PLEASE DON'T LEAVE: AN ANALYSIS OF OUTMIGRATION FROM MICHIGAN BETWEEN 1980 AND 2000

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ABSTRACT

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Using data from the 1980, 1990, and 2000 U.S. Censuses, this project measures the association between educational attainment and outmigration from the State of Michigan. I begin by using descriptive statistics to document basic trends over time, focusing especially on the states where two groups, the college educated and the less than college educated, have moved. Intergroup comparisons are also presented and discussed. Next, logistic regression is used to analyze how Michigan outmigration differs by educational group after statistically controlling for select demographic, economic, and social characteristics. This study concludes by offering policy recommendations that Michigan officials should consider in an effort to reduce the Michigan exodus.

Specific study results indicate that the destination states of Michigan outmigrants have been relatively constant regardless of educational level or census year. However, one key finding to emerge was that the number of college educated outmigrants was nearly twice that of the non-college educated group. Study results support the notion of a Michigan brain drain and also identify key characteristics that are likely contributors to outmigration. More specifically, results from logistic regression models indicate that even when controlling for educational status, the most powerful predictors of outmigration are age, previous migration, number of children under five and 18, and tenure. The magnitude of some of these differences changed slightly time, however, the directions remained consistent.

This thesis is dedicated to all those who helped me along the way and pushed me to become the person that I am today. I can never thank you enough.

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INTRODUCTION

As a whole, Americans are a very mobile population. Using data from the 2007 American Community Survey (ACS), the Census Bureau's migration expectancy table predicts that, on average, people in the United States move 11.7 times over their lives (2009).[1] An overwhelming majority of these domestic moves (83.6%) are within the same state (U.S. Census Bureau, 2007). People who move to another state are of particular interest because they no longer contribute to the origin state's economy and tend to be better educated than those they left behind. For example, recent ACS data reveal that nearly two-thirds of the population 25 years and over who moved out of one state and into another between 2006 and 2007 had completed, at a minimum, some college or an associate's degree (U.S. Census Bureau, 2007).

As with many demographic phenomena, each state is impacted differently by the outflow of its inhabitants. With its location in the snow/rust belt and its reliance on the struggling automotive industry to employ many of its residents, the state of Michigan has faced an enormous amount of outmigration, especially of the college educated. Data from the 2007 ACS suggest an estimated 118,813 people 25 years and over moved from Michigan to another state between 2006 and 2007 (U.S. Census Bureau, 2007). Over 79,000 of those who left completed at least some college or an associate's degree, while approximately 46,000 had at least a bachelor's degree. In terms of net domestic migration,[2] Michigan lost over 30,000 college educated individuals between 2006 and 2007 alone. Based on the educational characteristics of people

[1] These moves do not necessarily involve leaving the county or state; rather, they may also include short distance moves such as those across the street. It is important to remember that migration can be measured on a spectrum, meaning that some people may move several times while others never move.

[2] Net Domestic Migration is the difference between inmigration and outmigration for people moving within the U.S. Movers from abroad are excluded because while the number who moved from abroad to each state is available, the number who moved from each state to another country is not. Therefore, including movers from abroad skews the estimates by causing the inflow to seem larger while leaving the outflow unchanged.

leaving Michigan during this period, concern over the brain drain is a pertinent issue that needs to be addressed. Otherwise, large numbers of the college educated will continue to leave Michigan, thereby reducing the availability of college educated workers to fill state jobs that require education levels beyond high school.

The purpose of the current investigation is to identify key characteristics contributing to the outmigration from Michigan. Public Use Microdata Samples (PUMS) from the 1980, 1990, and 2000 U.S. Censuses are used to measure the level of outmigration. For this paper, outmigration is defined as moving out of the state of Michigan within the five-year period prior to the Census. In other words, this migration measure is based on a retrospective recall of where the respondent lived five years prior to Census day (April 1st) of that particular year. The term college educated refers to people possessing education levels of at least "some college".

Using the brain drain literature as guidance, this project identifies and examines three categories of characteristics commonly used[3] that are likely to impact migration decisions: demographic, economic, and social. The results of this paper have the potential to benefit state governments, especially Michigan's, by indicating which factors consistently contribute to outmigration. By utilizing this knowledge appropriately, policies can be created to target individuals who exhibit these "at risk" characteristics. This paper adds to the outmigration and brain drain knowledge base as most earlier studies approach this issue from more of a macro perspective by focusing on migration flows between countries rather than states (e.g., Beine, 2008; Hagopian, 2004; Portes, 1976). Still, other scholars examine metropolitan areas (e.g., Frey, 2004; Gottlieb, 2003), although this introduces the possibility of someone moving from one

[3] These categories may not have the same names in other research, but the philosophies remain the same.

metropolitan area to another within the same state (ex., Grand Rapids-Wyoming MSA to Detroit-Warren-Livonia MSA).

To address this issue, the first portion of this project will provide an overview of relevant migration theory followed by a review of relevant brain drain literature. Next, research questions and hypotheses regarding the characteristics of outmigrants from Michigan are discussed. Information about which data sources were used, how these data were gathered, and how cases were selected is then presented. Coding decisions and justifications for these decisions are then provided to improve the understanding of study results. The following analytic portion of the paper discusses common destination states and descriptive characteristics of outmigrants from Michigan. Next, logistic regression is used to develop a deeper understanding of the relationship between the characteristics, in blocks and individually, and outmigration. Concluding this report are possible policy recommendations, limitations, and suggestions for future research.

THEORY

The theoretical framework for this project is the push-pull model of migration. Briefly discussed in Ravenstein's classic 1885 article, the theory was later expanded by numerous other scholars (e.g., Zipf, 1946; Todaro, 1969; Dorigo & Tobler, 1983). The premise of the theory suggests that a variety of factors contribute to the migration decision of individuals, either by encouraging or discouraging migration from an area, region, or state. The classic push-pull model examines factors that push individuals out of the sending region and pull the same individuals to the receiving region. For example, Todaro (1969) analyzed the relationship between differences in expected income between regions and how these differences impact migration decisions. His findings suggest that lower expected earnings in one area act as a force to push workers out, while higher expected earnings in other areas act as a force to attract migrants. Because my research focuses primarily on the state of origin (Michigan) and less on the destination state, an adjusted push-pull model is needed to adequately fit this project. In an effort to adapt the theory, both push and pull factors are in relation to Michigan. Push factors will remain the same by explaining which characteristics "push" people out of Michigan. The major difference is among pull factors. Instead of determining how the characteristics of destination states attract these movers (i.e., pull them), the characteristics of Michigan are used to explain why nonmovers decided to remain in the state. Stated differently, what prevented Michiganders from moving? By identifying both push and pull factors, policymakers and researchers can determine which characteristics of Michigan contribute to the outmigration and which encourage people to stay. Once these factors are identified, those contributing to the outmigration can be targeted in an attempt to reduce the outflow from Michigan.

BACKGROUND

For nearly a century the state of Michigan has heavily relied on the automotive industry to keep its residents employed. One report suggests that Michigan's employment in the automotive industry is seven times higher than the national average (Bartik, 2006). Because many of these jobs do not require a great deal of education, opportunities for those who attain a higher education are limited as they either find a job in the state, which may or may not use their additional knowledge advantageously, or move to another state in search of work that requires their higher education. Qualitative interviews on this topic suggest people possess an initial reluctance to move, but minimal opportunities for desirable employment act as a force to drive them out (Mitra, 2008). According to Bound et al. (2004), this creates a chicken and egg situation for employers and workers. Employers look for states with large pools of highly educated workers when considering where to establish their business. From the perspective of employers, opening a facility in a state with a rapidly declining supply of educated labor is an economically risky maneuver. As the college educated labor supply within a state dwindles, businesses will face difficulty hiring individuals with suitable qualifications to fill vacant positions. To forego this possibility, businesses locate themselves in states where the pool of college educated workers is sizable and steady or growing. Consistent with human capital theory, college educated workers will follow these companies to states where jobs for educated individuals are available because employment opportunities in their home state are stagnant (Schultz, 1961). These moves can be thought of as an investment where the individual endures the immediate costs of moving to improve their long-term economic situation. This results in a dangerous downward spiral where no new businesses are opened in the state and college

educated workers continue to leave, further depleting the pool of educated workers and reducing the chances of companies opening in Michigan.

Now that a general overview has been presented, my focus will shift to an initial discussion of education, followed by my presentation of the blocks of demographic, economic, and social measures that I will examine. Below is a review of select characteristics within these blocks that may impact migration decisions. Whenever possible, preference in this review is given to studies that focus on college educated migration. Otherwise, studies discussing the general characteristics of the total mover population or results from survey data will be used as my starting point.

EDUCATION

Franklin's (2003) study of young, single respondents suggests that 22.6% of those with a college degree moved to a different state between 1995 and 2000, compared to 9.6% without a college degree. This suggests that the mobility rate is significantly higher among the college educated when compared to the less educated population. Another study found that the completion of a college degree is a much more important predictor of interstate movement than simply attending college (Malamud, 2006). More specifically, approximately 25% of respondents who attended college and did not receive a degree moved to another state, while over 36.6% of those who graduated moved (Kodrzycki, 2001). Hansen et al. (2003) went a step further and subdivided education by degree attained. Nearly three-fourths of those respondents with a Ph.D. moved to a different area, while only 55% with a Bachelor of Arts degree moved. As this example demonstrates, analyzing subcategories within educational attainment is advisable, because subgroup differences in mover rates can be substantial.

DEMOGRAPHIC CHARACTERISTICS

Demographic characteristics play an important role in this project. Attempts to reduce, or prevent, outmigrations may be more successful if individuals exhibiting characteristics associated with mobility are targeted. For example, if it is determined that younger, college educated individuals are more likely to outmigrate than their older counterparts, then more effort should be devoted to convincing the younger college educated individuals to remain in the state. This possibility will be discussed in further detail below.

Sex

Major demographic shifts occurred between 1980 and 2000 that changed the sex composition of the college educated. A smaller proportion of women were enrolled in college during 1980 than 2000 (Mather and Adams, 2008), so in earlier years females represented a smaller percentage of possible college educated outmigrants. Because more women now attend institutions of higher learning than ever before, the potential for women to be included in the college educated outmigrant category has dramatically increased.

