2019

The Impact of Location Characteristics on Population Distribution in the United States

Shuruq Alsharif

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THE IMPACT OF LOCATION CHARACTERISTICS ON POPULATION DISTRIBUTION IN THE UNITED STATES

BY
SHURUQ ALSHARIF

A dissertation submitted in partial fulfillment of the requirements for the
Doctor of Philosophy
Major in Sociology
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2019
THE IMPACT OF LOCATION CHARACTERISTICS ON POPULATION DISTRIBUTION IN THE UNITED STATE

SHURUQ ALSHARIF

This dissertation is approved as a creditable and independent investigation by a candidate for the Doctor of Philosophy in Sociology degree and is acceptable for meeting the design paper requirements for this degree. Acceptance of this does not imply that the conclusions reached by the candidates are necessarily the conclusions of the major department.

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ABSTRACT
THE IMPACT OF LOCATION CHARACTERISTICS ON POPULATION DISTRIBUTION IN THE UNITED STATES
SHURUQ ALSHARIF
2019

The United States is one of the most mobile countries in the world. This paper examined a couple of questions not previously addressed in the literature, namely the research questions of how the distributional patterns and associated factors, especially locational characteristics could be different between two types of internal migrants: native-born and foreign-born. The central hypothesis that guided the analysis was that income is often the primary push factor and key contributor to population growth in a county for both types of internal migrants, as they would be more likely to live in a county with a good economic conditions and high job growth percentages. The results support and build on past research findings showing that overall county-level population trends are linked to county economic profiles for both groups, as migrants are more likely live the places with growth in job opportunities and high economic payoff. There are differences in terms the destination type between native-born and foreign-born internal migrants. Native-born migrants are more like to move to metro areas that are associated with job growth compared to the foreign-born internal migrants. The predict models showed that when the job opportunities are the same between metro and non-metro areas, native populations tend to move to metro areas, while job growth in rural counties may not be associated with growth in foreign-born population.
CHAPTER ONE: INTRODUCTION

Statement of the Problem

The United States historically has one of the highest percentages of internal population mobility (Molloy, Smith, and Wozniak 2011; Borjas, Bronars, and Trejo 1992). Based on the Pew Social and Demographic Trends survey (2008), people in U.S. moved to a new location at least once in their lives. Movers most often cite the pull of economic opportunity as a reason for moving and family and connections as a reason for staying. These shifts in population, demographic characteristics, and distributions have an impact on individuals, as well as local demographics and economies (Census Bureau report 2010).

Labor mobility specifically is higher in the United States. For instance, people in the United States moved from their geographic location to other areas within the country in order to find jobs and better quality of life at a rate three times higher than that of Europeans over the past decade, with an average of 11 moves during a person’s lifetime (World Bank Group 2010). Waters and Pineau (2015) highlight that immigrants participate in the labor force more than the native population but are more likely to be in poverty than the native population.

The large share of immigrant population in the United States contributes to the high rate of internal population mobility. The United States is considered one of the countries with the most waves of migration from different places around the world. The expression “nation of immigrants” was used by Waters and Pineau (2015) to emphasize that the United States is comprised of a great majority of people from various places across the globe. According to U.S. Census Bureau report (2013), net immigration will be
the main driver of the nation’s population gain between 2027 and 2038 (U.S. Census Bureau 2013). Lee and Bean (2004) argued more Asian and Latino ethnic groups are coming to the United States now, changing the way that ethnic relationships in the United States function. The United States gained more immigrants after 1965, with a higher percentage of Latin American and Asian immigrants, which contributes to the diversity of this country (Hainmueller and Hopkins 2015). Moreover, foreign-born immigrants contribute to the population increase by between 15 and 20 percent, which poses stark challenges for the United States, including dealing with a reduced workforce and increased elderly population, as well as assimilating numbers of immigrants into its mainstream. The foreign-born population increased sharply between 1970 and 2000 and accounted for 29 percent of the total population increase since 2000 (Pew Research Center 2015).

However, scholars have noted earlier in the literature that immigrants are less likely to settle in rural areas than urban places. Some immigrants prefer big cities such as Chicago, Los Angeles, New York City, and other metropolitans that are referred to as traditional gateway destinations in the literature¹ (Waters and Pineau 2015; Yu 2001). This situation causes a skewed concentration distribution of the foreign-born population across the United States (Nogle 1996).

On the other hand, data from American Community Survey (2000) indicated that the native-born population is moving to places different from the foreign-born population, including traditional immigrant gateways, which still have the largest foreign-born gains. In the 1990s, some destinations have started to attract the native-born

¹ “Gateways” are areas in the U.S. with an already established immigrant population (Nogle 1996; Lichter and Johnson 2009).
population, such as states in the South and the West, referred to as “Domestic Migration Magnets”, as well as secondary migration of the foreign-born (Frey 2002).

**Rural and Urban Migration**

The outmigration from rural areas has been a consequence of conditions in these areas and simultaneously influences these conditions (Oprice and Sikes 1975). The population change and mobility in the United States have affected rural areas the most, which account for the increasing number of studies on population change and distribution between rural and urban areas in the United States. The impact on rural areas is determined by the characteristics of the rural areas themselves. Before 1970, rural areas lost millions of people to urban areas due to greater opportunities (Lewis and Stanley 2016). However, in the 1970s, many people returned to some rural areas with high natural amenities (Ulrich-Schad 2015; Kim, Marcouiller, and Deller 2005; English, Marcouiller and Cordell 2000). Different factors are at play in American rural places. One type of rural area has rich amenities, recreation, and a high rate of immigration, which can increase the economy; the other group struggles to survive. This contradicting situation is called the “Rural Paradox” by Krannich et al. (2011).

The effect of immigration is greater in rural areas than in urban areas due to the social and economic infrastructures in rural places that do not easily bear rapid population growth (Jensen 2016). The report by the Carsey Institute’s Center on Rural Families and Communities (Jensen 2016) highlights that immigrants in rural areas are likely to be less educated or skilled. For instance, the number of Hispanics who held low-skill jobs had increased. Rural areas in general lose their young adults. Immigrants tend to be young, which can therefore help address these problems.
Purpose behind Research and Sociological Relevance

Population distribution across in the United States has been primarily driven by migration rather than natural reasons, such as birth and death (Johnson et al 2005). For example, California and New York are more dependent on the foreign-born population as a main “source of population growth” (Frey 2002). This paper tries to understand and highlight the significant population distribution changes occurring in United States counties by comparing native-born and foreign-born migrant distributions using different theoretical perspectives. In addition, this paper attempts to analyze the reasons behind their mobility to understand how the characteristics of locations could impact the population distribution, especially population growth, and lead to centering the population in particular areas through migration.

Analyzing population change by using different theoretical perspectives for understanding foreign-born and native-born movers helps to understand how location characteristics can attract population and what kind of people they attract based on place of origin. Foreign-born and native-born movers may choose different location characteristics when moving because foreign-born populations had previously experienced at least one migration when they moved to the United States and are therefore willing to leave their communities behind and seek opportunity in other places (Morrison 1971). On the other hand, the native-born population may choose a place to live based on different characteristics, such as a “feeling of belonging to the place” or the “tug of family and connections” (Bennett 2014; Pew Social and Demographic Trends survey 2008). Therefore, a new study is needed to create a comprehensive picture of movers, location characteristics that attract them, and migrants who choose varying
locations based on their place of origin. In addition, the impact of population change on rural areas must be analyzed, some of which have little employment, heavy outmigration, and population decline, while other rural areas have greater population and industry growth.

Therefore, understanding migration patterns is important for a better understanding of social, economic, and environmental issues that influence population change and why areas gain and lose population over time. Migration patterns could lead to social and economic impacts on some counties, such as “brain drain”, and the challenges that cities may face in the context of migration (Long 1988).

Table 1. Native-Born and Foreign-Born Population Changes in New York State between 1990 and 2015.

<table>
<thead>
<tr>
<th>Population Change over Time</th>
<th>U.S. Born</th>
<th>Foreign Born</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select right now now</td>
<td>15,265,704</td>
<td>4,530,087</td>
</tr>
<tr>
<td>% change: 2000-2015</td>
<td>1.0%</td>
<td>17.1%</td>
</tr>
<tr>
<td>% change: 1990-2000</td>
<td>-0.2%</td>
<td>35.6%</td>
</tr>
</tbody>
</table>

Source: Migration Policy Institute.

Table 1 shows the population change in New York State. This data helps to measure the size of the population and to understand how the population is changing and growing. Population change as a significant aspect of demographic characteristics can affect long-term sustainability of states or counties. In general, New York State has a higher population increase among the foreign-born than among native-born. The main source of population gain in New York State seems to be the foreign-born population, which indicates that the pattern of where people choose to live and the characteristics of
New York State is attracting more foreign-born movers. Therefore, desirable location characteristics differ between native and foreign-born populations. However, the international population increase could also be related to both foreign-born migrants from outside of the country and others who came from within the country. Studies found that traditional gateway counties could be the first destinations for some foreign-born migrants from outside of the country, who then move to different destinations within the country, which could also mean that New York’s population sources depend more on new immigrants as a source of population growth (Population Reference Bureau 2002).


<table>
<thead>
<tr>
<th>States</th>
<th>Metropolitan Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in Native-Born Migrants</td>
<td>Georgia 748,299</td>
</tr>
<tr>
<td></td>
<td>Florida 744,559</td>
</tr>
<tr>
<td></td>
<td>North Carolina 701,226</td>
</tr>
<tr>
<td></td>
<td>Arizona 560,579</td>
</tr>
<tr>
<td></td>
<td>Texas 514,695</td>
</tr>
<tr>
<td>Increase in Foreign-Born Migrants</td>
<td>California 2,405,430</td>
</tr>
<tr>
<td></td>
<td>Texas 1,375,206</td>
</tr>
<tr>
<td></td>
<td>New York 1,016,272</td>
</tr>
<tr>
<td></td>
<td>Florida 1,008,227</td>
</tr>
<tr>
<td></td>
<td>Illinois 576,786</td>
</tr>
</tbody>
</table>

Table 2 shows evidence of different mobility patterns between both foreign-born and native-born migrants, as different states are attracting different types of population. These states and MSAs ranked top by sheer numbers states such as California, Texas, New York, Florida, Illinois, and New Jersey that experience the largest increases in foreign-born population. According to the U.S. Census (2002), California, Texas, New York, Florida, Illinois, and New Jersey have 69 percent of the nation’s foreign-born
population and at the same time only 36 percent of its native-born population. On the other hand, Georgia, Florida, North Carolina, Arizona, and Texas experienced an increase in the native-born population. However, some places may attract both native and foreign-born populations, such as Dallas, a traditional gateway area for foreign-born populations. Therefore, this paper attempts to address that lack of information by comparing foreign-born and native-born internal migration and providing an analysis of their destination choices. This research paper not only examines evidence of population change, but also focuses on where these changes are occurring geographically and how location characteristics influence population change, specifically for locations experiencing population growth. However, in order to understand locations experiencing population growth, examining population change in general is required as a first step toward understanding population growth.
Figure 1. County-Level Percent Population Change.
Source: American Community Survey (ACS), the 2006-2010 and 2012-2016 5-Year Estimates.
Figure 1 shows the percentages of population change between 2006 to 2010 and 2012 to 2016 five-year estimates in the approximately 3,100 counties, illustrating how populations grew and shrank. Figure 1 shows counties and highlights those that have experienced an increase or loss in population based on population change percentages. Five categories are used to find more details about this population growth or decline on the county level: (1) counties with a high migrant population loss; (2) counties with a low migrant population loss; (3) counties with no change, or counties with small changes; (4) counties with a low migrant population gain; and (5) counties with a high in migrant population gain. White counties were excluded because that data is not available for the 2006 to 2010 five-year estimates.

Figure 1 shows that population has decreased or changed slightly in counties running down the nation’s midsection. Movers were leaving the upper Midwest and much of the counties in the Great Plains. Most Michigan, Illinois (such as Alexander County at -16 percent), Indiana, and Ohio counties lost population. Approximately two thirds of North and South Dakota counties on their eastern sides lost population, such as Jones County in South Dakota by -29 percent. Some Maine counties lost population as well. Some counties lost population in Idaho, such as Camas County, by -20 percent.

Population gainers include most of the Western half of the country, which could be related to the fact that people move out of rural areas and cities into the country's suburbs, particularly in warmer regions. Also, some Texas counties had high population increase, such as Kennedy County by 131 percent and Loving County by 85 percent.

However, the county-level population change in areas with small-size populations should be interpreted cautiously. The intercensal population counts are published by the
American Community Survey estimates at the U.S. Census Bureau. The small-size population usually results in a small sample size associated with large margins of error in the estimates. Furthermore, the population change could also be related to natural reasons. Population decline, for example, could be related to not only outmigration, but also to a higher death rate than birth rate.
Figure 2. County-Level Percent Change in Native-Born Population.
Source: American Community Survey (ACS), the 2006-2010 and 2012-2016 5-Year Estimates.
Figure 2 shows the percentages of native-born population change between 2006 to 2010 and 2012 to 2016 five-year estimates, illustrating how populations grew and shrank. Five categories are used to find more details about this population growth or decline on the county level, which are the same categories that were used for all population change. Yellow counties were excluded because that data is not available for the 2006-2010 five-year estimates.

For the native-born population, the map shows a similar situation to the population change for the overall population, as shown above. Most counties in the West and Southwest exhibited more population increase. The counties located in the middle of the United States are most strongly observed losing population. As Figure 2 shows, the native-born population shrunk in the counties running down the nation’s midsection. In addition, native-born population shrunk in the counties in some counties in the Mississippi River, Alabama, and some other isolated areas. For example, Issaquena County, Mississippi lost -29 percent of the native-born population. Counties in the Great Plains that had small populations lost some of their native-born population. Some counties in Michigan are losing population, such as Wayne County, where the Detroit metropolitan area is located. Unemployment in Wayne County in 2010 hovered at 16 percent. According to American Community Survey, unemployed people means people who are jobless and searching for a job, including people who have quit and are searching for another job. To determine the mechanisms behind these results, a more detailed analysis is needed. Some eastern counties in North and South Dakota, Kansas, and Nebraska experienced some decline in their native population; however, western North and South Dakota counties experienced population growth, such as McKenzie and
Williams counties in North Dakota and Lincoln County in South Dakota. However, this circumstance could be because North and South Dakota have some of the largest populations of American Indian and Alaska Native based on the American Community Survey (2010-2015) at the five-year estimate and American Indians have a high fertility rate (Cannon 2017). The native populations of McMullen County (-25 percent), Jeff Davis County (-19 percent), and Presidio County (-18 percent) in the Texas Panhandle also experienced a sharp percentage decline. Harding County in New Mexico experienced the highest population loss at -38 percent.

Areas in the western United States gained population, especially the lower counties of California, shown above, as destinations for movers, and most of Washington State gained population. Hinsdale County in Colorado experienced the highest population increase at 78 percent. Also, Kennedy County (77 percent) and Loving County (63 percent) in Texas had high rates of population increase. This situation also could be related to the amenity index, as the counties in the United States with a high amenity index are frequently on the western side.
Figure 3. County-Level Percent Change in Foreign-Born Population.  
Source: American Community Survey (ACS), the 2006-2010 and 2012-2016 5-Year Estimates.
Figure 3 shows the percentages of foreign-born population change between 2006 to 2010 and 2012 to 2016 five-year estimates, showing how populations grew and shrank. Five categories are used to find more details about this population growth or decline on the county level, which are: (1) counties with a high migrant population loss; (2) counties with a low migrant population loss; (3) counties with small changes; (4) counties with a low migrant population gain; and (5) counties with a high migrant population gain. Yellow counties were excluded because that data is not available or too small in size for the 2006 to 2010 five-year estimates.

Figure 3 shows that some areas exhibited a population decrease in both native and foreign-born populations in counties running down the nation’s midsection, such as Lawrence County in Mississippi that lost population at -99 percent. However, Figure 3 shows a different pattern of population change between native and foreign-born populations in the nation’s midsection, as the foreign-born population was increasing and dispersing.

As Figure 3 shows, states traditionally receiving immigrants such as California, Florida, New Jersey, and Texas have many counties that experienced a sizeable increase in the foreign-born population as an increased population percentage of foreign-born migrants arrive, such as Kennedy County in Texas, as might be expected. The lower counties of California appear to be desirable destinations for movers, as shown above, and most of Washington State gained population.

However, many states that were not traditionally associated with immigration or containing immigration gateways also experienced significant growth of their foreign-
born populations and emerged as new destinations for foreign-born movers. For example, the percentage of foreign-born populations in Noble County in Ohio grew 551 percent.

Some counties in states with traditional gateways have been associated with foreign-born populations but simultaneously have not been traditionally identified as a gateway county also experienced significant growth of their foreign-born populations as new destinations counties for foreign-born movers in traditional gateway states. For example, the foreign-born population in Liberty County, Florida grew 392 percent, but experienced significant decline in its native-born population (-3.3 percent).

To summarize, notable declines occurred in parts of Maine and several states along the U.S.-Canada border. In addition, foreign-born population gain sometimes more than compensated for the native-born losses. This situation shows the role that immigrants play in contributing to population growth and slowing population loss. In some places, an influx of foreign-born population slowed overall population loss and even reversed it and foreign and native-born populations have different preferred locations in migrating, as well as old and new foreign-born populations.

The study aims to address several research questions:

Research Questions:

1. How does the population change differ between foreign-born and native-born internal migration? Which counties gain the highest number of migrants?

2. How do the location characteristics influence the native-born and foreign-born movers between counties differently?
Theoretical Significance of This Study

Further study of counties’ population is needed to help planners and policy makers understand the impacts of population change and healthy economies. Policy makers need information about location choice funding to receive future people and provide services, which is the goal of this paper. For the areas with significant migrant populations, planners in these areas also need to design programs to implement the necessary services (Capps et al 2011). In addition, studying population changes without specifically understanding the difference between foreign and native-born populations means that much important information will be missed that planners and policy makers might need. States that receive large numbers of foreign-born resettles, such as New York, need to plan for incoming populations. Immigrant studies and planning usually focus on immigration from abroad, not migration of foreign-born within the United States, which could be another reason for an increased concentration of the foreign-born population within some states. These population changes could affect each state's foreign-born population, even if immigration from outside the country stops.

