as White.

1. What economic and noneconomic determinants influence internal migration within the U.S. between 2007 and 2015?

2. How do the economic and noneconomic determinants of internal migration differ between Black, White, and Hispanic households?

Noneconomic determinants are defined as quality of life factors as published by Richard Cebula, such as access to public goods or location-specific amenities (Cebula 2005). Research on the determinants of migration has improved over the last couple of decades with increased availability of micro data and an evolution of the motivations behind migration decisions. Beginning with Ravenstein (1885), much of the existing literature on internal migration has sought to identify who migrates by identifying individual characteristics such as age, education, income, and marital status, and where they migrate to by examining location level characteristics. Sociology literature has furthered the study of internal migration patterns by suggesting that the development of sociological groups and support networks may affect migration patterns, providing reason to expect systemic racial and ethnic gaps in migration within the U.S. (Greenwood 1975).

While micro-level data is more readily available for research purposes, data is limited to the public. Due to public availability of micro-level data, researchers have had to get creative in how they explore internal migration patterns. Pais (2014) uses a longitudinal study in order to analyze repeat migration while other papers restricted their analysis of internal migration at higher geographical levels, such as state-level migration. With access to restricted-use ACS data, this paper, in contrast, has the ability to use a more narrow definition of migration. For the purposes of this paper, the definition of migration provided by the Population Association of America's is used. Migration is defined as "a relatively permanent change of residence that crosses jurisdictional boundaries (counties in particular), measured in terms of usual residence at a prior point in time, typically 1-5 years earlier" (Greenwood 1997). Moves within county, or residential movement, are examined in chapter 3. In addition to access to data at a lower geographical level, restricted-use ACS data provides unconstrained data such as the elimination of income caps on reported household income. It also allows the findings of internal migration to be further disaggregated

by race and ethnicity, in this case for Blacks, Whites, and Hispanics. While many household and location characteristics have similar relationships with the propensity to migrate across race and ethnicity, many of the magnitudes vary. There are also multiple characteristics that shares the opposite relationship across race and ethnicity. These relationships are further explored.

2.2 Literature Review

Both economic and noneconomic literature is used to build the model and hypotheses on determinants of internal migration across race and ethnicity. There are multiple categories of literature that are used as a means of not only constructing the necessary model but analyzing the results. While historical findings are used as a means in explaining differences in behaviors across race and ethnicity, sociological literature provides insight into necessary variables that theoretically influence migration. It is also used to motivate the use of noneconomic factors that influence migration, such as the strength in social networks, and potential methods to model them.

2.2.1 Economic Determinants of Internal Migration

Michael J. Greenwood defined the determinants of migration as "the factors that affect migration, including characteristics of both places and of persons and their families" (Greenwood 1997). Some of the most important economic characteristics are household and individual specific characteristics that make them more or less likely to migrate. Age and the propensity to migrate is expected to share a significant non-linear relationship (Plane 1993). Another important economic determinant is educational attainment, although not as widely included as age (Greenwood 1997). Using a longitudinal study, Pais (2014) used educational attainment rather than an income measure to examine repeat migration patterns. As explained by Patillo-McCoy (2000), class structure also influences mobility. The author recognizes the differences in spatial contexts of the Black and White middle class and examines the importance of race in determining spatial and social outcomes. He argues that "changes in the socio-economic distribution of African Americans can be translated into changes in their spatial distribution" (Patillo-McMoy 2000).

In addition to individual specific characteristics, the location itself can either pull or push migrants. Further more, some of these factors act as an anchor in keeping residents within a particular locale. A motivating location specific factor of migration is employment characteristics. Holzer (1991) compiled 20 years' worth of evidence on the spatial mismatch hypothesis. The most recent evidence suggests that spatial mismatch is relevant for explaining Black and White employment differences. The trends are relevant when considering the mismatch hypothesis due to the continuing decentralization of population and employment in metropolitan areas, changing the characteristics of employment in the U.S. generally and among Blacks in particular.

2.2.2 Noneconomic Determinants of Internal Migration

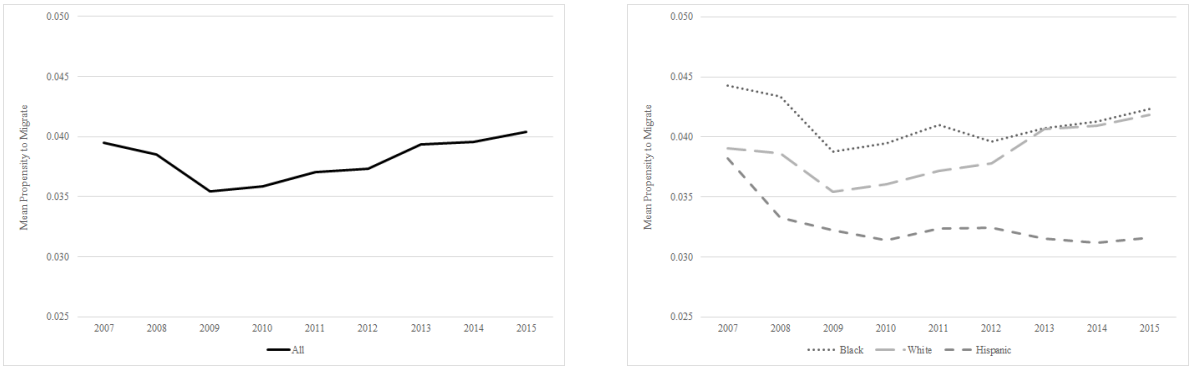
The inclusion of noneconomic factors is important in building a complete model of migration. Price-Spatlen (1998) illustrated the changing significance of noneconomic factors in shaping the influences of Black migration. Both Price-Spatlen (1998) and Enchautegui (2016) identify one of these noneconomic factors as ethnogenesis. "Ethnogenesis is the process by which ethnic and racial groups refine a sense of urban place by developing and refining a communal structure and a collective ethos from the interplay between socio-cultural characteristics and American social structure" (Enchautegui 1997). It was found that urban areas with strong ethnogenic measures not only attracted potential migrants but served as an anchor in keeping Blacks in that location. Enchautegui (2016) found that minority groups prefer to live in areas where people of their race or ethnicity are a larger proportion of the population (relative to other locations) in order to take advantage of social and economic support of spatially concentrated ethnic networks. It was through the process of ethnogenesis in the 1930's that significantly shaped both total Black migration and migration of young Blacks, although it was not as much of a driving force in the 1950's. These papers help to support the claim made in Liao (2012) that "individuals who are not White are less likely to move" (Liao 2012). It is through the establishment of strong communities from previous waves of migration of minorities that contributes to a decrease in residential mobility.

2.3 Data

Household migration decisions are analyzed at a given point in time using restricted-use ACS data from 2007 until 2015. In addition to using the ACS for individual and household level characteristics, data on state- and county-level characteristics have been gathered from multiple sources such as the Bureau of Labor Statistics (BLS), the Bureau of Economic Analysis (BEA), and the Census Bureau. The sample analyzed in this chapter are all household heads that self-identify as either Black, White, or Hispanic, age 18 or older, and was neither a full-time student nor active military within the last year. Eliminating full-time students and active military avoids those households that likely were forced to move for either education purposes or for military relocation.

2.3.1 A Snapshot of Internal Migration in the U.S.

Figure 2.1 is a series of two time trends representing the mean migration rate across race and ethnicity. Migration rates were calculated by creating a binary variable that measures whether the household migrated to at least a different county (*Migrate*=1) or stayed in the same residence or moved within county (*Migrate*=0). The definition of this variable follows the definition provided by the Population Association of America explained earlier in the chapter.



(a) Entire Sample **(b)** Across Race & Ethnicity

Figure 2.1: Mean Propensity to Migrate

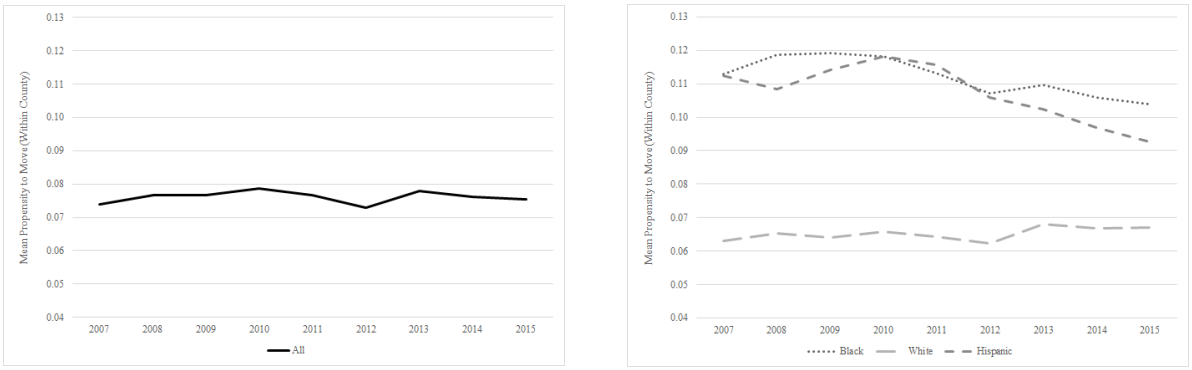
The propensity to migrate has declined over the last few decades but as shown in Figure 2.1, migration rates increased during the 2008 recession as a response to major economic shocks that

contributed to rapid spikes in unemployment, decreases in disposable income, and an increase in housing insecurity. This aligns with previous literature on the decline in internal migration rates noting the exception of recessionary periods and their prospective recovery (Cooke 2013; Molloy et al. 2011; Monras 2015). The decline in internal migration coincides with theories of ethnogenesis along with increased importance of social networks and social capital (Haug 2008). The affinity hypothesis, states that more friends, family, and investment in a community will reinforce the tendency not to migrate.

Across race and ethnicity, the figure shows that Black household heads had higher rates of internal migration, with the gap between White and Black household rates closing in 2013. This is different from the claim made in Liao (2012) and other literature suggesting that Blacks are less likely to migrate. One reason for this difference is differing definitions of migration while another significant difference is that these figures do not control for various other factors that can influence the propensity to migrate. The definition used throughout this paper excludes households that are moving within county which likely captures residential displacement, disproportionately impacting Black households. This also aligns with the ethnogenesis and social network theory that anchors Black households within a particular area, which are discussed in the next chapter. Hispanic household heads have the lowest propensity to migrate and saw the smallest increase in migration during the Great Recession. Minority households were disproportionately impacted by the Great Recession so why did Black households migrate more while Hispanic migration was less impacted? This could be a result of Hispanic households moving within county more during this time or a result of the impact on labor demand for laborers in the agriculture and industrial sectors (Villarreal 2014). Fewer employment opportunities elsewhere serves as a strong anchor, disincentivizing migration.

Figure 2.2 is a time series trend representing the propensity to move. Moving refers to households that moved within the same county in the last year. Moving rates were calculated by creating a binary variable equal to 1 if the household moved within the same county in the last year and 0 otherwise. This means that a household that migrated outside of the county have a value of 0. For

the entire sample, we see little change in the propensity to migrate over the 10-year time period. However, we see more variation when disaggregating the sample by race and ethnicity. Hispanic and Black households have a higher propensity to move than White households, consistent with literature on residential displacement, gentrification, and housing discrimination. In 2010, Black and Hispanic households were almost twice as likely to move within county than White households. We will explore this more in the next chapter.



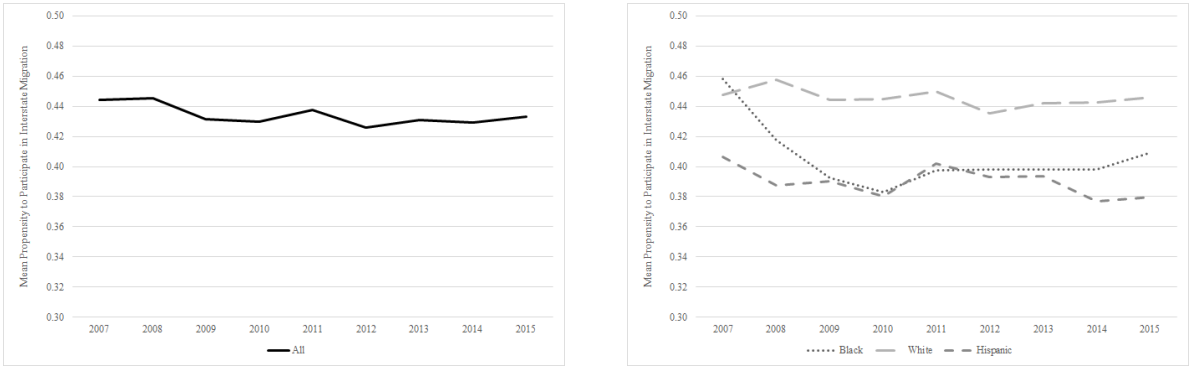
(a) Entire Sample

(b) Across Race & Ethnicity

Figure 2.2: Mean Propensity to Move Within County

Figure 2.3 measures the propensity to participate in interstate migration, moving to a different state, rather then intrastate migration, moving within state but to a different county. The propensity to participate in interstate migration is measured with a binary variable equal to 1 if the household migrated to a different state given the household migrated and 0 if the household migrated within state in the last year. For the entire sample, between 42% and 45% households migrated to a different state while the remaining migrated within state. Strong social networks, family structure, and economic costs of migrating further can help to explain the lower propensity to migrate to a different state. When households migrate, White households are more likely to participate in interstate migration than Black and Hispanic households. Black households experienced similar rates of interstate migration in 2007 but saw a drastic decrease during the Great Recession. Minorities were disproportionately impacted by the recession and without the means or opportunities motivating further migration, it makes sense that these households saw a dip in interstate migration. All

of these figures represent the propensity to migrate, move, and participate in interstate migration without controlling for various factors that also impact residential mobility. By including various household and location characteristics into the model, we will be able to tease out the role that race and ethnicity can have on internal migratory behavior.



(a) Entire Sample **(b)** Across Race & Ethnicity

Figure 2.3: Mean Propensity to Migrate to a Different State

2.3.2 Individual and Household Determinants of Internal Migration

This chapter will explore how both economic and noneconomic individual and location characteristics motivate inter- and intrastate migration within the U.S. between 2007 and 2015. Table 2.1 summarizes the economic individual characteristics of the household heads included in the analysis provided by the ACS.

Based on the definition of noneconomic determinants in Cebula (2005), all individual and household level characteristics are defined as economic determinants. All of the household and individual characteristics are provided by the same restricted-use ACS data that is used to construct the dependent variables of interest. As defined by the ACS, family size refers to the number of family members that are residing in the household head's places of residence permanently. This can include in-laws, nieces and nephews, grandparents, etc. Theoretically, a growing (or shrinking) household could induce migration but may have a larger impact on location and distance of migration. Children in particular can hold strong deterministic power. The number of children,

Table 2.1: List of Household and Individual Characteristics

Economic
Family Size
Number of Children Age 5 and Above
Number of Children Under the Age of 5
Sex (Male = 1)
Age (Years)
Marital Status (Married = 1)
U.S. Born (Yes = 1)
Educational Attainment (measured using a series of binary variables)
Labor Force Participant (Yes = 1)
Total Household Income

defined as the household heads "own children" [3], is split up into two categories: number of children age 5 and above and the number of children under the age of 5. Ham (2015) finds that the more children within a family, the less likely they are to migrate. While this chapter hypothesizes the same result, a distinction is made between school-age children and infants/toddlers. Families with young children that are not in school are hypothesized to be more mobile than households with school-age children. School-age children are more likely to have built social networks, making it harder for household to move further. It is also possible that households are more likely to migrate or move to areas with higher ranked schools while their children are still young. The summary statistics in Table 2.2 provide summaries for all three of these variables but only the two children variables will be included in the model to avoid multicollinearity with family size.

Age is a continuous numerical variable over 18 with a minimum value of 18. The ACS defines total family income as the total pre-tax income earned by the family. Total family income represents the total income earned by all members in the household, therefore total family income of a household of one would equal individual income. Income variables are adjusted for 2015 dollars. A series of education related binary variables are also included. Educational attainment has been broken up into five categories: less than high school, high school, some college, college, and advanced degree. Due to high intercorrelations between income and educational attainment

[3] "Own children" include biological, step, and adopted children.

and the possibility of endogeneity, only educational attainment variables will be included into the model. The binary variable that measures the sex of the household head equals 1 if male and 0 if female.[4] Marital status equals 1 if married and 0 otherwise. The additional binary variables included are: "U.S. Born" and "Labor Force Participation" all equaling 1 if the respondent falls into that category and 0 otherwise.

Table 2.2 summarizes the individual and household characteristics of the sample of household heads disaggregated by race and ethnicity between 2007 and 2015 using person weights provided by the ACS. As shown in the figures, Black households are more likely to migrate and both Black and Hispanic households are more likely to move within county. All households and individual characteristics of the sample are all as expected. Minority households on average earn less, have a lower propensity to be married, have more children, and are less likely to own their home. Black and Hispanic households heads are also more likely to be less educated and less likely to hold an advanced degree. It is important to recognize these differences as they can help to explain differences in the propensity to migrate. By controlling for many of these characteristics, we are better able to separate the relationship between having one of these characteristics on one's residential mobility rather than the racial and ethnic impact.

2.3.3 Location Determinants of Internal Migration

In addition to examining the explanatory role of individual and household characteristics on migratory behavior, this chapter analyzes the motivating power of location characteristics. Previous literature suggests that it is important to not only include characteristics of the current place of residence, but also characteristics of the previous location as well. Location characteristics of the origin are used in analyzing the household's decision to migrate and differences of the location characteristics of the origin and destination will be used in explaining inter- versus intrastate migration. For examples, the difference in the black proportion of the population is equal to the percentage of the population that identifies as Black from the current location minus the percentage of

[4]Throughout this paper, sex and gender are used interchangeably. When citing and referring to findings from previous publications, this paper will use their terminology. The ACS data names the self reported variable as sex

Table 2.2: Summary Statistics of Economic Household and Individual Characteristics

	All	Black	White	Hispanic
Black	0.1173			
	(0.0001267)			
White	0.7528			
	(0.0001668)			
Hispanic	0.13			
	(0.0001327)			
Migrate	0.03806	0.04117	0.03852	0.03261
	(0.0000755)	(0.0002532)	(0.0000847)	(0.0002118)
Mover	0.07601	0.1121	0.06503	0.1071
	(0.0001056)	(0.0003906)	(0.0001093)	(0.0003624)
Average Personal Income (2015 dollars)	$46,900	$32,770	$51,560	$32,690
	(21.56)	(43.66)	(26.53)	(42.93)
Average Household Income (2015 dollars)	$72,880	$49,170	$79,420	$56,370
	(28.13)	(60.83)	(34.15)	(60.23)
Sex (Male = 1)	0.5098	0.3835	0.5255	0.533
	(0.0001791)	(0.0005711)	(0.0001978)	(0.0005541)
Age	52.14	49.4	53.65	45.8
	(0.005723)	(0.01697)	(0.006466)	(0.01503)
Marital Status (Married = 1)	0.4982	0.2875	0.528	0.5155
	(0.0001791)	(0.0005225)	(0.0001984)	(0.0005561)
Family Size	2.408	2.395	2.275	3.19
	(0.0005397)	(0.001782)	(0.0005408)	(0.0020)
Children Age 5 and Up	0.5952	0.6966	0.5029	1.038
	(0.0003582)	(0.001235)	(0.000358)	(0.001326)
Children Under the Age of 5	0.1279	0.1263	0.1109	0.2277
	(0.0001584)	(0.0005176)	(0.0001624)	(0.0006056)
Homeowner (Yes = 1)	0.684	0.4621	0.7484	0.5116
	(0.0001766)	(0.0005758)	(0.0001852)	(0.0005569)
Labor Force Participant (Yes = 1)	0.6794	0.6857	0.6636	0.7651
	(0.0001625)	(0.000518)	(0.0001833)	(0.0004554)
Less than High School	0.1236	0.1537	0.07972	0.3511
	(0.0001221)	(0.0004035)	(0.0001084)	(0.0005309)
High School	0.2643	0.2854	0.2634	0.2505
	(0.0001588)	(0.0005277)	(0.0001749)	(0.0004881)
Some College	0.225	0.2653	0.2255	0.1858
	(0.0001513)	(0.0005193)	(0.0001678)	(0.0004333)
College	0.2711	0.2163	0.2984	0.162
	(0.0001581)	(0.0004858)	(0.0001812)	(0.0004055)
Advanced Degree or Higher	0.116	0.07935	0.133	0.05061
	(0.0001078)	(0.0003041)	(0.0001285)	(0.0002252)
U.S. Born (Yes = 1)	0.8726	0.9048	0.9484	0.4042
	(0.0001293)	(0.0003554)	(0.0000914)	(0.0005431)
Urban Resident	0.7868	0.898	0.7457	0.9245
	(0.0001407)	(0.0003535)	(0.0001679)	(0.0002974)
N	12,240,000	1,140,000	9,895,000	1,204,000

[a] Standard errors are in parentheses.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.

the population that identifies as Black from the previous location. Data on location characteristics was only available as early as 2007, which is why earlier ACS data is not included in the analysis. Table 2.3 lists the different location characteristics, separated by household-specific economic and noneconomic variables.

