Inter-County Variability of Net Migration at Older Ages as a Path Dependent Process

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ABSTRACT

This paper seeks to identify factors associated with the formation and development of nonmetropolitan destinations for older in-migration, thereby explaining why some U.S. counties are more likely than others to be nonmetro retirement destinations. We contend that most nonmetro retirement destinations are established and developed over time through a path dependent process. When amenities are commodified as recreation and tourism, migration streams tend to be established that ultimately produce sustained in-migration of older persons to selected destination communities. We use data from a variety of official sources and a spatial statistics methodology to examine inter-county variability in net migration rates at ages 60-74. Our findings are consistent with the aforementioned path dependent development framework. Counties with a long history of population growth, previous experience attracting older in-migrants, attractive natural amenities and a developed recreation and tourism industry are those most likely to be retirement-age migration destinations. In contrast, agricultural heartland and high poverty rate counties are associated with lower rates of older in-migration. Older in-migration should neither be seen as a panacea for strapped rural communities nor as a "pensions and care issue." Older migrants can be "grey gold," but they can also pose challenges, such as possibly increased demand for public services as they age in place.

INTRODUCTION

This paper seeks to identify factors associated with the formation and development of older migration streams to nonmetropolitan destinations, thereby explaining why some U.S. counties are more likely than others to become nonmetro retirement destinations. Rural retirement migration is not a new occurrence. In fact, particular rural regions have been net recipients of older in-migrants since at least the 1970s (Sofanko, Fliegel and Glasgow 1983). Retirement-age migration has interested scholars and policy makers because, regardless of the overall direction of metro to nonmetro migration -- positive in the 1970s, negative in the 1980s and positive since 1990 (Cromartie and Kandel 2007) -- more *older* persons have moved to nonmetro areas than in the opposite direction in each of these decades (Fulton, Fuguitt and Gibson 1997).[1] As Reeder (1998) has shown, nonmetro retirement destinations continued to grow rapidly and have net in-migration during the 1980s when most other nonmetro county types lost population to their metropolitan counterparts. Hence, even though the total number of nonmetro retirement destinations declined in the 1980s, the overall nonmetro sector continued to have positive net migration at ages 60+ during the decade.

Net in-migration of older persons played an important role in the rural population turnaround of the 1970s (Glasgow 1980), and it has been associated with relative prosperity and community vitality within rural America since then. While many nonmetro counties have positive migration at age 60 and older, the USDA and rural social scientists have been particularly interested in those counties with much higher than average in-migration at older ages. As a result, the USDA has designated counties with 15 percent or higher population growth at ages 60 and older due to net in-migration as "retirement destinations."[2] Such counties are one of the USDA's rural policy types designed to provide policy-relevant information about diverse county conditions to policymakers, public officials and researchers. The ERS's rural typology was developed by Ross and Green in 1985, updated in 1994 (Cook and Mizer 1994) and updated again

[1] While the relative rate of population growth has favored metro over nonmetro areas since the mid 1990s, nonmetro areas have continued to have modest net in-migration from metro areas. The metro growth advantage is attributable to international migration, which is strongly oriented toward metro areas, rather than internal migration (Cromartie and Kandel, 2007).

[2] Metro retirement counties were also identified in the latest classification by the ERS (USDA-ERS 2004).

in 2005 (Parker 2005). In addition to their higher than average rate of population growth, nonmetro retirement counties have been shown to have higher personal and household income, lower poverty rates, higher percentages of owner occupied housing and higher educational attainment than other types of nonmetro counties (Brown and Glasgow 2008).

Retirement-age migration is often seen as an engine of rural economic growth and development, and many states have designed programs with the explicit goal of recruiting retirees (Reeder 1998). Older migration is highly selective of younger-old, healthy, married couples with relatively high incomes. As Longino and Bradley (2006) pointed out, moving is costly and thus screens out persons who cannot afford to move. They also observed that retirees move soon after retiring while their assets are still largely intact. Retirement income is highly portable, and retirees can take their assets, pensions and Social Security with them, regardless of where they choose to live. This makes them attractive to areas seeking an infusion of outside capital. The *economic* development literature validates retiree recruitment efforts. While costs are incurred, rural places are likely to benefit economically from retirement-age in-migration, at least in the short term (Stallman, Deller and Shields 1999).