Literature on the role of sex in migration has a long history, complete with many contradictions. One of the founders of migration research, Ravenstein (1885), argued that females tend to move more often than males; however, most of these moves were over shorter distances. If true, women are less likely to be classified as movers because this study's definition of migration requires that migrants cross a state line, something usually associated with longer distance moves. Using data from the United Kingdom, Faggian et al.'s (2007) results counter Ravenstein's "law". Their findings suggest college educated women are more likely to be nonmovers than men. Using 2000 Census data, Whiser et al., (2008) found similar results, as

men who recently graduated from college are more likely to move than women (Whisler, 2008). Other researchers found no significant difference in mobility by sex (Kodrzycki, 2001).

Age

According to research by past Population Association of America president Ronald Rindfuss, individuals between the ages of 18 and 29 are considered to be the most mobile group in the U.S. population (1991). Whisler's research concurs (2008), as he found that older college graduates were less mobile than younger college graduates. These younger, college educated individuals are still establishing themselves and therefore have fewer social ties to affix them to a specific geographic area than someone who has lived in an area for an extended period. Additionally, several major life events typically occur during these younger ages, such as marriage and employment. These events tend to increase the mobility of respondents (Rindfuss, 1991).

Race

Mobility differs by race among the total population and college educated, albeit in different ways. Data from the 2003 Current Population Survey (CPS) show that Whites trail Asians and Blacks for mover rate and moves from a different state (Schachter, 2004). However, this is not the case among college graduates as Whites are more mobile than non-Whites (Kodrzycki, 2001). Less crude categorizations show similar differences between the various racial groups as educated Blacks and Asians are also less likely to move than Whites (Faggian, 2007).

ECONOMIC CHARACTERISTICS

Economic characteristics are often considered to be the driving force in migration research. Individuals who devote the time, energy, and money to advance their education often

expect a desirable job or compensation for their sacrifices. If these individuals experience difficulty finding and keeping a decent paying job in a given state, they will be forced to look elsewhere for such opportunities. Other states will gladly reap the rewards of a college educated workforce in the event that an origin state is unable to supply such opportunities.

While economic characteristics may be an important aspect of the migration decision, there are other non-economic characteristics that should be considered. As Cebula (2006) points out, some migration studies rely solely on economic characteristics in their analyses, potentially creating an omitted variable bias that compromises the entire study. To avoid this misstep, the current study uses economic characteristics in conjunction with various others.

Employment Status

The effect of employment status is multi-faceted as some individuals move for a better job, while others move because they are unable to obtain a job locally. According to 2008 CPS data, 19.7% of intercounty movers[4] at least 16 years old cited new job or job transfer as their primary reason for moving, compared to 3.6% who said they moved to look for work or had lost their job. These numbers help to remind us of the myriad of employment-related reasons people give for moving.

In addition to specific reasons for moving, unemployment has an important impact on the migration of the college educated. A United Kingdom study conducted by Faggian et al. (2006) found unemployment to be positively related to nonmover status among the college educated. These authors argue that unemployment is relatively rare for college graduates, so it may not play as large of a role in the migration decision as it does for the general population.

Income

[4] An intercounty mover is a person who moves from one county to another.

Tuckman's (1970) study attempting to predict migration among college students found a positive relationship between student income and chance of outmigration. This should come as no surprise, given that migrations can be quite costly to undertake, especially when moving long distances. Therefore, a college student with limited monetary resources would face more difficulty affording a move than an individual who earns more. This relationship holds among college educated workers as well, regardless of whether actual or expected income is used in the analysis (Cebula, 2006).

Housing Tenure

Among the general population, living in an owned home is highly predictive of whether respondents move or not.[5] According to data from the 2008 CPS, renters have a 29.3% total mover rate compared to only 6.6% for those who own their homes. People who own their home and decide to move to another state face difficult decisions because their mortgage payments are still due, the house may be left unoccupied, or both. Renters, however, do not have the burden associated with owning a piece of property, so their considerations are fewer overall.

SOCIAL CHARACTERISTICS

Social characteristics/ties can act as anchors to a community, preventing individuals from leaving an area due to a sense of belonging. The development of these ties creates barriers, preventing people from leaving their origin areas. Capturing social ties in a survey can be difficult, especially when they are not the focus of the study. The Census records the number of children, marital status, and other social characteristics discussed below. These characteristics

[5] For ease of wording, people who live in an owner occupied housing unit will hereafter be referred to as "homeowners", even though they may not be the actual homeowner. People living in a rented housing unit are "renters".

are examined to determine whether social ties cause or prevent outmigration from Michigan and to what extent.

Previous Outmigration

According to several authors using a variety of data sources, the best predictor of a current, or future, move is whether the respondent participated in a past move (Whisler et al., 2008; DaVanzo, 1983; Kodrzycki, 2001). Individuals with a history of migration may have severed their social ties to an area, reducing the number of factors preventing them from moving to a new state. Engaging in a move may instill a sense of confidence in the individual because they know what to expect and how to cope with the additional stress caused by moving. An individual without such experience may find the prospect of moving overwhelming, especially when the support system they relied on in the past is no longer available.

Veteran

Veterans are a very select subgroup within the U.S. population. Eleven percent of the US population 25 years old and over were veterans in 2007 (U.S. Census, 2007). To further subdivide this group, 58.8% had at least some college experience. Focusing on migration, Malmud (2006) found veterans to be more mobile than civilians. During their period of service, members of the armed forces are often required to move to numerous distinct locations. This constant movement could cause a loss of attachment to the area where they live and familiarizes them with the moving process, factors that may explain why they are more mobile than the non-veteran population.

Marital Status

Never married individuals are the most mobile marital status. Among the young, single, and college educated, 22.6% moved to another state between 1995 and 2000 (Franklin, 2003).

Young, married, college educated respondents were slightly less mobile at 18.6%. Hansen et al.'s (2003) study of the college educated leaving Pittsburgh reached similar conclusions and found singles to be the most mobile marital status. Married respondents who were college educated were the marital group next most likely to move followed by widows and divorcees (ibid).

Number of children under 18/ number of children under five

Based on the results of Whisler et al. (2008), the presence of children under 18 is associated with a lower likelihood of moving. It is important to highlight that their study does not distinguish the number of children in the home or their age. This is important because children under the age of five require a great deal of specialized attention from their parents. Older children do not require as much supervision as their younger siblings, so age of the child could be an important predictor. In addition, the number of children should be considered because each additional child may further decrease the chances of moving compared to one.

All of these characteristics play an important role in outmigration from Michigan. The goal of the following section is to examine the relationship between these characteristics and the population who lived in Michigan. This is accomplished through the use of various research questions that will be elaborated in the next section. There I will also present hypotheses designed to explore these questions which are based on my literature review and theoretical discussion.

CURRENT INVESTIGATION

The overarching research question for this investigation examines the characteristics of the people who leave Michigan in order to establish policies or programs aimed at reducing the Michigan outflow/brain drain. With this information, efforts targeted at the retention of the most "at risk" population in Michigan are more likely to succeed. By analyzing three separate sets of characteristics, this study will attempt to develop a more complete understanding of the context of the move, rather than focusing on just one piece of a larger puzzle. Another important matter examined is whether these characteristics differ over time. If the characteristics of these movers change over time, then a program developed for a specific period will be less effective as time passes. Using housing tenure as an example, renters may be more mobile than homeowners in 1980. Instituting a policy targeting renters would be advisable in this situation. However, if homeowners become more mobile by 2000 and renters are still the target of these policies, then Michigan officials may be trying to convince people who are already less likely to move to remain in Michigan. While it may appear that this program is successful over time, it is, in reality, a waste of already scarce resources.

My first research question examines states that were the most common destinations for the people who left Michigan. It also determines if state selection varied by education and over time. The determination of where these people move may offer clues to factors latent in the data, such as climate and distance. I hypothesize that destination states will vary by year because of the economic shifts that occurred during the time period being examined. An economic boom or bust in any state could dramatically alter the migration flow from Michigan, causing the most popular destination states to change.

The second research question looks to determine which block of characteristics plays the most important role in the migration decisions of movers from Michigan after controlling for education. Demographic characteristics, such as age and race, play a strong role in the migration of the population. In addition, social characteristics need to be considered because a person's ties to the community and their family, or lack thereof, may contribute to the push-pull dynamic of migration. However, economic characteristics such as employment status and earned income are arguably the sustaining factors of an individual or family. People unable to access the resources of employment and a decent, livable income will be forced to search areas outside of their immediate surroundings. For this reason I hypothesize that economic characteristics are the most important set of characteristics. Regardless of the outcome, if the same set of characteristics continually contributes to outmigration, then directed programs or a concerted effort will need to be implemented to prevent or reduce the outflow.

The third research question examines how migration differs by education. I hypothesize that respondents with higher levels of education have higher odds of moving than those with some college experience. Compared to individuals with some college experience, people below the some college education level (i.e., less than high school graduate and high school graduate) will have lower odds of moving. In terms of those with college experience, I hypothesize that actually obtaining a college degree is completely different and more important than attendance. A student may complete a few courses and then decide to discontinue their education. If this is truly the case, then mover rates among students who did not complete an advanced degree (i.e., some college) should not differ much, if at all, from high school graduates.

The fourth research query develops a deeper understanding of how selected characteristics within the blocks of demographic, economic, and social characteristics influence

migration, after controlling for education, year, and all other factors included in this investigation. Including everything in a single model removes the interconnectedness of these variables. For this question there are five subsections, each dealing with a particular characteristic.

The first section of this question compares renters and homeowners in terms of migration. I hypothesize that renters have higher odds of moving compared to owners. Owners are more invested in a community/economy because of their homeownership. They are under long-term financial obligations by way of a mortgage, so leaving an area requires additional planning and preparation. Renters, on the other hand, can leave at any time if not tied in to a lease.

Section 2 asks about the role age plays in outmigration from Michigan. I hypothesize that younger respondents have higher odds of moving than older individuals. The process of moving can be physically and emotionally exhausting. Younger people are better able to deal with these added stresses. Plus, younger respondents have had less time to accumulate worldly possessions, meaning less effort is involved in moving.