Furthermore, immigrants tend to have higher birth rates than native-born Americans (Pew Research Center 2013); their children may help to increase the number of young people, which could support or affect the economy of the area, especially for new destinations.

Therefore, planners should pay attention to foreign-born migrants in order to develop new programs, such as children's services, new schools, and job training programs. Services and programs should expand in the locations where migrants are relocating (Nogle 1996). This paper attempts to address that lack of information by
comparing foreign and native-born internal migration and providing an analysis of their
destination choices.

Furthermore, rural-urban migration research in the United States aims to help
researchers and policymakers know what has been done in this field in order to develop
policies and programs relating to the distribution of population in the United States.

**Brief Description of Research Design**

I used a spatial data and logistic model in the first step. Geographic information
systems (GIS) and spatial data analysis was used to map and describe the context,
location, and spatial relationship between variables, as well as add information to the
attribute table of the county shapefile so that some population characteristics can be
mapped. Furthermore, spatial data analysis helps to determine and control spatial
correlation between counties. A logistic model is used to estimate overall levels of the
dependent variable. The dependent variable is a variable converted into binary dummy
variables (0 or 1) by grouping into a categorical variable with 2 values, which shows
counties with a gain in migrant population, counties with a migrant population loss,
counties with no change, or counties with small changes.

In the next step, I implemented an ordinary least squares (OLS) model for those
counties experiencing immigrant population gain. Regression models provide an
assessment of the relative significance of residence and the different controlled variables
in order to explain whether the relative variables vary by residence. The dependent
variable is limited to only counties with population gain and is a continuous variable.
Because the American Community Survey (ACS) is based on a sample, a degree of
uncertainty is associated with them, called sampling error or margin of error, and an ACS
estimate is published accordingly. In order to reduce the impact of sampling error on data reliability, I included only the counties with more than 2 percent population growth for each group. The margin of error provides a range of values within which the real “real-world” value is likely to fall. Furthermore, controls for the average fertility rate from 2010 to 2016 are also added to the models.
CHAPTER TWO: LITERATURE REVIEW

This chapter focuses on previous studies about migration and the decisions behind migration, specifically focusing on two categories, which are conditions related to the “generating area” as "push" factors and conditions related to the area of “destination” as "pull" factors (Lee 1966; Thomas 1971). Previous studies of migration have chosen different scopes when analyzing migration patterns, including state level (Funkhouser 2000; Massey and Capoferro 2008) or county level (Parrado and Kandel 2008) as geographic units. Most of these factors are associated with characteristics of the sending and receiving locations (Donato et al 2007), especially with economic factors such as wage and job opportunities (Greenwood and Hunt 1989; Greenwood 1985; Rosen 1979; Massey 1990; Roback 1982). Factors of migration (or the push and pull of location factors) influencing people to move can be classified based on different characteristics of the place. These include economic factors, physical features of the location such as amenities and natural features, especially for rural areas (Rappaport 2003; Carlino and Mills 1987; Rosen 1979; Roback 1982; Oi 1997), and some other motivations such as socio-cultural and political factors, especially for foreign-born movers (Massey 1990; Portes and Böröcz 1989; Dudley, Poston ,and Frisble 1998).

Location Characteristics

Economics as pull and push factors

Frisbie and Poston (1976) argue areas with more sources have more incoming population, which provides evidence of how location characteristics affect the population migration process. Economic reasons for movement are more influential than any other factors (Greenwood and Hunt 1989; Greenwood 1985; Hirschman and Massey 2008).
Researchers have implemented studies on the reasons attracting people to move to new locations as well as changing preferences based on their income, a place's economic opportunities such as employment growth (Gurak and Kritz 2000; Frey and Liaw 2005a; Ellis and Goodwin-White 2006), and cost of living as a part of improving their quality of life, which are known drivers of population growth (Lichter and Brown 2011; Macgregor 2010; Carr and Kefalas 2010; Johnson 2006) and primary and common pull factors in urban areas (Thomas 1971).

Studies found that areas that struggle with low income, especially nonmetropolitan areas, have lower net migration (Albrecht 2010; Albrecht 2000; Beaulieu 2002; Flora and Flora 2008; Borjas et al. 1992). The labor flow from one population to another is often viewed as that the country of origin has higher rates of poverty than the sending country when they came to the United States (Portes and Böröcz 1989).

According to Borjas et al. (1992), the “Hicks-Sjaastad model” shows that mean income levels differ across places and lead to unidirectional migration flows. In addition, a strong relationship was evident between higher out-migration in states with less pay dispersion than in states with more wage dispersion (Borjas et al. 1992). However, the Roy model confirmed that migration could be two-directional. Areas that pay higher returns for skills attract more skilled people than areas that pay lower returns, while areas with more job opportunities for unskilled workers attract more unskilled people. This outcome held true in spite of the fact that Borjas et al. (1992) found that out-migration was higher for the more skilled immigrants, regardless of the sending state. Kandel Parrado and Kandel (2008) describe how industrial industries such as agriculture
attracted more low-skill foreign-born to rural areas in the Midwest. In addition, food processing firms with low wage labor and low-skilled requirements in the Central region attracted some foreign-born migrants from some countries (Broadway and Ward 1990).

Foreign-born migration may differ from native-born migration because these populations had previously experienced at least one migration when they moved to the United States. Since they are willing to move to a new place to find a better job and improve their financial situation, they may be willing to sacrifice for financial success (Chiswick 2013). Foreign-born might be therefore willing and likely to leave deteriorating economic conditions and migrate to another area within the United States regardless of if the new area has non-migrants (Morrison 1971), especially when they have higher human capitals. Some studies on native-born internal migration support that economic reasons for moving are also important for native-born internal migration (Greenwood 1985; Pandit and Withers 1999), as economic push and pull factors could work similarly for both foreign-born and native-born internal migration.

People balance and compare the cost and the benefits that will gain by moving to a new place and when the benefits outweigh the costs, migrants will move (Brown and Bean 2003). For instance, the decision of moving could be financially motivated, as migrants will be more likely to move if they obtain benefits and rewards, such as improving their incomes, that are greater than the cost of the move. The cost of the move could include the expense of traveling and the cost of buying or renting a house in the area that they want to move, the challenges of trying to adjust to the new labor market, and the obstacles in losing their social networks and connections in one area and attempting to build new ones, and the costs could be higher for foreign-born movers,
including the effort involved in learning a new language and culture. On the other hand, movers compare this cost with the benefits they might gain by moving, specifically when the benefits of moving outweigh the costs compared to the benefits and costs of staying in the current location, such as increased income made from moving (Massey and España 1987).

Most of all, the studies considered differences cost of living as an important reason for choosing a place to live. The cost of living is the amount of money necessary to maintain a certain standard of living through essential expenses, such as housing, transportation, consumables, services, and healthcare (Jorgenson 2011). The studies considered differences in housing costs as a strong indicator of differences in costs of living. Cost of housing is not critical reason of keeping people in one place, especially in rural areas; however, these costs could be a critical factor in driving people to leave (as push factor) (Ulrich-Schad, Henly and Safford 2013). The cost of living seems to be an important push factor and could help determine the outcome of the decision to move when comparing expenses between locations (Reichert and Rudzitis 1994).

**Cost of housing**

Housing costs could be more important as a push factor than wages (Ley 2007; Light and Johnston 2009). However, housing prices are a good indicator in measuring the cost of living in an area when compared to wage difference between two areas (Reichert and Rudzitis 1994). According to Reichert and Rudzitis (1994), the cost of living helps with the wage difference, but a wage loss for people moving to rural areas is still evident. People prefer to move to places with low housing prices, indicating that if housing prices are low, people are more likely to take a job that pays less (Reichert and
Reichert and Rudzitis argued that migrants from high-cost areas are more likely to accept income losses than migrants from lower cost areas. Moving from areas with high housing prices to areas with low housing prices might result in a capital gain for migrants who were homeowners and may increase migrants' inclination to accept lower incomes (Reichert and Rudzitis 1994). More specifically, when moving from a place where houses are very expensive, to a place where houses are comparatively affordable, people may be able to accept a lower income because of the difference in housing cost (Reichert and Rudzitis 1994). This situation could apply for both rented and owned homes.

Housing expenditures that are 30 percent or more of household income have historically been considered as an indicator of high cost or expensive housing. According to Linneman and Megboluble (1992) and the U.S. Census Bureau (2010), the conventional public policy indicator of the standard of housing affordability in the United States is based on the percentage of income spent on housing since 1981. People who spend more than 30 percent of their income on housing are considered "cost burdened." People who spend 50 percent or more are considered "severely cost burdened."

This guideline could be reasonable; however, the financial situation differs between metropolitan and nonmetropolitan areas, as people in big cities are more likely to spend more on some services and may have available income for housing than in rural areas. For example, people in New York City are more likely to spend more money from their income on housing rent, which increases every year (Public Agenda/WNY Metro Area Survey 2016). This situation could be a problem for low-income households who cannot afford these increasing rent prices and who spend more than 30 percent of their
monthly gross income on housing, including utilities. These households may prefer to move to a new place with more affordable housing prices.

*Vacant properties as an indicator of the economic market*

The percentage of vacant properties could be also a good indicator about the status of the housing market, and the economy of a particular place. A high percentage of vacant properties could indicate that local economies go down, and depresses the values of houses (Office of Policy Development and Research 2014). Furthermore, when the share of vacant properties goes up, a mismatch could be created between housing supply and demand (Office of Policy Development and Research 2014).

Places where people are out-migrating and leaving in large numbers have a lot of empty houses, and many services that no one is using. City planners and policy makers try to make their cities grow bigger and draw more people to live in the cities to stop these problems from happening. (Office of Policy Development and Research 2014).

**Geographical Factors and Ecological Outcomes**

Studies have found that important ecological connections between resources (such as social connections and population size) are necessary to sustain an equilibrium between size and opportunities (Dudley et al. 2005).

Analyzing where constriction centers in a population’s geographic dispersion is essential in understanding and addressing areas with high population change, especially where population gain is evident. The process of deconcentration and concentration should be examined at a smaller level, such as at the county or even the neighborhood level, especially for foreign-born movers living in community.
Traditional Gateways, Concentration, Social Capital, and Integration

The foreign-born population percentage in the United States was 7.9 percent of the total United States population in 1990 (The Pew Charitable Trusts 2013). During the 1980s, more than 80 percent of immigrants moved to California, New York, Florida, Texas, New Jersey, and Illinois, which means that less than 20 percent moved to the other 44 states (Population Reference Bureau 2002; Alba and Nee 1997). The political, geopolitical and economic shifts in the United States influence the immigration policy and the social dynamics at different levels (Li 1998). Boyd (1989) focused on different factors affecting migration, including what motivates people to go to a specific place, what types of people move to that place, and how long the migration continues. All of these factors originate from the social networks of family and friends that are encouraging migration, and the economy in both the original and final locations. All of these causes affect the migrant through their context and social relationships.

Research focused on determining if immigrants moving to an area could benefit the economy of this area, or conversely if the economy declines if immigrants were "hard to assimilate." Previous studies argued that immigrants help to reduce population loss and fill the gap in rural areas (Katharine et al 2009). For instance, the Chicago Council on Global Affairs stated that that immigration helps to reduce the impact of population loss in the Midwest at the state level (Rob Paral 2013). Lichter and Johnson (2009) attempted to analyze the different places that Hispanics choose to live, both in previously and more recently popular areas, and the non-migrants that live in those areas by examining the financial and demographic differences between those two groups. They found evidence
of a large “demographic impact” on the area receiving Hispanic immigration, in both areas that have an established Hispanic group and areas that have a new Hispanic group.

The relations between arrival time and key international events play different roles at varying degrees to help create the concentration of the foreign-born at certain localities (Li 1998). The combination of foreign born from outside the United States and the resettlement of immigrants who move within the United States have increased the concentration of foreign-born in the top four states, which are California, New York, Florida, and Texas (Nogle 1996). Many people with the same ethnic background often live in the same areas, and only a few states and cities receive most of the immigrants (Nogle 1996). Further research illustrates how the foreign-born social context and the group concentration from the same origin country discouraged some foreign-born groups to move out (Alba and Nee 1997; Ellis and Goodwin-White 2006; Frey and Liaw 2006; Kritz and Nogle 1994; Neuman and Tienda 1994). Foreign-born people may move based on where they know their connections such as friends and family are living, as they will have more job opportunities (Alba and Nee 1997).

A parallel body of new research focuses on that foreign-born internal immigrants have changed the pattern of choosing settlement destinations (Durand, Massey, Charvet 2000; Frey and Liaw 2006; Funkhouser 2000; Goździak and Martin 2005; Lichter and Johnson 2006; Massey and Capoferro 2008), distinguishing between two differential internal migration patterns, with one group selecting areas with relatively high concentrations of their own group as they will provide social networks, the other group selecting areas with strong labor markets with and high income (Kritz, Gurak, and Lee 2011). Locations where fellow nationals live are a more important determinant of internal
migration than human capital immigration status, or a state's unemployment rate (Kritz and Nogle 1994). When foreign-born have insufficient skills ("human capital"), such as English, a high level of education, and work experience, finding better jobs in the host economy or out of their ethnic communities becomes difficult (Nee, Sanders, and Serna 1994).

According to ethnic enclave economies theory, the enclaves often provide more opportunities for their group members who may face challenges gaining access to these opportunities in mainstream society (Zhou and Logan 1989). However, Zhou and Logan (1989) emphasized that the definition of the enclave should not exclude the participants outside of the residential enclave (people who moved to another neighborhood or the suburbs) and measure only people residing in the geographic enclave. Defining the enclave only in terms of place of residence might lead to missing many significant keys to the concept. Therefore, Portes and Jensen (1978) suggested analysis according to place of work, rather than place of residence. Therefore, this study attempted to examine and compare three methods of defining the economic enclave, which are by place of residence, place of work, and industry.

According to Sjaastad (1962), people who like their jobs are less likely to migrate internally than those who do not, as dissatisfied workers may think they can improve their economic conditions by moving. Having jobs within the ethnic community could have both a positive and negative effect. For instance, the ethnic community can offer jobs to help immigrants become established when they move to a new place and these jobs could be smaller and family-owned; however, these types of jobs make it difficult for them to move quickly to a better job (Nee, Sanders, and Serna 1994). The immigrant
groups may even provide many opportunities for immigrants; however, the groups limit their contact with the outside world, create more demands on successful entrepreneurs, and impose more restrictions on individual expression (Portes and Sensenbrenner 1993).

Nee, Sanders and Sernau (1994) analyzed how Asian immigrants in Los Angeles find a job. Los Angeles has different ethnic groups that mix with each other and the host society. The researchers emphasized that when immigrants recently arrived, their social network is a small circle that includes only relatives and friends of people with common backgrounds; therefore, they often find their initial jobs in the ethnic economy through personal ties. The fact that they often do not have the necessary skills or human capital makes it difficult to get better jobs in the host economy. In addition, people may want to work in their ethnic group because they can have their own business. Immigrants will therefore either start to own their own business or acquire the necessary skills to get a better job as a way of improving their situation (Nee, Sanders, and Sernau 1994).

The ethnic economy provides many connections and much motivation to continue to work hard, which is mostly because people are always arriving to the area that cannot speak the dominant language well and are willing to work for less money, causing an increasingly larger number of people that want to start their own businesses. People who do own their own businesses usually started with many small jobs that were given by people who are of the same ethnicity. Later on, however, these people might work in higher skilled jobs or in manual labor for larger companies that are not in the ethnic group, where they can earn more money and gain skills quicker. When people gain skills and a job outside of the ethnic community, they do not usually come back into the ethnic job market by owning their own business. Once they start to work outside of the ethnic
community, they often remain apart from the ethnic community and search for jobs in the host society (Nee, Sanders, and Sernau 1994). The geographic enclave shows distinct spatial clustering patterns and could provide more sources (both social and economic) for immigration, which provides evidence of how location characteristics affect the population migration process. Ethnic-owned businesses help to serve areas in ethnic enclaves that are geographically and economically separate from the rest of community (Light and Karageorgis 1980).

Massey and Capoferro (2008) highlighted that foreign-born who moved to traditional gateway states have decreased, and foreign-born are more likely to choose to live other Southern states, even though fewer foreign-born lived there before the 1990s. Contemporary immigrants are more diverse and have different characteristics compared to immigrants in the past century (Logan, Zhang, and Alba 2002). New immigrants are much more likely to move to areas that have not had immigration before once they find a good job that satisfies their preferences. Most of these immigrants have high levels of human capital; therefore, they might have a better chance finding a beneficial job positions in the United States. Borjas, et al. (1992) stated that out-migration rates are higher for more skilled migrants. Naturalization and language fluency increase opportunities to move (Neuman and Tienda, 1994; Nogle 1996). Lichter and Johnson (2009) found that people who leave to new locations often have higher educational levels than Hispanics in established communities. A high educational and skill level increases the probability that an immigrant would move within the United States, while decreasing the probability that a foreign-born migrant would choose traditional gateways states such as California, New York, or Florida as his destination (Nogle 1996).
Based on the research by Alba and Nee (1997), immigrants from some developing countries earn less than their counterparts, as many of them lack some important human capital skills. The need for unskilled labor is decreasing and the need for more skilled workers is increasing; however, foreign-born populations face other obstacles and may struggle more in the labor market. Moving to a different country will be additionally difficult because of the immigrant’s cultural and ethnic differences. However, when people have a lower “cost of immigration”, native-born Hispanics earn close to the same income as native-born whites, and native-born Asians have nearly the same income as native-born whites (Alba and Nee 1997). The costs of migration decrease when immigrants know someone in the area, since local residents can help newcomers adjust to the move (Massey et al 1993). In this situation, moving becomes easier and cheaper, because immigrants are provided with knowledge and assistance in finding jobs and a place to live, as well as friends in the destination (Fussell and Massey 2004). Massey (1990) argues that whether or not people are available in the new or old locations who can help one to migrate may impact the decision to move, because having a social network cuts down on the cost of moving, especially if the social network is large enough. Therefore, they may prefer to stay in the areas that place a higher value on the social capital of their immigrant communities because of a lack of language fluency and other forms of human capital (Kritz and Nogle 1994). Institutional resources in traditional gateways of large metropolitan areas discourage migrants from moving out into separate communities (Breton 1964).