Older migration to nonmetro areas is likely to remain strong in the future. As the baby boom generation ages, many more retirees will be available to change their places of residence. While we do not know the share of baby boomers that will eventually move to nonmetro destinations, it seems likely that nonmetro areas will receive a significant share (Cromartie and Nelson 2009). In fact, research has demonstrated that migration among baby boomers has already affected differential rates of population growth between regions (Plane and Rogerson 1991) and between metropolitan and nonmetropolitan areas (Nelson, Nicholson and Stege 2004).

Based on the 2000 Census, 277 nonmetropolitan counties had 15 percent or higher population growth at ages 60 and older due to net in-migration during the decade of the 1990s and were classified by USDA as *rural retirement destinations*. Considerable attention was given to the demographic and economic impacts of older in-migration, but virtually no research has considered why some nonmetro counties are more likely than others to attract high levels of older migrants. Many observers contend that older in-

migration to nonmetro destinations is associated with attractive environmental amenities (Poudyal et al. 2008; Cromartie and Nelson 2009). This is undoubtedly true, but, given the fact that many attractive places are not experiencing net in-migration at older ages, and the wide variety of reasons older in-migrants to rural retirement destinations give for their residential choices (Brown and Glasgow 2008), we believe that retirement destinations are not simply places with favorable weather, attractive natural amenities and/or developed recreational infrastructure, but also mid to low cost of living, available health care , cultural amenities and other factors (Bolender 2010).

[Figures 1 and 2 here]

The Regional Location of Nonmetro Older Migration:

As can be seen in Figure 1, older net in-migration is not randomly distributed across the nonmetro United States. Distinct concentrations occur in the northern reaches of states in the Upper Great Lakes, throughout nonmetro parts of Florida, in the Ozark-Ouachita Mountains, in the Texas Hill Country, along the front range of the Rocky Mountains, throughout the Southwest and in the Pacific Northwest. At first glance, one might conclude that the distribution of older migration destinations closely tracks the location of natural amenities, and this is often true. However, as can be seen in Figure 2, while the general regional locations of older in-migration and attractive amenities are quite similar, the majority of high amenity counties do not have especially high rates of older net in-migration. In fact, while most counties with 15% or higher net-in-migration at older ages score high on the USDA natural amenities scale, the reverse is not true.[3] In other words, most high amenity counties do not have especially high rates of net-in-migration at older ages.

[3] We use 15% or higher in migration at ages 60+ to indicate retirement destinations because the ERS-USDA county typology has made this level of net migration the conventional level (ERS-USDA 2004).

THEORETICAL PERSPECTIVE

Our overall perspective is that rural retirement destinations are established through an historical process that is initiated by a set of conditions that subsequently result in self-sustaining migration streams of older persons. *Path dependency* provides a useful theoretical perspective for understanding how this process operates over time to produce and maintain certain places as comparatively attractive destinations for older in-migrants (for example, the 277 nonmetro retirement destination counties).

Path dependency theory was preceded and influenced by human ecological studies of urban transformations, especially those conducted in Chicago during the first third of the twentieth century. Roderick McKenzie (1924), in particular, had a great influence on the Chicago School and on functionalist human ecology. Labeled as the "natural history of place," this perspective on social change proposed that geographic communities develop through a linear series of stages that are animated by changing technological regimes, large scale population movements or other perturbations. Early ecologists utilized biological analogies such as "invasion" and "succession" to explain the dynamic processes that transformed urban morphology. As Hawley (1968) observed, early ecology articulated an evolutionary image of organizations, communities and societies as having a *natural history* that moved from simple to increasingly complex divisions of labor.

Early ecology was legitimately criticized as being a linear, evolutionary model of development, and one that borrowed uncritically from plant ecology. Moreover, as Hawley (1950) has noted, empirical exposition of change in terms of a series of discrete stages, each of which unfolds from the preceding one, is difficult to show. Stable criteria for identifying developmental stages are lacking, and one cannot determine the number and order of stages comprising a sequence. Even as we acknowledge this critique, the idea that a place's existing conditions influence or limit its successive development dynamics has had a lasting influence on the study of social change at the community level and on path dependency, in particular.

