CROSSING STATE BOUNDARIES:

ECONOMIC STRUCTURE, EDUCATIONAL ATTAINMENT, AND

INTERSTATE MOBILITY

Kevin Shafer
Department of Sociology
The Ohio State University
300 Bricker Hall
190 North Oval Mall
Columbus, Ohio 43210
Shafer.71@sociology.osu.edu

I wish to thank Zhenchao Qian for his guidance and support on this project. I also thank Matthew Painter, Richard J. Petts, and Lauren Pinkus for their insightful comments and help on this paper.

ABSTRACT

This paper focuses on the migration patterns of American young adults changed in the late 1980s and 1990s. Special emphasis is placed on differences in the interstate mobility of highly educated and less educated individuals and macro-level characteristics that affect migration. Using 5% IPUMS data from the 1990 and 2000 censuses, I employ log-linear models to examine the effect of economic opportunities and spatial affinities among neighboring states, regions, and subregions on geographic mobility. I achieve this by looking at the effects of macro level characteristics, such as the shares of manufacturing, information, and technology jobs on the structure of persistence and interstate migration. Changes in state-level factors in the 1990s affect mobility patterns of young adults and educational attainment plays a role in interstate migration. Additionally, spatial affinities are an important factor in the attractiveness of destinations.

CROSSING STATE BOUNDARIES: ECONOMIC STRUCTURE, EDUCATIONAL ATTAINMENT, AND INTERSTATE MOBILITY

INTRODUCTION

Among the components of population change, internal migration is the weakest sibling (Stolnitz 1983). Indeed, we know changes in fertility and mortality patterns well, but we know little about the patterns of internal migration. Undoubtedly, people move often during their life course, especially young adults. Young adults leave their parents' home, find employment, establish an independent household, and start their own families (Pandit 1997). Economic forces are often cited to be the predominant factor to push people to and pull them from different cities, states, and regions (Zelinksy 1971, Long 1985, Frey 1987, Wilson 1988). Newspapers and other media often attribute the closing of one manufacturing company to the loss of residents in one area and the opening of a high technology company to the increases in resident population in another area. The erosion of manufacturing jobs and the transition into the new information and technology-based economy opens up new opportunities which promote migration (Elliot and Perry 1996). Accumulated human capital attributes, such as educational attainment, have become increasingly important during this transition. Many occupations in the new economy require the credential of a college degree (Harrison and Bluestone 1988, Bluestone and Harrison 1982, Blau and Duncan 1968). As individuals accumulate human capital, they are more inclined to migrate and poised to be socially mobile.

The United States has witnessed dramatic changes in economy since the 1980s. On the one hand, manufacturing jobs have been lost overseas. On the other hand, new industries have been booming. Clearly, the types of jobs lost and gained are different. They also are distributed differently across metropolitan areas and states. Young adults are likely to be affected the most by such changes. In this study, I use data from the 1990 and 2000 censuses to examine changes in interstate mobility among young adults ages 25 to 39. I pay particular attention to different patterns of spatial mobility for young adults with different levels of education.

To be sure, economic opportunity is the driving force of geographic mobility for today's young adults. This is especially true for young adults with college education. They are the ones who are likely to move from coast to coast. Highly educated individuals are more poised to make long distance moves because they can consider a variety of occupational opportunities. Additionally, they have more access to information about potential other migration relevant factors such as housing and community quality, which affect the attractiveness of destinations (Greenwell 1973). Increased ability to weigh these factors is especially important in a restructured economy.

Meanwhile, the economic and occupational structure of geographic locations is not the sole influence on migration. I also argue that the extent of spatial affinities is also an important factor. Some regions of the country are attractive destinations because they are culturally, environmentally, or socially unique. For example, spatial affinities in the South (Reed 1993) and New England (Zelinsky 1971) are strong because individuals identify with their particular geographic location. Herting, Grusky, and van Rompaey (1997) identified the importance of spatial affinities on the greater structure of geographic mobility. Less educated individuals are more affected by spatial ties than their college educated counterparts. Namely, they have less information about potential destinations (Greenwell 1973) and are conventionally understood as less "worldly." Individuals without a college degree are more likely to build partisanship for geographic locations, moving toward locations with which they are familiar.

In this paper, I argue that first, changes in migration over time reflect patterns in which individuals move to economically attractive places. Second, mobility patterns differ by educational attainment. College educated individuals are more likely to be pushed or pulled by economic factors while less educated are more affected by spatial affinity.

PREVIOUS RESEARCH

Young adults are the most geographically mobile group in the United States (Pandit 1997, Tobler 1985, Long 1988, Frey 1985). From the life course perspective, a move into adulthood attenuates

ties to geographic origin (Jones 1990). Young adults begin their path into adulthood, have few family commitments, and are willing to seek employment in a variety of geographic locations (Pandit 1997). Like most explanations of migration, researchers have indicated that young adults are pushed or pulled to geographic locations based on the attributes of potential destinations (Zelinsky 1971, Long 1985, Frey 1987, Wilson 1988). Varying strength of push and pull are often associated with the economic and occupational opportunities available to potential migrants. Locations that work to pull individuals offer migrants quality occupational opportunities while those that push have few economic opportunities available (Massey 1990).