Table 2.3: Location Specific Characteristics

Non-Economic
Population Composition (Percentage of population that is Black, White, or Hispanic)
Per Capita Expenditures on Parks and Recreation (2015 dollars)
Economic
Monthly Median Housing Prices (2015 dollars)
Per Capita Income (2015 dollars)
Unemployment Rate
Employment Growth (year over year)
Population

Noneconomic, also referred to as quality of life, are factors that hold little to no economic value from the individual perspective but can increase or decrease utility of households. To proxy quality of life, county level per capita expenditures on parks and recreation[5] is used and is adjusted for inflation using 2015 dollars. In order to test the theory of ethnogensis, population composition variables are included. These variables are calculated by dividing the total population of a particular race or ethnicity provided by the ACS by the total population of that particular county. This allows for the testing of population composition on migratory decisions across household in the sample. Monthly median housing costs[6] are at the state-level and includes both monthly owner and renter costs. Per capita income[7] is at the county level, providing an additional measurement of the standard of living within a particular location. Employment growth is the year over year change in

[5]U.S. Census Bureau, Government Finance Database

[6]U.S. Census Bureau, American Community Survey (2007-2015)

[7]Bureau of Economic Analysis, GDP & Personal Income (2007-2015)

employment numbers provided by the BEA at the county level. The unemployment rate[8] is also at the county-level and represents the percentage of the labor force that is unemployed.

2.4 Theoretical Model

This section outlines the theoretical model used to explain a household's decision to migrate. While this model can be used to explain migration in a broad sense, this paper focuses on internal migration decisions of a household within the United States.

2.4.1 Benefits-Cost Analysis in Self-Selection into Migration

In theory, when deciding where to migrate to, a potential migrant weighs the costs and benefits of the move. If the real value of expected benefits exceed the costs, ceteris paribus, the individual migrates. As outlined in Greenwood (1975), the present value of investment of migration from place *i* to place *j* is as follows,

$$PV_{ij} = \sum_{t=1}^{n} \frac{E_{jt} - E_{it}}{(1+r)^t} - \sum_{t=1}^{n} \frac{C_{jt} - C_{it}}{(1+r)^t} \tag{2.1}$$

In time period, *t*, $E_{jt} - E_{it}$ represent the difference between the present discounted value of earnings in location *j* and *i* and *r* represents the discount rate. $C_{jt} - C_{it}$ represents the difference in residence costs between location *j* and *i*. Given the potential earning streams of the individual and the costs associated with residing in each location, the potential migrant residing in location *i* migrates to location *j* if the present value of investment to migration is positive. While current and future income are important in migration decisions, there are behavioral and location characteristics that can influence not only migration but the location of migration.

2.4.2 Utility Maximization of the Household

Previous studies on the determinants of migration have most commonly explained migration decision within the context of utility maximization (Greenwood 1997). A utility maximizing

[8] U.S. Bureau of Labor Statistics (2007-2015)

framework allows for households to value things differently which is important when analyzing the differences in internal migration between groups. This is a limitation to the benefits-cost analysis model. There are two questions a potential migrant needs to answer, the first being whether to migrate and the second being where to migrate. While all migration literature addresses these two questions, there are disagreements regarding whether these questions are answered simultaneously or in some particular order. This paper treats these questions as being dependent on one another and, therefore, are answered simultaneously by the individual. Being that the individual decided whether to migrate and where to migrate simultaneously, they will consider both household characteristics and location characteristics in order to maximize utility. Migration occurs if an individual is able to increase their utility by migrating. An increase in utility can be a result of "better employment opportunities, higher wages, a preferred bundle of amenities, and many other factors" (Greenwood 1997). Like other models of migration using utility maximization, Graves and Linneman (1997) assumes that the household's goal is to maximize lifetime utility dependent on the household's lifetime income and leisure. Following the notation of Graves and Linneman (1977), the household receives utility every year from year 1 to year *n* such that,

$$U = U(u_1, \ldots, u_i, \ldots, u_n) \tag{2.2}$$

Where *u* represents the annual utility of the household for each year from 1 to *n* and *U* represents lifetime utility. Based on the categories of goods outlined in Tolley (1974), each household can consume traded goods, which are not specific to the location, and non-traded goods, which are location-specific. Examples of non-traded goods can include location specific public goods, availability of schools for children, and entertainment. Each year's utility of household *m* is a function of traded goods consumed, X_m; non-traded goods consumed in a particular location *l*, Z_l; and leisure, L_m. Household *m* maximizes the following lifetime utility, *U*,

$$U = U(X_m, Z_l, L_m) \tag{2.3}$$

The household's lifetime utility is subject to a time constraint. It's total lifetime available time, T_m, is dependent on lifetime labor supply, S_m, and lifetime leisure, L_m:

$$T_m = S_{HH} + L_{HH} \tag{2.4}$$

$$T_m = S_{HH} + S_{SP} + L_{HH} + L_{SP} \tag{2.5}$$

Where equation (2.4) represents the household's total available time for a single household head. The household's total lifetime labor supply, S_m, is equal to the lifetime labor supply of a single household head, S_{HH}, in household *m*.[9] Like labor supply, household *m*'s leisure time, L_m, is equal to the lifetime leisure of a single household, L_{HH}. Equation (2.5) represents the household's total available time for a married household head. Total labor supply, S_m, is equal to the labor supply of the household head, S_{HH}, and the labor supply of the spouse, S_{SP}, in household *m*. The household's lifetime consumption of leisure, L_m, is the sum of lifetime leisure of the household head, L_{HH}, and the lifetime leisure of the spouse, L_{SP}, in household *m*.

The household's utility is also subjected to an income constraint,

$$Y_m = W_{HH}S_{HH} + V_{HH} \tag{2.6}$$

$$Y_m = W_{HH}S_{HH} + W_{SP}S_{SP} + V_{HH} + V_{SP} \tag{2.7}$$

Where equation (2.6) represents the total lifetime household income of a single household head and equation (2.7) outlines the household's lifetime income of a dual earning household. Total income of an unmarried head is a function of their labor supply, S_{HH}, their wages, W_{HH} and non-labor income, V_{HH}. Total income of a dual earning household is a function of the labor supply of both the household head the spouse, S_{SP}, the labor wages of the household head and the spouse, W_{SP}, and the non-labor income of the household head and the spouse, V_{SP}. It is important to note that when the household is maximizing their utility and deciding on whether or not to migrate, wages

[9]The *m* subscript has been suppressed from S_{HH}, L_{HH}, S_{SP}, L_{SP}, W_{HH}, W_{SP}, V_{HH}, and V_{SP} in order to simplify notations.

will be a function of the location. When estimating lifetime utility of staying in location *i*, wages of location *i* are used in calculating lifetime wages. The potential rate of wage growth is also a function of the location's projected economic growth. When calculating wages lifetime utility of location *j*, wages of that location are used. The household's lifetime utility maximization problem can be rewritten and simplified as,

$$maxU = U(X_m, Z_l, L_m) \tag{2.8}$$

Subject to:

$$W_{HH}S_{HH} + W_{SP}S_{SP} + V_{HH} + V_{SP} = P_xX_m + P_zZ_l + W_{HH}L_{HH} + W_{SP}L_{SP} \tag{2.9}$$

$$T_m = S_{HH} + S_{SP} + L_{HH} + L_{SP} \tag{2.10}$$

$$W_{SP}, S_{SP}, V_{SP}, L_{SP} = 0 \textit{ if household head is single} \tag{2.11}$$

$$X_m, Z_l, L_m \geq 0 \tag{2.12}$$

Using the above maximization problem, the Lagrangian takes the following form,

$$\ell(X_m, Z_m, L_m, \lambda) = U(X_m, Z_m, L_m) - \lambda(W_{HH}S_{HH} + W_{SP}S_{SP} + V_{HH} + V_{SP} - P_xX_m - P_zX_m - P_zZ_m - W_{HH}L_{HH} - W_{SP}L_{SP}) \tag{2.13}$$

2.4.3 Migration Decision of the Household

The household's decision to migrate and location of migration depends on the particular household's utility maximization problem. Recall that a household can consume traded goods in any location but consume non-traded goods in a particular location. In order to simplify this problem, suppose the household has the choice of staying in location *i* or migrating to location *j*. The household will migrate to location *j* if,

$$maxU(X_m, Z_j, L_m) > maxU(X_m, Z_i, L_m)$$

The household will stay in location *i* if,

$$maxU(X_m, Z_j, L_m) < maxU(X_m, Z_i, L_m)$$

It is from previous literature on internal migration that this theoretical model on household migration is built from. Each household behaves differently and their utility function is determined by household characteristics. Each household's utility is a function of the consumption of traded goods, the consumption of location specific goods, additional location specific characteristics that may affect income, and the need for leisure. This chapter explores how these characteristics affect migratory patterns for different racial and ethnic groups.

2.5 Empirical Methodology

In order for households to maximize lifetime utility, they must take into consideration a multitude of factors that contribute to their overall well-being. The probability of migration is a function of individual and household characteristics and location characteristics. The first question that must be answered by household *m* is whether or not they should migrate from location *j* at time period *t*. The dependent binary variable, $Migrate_{mjt}$ is defined as,

$Migrate_{mjt} = 1$ *if household m migrates anywhere*

$Migrate_{mjt} = 0$ *if household m stays within the same residence*

The second question is the location of migration, measured by whether the household *m* participates in interstate migration or not. The second dependent binary variable of interest $Interstate_{mjt}$ is defined as,

$Interstate_{mjt} = 1$ *if migrant(s) migrates to a different state*

$Interstate_{mjt} = 0$ *if migrant(s) migrates within state*

The empirical strategy for analyzing the effect of race and ethnicity on migration is to estimate the probability of migrating conditional on variables that have historically influenced migration, including both individual and household characteristics, and how their effect has changed over the last decade. The Heckman corrected Probit estimation can be formalized as such,

$$Pr(Migrate_{mjt} = 1) = f(\alpha_1 + X_{jt}^T\beta + Z_{jt}^T\gamma + V_{mt}^T\delta) \tag{2.14}$$

$$Pr(Interstate_{mjt} = 1) = f(\alpha_2 + W_{ijt}^T\beta + Q_{ijt}^T\gamma + V_{mt}^T\delta) \tag{2.15}$$

where $Pr(Migrate_{mjt} = 1)$ is the selection group and represents the probability of household *m* migrating from place *j* at time period *t* and $Pr(Interstate_{mjt} = 1)$ represents the probability of household *m* migrating from state *j* to state *i*, provided they are a part of the selection equation. The model assumes the probability of participating in interstate migration is observed only if $Migrate_{mjt} = 1$.

The probability of migrating is a function of a vector of locations specific economic characteristics, X_{jt}, where location is defined in terms of the location of origin, *j*. The variables within this vector include monthly median housing costs, per capita income, unemployment rate, and the size of the population. The probability of migrating is also a function of origin specific non-economic factors, Z_{jt}. This includes an ethnogenesis measured by using the percentage of the location's population that identifies as Black, White, or Hispanic. It also includes per capita expenditures on parks and recreation. V_{mt} represents a vector of household and individual characteristics consisting of binary race variables, marital status, number of children age 5 and above, number of children under the age of 5, educational attainment, and other demographic characteristics as appropriate in the baseline specification to be examined. The probability of participating in interstate migration (rather than intrastate migration) is a function of the same vector of economic and non-economic

household and individual characteristics and a vector of non-economic location characteristic differences, Q_{ijt}. Location difference are the mathematical differences between the origin's and the destination's characteristics.

2.6 Results

The Heckman Probit model breaks down the household's decision to migrate into a two-step process and, therefore, the discussion regarding the results will be as well. The next section will examine the marginal effects of the selection portion of the equation, whether the household has migrated within the last year. The results will then be further discussed across the different racial and ethnic groups. Afterwards, we will examine how determinants influences interstate versus intrastate migration.

2.6.1 Determinants of the Selection group: Migrate

Table 2.4 provides the marginal effects of the first step of the Heckman selection model for the entire sample. A one unit change in the independent variable increases (or decreases) the propensity to migrate by β percentage points, where β is the coefficient of the independent variable. With the inclusion of both time and region fixed effects, male household heads are 0.025 percentage points more likely to migrate than female households, and both Black and Hispanic households are less likely to Migrate than White household when controlling for various other individual and household characteristics, consistent with the findings of previous literature. Age has a statistically significant quadratic relationship with the propensity to migrate. Married household heads are 0.22 percentage points less likely to migrate as the household head has to consider the opportunity costs of moving not only themselves but their partner as well. Another life stage that statistically significantly impacts residential mobility is having children. Households with children are less likely to migrate, even less mobile when the household has school-age children over the age of 5. As shown in Table 2.4, households with school-age children are 0.12 percentage points less likely to migrate while households with children under the age of 5 are 0.035 percentage points less likely. School-

age children begin building their social networks as they enter school, increasing the noneconomic costs of migrating, so while having more children in general decreases residential mobility, it decreases at a higher magnitude when the children are school-age. Household heads with less than a high school degree, some college, college, or an advanced degree are more likely to migrate than those with only a high school degree. Those that have completed college or an advanced degree are even more likely to migrate. While this could be a result of higher educational attainment on income and therefore the means to migrate, it is also a result of employment opportunities and the need to migrate for a particular job. Consider PhD graduates who may be limited on available locations for employment.

In addition to individual and household characteristics influencing internal migratory behavior, the characteristics of the current place of residence can also anchor or push migration. The unemployment rate of the county has a statistically significant positive relationship with migration. A 1 percentage point increase in the unemployment rate of the county, increases the likelihood of the household migrating by 0.002 percentage points. This is consistent with previous literature on the relationship between economic shocks and internal migration (Monras 2015). Locations that are negatively impacted by an economic shock, usually characterized by high unemployment, see more out-migration than locations that are not as impacted.

The population of the location can also influence households' decisions to migrate. Locations with a higher population experience a lower propensity to migrate. Although racial and ethnic population portions are also included in the entire sample, it is more insightful to discuss for the migratory behaviors for each race and ethnicity separately as the relationships across race and ethnicity are expected to differ. Monthly median housing costs are positively correlated with the propensity to migrate. As it becomes more expensive to live in a particular location, the benefits of migrating increase and households might choose to leave or are forced to migrate due to high costs of living. While costs could push households to migrate, an increase in benefits could anchor or pull migrants. County-level spending on parks and recreation is negatively correlated with migration. As per capita spending on amenities increases, migration decreases.

Table 2.4: Marginal Effects for Entire Sample (Selection=Migrate)

Variables		ALL	
Sex (Male=1)	0.02465***	0.02590***	0.02615***
	(0.001528)	(0.001533)	(0.001536)
Age	-0.04682***	-0.04686***	-0.04706***
	(0.0002811)	(0.0002812)	(0.0002817)
Age^2	0.0002493***	0.0002499***	0.0002519***
	(0.000002660)	(0.000002661)	(0.000002667)
Black	-0.01340***	-0.01254***	-0.02637***
	(0.002657)	(0.002658)	(0.002669)
Hispanic	-0.1046***	-0.1041***	-0.1250***
	(0.003086)	(0.003087)	(0.003098)
Marital Status (Married=1)	-0.2171***	-0.2178***	-0.2206***
	(0.001616)	(0.001617)	(0.001620)
# Of Children Age 5 and Up	-0.1236***	-0.1237***	-0.1223***
	(0.0009376)	(0.0009379)	(0.0009403)
# Of Children Under the Age of 5	-0.03728***	-0.03725***	-0.03492***
	(0.001737)	(0.001737)	(0.001740)
U.S. Born	-0.04440***	-0.04403***	-0.04044***
	(0.002871)	(0.002872)	(0.002876)
Less than High School	0.03425***	0.03398***	0.02661***
	(0.002879)	(0.002880)	(0.002885)
Some College	0.08782***	0.08790***	0.07815***
	(0.002180)	(0.002181)	(0.002190)
College	0.1259***	0.1257***	0.1195***
	(0.002076)	(0.002078)	(0.002085)
Advanced Degree	0.2461***	0.2461***	0.2408***
	(0.002508)	(0.002510)	(0.002518)
Labor Force Participant	-0.1789***	-0.1789***	-0.1749***
	(0.001986)	(0.001988)	(0.001992)
Unemployment Rate	-0.000454	0.002166***	0.002075***
	(0.0002582)	(0.0003622)	(0.0003669)
Total Population	-3.332e-08***	-3.338e-08***	-2.761e-08***
	(5.463e-10)	(5.438e-10)	(5.410e-10)
Per Capita Income	-0.000001029***	-0.000001045***	-5.390e-07***
	(6.468e-08)	(6.975e-08)	(7.218e-08)
% of Population that is Black	-0.3336***	-0.3357***	-0.3478***
	(0.01238)	(0.01243)	(0.01340)
% of Population that is White	-0.2204***	-0.2106***	-0.08917***
	(0.01159)	(0.01160)	(0.01208)
% of Population that is Hispanic	-0.09921***	-0.1106***	-0.09264***
	(0.01278)	(0.01278)	(0.01282)
Median Monthly Housing Cost	0.00004079***	0.00003875***	0.0001469***
	(0.000003278)	(0.000003372)	(0.000003802)
Per Capita Parks & Rec Expenditures	-4.158e-07***	-4.125e-07***	-4.683e-07***
	(1.253e-08)	(1.250e-08)	(1.214e-08)
Employment Growth	0.9929***	1.504***	1.234***
	(0.02571)	(0.03483)	(0.03480)
Time FE?	No	Yes	Yes
Region FE?	No	No	Yes

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.
[c] Location characteristics are of the residence of origin.

Individual, household, and location factors can all influence the economic and noneconomic costs and benefits of migrating. This paper tests the theory that independent variables will impact migratory behavior differently across race and ethnicity. Table 2.5 uses the same model specifications as Table 2.4 with the exception of the race binary variables as the model is ran for each racial and ethnic group separately. The results include both time and region fixed effects.[10]

Across all three racial and ethnic groups, sex, age, marital status, and the number of children have the same directional relationship with the propensity to migrate. These relationships were discussed in examining the results in Table 2.4. While the correlation is consistent, the magnitudes differ. An incremental increase in the number of school-age children for White households has a larger negative impact on migration than for Black and Hispanic households. An addition of one school-age child in a Black household decreases the propensity to migrate by 0.084 percentage points, while it decreases the propensity to migrate for Hispanic households by 0.11 percentage points, and 0.13 percentage points for White households. The magnitudes are similar for children under the age 5, and smaller than the impact of having school-age children.

The educational attainment of the household head not only varies across race and ethnicity, but the relationship with migration behavior varies as well. A Black household head that has completed less than a high school degree is 0.37 percentage points more likely to migrate than a household head that stopped at a high school degree. Hispanic households are 0.015 percentage points more likely while White households are 0.052 percentage points more likely. On the other end of the educational spectrum, a Black household with an advanced degree is 0.17 percentage points more likely to migrate, 0.24 percentage points more likely for White households, and 26 percentage points more likely for Hispanic households.

There is more variation in the results across race and ethnicity when examining location characteristics. A one percentage point increase in the unemployment rate of the original county of residence increases the propensity to migrate of a Black household head by 0.079 percentage points, 0.046 percentage points for Hispanic households, and 0.024 percentage for White households.

[10]See Appendix A.2 for the marginal effects without fixed effects and with only time fixed effects.