The third portion of this question asks how an earlier outmigration influences a more recent outmigration among the population who lived in Michigan five years ago. I hypothesize that individuals who moved in the past are more likely to outmigrate than respondents who have not previously moved. Previous outmigrants by definition have already moved from their state, or country, of birth, so the prospect of an outmigration may not be as daunting as it otherwise would be. Because only international and state-to-state moves are considered for this characteristic, previous movers severed relationships once in a different country or state and should be able to do so again with less difficulty. Someone without this experience may have greater concerns because they do not know what to expect. On the other hand, it may also be true

that a past migration went horribly wrong, resulting in a high level of reluctance to move again. In this case, I expect respondents with past outmigration experience to be less likely to move compared to respondents with no outmigration experience.

The fourth section inquires about the relationship between the respondent's marital status and outmigration from Michigan. I hypothesize that the never married respondents have higher odds of outmigration compared to other marital statuses. Currently married respondents need to consider their spouse and their spouse's opinions in their migration decisions. Divorced and widowed respondents are typically older with more social ties, resulting in lower odds of moving than those never married.

The fifth portion of this section attempts to identify the role children play in the migration decision of individuals from Michigan. I hypothesize that childless individuals will have higher odds of moving compared to those with children. Children have the potential to complicate the already stressful experience of moving. This is especially true for younger children (i.e., those under five years old) who do not fully comprehend moves of any magnitude. On the other hand, older children may be used as free labor during a move which saves on costs. If these scenarios are true, then older children will increase the likelihood of a migration relative to childless individuals, while younger children will reduce the odds. A reasonable counterargument can be made that parents with younger children are as mobile as childless respondents. Younger children have not developed strong social ties to the community and are generally not opposed to moving. Older children are more likely to exhibit reluctance toward a move because their social ties have been developed to a greater extent. An outmigration would act as an upheaval to older children, causing them to lose all of their previously established community ties in one fell swoop. Another possibility is that children are the cause of an outmigration. For example,

families may decide to move to another state in search of a better educational system or safer neighborhood.

This project's final research question looks to determine if the association between outmigration and the focal characteristics mentioned above (i.e., education, age, previous outmigration, housing tenure, marital status, and number of children under five/18) change over time. I hypothesize that the same factors will continually push or pull people out of Michigan from one period to the next. However, an abrupt event could occur that alters this outmigration flow. One such example might be a shift in an employer college recruiting programs. That is, if a large employer decides to actively concentrate their job recruitment efforts toward well educated individuals already living in the state, then this may have the potential to decrease the size and characteristics of the outflow from Michigan.

DATA

The data used in this investigation are from the 1980, 1990, and 2000 U.S. Censuses.[6] Collected every ten years (decennially), the Census attempts to gather information from the population of the United States. A sample of the population completes long form questionnaires, which collect migration and other additional information beyond the basic demographics collected by the short form. Nationally, long forms were distributed to one in every six households for all three Censuses.[7] In 1980 and 1990, sampling frames were obtained from commercial mailing lists or field representatives through address canvassing. Prior to the 2000 Census, concerns were raised over the completeness of commercial listings used in previous years. In an attempt to create a more inclusive sampling frame for 2000, the Census Bureau collaborated with the US Postal Service, state and local governments, and other organizations to compile its own address list, commonly referred to as the Decennial Master Address File or DMAF (Bureau, 2003). Address canvassing was conducted to supplement areas not adequately covered by the DMAF.

The sample used for the current investigation was created by IPUMS.org using the 5% "large" public use microdata samples (PUMS) from the 1980, 1990, and 2000 U.S. Censuses. IPUMS, the Integrated Public Use Microdata Series, is a collaboration between several statistical Government Agencies and the Minnesota Population Center at the University of Minnesota (Ruggles, 2010). From IPUMS, researchers can request microdatasets for decennial Censuses, the American Community Survey, and other surveys for their research. For the current sample, cases were selected through a stratified systematic selection procedure with equal probability to

[6] While more recent migration data are available, they either lack the history of the Census, as is the case for the ACS, or limit migration to region rather than state (Current Population Survey).
[7] Smaller areas were sampled at a higher rate (1 in 2) whereas larger areas were sampled at 1 in 8.

ensure that all cases had an equal chance of inclusion in the sample (Bureau, 2003).[8] The stratification process for the development of PUMS files has become increasingly complex over the years, as only 102 strata were available in 1980 but by 2000 this number was more than 34,000.[9] Most of this change resulted from more complicated race categories, especially after respondents were given the option to select more than one race.

In order to obtain an accurate sampling frame to answer the research questions of this project, the author restricted the sample to respondents who reported living in Michigan five years before the date of each respective Census. In order to be "at risk" of moving from Michigan, an individual must have lived in the state during the reference period (i.e., five years before).

[8] 1980 is a self-weighted sample. 1990 and 2000 are not.
[9] PUMS files were stratified by such characteristics as age, race, Hispanic origin, tenure, and others.

MEASURES

Table 1 provides descriptions for all variables used in the analyses of outmigration from Michigan. The dependent variable for this study is whether the respondent moved out of Michigan in the past five years. This variable is created by comparing the respondent's state of residence five years ago to their state of residence on the day of the Census.[10] Because everyone in the samples lived in Michigan five years ago, I only need to determine who moved out of the state. In order to do this, a dummy variable is created indicating the respondent's current state of residence, with "0" representing Michigan and "1" representing any other state in the U.S. Migrations are restricted to states within the U.S., otherwise the move would be international rather than internal. People living in another country at the time of the Census are outside of the scope of the Census and this project.

The focal independent variable for the current study is educational attainment. Each education level has a corresponding dummy variable. The categories are "less than high school", "high school graduate or equivalent", "associate's degree", "bachelor's degree or equivalent", and "master's degree or higher", with "some college" as the reference category.[11] For the descriptive statistics, less than a college education refers to people without any college experience. College educated refers to the group to those with some level of college experience.

DEMOGRAPHIC CHARACTERISTICS

[10] People are recorded by the state where they "usually reside," which can be thought of as where the individual spends most of his/her time.

[11] The 1980 census did not ask about the respondent's last degree obtained. Instead, respondents indicated how many years of college they completed.

The variable for sex is recoded so females are the reference group with a value of "0" instead of "2". The second demographic variable is age, which I limited to a high of 60 and centered.[12]

There are two main justifications for limiting age: Individuals older than sixty only have a few years of workforce participation remaining. Second, respondents over 60 years old represent a small proportion of the samples, under 10% in 2000, and have very low mover rates. According to data from the 2007 ACS, only 1.2% of those 60 years and over completed a state-to-state move between 2006 and 2007 (U.S. Census Bureau, 2007). The third demographic factor is race, which is the recoded version of the detailed race variable. The recoded version of race is used for reasons of parsimony, because several of the 40+ racial categories have small, or zero, cell sizes. For the recoded race variable, very few respondents are included in the Chinese, Japanese, and other Asian categories, so they are collapsed into an all-inclusive "Asian" category. American Indians and Alaskan Natives are combined with the other race category because of their small sample sizes. The variables for the various racial categories are dichotomously coded with "White" as the reference category. The other categories are "Black", "Asian", and "Other". [13]

ECONOMIC CHARACTERISTICS

Full-time worker and unemployment dummy variables indicate whether the respondents worked full-time or were unemployed, with part-time as the reference category. For this project,

[12] Centering improves the interpretability of results. For example, an uncentered age variable will have 0 years old as a reference group, which is outside of the bounds of this project. Centered age has a reference group equivalent to the mean, which is 34 for this project.

[13] Beginning with the 2000 Census, respondents are given the option to select more than one race. Only 2.2% of respondents reported two or more races in 2000. Because they could not be identified by a single race, they were placed in the "other" category.

Table 1. Description of Variables Used in Analyses of Outmigrants from Michigan

Table 1. Description of Variables Used in Analyses of Outmigrants from Michigan			
Independent Variables	**Variable Definition**	**Minimum Value**	**Maximum Value**
Sex	0=female; 1=male.	0	1
Age	Age of respondent.	18	60
Age Squared	Age of respondent squared.	324	3600
White	Reference	-	-
Black	0=Another race; 1=Black.	0	1
Asian	0=Another race; 1=Asian	0	1
Other	0=Another race; 1=Other	0	1
Part-Time Worker	Reference	-	-
Full-Time Worker	0=Other work status; 1=Full-Time Worker.	0	1
Unemployed	0=Other word status; 1=Unemployed.	0	1
Personal Income	Respondent's reported personal income	-$14,103	$796,600
Personal Income (logged)	Logged value of personal income	-0.69	13.48
Housing Tenure	0=Lives in owner occupied housing unit; 1=Lives in renter occupied housing unit.	0	1
Less than High School Graduate	0=Other education level; 1=Less than High School Graduate.	0	1
High School Graduate	0=Other education level; 1=High School Graduate.	0	1
Some College	Reference	-	-
Associate's Degree	0=Other education level; 1=Associate's Degree.		
Bachelor's Degree	0=Other education level; 1=Bachelor's Degree.	0	1
Master's Degree or higher	0=Other education level; 1=Master's Degree or higher.	0	1
Previous Migration	0=Born in Michigan; 1=Born in another state or country.	0	1
Veteran Status	0=Civilian; 1=Veteran.	0	1
Never Married	Reference	-	-
Married, spouse present	0=Other martial status; 1=Married, spouse present.	0	1
Married, spouse absent	0=Other marital status; 1=Married, spouse absent.	0	1
Separated	0=Other marital status; 1=Separated.	0	1
Widowed	0=Other marital status; 1=Widowed.	0	1
Divorced	0=Other marital status; 1=Divorced.	0	1
Number of children under 5	0=No children under 5 present; 1=1 child under 5; 2=2 or more children under 5.	0	2
Number of children under 18	0=No children under 18 present; 1=1 child present; 2=2 children present; 3=3 or more children present.	0	3
1990	0=Completed another Census; 1=Completed 1990 Census.	0	1
2000	0=Completed another Census; 1=Completed 2000 Census.	0	1
Dependent Variable	**Variable Definition**		
Michigan Outmigrant	0=nonmover; 1=mover.	0	1

full-time workers are defined as those employed for an average of 30 hours or more per week, while those with fewer than 30 hours are classified as part-time. In terms of finances, personal income is logged in the logistic regression models. Housing tenure is a simple dichotomous variable with "1" for living in a renter-occupied housing unit and "0" for owner-occupied housing unit. Subcategories within renter and owner occupied, such as "no cash rent" or "owned free and clear", are collapsed into their corresponding category.