Uneven push and pull results from differences in economic expansion and modernization across cities, states, and regions of the United States (Zelinsky 1971, Fuguitt 1985, Wilson 1988). Wilson's (1988) examination of regional modernization and mobility patterns in the United States found that economically developing regions became increasingly attractive to migrants after World War II. Wilson found two specific migration patterns. Economically strong core regions of the United States, such as the Northeast and Great Lakes states, experienced high in-migration between 1935 and 1980 attracting many opportunity-seeking individuals. Periphery regions, like the South and Plains states, had stagnant economic development until recently. As a result, periphery regions became attractive destinations much later than core regions, due to a late developing socioeconomic structure.

Some researchers have argued that largely modernized countries, like the United States, move toward migration equilibrium, a state where nationwide migration patterns are similar (Zelinsky 197**?**). Wilson's (1988) work indicates such a pattern. However, large disparities in regional migration patterns persist today as the economic and occupational structure continues to evolve (Fuguitt 1985, Plane and Mulligan 1997). States continue to lose and gain jobs at a different pace, leading to varied migration rates. To illustrate, in 1990 nationwide differences between service producing (high education) and goods producing (low education) work were nominal (United States Bureau of the Census 2000). However, by 2000 the majority of jobs in the United

States were in the service, technology, and professional sectors (see Table 1). This is a dynamic shift away from the manufacturing based economy that was prevalent in the United States into the mid-1970s (DiPrete 1993). Yet, this shift has not taken place evenly across all parts of the country.

Industrial restructuring or "deindustrialization" has eroded the manufacturing sector, placing emphasis on the need for a college degree to enter today's workplace (Bluestone and Harrison 1982, Harrison and Bluestone 1988). Emerging information and technology fields require educational credentials. To this end, Blau and Duncan (1967) argue that status attainment and social mobility result from the accumulation of human capital. Moving to opportunity does not simply change geographic location, but also alters social location. Here, the accumulation of human capital acts as migration capital, allowing individuals to consider opportunities in many locations. Both highly educated and less educated individuals are equally capable of short distance moves when economic opportunities are readily available (Clark and Ballard 1980, Gober 1994). Short distance moves require little migration capital—most people are capable of assessing the attractiveness of potential destinations at close proximity. However, not all individuals are equally poised to make moves at long distances. Higher educational attainment is beneficial in cycles of boom or bust because the college educated are more poised to act on the economic and occupational structures in any part of the country. In addition, migration capital enhances the quality and quantity of information about potential destinations such as housing quality and social factors that can be assessed using an attractiveness scale (Greenwell 1973, Herting et al. 1997).

Economic and occupational opportunities are important factors in geographic mobility, but they are not the sole influences. Geographic areas are not only defined by their economic characteristics, but also by their spatial attributes. For example, the language styles, behaviors, and values in the South and New England are unique and significantly different from other parts of the country. Reed (1993) found that spatial affiliation is stronger among Southerners than

religion, ethnicity, or race is for some. Zelinsky (1973) noted that New Englanders often define themselves by "virtue of speech, religion, behavior, and thought" [122]. Other spatial attributes are weaker, but are still significant in their own right. Certain parts of the country have environmental attributes individuals build an affinity for. Mountain states enjoy the Rocky Mountains and states such as California, Florida, or Arizona have attractive climates. Additionally, the social environment of regions can figure into migration decisions (Herting et al. 1997). Historical racial tensions in the South are a significant cause of out migration among underprivileged Southerners (Fligstein 1981).

Spatial affinities such as these are migration relevant attributes in their own right. The United States continues to be a patchwork of regions with unique characteristics (Gastil 1975). Regions and subregions tend to be highly homogeneous collections of states that share many characteristics (Herting et al. 1997). Southern states are homogeneous because they share characteristics that are unique and constrained to states south of the Mason-Dixon line. Spatial ties have pull like economic attributes in well-formed regions like the South, New England, and Plains states. Individuals that originate in these areas are more likely to be immobile than those from poorly formed regions (Herting et al. 1997). For example, the Great Lakes states do not have strong regional ties because they are a heterogeneous collection of cultural, environmental, and social attributes (Gastil 1975).

Variation in regional and subregional migration rates shapes a more complete picture of interstate mobility. Previous research has indicated that economic opportunities at close proximity usually result in short distance moves (Clark and Ballard 1980, Gober 1994). Yet, few researchers have provided insight into these patterns. Perhaps focusing on spatial ties and attributes provides a useful explanation. Following Herting, Grusky, and van Rompaey (1997), I term the combined effects of economics and spatial ties as sociocultural structure. The sociocultural structure of migration can be studied by mapping geographic mobility, similar to

studies that map occupational and social mobility in order to reveal the structure of stratification (Stier and Grusky 1990, Goodman 1981).

Young adults in regions and subregions with strong spatial ties and abundant economic and occupational opportunities should exhibit higher levels of persistence than those with lower levels of sociocultural structure. For example, if Southerners have strong spatial affiliations and occupational opportunities are available then opportunity seeking in the South is expected. Both the economic interests of individuals and regional partisanship are served. Educated individuals in these regions and subregions should have high levels of persistence, but it should be somewhat lower than persistence among less educated individuals. This type of migration pattern fits the popular concept that the college educated are more "worldly" than those without such credentials. Therefore, the less educated are more susceptible to the socializing influence of spatial ties.