Table 2.5: Marginal Effects by Race & Ethnicity (Selection=Migrate) With Time & Region Fixed Effects

Variables	BLACK	WHITE	HISPANIC
Sex (Male=1)	0.06356***	0.01990***	0.04364***
	(0.005190)	(0.001697)	(0.005239)
Age	-0.03566***	-0.04891***	-0.03459***
	(0.001015)	(0.0003081)	(0.001099)
Age^2	0.0001473***	0.0002645***	0.0001711***
	(0.000009991)	(0.000002893)	(0.00001111)
Marital Status (Married=1)	-0.1935***	-0.2253***	-0.1798***
	(0.005924)	(0.001782)	(0.005335)
# of Children Age 5 and Up	-0.08365***	-0.1293***	-0.1057***
	(0.002613)	(0.001109)	(0.002559)
# of Children Under the Age of 5	-0.02058***	-0.03274***	-0.04463***
	(0.005708)	(0.001980)	(0.004863)
U.S. Born	-0.1143***	-0.05370***	0.04939***
	(0.008020)	(0.003894)	(0.005352)
Less than High School	0.03678***	0.05211***	-0.01478*
	(0.008037)	(0.003517)	(0.007107)
Some College	0.06347***	0.07653***	0.07201***
	(0.006557)	(0.002455)	(0.007427)
College	0.1028***	0.1151***	0.1359***
	(0.006855)	(0.002306)	(0.007465)
Advanced Degree	0.1686***	0.2393***	0.2620***
	(0.009055)	(0.002743)	(0.01002)
Labor Force Participation	-0.08984***	-0.1914***	-0.1277***
	(0.006187)	(0.002224)	(0.006855)
Unemployment Rate	0.007908***	0.002406***	0.004632***
	(0.001330)	(0.0004103)	(0.001403)
Total Population	-5.808e-08***	-2.662e-08***	-4.503e-08***
	(1.864e-09)	(6.685e-10)	(1.704e-09)
Per Capita Income	-9.584e-07***	-4.418e-07***	-0.000002073***
	(2.598e-07)	(7.949e-08)	(3.046e-07)
% of Population that is Black	-0.6035***	-0.2995***	0.2502***
	(0.05374)	(0.01452)	(0.05835)
% of Population that is White	-0.1482**	-0.07353***	0.4798***
	(0.05211)	(0.01285)	(0.04872)
% of Population that is Hispanic	-0.2363***	0.07560***	-0.4133***
	(0.05484)	(0.01421)	(0.04885)
Median Monthly Housing Cost	0.0003131***	0.00008687***	0.000002747
	(0.00001266)	(0.000004202)	(0.00001786)
Per Capita Parks & Rec Expenditures	-4.869e-07***	-4.471e-07***	-1.232e-07**
	(3.450e-08)	(1.507e-08)	(4.131e-08)
Employment Growth	1.947***	1.122***	1.487***
	(0.1195)	(0.03817)	(0.1522)
Time FE?	Yes	Yes	Yes
Region FE?	Yes	Yes	Yes

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.
[c] Location characteristics are of the residence of origin.

One reason that economic shocks push migration decisions more for minority households is because minorities are disproportionately impacted during times of economic downturns. Monthly median housing costs also has relationships of different magnitudes. An increase in the monthly median housing costs of a particular state, increases the likelihood of migration of Black households more than White and Hispanic household heads, more than 3 times to be precise. As will be discussed more next chapter, Black households are more likely to experience racial discrimination in housing and forced migration due to gentrification.

As a measure of ethnogenesis, demographic population information is included. As the percentage of the population that is Black increases, Black households are significantly less likely to migrate than the other racial and ethnic households while Hispanic households are more likely to migrate. When the percentage of the population that is White increases, both Black and White households are less likely to migrate while Hispanic households migrate more. When the percentage of the population that is Hispanic increase, both Black and Hispanic households are less likely to migrate while White household migration is positively correlated.

Household and individual characteristics have similar directional relationships with the propensity to migrate (and be a part of the selection group) across race and ethnicity, with some variation in magnitudes, while location specific variables tend to have a greater impact on Black and Hispanic households. We will see even more variation in the relationship between these variables and the propensity to participate in interstate migration.

2.6.2 Determinants of Interstate Migration

Migration is only one part of the internal migration process. Once a household migrates, the household must now determines whether to migrate to a different state or stay within the same state. Table 2.6 provides the marginal effects of choosing to participate in interstate migration (versus intrastate migration) for the entire sample.

For households that have migrated within the last year, households with a Black or Hispanic household head are less likely to participate in interstate migration than White households. Being

Table 2.6: Marginal Effects for Entire Sample (Interstate)

Variables	ALL		
Sex (Male=1)	0.001486***	0.001536***	0.001535***
	(0.0001007)	(0.0001011)	(0.0001023)
Age	-0.001765***	-0.001769***	-0.001819***
	(0.00001975)	(0.00001976)	(0.00002000)
Age^2	0.000008533***	0.000008574***	0.000008917***
	(1.780e-07)	(1.780e-07)	(1.801e-07)
Black	-0.002335***	-0.002270***	-0.003677***
	(0.0001719)	(0.0001722)	(0.0001762)
Hispanic	-0.006407***	-0.006371***	-0.008453***
	(0.0001960)	(0.0001964)	(0.0002006)
Marital Status (Married=1)	-0.007547***	-0.007592***	-0.007899***
	(0.0001105)	(0.0001105)	(0.0001120)
# Of Children Age 5 and Up	-0.005335***	-0.005348***	-0.005347***
	(0.00006255)	(0.00006253)	(0.00006325)
# Of Children Under the Age of 5	-0.001738***	-0.001741***	-0.001602***
	(0.0001137)	(0.0001138)	(0.0001152)
U.S. Born	-0.002848***	-0.002835***	-0.002575***
	(0.0001802)	(0.0001802)	(0.0001818)
Less than High School	-0.0003481	-0.0003557	-0.0007454***
	(0.0002037)	(0.0002039)	(0.0002064)
Some College	0.005280***	0.005332***	0.004680***
	(0.0001495)	(0.0001497)	(0.0001516)
College	0.008957***	0.008981***	0.008563***
	(0.0001405)	(0.0001407)	(0.0001424)
Advanced Degree	0.01660***	0.01663***	0.01628***
	(0.0001652)	(0.0001655)	(0.0001675)
Labor Force Participation	-0.01116***	-0.01115***	-0.01095***
	(0.0001312)	(0.0001313)	(0.0001325)
Employment Growth	0.02669***	0.03716***	0.02935***
	(0.001812)	(0.001861)	(0.001834)
Total Population	-8.806e-10***	-8.833e-10***	-8.039e-10***
	(1.874e-11)	(1.876e-11)	(1.812e-11)
% of Population that is Black	-0.01605***	-0.01604***	-0.01572***
	(0.0006809)	(0.0006795)	(0.0006707)
% of Population that is Black White	-0.01328***	-0.01309***	-0.01009***
	(0.0006022)	(0.0006013)	(0.0005880)
% of Population that is Hispanic	-0.006620***	-0.006818***	-0.007376***
	(0.0006682)	(0.0006672)	(0.0006433)
Per Capita Income	-0.000006983***	-0.000006907***	-0.000006062***
	(2.499e-07)	(2.512e-07)	(2.570e-07)
Median Monthly Housing Cost	-0.002651***	-0.002657***	-0.002547***
	(0.00002518)	(0.00002516)	(0.00002508)
Unemployment Rate	-0.00008936***	-0.0000358	-0.0000438
	(0.00002209)	(0.00002277)	(0.00002245)
Per Capita Parks & Rec Expenditures	-0.1597***	-0.1587***	-0.1658***
	(0.004609)	(0.004603)	(0.004496)
Time FE?	No	Yes	Yes
Region FE?	No	No	Yes

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.
[c] Location characteristics are the differences between the new place of residence and the original place of residence.

married and having children also decrease the likelihood of migrating to a different state. Marriage and children can decrease residential mobility due to more members of a household building social networks. Even when a married couple and/or household with children migrate, they are more likely to stay closer to their current place of residence. Higher educational attainment positively correlates with interstate migration and labor force participation decreases the propensity to migrate to a different state.

Differences in location characteristics are calculated by finding the difference between the location characteristic of the new place of residence and the last place of residence. A positive difference in a variable means that the new place of residence has a higher value for that particular location characteristic. The marginal effect can be interpreted as a percentage point change in migrating to a different state with a one unit change in the difference of the location characteristic. For example, the coefficient of 0.29 for the location difference in employment growth tells us that a one percentage point increase in the difference in employment growth between the two locations, increases interstate migration by 0.29 percentage points. As another example, the coefficient of -0.0025 for the location difference in median monthly housing costs tells us that a one dollar increase in the difference in median monthly housing costs, decreases the likelihood of migrating to another state by 0.0025 percentage points. The negative sign indicates a lower propensity to migrate somewhere with higher housing costs and the positive sign for employment growth indicates a higher propensity to migrate to another state and location with higher employment growth.

Table 2.7 runs the same model on each racial and ethnic group with both time and region fixed effects.[11] Unlike the relationships between individual and household characteristics on the propensity to migrate, the relationships between the same characteristics on interstate migration vary for the different households. Age shares a negative relationship with the propensity to migrate to a different state for Black and White households while the opposite is true for Hispanic households. Age, including the quadratic, differs for Hispanic households.

[11] See Appendix A.2 for the marginal effects without fixed effects and with only time fixed effects.

Table 2.7: Marginal Effects by Race & Ethnicity (Interstate) With Time & Region Fixed Effects

Variables	BLACK	WHITE	HISPANIC
Sex (Male=1)	0.003025***	0.001372***	-0.0008978
	(0.0003213)	(0.0001194)	(0.004100)
Age	-0.001253***	-0.001996***	0.006453***
	(0.00006574)	(0.00002330)	(0.0008685)
Age^2	0.000004175***	0.000009906***	-0.00004327***
	(6.355e-07)	(2.074e-07)	(0.000009089)
Marital Status (Married=1)	-0.007024***	-0.008459***	0.03600***
	(0.0003743)	(0.0001305)	(0.004241)
# of Children Age 5 and Up	-0.003230***	-0.006029***	0.01612***
	(0.0001600)	(0.00007882)	(0.001994)
# of Children Under the Age of 5	-0.0008927*	-0.001618***	0.001255
	(0.0003485)	(0.0001385)	(0.003639)
U.S. Born	-0.006895***	-0.002950***	-0.03682***
	(0.0004643)	(0.0002583)	(0.004555)
Less than High School	-0.0002823	-0.0003813	-0.0009455
	(0.0005282)	(0.0002725)	(0.005680)
Some College	0.003538***	0.005060***	-0.007244
	(0.0004165)	(0.0001799)	(0.005804)
College	0.006154***	0.009183***	0.01519*
	(0.0004265)	(0.0001670)	(0.006327)
Advanced Degree	0.01142***	0.01746***	0.06044***
	(0.0005441)	(0.0001941)	(0.01072)
Labor Force Participation	-0.005282***	-0.01262***	-0.01818**
	(0.0003842)	(0.0001564)	(0.006126)
Employment Growth	0.03230***	0.03096***	-0.1273
	(0.005976)	(0.002123)	(0.08712)
Total Population	-1.450e-09***	-8.156e-10***	6.851e-09***
	(6.119e-11)	(2.379e-11)	(8.409e-10)
% of Population that is Black	-0.009408***	-0.01720***	-0.1343***
	(0.002115)	(0.0007726)	(0.03157)
% of Population that is White	-0.004749*	-0.01139***	-0.06616*
	(0.002041)	(0.0006637)	(0.02577)
% of Population that is Hispanic	-0.0004297	-0.004371***	-0.01373
	(0.002189)	(0.0007614)	(0.02611)
Par Capita Income	-0.000007682***	-0.000005919***	-0.00007600***
	(8.102e-07)	(3.058e-07)	(0.00001413)
Median Monthly Housing Cost	-0.002291***	-0.002707***	-0.02257***
	(0.00007688)	(0.00002974)	(0.002095)
Unemployment Rate	0.0001029	-0.00002257	-0.005016***
	(0.00007486)	(0.00002668)	(0.0009510)
Per Capita Parks & Rec Expenditures	-0.2035***	-0.1488***	-1.838***
	(0.01251)	(0.005346)	(0.2000)
Time FE?	Yes	Yes	Yes
Region FE?	Yes	Yes	Yes

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.
[c] Location characteristics are the differences between the new place of residence and the original place of residence.

Marital status is negatively correlated with interstate migration of Black and White household while sharing a positive relationship for Hispanic households. Like for the entire sample, having school-aged children decreases the propensity for Black and White households, however it increases the propensity for Hispanic households. Having younger children does not share a statistically significant relationship with interstate migration for Hispanic households. Like in the selection model, the magnitudes of the impacts are different across race and ethnicity. In addition to the different directional relationship between age and interstate migration across race and ethnicity, the coefficients are different. For both Black and White households, males are more likely to participate in interstate migration. Black male households are 0.003 percentage points more likely while White households are more than half that, at 0.0014 percentage points. We continue to see differences in magnitudes for the number of children the household has, whether the household head was born in the U.S., median monthly housing costs, the unemployment rate, and many of the educational attainment binary variables.

2.7 Conclusion

When controlling for individual and location characteristics, the results presented in this chapter align with the findings that minorities are less likely to migrate. Not only does this chapter provide an overview of determinants of migration but how these independent variables relate to the propensity to migrate differently across race and ethnicity. The signs of the coefficients for household and individual characteristics are pretty consistent across race and ethnicity, aligning with previous migration literature. There is more variation in coefficients for location characteristics and the migration behaviors across the three racial and ethnic groups such as differences in the magnitude of the coefficients for unemployment rate, per capita income, and racial and ethnic population composition.

Unlike for the selection model, there are multiple directional differences in the relationship between household characteristics and the propensity to participate in internal migration. Hispanic households consistently have opposite directional relationships with Black and White households

such as a positive relationship between age and interstate migration, where Black and White households have a negative relationship (consistent with migration literature) and the number of children within the household. Many of these differences for Hispanic households is likely a product of the large differences in family structure and culture.

This chapter examines not only the determinants of migration and interstate migration but how the signs and magnitudes of the coefficients vary across race and ethnicity. The ability to use restricted-use ACS data allowed for a more narrow definition of migration, separating residential movement within counties and internal migration. It builds a framework for understanding the differences in residential mobility across race and ethnicity and opens even more questions related to households that migrate. The next chapter dives deeper into all households that moved or migrated within the last year and examines how the household and location characteristics determines whether a household moves or migrates. Chapter 4 then explores the wage implications of residential mobility.

Chapter 3
Determinants of Residential Movement in the United States: An Empirical Analysis of Within County Residential Moves

3.1 Introduction

Although the propensity to migrate has declined over the last couple of decades, there continues to be movement within counties, a phenomenon not closely examined in the previous chapter. The previous chapter provided some insight into determinants of migration and interstate migration by race and ethnicity by diving into how location and households characteristics influence migratory behaviors across race and ethnicity. This chapter takes a closer look at both residential movement and migration, in particular the factors that influence whether a household or individual moves within-county, participates in intrastate migration, or participates in interstate migration. Within-county moves provides an additional dimension into understanding which households move and why. As briefly discussed in the previous chapters, public-use survey data is not as accessible for lower geographical moves. This chapter uses the same 2007 to 2015 restricted-use ACS data as used in the previous chapter but the sample used for analysis excludes all individuals and households that resided in the same home the previous year. This means that all households analyzed in this chapter are in the sample of the previous chapter. Using a multinomial logit, the following questions will be answered,

1. What are the determinants of within-county moves, intrastate (same state but different county) migration, and interstate migration?

2. How do the economic and noneconomic determinants of these three categories of movement and migration differ between Blacks, Whites, and Hispanics?

Like migration (movement to at least a different county), within county moves can be either voluntary or forced. Social and family networks are a strong anchor for individuals and households

to remain within or nearby a particular community, but life circumstances could create cause to switch residences. This could include a growing family, where households need a larger residence or even the need to downsize as children leave the nest. As shown in the previous chapter, residential movement is more prevalent than more longer distance migration. The cost, both economic and noneconomic, can be greater to move further within state or to a different state, especially when strong social networks are present. Although survey data makes it difficult to track the exact reason for residential movement and migration, longer distance migration is likely a result of employment opportunities, changes in one's life cycle, or even for education purposes. Households could move within county for the same reason, but it can also capture more forced movement and displacement.

White flight during the 1960's and 1970's, the Great Migration, and other instances of historical migrations have resulted in generations being anchored within particular locations and communities, reducing the propensity to migrate, not necessarily the propensity to move within county. Over the last 10 to 15 years, we witness instances of state-to-state migration decreasing and an increasing number of short, within county moves and within state migration. With over 78% of residential moves within the U.S. being within county and the difficulty to capture these moves with public data, there is a large gap in the literature. It leaves researchers questioning why household are moving within county, who these households are, and to what extent are these moves a product of life cycle changes such as marriage, having children, or beginning a new career, as opposed to forced migration such as via gentrification, displacement, or negative social pressure. Furthermore, these dynamics can vary by race if groups have different responsiveness to various factors.

In his book "Why Families Move", Peter Rossi creates a survey to study individual households and their motivation for moving and found that nearly 40% of households moving within his study were forced to move due to events such as eviction, building demolition, or severe income loss. Displacement can also be driven by gentrification and the attempt for local governments to maximize profits for both investors and the city but can also be present in the absence of gentrification

(Fraser 2004). The ability to analyze residential movement at a lower geographical level provides insight into not only the shorter moves, but the movement of minorities. The propensity to move within county is higher for Blacks and Hispanics than it is for White survey respondents. This chapter provides a closer look into residential mobility versus migration and its differences across race and ethnicity, further motivating the model in chapter 4 that takes a look at the economic consequences of differences in residential movement and migration.

3.2 Literature Review

Limited public data restricts most of the research on mobility to internal or international migration at a larger geographical level such as state-to-state migration and in- and out- migration or through small sample surveys of movement within a certain city or county. From the literature review and analysis in the previous chapter, location-specific characteristics in addition to individual and household characteristics such as age, income, household size, and number of children all have an impact on the propensity to migrate, but within-county moves are different. Household that are anchored by strong social and family networks may still move within county but never venture further. By analyzing within county moves, we capture the movement behavior of different households and potentially capture more instances of forced movement and displacement such as evictions, gentrification, and simply rent hikes. Rent increases can lead households to move to different rental properties on a more regular cadence rather than homeowners.

3.2.1 Residential Mobility

With the majority of movement being short distance moves, it is becoming increasingly important to understand household motivations, who these households are, and how residential stability can further hinder opportunities contributing to economic and social disparities (Desmond et al. 2015). As individuals and households enter different life stages, their needs and preferences change. Younger households and individuals between the ages of 20 and 35 are the most mobile as they settle into their careers, marry, and have children (Clark et al. 1999; Dieleman 2001). It

is generally assumed in the literature that shorter moves within a housing or labor market area, residential location can be chosen without reference to the location of the job, dependent on commute time (Dieleman 2001). In addition to the relationship between age and movement, Clark and Withers (1999) finds that a job change within a particular labor market acts as a trigger for a residential move. They conclude that job changes were more significant in understanding residential mobility than previous findings and assumptions. They found that a household that experiences a job change is 2.4 times more likely to move than a household that did not experience a job change. Furthermore, dual-earner households are less likely to move and homeowners are less likely to move than renters, likely a result of rent variation and the increased flexibility of leaving a rental than selling a home.

3.2.2 Short Versus Long Moves

Once an individual or household has either chosen or is forced to move, they must then determine where to move or migrate to, as analyzed in the previous chapter. Are they going to stay within the same county, move to a different county, or move to an entirely different state? The motivations behind these moves differ and some determinants may be more important in motivating longer moves than shorter moves (Holmlund 1984; Molho 1986; Nivalainen 2004). Nivalainen (2004) analyzes the migration decisions of Finnish families finding several differences between short and long distance moves. They conclude that higher education increases the likelihood of longer moves because investments in human capital are more easily transferable and those with higher degrees may have more narrower career opportunities making moving the only option for finding employment. Total family income can also be important, primarily for longer moves. The lower the total household income, the lower the opportunity cost of moving, increasing the likelihood of longer moves. Job experience can also have an impact on the distance of the move and since job experience is usually linked with age, older individuals are less likely to engage in longer moves. Age, however, is not expected to have a linear relationship as we expect the propensity to engage in longer moves to increase as individuals and households are ready to retire and/or when

their children move out. Having children, more importantly the children's ages, can have an impact on the distance of move. A household with school-age children is less likely to engage in longer moves as they are more likely to have built or have strong social relationships and connections. The more established the neighborhood or community, the more likely a shorter move will occur rather than a long move (Nivalainen 2004).