Path dependency was first employed by economists (Arthur, 1989) and later by other fields including sociology, political science and management (Gartland 2005). Path

dependency is present if actions at one point in time affect the options available in the future. More generally, events at any point are shaped in specific and systematic ways by historical trajectories. These trajectories involve self-reinforcing sequences that reproduce particular institutional or developmental patterns over time (Mahoney 2000).

Path dependency is often used to explain how history limits development options. As Putnam observed (1993: 179) "…path dependence can produce durable differences between two societies" (in our case counties). He continues, "…the process by which we arrive at today's institutions is relevant and constrains future choices…" Consider the case of economic dependence on agriculture. As Johnson and Rathge (2006) argue through the example of the Great Plains, extreme dependence on agriculture has resulted in the relative lack of alternative employment possibilities in the region. Further, increasing productivity by fewer and larger farms displaces population as capital is substituted for labor. A recent analysis and elaboration of this question by White (2008) unpacks the mechanistic "black box" through which agricultural dependence is transmitted to population loss. She demonstrates that the negative relationship between agricultural dependence and population change is contingent on the availability of nonfarm employment in the local economy. In other words, at the same level of farm dependence and mechanization, population loss is lower where nonfarm jobs are available to absorb the displaced farm labor. Accordingly, regional dependence on agriculture does not necessarily lead to population loss, if economic diversification was pursued at an earlier time. Rather than being a predetermined linear process, the demographic response to agricultural dependence is contingent on a set of economic development decisions made at strategic times. The development path described by White differs greatly from the conventional view of path dependent change in which "organizations follow a developmental logic along a path already begun" (Outhwaite and Ray 2005: 94; see also Sayer 1995). White's more optimistic version of path dependence is consistent with the position taken by Stark and Bruszt (1999) in their analysis of political and economic transformations in post-socialist Hungary. In their view, institutions can either constrain or enable. As Elster (1978) observed, there are branching points in history, and decisions taken at these points have powerful positive or negative impacts on future development paths.

The use of path dependency as a theoretical guide to empirical research is not limited to examining the negative implications of particular development trajectories because certain events, circumstances and decisions can also trigger advantageous future paths. We believe that the development path experienced by counties now attracting older in-migrants is an example of such a "virtuous" path. The literature (Glasgow 1980; Cuba 1989; Brown and Glasgow 2008) suggests the following scenario. A large majority of rural retirement destinations have attractive natural amenities. McGranahan (1999) showed that 72 percent of rural retirement destination counties (as of 1980) were in the top quartile of nonmetro counties in natural amenities. McGranahan's data also showed, however, that only 24 percent of the top quartile of nonmetro counties, as measured by his amenity scale, attracted older persons at a sufficiently high rate to be considered rural retirement destinations. Amenities thus *often* set the stage for older in-migration, but they are not sufficient to attract retirement age persons on their own. The next step in the process seems to be the development of recreation infrastructure and the resulting influx of visitors and vacationers. Visitors and vacationers often form powerful links to resort communities that may result in permanent relocation later in life. Cuba's (1989) study showed that over 90 percent of retirement age migrants to Cape Cod had previous experience there as vacationers. Summer vacationing often becomes an intergenerational experience, especially if grandparents have already moved to an area. As one public official in a rural retirement destination confided in a 2006 interview: "These folks are the most visited persons you will ever meet" (Brown and Glasgow 2008:162). In addition, in-migrant retirees sometimes recruit friends made during earlier vacations to join them as permanent residents of rural destinations. Once a place becomes well-established as an attractive vacation and retirement spot, migration networks are likely to develop and continue to recruit additional migrants over time. Hence, investing in recreation infrastructure at a critical juncture is an important decision in the process leading to the establishment of many of today's rural retirement destinations. Such investments made at so called "branching points" can set a community on the path toward attracting retirees in the future. Moreover, because of the way social networks operate, older persons can be attracted to retirement destinations regardless of whether they vacationed there themselves or even know someone who has done so. Once a community

has developed a visible profile as a retirement destination, migration streams develop and are sustained over time.