Conversely, young adults should disperse from regions with weak spatial ties and limited economic opportunities. Boundaries are easily traversed when sociocultural structure is attenuated. Educated individuals are more likely to be mobile in these regions because of their access to migration capital. A college degree allows individuals to consider opportunities elsewhere more readily than less educated individuals can.

Many regions and subregions are dissimilar in the strength of economic opportunities and spatial ties. If migration is best characterized as "moving to opportunity" then the socioeconomic structure may prove to be the most influential factor for potential migrants. In regions where the economy is good, but spatial ties are weak, I expect that persistence will be high for both the highly and less educated. However, in regions and subregions with few economic opportunities, but strong spatial affiliations, these groups will be affected dissimilarly. I suspect that college educated individuals are more likely to act on economic considerations, while the less educated act on spatial ties.

THE CURRENT STUDY

Social scientists have long been interested in studying geographic mobility. For each state, region, or even the country, a positive net migration is often associated with the booming and viability of economy while a negative net migration is seen as a sign of economic weakening. Indeed, the main conclusion from studies on interstate migration is that people move where jobs are located (Long 1985, Frey 1987, Wilson 1988, Elliot and Perry 1996). However, in recent years, social scientists have increasingly cast their focus on economic or occupational mobility leaving the study of geographic mobility on the periphery. One notable exception is a study by Herting, Grustky, and van Rompaey (1997). Their results show the importance of macro-level sociocultural characteristics on propensities for interstate mobility. However, this study only looked at interstate mobility in the 1970s. My research focuses on these characteristics by examining interstate mobility in the 1980s and 1990s, a period in which significant changes in the economy and population structure has taken place. I fill a void in the literature by focusing on the effects of sociocultural structure during this period by identifying changes in migratory processes.

One of Herting et al.'s (1997) important contributions is the introduction of a new model of geographic mobility. This model controls the problems that often confound the study of interstate migration, specifically geographic distance, migratory interia, population size, and contiguity. In this study, I examine changes in geographic mobility of young adults in the United States. This group tends to be the most mobile of all Americans because they are less constrained by commitments then others. Surprisingly, few studies have focused on this population. In addition to this important aim, I introduce the educational attainment or "migration capital" of young adults to examine how the accumulation of this capital affects interstate mobility by focusing on the macro-level affects that pull highly educated individuals to geographic locales.

DATA AND METHODS

I use the Integrated Public Use Microdata Series (IPUMS) 5% sample from the 1990 and 2000 censuses to examine changes in migration patterns from 1985-1990 and 1995-2000. I analyze

native-born residents of the United States because immigrants tend to have lower skills, lower socioeconomic states, and limited contact with mainstream culture (Chiswick and Sullivan 1995). The relative disadvantage of immigrants affects their ability for both social and geographic mobility.

Changes in the economic structure of the United States in the late 1980's and late 1990's affect migration patterns. Between 1985 and 2000 the information, technology, and service sectors continued to emerge. However, shifts in the socioeconomic structure of the United States did not take place evenly across the country (Elliot and Perry 1996). Focusing on differences in migration patterns during this period allows me to examine the effects of economic and occupational shifts on interstate migration.

I analyze the geographic mobility of young adults ages 25-39 in 1990 and 2000. Life course effects allow young adults to be the most geographically mobile group in the United States (Frey 1995, Tobler 1995, Long 1988). This is different from Herting et al. (1997) who include all individuals age 5 and over in the 1980 census. I limit the population for two reasons. First, presumably few people under age 18 make decisions regarding migration for themselves. Rather, these individuals are more likely to be compelled by their families into their geographic mobility or immobility. Second, previous research has indicated that elderly and retired Americans move to states with a low cost of living and advantageous public policy (Fournier, Rasmussen, and Serrow 1988, Cebula 1993). The attributes on which older Americans act upon are sufficiently different from attributes that other age groups find attractive.

Economic and occupational structures differ from state to state and require varying levels of human capital from migrants (Clark and Ballard 1980, Gober 1994, Plane and Mulligan 1997). Moreover, increased human capital, such as a college education, allows individuals to follow opportunities, even at long distances (Wilson 1988). I include educational attainment of individuals, college educated and not college educated, to look at the structural effects on geographic mobility. A strong professional, information, and/or technology based occupational

structure is a pulling force for highly educated migrants (Bluestone and Harrison 1982, Harrison and Bluestone 1988). This pull can account for both high in-migration and persistence.

A move is defined at the individual level as living in a destination state at the time of the census (e.g. 1990) that differs from the origin state five years before (e.g. 1985). Relying upon this definition of migration can be problematic because it does not capture the entire picture of geographic mobility. For example, individuals can move to multiple states over a five-year period, but only be coded as having lived in two states (Plane and Mulligan 1997). However, relying on a longer period of time fits the focus of this paper because it captures long term and permanent types of migration.

The data are interpreted at the state, regional, and subregional levels as defined by the United States Census Bureau (2000). Table 2 reports the regional and subregional classification system used to place the 50 states and District of Columbia into one of four regions and nine subregions. Some researchers have suggested that the use of census groupings does not provide an accurate picture of economic, cultural, or historical similarity between states (Pandit 1994, Gastil 1975, Hollingsworth 1969). However, most research has indicated that the census groupings capture economically, culturally, socially, and environmentally homogeneous areas (Plane and Mulligan 1997, Herting et al. 1997).