As expressed in the previous chapter, location characteristics will also have an important role in moving behavior. Some regional characteristics will be more important for shorter moves than longer moves, for instance the demographic make-up of the location, cost of living, employment opportunities, and public sector attributes (Dahlberg 2001; Nivalainen 2004; Widerstedt 1998). A stronger regional economy can serve as an anchor and motivate shorter moves, encouraging households to stay within the same community or pull households into the location for promises of economic stability. On the other hand, a stronger regional economy could induce forced residential movement as a result of gentrification, disproportionately impacting minorities.

3.2.3 Gentrification & Forced Displacement

According to the U.S. Department of Housing and Urban Development, gentrification is "the process by which a neighborhood occupied by low-income households undergoes revitalization or investment through the arrival of upper-income households" (1974, 4). Instances of gentrification have been tied back to residential segregation and White Flight between the 1950's and 1970's. In a case study of Chattanooga, many White middle-class households migrated to nearby suburbs, increasing residential segregation, and leaving the inner-city neighborhoods populated by lower-income non-White households. As a result, businesses either closed or moved with migrating households to the suburbs (Fraser 2004). The process of gentrification has historically increased housing costs, driving out lower-income households. Gentrification is about neighborhood changes that provide attractive amenities and lifestyle options that will bring in populations believed to revitalize the neighborhood and community, maximize profits of investors and businesses, and increasing overall revenue within the community (Fraser 2004). Gentrification can have multiple

effects on intra-neighborhood (residential moves within a particular neighborhood) moves: it could increase intra-neighborhood moves driven by increased residential satisfaction from new amenities but could also decrease moves due to increasing housing costs. Gentrification can induce mass displacement, disproportionately impacting low-income and minority households, and the fear of displacement drives the opposition to gentrification (Freeman 2005). While gentrification can lead to displacement, displacement can happen in the absence of gentrification.

Renters, minorities, older people, lower-income households, and less educated households tend to be over represented among the ranks of the displaced (Lee 2020). These households are vulnerable to eviction, landlord neglect, and harassment. Blacks and Latinx are overrepresented across most types of displacement through discriminatory government policies, unequal treatment in the housing market, and other forms of discrimination (Lee 2020). Residential instability can have negative consequences economically and socially, contributing to weakening social networks, increased displacement, and increased residential movement.

Analyzing within county moves are likely capturing more movement of households that are renters than the sample analyzed in the previous chapter. This also means that the data is likely capturing instances of forced displacement, which disproportionately impacts minorities. This could be a reason as to why households and individuals participating in within county moves are disproportionately minority. In analyzing 1,000 Milwaukee renters, Desmond (2015) found that between 2005 and 2010 nearly 50% of all households living below the poverty line moved residences at least once. The question remains, however, as to why some households are more likely to move and the mechanisms in place that influence residential mobility. This is important in addressing methodology to create residential stability which leads to stability in other facets of life such as social and educational. The findings also conclude that low-income households that move frequently are more likely to do so without complete understanding as to why they are moving. These households are more vulnerable to forced displacement (Desmond et al. 2015; Freeman 2005; Lee 2020).

3.3 Data

Like in the previous chapter, this chapter will complete its analysis on how the determinants differ for different categories of migration and movement using restricted-use ACS data from 2007 and 2015. It will also utilize the same location-specific characteristics as the last chapter collected from the BLS, BEA, and the Census. Since this chapter exclusively focuses on the movement of households that have not resided in the same residence in the last year, the sample is significantly smaller. The sample includes all household heads age 18 and over that are not active students or military, left their place of residence within the last year, and identify as Black, White, or Hispanic. The only difference between the sample in the previous chapter and this one is the exclusion of households that did not move.

3.3.1 Snapshot of Movement and Migration in the U.S.

Figure 3.1 represents the propensity to move within county given that the household did not stay in the same residence within the last year. The propensity to move within county is calculated using a binary variable that equals 1 if the household moved within county in the last year or 0 if the household migrated to a different county but within the same state or to a different state. Of the households that left their place of residence in the last year, the majority stayed within the same county regardless of race and ethnicity. From 2007 to 2015, 74% to 80% of Hispanic households that left their place of residence moved within county, 72% to 75% of Black households moved within county, and 62% to 65% of White households moved within county. While all households were more inclined to stay within county when faced with residential movement and migration, there is variation across the different racial and ethnic households. Black and Hispanic households are more more likely to move within county than White households. Without being able to extrapolate explicit reasons for these movements, these numbers likely capture the residential displacement so many households face, in addition to differences in family structure where family networks and community are important.

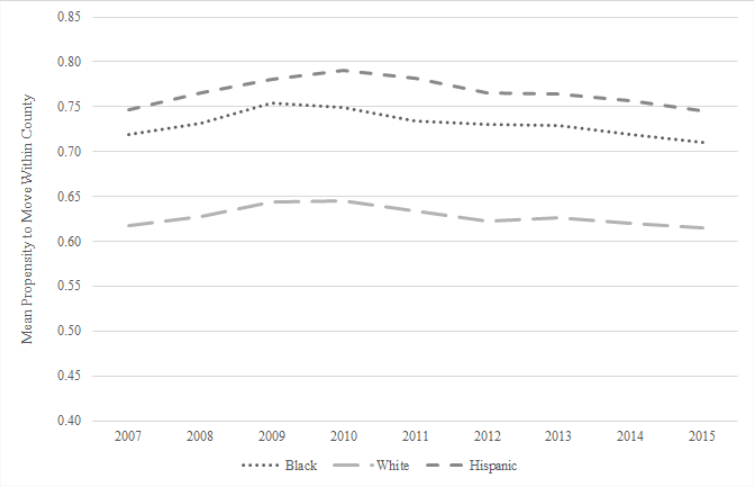


Figure 3.1: Mean Propensity to Move Within County Across Race & Ethnicity

Figure 3.2 represents the propensity to migrate within state (but to a different county) between 2007 and 2015. A binary variable representing instrastate migration equals 1 if the household moved within state but to a different county within the last year and 0 if the household moved within county or migrated to a different state. Regardless of race, the propensity to migrate within state is less than moving within county but more than interstate migration (migrating to a different state). Between the reference years, White households are more likely to migrate within state than Black and Hispanic households, and Black households are more likely than Hispanic households. These trends hold true for interstate migration modeled in Figure 3.3.

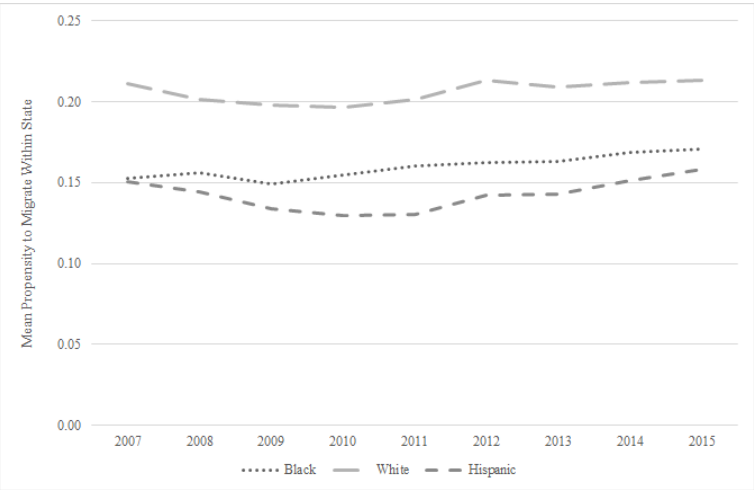


Figure 3.2: Mean Propensity to Migrate to a Different County Within State Across Race & Ethnicity

The propensity to participate in interstate migration is calculated using a binary variable. This binary variable is different from the interstate migration binary variable used in the previous chapter. This variables is equal to 1 if the household moved to a different state within the last year and 0 if the household moved within county or participated in intrastate migration. As shown in Figure 3.3, interstate migrate was less likely to occur when compared to the propensity to move within county or intrastate for all racial and ethnic households. The further a household moves, the more expensive it becomes and the higher the opportunity cost can be. The benefits of an interstate relocation would need to exceed the costs of the move, which include not only the physical costs but the noneconomic costs associated with the loss in social and family networks and other community ties. The three binary variables that were created for the three figures are mutually exclusive. Each household would fall under only one of the defined categories so if one were to sum the mean propensity of each category for each racial or ethnic group, it would sum to 1 or 100%.

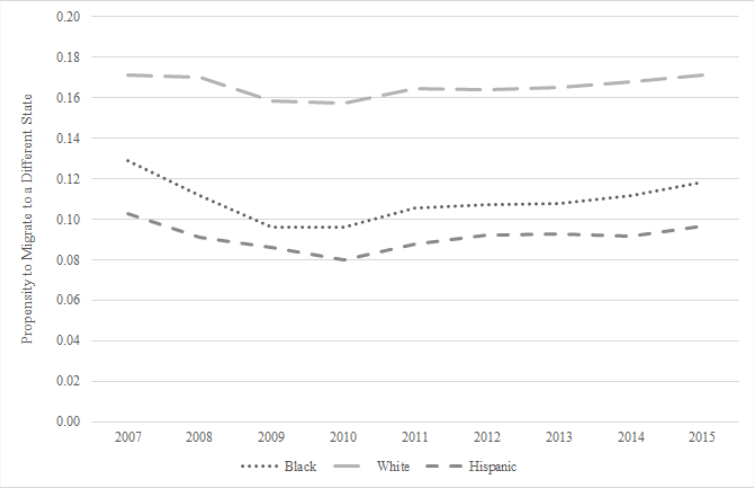


Figure 3.3: Mean Propensity to Migrate to a Different State Across Race & Ethnicity

3.3.2 Determinants of Movement and Migration

Table 3.1 summarizes the individual and household characteristics of the households that are analyzed in this chapter.

Table 3.1: Summary Statistics of Economic Household and Individual Characteristics

	All	Black	White	Hispanic
Black	0.1576			
	(0.0004583)			
White	0.6832			
	(0.0005723)			
Hispanic	0.1591			
	(0.0004567)			
Within County Moves	0.6663	0.7314	0.628	0.7666
	(0.0005556)	(0.001439)	(0.0006662)	(0.001349)
Within State (Different County)	0.1887	0.1595	0.2063	0.1424
	(0.000462)	(0.001197)	(0.0005583)	(0.001116)
Different State	0.1449	0.1091	0.1657	0.09107
	(0.0004108)	(0.001010)	(0.0005088)	(0.0009183)
Average Personal Income	$39,510	$27,980	$44,520	$29,420
	(59.95)	(103.2)	(79.84)	(106.4)
Average Household Income	$58,460	$38,850	$65,640	$47,040
	(77.23)	(135.7)	(101.8)	(144.2)
Sex (Male = 1)	0.4749	0.3711	0.4901	0.5123
	(0.0005916)	(0.001569)	(0.0006911)	(0.001582)
Age	43.13	41.69	44.35	39.32
	(0.01687)	(0.03923)	(0.02116)	(0.03568)
Marital Status (Married = 1)	0.338	0.1884	0.3612	0.3866
	(0.0005515)	(0.001258)	(0.0006539)	(0.001536)
Family Size	2.257	2.35	2.09	2.885
	(0.001767)	(0.004915)	(0.001871)	(0.005488)
# of Children Age 5 and Up	0.5446	0.726	0.4279	0.8655
	(0.001156)	(0.003505)	(0.001184)	(0.003618)
# of Children Under the Age of 5	0.2044	0.2084	0.1783	0.3128
	(0.000619)	(0.001714)	(0.000675)	(0.001924)
Homeowner (Yes = 1)	0.2849	0.1283	0.3417	0.1961
	(0.000503)	(0.0009872)	(0.0006286)	(0.001192)
Labor Force Participant (Yes = 1)	0.7627	0.7609	0.7496	0.8205
	(0.0004891)	(0.001312)	(0.000586)	(0.001179)
Less than High School	0.1282	0.1465	0.08028	0.3156
	(0.0004048)	(0.001092)	(0.0003835)	(0.001472)
High School	0.2454	0.2867	0.2329	0.2583
	(0.0005165)	(0.001454)	(0.0005924)	(0.001403)
Some College	0.2455	0.2988	0.2425	0.2055
	(0.0005164)	(0.001481)	(0.0006017)	(0.001286)
College	0.2774	0.2092	0.3176	0.172
	(0.0005241)	(0.001322)	(0.0006396)	(0.001180)
Advanced Degree or Higher	0.1036	0.05886	0.1267	0.04872
	(0.0003346)	(0.0007269)	(0.0004328)	(0.000628)
U.S. Born (Yes = 1)	0.861	0.9022	0.9463	0.4539
	(0.0004267)	(0.0009592)	(0.0003173)	(0.001576)
Urban Resident	0.8539	0.9397	0.8151	0.9354
	(0.000401)	(0.000775)	(0.00052)	(0.0007945)
N	1,125,000	144,000	837,000	145,000

[a] Standard errors are in parentheses.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.

Although the sample of households included in the analysis of this chapter differs from the previous chapter, the individual and household and location-specific characteristics remain the same. By including movers in the sample, we gain additional insight into the determinants of inter- and intrastate migration and valuable insight into what is going on at the county level. The county specific characteristics provides awareness into factors that anchor households into a particular location, greatly contributing to the utility maximizing problem faced by households and individuals.

As shown in both Table 3.1 and Figure 3.1, Black and Hispanic households are more likely to move within county than White households while White households are more likely to engage in inter- and intrastate migration. Similar to the discussion in section 2.3.3 in the previous chapter, Black and Hispanic households have lower individual and household income. Mean income presented in Table 3.1 are lower than the means presented in Table 2.2 suggesting that households that stayed within the same residence were more likley to have higher incomes. Eliminating those households in the sample for this chapter drove the mean income levels down. This is also true for martial status where 33.8% of all households analyzed in this chapter are married while 49.8% of households examined in the previous chapter were married. This tells us that the propensity to be married was higher for those households that stayed within the same residence. Black and Hispanic household have larger family sizes, including more children, than White households.

3.4 Theory & Empirical Methodology

This section outlines the theoretical and empirical model used to explain the movement and migratory behavior of individuals and households. It draws from similar theoretical conclusions discussed in the previous section in addition to a theory regarding forced migration.

3.4.1 Theory

As outlined in section 2.4.2 of Chapter 2, the actions and behaviors of individuals and households operate on the assumption of utility maximization. An individual is going to move if their lifetime utility of doing so is greater than staying in their current residence and a family is going to

move if their lifetime total family utility is greater than not moving. Since this chapter focuses on households that have decided to move or migrate, we can assume that moving will increase their lifetime utility as a unit. For households that are being forced to move, it may not be the case that they will receive more utility by moving. A household could be met with rising living costs and while they may not be explicitly forced to move, choose to move to avoid paying increasing living costs. Other households could be subject to forced displacement, such as eviction, where they do not have a choice. Regardless of whether the household or individual is moving voluntarily or is forced to do so, they still have a choice, some more than others, on where to move to.

The individual or household must now determine where they plan to move to and now must compare the utility of staying within the same county, moving to a different county, or moving to a different state. Because social and community ties are important, they are likely receiving more utility on noneconomic location characteristics and will need even more location amenities and income to incentivize a further move.

3.4.2 Empirical Methodology

The likelihood of participating in any one of the three categories of movement and migration is dependent on both household and individual characteristics and location-specific characteristics regardless of the movement being voluntary or forced. While we may not know exactly the reason for a household or individual's move, these above characteristics can also make a household or individual more (or less) likely to be impacted by displacement or even gentrified-induced displacement. The four choices that a household or individual is as follows,

1. Stay in the same residence
2. Move within county
3. Intrastate migration
4. Interstate migration

In order to examine the different "distance" moves more carefully, within county moves are examined as the base category (or reference group) while the households that stayed in the same residence in the last year has been left out of the analysis. The dependent variable, $Movement_{mjt}$, is equal to 1 if household *m* moved within county, equal to 2 if household *m* participated in intrastate migration from location *j* to location *i* in time period *t*, and 3 if household *m* migrated to a different state. This can be summarized as follows,

$$Movement_{mjt} = 1 \textit{ if household m moves within county} \tag{3.1}$$

$$Movement_{mjt} = 2 \textit{ if household m migrates within state but to a different county} \tag{3.2}$$

$$Movement_{mjt} = 3 \textit{ if household m migrates to a different state} \tag{3.3}$$

The empirical strategy for analyzing the effect of race and ethnicity on migration is to estimate the probability of households to participated in any one of the above three categories of movement and migration conditional on both economic and noneconomic household and individual and location-specific characteristics. The multinomial logit, similar to the one used in Nivalainen (2002), can be formalized as such,

$$Pr(Movement_{mjt} = 1) = f(\alpha_3 + V_{mt}^T\delta + W_{ijt}^T\eta + Q_{ijt}^T\phi) \tag{3.4}$$

$$Pr(Movement_{mjt} = 2) = f(\alpha_3 + V_{mt}^T\delta + W_{ijt}^T\eta + Q_{ijt}^T\phi) \tag{3.5}$$

$$Pr(Movement_{mjt} = 3) = f(\alpha_3 + V_{mt}^T\delta + W_{ijt}^T\eta + Q_{ijt}^T\phi) \tag{3.6}$$

Where $Pr(Migrate_{mjt} = 1$ represents the probability that household or individual *m* moves within county and is a function of the difference of economic location characteristics between the previous location *j* to location *i*, W_{ijt}^T, the difference of noneconomic location characteristics between the previous location *j* to location *i*, Q_{ijt}^T, and household and individual characteristics, V_{mt}^T. Similarly, $Pr(Migrate_{mjt} = 2$ represents the probability of the household migrating to a different county

but staying within the same state, and $Pr(Migrate_{mjt} = 3)$ represents the probability of the household migrating to a different state.

3.5 Results

The base category in the multinomial logit are the households that moved within county. Table 3.2 provides the marginal effects of the multinomial logit for the entire sample with time and region fixed effects where the coefficients on the independent variables represent the discrete change from the base category.[12] The coefficient is interpreted as the percentage change in interstate (or intrastate) migration relative to moving within county (base category) for a unit change in the independent variable. For example, men are 0.013 percentage points more likely to participate in interstate migration than moving within county. In order to account for the change in location characteristics in the presence of a move or migration, the difference in the location characteristic represents the independent variable. To interpret one of these coefficients, a 1 percentage point increase in the difference between employment growth, increasing the propensity to participate in interstate migration by 0.22 percentage points, relative to moving within county.

For the sample as a whole, men are more likely than women to migrate, older household heads are more likely to participate in interstate migration than within county moves, minority households are less likely to migrate, married household heads are more likely to migrate, and having more children decreases overall migration. Educational attainment has a positive relationship with migrating relative to within county moves, meaning higher educational attainments correlated with higher rates of inter- and intrastate migration. Similar to the previous chapter, the results for the entire sample provides insight into residential mobility, but more attention will be given to how these determinants differ across race and ethnicity and how they can explain variation in the migratory behaviors of Black, Hispanic, and White households.

[12] See Appendix B.2 for the marginal effects without fixed effects and with only time fixed effects.

Table 3.2: Multinomial Logit Marginal Effects (Entire Sample) With Time & Region Fixed Effects

Variables	Different County In-State Migration	Different State Migration
Sex	0.007152***	0.01280***
	(0.0007834)	(0.0006838)
Age	-0.0006943***	0.001995***
	(0.0001394)	(0.0001224)
Age^2	0.000002856*	-0.00001762***
	(0.000001364)	(0.000001187)
Black	-0.05101***	-0.04111***
	(0.001252)	(0.001145)
Hispanic	-0.03519***	-0.05213***
	(0.001444)	(0.001316)
Marital Status (Married=1)	0.01027***	0.03350***
	(0.0008377)	(0.0007195)
# of Children Age 5 and Up	-0.02086***	-0.01359***
	(0.0004804)	(0.0004266)
# of Children Under the Age of 5	-0.003449***	-0.007676***
	(0.0008174)	(0.0007328)
U.S. Born	0.02751***	-0.002723*
	(0.001454)	(0.001221)
Less than High School	0.000515	-0.02590***
	(0.001427)	(0.001397)
Some College	0.009591***	0.02346***
	(0.001102)	(0.001018)
College	0.02067***	0.06136***
	(0.001056)	(0.0009526)
Advanced Degree	0.02461***	0.1067***
	(0.001332)	(0.001097)
Labor Force Participation	-0.004294***	-0.04924***
	(0.001037)	(0.0008725)
Employment Growth	0.1293***	0.2213***
	(0.02770)	(0.02320)
Total Population	-5.676e-09***	4.872e-09***
	(3.984e-10)	(3.198e-10)
% of Population that is Black	0.05722***	-0.2141***
	(0.01062)	(0.008348)
% of Population that is White	0.2854***	-0.03469***
	(0.009394)	(0.007331)
% of Population that is Hispanic	0.1905***	-0.02038*
	(0.01038)	(0.008129)
Per Capita Income	-0.00002210***	-0.0001669***
	(0.000004561)	(0.000003434)
Median Monthly Housing Cost	0.01292***	-0.02695***
	(0.0003616)	(0.0002703)
Unemployment Rate	-0.001383***	-0.002732***
	(0.0003496)	(0.0002822)
Per Capita Parks & Rec Expenditures	0.3931***	-1.59***
	(0.04939)	(0.03480)
Time FE?	Yes	Yes
Region FE?	Yes	Yes

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.
[c] Location characteristics are the differences between the new place of residence and the original place of residence.