SOCIAL CHARACTERISTICS

The first social characteristic variable for this project is having a previous outmigration. This variable is created by comparing the respondent's state, or country, of birth to the state they lived in 5 years before the Census (e.g., Michigan). Respondents with previous outmigration experience have a value of "1" for this variable and "0" for no known history of outmigration. For this report, people who moved within the same state are classified as not having a previous outmigration because of the state level perspective. For veteran status, nonveterans are coded as "0" and veterans as "1". Marital status of the respondent is separated into dummy variables for married spouse present, married spouse absent, separated, divorced, and widowed, with never married as the reference category. Number of own children living in the household is the next variable. The Census codebook shows valid values as high as 60 children, while the dataset is top coded at 9. Based on a precursory look at the data, the proportion with more than three children under the age of 18 living in the household is 2.1% for the 2000 sample. Because the percent is so small, I recoded the variable so that the only remaining values are "0" for no children, "1" for one child, "2" for two children, and "3" for three or more. Number of own children in the household under age five is last with a range from zero to five. Less than .5% of the 2000 sample

had more than two children under the age of five, so two is the maximum value allowed for this variable.

The analysis begins with a list of the top five destination states for Michigan outmigrants by education and year. Trends latent in the data can be identified if the same states are continually the destinations of movers from Michigan. The second segment has two tables of select demographic, economic, and social characteristics of movers and nonmovers, separated by education and year. This allows for a trend analysis to be conducted to determine, on a basic level, the variables which consistently push or pull people to/from Michigan. Finally, logistic regressions are conducted on people who lived in Michigan five years ago. Logistic regression is used because the dependent variable is binary and skewed.[14] The first set of models includes education and adds the blocks of demographic, economic, and social characteristics individually. The full model contains the same three blocks of characteristics together in a single model, in addition to a quadratic term for age (model 2) and interactions with year (model 3).

[14] Between 10% and 20% of the sample moved from Michigan within a given five year period.

RESULTS

Tables 2a and 2b answer the research question, "Where are Michigan outmigrants moving" by providing the five most common destination states for movers with a college education and for those with less than a college education, respectively. Each table presents this information for the years 1980, 1990, and 2000. Contrary to my hypothesis, there is relatively little variation in the destination states of these two groups. For the college educated, the same five states appear for both 1980 and 1990: California, Florida, Illinois, Ohio, and Texas. In 2000, Indiana replaced Texas as the fifth most common destination state. Among movers with less than a college education, the top five destination states showed more variation. The less educated group moved to all of the top destinations of the more educated group, except for Illinois. In addition, they also moved to Arizona and Tennessee. While some differences do exist, both education groups commonly move to the same states. This may be due to the location, climate, or economy of the destination state.

Among those with less than a college education, the percentage that moved to the five most common destination states ranged from 39.6% to 45.7%. This is very similar to the college educated percentages (38.6%-44.4%). These numbers suggest that for both groups more than a third of Michigan outmigrants selected one of the most common destination states as a place to live. Even though the percentages were similar, the number of movers differed dramatically by level of education. More specifically, in 1990 and 2000, the number of college educated movers to the top five destination states was more than double the number of movers with less than a college education. This descriptive overview provides a first glance at the educational composition of the migration flows out of Michigan.

Table 2a. Top Five Destination States for College Educated Outmigrants from Michigan

Table 2a. Top Five Destination States for College Educated Outmigrants from Michigan						
1980			1990		2000	
State	Number of Movers		State	Number of Movers	State	Number of Movers
California	15,040		California	28,013	Florida	23,022
Florida	8,900		Florida	26,722	Illinois	21,991
Illinois	8,760		Ohio	20,468	California	21,320
Ohio	7,820		Illinois	20,280	Ohio	19,639
Texas	7,160		Texas	13,000	Indiana	13,568
Total movers from Michigan to these states	47,680			108,483		99,540
Percent of movers who relocated from Michigan to these states	42.9%			44.4%		38.6%
Source: 1980, 1990, and 2000 U.S. Census.						

Table 2b. Top Five Destination States for Michigan Outmigrants with Less Than a College Education

Table 2b. Top Five Destination States for Michigan Outmigrants with Less Than a College Educatio						
1980			1990		2000	
State	Number of Movers		State	Number of Movers	State	Number of Movers
Florida	11,980		Florida	22,018	Florida	12,447
California	8,660		California	8,545	Ohio	7,289
Texas	5,980		Ohio	7,849	Indiana	7,007
Ohio	5,220		Indiana	7,186	Tennessee	5,782
Arizona	4,160		Tennessee	5,751	Texas	5,560
Total movers from Michigan to these states	36,000			51,349		38,085
Percent of movers who relocated from Michigan to these states	45.6%			45.7%		39.6%
Source: 1980, 1990, and 2000 U.S. Census.						

Characteristics of these common destination states may contribute to the migrant's choice of destination. Based on tables 2a and 2b, the top destination state always offers a much warmer climate than Michigan. To further solidify the point, all lists in tables 2a and 2b contain at least two states located in the "sunbelt". This may be a coincidence, or it could indicate amenity seeking behaviors among outmigrants. Another consideration is the distance of these moves. Illinois, Indiana, and Ohio are all within the same region as Michigan. However, Arizona, California, Florida, Tennessee, and Texas are in different regions of the country and are therefore longer distance moves. These results suggest that distance is not a strong deterrent for migrants who decide to leave Michigan, regardless of their education.

While it is important to determine where people moved, it is equally beneficial to identify similarities and differences between movers with a college education and those with less than a college education. To achieve this goal, weighted descriptive statistics for Michigan outmigrants by education and year are shown in table 3a. This table reveals that several characteristics did not greatly differ by education. For instance, median age was 29 for both groups in 1980. When comparing these groups by the same year, median age was very similar, differing by a high of only two years in 2000. In addition, median age had similar increasing trends across the two groups, which means people who reported moving in the 1990 and 2000 Censuses were older relative to 1980 movers. The corresponding increase in educational attainment during this 20 year period may explain some of this age difference, as people now stay in school longer and thus may postpone their moves out of the state. This has the potential to increase the number of educated workers in Michigan if the state is able to convince people to remain there. The additional time students spend living in Michigan could be utilized advantageously by

Table 3a. Weighted Descriptive Statistics of Michigan Outmigrants by Education and Year

Table 3a. Weighted Descriptive Statistics of Michigan Outmigrants by Education and Year							
Characteristic	College Education				Less than College		
	1980	1990	2000		1980	1990	2000
Education							
Less than High School Graduate					31.0%	24.8%	17.4%
High School Graduate or Equivalent					69.0%	75.2%	82.7%
Some College	15.5%	35.9%	25.9%				
Associates degree or equivalent	27.6%	11.5%	10.2%				
Bachelors degree or equivalent	28.3%	35.5%	40.7%				
Masters degree or higher	28.6%	17.1%	23.2%				
Demographic							
Male	57.9%	52.8%	51.8%		51.6%	51.7%	51.0%
Age[1]	29	30	32		29	31	34
Race							
White	91.3%	88.0%	82.0%		90.1%	83.8%	77.0%
Black	6.4%	8.7%	7.9%		8.6%	12.3%	14.0%
Asian	1.8%	2.6%	5.7%		0.5%	0.9%	1.5%
Other	0.5%	0.8%	4.4%		0.8%	3.0%	7.4%
Economic							
Employment Status							
Unemployed	4.0%	3.7%	4.2%		11.6%	11.8%	11.5%
Part Time Worker	14.2%	15.3%	14.6%		14.3%	16.5%	15.2%
Full Time Worker	81.8%	81.0%	81.2%		74.1%	71.7%	73.3%
Personal Income[1]	$11,420	$20,000	$31,000		$7,005	$10,800	$16,800
Living in an owned home	47.2%	44.1%	50.4%		43.9%	40.5%	46.0%
Social							
Previous Outmigration	53.3%	47.3%	51.9%		50.1%	43.7%	47.4%
Veteran	17.1%	12.5%	7.7%		19.5%	16.5%	11.4%
Marital Status							
Married, spouse present	58.1%	53.6%	51.2%		56.1%	51.4%	44.5%
Married, spouse absent	0.7%	1.5%	1.4%		1.3%	1.9%	2.1%
Never Married	30.3%	34.4%	36.6%		24.6%	27.3%	32.9%
Separated	1.9%	1.6%	1.2%		4.1%	4.0%	3.6%
Divorced	8.3%	8.3%	9.1%		11.6%	13.4%	15.2%
Widowed	0.7%	0.7%	0.6%		2.3%	2.0%	1.7%
Number of children under 5							
0	82.4%	83.3%	84.7%		80.7%	80.9%	84.2%
1	13.4%	12.5%	11.1%		15.0%	13.8%	12.0%
2+	4.2%	4.2%	4.3%		4.3%	5.3%	3.8%
Number of children under 18							
0	61.9%	64.8%	68.0%		54.4%	57.9%	61.7%
1	14.4%	15.1%	12.8%		18.4%	18.1%	15.6%
2	15.0%	13.8%	12.3%		14.4%	14.5%	13.7%
3+	8.8%	6.3%	6.9%		12.8%	9.5%	9.0%
Percent who moved from Michigan	21.7%	18.6%	18.5%		13.5%	11.5%	10.6%
Weighted n	103,060	244,227	233,566		87,120	112,483	120,758
1. Median of the characteristic							
Source: U.S. Census Bureau, 1980, 1990, and 2000 U.S. Census.							

encouraging people to develop additional social ties and by providing workforce opportunities. If this approach worked and Michigan somehow managed to keep these individuals, then the size of its educated workforce would grow substantially. The increase in median age may also be indicative of a weak economy where older people who would not have otherwise moved are forced to leave Michigan in search of work.

The sex distribution is another area where both educational groups are similar. Observed results suggest that the percentage of females who moved out of Michigan was much higher among college women in 2000 than in either 1980 or 1990. This may be partially due to changes in social attitudes regarding the independence of women. I believe that women who wanted to move to another state by themselves would face less resistance in 2000 than in 1980 because of recent changes in social norms and gains in independence. Another important aspect to consider is the increase in the number and proportion of women attending college (Mather, 2007). Both of these factors would increase their chances of moving, because college students, and the college educated for that matter, tend to be more mobile. Despite the gains by women, men always represented more than half of the movers for both education groups.