MEASURING GEOGRAPHIC MOBILITY

Following Herting et al. (1997) I utilize log-linear models that analyze both the diagonal (non-migrants) and off diagonals (migrants) of a 51 x 51 interstate mobility table. The 51 columns index the state of residence at the time of the census (1990 or 2000) and the 51 rows index the state of residence five years earlier (1985 or 1995). By adding the effects of educational attainment and time I am able to take macro-level socioeconomic structure differences into account. Therefore, I analyze a 2 (time) x 2 (education) x 51 (origin states) x 51 (destination states) mobility table.

Log-linear models provide several advantages over other statistical methods when analyzing geographic mobility. Rather than predicting moves, I am able to map out an overall picture of interstate migration, revealing the structure of geographic mobility. Specifically, these models can account for state, regional, and subregional affinities that affect migration patterns. In addition, log-linear models purge two effects that often confound the analysis of interstate migration.

First, the distance between states makes interstate migration easier in some parts of the country than others. For example, while the Middle Atlantic subregions is composed of three states within a relatively short distance of one another, the South Atlantic subregion is composed of seven states that make up a significant portion of the eastern seaboard. Differences in size are important because short distance moves are more numerous than those of longer distances (Clark and Ballard 1980, Gober 1994), leading to over or underemphasized migration rates. Second, population size can complicate the analysis of geographic mobility (Herting et al. 1997). Migration rates can be affected by a state's population size because of differences in the denominator. Both population size and distance are controlled for in log-linear models because the marginals of the table standardize units so that they can be compared (Hout 1983).

By including parameters in the marginals of the table, an overlapping persistence model results. This method assumes that the distribution of individuals across the 51 x 51 table is not random and that several factors affect interstate mobility (Herting et al. 1997, Stier and Grusky 1990). While log-linear models cannot take all migration relevant structural factors into account, they are capable of controlling affinities that influence the attractiveness of potential destinations. I implement marginal controls for regional, subregional, and other effects that help to control affinities.

RESULTS

Table 3 reports the likelihood ratio (L^2) and BIC statistics for the log linear modeling of origin and destination states by year and education. Log-linear models are judged by their goodness of

fit—the model should be parsimonious, use as few degrees of freedom possible, and have a low BIC statistic. The BIC statistic controls for sample size[1] and is the primary indicator of fit (Raftery 1986, Hout 1983). Model 1 is the main effects model of time, education, origin, and destination. Model 1 has a poor fit (BIC= 31,348,008) and cannot account for economic, occupational, or spatial affinities. All movement is assumed random in the model.

Model 2 includes a term to analyze state level persistence (origin=destination). A large decrease in the BIC statistic, to 480,587 suggests that state level immobility is a key factor in understanding the greater structure of migratory patterns. However, this model is problematic for three reasons. First, the analysis of 51 immobility terms at the state level is not parsimonious. Second, the BIC statistic is still rather large. Third, this model does not account for the affinities that affect migration patterns.

Model 3 includes terms for state immobility and interregional migration in order to capture heavy exchange between continuous states (Clark and Ballard 1980, Gober 1994). There is a significant reduction in the BIC statistic from Model 2 (480,587 to 171,752), at the cost of 109 degrees of freedom. This suggests that regional level effects, such as similarities in the occupational structure and spatial ties underlay geographic mobility. However, leaving the analysis at this level is confounded by the heterogeneous nature of regions. In addition, this model does not account for other affinities that affect geographic mobility.

Model 4 includes a term for subregional persistence. Model 4 has a poor fit, with a larger BIC statistic than Model 3 (171,752 to 584,270), using one less degree of freedom. However, an increased BIC statistic is expected because of changes in the population size and geographic area in the units of analysis. Despite an inflated BIC statistic, Model 4 has a better theoretical fit. Subregions are more homogeneous than regions and better capture economic structure and spatial affinities.

[1] $BIC= L^2 –(df) \log (n)$

Model 5 includes a term for intersubregional migration. This term tests the effect of both occupational opportunities available and the strength of spatial ties on geographic mobility. Model 5 is a better fit than Model 4, reducing the BIC by more than 300,000, while using 27 more degrees of freedom. This indicates that short distance moves are frequent and an important part of the geographic mobility structure.

Model 6 includes terms for subregional persistence, intersubregional migration, and exchange between bordering states. By including bordering states terms I capture heavy exchange that takes place between states that are on regional and subregional borders (Herting et al. 1997). For example, the Ohio River serves as a boundary between Kentucky and Ohio, Indiana and Illinois. Exchange between these states can be high, but they are in different census subregions. These parameters also help to loosen the rather restrictive classification utilized by the Census Bureau to split the United States into regions and subregions and capture the similarity between continuous states. This model has a good fit with a BIC of 218,380. While this is larger than the BIC statistic for Model 3, Model 6 uses 43 less degrees of freedom. This suggests states that states which border each other, but not in the same subregion, are sufficiently homogeneous to effect migration patterns.