Tables 3.3, 3.4, and 3.5 display the marginal effects of the multinomial logit for each of the three racial and ethnic groups of analysis with time and region fixed effects.[13] Gender, marital status, number of children, and educational attainment have the same directional relationship with interstate and intrastate migration relative to within county moves. Men are more likely to participate in both inter- and intrastate migration than within county moves across all three racial and ethnic groups. Being married also increases the propensity to migrate relative to moving. Having children, either school-age or under the age of 5, decreases the propensity to migrate. Having children under the age of 5 for White households heads does not have a statistically significant impact on intrastate migration relative to county-level moves. The location differences of per capita income, median monthly housing costs, unemployment rate, and per capita expenditures on parks and recreation have similar directional relationships as well. The negative sign for the coefficient for the location difference in the unemployment rate is negative across race and ethnicity, meaning that as the difference in the unemployment rate between the new and original location increases, the propensity to participate in either inter- or intrastate migration decreases relative to within county moves.

With some sign differences for the relationship between the independent variables and the dependent variable, there is more to discuss regarding the difference in magnitudes. An additional child age 5 and older decreases the propensity for intrastate migration by 0.015 percentage points for both Black and Hispanic households and 0.023 percentage points for White households relative to the base category. This suggests that having older children is a stronger deterrent in intrastate migration for White households than minority households potentially due to a higher value placed on the social networks of school-age children. White households are nearly twice less likely to participate in interstate migration than minority households. An additional school-age child decreases the propensity to participate in interstate migration than the base category for white households by 0.16 percentage points. This impacts is close to 7 times more strong than the impact of having an additional school-aged child has on intrastate migration. Migrating within state is more likely to

[13] See Appendix B.2 for the marginal effects without fixed effects and with only time fixed effects.

Table 3.3: Multinomial Logit Marginal Effects (Black Sample) With Time & Region Fixed Effects

Variables	Different County In-State Migration	Different State Migration
Sex	0.01202***	0.009549***
	(0.002091)	(0.001716)
Age	-0.002585***	-0.001063**
	(0.0004113)	(0.0003424)
Age^2	0.00002218***	0.000008635*
	(0.000004194)	(0.000003490)
Marital Status (Married=1)	0.01091***	0.01488***
	(0.002489)	(0.002002)
# of Children Age 5 and Up	-0.01525***	-0.007812***
	(0.001034)	(0.0008560)
# of Children Under the Age of 5	-0.008190***	-0.008608***
	(0.002113)	(0.001784)
U.S. Born	-0.00121	-0.02108***
	(0.003235)	(0.002469)
Less than High School	0.002675	-0.01710***
	(0.003173)	(0.002860)
Some College	0.01405***	0.01768***
	(0.002601)	(0.002209)
College	0.04426***	0.04743***
	(0.002745)	(0.002280)
Advanced Degree	0.05883***	0.09162***
	(0.003898)	(0.002895)
Labor Force Participation	0.004144	-0.01588***
	(0.002515)	(0.002049)
Employment Growth	0.4206***	-0.2037**
	(0.08209)	(0.06588)
Total Population	3.15E-10	-2.455e-09**
	(1.138e-09)	(7.871e-10)
% of Population that is Black	0.05015	0.09857***
	(0.03169)	(0.02223)
% of Population that is White	0.3151***	0.1413***
	(0.03084)	(0.02156)
% of Population that is Hispanic	0.1074**	0.1954***
	(0.03312)	(0.02353)
Per Capita Income	2.31E-05	-0.0001349***
	(0.00001317)	(0.000009019)
Median Monthly Housing Cost	0.01010***	-0.02556***
	(0.001078)	(0.0007093)
Unemployment Rate	-0.01271***	-0.009081***
	(0.001047)	(0.0007949)
Per Capita Parks & Rec Expenditures	0.1593	-1.901***
	(0.1331)	(0.09226)
Time FE?	Yes	Yes
Region FE?	Yes	Yes

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.
[c] Location characteristics are the differences between the new place of residence and the original place of residence.

Table 3.4: Multinomial Logit Marginal Effects (White Sample) With Time & Region Fixed Effects

Variables	Different County In-State Migration	Different State Migration
Sex	0.005996***	0.01389***
	(0.0009301)	(0.0008270)
Age	-0.0003571*	0.002843***
	(0.0001626)	(0.0001458)
Age^2	-1.1E-06	-0.00002515***
	(0.000001579)	(0.000001403)
Marital Status (Married=1)	0.01031***	0.04012***
	(0.0009887)	(0.0008643)
# of Children Age 5 and Up	-0.02287***	-0.01649***
	(0.0006149)	(0.0005523)
# of Children Under the Age of 5	-0.00123	-0.008325***
	(0.0009993)	(0.0009079)
U.S. Born	0.02490***	0.004480*
	(0.002186)	(0.001793)
Less than High School	0.008064***	-0.03401***
	(0.001869)	(0.001907)
Some College	0.007231***	0.02598***
	(0.001333)	(0.001258)
College	0.01476***	0.06774***
	(0.001254)	(0.001159)
Advanced Degree	0.01721***	0.1155***
	(0.001549)	(0.001315)
Labor Force Participation	-0.005235***	-0.05951***
	(0.001249)	(0.001063)
Employment Growth	0.07273*	0.2979***
	(0.03182)	(0.02727)
Total Population	-4.382e-09***	8.143e-09***
	(5.026e-10)	(4.044e-10)
% of Population that is Black	0.06553***	-0.2925***
	(0.01249)	(0.01002)
% of Population that is White	0.2806***	-0.07701***
	(0.01087)	(0.008673)
% of Population that is Hispanic	0.1978***	-0.05502***
	(0.01231)	(0.009793)
Per Capita Income	-0.00002177***	-0.0001716***
	(0.000005333)	(0.000004130)
Median Monthly Housing Cost	0.01319***	-0.02727***
	(0.0004178)	(0.0003218)
Unemployment Rate	-0.00051	-0.001082**
	(0.0004079)	(0.0003360)
Per Capita Parks & Rec Expenditures	0.4822***	-1.367***
	(0.05697)	(0.04197)
Time FE?	Yes	Yes
Region FE?	Yes	Yes

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.
[c] Location characteristics are the differences between the new place of residence and the original place of residence.

Table 3.5: Multinomial Logit Marginal Effects (Hispanic Sample) With Time & Region Fixed Effects

Variables	Different County In-State Migration	Different State Migration
Sex	0.01293***	0.009150***
	(0.001985)	(0.001586)
Age	-0.00082	0.000607
	(0.0004200)	(0.0003409)
Age^2	8.15E-06	-6.9E-06
	(0.000004364)	(0.000003540)
Marital Status (Married=1)	0.007583***	0.01111***
	(0.002033)	(0.001615)
# of Children Age 5 and Up	-0.01521***	-0.007006***
	(0.0009831)	(0.0007801)
# of Children Under the Age of 5	-0.007792***	-0.005833***
	(0.001759)	(0.001421)
U.S. Born	0.03377***	0.004996**
	(0.001975)	(0.001570)
Less than High School	-0.008300**	-0.006291**
	(0.002698)	(0.002201)
Some College	0.01717***	0.009693***
	(0.002760)	(0.002291)
College	0.03379***	0.03371***
	(0.002787)	(0.002237)
Advanced Degree	0.04591***	0.07049***
	(0.003925)	(0.002818)
Labor Force Participation	-0.01374***	-0.02392***
	(0.002640)	(0.002045)
Employment Growth	0.4070***	0.1082
	(0.08439)	(0.06113)
Total Population	-1.140e-08***	9.47E-10
	(7.168e-10)	(5.451e-10)
% of Population that is Black	0.2322***	-0.1100***
	(0.02916)	(0.02027)
% of Population that is White	0.3957***	0.1114***
	(0.02471)	(0.01743)
% of Population that is Hispanic	0.2567***	0.05497**
	(0.02503)	(0.01777)
Per Capita Income	-0.0001000***	-0.0001506***
	(0.00001187)	(0.000007733)
Median Monthly Housing Cost	0.01602***	-0.02665***
	(0.001065)	(0.0006634)
Unemployment Rate	0.000492	-0.007238***
	(0.0009061)	(0.0006365)
Per Capita Parks & Rec Expenditures	-0.01351	-2.155***
	(0.1641)	(0.1039)
Time FE?	Yes	Yes
Region FE?	Yes	Yes

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.
[c] Location characteristics are the differences between the new place of residence and the original place of residence.

be a shorter move, having a lower impact on social networks while interstate migrations are more likely to be a further distance relocation having a more costly impact on social networks. The magnitudes of the coefficients for having children under the age of 5 are consistently smaller than for having school-age children across all three racial and ethnic groups. This is consistent with not only the literature but the hypothesis of this chapter that households with younger children are more mobile than households with school-age children.

The directional relationship between the difference in the county-level unemployment rate is consistently negative across all three groups with differing magnitudes. An increase in the difference of the unemployment rate by 1 percentage point decreases the propensity to migrate by 0.013 percentage points for Black households relative to the base group while it decreases the propensity for White households by 0.0005 percentage points. One reason why the unemployment rate has a stronger impact on the migratory behavior of Black households is that Black individuals' employment tends to be disproportionately impacted in periods of high unemployment and are therefore more responsive. There are also large differences between the impact of the difference in employment growth. A 1 percentage point increase in the difference in employment growth (meaning higher employment growth in the new location) increases intrastate migration for Black household and Hispanic household by 0.42 percentage points and 0.41 percentage points respectively, relative to the base category. It only increases the propensity of intrastate migration for White households by 0.073 percentage points relative to the base category. This suggests that employment growth is not as big of a factor in making migratory decisions for White households as it is for Black and Hispanic households.

The results in this section are consistent with the findings in the previous chapter and the hypothesis of this overall paper that both individual, household, and location characteristic influence household residential mobility differently for Black, White, and Hispanic households. They can help to explain not only what factors go into the migratory decisions of the household but how different households weight these factors differently and how they might assign costs and benefits to the noneconomic variables.

3.6 Conclusion

Without restricted-use ACS data, it would not be possible to analyze within county moves and how the determinants of movers differ for internal migrants at a national level. As hypothesized, there exists differences in not only directional relationships between types of movement and migration but the magnitudes in which the variables impact movement and migration. While the number of children decreases the propensity to participate in intra- or interstate migration relative to moving within county, the size of the impact on the propensity differs across race and ethnicity, having a larger negative impact on White households than Black or Hispanic households for both intra- and interstate migration relative to the reference group. There are also differences in county-level unemployment rates, employment growth, and population composition.

Due to data availability, median monthly housing costs were collected at the state level. This could make interpreting the coefficients difficult for the groups that moved within county or participated in intrastate migration as the difference in median monthly housing costs for these two groups would be zero. Additionally, the population composition variables provided some unexpected results such as a negative sign for the differences in population composition for White households. A further dive into these variables and alternative measures to proxy for ethnogenesis could further contribute to the literature.

Future modifications could be including more county-level location characteristics such as average January temperatures that have been shown to impact migration behavior and other variables that measure location-specific amenities that could increase the benefits (or costs) of moving or migrating to that location such as crime rates or other location amenity variables. I would also increase the time frame of analysis to include more recent years. Even with potential improvements to the model, the chapter provides insight into residential mobility at a more granular level than chapter 2, and further explains how migratory behaviors are influenced differently for Black, White, and Hispanic households.

Chapter 4
Economic Outcomes of Racial and Ethnic Gaps in Internal Migration: Wage Disparities Within the United States

4.1 Introduction

Racial, ethnic, and gender inequality continue to be a social problem worldwide. There are persistent differences in incarceration rates, health care, unemployment, wealth, and earnings. The inequalities provide privileges to some groups while putting other groups at a disadvantage, limiting opportunities, limiting wage growth, and continuing to contribute to the many disparities prevalent within today's society. Limited employment opportunities and continued discrimination contribute to the growing wage gap, and therefore preventing the growth in accumulated wealth, relative to Whites.

Literature on internal migration in developed countries can be broken up into two primary areas of research: determinants of internal migration and the effects or consequences of internal migration. The previous two chapters explored the determinants of both internal migration and residential movement in addition to how these determinants differ across race and ethnicity. As shown, there exists a racial, ethnic, and gender gap in the propensity to migrate within the U.S. Blacks and Hispanic households are less likely to migrate than White households and have a higher propensity to move within county than White households. This chapter analyzes the consequences of these gaps in internal migration, in particular the wage effects. This chapter, like the previous two chapters, uses restricted-use ACS survey data between 2007 and 2015 to answer the following question:

1. Does the propensity to move or migrate correlate with hourly wages?

2. Do the differences in residential mobility across race and ethnicity explain some of the unexplained variation in hourly wages between 2007 and 2015?

In 2018, the median income for Black households was approximately $41,360 while the median income for White non-Hispanic households was $70,640 and Hispanic households was $51,450 (Census Bureau). Racial and ethnic wage disparities persist and continue to be a topic of interest within many disciplines as an effort to determine the causes of these differences. Previous studies, broadly speaking, find the causes of wage differences to be occupational segregation, work-related individual characteristics, differences in family structures, and discrimination.

This chapter analyzes the many effects of racial and ethnic disparities within the U.S., paying particular attention to the propensity to migrate on wage inequality. The findings of this chapter contribute to not only the literature on the economic consequences of internal migration but by using restricted-use data it also furthers the discussion on the effects of the racial and ethnic pay gap prevalent in today's society. It provides a more in depth look into racial segregation and the role that residential mobility plays in neighborhood segregation, higher unemployment rates of minorities, and decreased employment and compensation opportunities.

4.2 Literature Review

This section provides an overview of the determinants of wages in addition to previous findings on racial and ethnic wage disparities. In conjunction with literature pertaining to internal migration patterns and household structure, this chapter provides a means to link the propensity of minorities to migrate to earning outcomes in the labor market.

4.2.1 Determinants of Work-Related Wages

There are many reasons that some individuals earn more than others, such as educational attainment, occupation, work-related experience, and geographic location (Antecol 2001; McCall 2001). High-skilled occupations, on average, make more than low-skilled occupations. For example, a doctor is going to earn more than a barista to compensate for the many years of required schooling in addition to the much lower labor supply of qualified doctors relative to baristas.

While occupation and educational attainment may be correlated within some industries, higher educational attainment does not automatically lead to a particular occupation. Individuals can take different paths in order to work in the same industry whether that means earning a bachelor's degree or not. Previous models include both an occupation variable and an educational attainment measure. Trejo (1997) found that education is the primary explanation for differences in Black, White and Mexican wages. Oaxaca (1973) included a continuous educational attainment variable that measured years of schooling while Blinder (1973) used a series of binary variables that measured highest degrees earned. This chapter does the latter.

Family structure, in particular marital status and number of children, can also impact the earning potential of an individual (Duncan 1968; Jones 1983; McCall 2001). Having children can impact work experience as workers, more often than not female workers, take an absence from work (Oaxaca 1973). We expect that the impact of the number of children will impact the three racial and ethnic groups differently as minorities may not be able to take as long of a break from work, either due to limited means or less access to child leave benefits in their workplace. Even when controlling for educational attainment and occupation, White workers (men in particular) earn more than minorities on average meaning there are unexplained variations in wages across race, ethnicity, and gender. The findings from both Oaxaca (1973) and Blinder (1973) support this and describe the unexplained variation in wages across race, ethnicity, and gender to be a form of discrimination.

4.2.2 Racial and Ethnic Wage Gaps

When analyzing wage inequality and wage gaps between groups, the literature focuses primarily on racial, ethnic, and gender pay gaps. In exploring the determinants of racial, ethnic, and gender wage gaps, previous literature finds that the pay differences are greater across race and ethnicity than gender (McCall 2001). Occupation segregation is one of the biggest determinants of wage gaps. Men and women have disproportionately higher rates of employment in different sectors, and so do different racial groups. It not only helps to explain differences in pay but differ-

ences in recessionary impacts on employment as different industries might be harder hit during a recession than others.

In investigating the racial and ethnic wage gap between 1940 and 1990 in the United States, Chandra (2000) notes the importance of considering why large numbers of Blacks leave the labor force. While the racial and wage gap is an important one, it is important to take a step back to understand the labor market dynamics that affect White and Black employees differently. Through technological advancements and a higher demand for more skilled labor, low-skilled Blacks drop out of the labor force. There has been and continues to be occupational differences based on race and ethnicity affecting likelihood to be in the labor force and employment opportunities.

One of the most interesting and most difficult to measure causes of racial and wage inequality within the U.S. is discrimination. This chapter frequently refers to the findings of Oaxaca (1973) and Blinder (1973) due to the large reach of both studies in understanding both the racial and gender pay gap. Oaxaca (1973) focuses his study on the male-female wage gap while Blinder (1973) presents the intersection of both gender and race. These two studies are used in not only understanding the individual characteristics that determine wages, but the empirical methodology to determine the amount of those impacts.

4.2.3 Returns to Migration

While individual characteristics are important in explaining variations in wages, other variables that relate to the life cycle are also important. Previous literature on migration has used expected utility differentials to explain motivations in migration. As explained in previous literature, earnings play an important role in the utility maximization problem households face when making migration decisions (Morrison 1977; DaVanzo et al. 1981; and Herzog 1985). Using longitudinal data, Gabriel et al. (1995) found that between the years of 1985 and 1991, "perspective immigrants enjoy a consistent advantage in annual wage and salary income relative to nonmigrants with similar earnings-related characteristics" (Gabriel 1995, 460). Yankow (1999) draws similar conclusions but further explains that although internal migrants may experience increased wages, it

does not happen instantaneously, rather there is a delay in earning growth which could understate the effects of wage disparities between internal migrants and non-migrants. Master (1972) also found that internal migration can impact wages, finding that Black migrants earned 15% to 20% more than Blacks that stayed in their same residence.

In addition to the potential to see delayed increases in wages after an individual migrated internally within the U.S. the timing of the relocation can also have an impact. If an individual migrates during a time of high national unemployment, the individual may accept a job offer with a lower salary (Greenwood 1997). Another reason why wages may not increase are the impact that nonmonetary compensation can have on migration decisions such as location amenities, social networks, or work-related benefits that are separate from compensation (Mathios 1989).

4.3 Data

Figure 4.1 is a time series trend that shows the average hourly wage of salaried and hourly workers from 2007 to 2015 across race and ethnicity. Consistent with Census data, news releases, and previous literature, White individuals on average, earn more than minorities. While Hispanic workers earn the least hourly on average. See Appendix C.1 for the time trend of average wages across gender.

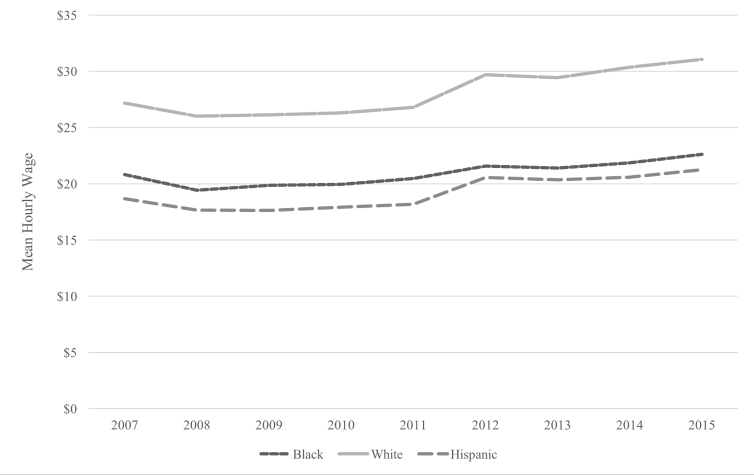


Figure 4.1: Mean Hourly Wages Across Race and Ethnicity

Like in the previous chapters, this chapter continues to utilize restricted-use ACS data from 2007 to 2015. It includes all Black, White, and Hispanic individuals ages 18 and over, that were neither active students nor military within the last year, rather than only household heads as in the previous chapters. All of the individuals that were analyzed in chapter 2 are included in this sample, with the addition of all other members within the household that meet the above criteria.