In addition, more skilled people with a higher educational level and language fluency might make better, more effective decisions about moving than people with less
education and language fluency. Moreover, migrants with greater human capital are more likely to remain in their location if the pay or income increase is better in their new location. If the pay and income increase are smaller, they are less likely to remain in their new location. If the income increase is sufficiently large and the cost of moving is adequately small, both people with more human capital and people with less human capital would like to move to this new location (not only more skilled people with a higher educational level and language fluency who might make better, more effective decisions, called “efficient” migrants). If that the wage increase is smaller, “negative selectivity” would be evident, where people with more human capital such as the educated or efficient migrants will prefer not to move to that location and primarily people with less human capital, like less educated migrants, will choose to move to that location. This situation could indicate that people with less human capital may come to the country for temporary work, whereas people with greater human capital come for longer intervals to fill higher paying jobs (Chiswick 2013).

Zhou and Logan (1989) studied the Chinese enclave in New York City and attempted to understand the character of labor markets in enclave economies, emphasizing the relationships of increasing the human capital, the positive returns for income and earnings from education, the labor market experience, and the English language ability among immigrants. All variables that might relate to human capital, such as labor market experience, education, English-language ability, marital status, the number of hours worked, period of immigration, citizenship, and occupation were included, as well as the presence of children for females as a control variable. Zhou and Logan (1989) noted that the immigrant workers who participate in the enclave labor
market have greater returns on human capital than those who work outside of the enclave labor market. To illustrate, enclave workers, in their community of New York's Chinese immigrants, are more able to receive benefits of human capital resources to increase their income, although more workers are not consistently outside of the enclave and none of the human capital variables are positively related to the income of female enclave workers. However, the results could not be generalized because the Chinese experience in New York differs from that of other foreign-born groups in different places or other Chinese groups in different places, which is related to characteristics of enclave economies.

Some immigrant enclaves are easily established in desirable locations. However, newer immigrant groups still have higher populations in a small area than immigrant groups in the past (Alba and Nee 1997). A small number of states and metro areas get the most immigrants, and the immigrants are both living and working in these areas. During the late 1980s, more than 80 percent of the immigrants moved to only six states total (California, New York, Florida, Texas, New Jersey, and Illinois). This geographic concentration is because people tend to move to areas with people that they know and who can help them learn the society and the language. However, even with this expectation that people will move to these gateway areas, the number of people that are moving to these areas seems to be higher in last decades than it was before. The previous literature in the field of economics as a cited by Alba and Nee (1997) argued that people who moved to the United States after 1965 are limited by their lack of human capital when they are coming from developing countries; however, not as much by their race. This is because the economy is changing (the need for unskilled labor is less than it was,
and the need for skilled labor is rising). Therefore, as high levels of human capital are more likely to increase the likelihood of immigrating, they may choose a destination that does not necessarily have a high concentration of their ethnic group (Kritz et al. 2011). On the other hand, immigrants with lower levels of human capital tend to move near their ethnic communities for support and may choose a "frontier" destination if they perceive that location to have the highest social network rewards (Nogle 1996).

According to Portes and Sensenbrenner (1993), enclaves offer economic and social capital to the group that enhances their economic “integration and socio-economic mobility”. Kritz et al. (2011:1) argued that the labor market out-migration illustrates that foreign-born internal migration may prefer both economic and social networking reasons for choosing places of residence more than simply one motivating factor, choosing to “maximize” both economic and social forces and attracting immigrants to destinations (Johnson-Webb 2002; Parrado and Kandel 2008).

Moreover, the traditional gateways or areas with close community ties could be a first step for some immigration groups, as they may settle temporarily in those places. Living in the ethnic neighborhood could be only a starting point for foreign-born movers; for others, it may be a preferred destination (Logan et al. 2002; Li 1998). Those places could provide an “informal or institutional support systems” and immigrants may then move to a new destination (Kritz at el. 2011). Social ties are usually a main reason for choosing immigrants’ initial settlement choices (Massey et al. 1987; Portes and Rumbaut 1990).

In other words, the research emphasized the distinction between immigrant enclave and ethnic community. “Ethnic neighborhoods” are defined as immigrant
enclaves that are selected as living environments by those with more opportunities based on resources, while the ethnic community is formed through a different social process than the immigrant enclave. In other words, immigrant enclaves are defined as immigrants who chose to live in a certain place that have many resources and social capital, such as more education or finances. Ethnic neighborhoods are formed through a different social process, which determines that these foreign-born have fewer resources and opportunities (Logan et al. 2002).

Shifting of economics and policies on immigration in the United States helps to create a relatively self-contained city-within-a-city with a set of integrated residential and business areas, especially with highly mobile capital, that could help to make coherent, effective outposts in world cities such as Los Angeles (Li 1998). According to Li (1998), the ethnoburb attracts many Chinese immigrants (including mainland China, Taiwan, Indochina, and Hong Kong as the four major sources of these Chinese immigrants), who settle in the United States to live and work and also those who are currently living in United States, as the community helps them to feel like they are at home (providing their own types of food, reading Chinese newspapers, shopping in Chinese supermarkets, speaking their language, and so on). Most of these immigrants have a high socioeconomic status with higher education levels than the Chinese population. The ethnoburb has higher percentages engaged in professional services as well as a high level of self-employment linked to the global economy, as the ethnoburban Chinese labor force was more comprised of self-employed entrepreneurs than the Los Angeles County workforce as a whole (Li 1998). Most importantly, this situation could vary between different groups of immigration, as groups have different
levels of human capital and immigration statuses, such as Asian and Hispanic foreign-borns (Gurak and Kritz 2010; Kritz and Nogle 1994).

Another line of research has implemented studies on the relationship between immigrants and the host society (Winders 2005), as well as integration processes (Bohon, Macpherson, Atiles 2005; Leach and Bean 2008). Foreign-born groups as minorities in a community may face some difficulties and hostility, such as being sent to concentration camps. If immigrants are similar to the host society with their culture and language, they are more likely to face less conflict with people from the host society. Some previous studies have found that Hispanics are more likely to be able to convert human-capital characteristics into residential characteristics with non-Hispanic whites than either African Americans (South, Crowder, and Chavez 2005). The solidarity and trust between the community individuals aids to create a network of successful enterprises (Portes and Sensenbrenner 1993). Some ethnic groups, such as Asia and Latin America, experience difficulties surrounding housing and employment discrimination based on their racial and cultural backgrounds, which creates obstacles to integration with the host society (Breton 1964; Massey 1998; Portes and Zhou 1993). If immigrants differ from the host population in terms of appearance or culture, they are more likely to experience prejudice because of those differences. Some refugee groups are less able to escape from this prejudice, the more tightly knit the ethnic group becomes and the more they band together.

Furthermore, the immigrants also work to create their own sense of financial freedom (Portes and Sensenbrenner 1993). Conflict between the host society and the minority might be because of either financial problems or problems with unity. In the
case of financial problems, the minorities are in conflict with the host society through the people who buy from them, the businesses they own, and their employers. For the case of “Conflict with Clientele”, the conflicts are with people who are buying or selling or people who are renting and who own the house to be rented, and the minorities face conflicts. In the case of “Conflict with Business”, these minorities can own businesses that are in competition with other businesses of people in the host society. The businesses in the host society might be older and have higher prices than the minority businesses. Alternatively, members of the host society might instead be people that want to learn and start this business, but cannot compete with the minority businesses. The conflict may occur both with the group in power and with other groups that are not in power in the host society. In the case of “Conflict with Labor”, businesses have to decide between hiring cheap minority labor and expensive labor from the host society Bonacich (1973).

Previous research focused on the integration and of different ethnic groups in neighborhood residences. Logan et al (2002) focused on the percentages of neighborhood residents in second and later generations in the New York and Los Angeles metropolitan regions in 1990, because New York and Los Angeles share in common the extraordinary size and diversity of their immigrant populations. In addition, the two cities represent different styles of urban development (New York as a representative of an older style and Los Angeles as a newer one). The percentages of neighborhood residents who are immigrants, who speak the language of the group, and who speak English only were analyzed, while the second set of indicators include the median household income (both below the poverty line and the labor force with high occupational status). For median household income, for example, different neighborhoods were studied, and the household
income is weighted by the number of people living in the community. People who were born in the United States and those who speak only English were found to be less likely to live in ethnic neighborhoods. South et al. (2005) emphasized that these immigrants’ children who came to United States at a young age or later generations are more likely to assimilate into United States society than their parents or the first generation and have capital and socioeconomic capacity, which help to promote movement out of the enclave and ethnic mixing (South et al. 2005).

Diversity

The process of deconcentration and concentration could be an indicator for integrations in the community, as well as ethnic discrimination (Hall 2013; Charles 2003; Massey and Denton 1993; White and Glick 2009). Diversity or segregation and concentration could be related also to the movements of the native-born (Hall 2013). Based on the research by Park and Iceland (2011), foreign-born who live in a new destination, not in traditional gateways areas, are more likely to cooperate and integrate with native-born than foreign-born who live inside traditional gateways, regardless of their ethnicity or race. However, many other factors could cause this situation, such as socioeconomic attributes and other human capital, including educational and labor skills that match labor condition needs (Fang and Brown 1999; Kritz and Nogle 1994; Leach and Bean 2008; Ley 2007), languages resources (Hall 2013; Gurak and Kritz 2000; Nogle 1997), or social connections (Bartel 1989; Ellis and Goodwin-White 2006; Kritz and Nogle 1994). The sociology literature as a cited by Alba and Nee (1997) argued that immigrants’ race does affect their work experiences. These sociologists state that the cost of moving to a new area is the same as the cost or expense of being a different race.
When you try to control for the cost of moving to a new area, and the different skill levels.

On the other hand, some research found that native-born (white) are less likely to live in areas with moderately-sized minority populations (Charles 2000, 2006; Farley, Fielding, and Krysan 1997; Krysan 2002). Other research found that some groups of foreign-born (Latino) who live in new destinations face more discrimination from native-born (white) Lichter et al. (2010), and this segregation is not relative to factors such as income inequality between whites and Latino living in these areas. Hall (2013) focused on immigrant dispersion away from traditional gateways and their residential integration with native-born by using new immigrant groups: Asian (Chinese, Indians, Koreans, Filipinos, and Vietnamese) and Latin American and the Caribbean (Dominicans, Haitians, Mexicans, Jamaicans, and Salvadorans). Hall (2013) found that foreign-born groups face obstacles in integrating into new destinations (Hall 2013).

**History of Immigration Policy**

In order to understand the picture of foreign-born migration, policies in the United States about immigration should be understood. The literature discusses at length how policy makers have changed policy regulations about immigration. Policies on immigration have changed throughout the past 90 years (Lowell 2010). Studies focused on understanding the role of immigration law and policy in the production of documented knowledge regarding race and nationality (Ngai 1999; Lowell 2010; Keely 1991; Wolgin 2011).

Many changes in policy on immigration have been processed over the history of the United States. The Naturalization Act of 1795 specifies that only white people could
become citizens, limiting the eligibility to naturalize, and includes some other requirements, such as two years of residence in the country and “good moral character.” The Naturalization Act of 1795 then extended the residency requirement to five years, followed by 14 years, and then back to five in 1802. Later in 1870, the eligibility to naturalize also included people of African origin. Furthermore, some restrictions were made and specified about who could become a citizen, involving restrictions on criminals and people with contagious diseases.

Much previous research discussed the idea of “differential immigration quotas”, suggesting that only a certain number of people per country can come to the United States (Ngai 1999). The Immigration Act of 1924 showed preference to the “Nordics” of northern and western Europe over immigrants from southern and western Europe. However, the Reed-Johnson Act was as the solution and end to this problem. However, the idea of “national origin” is problematic because the idea of a nation is used to categorize people, which could be a form of discrimination (Ngai 1999).

As race and nationality were associated with each other, the Immigration Act of 1924 categorized people in different racial categories. The law preferred European immigrants, indicating that some were preferred races to others. Europeans who moved from Europe were given two identities as their nationality, which could change, and their race, which could not change. This system helped European Americans to feel close to their “Americanization.” However, other groups of immigrants from other countries, such as Asian, had different ethnic and racial identities and were still less able to assimilate to the United States as their country of origin. The Immigration Act of 1924 institutionalized these biases, and for the next few decades, Europeans went through the
process of becoming Americanized, while other groups could not be considered “more assimilated” or a part of the “melting pot”, as some races were viewed as foreigners because of their ethnic and racial appearances and backgrounds (Ngai 1999).

Moreover, in the Immigration Act Law, a system was implemented restricting the number of immigrants from different countries and immigrants from European country were considered desirable. The system divided the world into racial groups, such as white and “colored groups”, which were not identified by their culture and nationality, but solely by their race.

In a debate about a 1965 law, two ideas were presented about immigration: one highlighted “humanitarian values”, or how other groups of people should be addressed, and another emphasized keeping American culture as it was (Keely 1991). According to Keely (1991), the humanitarian values side preferred to remove the “quota system”, which states that only a certain number and type of people from a country could come to the United States. In addition, proponents supported the idea that people wanted to come to the United States to be with their families. This group preferred to remove some systems such as the “Asia-Pacific Triangle” and the quota system as these systems were viewed as discrimination. In addition, the McCarran-Walter Act allowed fewer families to travel together, as since many families that still needed to be reunited; this reform was pushed through the legal system (Keely 1991 and Wolgin 2011). The humanitarian values side then wanted to see many different people come from different countries to the United States, including immigrant aid groups, as well as ethnic societies and labor groups.
The other viewpoint would prefer the American culture to stay the same, keeping the quota system, specifically for the Asia-Pacific Triangle Policy. Proponents believed that national quotas should be removed for people from the Western Hemisphere, but that quotas still needed to be in place for the Eastern Hemisphere. Under this view, immigrants are believed to take away jobs from Americans, which should be prevented. However, Northern and Western European countries are considered to be culturally close to American culture and immigration could be permitted. The groups who supported this idea were called civic, patriotic, or veterans’ groups, and wanted to avoid “brain drain” (Keely 1991 and Wolgin 2011), or the emigration of highly skilled, trained or knowledgeable people from some particular countries. Neither idea won completely, and compromises were made by both groups. The end of the quota system passed and family reunions were emphasized, while a set of procedures was implemented to protect American jobs (Keely 1991 and Wolgin 2011).

The literature discussed extensively how the policy regulations about immigration should be changed, favoring more skilled immigration, as the United States would benefit significantly by shifting its policies toward admitting immigrants on the basis of their skill levels, by means of a point system ranking skills, or perhaps even selling visas to immigrants (Lowell 2010). Boyd (2013) compared the immigration policies in Canada and the United States. Canada’s policy focuses more on highly skilled immigrants; since more labor is needed for the population and the demographic population is shifting toward fewer children and more elderly, these skilled workers are necessary to the economy. However, the United States tends to bring people with a family member to the United States, rather than if they are a skilled worker. However, the United States
brought skilled workers through temporary visas, which can allow people to move to the United States to work temporarily and eventually, stay in the United States. Moreover, both the United States and Canada attempted to bring temporary highly skilled workers that matched with labor needs. The “Foreign Skilled Worker Programme” is the system used by Canada to make the decisions about who comes into the country by giving people points based on how “desirable” of an immigrant they are (Boyd 2013).

Some of these policies that were based on the countries of origin of the immigrants restricted migration that disadvantaged some potential immigrants from Southern and Eastern Europe and Asia and affected the number of representatives from different locations. Where the immigrants chose to live was influenced by various factors, however, and could also be affected by the hostile actions instituted by these policies. These circumstances helped to create concentrations of immigrants in some spatial locations as they could feel a sense of solidarity and gain linguistic, social, and cultural assimilation, as well as more job opportunities, especially for low-skilled immigration. However, immigrants could also choose to live where they do because of the economic, social, and cultural aspects of their lives.

The United States immigration policy has changed since the election of Donald Trump as president in January 2017. The Trump administration has imposed more limitations on immigration policies, especially the refugee resettlement program, and admissions from certain majority-Muslim countries (MPI report). Although these policies address immigration from outside of the country, they could affect internal foreign-born migrants as well. The factors that make immigration for leaving a country similar to foreign-born internal migration are “push factors”, or political problems, and “pull
factors”, or the advantages in the advanced nation-states. The assumptions are that the existence of these inequalities is enough to cause people to move (Portes and Böröcz 1989). For example, many political refugees lack options and cannot return to their countries, which leads to higher levels of internal solidarity.

**Other Locational Characteristics**

**Environment**

The concept of environment remains a more important idea about human ecology because the environment affects the source for a population in a location (Dudley et al 2005). Some other studies considers factors including environmental quality, climate, the pace of life, landscape or scenery, outdoor recreation to measure the quality of life (Herrick 1959; Stewart 1965; Stone 1955, Reichert and Rudzitis 1994), how these factors are associated with age, education level for both the place of origin and the place to which they moved, and movers’ overall satisfaction or dissatisfaction with the place to which they moved (Reichert and Rudzitis 1994).

**Rural areas and natural amenities**

Location-specific environmental characteristics, such as natural amenities, including nice weather and recreational opportunities, are increasingly recognized predictors of migration (Gosnell and Abrams 2011; Hunter, Boardman, and Saint 2005; Johnson and Beale 2002; Krannich, Luloff, and Field 2011; McGranahan 1999) as they are considered as a factor that improves the quality of life. In addition, the social investments that a population makes in a location, such as the approach that tourism and natural amenities are socially built, are considered in migration research (Winkler 2010).
Population changes are additionally impacted by local amenities, which may be related in some way to the weather. Early research studied places with nice weather specific features influencing the population mobility as pull factors, such as the weather as the migration moves to places with warm winters (Rappaport 2003; Carlino and Mills 1987; Rosen 1979; Roback 1982, and Oi 1997). Weather characteristics are considered as a factor to improving the quality of life and the weather value is calculated as the sum of the wages a household that people are willing to pay to live in a location with good weather characteristics (Rosen, 1979 and Roback, 1982). For instance, Carlino and Mills (1987), analyzed the data from 3,000 counties in the United States to determine the relationship between economic and climate factors and population mobility in the 1970s. They found that the weather played an important role in population movement, especially when that migration was to the southern and western regions of the United States. Rappaport (2003) used the average of the high temperatures on January days from 1961 to 1990 and the July daily maximum heat index, which includes humidity, for summer weather. His idea was to focus on daytime temperatures because these temperatures affect people more than the low nighttime temperatures in winter. He also used solely United States data, with counties as the geographic unit of analysis, which helped to provide more accurate results, as counties’ borders remain steady most of the time. Rappaport (2003) found that people not only move to areas with warm winters, but also to cooler, less humid areas.