Viewed through an *opportunity-oriented* versus a *problem-oriented* perspective, path dependency then refers to reinforcing conditions that can perpetuate positive development trajectories. The self-reinforcing sequences in this case can work in favor of a region or community rather than to its detriment. Recognizing and understanding the dynamics of these self-reinforcing mechanisms can be a powerful lens for understanding why certain areas assume particular development paths while relatively similar places progress along a different track. Our study contributes to understanding what triggers and sustains retirement-age migration flows to nonmetropolitan counties that have become established as retirement destinations. Understanding the dynamics of retirement migration in the context of path dependency can help policy makers promote positive self-reinforcing mechanisms to improve community quality of life.

DATA SOURCES AND RESEARCH DESIGN

This study uses US counties and county equivalents as the units of analysis. Metropolitan counties were excluded, as our focus is on older in-migration to nonmetropolitan retirement destinations. After accounting for reclassifications and administrative changes between 1990 and 2000 and missing data, our data set included 2004 nonmetro counties.[4]

Our data were compiled from various secondary sources. Social, economic, and demographic data were drawn from the 1990 and 2000 Decennial Census of Population and the Bureau of Economic Analysis' 2006 release of the Regional Economic Information System (REIS). Several variables were obtained from the USDA Economic Research Service, including county economic types, and a scale of natural amenities. Information on hospital location was from the American Hospital Association, as included in the Environmental Systems Research Institute data file. Presence of two

[4] We employ spatial regression using ArcGIS and Geoda software in this analysis. ArcGIS assigns 0 to missing data when files are merged. Accordingly, we deleted the 50 counties that were missing data on one or more variables. Otherwise, these missing data would have been treated as zeros.

and/or four year colleges in the county in 1995 came from the U.S. Department of Education.

Our dependent variable, net migration rate at ages 60-74 between 1990 and 2000, resulted from a transformation of raw net migration numbers estimated by Voss and his colleagues (2003). We limit the range of older net migration to between 60-74 because as Johnson and his colleagues (2005) showed, older migration peaks between ages 60-70, declines somewhat between 70-74, and declines to zero thereafter. Hence, this is one way in which our research differs from previous research using the USDA-ERS convention of age 60 and older (Poudyal et al 2008). Net migration numbers for each five year age group from 60 to 74 were aggregated. The resulting total of net migrants was then divided by the summed expected populations of these age groups in 2000, as determined by using a survival methodology with 1990 population, birth and death numbers.

Previous research on the formation and development of rural retirement destinations has used a dichotomous dependent variable and logistic regression to determine whether certain county characteristics affect the likelihood that a county will have a high net migration rate at ages 60 and above (Kulcsar et al. 2008). However, this study determined through a sensitivity analysis that changing the migration threshold from the 15 percent recommended by the USDA to 10 percent or 20 percent alters the geographic extensiveness of rural retirement migration even though it does not change its regional concentration. Hence, using a somewhat arbitrary migration threshold to delineate the dichotomous dependent variable might affect whether certain factors are shown to increase or decrease the likelihood that a county is a retirement destination. In other words, results might be an artifact of where the migration threshold is drawn. In contrast, we use a county's net migration rate at ages 60 -74 as our dependent variable, with positive coefficients indicating that a particular county attribute is positively associated with a county's rate of older in-migration and vice versa for negative coefficients. As indicated earlier, we truncate the dependent variable at age 74 because very little net migration to nonmetro counties occurs after that age (Johnson et al 2005; Johnson and Cromartie 2006).

The initial component of our multivariate analysis was to fit an ordinary least squares regression line using counties' net migration rates at ages 60-74 as our dependent

variable. Given the geographic clustering of older net in-migration rates shown in Figure 1, we expanded the work to include spatial statistics methods. We used the global Moran's I test to determine the presence and strength of spatial autocorrelation among the net migration rates of the various counties. The Moran's I test score of 0.48 was statistically significant, indicating positive spatial autocorrelation. This means that counties with high rates of older net in-migration shown to cluster in Figure 1 have similar values on the dependent variable. Next, we used Lagrange multiplier techniques to determine the type of spatial dependence.