Table 4.1 presents the mean statistics and the standard deviation of multiple individual characteristics across race and ethnicity. White and Hispanic individuals are more likely to be married on average and Hispanic families have larger families, including more children. White individuals have higher levels of education, and we know from previous literature is one factor in explaining the racial and ethnic wage gap.

The independent variables that are included in the wage determination model explained in the next couple of sections are age, occupation, gender, race and ethnicity binary variables, marital status, and educational attainment binary variables. As explained in the previous sections, age is a continuous variable, often times used as a proxy for work experience. To avoid estimating work experience with the available data, this chapter will use age like Blinder used in his analysis of the Black-White pay gap (Blinder 1973). To account for the impact that having children can have on workers (in particular women), and in turn work experience, the number of children will be included into the model as an individual characteristic. A multinomial occupation variable is included to control for occupation.[14]

Like in the previous two chapters, gender is a binary variable equal to 1 if the individual is male and 0 if female. Also, Black and Hispanic binary variables are included to control for the impact that race has on wages earned (Blinder 1973; McCall 2001; Oaxaca 1973). The binary variable measuring whether the individual is White is left out of the empirical model, serving as the reference group. Marital status is also controlled for with a binary variable measuring 1 if the individual is married and 0 otherwise.

[14]The disclosure process for presenting output using restricted-use ACS data becomes more complicated the more output that is requested. For this reason, I only requested the most necessary output and, therefore, this variable is suppressed in the table.

Table 4.1: Summary Statistics of Individual Characteristics

	All	Black	White	Hispanic
Black	0.1179			
	(0.0001241)			
White	0.7325			
	(0.0001668)			
Hispanic	0.1496			
	(0.0001376)			
Migrate	0.0440	0.04651	0.04504	0.03696
	(0.00007821)	(0.0002568)	(0.00008921)	(0.0002036)
Mover	0.08342	0.1126	0.07265	0.1131
	(0.0001067)	(0.0003794)	(0.0001123)	(0.0003389)
Stay (Did not move/migrate)	0.8726	0.8409	0.8823	0.8499
	(0.0001273)	(0.0004387)	(0.0001381)	(0.0003814)
Within State/Diff. County	0.02561	0.02764	0.02589	0.02259
	(0.00006067)	(0.0002011)	(0.00006873)	(0.0001615)
Different State	0.01840	0.01887	0.01915	0.01437
	(0.00005096)	(0.0001652)	(0.00005878)	(0.0001274)
Hourly Wage	23.7100	19.9300	25.60	17.50
	(0.02828)	(0.1102)	(0.03117)	(0.06963)
Sex (Male = 1)	0.5288	0.4301	0.5344	0.5790
	(0.0001739)	(0.0005663)	(0.0001932)	(0.0004982)
Age	45.06	43.65	46.05	41.31
	(0.004157)	(0.01276)	(0.004720)	(0.01083)
Married (Yes = 1)	0.5608	0.3537	0.6051	0.5070
	(0.0001758)	(0.0005348)	(0.0001943)	(0.0005090)
# of Children Age 5 and Up	0.7493	0.8344	0.6649	1.095
	(0.0003612)	(0.001215)	(0.0003731)	(0.001201)
# of Children Under the Age of 5	0.1606	0.1495	0.1463	0.2394
	(0.0001636)	(0.0005167)	(0.0001733)	(0.0005499)
# of Persons in Family	2.760	2.742	2.617	3.47
	(0.0005575)	(0.001829)	(0.0005570)	(0.001941)
Homeowner (Yes = 1)	0.6961	0.5031	0.7643	0.5141
	(0.0001713)	(0.0005685)	(0.0001793)	(0.0005096)
Less than High School	0.09392	0.09099	0.04795	0.3214
	(0.0001102)	(0.0003216)	(0.00008751)	(0.0004796)
High School	0.2577	0.2949	0.2495	0.2689
	(0.0001552)	(0.0005234)	(0.0001702)	(0.0004578)
Some College	0.2225	0.2747	0.2216	0.1857
	(0.0001461)	(0.0005093)	(0.0001627)	(0.0003922)
College	0.3007	0.2511	0.3350	0.1719
	(0.0001576)	(0.0004924)	(0.0001820)	(0.0003737)
Advanced Degree	0.1252	0.08829	0.1460	0.05221
	(0.0001071)	(0.0003049)	(0.0001301)	(0.0002042)
U.S. Born	0.8521	0.8612	0.9459	0.3858
	(0.0001346)	(0.0003942)	(0.00009207)	(0.0004910)
Urban Resident	0.7723	0.8945	0.7231	0.9164
	(0.0001398)	(0.0003533)	(0.0001688)	(0.0002819)
N	13260000	1183000	10620000	1459000

[a] Standard errors are in parentheses.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.

The same series of binary variables measuring educational attainment that were used in the previous chapters are used in this chapter. Individuals with high school as their highest level of education completed represent the reference group while binary variables measuring less than high school completion, some college, college, or an advanced degree are included in the model. A binary variable measuring whether or not the individual is an immigrant or not is also included. Lastly, three binary variables measuring residential movement and migration are included with staying in the same residence being the reference group.

4.4 Theory

Previous literature on estimating determinants of wages and wage inequalities often cite the work of Oaxaca (1973) and Blinder (1973). This chapter will follow the empirical methodology framework as described in both of these papers by using ordinary least squares (OLS) estimation of wages. Wages are a function of multiple individual characteristics and all of the unexplained variation in wages accounts for the racial and ethnic discrimination that minorities face in the workplace.

Age is often times used as a proxy for work experience. Previous studies have either used age or an estimate of work experience as originally defined by Mincer as the difference between the individual's age and years of schooling minus 5 or 6 (Mincer et al. 1974). For simplicity and because this chapter does not intend to dive into the impact of work experience on wages, age will be included in the model as a proxy for experience. In theory and based on the findings presented in previous studies age should have a positive relationship with wages. It is expected that as an individual gains work-related experience, their wages will increase. Blinder (1973) found that White individuals gained "more than Blacks from experience in the labor force" and therefore experienced a more pronounced life-cycle pattern of wages (Blinder 1973, 445). In addition to using age as a proxy for work experience, the number of children is included into the model as a proxy for the loss in work years by having children. With women having a higher propensity to leave work for longer periods of time when having children, the number of children should have

a negative impact on women's earnings and a smaller impact for men's wages. Blinder (1973) found that the number of children impacted White female wages more than Black female wages, suggesting that Black females take shorter breaks from work for each additional child.

Oaxaca (1973) found being married had a positive relationship on wages. Given these findings, this chapter hypothesizes the same. Similarly, educational attainment is expected to be positively related to wages. Higher educational attainment, or in the case of this chapter higher degree completion, will result in higher wages. Blinder (1973) found that education was one of the biggest wage advantageous for White males driven by the fact that While males achieved higher educational attainment.

In examining the male-female wage gap, Oaxaca (1973) also included a migration binary variable that measured whether the individual has "maintained the same residence more than fifty miles from his or her current address since the age of seventeen" (Oaxaca 1973, 698). He found that migrating had a negative relationship with wages. This chapter will expand this portion of his analysis by more narrowly defining migration and including a series of binary variables to further extract the role that residential mobility and migration has on wages.

4.5 Empirical Methodology

Using the wage determination framework as described in Oaxaca (1973) and Blinder (1973) the log-linear functional form of the wage equation is as follows,

$$log(W_{it}) = \alpha_1 + \beta Z_{it} + \gamma X_{it} + u_{it} \tag{4.1}$$

Where W_{it} represents the hourly wage rate for both salaried and hourly workers in time period *t*, Z_{it} is a vector of individual characteristic such as sex, age, race, and educational attainment, X_{it} is a vector representing the three residential movement and migration binary variables, and u_{it} as a the disturbance term. As for the coefficients, γ represents the coefficients for the corresponding residential mobility variables and β represents the coefficients for the individual characteristics.

The individual characteristics in W_{it} are age, the quadratic form of age, Black and Hispanic binary variables, marital status, a series of educational attainment binary variables representing highest level of completion, number of children, and whether the individual was born in the U.S. The variables included in the vector of residential mobility variables are defined as:

$Mover_{it} = 1$ *if individual i moved within county in the last year*

$WithinState_{it} = 1$ *if individual i migrates within state but to a different county*

$OuterState_{it} = 1$ *if individual i migrates to a different state*

This model will be ran for the sample as a whole and then ran separately for Black, White, and Hispanic individuals in order to extrapolate the differences that these variables have on wages for each racial and ethnic groups. In addition to running the model on each group, the model will be ran without fixed effects, the inclusion of time fixed effects, and a third time with both time and region fixed effects.

4.6 Results

The regression coefficients for the entire samples are presented in Table 4.2. Each column corresponds to which, if any, fixed effects were included. For the purposes of this discussion, the results in the last column, with both time and region fixed effects will be examined. The coefficients tell us how much $log(wages)$ change given a one unit change in the independent variable.

Similar to the findings in previous wage determination studies, age is positively correlated with wages, consistent with the theory that older individuals have a higher earning potential. Also consistent with theory, Black and Hispanic individuals earn less than their White counterparts. Marital status shares a positive relationship with wages as does educational attainment. Higher educational attainment translates to highers wages on average. Within county moves and migrating, regardless of whether it is interstate or intrastate, has a negative relationship with average hourly earnings.

In other words, individuals who left their place of residence within the last year earned less on average than those who stayed in the same residence when controlling for various individual characteristics.

Table 4.2: Linear Regression Results for Entire Sample

Variables	ALL		
Sex (Male=1)	0.1945***	0.1942***	0.1917***
	(0.0004387)	(0.0004382)	(0.0004365)
Age	0.03945***	0.03937***	0.03904***
	(0.00009873)	(0.00009858)	(0.00009817)
Age^2	-0.0003675***	-0.0003687***	-0.0003660***
	(0.000001028)	(0.000001026)	(0.000001022)
Black	-0.03384***	-0.03496***	-0.02076***
	(0.0006305)	(0.0006295)	(0.0006363)
Hispanic	-0.03477***	-0.03756***	-0.04996***
	(0.0006816)	(0.0006807)	(0.0006891)
Marital Status (Married=1)	0.05120***	0.05776***	0.06231***
	(0.0003745)	(0.0003755)	(0.0003742)
Less than High School	-0.1060***	-0.1046***	-0.1025***
	(0.0007731)	(0.0007719)	(0.0007692)
Some College	0.06609***	0.06382***	0.06365***
	(0.0005193)	(0.0005187)	(0.0005175)
College	0.2023***	0.1976***	0.1945***
	(0.0005338)	(0.0005335)	(0.0005316)
Advanced Degree	0.4198***	0.4136***	0.4059***
	(0.0007555)	(0.0007549)	(0.0007522)
Mover	-0.03980***	-0.04073***	-0.04159***
	(0.0007168)	(0.0007157)	(0.0007132)
Within State/Diff. County	-0.04630***	-0.04698***	-0.04096***
	(0.001198)	(0.001196)	(0.001191)
Different State	-0.05512***	-0.05465***	-0.05260***
	(0.001432)	(0.001429)	(0.001424)
U.S. Born	-0.008348***	-0.007570***	0.009018***
	(0.0006616)	(0.0006606)	(0.0006601)
Time FE?	No	Yes	Yes
Region FE?	No	No	Yes

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.

Table 4.3 presents the log-linear regression coefficients for the three racial and ethnic groups separately.Across all three racial and ethnic groups, age is positively correlated with hourly wages, more so for White individuals suggesting White individuals receive higher rates of compensation with higher experience. This could be due to the slower rates of promotions for minorities where

it takes minorities longer to climb the corporate ladder. For all three groups, higher degree completion leads to higher hourly wages on average. For each education group, White individuals experience higher wage premiums when completing a college degree higher than their minority counterparts. This is similar to the findings presented in Blinder (1973) where White men experienced higher wage advantages with higher educational attainment.

Table 4.3: Regression Results: Wage Determination by Race & Ethnicity With Time & Region Fixed Effects

Variables	BLACK	WHITE	HISPANIC
Sex (Male=1)	0.2039***	0.2010***	0.1659***
	(0.0004942)	(0.0004919)	(0.001269)
Age	0.04097***	0.04066***	0.03173***
	(0.0001103)	(0.0001097)	(0.0003091)
Age^2	-0.0003826***	-0.0003824***	-0.0002925***
	(0.000001140)	(0.000001134)	(0.000003383)
Marital Status (Married=1)	0.05150***	0.06329***	0.07484***
	(0.0004232)	(0.0004232)	(0.001037)
Less than High School	-0.1018***	-0.09783***	-0.09097***
	(0.001039)	(0.001035)	(0.001427)
Some College	0.06388***	0.06135***	0.07262***
	(0.0005861)	(0.0005845)	(0.001539)
College	0.2060***	0.1976***	0.1744***
	(0.0005935)	(0.0005914)	(0.001690)
Advanced Degree	0.4237***	0.4088***	0.3760***
	(0.0008292)	(0.0008260)	(0.002689)
Mover	-0.03590***	-0.03942***	-0.04211***
	(0.0008499)	(0.0008460)	(0.001710)
Within State/Diff. County	-0.04793***	-0.04367***	-0.02376***
	(0.001344)	(0.001337)	(0.003531)
Different State	-0.05346***	-0.05381***	-0.05987***
	(0.001594)	(0.001586)	(0.004396)
U.S. Born	-0.05297***	-0.03266***	0.06229***
	(0.0009448)	(0.0009425)	(0.001129)
Time FE?	Yes	Yes	Yes
Region FE?	Yes	Yes	Yes

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.

The main variables of interest for this chapter are the impacts that residential mobility can have on wages. The reference group is individuals that stayed within the same residence over the last year rather than moving or migrating. For the entire sample, individuals that moved within the same county over the last year, earned lower hourly wages on average than those who stayed. Both

interstate and intrastate migrants earned less hourly wages on average than staying in the same residence. Without the ability to lag residential movement and migration or see future wages, the results are capturing the instant change in hourly wages, and as shown in Yankow (1999) there can be a delay in earnings growth post move or migration.

If we analyze the movement and migration variables on wages across the three racial and ethnic groups, we see differences in statistical significance. Moving within county has a statistically significant negative relationship with hourly wages earned across all three racial and ethnic groups, but even more for Blacks and Hispanics. A Black individual earns 5% less hourly when moving within county relative to the reference group while White individuals earn 3.9% less hourly.

Intrastate migration has a more negative relationship with hourly wages for White individuals than Black or Hispanic. White individuals that migrate within state in the last year earned 4.27% less than Whites who stayed in the same residence while Blacks and Hispanics earned 2.5% and 2.3% less, respectively. While White and Hispanic individuals experienced similar wage decreases when migrating to a different state, Hispanics saw the highest at 5.8% while Blacks earned 2.87% less than Blacks who stayed in the same residence. These declines in earnings could be attributed to various factors such as life cycle events that reduce the amount of work for an extended period of time such as maternity leave or paternity leave, or job transitions. It could also be due to migrating to a location with a lower cost of living, and therefore lower average wages. While the model controls for region, it does not control for migrating to a location with lower average wages.

4.7 Conclusion

As in other studies, wages are different across race and ethnicity even when accounting for individual and migratory characteristics. Like in Oaxaca (1973), migration can impact wages. With the availability to restricted-use data, this chapter was able to narrowly define migration and separate not only inter- and intrastate migration but include a within county variable. Those that moved or migrated within the last year earned lower hourly wages on average than those who stayed in the same residence. When examining the behaviors across race and ethnicity, Blacks

were more negatively impacted when moving within county while White individuals were more negatively impacted when migrating within state. Hispanics experienced the largest dip in wages when migrating to a different state. While migration has been shown to provide a wage premium, it is unlikely the wage growth happens instantaneously and without the ability to see future wages, this work is unable to capture not only the wage premium to migration but how long it takes before an individual earned that premium.

A future addition to this chapter could include further analyzing the wage determinant results and measuring the differences in the coefficients to understand how the independent variables influence the wage inequality. It would explore the Blinder-Oaxaca Decomposition for linear regressions to show the impact an individual characteristic would have on the coefficient differences between two groups. Another potential approach is to jointly estimate the propensity to migrate and hourly earning. Both potential additions, while informative to both migration and wage literature, is beyond the scope of this work.

Another iteration of this chapter would further separate the three racial and ethnic groups by gender. From the findings of previous literature, there are differences across gender, and it would be interesting to better understand the intersection between race and ethnicity and gender on wage inequality. For instance, the number of children an individual has would impact men differently than women.

Chapter 5
Conclusion

With all of the racial and ethnic disparities present both historically and in today's society, residential movement and migration is no exception. The last four chapters explord the economic and noneconomic impacts of internal migration and residential movement for households within the U.S. across race and ethnicity in addition to the potential wage implications. All chapters use private-use American Community Survey (ACS) data. These chapters contribute to the existing literature on internal migration by examining the role that both economic and noneconomic location and household characteristics play in the migratory behaviors of U.S. households. It melds together sociology and economic theories such as ethnogensis and how the racial composition of a location's population can influence the migration decisions across Black, White, and Hispanic households. The private-use data allows for the examination of smaller geographic residential movement, in particular within county moves that is likely capturing residential displacement. By separating within county moves and migration, this work is better able to capture different types of residential movement across race and ethnicity. The data also helps to contribute to the wage literature as it provides the ability to see how different types of movement and internal migration can impact wages earned.

Household and individual characteristics share similar relationships with the propensity to migrate across all three racial and ethnic group, however the magnitudes of the coefficients varied. There was more variation in the impact of location characteristics on migratory behaviors for variables like the unemployment rate, per capita income, and the racial and ethnic population composition of the final destination. When a household does migrate, the impact on whether the household participates in interstate versus intrastate migration greatly differs across race and ethnicity. Hispanic households consistently experience opposite directional relationships between the explanatory variables and the propensity to migrate to a different state than Black and White

households. The variables that stand out are age and the number of children, likely driven by the difference in culture and familial structure.

Chapter 3 shows the existence of differences in both the directional relationships between types of movement and migration and the magnitudes in which the variables impact movement and migration across race and ethnicity. While having children influence household migratory decisions, the impact was greater for White households. In addition, location characteristics had differing impacts including county-level unemployment rates, employment growth, and population composition.

Migratory behavior has been found to impact earnings, but it has also been found that the earning growth associated with internal migration is unlikely to be instantaneous and is experienced years after migration (Yankow 1999). Without having future wages or the ability to lag the migration variable, it was not possible to determine when these estimated wage premiums kick in and therefore show that the instant change in wages within a year of moving and migrating were negative. This could be due in part to individuals working less in the year of moving or migrating. It also could be caused by migrating to a location with a lower cost of living, bringing down hourly wages earned on average. The important takeaway is that the wage impacts of moving and migrating differ across race and ethnicity and reinforces the presence of racial and ethnic disparities that continue to persist.

Together, these chapters contribute to existing literature to provide a deeper understanding of the different levels of residential movement and migration, the determinants of migration, the wage implications of moving and migrating, and most importantly how migratory decisions and wage implications vary across race and ethnicity.