Tourism and amenities help many rural counties grow faster than others, specifically rural areas rich in natural amenities and recreational opportunities to attract new residents with fewer missing data or a decreasing number of residents (English et al.
English et al. (2000) studied 2,261 nonmetropolitan counties in United States, measuring the effect of tourism and amenities by using hotels and other lodgings, food and drink locations, recreation and amusement services, and retail trade. English et al. found that some natural features of rural areas, such as forests, promote population increase in some rural areas (2000).

Amenities brought more people to rural areas than better jobs (Reichert and Rudzitis 1994; Ulrich-Schad 2013). The reason why a person moved influenced whether they gained or lost income. Location-specific amenities offer understanding of why in some cases and for some specific ages, income would not be as important as expected for moving to new locations if the location has a wide range of amenities (Graves and Linneman 1979; Linneman and Graves 1983). Some literature considered the difference between people who move to the new location (county) with a lower wage and people who move to the city for a higher wage (Carr and Kefalas 2010; Corbett 2007; Winkler, Cheng, and Golding 2011; Reichert and Rudzitis 1994). Reichert and Rudzitis (1994) assumed that people are more likely to move for quality of life and are more willing to lose some income within an acceptable range (receiving smaller losses in real income). Migrants from high-cost areas are more likely to accept income losses than migrants from lower cost areas; however, Reichert and Rudzitis (1994) argued that movers who choose to move for another reason besides the amenities, such as more job opportunities and a better job in their field, would still prefer a high income, regardless of the amenities. For instance, poorer people who are close to the poverty line are more likely to seek out job opportunities to make more money regardless of where they live (Reichert and Rudzitis 1994).
Notably, people who were older were more likely to move to find good amenities regardless of if a job had lower income, because they preferred living in a small town and county better than a large metropolitan city. For instance, when people make more money, such as older people, they are willing to spend more on their quality of life and amenities. On the other hand, younger people were more likely to move to places (Carr and Kefalas 2010; Corbett 2007; Winkler et al. 2011 shad 2013) for a higher income job (Reichert and Rudzitis 1994), because they moved only to improve their career and were less focused on their quality of life, or whether the area has a high rate of amenities. Reichert and Rudzitis (1994) did a survey of 15 wilderness counties from high-amenity counties with high population growth during the 1970s and the first half of the 1980s that were not adjacent to metropolitan areas. The sample was randomly selected from 277 wilderness counties in the United States based on the respondents. Most of the people did not rate any one reason as very high using (“extremely dissatisfied” with the healthiness or scenery), but some were more important to the migrants than others (environmental quality, too busy, high crime, not enough outdoor things to do, not nice to look at rated higher than not getting a promotion or high cost of living). However, the reasons why people would to move to a location (as the pull factors) were more important and rated higher, and people wanted to move to rural areas because of the beautiful land, the better air, the less busy lifestyle, outdoor activities (hunting, fishing, hiking), and other amenities. Furthermore, people who moved from the environment with bad weather, smoke, noise, made less money in their second job as push factors. On the other hand, people who moved not because they wanted to improve their career usually lost income when moving to a rural area.
To summarize, rural areas with amenities had positive net immigration factored by age (Ulrich-Schad 2015; Brown and Glasgow 2008; Clarke and Hunter 1992; Johnson et al. 2005; Reichert and Rudzitis 1994). In addition, Greenwood and Hunt (1989) found different levels of education between rural areas with tourism and amenities and other rural counties, with 1.5 percent of the population having college degrees, as compared to 3 percent, respectively.

**Foreign- and native-born movers: differences and similarities**

Some push and pull factors apply similarly for both foreign and native-born migrants; however, social and human capitals work differently between foreign and native-born migrants. Foreign-born migrants may be more likely to move to metropolitan areas that contain the traditional gateways and high concentrations of their ethnic groups in order to utilize their established social networks, especially if the migrants are older and have less human capital, such as poor English fluency (Chiswick 2013; Neuman and Tienda 1994; Nogle 1994; Nogle 1996). On the other hand, internal native-born immigrants are more likely to move to their hometown or close to family, especially as they age, or because of a feeling of a “sense of place”, or belonging to the area (Ferguson, Ali, Olfert, and Partridge 2007). Ferguson, Ali, Olfert, and Partridge (2006) suggest that some people continue to stay or move to areas where they have a feeling of a “sense of place” or belonging to the area. In addition, they might move to areas with tourism and amenities as they age (Ulrich-Schad 2015). This situation means that the mechanism behind the social networks functions initially as a significant factor to migration, but that the social network could differently impact the movement between native-born (who may
prefer to move close to family and friends) (Ulrich-Schad et al 2013) and foreign-born (who prefer people with the same ethnic background) (Fussell and Massey 2004).

Naturalization increases opportunities to move. Foreign-born migration may differ from native-born migration because these populations had previously experienced at least one migration when they moved to the United States. Additionally, studies show that native-born populations from some ethnic groups are more likely to out-migrate (Kobrin and Speare 1983; Tienda and Wilson 1992).

Evidence grows that areas with economic advantages, such as employment growth, attract both foreign-born and native-born to move (Frey and Liaw 2006). However, the fields that attract foreign-born internal migrants are different from that of native-born migrants (Immigration Policy Program 2004; U.S. Bureau of Labor Statistics 2018). Lowell (2010) analyzed career choices for immigrants over the course of 10 years for seven major STEM groups: life sciences, physical sciences, engineering, science technicians, engineering technicians, mathematicians and information technology, and social sciences. In 1950, workers in STEM fields were mostly born in America and were white men. Over the next 50 years, the STEM workforce became much more diverse, with more participation from minorities and people born in other countries. The most growth for foreign-born workers in STEM fields happened between 1950 and 1970, but foreign workers made the biggest impact in their fields in terms of numbers in the 1980s and 1990s. They also helped create more jobs between 2001 and 2006. Foreigners are much more likely to work in STEM fields than in any other part of the United States workforce. This data shows that immigrants are increasing in number in STEM careers; however, that information is not enough to show that native-born citizens
are missing these jobs to foreigners. Some smaller fields are not as pursued as a college major, but other fields that have more majors than expected, such as Physics, which until recently was not doing well in attracting native-born students. In addition, many native-born people received training in STEM fields that do not work in those fields anymore after 2001. In addition, the research found that self-employment among the foreign-born hampers their mobility. Li (1998) included in his study immigrants from 35 countries, including mainland China, Taiwan, Indochina, and Hong Kong as the four primary sources of these Chinese immigrants. Li (1998) mentioned that some foreign-born groups in the ethnoburb have a high level of self-employment linked to the global economy, as the ethnoburban Chinese labor force were self-employed entrepreneurs at a rate higher than in the Los Angeles County workforce as a whole.

These studies provide a useful background for research on some factors related to population migration. Previous studies examine different factors, such as economy (Frey and Liaw 2006; Gurak and Kritz 2000; Frey and Liaw 2005a; Ellis and Goodwin-White 2006), natural amenities (English et al. 2000), population change varying by region (Lewis and Stanley 2016), and age groups (Ulrich-Schad 2015). Although the research evidence on population change has accumulated, little is still known about the impact of population distribution between native-born and foreign-born internal migrants on counties. Lack of comparability in the literature of migration can lead to divergent results between studies. These two types of migrants will have different characteristics.

This paper raises questions overlooked in previous research, simplifies the empirical analysis of multi-directional migration flows, and adds to the literature by examining factors that may account for differences in settlement patterns between in
foreign-born and native-born migrants. One of the major objectives of this paper is to provide a better understanding of the factors and relationships behind the population growth in specific counties, as well as to present a comprehensive picture of the population in these counties.

In conclusion, the migration process and destination choice could be different for foreign and native-born internal migrants. The migration process is not a random process, but often reasons exist behind the move, including selectivity according to the social (Alba and Nee 1997; Ellis and Goodwin-White 2006; Frey and Liaw 2006; Kritz and Nogle 1994; Neuman and Tienda 1994) and economic (Greenwood and Hunt 1989; Greenwood 1985; Hirschman and Massey 2008; Gurak and Kritz 2000; Frey and Liaw 2005a; Ellis and Goodwin-White 2006) factors. In addition, the sending and receiving locations affect people’s choices. Internal migration, therefore, is not merely an individual choice and preference but a response to specific social and economic conditions. The pull factors highlighted in the literature for international migrants were not simply applied to the United States, but could also pertain to moving within the United States. Some large cities and metropolitan areas have more social (among their ethnic groups) and economic advantages for foreign-born immigration than other areas. On the other hand, they may move to the areas that offer the most career and educational opportunities, as well as social support. Enough evidence exists in the migration literature to permit the formulation of several basic generalizations regarding these attributes.
CHAPTER THREE: THEORETICAL FRAMEWORK

Theory

Many theories discuss population mobility and the reasons behind choosing specific locations to live, as I will mention briefly. Geographic Theory does not specifically discuss migrants, but illustrates that young people are more likely to move when the area of origin is rural (Jacob 1996). However, a different type of population move from urban to rural is also observed, and defined as a "back-to-the-land movement" (Jacob 1996, 1997; Halfacre 2007).

In sociological theories, while some reactions to the shortcomings of classical theories are used to interpret this situation, most interpretations focus on the different sense of community between urban and rural areas. Contemporary theories, such as Network Theory, note that the importance of social capital lies in the personal networks that connect migrants, previous migrants, and non-migrants in the area of origin. These personal networks help to decrease the costs of migration (Massey et al, 1993:448). Simmel, as a cited by Portes and Sensenbrenner (1993), highlighted that individuals do not behave based on the expectations of group morality, but rather pursue their own self-interests.

The Rational Choices Theory can explain this situation in greater depth based on individual decisions that maximize utility (Coleman 1986). People compare cost with benefits received; if the benefits are higher, they will execute the action and are more likely to repeat it, and vice versa (Homans 1958). This theory can illustrate why people move, which may be based on their self-interest and include higher income, more job opportunities, more services, better education, and so on.
Schelling also highlights the individual’s behaviors based on their interests and goals called “purposive”, which is the primary motive behind individual actions. He uses the example of people sitting in his lecture room to explain the idea of “spatial distribution”. All of the people in his lecture room choose their location by their preferences. People with more resources may have more opportunities than people with fewer resources. Schelling also discusses "equilibria" as adjusting or adapting to our situations and making choices based on the environment and available options. He provides the example of segregation and ethnic issues, due the fact that people prefer homogeneity to variety. Immigration studies have focused on some specific theories to understand the international immigration process. One of the most important theories in this area is Assimilation Theory. I will mention this theory briefly.

**Assimilation Theory**

The concept of “anglo-conformity” is used early in the literature to describe assimilation among immigration in that native-born prefer to keep the English language and cultural patterns as central to the culture. Portes and Böröcz (1989) state that Assimilation Theory is a type of “functionalist paradigm”, but which specifically applies to minorities and small groups. Another idea that is related to Anglo-conformity is that people agree with immigration as long as the immigrants take on the American cultural standards. Anglo-conformity does not necessarily mean racism Gordon (1961). Gordon (1961) claims that assimilation is not only one process, but several processes. Two different forms of assimilation are observed: “behavioral assimilation” and “structural assimilation”, where behavioral assimilation is about adopting the behavior patterns of the culture to a degree (the immigrant group also changes these behavior patterns in part).
This type of assimilation is also called “cultural modification” or “acculturation”. Conversely, structural assimilation addresses the way the immigrants become a part of social groups and community groups in the culture. Before a minority assimilates to the culture, they experience a “social disequilibrium” process, where the cultural expectations and norms are different from what they expect and have experienced. If the newcomers can adapt to the new culture, they will be closer to the host society; however, if they have some differences, such as religion and language, they will face more difficulties in adapting to the culture. On the other hand, the newcomers will be able to adapt to the culture much quicker when their own culture is similar to the host society, which affects their “immigrant reception”, or how immigrants are received in their new society (Gordon 1961). In addition, their economic status, political implications, and legal contexts affect this reception, and all of these factors simultaneously interact to form a complete picture of the reception of the immigrant. The host installation and structure affect this reception, including the host governments, employers, and the native population. The job-type relationship between the host society and minority group are called “secondary relationships”, which are not usually that close, and “primary relationships”, which are much closer. According to Glazer (1993), assimilation still occurs in society, and he disagrees that assimilation as a goal in the government or as a country is obsolete in a society.

However, the idea of “assimilation” is criticized by more recent literature, which states that a new set of words must be implemented to describe assimilation, because some people believe that assimilation is prejudiced, preferring the “white” American culture to other ethnic cultures and opposing the acceptance of differences of
multicultural societies (Alba and Nee 1997). Alba and Nee (1997) believe that this criticism of assimilation may be inaccurate and the understanding of assimilation needs to change based on the changing times. The idea of assimilation helps to understand the experience of other ethnic groups in the United States. Assimilation is should focus more on involving people in part of a new culture, rather than completely losing their old culture. Alba and Nee (1997) mentioned that Burgess defined assimilation as the way people and groups gain the memories and attitudes of another group by sharing experience and history, and become involved in this society. This definition does not assume that the minority group will lose their cultural traits, which is a common assumption about assimilation by critics, but rather that minorities become a part of the mainstream culture. Park, as cited by Alba and Nee (1997), provided another definition that viewed “social” assimilation as when people from different cultures and races live and share in the same location; however, they feel as though they are part of similar culture which helps them work together as a nation or unified group.

Other research does disagree with the traditional idea of assimilation or the assumptions that are made about it. Hirschman (1983) focused on different types of assimilation, such as financial equality, segregation in different parts of the same location like cities, intermarriage with the general population, and popular attitudes by examining concepts around them, including the timing of immigration, such as how long they have lived in the destination regions, the composition of immigrant populations, and the geographic and spatial distribution after their arrivals, rather than by providing an overview of the relationships between different ethnicities or comparing ethnicities to each other. However, analyzing assimilation on its own allows different questions to be
studied, such as, are there differences in cultural attitudes about ambition that make a difference in income? These individual questions are different from the generalizations that are often made about assimilation. The “class approaches to ethnicity and race” aid in answering these questions. The main idea of these approaches is that whatever it is in society that divides people by class is also what divides people by ethnicity, with regard to both how the person identifies themselves and the objective differences between social classes, such as income.

Spatial assimilation is important for understanding the social and economic progress of minority members, as well as for understanding ecological factors, including human capital and status attainment models (Massey and Denton 1985). Human and financial capital allows for socioeconomic assimilation, which is a dimension of social assimilation (South et al 2005). The ecological factors, including human capital and status attainment, should be integrated into theory and research on stratification and minorities. For example, the theory of spatial assimilation highlights the important role of fluency in the English language as a central determinant of mobility patterns, which can lead to structural and spatial assimilation (South et al 2005). More specifically, Spatial Assimilation Theory estimates that racial and ethnic residential differentiation could be a consequence of socioeconomic differences among groups, at least in part. Socioeconomic resources are an important component of environmental weather isolation or integration (Massey and Denton 1985).

South et al (2005) focused on the decision to move and the choice of destination. One of the key findings is that Latino mobility tends to increase with human and financial capital and with English-language use. Massey and Denton (1985) attempted to replicate
previous substantive contradictions between Hispanics, Puerto Ricans, and blacks at the micro level and address the statistical biases in aggregate macro-level models.

Furthermore, they attempted to identify the biases that are likely to be produced when the individual level from ecological data is inferred, using both micro and macro data. First, the authors compared structural models of black and Hispanic groups, which they then contrasted with models of Hispanic and Puerto Rican groups. The probability of living near white and other minorities were used, which are based on the probability of having Anglo, Black and Hispanic contacts using education, income, and occupational status determine to determine the possibility of living near Anglos, or spatial assimilation. Even though the authors used different levels of analysis (macro-analyses were conducted using data from urban areas, while microanalyses were based on survey data at the national level), the results were similar. Blacks continued to be significantly more segregated from whites and face more difficulties avoiding spatial assimilation compared to Hispanics.

**Neoclassical Theory and New Economics Theory**

Massey, Arango, Hugo, Kouaouci, Pellegrino, and Taylor (1993) emphasize that two types of ideas about international migration relating to rational choice exist: one from “neoclassical human theory” and another from the “new economics of migration”. One type focuses at the individual level, while another focuses at the household level. One idea examines income (and complete and well-functioning markets), and the other focuses on risk (and imperfect markets). The two groups also examine the migration decision differently, as one theory focuses on income as relative to a reference group
(how and how much one income will increase relative to home country), while the other views income as absolute (Portes and Sensenbrenner 1993).

**Ecological Theory**

Ecological Theory focuses on the relation between the demographic processes of fertility, mortality, and migration, as well as areas’ characteristics and the balance processes between migration, population size, and life chances to maintain an equilibrium with their sustaining organization. “Ecological demography is the application of human ecological theory to the analysis of the demographic processes” (Dudley et al 2005).

This theory that fits best with my study and understand that push and pull factors, which discusses “push factors”, or reasons for leaving a place, as economic factors, or social or political problems, and “pull factors” as the advantages in the advanced states (Portes and Böröcz 1989). Additionally, the differences between nations or collective groups migrating relates to the macro or large-scale labor patterns, while the individual’s choice within the same country to move addresses the causes behind migration; however, this theory helps to understand the connection between the situation in sending areas and the new destination. This theory also aids in understanding both the international and domestic migrants’ decisions in terms of factors and opportunities in areas.

Ecological Theory could help understand how foreign-born congregate in ethnic gateways where resources are available, including employment, housing, and other functional requirements, as well as rich ethnic and linguistic resources. Immigrants become less concentrated in ethnic gateways where the quality of housing, economic opportunities, and services is better (Massey 1985; Rosenbaum and Friedman 2007). Furthermore, the type of model utilized in this research is Dual Labor Market Theory,
which does not analyze individual decisions, but rather the labor demands of societies (if one society needs more labor and is willing to pay more for it, people will move to that society) and helps to understand moving to a new place and preferring different type of industries between foreign and native-born movers (Massey et al. 1993).
CHAPTER FOUR: METHODOLOGY

This chapter discusses the data used in order to understand the population distribution in different locations, especially for areas that have population gain in order to understand how the characteristics of location could affect different type of people based on their nationality.