Another measure with similarities across groups is the percentage of respondents who had no children under the age of five. This hovered between 80 and 85 percent for both groups and tended to increase over this 20 year period. I suggest that people with children are devoting resources to the care and maintenance of their offspring. When considering the possibility of a move, the availability of these resources, particularly time and money, play an important role in any migration decision. Therefore, people who have a greater degree of flexibility with these resources (i.e., the childless) can more easily move to another state. This result begins to provide support for my hypothesis that children under the age of five hinder migration.

Differences between these movers are as important as the similarities, if not more so. Table 3a contains the total number of college educated movers that left Michigan between 1975-1980, 1985-1990, and 1995-2000, which was 580,853. A significantly smaller number of people with less than a college education, 320,361 moved out. Based on these estimates, 64.5% of the outflow from Michigan had at least some college education. Unlike the numbers from tables 2a and 2b, these figures show the full extent of the domestic outflow from Michigan. Analyzing the percentage of movers by education provides similar conclusions. Regardless of the year, people with a college education move at higher rates. Because of the human capital they possess (e.g., education, skills, and/or expertise), these are arguably the most desirable individuals sought after by businesses. Other states may attract these well educated individuals by enticing them with added incentives, such as higher pay and better amenities. Less educated people may not receive such preferential treatment, or they may find it difficult to afford the higher costs of an area that provides better amenities. According to the bottom of table 3a, the percent of outmigrants vastly differed between the two education groups. The percent of outmigrants is calculated by dividing the number of people within a group who moved by the total number of people within said group. Using the 1980 college educated as an example, 103,060 out of 474,660 moved out of Michigan, resulting in 21.7% who relocated to another state. The lowest percent for the college educated group was 18.5% in 2000, which was still greater than the highest for people with less than a college education (13.5% in 1980). As previously suggested, the college educated benefit more from completing a state-to-state migration than do those without a college education. Unless there is a strong desire to move, people with less than a college education have less incentive to move to another state.

Employment status is another characteristic that differs dramatically across groups. Over 11% of Michigan outmigrants with less than a college education were currently unemployed, compared with only 4% of the college educated movers. This supports Faggian et al.'s (2006) notion that the college educated may be less impacted by economic conditions due to their desirability. Median personal income is another example where the groups diverge. The less than college educated group earned only slightly more than half the income of their college educated counterparts in 1990. This trend persisted in 2000 when college educated movers earned $31,000 and the less than college group earned only $16,800. This finding provides support for the public service announcements which argue that attending college increases your income, at least among movers. Finally, a higher percentage of college educated movers had no children under the age of 18 throughout 1980, 1990, and 2000 than movers with less than a college education. This could be a result of college educated movers postponing their fertility in order to complete their schooling. Some couples who move may also have decided to forego children entirely, opting instead to focus resources on their careers instead of family. It should also be noted that children under 18 do not reduce interstate movement as much as children under five, as predicted by my hypothesis. This result is a justification for the incorporation of the number of children and their ages in my models.

Characteristics of nonmovers by level of education are presented in table 3b. An important point to highlight is the difference in their educational attainment over the years. For example, in 1990 half of the college educated nonmovers were in the "some college" category. Education was divided more evenly in 1980 and 2000 as 77.3% and 60.2%, respectively, had completed an associate's degree or higher. For whatever reason, obtaining a degree was not as common among nonmovers in 1990 as it was in 1980 and 2000. If the economic situation was

Table 3b. Weighted Descriptive Statistics of Michigan Nonmovers by Education and Year

Characteristic	College Education			Less than College		
	1980	1990	2000	1980	1990	2000
Education						
Less than High School Graduate				31.3%	25.3%	18.6%
High School Graduate or Equivalent				68.7%	74.8%	81.4%
Some College	22.7%	50.0%	39.8%			
Associates degree or equivalent	34.7%	15.3%	15.7%			
Bachelors degree or equivalent	23.0%	24.3%	31.5%			
Masters degree or higher	19.6%	10.4%	13.0%			
Demographic						
Male	56.0%	50.4%	49.8%	52.2%	50.8%	52.2%
Age[1]	29	32	33	28	31	33
Race						
White	89.2%	87.4%	84.8%	85.7%	81.7%	78.4%
Black	9.3%	10.4%	10.5%	13.4%	15.5%	16.5%
Asian	0.1%	1.1%	2.1%	0.2%	0.5%	0.7%
Other	0.5%	1.1%	2.6%	0.7%	2.3%	4.3%
Economic						
Employment Status						
Unemployed	3.3%	3.9%	2.9%	13.3%	13.7%	8.7%
Part Time Worker	14.7%	15.8%	15.7%	11.2%	16.5%	15.5%
Full Time Worker	82.0%	80.2%	81.3%	75.5%	69.8%	75.7%
Personal Income[1]	$13,955	$21,000	$32,000	$9,705	$12,088	$20,000
Living in an owned home	63.7%	63.1%	68.7%	61.2%	55.6%	68.2%
Social						
Previous Outmigration	25.7%	21.8%	22.2%	24.6%	20.4%	19.2%
Veteran	16.5%	11.4%	7.6%	16.6%	11.6%	8.3%
Marital Status						
Married, spouse present	60.8%	55.8%	54.3%	57.6%	48.7%	42.7%
Married, spouse absent	0.6%	0.9%	1.0%	0.8%	1.4%	1.5%
Never Married	27.2%	28.7%	30.6%	23.1%	29.4%	35.5%
Separated	2.1%	2.1%	1.5%	4.4%	4.0%	3.0%
Divorced	8.8%	11.7%	12.0%	12.1%	14.8%	15.9%
Widowed	0.6%	0.7%	0.7%	2.0%	1.7%	1.4%
Number of children under 5						
0	76.2%	76.9%	78.7%	74.9%	75.9%	80.2%
1	17.6%	16.9%	15.3%	18.4%	17.2%	14.5%
2+	6.2%	6.2%	5.9%	6.7%	6.9%	5.4%
Number of children under 18						
0	56.5%	54.4%	56.6%	48.2%	49.8%	53.8%
1	17.1%	18.6%	17.8%	20.2%	20.0%	18.4%
2	17.2%	17.7%	16.7%	17.9%	18.2%	16.8%
3+	9.2%	9.4%	8.9%	13.7%	12.1%	11.0%
Weighted n	371,600	1,067,922	1,031,239	575,260	866,037	1,013,752

1. Median of the characteristic

Source: U.S. Census Bureau, 1980, 1990, and 2000 U.S. Census.

promising and jobs were plentiful, then it would make sense in certain circumstances to drop out of college in search of work. However, if job prospects are bleak and create more competition, then having a higher degree could benefit one's marketability. This creates a balancing act where the individual must decide whether they plan to remain in school and continue to pay tuition in the hopes of landing a high paying job in the future, or to abandon their schooling and take their chances in the labor market. Directly tied into this scenario is the concern over costs associated with pursuing an advanced degree. We cannot lose sight of the fact that in a harsh economic climate where money is already tight, people may have trouble affording to continue their college education.

The racial distribution among the groups of nonmovers changed over time, which may be the result of a demographic shift in Michigan. Nearly 90% of the college educated nonmover sample was White in 1980. This decreased to 84.8% by 2000 as other races obtained college educations. Specifically, the Asian race category began with .1% in 1980 and eventually increased to 2.1% in 2000. This trend of an increase in the percentage of non-White nonmovers occurred for the less educated group as well. The "other" race category started with .7% in 1980, but grew to 4.3% by 2000. Never married nonmovers varied across the two groups, although it was much more pronounced for the less than college educated. Fewer than 25% of the less than college educated nonmovers were never married in 1980. By 1990, this figure approached 30%, and reached its peak of 35.5% in 2000. The percent of never married respondents in the college educated nonmover group started off higher, at 27.2% in 1980, but failed to keep pace with less than college educated nonmovers (i.e., 30.6% in 2000). These trends suggest that never married respondents accounted for a greater percentage of nonmovers over time. As a direct result, married individuals (spouse present) composed a smaller percentage of nonmovers. People may

feel less pressured to marry the partners they are currently courting. Instead, they are deciding to utilize other options, such as cohabitation or continuing to live apart.

The question that logically follows is, how do movers differ from nonmovers? Comparing tables 3a and 3b, a greater percentage of college educated movers earned a bachelor's degree or higher than college educated nonmovers. The lowest percentage of college educated movers that earned a bachelor's degree or higher was 52.6% in 1990. Among college educated nonmovers, the highest percentage that earned at least a bachelor's degree was 44.5% in 2000. This confirms that a smaller percentage of people who earned a bachelor's degree or higher are staying in Michigan compared to movers. Completing a previous migration was another characteristic where movers and nonmovers differed. Education does not play a large role in previous outmigration as both sets of movers had rates of about 45% to 50%. The percentage of nonmovers with prior migration experience was considerably lower, at approximately 20% to 25%. This finding supports my hypothesis regarding previous migration and parallels several migration studies discussed earlier (Whisler et al., 2008; DaVanzo, 1983; Kodrzycki, 2001). Based on these results, it may be the case that having the experience of a prior move prepares people for the possibility of dealing with future moves. People who possess the experience of moving may have the best understanding of the process and what is involved. Those without such experience may find the mere thought of a move overwhelming. Shifting attention to housing tenure, people living in their own homes had higher rates of staying in Michigan than those living in rented homes, a result I earlier predicted. This should not come as a surprise given that owning a home requires a certain level of commitment to an area. People who currently live in an owned home will have to deal with the difficulties associated with

selling their property if they decide to move. This added burden may be enough of a barrier to prevent homeowners from moving.

Analyzing characteristics using cross tabulations acts as a great starting point for this project, but it lacks the sophistication of being able to statistically control for other variables. The next section isolates the three blocks of characteristics in order to better assess their association with outmigration from Michigan. To do this, Table 4 presents logistic regression models for the focal variable (education) and the individual blocks of demographic, economic, and social characteristics. As a reminder, the reference categories for the various characteristics are as follows: education-some college, sex-female, centered age-34, race-White, employment status-part-time worker, housing tenure-living in an owner-occupied housing unit, past outmigration-no known history of a past migration, veteran status-nonveteran, marital status-never married, and number of children under five/18-childless individuals. The pseudo r-squared term used for the logistic regressions describes how much the characteristics add to the baseline model.[15] To determine which block of characteristics plays the largest role in the outmigration from Michigan, the pseudo r-squared values are compared to identify the block of characteristics that add the most to the baseline model.