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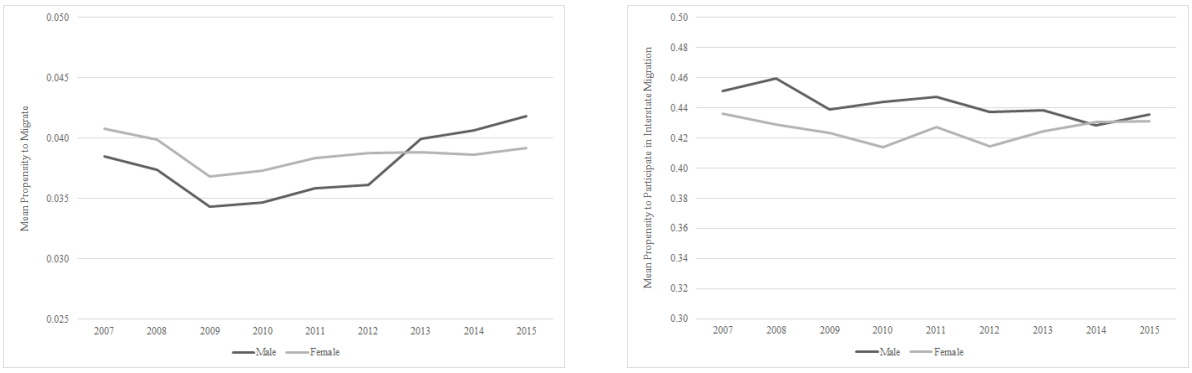
Appendix A
Supplemental Discussions on Internal Migration Within the U.S.

A.1 Internal Migration and Gender

Table A.1 is a time series trend that shows the propensity to migrate and interstate migration rstes between 2007 and 2017. Females had a higher propensity to migrate until 2013, where male migration rates increased, surpassing females'. While females had higher rates of migration than males, males were more likely to participate in interstate migration, until rates converged in 2014.



(a) Internal Migration by Sex **(b)** Interstate Migration by Sex

Figure A.1: Mean Propensity to Migrate & Participate in Interstate Migration

A.2 Heckman Results With Varying Fixed Effects

The following tables provide additional Heckman corrected results that correspond with the results presented in Chapter 2. The results are without fixed effects and with only time fixed effects for the entire sample and across the three racial and ethnic groups examined throughout this work.

Table A.1: Marginal Effects by Race & Ethnicity (Selection=Migrate) Without Fixed Effects

Variables	BLACK	WHITE	HISPANIC
Sex (Male=1)	0.06381***	0.01769***	0.04430***
	(0.005174)	(0.001687)	(0.005226)
Age	-0.03594***	-0.04849***	-0.03480***
	(0.001014)	(0.0003073)	(0.001097)
Age^2	0.0001496***	0.0002599***	0.0001730***
	(0.000009978)	(0.000002885)	(0.00001109)
Marital Status (Married=1)	-0.1857***	-0.2229***	-0.1753***
	(0.005903)	(0.001777)	(0.005320)
# Of Children Age 5 and Up	-0.08477***	-0.1310***	-0.1064***
	(0.002607)	(0.001105)	(0.002556)
# Of Children Under the Age of 5	-0.02245***	-0.03552***	-0.04502***
	(0.005703)	(0.001975)	(0.004858)
U.S. Born	-0.1048***	-0.06202***	0.04533***
	(0.007982)	(0.003882)	(0.005320)
Less than High School	0.03934***	0.06092***	-0.01188
	(0.008025)	(0.003505)	(0.007093)
Some College	0.06510***	0.08935***	0.07456***
	(0.006531)	(0.002442)	(0.007414)
College	0.1056***	0.1237***	0.1387***
	(0.006835)	(0.002294)	(0.007453)
Advanced Degree	0.1724***	0.2470***	0.2621***
	(0.009031)	(0.002730)	(0.01001)
Labor Force Participation	-0.08549***	-0.1979***	-0.1262***
	(0.006170)	(0.002217)	(0.006842)
Unemployment Rate	4.77E-05	-0.00019	-0.002107*
	(0.0008572)	(0.0002905)	(0.001016)
Total Population	-6.392e-08***	-3.369e-08***	-4.719e-08***
	(1.727e-09)	(6.847e-10)	(1.658e-09)
Per Capita Income	-0.000002627***	-7.818e-07***	-0.000003376***
	(2.283e-07)	(7.146e-08)	(2.756e-07)
% of Population that is Black	-0.7685***	-0.2551***	0.1520**
	(0.04651)	(0.01364)	(0.04882)
% of Population that is White	-0.4609***	-0.1653***	0.2807***
	(0.04666)	(0.01259)	(0.04484)
% of Population that is Hispanic	-0.3628***	0.1089***	-0.4794***
	(0.05039)	(0.01460)	(0.04498)
Median Monthly Housing Cost	0.0001909***	-0.00001360***	-1E-05
	(0.00001089)	(0.000003644)	(0.00001366)
Per Capita Parks & Rec Expenditures	-4.142e-07***	-3.926e-07***	-8.409e-08*
	(3.408e-08)	(1.557e-08)	(4.072e-08)
Employment Growth	1.251***	0.9431***	1.298***
	(0.08772)	(0.02867)	(0.1089)
Time FE?	No	No	No
Region FE?	No	No	No

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.
[c] Location characteristics are of the residence of origin.

Table A.2: Marginal Effects by Race & Ethnicity (Selection=Migrate) With Time Fixed Effects

Variables	BLACK	WHITE	HISPANIC
Sex (Male=1)	0.06393***	0.01966***	0.04374***
	(0.005182)	(0.001693)	(0.005233)
Age	-0.03588***	-0.04858***	-0.03475***
	(0.001014)	(0.0003075)	(0.001098)
Age^2	0.0001493***	0.0002611***	0.0001727***
	(0.000009977)	(0.000002887)	(0.00001110)
Marital Status (Married=1)	-0.1880***	-0.2235***	-0.1765***
	(0.005910)	(0.001778)	(0.005324)
# Of Children Age 5 and Up	-0.08486***	-0.1310***	-0.1064***
	(0.002610)	(0.001106)	(0.002556)
# Of Children Under the Age of 5	-0.02227***	-0.03548***	-0.04526***
	(0.005705)	(0.001976)	(0.004859)
U.S. Born	-0.1057***	-0.06162***	0.04634***
	(0.007983)	(0.003884)	(0.005323)
Less than High School	0.03857***	0.06051***	-0.01228
	(0.008028)	(0.003507)	(0.007095)
Some College	0.06553***	0.08946***	0.07457***
	(0.006538)	(0.002443)	(0.007417)
College	0.1054***	0.1236***	0.1385***
	(0.006841)	(0.002296)	(0.007456)
Advanced Degree	0.1718***	0.2471***	0.2620***
	(0.009041)	(0.002733)	(0.01001)
Labor Force Participation	-0.08748***	-0.1973***	-0.1268***
	(0.006176)	(0.002218)	(0.006846)
Unemployment Rate	0.003168*	0.003218	0.001956
	(0.001259)	(0.0004062)	(0.001363)
Total Population	-6.396e-08***	-3.375e-08***	-4.747e-08***
	(1.772e-09)	(6.801e-10)	(1.661e-09)
Per Capita Income	-0.000002524***	-7.676e-07***	-0.000002985***
	(2.419e-07)	(7.733e-08)	(2.951e-07)
% of Population that is Black	-0.7341***	-0.2652***	0.1481**
	(0.04685)	(0.01371)	(0.04908)
% of Population that is White	-0.4234***	-0.1601***	0.2905***
	(0.04686)	(0.01261)	(0.04497)
% of Population that is Hispanic	-0.3625***	0.09465***	-0.4862***
	(0.05056)	(0.01461)	(0.04515)
Median Monthly Housing Cost	0.0001960***	-0.00001826***	-2.3E-05
	(0.00001096)	(0.000003740)	(0.00001452)
Per Capita Parks & Rec Expenditures	-4.067e-07***	-3.900e-07***	-8.447e-08*
	(3.440e-08)	(1.548e-08)	(4.082e-08)
Employment Growth	2.247***	1.339***	1.963***
	(0.1166)	(0.03836)	(0.1498)
Time FE?	Yes	Yes	Yes
Region FE?	No	No	No

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.
[c] Location characteristics are of the residence of origin.

Table A.3: Marginal Effects by Race & Ethnicity (Interstate) Without Fixed Effects

Variables	BLACK	WHITE	HISPANIC
Sex (Male=1)	0.003135***	0.001287***	-0.00169
	(0.0003206)	(0.0001168)	(0.003439)
Age	-0.001253***	-0.001904***	0.006118***
	(0.00006546)	(0.00002286)	(0.0007462)
Age^2	0.000004208***	0.000009232***	-0.00003980***
	(6.332e-07)	(2.037e-07)	(0.000007731)
Marital Status (Married=1)	-0.006732***	-0.008040***	0.03250***
	(0.0003721)	(0.0001280)	(0.003641)
# of Children Age 5 and Up	-0.003201***	-0.006017***	0.01590***
	(0.0001588)	(0.00007754)	(0.001691)
# of Children Under the Age of 5	-0.0009151**	-0.001791***	0.002459
	(0.0003493)	(0.0001358)	(0.003055)
U.S. Born	-0.006491***	-0.003661***	-0.03152***
	(0.0004616)	(0.0002538)	(0.003937)
Less than High School	-0.00021	9.98E-05	-0.00067
	(0.0005261)	(0.0002665)	(0.004776)
Some College	0.003523***	0.006032***	-0.0083
	(0.0004128)	(0.0001766)	(0.004884)
College	0.006239***	0.009849***	0.00897
	(0.0004247)	(0.0001639)	(0.005160)
Advanced Degree	0.01142***	0.01802***	0.04617***
	(0.0005400)	(0.0001906)	(0.008628)
Labor Force Participation	-0.005243***	-0.01294***	-0.01248*
	(0.0003834)	(0.0001542)	(0.004997)
Employment Growth	0.01654**	0.03081***	-0.1398
	(0.005775)	(0.002085)	(0.07275)
Total Population	-1.521e-09***	-9.243e-10***	6.270e-09***
	(5.976e-11)	(2.523e-11)	(7.311e-10)
% of Population that is Black	-0.009394***	-0.01756***	-0.1081***
	(0.002092)	(0.0007934)	(0.02632)
% of Population that is White	-0.006666**	-0.01451***	-0.03796
	(0.002029)	(0.0006896)	(0.02143)
% of Population that is Hispanic	0.000669	-0.002526**	0.000483
	(0.002181)	(0.0008054)	(0.02169)
Par Capita Income	-0.000009304***	-0.000006808***	-0.00005645***
	(7.702e-07)	(2.971e-07)	(0.00001155)
Median Monthly Housing Cost	-0.002316***	-0.002822***	-0.01834***
	(0.00007584)	(0.00002983)	(0.001747)
Unemployment Rate	-9.4E-06	-0.00006463*	-0.003874***
	(0.00007073)	(0.00002617)	(0.0008013)
Per Capita Parks & Rec Expenditures	-0.2081***	-0.1403***	-1.470***
	(0.01185)	(0.005468)	(0.1641)
Time FE?	No	No	No
Region FE?	No	No	No

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.
[c] Location characteristics are the differences between the new place of residence and the original place of residence.

Table A.4: Marginal Effects by Race & Ethnicity (Interstate) With Time Fixed Effects

Variables	BLACK	WHITE	HISPANIC
Sex (Male=1)	0.003100***	0.001382***	-0.00184
	(0.0003217)	(0.0001174)	(0.003538)
Age	-0.001256***	-0.001909***	0.006180***
	(0.00006463)	(0.00002288)	(0.0007643)
Age^2	0.000004259***	0.000009280***	-0.00004038***
	(6.229e-07)	(2.038e-07)	(0.000007933)
Marital Status (Married=1)	-0.006815***	-0.008083***	0.03287***
	(0.0003728)	(0.0001281)	(0.003726)
# of Children Age 5 and Up	-0.003223***	-0.006031***	0.01597***
	(0.0001599)	(0.00007758)	(0.001733)
# of Children Under the Age of 5	-0.0008788*	-0.001796***	0.002212
	(0.0003489)	(0.0001360)	(0.003143)
U.S. Born	-0.006502***	-0.003676***	-0.03212***
	(0.0004595)	(0.0002538)	(0.004029)
Less than High School	-0.0002	(0.0002669)	-0.00089
	(0.0005252)		(0.004912)
Some College	0.003724***	0.006070***	-0.00832
	(0.0004140)	(0.0001769)	(0.005022)
College	0.006342***	0.009853***	0.01014
	(0.0004246)	(0.0001642)	(0.005344)
Advanced Degree	0.01158***	0.01804***	0.04857***
	(0.0005418)	(0.0001910)	(0.008959)
Labor Force Participation	-0.005226***	-0.01293***	-0.01337**
	(0.0003835)	(0.0001543)	(0.005159)
Employment Growth	0.03494***	0.03951***	-0.1883*
	(0.005875)	(0.002153)	(0.07527)
Total Population	-1.509e-09***	-9.270e-10***	6.434e-09***
	(5.953e-11)	(2.525e-11)	(7.506e-10)
% of Population that is Black	-0.008940***	-0.01764***	-0.1108***
	(0.002121)	(0.0007924)	(0.02708)
% of Population that is White	-0.006167**	-0.01437***	-0.04003
	(0.002060)	(0.0006887)	(0.02205)
% of Population that is Hispanic	0.00064	-0.002768***	-0.00029
	(0.002214)	(0.0008050)	(0.02233)
Par Capita Income	-0.000009141***	-0.000006702***	-0.00006003***
	(7.694e-07)	(2.998e-07)	(0.00001191)
Median Monthly Housing Cost	-0.002306***	-0.002832***	-0.01881***
	(0.00007737)	(0.00002987)	(0.001796)
Unemployment Rate	3.2E-05	9.27E-06	-0.004256***
	(0.00007372)	(0.00002712)	(0.0008272)
Per Capita Parks & Rec Expenditures	-0.2065***	-0.1390***	-1.5190***
	(0.01219)	(0.005459)	(0.1693)
Time FE?	Yes	Yes	Yes
Region FE?	No	No	No

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.
[c] Location characteristics are the differences between the new place of residence and the original place of residence.

Appendix B
Residential Mobility & Migration by Gender

B.1 Overview

Figure B.1 is a time series trend showing the propensity to move (movement within county) between 2007 and 2015 by gender. Women are more likely to move within county than males. Within county moves capture some residential displacement and from previous literature and studies, we know that women are disproportionately affected by displacement, especially women with children.

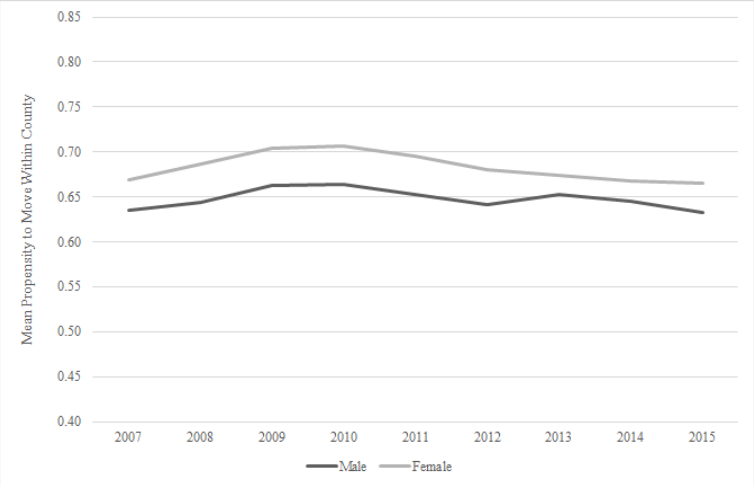


Figure B.1: Mean Propensity to Move Within County

Table B.2 shows the propensity to migrate to a different county but stay within the same state (intrastate migration). While females have a higher propensity to move within county, they are less likely to participate in intrastate migration. Table B.3 shows the propensity to migrate to a different state (interstate migration) by gender. Similar to the propensity to participate in intrastate migration, men are more likely to participate in interstate migration.

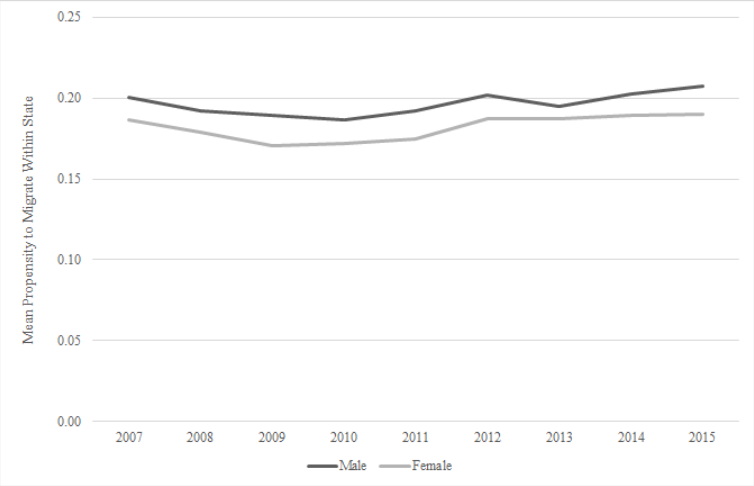


Figure B.2: Mean Propensity to Migrate to a Different County Within State

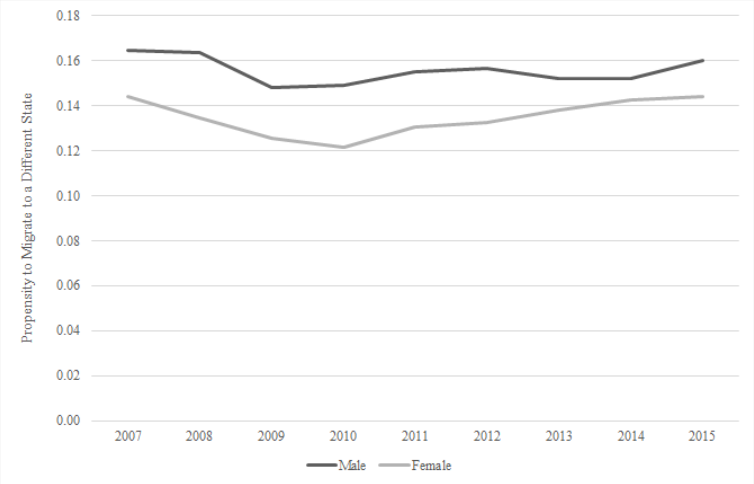


Figure B.3: Mean Propensity to Migrate to a Different State

B.2 Multinomial Logit Results With Varying Fixed Effects

The following tables provide additional multinomial logit results that coorespond with the results in Chapter 3 with no fixed effects and with only time fixed effects. Results are provided for varying fixed effects for the entire sample and across the three racial and ethnic groups.

Table B.1: Multinomial Logit Marginal Effects (Entire Sample) Without Fixed Effects

Variables	Different County In-State Migration	Different State Migration
Sex	0.006478***	0.01304***
	(0.0007827)	(0.0006828)
Age	-0.0007845***	0.002225***
	(0.0001395)	(0.0001224)
Age^2	0.000003530**	-0.00001966***
	(0.000001365)	(0.000001187)
Black	-0.04459***	-0.03598***
	(0.001242)	(0.001137)
Hispanic	-0.04353***	-0.04547***
	(0.001427)	(0.001311)
Marital Status (Married=1)	0.01058***	0.03512***
	(0.0008380)	(0.0007200)
# of Children Age 5 and Up	-0.02095***	-0.01378***
	(0.0004809)	(0.0004270)
# of Children Under the Age of 5	-0.003894***	-0.008305***
	(0.0008185)	(0.0007340)
U.S. Born	0.02984***	-0.004268***
	(0.001450)	(0.001224)
Less than High School	0.001028	-0.02463***
	(0.001430)	(0.001400)
Some College	0.005881***	0.02501***
	(0.001100)	(0.001018)
College	0.01741***	0.06269***
	(0.001054)	(0.0009520)
Advanced Degree	0.02106***	0.1082***
	(0.001331)	(0.001096)
Labor Force Participation	-0.003962***	-0.04992***
	(0.001038)	(0.0008737)
Employment Growth	0.1339***	0.2801***
	(0.02789)	(0.02339)
Total Population	-5.324e-09***	4.455e-09***
	(3.870e-10)	(3.222e-10)
% of Population that is Black	0.05858***	-0.2143***
	(0.01050)	(0.008426)
% of Population that is White	0.2823***	-0.04106***
	(0.009218)	(0.007382)
% of Population that is Hispanic	0.1763***	-0.00832
	(0.01022)	(0.008218)
Per Capita Income	-0.00001507***	-0.0001694***
	(0.000004572)	(0.000003445)
Median Monthly Housing Cost	0.01147***	-0.02780***
	(0.0003580)	(0.0002716)
Unemployment Rate	-0.001673***	-0.002577***
	(0.0003466)	(0.0002830)
Per Capita Parks & Rec Expenditures	0.3405***	-1.600***
	(0.04946)	(0.03480)
Time FE?	No	No
Region FE?	No	No

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.
[c] Location characteristics are the differences between the new place of residence and the original place of residence.