Research Design

The study aims to address several research questions:

1. How does the population change differ between foreign-born and native-born internal migration? Which counties gain the highest number of migrants?

2. How do the location characteristics influence the native-born and foreign-born movers between counties differently?

Research Hypotheses

- Income is often the primary push factor and key contributor to population growth for both types of internal migrants.
  - Counties with high household income have an increase in incoming migrants.
  - Counties with high job growth have an increase in incoming migrants, which indicates a positive relationship between job growth and migrant increase.
  - Foreign and native-born immigrants may have different fields that are important to them.
- Counties with high cost of living rates have fewer migrants, which suggests a negative relationship exists between cost of living and migrant increase.
  - Counties with low housing costs have more incoming migrants.
- Metropolitan areas have significantly more incoming migrants.
- Counties with high rates of nationality diversity have more incoming migrants, especially within the foreign-born population.
- Traditional gateway counties have significantly higher levels of foreign-born incoming migrants.
- Counties with a high rank of natural amenities have more incoming migrants, especially within the native-born population.

**Data**

Secondary data is used from the American Community Survey 2006-2010 and 2012-2016 five-year estimates and County Business Patterns 2006-2010 five-year estimates from TIGER/Line Shapefiles and TIGER geodatabases. The American Community Survey 2006-2010 from FactFinder was used to measure the fertility rates for each county. The ACS annual sample size includes about 3.5 million addresses and the data is collected nearly every day of the year (Census Bureau 2018). I used a five-year interval to provide a large enough sample size to adequately represent the diversity of the foreign and native-born internal migration population and to provide the detailed information needed for this study. The Census Bureau combines five consecutive years of the ACS data to make estimates for geographic areas with fewer than 65,000 residents. These 5-year estimates provide data collected over a period of 60 months (Census Bureau 2018). The topography scale is from The National Atlas of the U.S. Department of the

Methods

 Counties are used as the geographic unit of analysis for their many advantages. Using counties excludes geographic areas with low population, which would introduce a source of considerable bias. Percentage of population change would work as a dependent variable, and place of birth can identify native-born and foreign-born immigrants (Nogle 1996 and Kritz and Nogle, 1994a). I used the geographic information systems (GIS) and spatial data analysis to map and describe the context, location, and spatial relationship between variables. Furthermore, I used GIS software to join the majority of Census data products available in American Factfinder. Then, I analyzed the data using STATA and SPSS.

 I created three different models in order to understand the whole picture of population distributions and changes over time and potential differences by nativity. The dependent variables are the percentage of total population change, the percentage of native population change, and the percentage of foreign population change, using the five-year estimates between 2006-2010 and 2012-2016, which is measured by subtracting
the initial value (2006-2010) from the subsequent value (2012-2016) to calculate the absolute change itself, then dividing by the original number and multiplying by 100.

\[ P3 = \frac{(P2-P1)}{P1} \times 100, \]

where \( P1 \) = the 2006-2010 population estimates

\( P2 \) = the 2012-2016 population estimates

\( P3 \) = the percentage of total population change.

The dependent variables are the percentage of total population change, the percentage of native population change, and the percentage of foreign population change.

Native born: those who are U.S. citizens at birth, including Puerto Rico or other U.S. territories. Foreign born: those who are not a U.S. citizen at birth or who were born outside the United States, Puerto Rico, or other U.S. territories. The terms “foreign born” and “immigrant” are used interchangeably throughout this brief.

However, using population change within counties can bias this study and fail to offer a clean indicator of how populations respond to the current conditions on the ground, because some factors influencing population change include net migration (referencing both emigration and immigration) and birth and death rates. Using the percentages of population change to examine reasons behind population centration and the economic factors for movement, the results could be misleading and could relate to the high birth rates and not to net migration.

I attempted to collect the population change only for the population aged 18 years and over for native and foreign-born populations; however, a lack of data analyzing specific age groups for both foreign and native-born populations by counties is evident. I found only 479 counties out of about 3000 counties for the five-year estimates between
the years of 2006 and 2010 and 451 counties out of about 3,000 counties for the five-year estimates between the years of 2012 and 2016. Therefore, the average of fertility rates is used in the multivariate model as a control for fertility’s impact on population change. These criteria are instated in order to control and reduce the probability that migration behavior is dependent upon the natural increase (Nogle 1996).

Economic factors such as differences in income are often the push factor and are key contributors to population change. Therefore, the total median household income at the 2010 five year estimates is used as a primary independent variable. The counties with a population change are anticipated to have a higher income.
Table 3. Description Table of Independent Variables’ Measurement for Total population Change and Expected Findings.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measurement</th>
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<tbody>
<tr>
<td>Income</td>
<td>INCOME: This variable is calculated from the total median household income 2010 five-year estimates and is used as a primary independent variable.</td>
</tr>
<tr>
<td>Industry of employment (2 variables)</td>
<td>EMPGROWTH: This variable is calculated using a percentage for employment rate growth (all sectors combined) in the original value as of 2010, subtracted from the new value and divided by the original number, then multiplied by 100. This variable is included because job growth may vary substantially between counties. This variable was then coded as a dummy variable: 0 denoting counties with no job growth, 1 denoting counties with job growth (greater than 0 percent). I expect to find that counties with employment rate growth experience more population gain than counties with less employment rate growth. <strong>Different sectors have different levels of growth</strong> Foreign and native-born immigrants may have different fields that are important to them, since foreign-born immigrants are often looking for different types of jobs than native-born immigrants (MPI 2016). DIFFJOB: This variable is calculated by analyzing the differences in median levels of growth between different industry sectors, coded as (1) Agriculture, forestry, fishing and hunting, and mining; (2) Arts, entertainment, and recreation, and accommodation and food services; (3) Manufacturing; (4) Professional, scientific, management, administrative, and waste management services; (5) Transportation, warehousing, and utilities; and (6) Educational services, healthcare, and social assistance.</td>
</tr>
<tr>
<td>Cost of housing</td>
<td>COSTRENT: Counties with a high housing cost can increase migrants’ moving (Ley 2007; Light and Johnston 2009). I use the “gross rent” as a percentage of household income (GRAPI) based on the Census Bureau categories 30 percent or more. The government has been using the standard of 30 percent since 1981: Those who spend more than 30 percent of their income on housing have historically been said to be &quot;cost burdened.&quot; Those who spend 50 percent or more are considered &quot;severely cost burdened.&quot; (Schwartz and Wilson 2000). I expect to find that the cost of housing affects foreign-born immigrants as well as native-born immigrants, with both groups moving from areas of high housing prices to areas of low housing prices.</td>
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</table>
COSTOWNER: I use the “monthly owner costs as a percentage of household income cost (SMOCAPI)” based on the Census Bureau categories of 30 percent or more.

VACANT: The percentage of vacant houses. Based on the American Community Survey definition of vacant units, the vacant units are not determined until the third month of data collection. The American Community Survey includes people at the address where they live at the time of the survey if they have been there or will be there more than two months.

The vacancy rate is calculated by taking the number of vacant units, multiplying that number by 100, and dividing that result by the total number of units. The percentage of vacant houses is used as economic indicators of a real estate market's overall health.

| Metro | METRO: The standard Office of Management and Budget (OMB) divided metro and nonmetro areas into two metro and 10 nonmetro groups. This scheme was initially established in 1993. Metro area includes large metro areas of 1 million+ residents and small metro areas of less than 1 million residents. The nonmetropolitan counties include micropolitan areas adjacent to small metro areas, noncore areas adjacent to large metro areas, micropolitan areas adjacent to small metro areas, noncore areas adjacent to small metro areas and containing a town of at least 2,500 residents, noncore areas adjacent to small metro areas and not containing a town of at least 2,500 residents, micropolitan areas not adjacent to a metro area, noncore areas adjacent to micropolitan areas and containing a town of at least 2,500 residents, noncore areas adjacent to micro areas and containing a town of at least 2,500 residents, noncore areas not adjacent to metro or micropolitan areas and containing a town of at least 2,500 residents, and noncore areas not adjacent to metro or micro areas and not containing a town of at least 2,500 residents. For the purpose of this study, the metro variable is coded as 1 if metro and 0 if not. For more information, Figure 1 in the appendix A maps the metro and micro counties. |
Table 4. Description Table of Independent Variables’ Measurement for Native-Born Population Change and Expected Findings.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amenity Rank</td>
<td>AMENITY: This variable is based on the natural amenities scale, which is a measure of the physical characteristics of a county area that enhance the location as a place to live. The scale was constructed by combining six measures of climate, topography, and water area that reflect environmental qualities most people prefer. These measures are warm winter, winter sun, temperate summer, low summer humidity, topographic variation, and water area. The data is available for counties in the lower 48 states. The scale of amenities was used to make the Amenity Rank, which is based on deviations from the mean: 1 = Under -2 (Low) 2 = -1 to -2 3 = 0 to -1 4 = 0 to 1 5 = 1 to 2 6 = 2 to 3 7 = Over 3 (High) I expect to find that the natural amenities rank affects the native-born immigrants. Counties that have a high rank of the natural amenities have a high native-born population change. For more information, Figure 2 in the appendix A maps the Amenity Rank among counties.</td>
</tr>
</tbody>
</table>
Table 5. Description Table of Independent Variables’ Measurement for Foreign-Born Population Change.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index of qualitative variation of nationality</td>
<td>IQV of nationality: The index of qualitative variation (IQV) is a measure of variability and racial diversity by county. The IQV is based on the ratio of the total number of differences in the distribution to the maximum number of possible differences in the same distribution. Counties with high nationality diversity have more foreign-born population change. IQV helps to determine and measure categorical variables of nationality diversity data. (IQV = \frac{K(1002 - \sum\text{Pct}^2)}{1002(K - 1)}), where (K) is the number of categories in the distribution and (\sum\text{Pct}^2) is the sum of all squared percentages in the distribution. For more information, Figure 3 in the appendix A maps the nationality diversity among counties.</td>
</tr>
<tr>
<td>Using different languages</td>
<td>This variable includes the percent of the population using a language other than English (Bartel and Koch 1991; Frey and Liaw 2005b; Kritz and Nogle 1994).</td>
</tr>
<tr>
<td>Gateways Counties</td>
<td>The gateways used in this analysis are defined as metropolitan areas with populations over 1 million in 2000, based on 1999 metropolitan-area definitions. The typology includes six immigrant gateway types defined by Singer 2004 and Immigrant Gateways, Migration Policy Institute. Gateway metropolitan areas are categorized as follows: Former gateways, such as Buffalo and Pittsburgh, attracted considerable numbers of immigrants in the early 1900s but no longer do, continuous gateways, such as New York and Chicago, are long-established destinations for immigrants and continue to receive large numbers of foreign-born, post-World War II gateways, such as Houston, Los Angeles, and Miami, began attracting immigrants in large numbers only during the past 50 years or less, emerging gateways which have had rapidly growing immigrant populations during the past 25 years alone such as Atlanta, Dallas-Ft. Worth, and Washington, re-emerging gateways, such as Minneapolis-St. Paul and Seattle, that began the 20th century with a strong attraction for immigrants, waned as destinations during the middle of the century, but are now re-emerging as immigrant gateways, and pre-emerging gateways, such as Raleigh-Durham and Austin, where immigrant populations have grown very rapidly starting in the 1990s and are likely to continue to grow as immigrant destinations. For more information, Figure 4 in the appendix A maps the gateway counties. In this study, I code only continuous gateways, post–World War II gateways, emerging gateways, and re-emerging gateways as 1 and former gateways and other counties as 0.</td>
</tr>
</tbody>
</table>
Models

- In the first stage, the dependent variable is a variable from 1 to 5 by grouping into a categorical variable with 5 values, which shows counties with a high migrant population gain, counties with a low migrant population gain, no change, counties with a low migrant population loss, and counties with a high migrant population loss as the following:
  1 = counties with a high migrant population loss,
  2 = counties with a low migrant population loss,
  3 = counties with no change, or counties with small changes,
  4 = counties with a low migrant population gain, and
  5 = counties with a high in migrant population gain

  This variable will be used to present the data in the GIS map.

- The total population change and native-born population change include 3,144 cases, and the foreign-born population change includes 3,129 cases. The groups have an equal number of cases in each bin. For instance, the total population change for all counties included 3,144 cases, with about 629 cases in each category. To find the cutoff point, I sorted the percentages from highest to lowest and found the cutoff between each of the groups, which would be less than -2.73, between -2.73 and -0.841, between -0.840 and 1.342, between 1.35 and 4.8, and greater than 4.8. I then recalculated the groups. I did not include the missing data in the grouping. Similar processes were implemented for native-born and foreign-born groups.
I used a logistic model in the second step to estimate over all levels of the dependent variable. The dependent variable is a variable from 1 to 0 converted into binary dummy variables (0 or 1) by grouping into a categorical variable with 2 values, which shows counties with a gain in migrant population, counties with a migrant population loss, and counties with no change, or counties with small changes.

In the next step, I used an ordinary least squares (OLS) model for those counties experiencing immigrant population gain. Regression models provide an assessment of the relative significance of residence and the different controlled variables in order to explain whether the relative variables vary by residence. The dependent variable includes only counties with population gain, and is a continuous variable. Because the American Community Survey (ACS) is based on a sample, a degree of uncertainty associated with the data, called sampling error or margin of error, and an ACS estimate is published. In order to reduce the impact of sampling error on data reliability, I include only counties with 2 percent of population growth or more than 2 percent for each group. The margin of error provides a range of values within which the real “real-world” value is likely to fall.

Controls for the average fertility rate from 2010 to 2016 are also added to the models.

The independent variables should not be correlated with each other; therefore, I measured spatial correlations before running the models to determine if the data needs to prevent or reduce correlations between locations. If these locations are
experiencing population growth, I map the dependent variable (population gain) in the GIS. I found some counties with high population gain that are close other counties with high population gain, which could be problematic in the results, as Figures 4, 5, and 6 show.
Figure 4. Correlations among Some Locations for the Total Population Model.
Figure 5. Correlations among Some Locations for the Native-Born Population Model.
Figure 6. Correlations among Some Locations for the Foreign Population Model.
The OLS model utilized in this research must meet the following assumptions.

Linearity: The relationships between the independent and dependent variables should be linear. In addition, errors should be normal in the P value for the T test in order to ensure the squares estimates and B are unbiased. Scatterplots and Q-Q plots in SPSS are used to identify whether all variables are linear; if they are not normal, methods can be implemented to correct this situation (see Appendix B for details). The results have shown that some independent variables were fairly linear and these variables can be used, although they were not perfectly linear; the vacant and percentages of employment was the only problematic variable in the dataset. Some of the variables appear to be left or right tailed, which should be addressed. In addition, after running a regression model, I analyzed the skewness and kurtosis values of the residuals, as well as the distribution of residuals by using a Q-Q plot. I also performed a standardized residuals test in SPSS and using the histogram, I found outlying residuals. When I performed a studentized residual test using ID as the label in the histogram, the same points were problematic. In the next step, I used the log of the independent variables that appeared to have a problem and re-modeled the regression to analyze the residuals after running the regression.

\[ \text{No relationship will be perfectly linear, so linearity can be considered “approximately true “.} \]
CHAPTER FIVE: FINDINGS

This chapter presents the results of this study. I used logistic models to understand the probability of living in a county with better economic or environmental characteristics more than in a county with worse economic or environmental characteristics by comparing foreign and native population models. The regression models were then used to explain only the counties with population increase and the attraction of different economic and environmental characteristics of these counties for different types of people. In addition, maps were used to provide more clarity in understanding relationships between the variables.

Examining Indicators of Counties with Population Growth and Counties with Population Loss

The dependent variable was coded as dummy variable: 0 denoting counties with no change or minimum changes and counties with population loss; 1 denoting counties with population growth (2 percent of population growth or greater than 2 percent of population change). The independent variables included “Median income”, “Jobgrowth”, “COSowner”, “COSRent”, “Metro”, “Vacant”, “Fertility” (as a control variable) for total population model. I added the “Amenity” variable for the native-born population model. I added “Other languages”, “IQV”, and “Gateway” to the foreign-born model. The independent variables included “Median income” which is the median household income. “Jobgrowth” is calculated as a percentage of change in employment (all sectors combined) in the original value as of 2010, subtracted from the new value and divided by the original number, then multiplied by 100. Then, this variable was coded as dummy variable: 0 denoting counties with no job growth; 1 denoting counties with job growth
(greater than 0 percent), “metro” (1 if it metro and 0 if non metro), “COSowner”, which is whether spending on housing accounts for more than 30 percent of their income for owners, “COSRent” which is whether spending on housing accounts for more than 30 percent of their income for renters, “Vacant”, which is the percentage of vacant housing in a county, and the fertility rate as a control variable in the model. I added amenity rank as independent variable for the native-born model, the index of qualitative variation “IQV”, which is a measure of variability diversity by county, and traditional gateway county (1 if the county is a traditional gateway and 0 if not) for the foreign-born model.

For the total population model, 3,099 were used, 3,102 cases were used for native-born population model, and 3,080 cases were used for the foreign-born population model, as Table 6 describes.