Tables 4 and 5 reports the results for Model 7, the model that shows the best fit to the data. Model 7 includes terms for subregional persistence (Table 4) and intersubregional migration, bordering states, and other affinities (Table 5). Some states and subregions exhibit extreme push or pull that confound the greater structure of interstate migration. I have included an Arizona dispersal term that accounts for out-migration from Arizona to other states, especially those in the Midwest. Inflow parameters for California, Florida, New York, and Texas control the strong pull associated with these states. I also add a term for a "Metropolitan Washington DC effect." This parameter captures exchange between the District of Columbia, Virginia, and Maryland. The inclusion of these parameters also loosens the restrictions of regional and subregional boundaries

because atypical migration patterns often lie outside of the census classification system. Model 7 has a BIC statistic of 140,486 using 9,889 degrees of freedom, indicating a good fit to the data.

New England and the West South Central subregion are highly homogeneous, have strong spatial ties, and good economies. As expected, these regions have high levels of persistence. New England is an economically developed subregion, with numerous occupational opportunities for college-educated individuals (see Table 1). In addition, New England is one of the most unique parts of the country and spatial ties are strong. New England's strong economic structure and spatial ties results in high subregional persistence. As expected, persistence among the less educated is strong (additive effect= 7.553) while college graduates have average persistence (additive effect= 5.692). Holding power follows the pattern of increased economic development in New England with stronger persistence in 2000 (additive effect= 7.619). In addition, the strength of spatial ties in the subregion causes New Englanders to find opportunities at close proximity. High exchange with the Middle Atlantic subregion and high intersubregional migration illustrate this effect.

The emergence of strong, unique Southwestern spatial ties and rapidly improving economic conditions has lead to strong persistence in the West South Central subregion (Reed 1993). Persistence rates are high for the less educated (additive effect= 6.519) and college educated (additive effect= 5.903). The availability of high education work has increased persistence within the region among college graduates. These levels, however, are significantly lower than persistence rates for the less educated (additive effect= 6.519). In addition, increased economic opportunities have lead to increased holding power from 1990 to 2000 (additive effect= 6.662). The West South Central subregion is similar to other Southern subregions, with high exchange to other subregions in the South. Intersubregional migration is high (additive effect= 1.576), especially to Texas, which has very strong drawing power for the subregion as a whole.

The East North Central is a subregion with weak spatial ties and a poor economy for college graduates. As expected, persistence levels are weak given these characteristics. While more high

education work opportunities were available in 2000, persistence among college graduates remained low (additive effect= 5.183). In addition, moves within the subregion are low. This lends further support to the notion that neither spatial ties nor economic opportunities work to keep college graduates in East North Central states. Those without a college degree have higher persistence rates than their college-educated counterparts (additive effect= 6.333). States in the East North Central have long been characterized by their industrial economies (e.g. Harrison and Bluestone 1988). Change to a service and technology based economy is slow in this subregion. While persistence among less educated individuals increased between 1990 and 2000, the holding power among the less educated remains rather average (additive effect= 6.459).

Weak spatial ties and a strong economic and occupational structure characterize the Middle Atlantic, Pacific, and Mountain subregions. In the Middle Atlantic subregion holding power for the highly educated is weak (additive effect= 5.169), while persistence among the less educated is much higher (6.472). This is unexpected, given that economic conditions for the highly educated are good, and occupational opportunities have grown at a rate higher than the national average. In fact, the Middle Atlantic has more high education job opportunities than any other subregion. High exchange with New England, between New York and California, and to New York may account for these findings. Subregional persistence, however, has increased between 1990 and 2000 (additive effect= 6.549) and indicates that improving economic conditions have positively affected persistence. However, persistence rates for college graduates are lower compared to less educated individuals.

While parts of the Pacific have desirable qualities such as coastline or a fair climate, their spatial pull is somewhat limited. Occupational opportunities for the highly educated are available, but economic development has slowed between 1990 and 2000. These are not strong pull factors in their own right. Development in high education fields grew at a rate less than the national average. Low persistence level among non-college graduates (additive effect= 6.285) and college graduates (additive effect= 5.771) is a function of these factors. Heavy in migration

limits opportunities in the region—evidenced by high inflow to California and exchange with the Mountain subregion.

Subregional persistence in the Mountain states has reduced over time, with average holding power among lower educated individuals (additive effect= 6.305) and weak holding power for college graduates (additive effect= 5.583). Weak persistence can be attributed to several factors. First, high education work in the subregion has grown at a rate less than the national average. As the economic opportunities have slowed, persistence has reduced. Second, the Mountain states have the highest in and out migration rates of any areas of the country. This indicates that many individuals are following opportunities to the Mountain states effecting persistence in the subregion. Namely, closing opportunities to individuals and sending them elsewhere to find employment. Third, the Mountain subregion is a heterogeneous, hybrid subregion. It can be characterized as a hybrid subregion. Attributes such as religion, a split between Mormonism, Catholicism, and Protestantism (Gastil 1975) and ethnicity, especially due to large Latino populations in the South Mountain states facilitate heterogeneity.