Table B.2: Multinomial Logit Marginal Effects (Entire Sample) With Time Effects

Variables	Different County In-State Migration	Different State Migration
Sex	0.006798***	0.01275***
	(0.0007841)	(0.0006846)
Age	-0.0008013***	0.002210***
	(0.0001395)	(0.0001224)
Age^2	0.000003642**	-0.00001954***
	(0.000001365)	(0.000001187)
Black	-0.04430***	-0.03573***
	(0.001242)	(0.001137)
Hispanic	-0.04347***	-0.04508***
	(0.001428)	(0.001311)
Marital Status (Married=1)	0.01039***	0.03490***
	(0.0008381)	(0.0007203)
# of Children Age 5 and Up	-0.02097***	-0.01385***
	(0.0004809)	(0.0004270)
# of Children Under the Age of 5	-0.003882***	-0.008339***
	(0.0008184)	(0.0007340)
U.S. Born	0.02977***	-0.004428***
	(0.001450)	(0.001224)
Less than High School	0.001198	-0.02484***
	(0.001430)	(0.001400)
Some College	0.006099***	0.02530***
	(0.001101)	(0.001018)
College	0.01724***	0.06306***
	(0.001056)	(0.0009529)
Advanced Degree	0.02078***	0.1086***
	(0.001332)	(0.001097)
Labor Force Participation	-0.003783***	-0.04998***
	(0.001038)	(0.0008738)
Employment Growth	0.1311***	0.2732***
	(0.02788)	(0.02335)
Total Population	-5.331e-09***	4.493e-09***
	(3.868e-10)	(3.222e-10)
% of Population that is Black	0.05837***	-0.2132***
	(0.01050)	(0.008425)
% of Population that is White	0.2817***	-0.04093***
	(0.009214)	(0.007381)
% of Population that is Hispanic	0.1765***	-0.0077
	(0.01021)	(0.008216)
Per Capita Income	-0.00001435**	-0.0001692***
	(0.000004565)	(0.000003442)
Median Monthly Housing Cost	0.01146***	-0.02771***
	(0.0003582)	(0.0002714)
Unemployment Rate	-0.001695***	-0.002634***
	(0.0003473)	(0.0002837)
Per Capita Parks & Rec Expenditures	0.3475***	-1.6***
	(0.04947)	(0.03467)
Time FE?	Yes	Yes
Region FE?	No	No

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.
[c] Location characteristics are the differences between the new place of residence and the original place of residence.

Table B.3: Multinomial Logit Marginal Effects (Black Sample) Without Fixed Effects

Variables	Different County In-State Migration	Different State Migration
Sex	0.01032***	0.009852***
	(0.002091)	(0.001714)
Age	-0.002861***	-0.001103**
	(0.0004110)	(0.0003424)
Age^2	0.00002468***	0.000009022**
	(0.000004189)	(0.000003490)
Marital Status (Married=1)	0.01383***	0.01631***
	(0.002491)	(0.002000)
# of Children Age 5 and Up	-0.01578***	-0.007874***
	(0.001035)	(0.0008554)
# of Children Under the Age of 5	-0.009193***	-0.009020***
	(0.002116)	(0.001785)
U.S. Born	-0.00372	-0.02134***
	(0.003230)	(0.002461)
Less than High School	0.002898	-0.01721***
	(0.003179)	(0.002861)
Some College	0.01159***	0.01678***
	(0.002599)	(0.002204)
College	0.04348***	0.04727***
	(0.002743)	(0.002276)
Advanced Degree	0.05827***	0.09148***
	(0.003899)	(0.002892)
Labor Force Participation	0.006362*	-0.01543***
	(0.002516)	(0.002047)
Employment Growth	0.4718***	-0.1763**
	(0.08319)	(0.06660)
Total Population	6.25E-10	-2.677e-09***
	(1.109e-09)	(7.946e-10)
% of Population that is Black	0.05627	0.1032***
	(0.03181)	(0.02243)
% of Population that is White	0.3178***	0.1433***
	(0.03086)	(0.02174)
% of Population that is Hispanic	0.1095***	0.2032***
	(0.03325)	(0.02376)
Per Capita Income	2.08E-05	-0.0001384***
	(0.00001334)	(0.000009080)
Median Monthly Housing Cost	0.009609***	-0.02586***
	(0.001085)	(0.0007118)
Unemployment Rate	-0.01323***	-0.009015***
	(0.001052)	(0.0007942)
Per Capita Parks & Rec Expenditures	0.1871	-1.923***
	(0.1358)	(0.09327)
Time FE?	No	No
Region FE?	No	No

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.
[c] Location characteristics are the differences between the new place of residence and the original place of residence.

Table B.4: Multinomial Logit Marginal Effects (Black Sample) With Time Effects

Variables	Within State Different County Migration	Different State Migration
Sex	0.01069***	0.009526***
	(0.002093)	(0.001715)
Age	-0.002816***	-0.001103**
	(0.0004111)	(0.0003420)
Age^2	0.00002416***	0.000009013**
	(0.000004192)	(0.000003486)
Marital Status (Married=1)	0.01388***	0.01589***
	(0.002492)	(0.002000)
# of Children Age 5 and Up	-0.01567***	-0.008011***
	(0.001035)	(0.0008557)
# of Children Under the Age of 5	-0.009129***	-0.008976***
	(0.002116)	(0.001784)
U.S. Born	-0.00334	-0.02190***
	(0.003231)	(0.002462)
Less than High School	0.003103	-0.01722***
	(0.003179)	(0.002860)
Some College	0.01145***	0.01767***
	(0.002601)	(0.002205)
College	0.04307***	0.04791***
	(0.002745)	(0.002278)
Advanced Degree	0.05750***	0.09200***
	(0.003902)	(0.002895)
Labor Force Participation	0.006316*	-0.01543***
	(0.002517)	(0.002047)
Employment Growth	0.4673***	-0.1951**
	(0.08342)	(0.06629)
Total Population	6.15E-10	-2.604e-09**
	(1.108e-09)	(7.940e-10)
% of Population that is Black	0.05677	0.1030***
	(0.03181)	(0.02241)
% of Population that is White	0.3181***	0.1421***
	(0.03086)	(0.02172)
% of Population that is Hispanic	0.1094***	0.2045***
	(0.03323)	(0.02374)
Per Capita Income	2.08E-05	-0.0001379***
	(0.00001333)	(0.000009049)
Median Monthly Housing Cost	0.009619***	-0.02578***
	(0.001085)	(0.0007108)
Unemployment Rate	-0.01328***	-0.009191***
	(0.001055)	(0.0007990)
Per Capita Parks & Rec Expenditures	0.1851	-1.892***
	(0.1357)	(0.09235)
Time FE?	Yes	Yes
Region FE?	No	No

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.
[c] Location characteristics are the differences between the new place of residence and the original place of residence.

Table B.5: Multinomial Logit Marginal Effects (White Sample) Without Fixed Effects

Variables	Within State Different County Migration	Different State Migration
Sex	0.005336***	0.01429***
	(0.0009295)	(0.0008260)
Age	-0.0005111**	0.003215***
	(0.0001627)	(0.0001459)
Age^2	1.37E-07	-0.00002848***
	(0.000001580)	(0.000001405)
Marital Status (Married=1)	0.01063***	0.04202***
	(0.0009895)	(0.0008654)
# of Children Age 5 and Up	-0.02258***	-0.01674***
	(0.0006157)	(0.0005532)
# of Children Under the Age of 5	-0.00156	-0.009174***
	(0.001001)	(0.0009100)
U.S. Born	0.03232***	0.001496
	(0.002185)	(0.001796)
Less than High School	0.009564***	-0.03179***
	(0.001873)	(0.001911)
Some College	0.002539	0.02919***
	(0.001331)	(0.001258)
College	0.01030***	0.07029***
	(0.001252)	(0.001159)
Advanced Degree	0.01208***	0.1183***
	(0.001547)	(0.001314)
Labor Force Participation	-0.004783***	-0.06094***
	(0.001250)	(0.001065)
Employment Growth	0.06930*	0.3696***
	(0.03206)	(0.02749)
Total Population	-4.212e-09***	7.673e-09***
	(4.875e-10)	(4.103e-10)
% of Population that is Black	0.06858***	-0.2957***
	(0.01232)	(0.01015)
% of Population that is White	0.2763***	-0.08615***
	(0.01064)	(0.008768)
% of Population that is Hispanic	0.1785***	-0.03740***
	(0.01206)	(0.009946)
Per Capita Income	-0.00001250*	-0.0001751***
	(0.000005337)	(0.000004146)
Median Monthly Housing Cost	0.01158***	-0.02833***
	(0.0004128)	(0.0003241)
Unemployment Rate	-0.00076	-0.0008027*
	(0.0004046)	(0.0003378)
Per Capita Parks & Rec Expenditures	0.4164***	-1.366***
	(0.05682)	(0.04181)
Time FE?	No	No
Region FE?	No	No

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.
[c] Location characteristics are the differences between the new place of residence and the original place of residence.

Table B.6: Multinomial Logit Marginal Effects (White Sample) With Time Effects

Variables	Within State Different County Migration	Different State Migration
Sex	0.005718***	0.01398***
	(0.0009315)	(0.0008286)
Age	-0.0005366***	0.003201***
	(0.0001627)	(0.0001459)
Age^2	3.25E-07	-0.00002837***
	(0.000001580)	(0.000001405)
Marital Status (Married=1)	0.01042***	0.04184***
	(0.0009896)	(0.0008658)
# of Children Age 5 and Up	-0.02264***	-0.01680***
	(0.0006157)	(0.0005532)
# of Children Under the Age of 5	-0.00159	-0.009206***
	(0.001001)	(0.0009100)
U.S. Born	0.03215***	0.001296
	(0.002185)	(0.001796)
Less than High School	0.009706***	-0.03207***
	(0.001873)	(0.001911)
Some College	0.002788*	0.02939***
	(0.001331)	(0.001258)
College	0.01014***	0.07063***
	(0.001253)	(0.001160)
Advanced Degree	0.01183***	0.1188***
	(0.001548)	(0.001316)
Labor Force Participation	-0.004537***	-0.06104***
	(0.001250)	(0.001065)
Employment Growth	0.06712*	0.3650***
	(0.03204)	(0.02746)
Total Population	-4.228e-09***	7.706e-09***
	(4.873e-10)	(4.103e-10)
% of Population that is Black	0.06864***	-0.2946***
	(0.01232)	(0.01015)
% of Population that is White	0.2759***	-0.08591***
	(0.01063)	(0.008768)
% of Population that is Hispanic	0.1791***	-0.03694***
	(0.01206)	(0.009945)
Per Capita Income	-0.00001175*	-0.0001750***
	(0.000005330)	(0.000004144)
Median Monthly Housing Cost	0.01156***	-0.02824***
	(0.0004131)	(0.0003240)
Unemployment Rate	-0.00079	-0.0008360*
	(0.0004053)	(0.0003386)
Per Capita Parks & Rec Expenditures	0.4244***	-1.368***
	(0.05686)	(0.04170)
Time FE?	Yes	Yes
Region FE?	No	No

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.
[c] Location characteristics are the differences between the new place of residence and the original place of residence.

Table B.7: Multinomial Logit Marginal Effects (Hispanic Sample) Without Fixed Effects

Variables	Within State Different County Migration	Different State Migration
Sex	0.01274***	0.009452***
	(0.001983)	(0.001585)
Age	-0.00082	0.000594
	(0.0004206)	(0.0003423)
Age^2	8.09E-06	-0.000007032*
	(0.000004370)	(0.000003556)
Marital Status (Married=1)	0.006980***	0.01006***
	(0.002033)	(0.001615)
# of Children Age 5 and Up	-0.01607***	-0.007545***
	(0.0009838)	(0.0007811)
# of Children Under the Age of 5	-0.008358***	-0.005983***
	(0.001761)	(0.001424)
U.S. Born	0.03056***	0.002634
	(0.001968)	(0.001566)
Less than High School	-0.009905***	-0.007544***
	(0.002700)	(0.002204)
Some College	0.01573***	0.008201***
	(0.002760)	(0.002294)
College	0.03415***	0.03316***
	(0.002788)	(0.002240)
Advanced Degree	0.04752***	0.07157***
	(0.003927)	(0.002821)
Labor Force Participation	-0.01435***	-0.02466***
	(0.002640)	(0.002048)
Employment Growth	0.4048***	0.1078
	(0.08520)	(0.06191)
Total Population	-1.066e-08***	1.126e-09*
	(7.057e-10)	(5.291e-10)
% of Population that is Black	0.2402***	-0.1234***
	(0.02935)	(0.02028)
% of Population that is White	0.4087***	0.1147***
	(0.02464)	(0.01733)
% of Population that is Hispanic	0.2618***	0.04822**
	(0.02499)	(0.01767)
Per Capita Income	-0.00009757***	-0.0001490***
	(0.00001197)	(0.000007799)
Median Monthly Housing Cost	0.01561***	-0.02746***
	(0.001062)	(0.0006598)
Unemployment Rate	-9.6E-05	-0.007117***
	(0.0008951)	(0.0006252)
Per Capita Parks & Rec Expenditures	-0.01634	-2.286***
	(0.1664)	(0.1043)
Time FE?	No	No
Region FE?	No	No

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.
[c] Location characteristics are the differences between the new place of residence and the original place of residence.

Table B.8: Multinomial Logit Marginal Effects (Hispanic Sample) With Time Effects

Variables	Within State Different County Migration	Different State Migration
Sex	0.01265***	0.009109***
	(0.001985)	(0.001587)
Age	-0.0008	0.00061
	(0.0004205)	(0.0003422)
Age^2	7.99E-06	-0.000007146*
	(0.000004370)	(0.000003556)
Marital Status (Married=1)	0.006805***	0.009928***
	(0.002033)	(0.001615)
# of Children Age 5 and Up	-0.01606***	-0.007600***
	(0.0009836)	(0.0007812)
# of Children Under the Age of 5	-0.008244***	-0.006005***
	(0.001760)	(0.001424)
U.S. Born	0.03058***	0.002783
	(0.001968)	(0.001566)
Less than High School	-0.009776***	-0.007574***
	(0.002700)	(0.002204)
Some College	0.01602***	0.008583***
	(0.002762)	(0.002295)
College	0.03414***	0.03349***
	(0.002790)	(0.002241)
Advanced Degree	0.04734***	0.07184***
	(0.003928)	(0.002822)
Labor Force Participation	-0.01425***	-0.02450***
	(0.002641)	(0.002048)
Employment Growth	0.3973***	0.09156
	(0.08511)	(0.06172)
Total Population	-1.064e-08***	1.175e-09*
	(7.054e-10)	(5.290e-10)
% of Population that is Black	0.2397***	-0.1221***
	(0.02932)	(0.02027)
% of Population that is White	0.4071***	0.1143***
	(0.02461)	(0.01732)
% of Population that is Hispanic	0.2613***	0.04902**
	(0.02497)	(0.01766)
Per Capita Income	-0.00009590***	-0.0001484***
	(0.00001196)	(0.000007783)
Median Monthly Housing Cost	0.01563***	-0.02732***
	(0.001061)	(0.0006595)
Unemployment Rate	-6.8E-05	-0.007264***
	(0.0008974)	(0.0006268)
Per Capita Parks & Rec Expenditures	-0.01095	-2.283***
	(0.1663)	(0.1041)
Time FE?	Yes	Yes
Region FE?	No	No

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.
[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.
[c] Location characteristics are the differences between the new place of residence and the original place of residence.

Appendix C
Wage, Migration, and Gender

C.1 Wage and Sex

Similar to the wage differences by race and ethnicity, there exists a gender wage gap. Table C.1 provides a time trend analysis of mean hourly earnings for both salaried and hourly employees by gender between 2007 and 2015. Consistent with not only the literature but news pertaining to the gender pay gap, men on average earn higher wages than women.

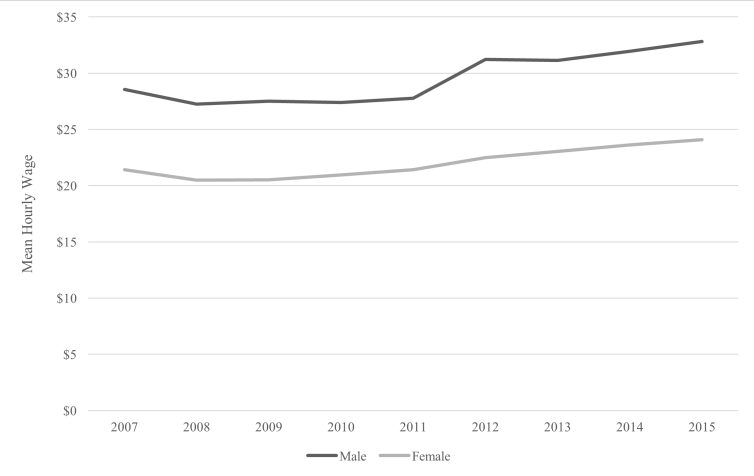


Figure C.1: Mean Hourly Wages by Gender

C.2 Regression Results With Other Fixed Effects

The following table includes the linear regression results across race and ethnicity with only time fixed effects and no time fixed effects. Consistent with the results presented in Chapter 4, the model controls for occupation.

Table C.1: Regression Results: Wage Determination by Race & Ethnicity with Other FE

Variables	BLACK	WHITE	HISPANIC	BLACK	WHITE	HISPANIC
Sex (Male=1)	0.1095***	0.2039***	0.1682***	0.1025***	0.2033***	0.1677***
	(0.001448)	(0.0004942)	(0.001278)	(0.001441)	(0.0004937)	(0.001277)
Age	0.03275***	0.04097***	0.03314***	0.03271***	0.04101***	0.03240***
	(0.0003370)	(0.0001103)	(0.0003111)	(0.0003344)	(0.0001101)	(0.0003109)
Age^2	-0.0002895***	-0.0003826***	-0.0003060***	-0.0002918***	-0.0003850***	-0.0003009***
	(0.000003550)	(0.000001140)	(0.000003407)	(0.000003522)	(0.000001138)	(0.000003403)
Marital Status (Married=1)	0.04636***	0.05150***	0.06636***	0.05899***	0.05868***	0.06990***
	(0.001247)	(0.0004232)	(0.001041)	(0.001246)	(0.0004244)	(0.001041)
Less than High School	-0.09299***	-0.1018***	-0.09328***	-0.08891***	-0.09990***	-0.09247***
	(0.002273)	(0.001039)	(0.001435)	(0.002255)	(0.001038)	(0.001433)
Some College	0.06322***	0.06388***	0.07602***	0.06102***	0.06153***	0.07432***
	(0.001605)	(0.0005861)	(0.001549)	(0.001597)	(0.0005853)	(0.001548)
College	0.1770***	0.2060***	0.1760***	0.1730***	0.2010***	0.1733***
	(0.001796)	(0.0005935)	(0.001702)	(0.001786)	(0.0005931)	(0.001700)
Advanced Degree	0.3903***	0.4237***	0.3800***	0.3852***	0.4173***	0.3759***
	(0.002627)	(0.0008292)	(0.002707)	(0.002611)	(0.0008285)	(0.002704)
Mover	-0.05457***	-0.03590***	-0.04409***	-0.05131***	-0.03700***	-0.04458***
	(0.002022)	(0.0008499)	(0.001722)	(0.002009)	(0.0008484)	(0.001720)
Within State/Diff. County	-0.03433***	-0.04793***	-0.03193***	-0.02532***	-0.04869***	-0.03201***
	(0.003862)	(0.001344)	(0.003558)	(0.003833)	(0.001342)	(0.003552)
Different State	-0.03795***	-0.05346***	-0.07055***	-0.02917***	-0.05305***	-0.06947***
	(0.004731)	(0.001594)	(0.004428)	(0.004696)	(0.001591)	(0.004421)
U.S. Born	-0.05997***	-0.05297***	0.06095***	-0.006879***	-0.05231***	0.06054***
	(0.001749)	(0.0009448)	(0.001130)	(0.001803)	(0.0009432)	(0.001129)
Time FE?	No	No	No	Yes	Yes	Yes
Region FE?	No	No	No	No	No	No

[a] Standard errors are in parentheses. * p < 0.1 ** p < 0.05 *** p < 0.01.

[b] All output, including observation numbers, have been rounded in order to adhere to privacy requirements when using restricted-use data.