Spatial autocorrelation can manifest itself as either *spatial lag* or *spatial error*. Spatial lag occurs when the dependent variable's value of one county is affected by the values of the dependent variables in nearby counties. If spatial autocorrelation is present in county-level regression analysis that does not account for spatial lag, the estimated coefficients will be biased and inconsistent, similar to the exclusion of any other statistically important independent variable. On the other hand, spatial error exists when the error term in one county is correlated with the error term in neighboring counties. Spatial error does not bias coefficients in ordinary least squares regression, but the estimates of the coefficients and F tests will be misleading (Anselin 1988). Another aspect differentiating spatial lag from spatial error is that the former is thought to have substantive meaning while the latter is more of a statistical *nuisance* (Ward and Gleditsch 2008). To determine whether our analysis is being affected by spatial lag or spatial error, and to assure that spatial autocorrelation is properly accounted for, we used *GeoDa* to estimate an ordinary least squares model with diagnostic tests for spatial dependence (Anselin et al., 2006). The results of these tests allowed us to re-estimate the model to properly account for spatial influences.[5]

Both the Lagrange multiplier lag and error results were statistically significant. However, the spatial error's test statistic exceeded that of spatial lag in every case. This indicated that a spatial error model would represent a better fit for our final regression analysis.[6] Spatial error is preferred over spatial lag when the expectation is that even as

[5] The spatial error and spatial lag dependence models can be written as follows: (spatial error) $\mathbf{y} = \mathbf{X}\beta + (\mathbf{I} - \rho\mathbf{W})-1\ \varepsilon$; (spatial lag) ,$\mathbf{y} = (\mathbf{I} - \rho\mathbf{W})-1\ \mathbf{X}\beta + (\mathbf{I} - \rho\mathbf{W}) - 1\varepsilon$

[6] For the spatial weight matrix used in the spatial regression models, we selected a 2nd order Queens contiguous matrix that identifies adjacent counties (1st order) and counties adjacent to the first order. After

spatial clustering affects the dependent variable's error structure, it does not have an independent substantive effect on inter-county variability in the dependent variable, in this case older in-migration.[7] To illustrate this difference with a concrete example, studies of intercommunity variability in hate crime rates typically use a spatial lag model because crimes in one community are thought to lead to retaliatory crimes in neighboring communities (see e.g., Lyons, 2007). In contrast, we see retirement in-migration clustering in generalized regions more because of shared locational factors than as a simple extension of migration flows from one county to the next. .

MODELING THE COUNTY-LEVEL DETERMINANTS OF OLDER IN-MIGRATION

As indicated above, only 277 of 2051 nonmetro counties met the USDA's criteria for being identified a rural retirement destination in 2000, i.e., having 15 percent or higher net in-migration at ages 60 or above. Accordingly, our analysis seeks to identify why some nonmetropolitan counties are more likely than others to have higher rates of net migration at older ages. Previous research has demonstrated a positive association between older in-migration and natural amenity endowments (McGranahan 1999; Poudyal et al 2008), but these analyses have only begun to examine why older in-migration *clusters in particular high amenity areas and not in others*. Clearly, there is more to the story than simply having nice weather, a diverse topography and/or lakes and shoreline. In addition, previous research has not examined older in-migration from an historical perspective to determine whether streams of older in-migration become self-perpetuating over time as is true of other types of migration. As indicated in our discussion of path dependence, we believe that amenity endowments are a frequent precondition for older in-migration to occur, a precondition that will often result in older in-migration when recreation infrastructure is subsequently developed and vacationers begin to return as residents at retirement (or pre-retirement) ages. Once this process is set in motion, retirement age migration is likely to become a self-maintaining process. We

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testing both 1st and 2nd order Queens weight matrices, we found the 2nd order matrix to show improved fit, suggesting that the influence of spatial autocorrelation in-migration rates at age 60-74 extends beyond the counties immediately adjacent to the county of interest. .

[7] We ran the analysis using both spatial error and spatial lag models. The spatial lag model essentially reproduced the spatial error model's findings.

include several time varying factors to determine whether having a relatively high rate of older in-migration in the current period is contingent on having had high rates in the past.[8] Our overall hypothesis is illustrated in Figure 3.