The first model in Table 4 shows the demographic characteristics with a pseudo r-squared value of .024. This suggests that demographic characteristics do not add much to the baseline model. Economic characteristics, presented in the second model, have a pseudo r-squared value of .04. Therefore, economic characteristics add more to the baseline model than do demographic ones. However, social characteristics (model 3) have the highest pseudo r-squared value at .069. Based on the pseudo r-squared values for all three models, social characteristics add the most to the

[15] A baseline model is a model without any independent variables.

Table 4. Logistic Regression of Michigan Outmigration on Blocks of Characteristics

Table 4. Logistic Regression of Michigan Outmigration on Blocks of Characteristics						
Characteristic	Model 1		Model 2		Model 3	
Less than High School Graduate	0.818	***	0.730	***	0.731	***
High School Graduate	0.792	***	0.792	***	0.810	***
Associate's Degree	1.096	***	1.155	***	1.079	***
Bachelor's Degree	1.970	***	2.196	***	1.792	***
Master's Degree or higher	2.461	***	3.075	***	1.949	***
Demographic						
Male	1.011					
Age[c]	0.997	***				
Black	0.943	**				
Asian	2.144	***				
Other	1.416	***				
Economic						
Unemployed			1.104	***		
Full-Time Worker			1.160	***		
Logged Personal Income			0.897	***		
Renter-occupied Housing Unit			1.076	***		
Social						
Past Outmigration					3.545	***
Veteran					1.202	***
Married, spouse absent					0.914	***
Married, spouse present					1.161	**
Separated					0.826	***
Divorced					0.711	***
Widowed					0.887	**
Number of children under 18					0.850	***
Number of children under 5					0.911	***
Model Chi Square	7,096.75	***	11,137.72	***	19,125.79	***
n	276,878		276,878		276,878	
df	10		9		14	
R^2_L	0.024		0.040		0.069	
* p<.05; ** p<.01; *** p<.001						
[c]=centered						
Source: U.S. Census Bureau, 1980, 1990, and 2000 U.S. Census.						

baseline model and are therefore the most important to the outmigration from Michigan after controlling for education. This finding provides support for the notion of using other characteristics in addition to economics.

Before the results of the full logistic regression models (Table 5) are discussed, a distinction needs to be made between significant and meaningful results. Because of the large sample size (n=276,878), almost all characteristics are significant at the $p<.05$, and even the $p<.001$, level. It is important to note that not all of these significant results are meaningful. For example, centered age in model 1 of Table 5 has an odds ratio of .997. To interpret this number, subtract one from the estimate. When the result is positive, the characteristic of interest has higher odds of moving than the comparison group. When the result is negative, the characteristic has lower odds of moving. The interpretation for the current example of centered age is that a 35 year old has .3% lower odds of moving (.997-1= -.003), net of other characteristics. Even though this finding is significant, logically it does not mean much to have .3% lower odds of moving because the percentage is so miniscule. In such events, the result is significant but not meaningful. The opposite could also be true, where a characteristic is meaningful (i.e., has a high odds ratio) but is not significant. The association between migration and age will be revisited in the following paragraphs.

The final portion of this analysis includes all three blocks of characteristics along with education in a logistic regression model. Model 1 of Table 5 answers the research question, is there a difference in outmigration from Michigan between people with some college experience and other education levels? Results support my hypothesis that all education levels are indeed significantly different from respondents with some college education. People without college

Table 5. Outmigration form Michigan: Final Model

Table 5. Outmigration from Michigan: Final Model						
Characteristic	Model 1		Model 2		Model 3	
Less than High School Graduate	0.659	***	0.644	***	0.661	***
High School Graduate	0.802	***	0.799	***	0.820	***
Associate's Degree	1.084	***	1.101	***	1.121	*
Bachelor's Degree	1.928	***	1.976	***	1.718	***
Master's Degree or higher	2.249	***	2.319	***	1.936	***
Demographic						
Male	1.002		1.005		1.004	
Age[c]	0.997	***	0.990	***	0.997	*
Age Squared			1.001	***		
Black	0.633	***	0.642	***	0.630	***
Asian	1.061		1.068		1.035	
Other	1.080	*	1.087	*	1.077	*
Economic						
Unemployed	1.121	***	1.126	***	1.122	***
Full-Time Worker	1.121	***	1.146	***	1.123	***
Logged Personal Income	0.897	***	0.905	***	0.895	***
Renter-occupied Housing Unit	1.089	***	1.084	***	1.068	***
Social						
Past Outmigration	3.650	***	3.658	***	3.433	***
Veteran	1.306	***	1.295	***	1.297	***
Married, spouse absent	1.335	***	1.374	***	1.304	*
Married, spouse present	1.213	***	1.243	***	1.159	***
Separated	0.882	***	0.929		0.774	***
Divorced	0.805	***	0.852	***	0.838	***
Widowed	1.119	*	1.100		1.033	
Number of children under 5	0.841	***	0.826	***	0.986	***
Number of children under 18	0.888	***	0.918	***	0.782	
Year 1990	0.906	***	0.919	***	0.597	***
x Less than High School					1.001	
x High School Graduate					0.946	
x Associate's Degree					0.973	
x Bachelor's Degree					1.144	*
x Master's Degree or higher					1.142	*
x Age					1.002	
x Renter-occupied HU					1.026	***
x Past Oumigration					1.007	
x Married, spouse absent					1.136	
x Married, spouse present					1.104	**
x Separated					1.156	
x Divorced					0.911	
x Widowed					1.145	
x Number of children under 5					0.857	***
x Number of children under 18					1.105	***
Year 2000	0.855	***	0.863	***	0.581	***
x Less than High School					0.951	
x High School Graduate					0.986	
x Associate's Degree					0.928	
x Bachelor's Degree					1.159	*
x Master's Degree or higher					1.314	***
x Age					1.000	
x Renter-occupied HU					1.021	***
x Past Outmigration					1.156	***
x Married, spouse absent					0.940	
x Married, spouse present					1.031	
x Separated					1.282	*
x Divorced					1.000	
x Widowed					1.084	
x Number of children under 5					0.881	***
x Number of children under 18					1.102	***
Model Chi Square	23,184.40	***	23,293.45	***	23,310.78	***
Nested Chi Square			109.05	***	126.38	***
n	276,878		276,878		276,878	
df	25		26		55	
R^2_L	0.0879		0.0884		0.0889	
* p<.05; ** p<.01; *** p<.001						
[c]=centered						
Source: U.S. Census Bureau, 1980, 1990, and 2000 U.S. Census.						

experience, less than high school graduates and high school graduates, have lower odds of moving compared to people with some college education. Respondents with education levels higher than some college (e.g., associate's degree, graduate degree, etc.) all have higher odds of moving than those with some college experience. This is especially true for people with graduate or professional degrees, who have 125% higher odds of moving than those with some college education. These results indicate that the differences in outmigration by level of education persist, even after other characteristics are controlled.

Confirming or denying the hypothesis regarding age requires a different approach. Because of its continuous nature, interpreting age does not work the same way as for dichotomous variables. The odds ratio for the centered age term describes the odds of an outmigration for a one year increase in the mean age of 34. To determine the odds of a 35 year old moving, simply use the odds ratio provided in Table 5. The results from model 1 suggest that a one unit increase in age lowers the odds of moving by .3%. To calculate the odds of a 36 year old, there are two options available to make this comparison. Option one determines the odds ratio at the specified age. To calculate this, take the natural log of the odds ratio from Table 5. Next, multiply the estimate by the desired change in age and exponentiate the result.[16] Using values from model 1, the natural log of the centered age term (.997) is -.003. For example, the change in the characteristic (c) for a 44 year old would be 10. Multiplying -.003 by 10 yields -.030, which has an exponential value of .9704. The answer .9704 is the odds ratio coefficient at the specified age, 44 in this case. To transform the coefficient to a percent change in the odds, the second option, take the odds ratio calculated above, subtract the result by one, and multiply

[16] OR=Exp(B*c), where B=ln(OR in table 5) and c=change in the characteristic.

the entire thing by 100.[17] From the last example we know that exp (-.003*10) =.9704, so subtracting one from the result and multiplying it by 100 equals -2.96. This shows that 44 year olds have 2.96% lower odds of moving. Table 6 contains examples of the percent change in odds and odds ratios for selected values of the key continuous characteristics included in model 1. The values in this table support my hypothesis that younger respondents have higher odds of outmigration and older respondents have lower odds.

Counter to my marital status hypothesis, never married individuals were not the most mobile. Married spouse absent, married spouse present, and widowed respondents all had significantly higher odds of moving than never married individuals. Part of this difference may be explained by the fact that model 1 controls for characteristics that tend to vary by marital status, such as age and number of children. For instance, if we assume that children reduce the chances of outmigration and most children are living in married families, then comparing never married and married respondents without controlling for children is not the ideal situation. Once these factors are taken into consideration, the ability to compare how outmigration differs across marital statuses greatly improves. Another plausible explanation is that the state-level perspective used for this research makes it appear as though never married individuals are less mobile. Using a sub-state focus, it may be the case that never married respondents are actually more mobile than other marital statuses.

My next research question asks how completing a past outmigration impacts a current outmigration. My hypothesis that people with past outmigration experience are more mobile than those without such experience is supported. In fact, the past outmigration measure has the highest reported odds ratio value of any characteristic in model 1, indicating its importance.

[17] Percent change in odds= 100*[Exp(B*c)-1], where B= ln(OR in table 5) and c=change in the characteristic.

Respondents with a history of outmigration have 265% higher odds of leaving Michigan than people without a past migration. As mentioned earlier, people who moved in the past may have already partially severed their ties to an area, a factor which may reduce their reservations about moving again if they deem such an action as necessary.

The housing tenure hypothesis argued that people currently living in renter-occupied housing units are more likely to move than those living in owner-occupied housing units. The results from model 1 in Table 5 support this notion. Renters have 8% higher odds of leaving Michigan than owners, which is considerably less than I was expecting. The association between migration and housing tenure might not be as strong as expected because the measure captures tenure at the destination state rather than the origin state. For instance, if a renter moved from Michigan and bought a house in Ohio, then it would appear as though owners are more mobile, which is clearly not the case. The discussion of using past characteristics instead of current ones is continued below in the limitations section of this paper.