Strong spatial ties in the South Atlantic account for higher persistence levels. However, holding power in the South Atlantic is lower than other Southern subregions. Reed (1993) argues that high in migration from states in the Northeast has "easternized" the South Atlantic states. While the economy has strengthened between 1990 and 2000, especially for high education workers, migration patterns do not reflect this. Specifically, there is reduced holding power during this period for less educated individuals (additive effect 1990= 6.141 2000= 5.977) and low persistence among the highly educated (additive effect= 5.066). Exchange to adjacent subregions such as the West South Central (additive effect= 1.215) and Middle Atlantic (additive effect= 1.401) with improving economies indicates that high in migration has affected persistence. For example, Florida has long been considered an attractive destination for potential migrants. While this is true for less educated individuals (additive effect= 1.881), the highly

educated move to Florida much lower rates (additive effect= 0.879). In migration to Florida reduced significantly between 1990 and 2000 (additive effect= 1.491).

I now turn to subregions with strong spatial ties, but weak economic and opportunity structures. Spatial affinities in the East South Central subregion are strong. Commonly refered to as the "Deep South," spatial ties work as a strong pull factor for Southerners (Herting et al. 1997). Economically, less educated workers have more opportunities in this subregion. By 2000, the economic structure of the East South Central states was still heavily industrial, with only average growth in high education sectors. The combined effects of spatial ties and economic considerations have lead to very average persistence for both college (additive effect= 5.903) and non-college graduates (additive effect= 6.593). Despite fewer occupational opportunities and a weaker economy, college graduates stay in this subregion more than those in the Middle Atlantic, Pacific, or Mountain states. In addition, exchange between the East South Central and other Southern subregions is high, especially for college graduates. These subregions are similar to the East South Central, but have stronger economies. Cultural attributes and occupational opportunities may be important factors for those moving to other Southern subregions.

Like the East South Central, the West North Central is a very homogeneous subregion. This area encompasses the "Plains states," an area that is fairly similar economically, culturally, and environmentally. Subregional persistence is high for both the less educated and college educated (additive effect= 6.023) groups. In addition, the holding power of the West North Central has remained constant between 1990 and 2000 for non-college graduates (additive effect= 6.885). Persistence among the college-educated is suprising because growth in high education jobs is behind the national average. However, high intersubregional exchange among college graduates inidicates that individuals are acting on both economic opportunity and spatial ties (additive effect= 1.727). Lending further support to the importance of spatial affinities, there is high exchange with bordering states in the East North Central subregion. States on this border tend to

be similar to the West North Central (Gastil 1975, Herting et al. 1997), allowing migrants to act on spatial affinities.

SUMMARY AND CONCLUSION

Economic and occupational opportunities are important to interstate migration. Specifically, changes in persistence, in-migration, and out-migration over time reflect economic development. Shifts in the economy from industrially based to service oriented caused dynamic changes in the 1980s, 1990s, and 2000s (DiPrete 1993). These changes have had a profound effect on both social and geographic mobility. College educated individuals are more capable of social mobility and migration because they have the credentials necessary to consider numerous opportunities. The analysis here indicates that the college educated are the most geographically mobile and act mostly out of economic interest. However, the same can not be said for their less educated counterparts. Namely, economic and occupational opportunities do not provide a complete picture of interstate migration among young adults.

Spatial affinities are important and often overlooked characteristics that affect geographic mobility and persistence. Subregions, like the East South Central and West North Central, have especially high holding power given the relative weakness of their economic structures. I have identified subregions where spatial ties are especially strong. However, not all individuals act on these spatial ties. College graduates are less likely to act on spatial affinities and more likely to act on economic considerations. Non-college graduates are more likely to act on their spatial affiliations.

Following Herting et al.'s (1997) new model to study geographic mobility, I have identified those factors that affect migration of young adults. This paper extends the literature in three important ways. First, I have used recent census data to update our understanding of interstate migration. This is especially important given that the economic structure of the United States has changed significantly over the last 15 years. Second, I have identified macro-level characteristics

that affect the most mobile group in the United States. Third, I have introduced educational attainment as an important factor that affects interstate migration.

WORKS CITED

Blau, Peter M. and O.D. Duncan. 1967. *The American Occupational Structure*. New York: John Wiley & Sons, Inc.

Bluestone, Barry and Bennett Harrison. 1982. *The Deindustrialization of America: Plant Closings, Community Abandonment, and the Dismantling of Basic Industry.* New York: Basic Books.

Cebula, Richard J. 1993. "The Impact of Living Costs on Geographic Mobility." *The Quarterly Review of Economics and Finance.* 33:101-105.

Chiswick, Barry R. and TA Sullivan. 1995. "The New Immigrants." Pp. 211-270 in *State of the Union: America in the 1990s,* vol. II: Social Trends, edited by R. Farley. New York: Russell Sage Foundation.

Clark, GL and KP Ballard. 1980. "Modeling Out-migration From Depressed Regions: The Significance of Origin and Destination Characteristics." *Environment and Planning A* 12:799-812.

DiPrete, TA. 1993. "Industrial Restructuring and the Mobility Response of American Workers in the 1980s." *American Sociological Review.* 58:74-96.

Elliot, J.R. and M.J. Perry. 1996. "Metropolitanizing Nonmetro Space: Population Redistribution and Emergent Metropolitan Areas, 1965-1990." *Urban Studies*. 34:21-41.

Fligstein, Neil. 1981. *Going North: Migration of Blacks and Whites from the South. 1900-1950.* New York: Academic.

Fournier, GM, DW Rasmussen, and WJ Serow. 1988. "Elderly Migration as a Response to Economic Incentives." *Social Science Quarterly.* 69:245-260.