[Figure 3 here]

We group explanatory factors into six sets, each of which is entered into the regression along with preceding sets as a separate model. The six models reflect: (1) a county's natural amenity endowments, (2) path dependency including its level of economic dependence on recreation activities and relatively high rates of older in-migration in the past (3) its socio-demographic structure, (4) the presence of certain institutions needed by or thought to be attractive to older persons, and (5) its economic dependence on particular sectors, and (6) its geographic situation and regional location. The multivariate results presented in this paper are based on OLS regression and maximum likelihood estimation of a spatial error model using a second order Queen contiguity rule spatial weights matrix (Anselin 2005; Ward and Gleditsch 2008). These spatial error models were estimated using GeoDa software.

The first model includes a scale of natural amenities (McGranahan, 1999)[9] and a spatial parameter to account for spatial error, i.e., the spatial clustering of nonmetropolitan counties with high net in-migration at older ages. This gives a baseline estimate of the association between having a high amenity endowment and older in-migration, and lets us examine whether it makes sense to think of amenities as a common precondition of older in-migration. Our analytical strategy is to determine whether amenities have an independent effect on older in-migration or whether the bivariate correlation is diminished once other county attributes thought to be associated with

[8] While our analysis is not longitudinal and therefore not a strong test of the path dependent development hypothesis, it is a step in this direction.

[9] The USDA natural amenities scale is an additive measure of standardized values on average January temperature, average January days of sun, low winter-summer temperature gap, low average July humidity, topographic variation, and a logged measure of water area, all appropriately coded so that higher values indicate greater amenities. Water area could change if new reservoirs are built or old ones decommissioned. Otherwise, this scale should be relatively constant over time. The scale varies from -3 to +3, and has a normal distribution making it appropriate for statistical analysis without transformation (McGranahan 1999).

retirement-age migration are accounted for. As stated earlier, we believe that natural amenities often set the stage for recreation and tourism development, which can subsequently trigger the retirement migration process. Natural amenities, as measured by McGranahan, change very little over time, and hence counties with a high score on the scale at present would have had a similarly high score in the recent past.

Model 2 adds two variables that investigate the path dependence hypothesis. We do this to examine whether past experience attracting older in-migrants is a good predictor of older in-migration during the most recent inter-census period and if development decisions and investments in recreation and tourism made at an earlier time underlie contemporary development trajectories. As we discussed earlier, we do not believe that previous experience *predetermines* the future, but we think that it increases the likelihood that many environmentally attractive places that invested in recreation and tourism infrastructure began to attract visitors and vacationers, some of whom chose to change their permanent residence to these places in later life. Once established, we contend that social networks linking visitors and vacationers to summer places become self-sustaining and often result in intergenerational migration streams. The average share of earnings from recreation and lodging during the twenty years prior to the 1990-2000 migration interval indicates whether a county invested in recreation and tourism in the past, thereby setting the older migration process into motion. To use Elster's (1978) terminology, when this subset of naturally well endowed nonmetro counties invested in recreation infrastructure they reached a "branching point" which was subsequently conducive to their development as retirement destinations (Deller et al. 2001). The second variable indicates a county's net migration rate at ages 60-74 in the decade prior to the migration interval under investigation. It examines whether counties with previous experience as retirement destinations are more likely to maintain this status at the present time compared with counties that did not have high rates in the past. In other words, we expect that counties that had relatively high rates of older in-migration a decade previous will be more likely to maintain their high rate of in-migration during the current period.