Table 6. Sample Numbers and Missing Information.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Total Population Model</th>
<th>Native-Born Population Model</th>
<th>Foreign-Born Population Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Valid Information</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counties with population decline</td>
<td>65.16 (2,022)</td>
<td>66.73 (2,070)</td>
<td>35.55 (674)</td>
</tr>
<tr>
<td>Counties with population growth</td>
<td>34.84 (1,081)</td>
<td>33.27 (1,032)</td>
<td>64.45 (1,222)</td>
</tr>
<tr>
<td><strong>Missing Information</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100% (3,103)</td>
<td>100% (3,102)</td>
<td>100% (1,897)</td>
</tr>
</tbody>
</table>

Table 6 shows the observations for each model for the dependent variables. The threshold is the counties with population increase of 2 or higher, and counties that stayed the same or decreased (0 or less) as counties with population decline. In the total
population model, 1,081 counties (34.84 percent) experienced population increase (coded 1) and 2,022 counties (65.16 percent) experienced population decline, no change, or a small change (coded 0). For the native-born model, 1,032 counties (33.27 percent) experienced population increase (coded 1) and 2,070 counties (66.73 percent) experienced population decline, no change, or a small change (coded 0). For the foreign-born model, 1,222 counties (64.45 percent) experienced population increase (coded 1), and 674 counties (35.55 percent) experienced population decline, no change, or a small change (coded 0). These results actually indicate that more counties experienced population increase for the foreign-born population compared to the native-born population, as foreign-born migrants are more likely to spread out and disperse when migrating to counties.
Table 7. Descriptive Statistics of Variables Used in Analysis (NA and Standard Deviations in Parentheses).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total Population Model</th>
<th>Native-Born Model</th>
<th>Foreign-Born Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Counties with population decline</td>
<td>Counties with population growth</td>
<td>Counties with population decline</td>
</tr>
<tr>
<td>Median Income</td>
<td>$40,855 (STD: 8870) (2,002)</td>
<td>$50,158 (STD: 13058) (1,072)</td>
<td>$41,214 (STD: 9382) (2,051)</td>
</tr>
<tr>
<td></td>
<td>$40,855 (STD: 8870) (2,002)</td>
<td>$50,158 (STD: 13058) (1,072)</td>
<td>$41,214 (STD: 9382) (2,051)</td>
</tr>
<tr>
<td>Metro</td>
<td>25% (499)</td>
<td>61% (656)</td>
<td>26% (533)</td>
</tr>
<tr>
<td>Non-Metro</td>
<td>75% (1,503)</td>
<td>39% (416)</td>
<td>74% (1,518)</td>
</tr>
<tr>
<td>Job Growth</td>
<td>25.2% (504)</td>
<td>77.24% (828)</td>
<td>26.9% (533)</td>
</tr>
<tr>
<td>Job Loss</td>
<td>74.8% (1,498)</td>
<td>22.7% (244)</td>
<td>73% (1,498)</td>
</tr>
<tr>
<td>COSRent</td>
<td>44.6 (STD: 9.82) (2,002)</td>
<td>45.8 (STD: 9.45) (1,072)</td>
<td>44.7 (STD:9.78 (2,051)</td>
</tr>
<tr>
<td>COSowner</td>
<td>30.9 (STD: 7.82) (2,002)</td>
<td>32.5 (STD: 9.05) (1,072)</td>
<td>30.7 (STD: 7.85) (2,051)</td>
</tr>
</tbody>
</table>

Note: NA and Standard Deviations in Parentheses.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>3.3 (STD: .95) (2,051)</th>
<th>3.8 (STD: 1.11) (1,023)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Amenities</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>IQV</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.189 (STD: .17) (674)</td>
<td>.24 (STD: .22) (1,222)</td>
</tr>
<tr>
<td><strong>Gateway</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4.15% (28)</td>
<td>10.6% (129)</td>
</tr>
<tr>
<td><strong>Non-Gateway</strong></td>
<td></td>
<td></td>
<td>95.8% (646)</td>
<td>89.4% (1,093)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Using Languages</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>9.98 (STD: 11.68) (674)</td>
<td>12.04 (STD: 12.45) (1,222)</td>
</tr>
</tbody>
</table>
Table 7 shows that the standard deviation for some variables such as median household income are high; however, the mean is much higher, as 95 percent of people make between about $23K and $59K for counties that experienced decline for total population. The means of median household income for counties that experienced growth for total, native, and foreign populations are higher than counties that experienced decline. There is a relationship between the median household income and population growth. However, the median household income is high because people are moving to places because the income is better, or because people are moving to a place as there are more businesses that open there and the mean income rises.

For the binary variables, 61 percent of the overall population, 61 percent of the native-born population, and 56 percent of the foreign-born population experienced growth in metro areas. In other words, people tend to migrate to metro areas compared to non-metro areas, while most non-metro areas declined in population. The variable job growth indicates that the counties that experienced growth in total, native, and foreign populations have higher job growth than counties that experienced population decline. In the other words, the population in general tends to migrate to places with more job opportunities. For this binary variable, 77.24 percent of the overall population, 76.25 percent of the native-born population, and 58.59 percent of the foreign-born population experienced growth in counties that have job growth.

The variables COSowner (percentage of the population spending more than 30 percent of their income on housing for owners), and COSRent (percentage of the population spending more than 30 percent of their income on housing for renters) are higher for counties that experienced growth in total, native, and foreign populations.
When there are a lot of people moving to an area, that drives the cost of housing up and the demand for housing is greater, therefore the cost is higher. The cost of housing depends on how many people are moving to an area. However, people are going to be less likely to move to an area where the cost of housing is much higher, which is going to make the housing prices go down. The cost of housing is higher to areas with a lot of population growth, but not by much, because if the cost of housing is too high, the population growth will slow down. However, the differences in housing cost between areas with population growth and counties with stagnation or decline do not vary greatly. The percentage of vacant houses is higher for counties experiencing population decline for the foreign-born and the native-born model. When there is a population decline, there are more vacant houses. Because people are leaving an area, therefore, there are more empty houses in an area.

The amenity rank is an independent variable for the native-born model and the index of qualitative variation (IQV) is a measure of variability diversity and is not a measurement or an observed value, but a score, meaning that the large standard deviation may be either good or bad. The mean score of counties with population increase is higher than the counties with population decline for the amenity rank.

In addition, 10.56 percent of traditional gateway counties experienced population growth, and 4.15 percent of traditional gateway counties experienced population decline. In other words, foreign-born appear to migrate to traditional gateway counties and strongly prefer gateway counties, which might be what I expected. The index of qualitative variation (IQV) which is a measure of variability diversity and shows that the counties with more diversity experience more population increase.
Before I ran the logistic regression models, I checked all the independent variables by using graphs in STATA and SPSS programs showing the histograms, which were heavily skewed. Methods were implemented to correct this situation (see Appendix B for details). In addition, after running a regression model, I analyzed the skewness and kurtosis values, as well as the distributions, by using a Q-Q plot for the interval/ratio variables. The results have shown that the variables “Jobgrowth”, “COSowner”, and “COSRent” can be used, although these variables are not perfectly distributed; the only problem for the variables “Income” and “Vacant” is that they appears to be somewhat left or right-tailed, which should be addressed, as I will describe later. The results indicated different values of skewness and kurtosis. The variables “COSowner” and “COSRent” are somewhat right-tailed, but are not significantly detrimental to the model. However, some variables such as “Using languages other than English”, and “Vacant” were heavily right or left-tailed for native and foreign-born models. In the next step, I transformed these variables and re-modeled the logistic regression models.

The models should be tested to be guaranteed the data fits the models well, and methods were used to answer this question. Many approaches can be used to examine that question, including by measuring the likelihood ratio chi-square with a p-value < 0.0001, which tells that the model as a whole fits significantly better than the null model. In other words, the likelihood ratio chi-square test is essentially testing whether the model that contains the full slate of predictors represents a significant improvement in fit over a null model. Therefore, if predictors indicate that this test is statistically significant, then evidence exists of a good model fit. In addition, the “postestimation” options in STATA were used by measuring the specification diagnostic and goodness-of-fit analysis to
examine the goodness of fit test. The Hosmer Lemeshow goodness of fit test was used, which is essentially a type of a global measure of fit. In this test, the non-significant chi-square test an indicator of good model fit. Hosmer and Lemeshow (1980) grouped cases together according to “their predicted values from the logistic regression model” by arranging the predicted values from lowest to highest (See the Appendix B for more details).

The next step, I used stepwise regression, where the computer tests all of the independent variables to see if they are significant in the model, one after another, which results in the best model. Further information that I gathered includes the classification table and sensitivity tests. The classification results based on generating predicted probabilities, but while utilizing the prediction model to determine if predictions were correctly categorized by examining the accuracy rate to making a judgement about the fit of the model. I found that the model results were manageable.

Also, I used the “robust standard errors” to provide an alternative strategy to carrying out regression in those cases where evidence exists of a violation of the assumption of constant (i.e., homogeneity of) variance. This violation will not result in a change in the coefficients, but will cause a problem with the standard errors. The robust standard errors help address this problem.
Table 8. Results from the Logistic Regression Models with Robust Standard Errors.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Total Population</th>
<th>Native-born Population</th>
<th>Foreign-born Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>3,074</td>
<td>3,074</td>
<td>1,896</td>
</tr>
<tr>
<td>LR chi2</td>
<td>307.45</td>
<td>368.99</td>
<td>436.63</td>
</tr>
<tr>
<td>Prob &gt; chi2</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-1419.2261</td>
<td>-1380.6461</td>
<td>-1138.0367</td>
</tr>
<tr>
<td>$Income (logged)</td>
<td>11.89***</td>
<td>2.476***</td>
<td>4.90***</td>
</tr>
<tr>
<td>Job Growth (Counties with job loss as the reference group)</td>
<td>5.47***</td>
<td>1.70***</td>
<td>4.68***</td>
</tr>
<tr>
<td>%Cost of Rent</td>
<td>1.004</td>
<td>0.00388</td>
<td>0.99</td>
</tr>
<tr>
<td>%Cost of Owner</td>
<td>1.012</td>
<td>0.0117</td>
<td>0.99</td>
</tr>
<tr>
<td>%Vacant houses (logged)</td>
<td>1.105</td>
<td>.01002</td>
<td>0.69*</td>
</tr>
<tr>
<td>Metropolitan Metro Location</td>
<td>1.45</td>
<td>0.369</td>
<td>1.30</td>
</tr>
<tr>
<td>Amenity</td>
<td>-</td>
<td>-</td>
<td>1.98***</td>
</tr>
<tr>
<td>% other languages (logged)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Gateways Counties (Non-Gateways as the reference group)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>IQV</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Coefficient</td>
<td>Std. Error</td>
<td>t</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------</td>
<td>------------</td>
<td>----</td>
</tr>
<tr>
<td>Fertility (control variable)(logged)</td>
<td>1.905***</td>
<td>0.6445***</td>
<td>1.39*</td>
</tr>
<tr>
<td>Metro # Job Growth</td>
<td>1.96**</td>
<td>0.6756**</td>
<td>2.28***</td>
</tr>
<tr>
<td>_cons</td>
<td>1.79***</td>
<td>-31.6557***</td>
<td>9.17***</td>
</tr>
</tbody>
</table>

Note: *p<0.05; **p<0.01; ***p<0.001.
Table 8 shows that the likelihood ratio chi-square was 307.45 for the total population model, 368.99 for the native-born population model, and 436.63 for the foreign-born population model, with a p-value < 0.000 for all models, which indicates that the model as a whole fits significantly better than the null model. The log likelihoods for the total population model, the native-born population model, and the foreign-born population model are -1419.2261, -1380.6461, and -1138.0367, respectively. The minus in likelihood ratio (LR) chi-square test the difference between the starting and ending log likelihood. The number in the parenthesis indicates the number of degrees of freedom. Prob > chi2 is the probability of obtaining the chi-square statistic that the null hypothesis is true. In this case, the probability of obtaining this chi-square statistic (307.45) for the total population model indicates that the independent variables, taken together, evidently affect the dependent variable. The p-value, which is compared to a critical value, uses .05 or .01 to determine if the overall models are statistically significant. In this case, the models are statistically significant because the p-value is less than .000. Which means, the p-value shows the model is significant, the chi-square statistic is saying that the independent variables are affecting the model.

The odds ratio is equal to exp(B). The odds ratio (if the corresponding variable is incremented by 1)/odds (if variable is not incremented) is as follows:

\[
\frac{P(\text{event} \mid x + 1)}{(1 - P(\text{event} \mid x + 1))} / \frac{P(\text{event} \mid x)}{(1 - P(\text{event} \mid x))}
\]

In the other words, odds ratio is relative risk, which is based on the ratio of the probability of choosing one outcome category (counties with population increase) over the probability of choosing the baseline category (counties with population decline, or no
change). In the table, an odds ratio of greater than 1 indicates that the condition or event is more likely to occur in the first group (counties with population increase).

This logistic regression model displays significance at 0.001 for all models. Median household income variables in the models are household income, which increased the probability of choosing counties with population increase over the probability of choosing counties with population decline or no change. With each unit increase in the median household income, a 10.89 increased likelihood is observed of people living in a county with population growth for the total population, a 3.9 increased likelihood of people living in a county with population growth for the native-born population, and 3.75 increased likelihood of people living in a county with population growth for the foreign-born population. Median household income is significant at 0.001 for all models.

Compared to the counties with job loss (the reference group), the odds for the counties with job growth have a population gain was 4.47. Compared to the counties with job loss (the reference group), the odds for the counties with job growth have a chance to have population gain was 3.68. This variable is very significant for the total population model and the native-born model at 0.001, and it is not significant for the foreign-born model.

The cost of rent variable indicates when renters spend more than 30 percent of their income on housing, they have an increased likelihood of .02 to live in a county with population growth for the foreign-born population model. The housing for rent costs variable that shows when 30 percent or more of household income is spent on housing is not significant for the total population and native-born population models.
The housing for owner costs variable that shows when 30 percent or more of household income is spent on housing is not significant for the total population model and the native-born model and is significant at a p value of 0.01 for the foreign-born model. With each unit increase in monthly spending on housing costs for owners, a .98 decreased likelihood of people living in a county is observed (98 percent less likely to living in a county with high housing costs for owners for foreign-born population).

The variable that shows the percentages of vacant houses in a county is not significant for both the total population and the foreign-born models. This variable shows that for each unit increase in the log of the vacant houses variable, a decreased likelihood of 0.69 is observed for native-born population model. It is significant at a p value of 0.05 for the native-born model.

Moreover, compared to the counties in rural (the reference group), the odds for the counties with metro location to have a population gain was 45 percent for the total population model. Compared to the counties in rural (the reference group), the odds for the counties with metro location to have a population gain was 3 percent for native-born population. Comparatively, the foreign-born population is less likely to live in metro areas. This might be related to that the foreign-born population might prefer economic opportunities weather in urban or rural areas. However, this variable is not significant. In addition, for each unit increase in the amenity rank, an increased likelihood of 0.98 is observed for the native-born population, which is very significant at a p value of 0.001.

For the foreign-born population, gateways counties are not significant; however, compared to non-traditional gateway for foreign-born population, the odds for gateways counties to have a population gain was 27 (27 percent of the population are more likely to
live in gateway counties for the foreign-born population, compared to non-gateways counties).

For the foreign-born population, an increased likelihood of 0.84 is observed for each unit increase in the log of the language variable, which indicates whether people speak other languages than English. This variable is very significant at a p value of 0.001. For the foreign-born population, each unit increase in high nationality diversity, a decreased likelihood of 0.57 was of foreign people living in a county is observed (foreign-born population less likely to live in a county with high nationality diversity. This variable is significant at a p value of 0.01.

Metro Areas# Job Growth are interactions between being a metro area (comparing to non-metro areas), and percentage of job growth is 0.96 to be a county with total population, 1.28 with native-born population growth and 2.37 with foreign-born. It is very significant at a p value of 0.001 for foreign-born model and it is very significant at a p value of 0.01 for total population and native-born population model.

Table 9. Interactions between Job Growth “Job Growth” and Metropolitan “Metro”.

<table>
<thead>
<tr>
<th>Interaction</th>
<th>Total Population</th>
<th>Native-born Population</th>
<th>Foreign-born Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metro # Job Growth</td>
<td>1.96**</td>
<td>2.28***</td>
<td>2.37**</td>
</tr>
</tbody>
</table>

The interactions between the variables job growth “Job Growth” and metropolitan “Metro” are significant in both the log odds and the odds ratio models at a 0.001 p-value. The interactions in the odds ratio shows the differences for probability. The interactions
here is categorical by categorical interaction. The interaction term is significant, indicating the odds for the counties with a metro location currently experiencing job growth were 1.96 times for the total population to have a population gain, and more than doubled for native-born and foreign born populations, compared to the non-metro location and locations with job loss. The interaction term is statistically significant.

**Urban vs. Rural**

Table 10. Predicted Probabilities by Job Growth and Urban/Rural Division.

<table>
<thead>
<tr>
<th></th>
<th>Total Population</th>
<th>Native-born Population</th>
<th>Foreign-born Population</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Urban</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Growth</td>
<td>0.692***</td>
<td>0.650***</td>
<td>0.770***</td>
</tr>
<tr>
<td>Job Loss</td>
<td>0.462***</td>
<td>0.418***</td>
<td>0.607***</td>
</tr>
<tr>
<td><strong>Rural</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Growth</td>
<td>0.201***</td>
<td>0.189***</td>
<td>0.573***</td>
</tr>
<tr>
<td>Job Loss</td>
<td>0.151***</td>
<td>0.156***</td>
<td>0.587***</td>
</tr>
</tbody>
</table>

Note: *p<0.05; **p<0.01; ***p<0.001.

The Predicted Table examines the odds ratio to determine if job opportunities are the same between urban and rural areas and whether population gain is more observed in urban or rural areas. Job growth is higher in urban areas than rural areas in overall. The odds ratio for each level shows that comparing the predicted probability of population gain, a gap between urban and rural areas is observed when both have job opportunities, with the chance of a population gain in urban areas at 69 percent and only 20 percent in rural areas for the total population model. The odds ratio for each level shows that comparing the predicted probability of population gain, a gap between urban and rural areas is evident when both have job opportunities, with the chance of population gain in urban areas at 65 percent and only 18 percent in rural areas for the native-born population.
model. According to the odds ratio for each level, a gap between urban and rural is observed in the predicted probability of population gain when both areas have job opportunities, with the chance of population gain in urban areas at 77 percent and only 75 percent in rural areas for the foreign-born population model.

The foreign-born population is more likely to move to rural areas than the other two groups when we look at the probabilities in both job growth and job loss. However, they are moving to rural areas similarly whether there is job growth or loss in those areas which it could be because some other reasons rather than job opportunities. Whereas the other two models indicate groups that strongly prefer urban to rural areas, but the foreign-born model does not prefer urban to rural areas as strongly. There were more likely to have foreign-born population growth in counties with job growth in urban areas. Job growth in rural counties may not be associated with growth in foreign-born population in rural counties. Figures 5, 6, and 7 provide a visual illustration of that concept.
Figure 7. Predicted Probabilities by Urban/Rural Division and Job Growth for Total Population Model.