The hypothesis that children deter outmigration from Michigan was supported. The odds ratios for number of children under five and 18 are significant with lower odds of moving than childless individuals. This is best exemplified by the values in Table 6. The percent change in the odds column indicates that, compared to childless couples, the first child has the greatest impact on outmigration. Subsequent children continue to lower the odds, but at a diminishing rate. According to Table 6, a person with one child under the age of 18 has 11.2% lower odds of moving than a childless person, while a person with three children has 30% lower odds. If each child reduced the odds by 11.2%, then three would lower the odds by 33.6%. That is not the case in this situation, meaning that the first child has the greatest impact on outmigration.

Model 2 of Table 5 examines the association between outmigration and age more closely

Table 6. Percent Change in the Odds for Continuous Characteristics Based on Results from Model 1 of Table 5

Table 6. Percent Change in the Odds for Continuous Characteristics Based on Results from Model 1 of Table 5		
Characteristic	Odds Ratio	Percent Change in Odds
Age[c]		
18	1.049	4.9%
24	1.031	3.1%
34 (mean)	1.000	0.0%
35	0.997	-0.3%
44	0.970	-3.0%
60	0.925	-7.5%
Number of children under 18		
1	0.888	-11.2%
2	0.789	-21.1%
3	0.700	-30.0%
Number of children under 5		
1	0.841	-15.9%
2	0.707	-29.3%
[c]= Centered		
Source: U.S. Census Bureau, 1980, 1990, and 2000 U.S. Census		

by adding an age squared term. This term identifies whether the relationship is linear (i.e., a straight line) or nonlinear/curvilinear. Before testing the age squared term itself, it must first be determined if the term significantly adds to the model. The nested chi square test has a p-value less than .001, so we can safely conclude that it significantly improves upon the prior model. Next, we look to the significance of the coefficient/odds ratio, which surpasses the significance threshold of $p<.05$. The age squared term is significant, but has a rather small coefficient (.0007). This is probably due to the use of single year of age instead of a larger interval, such as ten years of age. Based on the results from model 2, we can gather that the association between age and migration is nonlinear in nature and has a diminishing negative effect. This means that the odds of moving decline as people age, although there is a point where it begins to even out and eventually plateaus.

The final research question asks, does the association between select characteristics and migration vary over time and if so, how? Model 3 of Table 5 answers this question by interacting the dichotomous year variables with the characteristics of interest. The age squared term was removed from model 3 due to its limited meaning and parsimony. In general, if the interaction term is significant then there was a difference between 1980 and that particular year. For illustrative purposes, I will use the significant interaction between 1990 and number of children under five. Using number of children under five as the focal variable, the equation is ln (.986) +ln (.857)*y, or -.0141+ -.154y, where y represents the dummy term for year. When the year is 1980 (i.e., y=0), the coefficient is the main effect of -.0141 with an odds ratio of exp (-.0141) =.986. When the year is 1990, the odds ratio is exp (-.0141+ -.154) =.84527. Therefore, the association between number of children under five and outmigration from Michigan was stronger in 1990 than 1980. For example, a respondent with one child under the age of five has slightly

lower odds of outmigration in 1990 than in 1980. The difference over time could be important if a change occurred where children under five suddenly led to higher odds of outmigration than childless individuals. Given the results of the example provided, that is not the case. This approach can be used with the remaining interaction terms.

The results from model 3 show six out of the 15 interactions being significantly different between 1980 and 1990. Most of these significant interaction terms suggest a stronger association between the characteristics and outmigration in 1990 than 1980 compared to the respective comparison group. These include: having a bachelor's degree, having a master's degree or higher, being married with a spouse present, living in a rented housing unit, and having children under the age of five. The sole exception to this finding is the number of children under 18. It turns out that children under the age of 18 significantly increase the odds of moving in 1990 compared to 1980. Several possible reasons may explain why the association is weaker in 1990. The cost of college tuition grew during this period from $1,163 in 1980 to $2,839 in 1990 (National, 2009).[18] Families with children who are close to entering college needed to save more money in 1990 for their children to attend college. Money spent on moving expenses detracts from savings for a college fund. It can also be argued that children contributed less to the family and cost more in 1990. I would argue that children were treated "with kid gloves" much more so in 1990 than 1980. Assisting in physical activities like packing and moving boxes were previously a requirement for older children, but now these activities are more of an option. By not completing these tasks, children are forcing their parents to delegate these activities to other family members or hired professionals. Both of these options require the precious resources of time and/or money.

[18] Dollar amounts are in 2007-2008 dollars.

Many of the interactions that were significantly different between 1980 and 1990 were also significantly different between 1980 and 2000. The commonalities include: having a bachelor's degree, having a master's degree or higher, living in a renter-occupied housing unit, and having children under the age of five or 18. Completing a past outmigration and being separated were characteristics that experienced significant changes in their associations between 1980 and 2000 but not between 1980 and 1990. It was more socially acceptable to be separated in 2000 than in the 1980s. In 1980, this may have led people to move within the same state in the hopes of repairing their marriage. In 2000, there is less concern over being separated; meaning the willingness to remain in the same state is lessened.

The results from the 2000 interactions are consistent with those from 1990. Namely, none of the associations with outmigration changed direction, only magnitude. Therefore, I partially reject my hypothesis on the grounds that the associations experience a certain degree of change. On the other hand, I accept that the same characteristics act as push/pull forces on potential Michigan movers over time.

DISCUSSION

People are leaving the state of Michigan in droves. According to the results from this project, over 901,214 people 18 to 60 years old moved out between the years of 1975-1980, 1985-1990, and 1995-2000. Approximately 64% of these movers had some form of college education. While these numbers describe the educational composition of this outflow, additional information about these outmigrants can be ascertained. One key piece of information used by this project was to determine where people moved and if the destination varied by education or year. The results from tables 2a and 2b showed that Michigan outmigrants tend to select two types of destinations when they move, regardless of the year or their education. The first type of destination is close to Michigan and includes the states of Illinois, Indiana, Ohio, and Tennessee. The second type offer much warmer climates due to their location in the sunbelt region. The sunbelt states of California or Florida always attract the greatest number of Michigan outmigrants. The remaining sunbelt destination states on the lists include Arizona and Texas. These findings are counter to my hypothesis that the common destination states change considerably by year and education level. One important difference to keep in mind relates to the number of people who moved to the most common destination states. For both 1990 and 2000, there was more than a 2-to-1 ratio in terms of the number of college educated outmigrants from Michigan versus less than college educated outmigrants who moved to these states. In other words, twice as many college educated Michiganders moved to a common destination state between 1985-1990 and 1995-2000 than did those with less than a college education.

Knowing where people moved offers some insight into why a person moved, but it does not answer the question, who moves? Stated differently, which characteristics push people out of the state and which cause them to stay? For this paper I decided to focus on the characteristics of

education, age, housing tenure, marital status, past outmigration experience, and number of children under five and 18. This was accomplished through the use of descriptive statistics (tables 3a and 3b) and logistic regression models (tables 4 and 5). The latter were also used to test this paper's main hypotheses.

The first such research question asked about the role of education on outmigration. The descriptive statistics revealed that between 18% and 22% of the college educated group moved. A smaller percentage of the less than college educated group moved (i.e., 11% to 14%). Outmigration also differed by level of education. For example, more than half of the college educated movers earned a bachelor's degree or higher for all three years. The percentage of college educated nonmovers with a bachelor's degree or higher was much lower, ranging from 34.7% to 44.5%. This means that among college educated respondents, a higher percentage with bachelor's degrees or higher are deciding to leave the state rather than stay. These well educated individuals are an extremely desirable component of the workforce. Other states are competing with Michigan to attract these individuals with the goal of increasing their supply of well educated workers. If Michigan decides to take these people for granted, other states will gladly continue to lure them away, further solidifying a brain drain. Results from the logistic regression model provide additional confirmation for my hypothesis that outmigration varies by education. Using some college as the reference category, respondents who completed high school or less had lower odds of moving. All education levels above some college had higher odds of moving than those who only completed some college. This is especially true for those who obtained Master's degrees or higher, as those individuals had 125% higher odds of moving than respondents with some college. Apparently, having an advanced degree works as an incredibly strong push factor out of Michigan, relative to having some college experience.

The second part of this research inquired about the association between age and outmigration. According to the descriptive statistics, median ages between movers and nonmovers did not differ greatly. In 2000, the median age for college educated movers was 32 and 33 for nonmovers. Results from the logistic regression models support my hypothesis that people above the mean age of 34 have lower odds of outmigration, while respondents who are younger than 34 have higher odds of moving. Several major life events typically occur before the age of 34, such as marriage, childbirth, and first major employment. Many of these events lead to migrations because people are moving in together, to a larger house, or to a new area. With the exception of retirement, people older than 34 typically do not experience many major life transitions that lead to a move. This will be discussed in further detail below. Another important point deals with the nonlinearity in the association between migration and age indicated in model two of Table 5. The nonlinearity was significant as predicted, although the coefficient was relatively small. This may be due to the use of single year of age in the logistic regression model, whereas a five or ten year interval for age would lead to more meaningful results. Despite its small size, the coefficient for the age squared term indicated a diminishing negative effect. This suggests that outmigrations are highest among the youngest, decrease as people age, and eventually level off.

According to the descriptive statistics, the housing tenure variable had similar results by mover status. Nonmovers had considerably higher rates of living in owned homes than movers. The majority of mover estimates were almost exclusively in the 40% range. Nonmovers commonly had estimates equal to 60% or greater. These findings are consistent with the results of the logistic regression and my hypothesis that renters have higher odds of moving than

owners. Renters have more freedom to move from one state to another without having to worry about the added stress associated with selling a house.

The previous migration characteristic was exactly as predicted by my hypothesis and was consistent across the descriptive statistics and logistic regression models. People with a past outmigration were more likely to move than people without a past move. The experience of moving equips people with the proper tools and knowledge needed to prepare for a future move. Completing such a large move in the past may have the advantage of making the entire process seem more manageable and less overwhelming in the future.

The descriptive statistics for marital status suggest that the percentage of movers who were married decreased over time. The married, spouse present category went down nearly ten percentage points, while the percentage of movers who were never married increased during this 20 year period. This trend was noticeable among all groups was the case for both mover groups over time and was expected given the increased social acceptance of cohabitation as a means, or alternative, to marriage. Turning to the logistic regression results, both married categories (spouse absent and spouse present) had higher odds of moving than never married individuals. This result caused me to reject my hypothesis that never married respondents were the most mobile. After all, a household with two educated individuals would be more desirable in a global economy than a household with only one, which may help explain the higher odds of mobility for married couples compared to never married individuals.