Frey, W.H. 1987. "Migration and Depopulation of the Metropolis: Regional Restructuring or Rural Renaisance?" *American Sociological Review.* 52:240-57.

Fuguitt, G.V. 1985. "The Nonmetropolitan Population Turnaround." *Annual Review of Sociology*, 11:259-80.

Gastil, Raymond D. 1975. *Cultural Regions of the United States*. Seattle, WA: University of Washington Press.

Gober, Patricia. 1994. "Americans on the Move." *Population Bulletin.* 49:3-39.

Goodman, Leo A. 1981. "Criteria for Determining Whether Certain Categories in a Cross-Classification Table Should Be Combined, With Special Reference to Occupational Categories in a Occupational Mobility Table." *American Journal of Sociology*. 87:612-650.

Harrison, Bennett and Barry Bluestone. 1988. *The Great U-Turn: Corporate Restructuring and the Polarizing of America*. NewYork: Basic Books.

Herting, JR, DB Grusky, and SE Van Rompaey. 1997. "The Social Geography of Interstate Mobility and Persistence." *American Sociological Review.* 62:267-287.

Hollingsworth, T.H. 1969. "Gross Migration Flows as a Basis for Regional Definition: An Experiment with Scottish Data." *Proceedings of the International Population Conference.* London, 2755-2765.

Hout, Michael. 1983. *Mobility Tables.* Sage University Paper Series on Quantitative Applications in the Social Sciences, 07-031. Beverly Hills and London: Sage Publications.

Jones, H. 1990. *Population Geography*. London: Paul Chapman.

Long, J.F. 1985. "Migration and the Phases of Population Redistribution." *Journal of Development Economics*. 17:29-42.

Massey, Douglas. 1990. "Social Structure, Household Strategies, and Cumulative Causation of Migration." *Population Index*. 56:3-26.

_____. 1988. *Migration and Residential Mobility in the United States.* New York: Russell Sage.

Pandit, Kavita. 1994. "Differentiating Between Subsystems and Typologies in the Analysis of Migration Regions: A U.S. Example." *Professional Geographer*. 46:331-345.

_____. 1997. "Cohort and Period Effects in U.S. Migration: How Demographic and Economic Cycles Influence the Migration Schedule." *Annals of the Association of American Geographers.* 87:439-450.

Plane, DA and GF Mulligan. 1997. "Measuring Spatial Focus in a Migration System." *Demography:* 34:251-262.

Raftery, A.E. 1986. "Choosing Models for Cross-Classifications." *American Sociological Review*. 58:482-495.

Reed, JS. 1993. *Surveying the South.* Columbia, MO: University of Missouri Press.

Stier, Haya and David Grusky. 1990. "An Overlapping Persistence Model of Career Mobility." *American Sociological Review*. 55:736-756.

Stolnitz, G.J. 1983. "Three to Five Main Challenges to Demographic Research." *Demography.* 20:415-432.

Tobler, Waldo. 1995. "Migration: Ravenstein, Thornthwaite, and Beyond." *Urban Geography*. 16:327-343.

United States Bureau of the Census. 2000. *Statistical Abstract of the United States.* Washington: U.S. Department of Commerce.

Wilson, Franklin D. 1988. "Aspects of Migration in an Advanced Industrial Society." *American Sociological Review*. 53:113-126.

Zelinsky, Wilbur. 1971. “The Hypothesis of the Mobility Transition.” *Geographical Review*. 61:219-49.

Zelinsky, Wilbur. 1973. *The Cultural Geography of the United States*. Englewood Cliffs, NJ: Prentice-Hall.

Table 1. Employment in Nonfarm Establishments by Census Subregion[1], 1990 and 2000
(number in thousands)

	2000			1990		
State	**Total Workforce**	**% Low Education Work[2]**	**% High Education Work[3]**	**Total Workforce**	**% Low Education Work[2]**	**% High Education Work[3]**
United States	131,418	47.4	52.2	108,392	50.0	49.4
New England	7,011	45.6	54.4	6,040	49.2	50.7
Middle Atlantic	18,326	43.4	56.4	16,456	46.7	53.1
East North Central	22,194	52.1	47.8	18,699	54.3	45.4
West North Central	9,867	49.6	50.1	8,067	51.1	48.4
South Atlantic	24,653	45.8	54.0	19,382	49.4	50.2
East South Central	7,654	52.5	47.0	6,221	54.8	44.3
West South Central	14,022	47.6	50.7	10,923	49.1	48.3
Mountain	8,501	44.9	54.2	5,904	45.3	53.0
Pacific	19,675	47.6	53.2	16,700	49.1	50.6

Source: Statistical Abstract of the United States, 1991 and 2000

[1] Table X lists the states that make up each census subregion

[2]Low Education Work includes the general Census classifications of Construction, Manufacturing, Transportation/Pubic Utilities, and Retail Trade

[3] High Education Work includes the general census classifications of Financial/Insurance/Real Estate, Services, and Government