![Bar chart showing predicted probabilities for Total Population by Urban/Rural Division and Job Growth at 4%.]

Figure 8. Predicted Probabilities by Urban/Rural Division and Job Growth for Native-born Population Model.

![Bar chart showing predicted probabilities for Native-born Population by Urban/Rural Division and Job Growth at 4%.]
Examining Indicators of Native-born Population Growth and Foreign-born Population Growth

A multiple regression was utilized in the next step. Models were used for those counties experiencing population gain. The dependent variable includes only counties with population gain and is a continuous variable. In order to reduce the impact of sampling error on data reliability, I included only counties with more than 2 percent of population growth for each group. Controls for the average fertility rate from 2010 to 2016 are also added to the models.

The OLS model utilized in this research must meet the following assumptions. Firstly, the relationships between the independent and dependent variables should be
linear. Assuming that unobserved error is normally distributed, Y should also be normally distributed, conditional on X. In addition, errors should be normal in the P value for the T test in order to ensure the squares estimates and B are unbiased. Scatterplots and Q-Q plots in SPSS are used to identify whether all variables are linear; if they are not normal, methods can be implemented to correct this situation. I also checked the distributions in STATA by predicting r and then created kdensity to assess normalcy by generating graphs to verify the distribution and using the Shapiro-Wilk W Test for normality. The results have shown that some independent variables were fairly linear and can be used, although none were perfectly linear\(^3\), such as the cost of housing variables; the problems occurred for median household income and vacant variables. Some of the variables appear to be left or right tailed, which should be addressed. In addition, after running a regression model, I analyzed the skewness and kurtosis values of the residuals, as well as the distribution of residuals by using a Q-Q plot. I also performed a standardized residuals test in SPSS and the histogram indicated problematic residuals. When I performed a studentized residual test using ID as the label in the histogram, the same points were problematic.

I checked for heteroscedasticity (i.e., if the variance of the errors depends on X, the error term exhibits heteroscedasticity (nonconstant variance)). I also performed the White Test, the Cook-Weisberg Test, and the specification test (see Appendix B for more details). If the p-value (Prob > chi2) in the Cook-Weisberg Test is less than 0.05, conclude that there is a problem with heteroscedasticity. In the specification test, if the Prob > F is less than 0.05, the null hypothesis will be rejected that the model has no

\(^3\) No relationship will be perfectly linear, so it can be considered "approximately true".
omitted variables and indicates that other factors may influence the data that have not
been included as independent variables. In the next step, the log of the variables that
appear to have a problem was generated and the regression was re-modeled, analyzing
the residuals after running the regression. I used the best model with an R of close to 1.
Then, the stepwise regression method was applied, where independent variables are
tested to determine if they are significant in the model, one after the other, resulting in the
best model.

As I described earlier, correlation could occur between locations with high/high
(HH) or low/low(LL) population growth. Using regression with robust standard errors
helps to control for intra-class correlation, as the dependent variables (population gain)
should not be correlated with each other; therefore I measured spatial correlations before
running the OLS model to determine if the data needs to prevent or reduce correlations
between the locations if these locations are experiencing population growth. I mapped the
dependent variable (population gain) in GIS by using the spatial autocorrelation tools, the
Local Moran’s I, the Local Getis-Ord Gi, and the hot spots and cold spots tool. Clusters
occur in a geographic distribution when a critical number of counties are having similarly
high or low values. Mapping cluster tools perform cluster analysis to identify the
locations of statistically significant hot spots, cold spots, or spatial outliers. I found that
some counties with high population gain are clustered to other counties with high
population gain, which could be a problematic in the total population and native-born
population models.

Following these results, a high positive z-score is used to indicate that the
surrounding counties have similar values in GIS (either high or low values).
The COType field in the Output Feature Class uses HH for a statistically significant cluster of high values and LL for a statistically significant cluster of low values using a 95 percent confidence level (See Appendix B for details).
Table 11. Descriptive Statistics of Variables Used in Analysis (*Frequency, Mean, AND Std. Deviation in Parentheses*).

<table>
<thead>
<tr>
<th>Variable Names</th>
<th>Population</th>
<th>Native-Born</th>
<th>Foreign-Born</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>$ Income</strong></td>
<td>$48,055</td>
<td>$48,012</td>
<td>$49,028</td>
</tr>
<tr>
<td></td>
<td>(STD: 12,409)</td>
<td>(STD:12,409)</td>
<td>(STD: 12,947)</td>
</tr>
<tr>
<td><strong>Job Growth (Job Loss</strong></td>
<td><strong>65%</strong></td>
<td><strong>65%</strong></td>
<td><strong>58.5%</strong></td>
</tr>
<tr>
<td><strong>as the reference group)</strong></td>
<td>(1,037)</td>
<td>(987)</td>
<td>(716)</td>
</tr>
<tr>
<td><strong>Job Loss</strong></td>
<td><strong>35%</strong></td>
<td><strong>35%</strong></td>
<td><strong>41%</strong></td>
</tr>
<tr>
<td></td>
<td>(558)</td>
<td>(525)</td>
<td>(506)</td>
</tr>
<tr>
<td><strong>% Cost of Rent</strong></td>
<td><strong>45.64</strong></td>
<td><strong>45.6</strong></td>
<td><strong>46.6</strong></td>
</tr>
<tr>
<td></td>
<td>(STD: 9.2)</td>
<td>(STD:9.2)</td>
<td>(STD:8.1)</td>
</tr>
<tr>
<td><strong>% Cost of Owner</strong></td>
<td><strong>32.22</strong></td>
<td><strong>32.22</strong></td>
<td><strong>32</strong></td>
</tr>
<tr>
<td></td>
<td>(STD: 8.65)</td>
<td>(STD: 8.65)</td>
<td>(STD: 8.36)</td>
</tr>
<tr>
<td><strong>% Vacant houses</strong></td>
<td><strong>14.9</strong></td>
<td><strong>15.</strong></td>
<td><strong>13.96</strong></td>
</tr>
<tr>
<td><strong>Metropolitan</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Metro Location (Non-Metro</strong></td>
<td><strong>53%</strong></td>
<td><strong>54%</strong></td>
<td><strong>56.30%</strong></td>
</tr>
<tr>
<td><strong>as the reference group)</strong></td>
<td>(852)</td>
<td>(815)</td>
<td>(688)</td>
</tr>
<tr>
<td><strong>Non-Metro</strong></td>
<td><strong>46.58%</strong></td>
<td><strong>46%</strong></td>
<td><strong>43.70 %</strong></td>
</tr>
<tr>
<td></td>
<td>(743)</td>
<td>(697)</td>
<td>(534)</td>
</tr>
<tr>
<td><strong>Amenity</strong></td>
<td><strong>3.7</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(STD:1.09)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>% other languages</strong></td>
<td>-</td>
<td>-</td>
<td><strong>12.04</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(STD:12.45)</td>
</tr>
<tr>
<td></td>
<td>Gateway County (Non- Gateways as the reference group)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>------------------------</td>
<td>------------------------------------------------------</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Gateway County</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non- Gateway County</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IQV</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 11 shows that the mean of median household income is $48,055.52 for the total population, $48,141.31 for the native-born population, and $49,028.19 for the foreign-born population when including counties that experienced population gain.

The job growth among the three groups are similar. Counties with population growth have more job growth. The mean for the cost of rent is 45.6 for the total population, 45.6 for the native-born population, and 46.6 for the foreign-born population, which the highest. The mean for the cost of owner variable is 32 for the total population, 32 for the native-born population, and 32 for the foreign-born population. This means that the foreign-born get charged more for rent or choose more expensive housing.

The mean of the amenity rank was 3.7 for the native-born model. It might be that some of those counties with a low amount of amenities have other environmental features that draw people in, such as better paying jobs that outweigh the amenities. The index of qualitative variation (IQV), a measure of variability diversity, is not a measurement or an observed value, but a score, meaning that a large standard deviation is not necessarily good or bad. For the binary variables, 852 (53 percent) of metro areas for the total population model 815 (45 percent) for the native-born population model, and 688 (56.30 percent) for the foreign-born population model experienced population growth. The native and foreign-born populations tend to migrate to metro areas.
Table 12. OLS Regression of Counties with Population Gain on Selected Independent Variables Using Multivariate Regression.

<table>
<thead>
<tr>
<th>Variable Names</th>
<th>Population</th>
<th>Native-Born</th>
<th>Foreign-Born</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ Income (logged)</td>
<td>0.91***</td>
<td>0.574*</td>
<td>0.40**</td>
</tr>
<tr>
<td>Job Growth (Counties with job loss as the reference group)</td>
<td>0.071***</td>
<td>0.695***</td>
<td>.016**</td>
</tr>
<tr>
<td>% Cost of Rent</td>
<td>-0.0013</td>
<td>-0.0060</td>
<td>-0.0007</td>
</tr>
<tr>
<td>% Cost of owner</td>
<td>-0.005</td>
<td>-0.010</td>
<td>-0.014*</td>
</tr>
<tr>
<td>% Vacant houses (logged)</td>
<td>0.31**</td>
<td>0.1861*</td>
<td>0.05</td>
</tr>
<tr>
<td>Metropolitan Metro Location (Non-Metro as the reference group)</td>
<td>0.037</td>
<td>0.082</td>
<td>-.34**</td>
</tr>
<tr>
<td>Amenity (1)</td>
<td>-</td>
<td>0.194***</td>
<td>-</td>
</tr>
<tr>
<td>% other languages (logged)</td>
<td>-</td>
<td>-</td>
<td>0.304**</td>
</tr>
<tr>
<td>Gateways Counties(Non-Gateways as the reference group)</td>
<td>-</td>
<td>-</td>
<td>0.0952</td>
</tr>
<tr>
<td>IQV</td>
<td>-</td>
<td>-</td>
<td>-0.65***</td>
</tr>
<tr>
<td>METRO#job Fertility (control variable) (logged)</td>
<td>.542***</td>
<td>.486**</td>
<td>.153</td>
</tr>
<tr>
<td>Cons</td>
<td>-11.198***</td>
<td>-7.103*</td>
<td>-3.466*</td>
</tr>
<tr>
<td></td>
<td>R2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td></td>
<td>0.23</td>
<td>0.22</td>
<td>0.25</td>
</tr>
<tr>
<td>F</td>
<td>43***</td>
<td>48***</td>
<td>43***</td>
</tr>
</tbody>
</table>

Note: *p<0.05; **p<0.01; ***p<0.001.
In Table 12 the R2 shows that all dependent variables 23 percent explained the independent variable in the total population model, 22 percent for the native-born population model, and 25 percent for the foreign-born population model. The equation for the models is as follows:

\[
\text{Population gain} = \beta_1X + \beta_2X + \beta_3X + \beta_4X + \ldots + \alpha.
\]

For example, for the total population model, the estimate \( Y = b_0 \) (intercept (-11.198) +b1 (0.91) income + b2 (0.071) job growth + b3 (-0.0013) the cost of rent + b4 (-0.005) the cost of owner + b5 (0.206349) the percentages of vacant houses+b6 (0.31) Metro areas + b7 (-0.037) fertility + b8 (.542) metro*job.

The model is significant for the total population at a p value of 0.001. The most significant variables are income and job growth for the total population model at 0.001. In one unit increase median income in a county, the population will increase by 0.91 for the total population model, by 0.574 for the native-born model, and by 0.40 for the foreign-born population model, holding all other independent variables constant. The income and job growth variables are significant for all model. When counties have job growth, then there is a 0.071 increase in population, a 0.695 increase in native-born population, and .016 increase in foreign-born population. This variable is very significant for total population model and native-born population model and it is significant at 0.01 for the foreign population.

The models predict that if the cost of rent is high in a county, the population will decrease by -0.0013 for the total population, by -0.0060 for the native population, and by -0.0007308 for the foreign population, holding other independent variables constant. However, this variable is not significant.
Moreover, the models predict that if the cost of owning a house is high in a county, the native population will decrease by -0.010085 and the foreign population will decrease by -0.0140484, holding other independent variables constant. This variable is significant at 0.005 for the foreign population and not significant for other models. When the p value is less than 0.05, the null hypotheses will be rejected.

The top places with high housing costs and similarly high rent costs that are considerably above the national average are Wolfe County in Kentucky, where rent comprises an average 76 percent of household income, and Magoffin County in Kentucky, where rent is 75 percent of household income. These counties are non-metro (completely rural or with a population of less than 2,500). Crawford County in Georgia followed on the list, with rent comprising 72 percent of household income, which is generally metro (areas of a population of fewer than 250,000).

The places where housing costs are very high have housing owner costs that are considerably above the national average are Hancock County in Georgia, with 54 percent of household income going toward rent, an urban population of 2,500 to 19,999, and a population loss of -9.34 percent for the total population, -9 percent for the native-born population, and -13 percent for the foreign-born population. Keya Paha County follows in Nebraska with 68 percent of household income going toward rent, which is completely rural or has a population of less than 2,500. Monroe County in Florida has 64.4 percent of household income used toward rent and an urban population of 20,000 or more. Nantucket County in Massachusetts has an average of 64.4 percent of household income used toward rent and an urban population of 2,500 to 19,999 and is not adjacent to a metro area, followed by Holmes County, Mississippi, with 61 percent of household
income used toward rent, and an urban population of 2,500 to 19,999 that is adjacent to a metro area. For metro variable, if the area is a metro area, then there is a -.34 decrease in foreign-born population. The metro variable is significant for the foreign-born population model at 0.01. In addition, with a one unit increase the percentage of people speaking other languages in a county, the foreign population will increase by 0.304, which is significant at 0.01. It is if an area has high amenities, then there is a 0.194 increase in native-born population. It is very significant at 0.001. In the other hand, if the area is a gateway area, then there is a 0.0952 increase in foreign population. However, this variable is not significant. Therefore, we accept the null hypothesis here. With a one unit increase in the index of qualitative variation (IQV), which measures variability diversity, the foreign population will decrease by -0.65. This variable is very significant at 0.001.

Table 13. Interactions between Variable “Job Growth” and Metropolitan “Metro” for Counties with Population Growth Models.

<table>
<thead>
<tr>
<th>Total Population</th>
<th>Native-Born Population</th>
<th>Foreign-Born Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.542***</td>
<td>0.487**</td>
<td>0.153</td>
</tr>
</tbody>
</table>

Note: *p<0.05; **p<0.01; ***p<0.001.

Table 13 shows the interactions between variables “Job Growth” and “Metro” for counties with population growth models. The interaction means that the effect of job growth on an increase in population is different for different values of the “Metro” variable (metro or non-metro). Being a metro area and having a job growth in a county increases the population by 0.542 for the total population and 0.487 for the native-born population. This variable is significant at 0.001 for the total population and at 0.01 for the
native-born population, compared to non-metro areas and areas with job loss, holding all other independent variables constant. The interaction between job growth and metropolitan areas is not significant for the foreign-born population.

**Urban vs. Rural**

Table 14. Predicted the Percent of Population Growth by Job Growth and Urban/Rural Division.

<table>
<thead>
<tr>
<th></th>
<th>Total Population</th>
<th>Native-Born Population</th>
<th>Foreign-Born Population</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Urban</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Growth</td>
<td>1.606***</td>
<td>1.599***</td>
<td>2.876***</td>
</tr>
<tr>
<td>Job Loss</td>
<td>0.358**</td>
<td>0.418***</td>
<td>2.559***</td>
</tr>
<tr>
<td><strong>Rural</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Growth</td>
<td>1.027***</td>
<td>1.031***</td>
<td>3.061***</td>
</tr>
<tr>
<td>Job Loss</td>
<td>0.321**</td>
<td>0.336**</td>
<td>2.897***</td>
</tr>
</tbody>
</table>

Note: *p<0.05; **p<0.01; ***p<0.001.

Based on the results of OLS Models, Table 14 presents the predicted the increase of population by job growth and urban/rural division under the conditions of having a job growth (coded 1), and being metro (coded 1). The predicted result represents that being a county with a job growth and being metro county increase the population by 1.606 for the total population, 1.599 for the native-born population, and 2.876 for the foreign-born population. For counties with job growth, there is more population increase. However, the population is increasing for both job growth and job loss –the population is increasing much more when there is job growth in an area. In other words, the population is
increasing at a higher rate when there is job growth for both urban and rural areas, but that urban areas are experiencing more growth than rural areas. The predicted terms are statistically significant.

Figure 10. Predicted Population Increase by Urban/Rural Division and Job Growth for the Total Population Model.
Figure 11. Predicted Population Increase by Urban/Rural Division and Job Growth for the Native-Born Population Model.
Figure 12. Predicted Population Increase by Urban/Rural Division and Job Growth for the Foreign-Born Population Model.
Different Sectors by Nativity

Figure 13. Percent Change in Native-Born Population by Five Year Estimates, 2006-2010 and 2012-2016.
Figure 14. Percent Change in Foreign-Born Population, by Five-Year Estimates, 2006-2010 and 2012-2016.
In order to understand how foreign and native-born migrants may choose counties based on different industry fields that are important to them, since foreign-born are often looking for different types of jobs than native-born, I used the GIS maps to present the counties based on the top industry fields for each county (the differences in median levels of growth were grouped between different industry sectors, coded as (1) Agriculture, forestry, fishing and hunting, and mining; (2) Arts, entertainment, and recreation, and accommodation and food services; (3) Manufacturing; (4) Professional, scientific, and management, and administrative, and waste management services; (5) Transportation, warehousing, and utilities; and (6) Educational services, healthcare, and social assistance.

The maps show that in a large area of the center of the United States, many counties experienced native-born population loss and some counties experienced foreign-born population gain due to agriculture, forestry, fishing and hunting, and mining county types of industry. Many of these counties still experienced an overall loss of population; however, the foreign-born population helps to generate an influx of immigrants. These types of work require mostly mid to low skill levels on average. However, 97 percent of farmers and ranchers are native-born (U.S. 2012).

In addition, most counties with a manufacturing industry sector experienced an overall gain and loss of native and foreign-born populations, respectively. Most of manufacturing jobs need low skill (supervisors and managers). The native-born population seems to be gaining in manufacturing areas, and the foreign-born population seems to be losing in manufacturing areas. On the other hand, in some industries most closely associated with the high-skilled with both foreign and native workers such as educational services, healthcare, and social assistance. For example, in all of these sectors
all workers should have at least a high school diploma or higher, and in healthcare, more than half of all workers should have at least a Bachelor’s degree (Singer 2012).