The final key characteristics are number of children under five and 18. Childless individuals comprise between 70% and 80% of both education groups. When these groups are divided by mover status, people without children have higher percentages of moving than those with them, regardless of the child's/children's age(s). Individuals without children have fewer

people to worry about when deciding to move, which has the potential to make the decision less complicated. When the age of the child/children is taken into account, children under 18 act as less of a barrier to migration than children under five, especially when there are more than one. For example, 15% of college educated movers had two or more children under 18 in 1980. Compare this with the 4.2% of the college educated movers who had two or more children under five during the same period. Older children can help in the moving process, much more so than their younger counterparts. Not to mention, older children (i.e., teenagers) typically do not require the same amount of close supervision as a toddler. The logistic regression results support my hypothesis that children under five and 18 lower the odds of moving. Interestingly enough, the first child acts as the strongest deterrent and each child thereafter continues to reduce the odds of migration to a lesser degree.

The final segment of this research attempted to identify how the key characteristics differ over this 20 year period. Specifically, do any of the associations change direction over time? The results from model 3 of Table 5 indicate a few significant differences, but none that cause the association to switch direction. Because the same characteristics are associated with either driving people out of Michigan or causing them to stay, policymakers with the goal to reduce Michigan's outmigration will not need to worry about changing these policies over time. Utilized correctly, future Michigan policies can target the key characteristics of being better educated, younger, married, childless, living in a rented home, and having a previous migration, to reduce the migration outflow. This is particularly important for targeting college educated individuals who are always in demand. If Michigan does not invest is the retention of these educated laborers, then they will have little reason to pursue a career in the state. Instead, they will consider offers from states that are more welcoming and accommodating to their needs.

The policy implications that can be derived from this project are plentiful. One policy recommendation could be to help potential residents find and pay for housing in Michigan. Since realtors rarely charge buyers directly for their services, this should cost little, or perhaps nothing, to implement. Helping to pay for a home would be costly and stipulations would be needed to protect the state's interest. A predetermined amount of money could be offered in exchange for a set amount of time spent living in Michigan, say ten years. If the individual remained in the state for the full term, the loan payment would be forgiven. However, if a person moved to another state or country before the conclusion of this ten year period, then they would be required to repay the loan. This type of policy allows people to invest in Michigan through the purchase of a house and establish social ties in the state. If successful, the number of college educated workers who decide to stay in Michigan will grow and hopefully attract businesses. These businesses may be willing to assist in funding this plan in order to retain the best and brightest the state has to offer.

Another possible policy initiative could be to institute a state tax credit or student loan repayment program for the educated. This would act as a reward for being an educated worker in Michigan and acknowledge the extra costs they had to endure. To make things fair, varying levels would be created based on educational achievement. For example, a person with some college experience would receive less than a bachelor degree holder. Even though this policy requires a great deal of funds, the potential returns are almost endless. The program has the opportunity to not only retain the current college educated, but attract them from other states and countries. This in turn could lead to the creation and expansion of business firms that would most likely help to fund the program as long as its success continued. A symbiotic relationship of this

nature with various companies could improve the outlook of Michigan's future because everyone is invested in its long term success.

The final policy I will discuss targets the future children of childless individuals. Establishing a college fund to cover a portion of their tuition could reduce the financial burden on their parents while ensuring the presence of a second generation of college educated workers in Michigan. Ideally, these college funds would only be usable at Michigan universities and institutions so that the student develops social ties in the state which lead to employment opportunities. For childless individuals who do not want or cannot have children, the state could offer a greater tax benefit or student loan repayment.

LIMITATIONS

One key limitation of this study involves using current characteristics, rather than past ones, to predict outmigration. For example, respondents who moved five years before the day of the Census may have been unemployed when they moved. If they are gainfully employed when the Census is taken then they will report their current employment status (i.e., being employed) on the Census long form. In this case, past unemployment, arguably an important predictor of migration is missed, while current employment status, less important for predicting past movers, is what appears when using Census data. To resolve this issue, conducting longitudinal studies with a focus on migration would be the ideal situation.

The measure of migration used in the Census, and this paper, has its own limitations. It does not offer a sense of how long ago the person migrated, just that it happened within the last five years. Also, it has the potential to miss several migrations because it only asks about one. Within any five year period a person could move numerous times, only one of which would be reported on the Census. The ability to capture multiple moves would greatly improve the past outmigration measure used in this study. The possibility exists that a respondent moved out of the state of Michigan for a period of time and moved back before completing the Census. Such return migration, in this case including two moves, would not be captured and instead this individual would be coded as a nonmover. For instance, a person who lived in Michigan on April 1st, 1995, moved to Ohio in 1997, and moved back to Michigan before April 1st, 2000 would be classified as a nonmover.

Another important limitation inherent in decennial Censuses and this study is the inability to track people who move to another country (emigrants). This issue is especially relevant for the state of Michigan because it borders Canada and offers several passages out of the country.

These international movers disappear without leaving behind a trace for researchers who use U.S. Census data. If a substantial stream of individuals move from Michigan to Canada, or any other country, then such migration outflows would be more severe than anyone realizes.

A final limitation for this study involves its focus on outmigration. Determining the severity of a brain drain typically requires the use of both in and outmigration from an area. By only presenting one side of this equation, the current project ignores potential gains to the state. If a larger number of college educated individuals are moving into the state compared to those moving out, then a large outmigration of the college educated is of little concern. However, if the net migration of the college educated shows significant loss, then concern over a brain drain is legitimate.

FUTURE RESEARCH

Future research concentrating on outmigration could use the demographic, economic, and social characteristics featured in this paper to identify similarities or differences between states. People who decide to leave Michigan may have a particular set of characteristics, while those who leave another state may have an entirely different set. Using previous migration as an example, a state like Texas may have a large percentage of the population with a previous migration because of the sizable immigration from Mexico and other countries. Whereas states that receive very few migrants from abroad or other states, such as Wyoming, might not find a previous migration measure as helpful in their analysis. However, if the same sets of characteristics push individuals out of a region, perhaps a larger scale approach needs to be taken to reduce these migrations. That is, fixing only one state in an economically depressed region may not be as effective in attracting businesses to the area as improving the conditions of surrounding states as well. It may be the case that helping other states improve their situation ultimately benefits the region as a whole, so states should consider working together to improve their overall well being.

Use of the American Community Survey (ACS) and multiyear datasets could provide an update to this research and other related projects. While the ACS lacks the historical presence of the Census, it provides an annual look at 1-year migration rates instead of a decennial 5-year perspective. Due to the content change, comparisons between the Decennial Census and ACS are not recommended, but the same variables are available and can be used in a brain drain analysis. As an added bonus, the ACS recently began asking respondents who graduate from college about their bachelor degree(s) majors. This information could be used to determine what degrees/fields are staying or leaving Michigan and try to adapt economically based on this knowledge.

Another research area that could be integrated with the outmigration literature is the upcoming retirement of the baby boom generation. It may be the case that individuals do not have to migrate to find desirable employment because appealing positions become available as the elderly retire. This may also work in the opposite direction as desirable jobs become vacant in other states. Such openings could pull college educated individuals out of Michigan. In this instance, retirement among the elderly actually contributes to outmigration. A third possibility exists where companies decide not to replace retired workers and instead distribute the work among existing employees.

In the end, it is impossible to completely prevent outmigration from a state and unreasonable to expect such an outcome. However, Michigan officials can actively take steps towards establishing and promoting achievable goals to reduce outmigration, especially of the college educated, by targeting those with key characteristics described in this report. Without this type of intervention, the "pool" of skilled and knowledgeable workers contributing to Michigan's economy will dwindle to nothing more than a puddle.

CONCLUSION

Using data from the 1980, 1990, and 2000 U.S. Censuses, the current project identified the extent of outmigration from Michigan during this 20 year period. The educational compositions of these flows were used to determine if a brain drain from Michigan occurred. According to the results of this project, an estimated 901,214 people left the state between 1975-1980, 1985-1990, and 1995-2000. Approximately 64% of these movers had some form of college education. This lends credence to the argument of a Michigan brain drain.

Common destination states of movers were analyzed for patterns and possible reasons for moving. The top destinations experienced relatively little variation by year and education. All of the top five destinations were either close to Michigan or located in the sunbelt region. With this information, two primary migration flows were identified. The first flow contains people who moved to nearby states, possibly for work or family related reasons. The second group traveled further in search of amenities, such as a warmer climate. This is best exemplified by the fact that California or Florida were always the most common destination and at least two Midwestern states were among the top five recipients of Michigan outmigrants.

Select demographic, economic, and social characteristics of movers and nonmovers were also examined to determine which factors were associated with moves out of Michigan and which were associated with staying. Descriptive statistics and logistic regression models were used in this examination. Results indicate that people who completed a previous outmigration, were married (spouse absent or spouse present), younger, currently lived in a renter-occupied housing unit, childless, and better educated had higher odds of moving compared to their respective reference groups. I consider these characteristics as push factors out of Michigan and their counterparts to be the pull/preventive factors. A few of these characteristics had significant

changes in the level of association with outmigration over time, but the direction always remained the same. Therefore, a policy developed to reduce the brain drain from Michigan will not have to worry about a total shift in the factors contributing to outmigration.

Several policy implications can be formulated by Michigan policy makers based on the results from this project. First of all, people with Master's degrees or higher will be the most difficult group to retain due to their desirability in national and global marketplaces. These highly educated individuals account for a small proportion of the educated population, so a determination needs to be made regarding the amount of resources that should be devoted and the expected outcomes of any action taken. In an ideal situation the more resources Michigan devotes, the greater the retention of these educated individuals. Personally, I believe expending a portion of resources on these folks is justified because they are such an integral part of the workforce. However, a majority of the resources should go towards people with bachelor's degrees and associate's degrees. Even though they are often less specialized than people with Master's degrees or higher, they are still educated and much greater in terms of numbers. It is from these groups that I believe Michigan will receive the greatest return for their investment. This can be accomplished through the state tax credit and student loan repayment programs discussed earlier. Another group that should be targeted is renters. These individuals are not as invested into the state as homeowners. One such strategy could be a mortgage payment loan where the debt is forgiven after the person has lived in the state for a specified amount of time. This type of system would, in effect, reward individuals for deciding to remain in the state.

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