Table 2. Definitions of Census Regions, Subregions, and States

Census Region	Census Subregion	State	i =/j=
WEST	**Pacific**	Alaska	2
		California	5
		Hawaii	12
		Oregon	38
		Washington	48
	Mountain	Arizona	3
		Colorado	6
		Idaho	13
		Montana	27
		New Mexico	32
		Nevada	29
		Utah	45
		Wyoming	51
SOUTH	**West South Central**	Arkansas	4
		Lousiana	19
		Oklahoma	37
		Texas	44
	East South Central	Alabama	1
		Kentucky	18
		Mississippi	25
		Tennessee	43
	South Atlantic	Delaware	8
		District of Columbia	9
		Florida	10
		Georgia	11
		Maryland	21
		North Carolina	34
		South Carolina	41
		Virginia	47
		West Virginia	49
MIDWEST	**West North Central**	Iowa	16
		Kansas	17
		Minnesota	26
		Missouri	28
		Nebraska	24
		North Dakota	35
		South Dakota	42
	East North Central	Illinois	14
		Indiana	15
		Michigan	23
		Ohio	36
		Wisconsin	50
NORTHEAST	**Middle Atlantic**	New Jersey	31
		New York	33
		Pennsylvania	39
	New England	Connecticut	7
		Maine	20
		Massachusetts	22
		New Hampshire	30
		Rhode Island	40
		Vermont	46

Table 3. Likelihood-Ration Chi-Square Statistics for Log-Rate Models of Trends in Internal Migration, Year, and Education for Individuals 25-39

Model	Specifications	df	L^2	BIC
1	Origin State x Destination State x Education x Time	10,000.00	31,503,857	31,348,008
2	Origin State x Destination State x Education x Time + State Level Immobility	9,999.00	806,221	480,587
3	Origin State x Destination State x Education x Time + Regional Immobility	9,890.00	327,607	171,752
4	Origin State x Destination State x Education x Time + Subregional Immobility	9,991.00	739,978	584,270
5	Origin State x Destination State x Education x Time + Subregional Immobility + Within Subregion Move	9,964.00	438,464	283,177
6	Origin State x Destination State x Education x Time + Subregional Immobility+ Within Subregion Move + Bordering States	9,933.00	373,119	218,380
7	Origin State x Destination State x Education x Time + Subregional Immobility + Within Subregion Move + Bordering States + Other Affinities	9,889.00	294,605	140,486

Source: IPUMS 5% Sample, 1990 and 2000

Table 4. Parameter Estimates for Subregional Persistence in the Best Fit Model

Effect	Main Effect		Year Effect		Education Effect	
Description	1990, Not College Educated		2000		College Educated	
Parameters						
Subregional						
Pacific	6.285	**	6.090	**	5.771	**
Mountain	6.305	**	6.189	**	5.583	**
West South Central	6.519	**	6.662	**	6.218	**
East South Central	6.593	**	6.556	*	5.903	**
South Atlantic	6.141	**	5.977	**	5.066	**
Mid Atlantic	6.472	**	6.549	**	5.169	**
New England	7.553	**	7.619	**	5.692	**
East North Central	6.333	**	6.459	**	5.183	**
West North Central	6.855	**	6.855		6.023	**

Source: IPUMS 5% Sample, 1990 and 2000

*p<.05 **p<.01

Table 5. Parameter Estimates for Subregional and Other Affinities by Year and Education in the Best Fit Model

Effect	Main Effect		Year Effect		Education Effect	
Description	1990, Not College Educated		2000		College Educated	
Parameters						
Within Subregion Move						
Pacific	1.562	**	1.366	**	1.386	**
Mountain	1.475	**	1.314	**	1.289	**
West South Central	1.308	**	1.317		1.576	**
East South Central	1.479	**	1.480		1.670	**
South Atlantic	0.839	**	0.832	**	0.779	**
Mid Atlantic	1.951	**	1.839	**	1.657	**
New England	3.038	**	2.882	**	2.120	**
East North Central	1.001	**	1.092	**	1.076	**
West North Central	1.727	**	1.734		1.844	**
Bordering States Exchange						
Pacific-Mountain	1.598	**	1.625		1.148	**
Mountain-West North Central-West South Central	1.171	**	1.097		1.110	
West South Central-East South Central	1.215	**	1.265		1.204	
West North Central-East North Central	1.844	**	2.046	**	2.050	**
West North Central-East South Central	0.466	**	0.576		0.859	**
East North Central-East South Central	1.302	**	1.530	**	1.004	**
East North Central-South Atlantic	1.441	**	1.476		0.972	**
East North Central-Middle Atlantic	0.866	**	0.896		0.974	**
Middle Atlantic-South Atlantic	1.401	**	1.343		1.359	
East South Central-South Atlantic	0.832	**	0.648	**	0.666	**
Middle Atlantic-New England	1.908	**	1.799	**	1.797	**
Other Affinities						
California Inflow	1.327	**	0.940	**	1.628	**
Florida Inflow	1.881	**	1.491	**	0.876	**
New York Inflow	0.425	**	0.606	**	0.337	**
Texas Inflow	1.714	**	1.629	**	2.042	**
Arizona Dispersal	0.492		0.303	**	0.479	
New York-California Exchange	0.087	**	0.187	**	0.378	**
Alabama-Georgia Exchange	1.576	**	1.439	**	1.725	**
D.C.-Maryland-Virginia Area Exchange	1.512	**	1.411	**	1.408	**

Source: IPUMS 5% Sample, 1990 and 2000

*p<.05 **p<.01