For the arts, entertainment, and recreation, and accommodation and food services sectors, which reflect a mixture of mid- and low-skilled workers, both foreign and native-born workers share the top of their occupations in counties; however, these counties are highly concentrated with native-born. The food service sector includes restaurants, bars, and food service contractors, as well as food service in schools and hospitals. Workers require different skill levels; therefore, foreign and native-born populations may possess different skill levels in this sector, such as working in food preparation, supervising, and managing. The counties with top sectors of transportation, warehousing, and utilities have both native and foreign-born populations.

Accommodation may include both high skilled work; accommodation may include people who work at hotels, from maids to supervisors, recreation might include managing.

Counties with leaders in the professional, scientific, and management, and administrative, and waste management services are among the top most common jobs for foreigners compared to the native population. These industry changes could help to attract foreigners to new destinations.
CHAPTER SIX: DISCUSSION AND CONCLUSION

Scholars have studied population distributions, settlements, and migrants greatly, but many questions remain unanswered about how these factors could differ between people based on their nativity or geographic locations that attract people. The purpose of this study is to provide a better understanding of population change, focusing specifically on the characteristics of counties with population gain. Analyzing the distributional patterns and associated factors that may differ between native-born and foreign-born migrants, the study also examines existing theoretical frameworks that explain the settlement of native-born and foreign-born populations in the U.S.

This study examined a couple of questions that were not previously addressed in the literature, namely the research questions of how populations change in counties in general and how they differ between foreign and native-born internal migration. The central hypothesis that guided the analysis was that income is often the primary push factor and key contributor to population growth in a county for both types of internal migrants, as they would be more likely to live in a county with good economic conditions and growth in job opportunities. However, some factors attract foreign-born more than they do to the native-born population, as scholars have shown. For example, social capitals work differently between foreign and native-born migrants. Foreign-born migrants may be more likely to move to traditional gateways with high concentrations of their ethnic groups in order to utilize their established social networks, especially if the migrants are older and have less human capital, such as poor English fluency (Alba and Nee 1997). This chapter provides a brief overview of key findings of this research and
how the results from this study are similar to or different from previous research. Finally, this chapter will elaborate on limitations of this study and possible future studies.

**Summary of Findings**

Mapping the population distributions among counties and grouping showed that within a large area at the center of the United States, many counties experienced native-born population loss and foreign-born loss; however, some of these counties still experienced foreign-born population gain, which may indicate that foreigners help to reduce the impact of population loss in those counties. Most of these counties experiencing foreign-born population gain are rural. In addition, foreign-born population change was more dispersed among the counties than the native-born population, most strongly observed in the middle of the United States. Many states that were not traditionally associated with immigration or containing immigration gateways also experienced significant growth of their foreign-born populations and emerged as new destinations for foreign-born movers. For example, the percentage of change of foreign-born populations in Noble County in Ohio grew 551 percent, which is not considered an immigration gateway. Moreover, mapping the population distributions among counties showed that areas in the western United States gained population, especially the lower counties of California, which may be related to the amenity index, as counties in the United States with a high amenity index are frequently on the western side.

To explore the probabilities of population increase, a logistic model was utilized, with the dependent variable converted into binary dummy variables (0 or 1) by grouping into a categorical variable with 2 values, which showed counties with a gain in migrant population, counties with a migrant population loss, counties with no change, or counties
with small changes. The findings thus support and build on past research showing that overall the population trends of counties are linked to their economic profiles for all groups, and migrants are more likely live in places with a good economy. With each unit increase in the median household income, a 10.89 increased likelihood is observed for people living in a county with population growth for the total population, a 3.9 increased likelihood for people living in a county with population growth for the native-born population, and 3.75 increased likelihood for people living in a county with population growth for the foreign-born population. However, compared to counties with job loss, the odds for counties with job growth having a population gain was 4.47 for the total population and 3.68 for the native-born population. This variable is very significant for the total population model and the native-born model at 0.001, and is not significant for the foreign-born model. The housing for rent costs variable that shows the variable indicating when 30 percent or more of household income is spent on housing is not significant for the total population and native-born population models. The cost of rent variable indicates when renters spend more than 30 percent of their income on housing, and migrants have an increased likelihood of .02 to live in a county with population growth for the foreign-born population model. However, with each unit increase in monthly spending on housing costs for owners, a .98 decreased likelihood of people living in a county is observed (i.e., migrants are 98 percent less likely to live in a county with high housing costs for owners for the foreign-born population).

In addition, for each unit increase in the amenity rank, an increased likelihood of 0.98 is observed for the native-born population, which is very significant at a p value of 0.001. On the other hand, for the foreign-born population, gateway counties are not
significant, which may indicate that foreigners started to prefer new destinations.

Moreover, for the foreign-born population, an increased likelihood of 0.84 is observed for each unit increase in the log of the language variable, which indicates whether people speak other languages than English. This variable is very significant at a p value of 0.001. For the foreign-born population, each unit increase in high nationality diversity, a decreased likelihood of 0.57 was observed for foreign people living in a county, indicating that the foreign-born population is less likely to live in a county with high nationality diversity. This variable is significant at a p value of 0.01.

The interaction term is significant for all groups, indicating the odds for counties with a metro location currently experiencing job growth were 1.96 times higher for the total population to have a population gain, and more than double for the native-born population, compared to non-metro locations and locations with job loss. The predicted probabilities of the population growth examines the odds ratio to determine if job opportunities are the same between urban and rural areas and whether population gain is more observed in urban or rural areas. Job growth is higher in urban areas than rural areas overall. The odds ratio for each level shows that when comparing the predicted probability of population gain, a gap between urban and rural areas is observed when both have job opportunities, with the chance of a population gain in urban areas at 69 percent and only 20 percent in rural areas for the total population model. The odds ratio for each level shows that comparing the predicted probability of population gain, a gap between urban and rural areas is evident when both have job opportunities, with the chance of population gain in urban areas at 65 percent and only 18 percent in rural areas for the native-born population model. According to the odds ratio for each level, a gap
between urban and rural areas is observed in the predicted probability of population gain when both areas have job opportunities, with the chance of population gain in urban areas at 77 percent and only 75 percent in rural areas for the foreign-born population model. The foreign-born population is more likely to move to rural areas compared to the other two groups, and move to rural areas similarly whether job growth or loss is observed in those areas.
In the next step, I used an ordinary least squares (OLS) model for those counties experiencing immigrant population gain. The dependent variable includes only counties with population gain and is a continuous variable. The three models share significance of income and job opportunities in a county association with the population increase in a county. The model is significant for the total population at a p value of 0.001. The most significant variables are income and job growth for the total population model at 0.001. In a one unit increase of median income in a county, the population will increase by 0.91 for the total population model, by 0.574 for the native-born model, and by 0.40 for the foreign-born population model, holding all other independent variables constant. When counties experience job growth, a 0.071 increase in total population, a 0.695 increase in native-born population, and .016 increase in foreign-born population is observed. This variable is very significant for the total population model and the native-born population model and is significant at 0.01 for the foreign population.

For the native-born population, if an area has high amenities, then a 0.194 increase in native-born population is observed. This variable is very significant at a p value of 0.001. On the other hand, for the foreign-born population model, the gateway area variable is not significant for counties with population gain. In addition, if the area is a metro area, then a .34 decrease in foreign-born population is evident. The metro variable is significant for the foreign-born population model at 0.01. In addition, with a one unit increase the percentage of people speaking other languages in a county, the foreign-born population will increase by 0.304, which is significant at 0.01. With a one unit increase in the index of qualitative variation (IQV), which measures variability
diversity, the foreign population will decrease by -0.65. This variable is very significant at 0.001.

Discussion

The evidence from the findings shows that migrants are moving rapidly into areas with the healthiest economies for all groups. This finding is consistent with past research by Gurak and Kritz (2000), Frey and Liaw (2005a), and Ellis and Goodwin-White (2006). A relationship between the median household income and population growth is evident, which means that the likelihood of population growth did depend on economic conditions in 2010. However, the median household income could be high because people are moving to places where the income is better, or similarly, because more businesses open there and the mean income increases. Push and pull factors theory helps to understand the economic factors as important factors to choose the new destination. This theory also aids in understanding both the international and domestic migrants’ decisions in terms of factors and opportunities in areas.

Looking at different metropolitan status, the job growth variable is associated with growth in the population; however, the increase in the population is higher when the location is a metro. Once the job opportunities are the same between urban and rural areas, the native-born population tends to move to urban areas. The population is increasing at a higher rate when job growth is evident for both urban and rural areas, but urban areas are experiencing more growth than rural areas. In the other words, being a metro area with job growth increases the chance of experiencing population growth for the native-born population.
However, the metropolitan status factor is stronger for native-born movers than foreign-born movers. Foreign-born are moving to rural areas similarly whether job growth or loss is occurring in those areas, which could support the idea that the foreign population helped keep the rural population stable from 2010 to 2016 (Katharine et al 2009). Foreign-born populations may live in a place with other non-urban-based industries, possibly because they do not need to master a lot of new skills or acquire new skills as much as in an urban area.

Some past studies have shown that immigration was centered in traditional places, while the logistic and OLS models showed that traditional counties were not significant in the model, which could indicate that the new population of foreign-born chose not to live in the traditional gateways associated with immigration and other counties also experienced some growth of their foreign-born populations as new destinations for foreign-born movers. This outcome is similar to past research from Johnson-Webb (2002) and Parrado and Kandel (2008). On the other hand, these results do not support the traditional idea of assimilation, as foreign-born migrants were more likely to move to places where they will have a high concentration of their own ethnic groups such as that the traditional gateway metropolitan areas with high concentrations of their ethnic groups in order to utilize their established social networks and live close to people who are from similar cultures. As the maps also show many states that were not traditionally associated with immigration experienced significant growth (as new destinations).

Migrants are less likely to move to areas with a high cost of housing for owners. A negative relationship between foreign-born population growth and cost of owning a home is observed. The cost of owning a home is lower outside of a metropolitan area,
which could be one of the reasons attracting the foreign-born population. Even though the
cost of rented housing is high, foreign-born migrants still tend to move to these areas. A
negative relationship between the index of qualitative variation (IQV), which measures
variability diversity, and the foreign population is observed. This situation could indicate
that the new foreign-born population is moving throughout different areas, even into
areas that have not “witnessed a large influx” of foreign-born migrants. A positive
relationship between the percentage of people speaking other languages in a county and
the foreign population is observed. In addition, the native-born population is more likely
to live in a county with high amenities, which is consistent with the study by English et al
(2000); however, this study examines the overall population, not only native-born.

Ecological Theory here helps understand how foreign-born move where resources
are available, including employment, housing (for owners), and other functional
requirements, as well as rich linguistic resources. Immigrants become less concentrated
in ethnic gateways and they become more likely to move to places where the quality of
housing, economic opportunities, rich linguistic resources, and services is better. The
ecological factors should be integrated into theory spatial assimilation in somehow. For
example, the theory of spatial assimilation highlights the important role of fluency in the
English language as a central determinant of mobility patterns, which can lead to
structural and spatial assimilation (South, Crowder, and Chavez 2005). Also, foreign
population still move to places with less national diversity, which could mean they still
have less integrated with native-born population.
Limitations

Using an aggregation approach and counties as a level of analysis could help because of insufficient sample sizes. Unfortunately, however, given that no data was available for some counties and also no data specific to population change based on the portion of the population aged 18 or higher for most counties in the 2010 census sample, understanding the percentages of population change is difficult, as focusing on the adult population is important to understand the impact of the independent variables on population change and excluding people under the age of 18 from the population could help to improve the results. Even using the fertility rates as a control variable in this model minimizes the degree to which births contribute to population change; however, limiting the data to the population aged 18 and older greatly improves the reliability of the model.

However, county populations vary widely from large to small numbers, especially for foreign born populations, which could be potentially unreliable when sample sizes are small. On the other hand, focusing only on the adult population reduces the sample size even further. Replicating this type of study in the future will be difficult, since even combining five years of American Community Survey (ACS) data still may produce some problem of how to interpret migration.

The analysis suggests that new foreign-born should be grouped based on immigrants’ national origins or ethnic categories. Using foreign-born as one group can obscure actual trends underway and make findings difficult to interpret, especially as a sharp increase in immigration from Mexico and Asia has been observed, which could impact the change in the state of residence.
Future Research

An important next step is to look more closely at the characteristics of industry fields’ influence on immigrants’ migration decisions, the skills required in each sector, and the possible differences between native and foreign-born populations that would allow us to confirm whether our findings are correct about what types of industry attract migrants to counties.

Examining how places differ among the foreign-born from different ethnic groups is also important, since in addition to being influenced by their ethnic, country, or regional groups and social networks, the population varies across origin groups. Another important issue for future studies is that some groups of foreign-born choose new destinations and other groups do not. Characteristics of non-urban areas in which migrants prefer to live include good weather and small rural counties.

Also, some personal characteristics, such as level of education, marital status, personal income and labor force participation, should be examined to understand the migration process for foreign-born. More in-depth analysis on the individual’s choices should be included in future studies.

Conclusion

This research fills an existing gap in the literature and can potentially initiate more studies about population mobility. One of the major objectives of this paper is to provide a better understanding of the factors and relationships behind population growth in U.S. counties, as well as to present a comprehensive picture of the population in these counties. The evidence from the findings shows that migrants are dispersing among places and are moving rapidly into areas with the healthiest economies for all groups. A
significantly positive relationship exists between median household income and population growth. A positive relationship also exists between job growth and population growth.

The findings of this study answer the research question whether foreign-born and native-born migrants exhibit different patterns in terms of their mobility change. Foreign-born migrants seem more disparate than they used to be, compared to the past. However, native-born migrants might be showing a different trend. These changes of mobility patterns could change the character of many places, including urban, suburban and rural areas in future as foreign-born migrants were more likely to move to metro areas in the past. Furthermore, the findings of this study answered in depth how the location characteristics influence the native-born and foreign-born movers between counties differently. The findings show that the foreign-born population is more dispersed in non-metro areas, compared to native-born population mobility.

The findings also explain how the foreign-born population responds to economic factors differently from native-born migrants in terms of if the factor of job growth or decline happened in urban or rural areas. A gap between urban and rural areas is observed in the predicted probability of population gain when both areas have job opportunities. The chance of population gain in urban areas is at 65 percent and only 18 percent in rural areas for the native-born population model. However, job growth in rural counties may not be associated with growth in the foreign-born population in rural counties. In addition, if an area has high amenities, then an increase in the native-born population is observed. A negative relationship is evident between an increase in the index of
qualitative variation (IQV)\textsuperscript{4}, which measures variability diversity, and the foreign population, is very important to the immigrant integration process. A positive relationship between the percentage of people speaking other languages in a county and the foreign population is observed. Therefore, the findings support the Ecological Theory as both native-born and foreign-born movers prefer locations where resources are available, including employment, job, housing, and natural amenities for native-born movers as well as rich linguistic resources for foreign-born movers.

\textsuperscript{4} Only for the foreign-born population.
APPENDICES
APPENDIX A: FIGURES

Figure 1.1. Metro and Non-Metro Areas.

Metropolitan and Micropolitan Statistical Area by County.
Figure 1.2. Natural Amenities Scale by County.
Figure 1.3. The index of qualitative variation (IQV) by Nationality.
Figure 1.4. Traditional Gateway Counties.

APPENDIX B: LOGISTIC MODEL

Figure 2.1. Variables in foreign-born logistic models before transform to log as an example.

Figure 2.2. Variables in foreign-born logistic models after transform to log.
Figure 2.3. The goodness of fit test for the Native-born Logistic Model after using log transformation for some variables.

**Logistic model for nativchang, goodness-of-fit test**

- number of observations = 1340
- number of covariate patterns = 1340
  - Pearson chi2(1330) = 1291.11
  - Prob > chi2 = 0.7729
APPENDIX C: REGRESSION MODELS

Figure 3.3. Total Population Model Variables as example, using COSRent.

Figure 3.4. Total Population Model Variables as example, using COSowner.

Figure 3.5. Total Population Model Variables as example, using Median_household_income.
Figure 3.6. Creating k-density to Check Normalcy.
Figure 3.7. Checking the distribution.

Figure 3.8. Running the Shapiro-Wilk \( W \) test for Normality.

```
. swilk r

Shapiro-Wilk W test for normal data

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Figure 3.9. Cook-Weisberg Test and White Test.

**Cameron & Trivedi's decomposition of IM-test**

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Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of ntvgain

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Figure 3.10. Specification Test.

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<td>3046.98026</td>
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<td>Adj R-squared = 0.1227</td>
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<td>Root MSE = 5.3401</td>
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| ntvgain | Coef.    | Std. Err. | t     | P>|t| | [95% Conf. Interval] |
|---------|----------|-----------|-------|------|----------------------|
| _hat    | -.5875096 | .2942217  | -2.00 | 0.046 | -1.164635 to -.0103824 |
| _hatsq  | .1520523  | .0272748  | 5.57  | 0.000 | .0985517 to .2055529  |
| _cons   | 3.614412  | .759672   | 4.76  | 0.000 | 2.124288 to 5.104535  |

. * ovtest

Ramsey RESET test using powers of the fitted values of ntvgain
Ho: model has no omitted variables
F(3, 1503) = 25.08
Prob > F = 0.0000
Figure 3.11. Checking for heteroscedasticity.
Figure 4.1. Total Population Model Spatial Autocorrelation Report.

Given the z-score of 31.1337511611, there is a less than 1% likelihood that this clustered pattern could be the result of random chance.
Figure 4.2. Total Population Model Global Moran and Dataset Information.

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Figure 4.3. Native-Born Population Model Spatial Autocorrelation Report.

Spatial Autocorrelation Report

Given the z-score of 30.8885114141, there is a less than 1% likelihood that this clustered pattern could be the result of random chance.
Figure 4.4. Native-Born Population Model Global Moran and Dataset Information.

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Figure 4.5. Foreign-Born Population Model Autocorrelation Report.

Given the z-score of 1.741615900517, there is a less than 10% likelihood that this clustered pattern could be the result of random chance.
Figure 4.3. Foreign-Born Population Model Global Moran and Dataset Information.

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Sources from:


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REFERENCES


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