The third model adds measures of population size, change and socioeconomic composition.[10] As shown by previous research (Duncombe et al 2001; Poudyal 2008) we expect population size to be negatively associated with older in-migration. Qualitative research also shows that older in-migrants indicate a preference for more highly rural retirement destination communities. For example, Brown and Glasgow (2008) reported that "community attributes" were the most frequently given reason for moving to the fourteen rural retirement destinations examined in their study. Respondents observed that they were attracted by the place's "slower pace of life," "small town atmosphere," "small town community feel," "quiet feel," and "convenience away from the big city." Alternatively, one could hypothesize that larger nonmetro places would be more attractive to older in-migrants because they have a wider range of health and social services needed to support independent senior living as well as a wider range of housing and commercial options. However, since we include specific variables measuring access to health care and the intensity of governmental employment, we believe that this aspect of population size will be accounted for in our analysis. Since the distribution of counties by population size follows the rank size rule, we account for the positive skew by using the natural log of population in this analysis. Previous research shows that retirement destinations are likely to have relatively high overall rates of population growth. For example, between 1990 and 2000, nonmetro retirement destination counties grew by over 25 percent, while other nonmetro counties grew by less than 5 percent (Brown and Glasgow 2008).[11] We cannot use population change during the 1990s as a predictor variable because there would be an automatic inter-correlation between a component of change, net migration rates in the 1990s, and population growth in the 1990s itself. Accordingly, we include the average annual rate of population change in the 1970s and the 1980s to account for places with a history of past growth while avoiding

[10] Percent urban could also have been added to measure urbanization, but it is correlated .74 with the natural log of population size across nonmetropolitan counties. Accordingly, we only include population size.

[11] The direction of causation between migration and population change is not clear. One could argue that growing places are attractive to potential in-migrants, and conversely, since migration is a component of population change, places with higher rates of older in-migration are more likely to grow more rapidly.

methodological problems involved with an independent variable being so closely related to the dependent variable.[12]

Model 3 also focuses on the effects of differences in socio-demographic composition on inter-county variability in the rate of older migration by adding percent of the population below the official poverty line. Older in-migrants are positively selected with respect to socioeconomic status, so it stands to reason that they would be attracted to places that are relatively well off and repelled from places with high poverty rates.[13] Percent 65+ was also entered in this model. We reason that older in-movers are attracted to places with pre-existing concentrations of older population. Once a county begins to develop a profile as a retirement community, subsequent older in-migration seems likely.

The final variable in model 3 is the county's crime rate at the beginning of the migration interval. We include this variable because past research indicates social problems such as high crime rates are experienced as push factors motivating out migration (Kallan, J. 1993; Wiseman and Virden 1977). Accordingly, we expect older movers to avoid places with higher than average crime rates.

The fourth model includes two variables that measure access to services and cultural opportunities. Older in-migrants either have or will eventually have greater need for medical care than their younger counterparts. Moreover, because of falls and other accidents, older persons typically have greater need for emergency medical facilities. Given a wide range of places with attractive natural amenities, highly developed recreation and vacation industries and other attractive attributes, we expect older migrants also to choose destinations with greater than average access to medical facilities. Using geo-referenced data from the American Hospital Association, we include a variable that

[12] Like population size, the rate of population change is often skewed and hence often requires transformation in regression models (See White 2008, for example). We tested for skewness and found that while skewed (1.3) the variable does not require transformation. It is thus entered in its original form. As Johnson and Cromartie (2006) have shown, inter-area variability in nonmetropolitan population change during the 1990s was almost completely accounted for by net migration while the contribution of natural increase was low and had declined regularly over the past several decades. Given the high correlation between the rate of population change between 1990 and 2000 and the overall rate of net migration during this same period (r =.94), both variables cannot be entered in the model. We chose the rate of population change because it is a more general indicator of development.

[13] Brown and Glasgow (2008) showed that the vast majority of older in-movers to rural areas are white. Hence, one might argue that white migrants would seek out destinations with low minority populations. However, their previous research also demonstrated that nonmetro retirement destinations are virtually identical to non-retirement destinations with respect to racial composition, 17.3 pct nonwhite for non-NRD counties and 16.1 percent for NRDs. Thus, we do not include racial composition in the present analysis.

indicates the presence of a general hospital with at least 100 beds either in a particular county or within 10 miles of the county's border. All hospitals counted in the variable have an emergency room and almost always at least one medical specialty.

Given the positive socioeconomic selectivity of older in-migrants, one would expect places with at least one institution of higher learning to have relatively high rates of in-migration between ages 60 and 74. Previous case studies by Brown and Glasgow (2008) revealed that older in-movers frequently participate in art, music, drama, other cultural and athletic events and activities as both participants and as audiences, and these performances, competitions and exhibitions are often sponsored or hosted by local colleges and universities. Moreover, local colleges frequently offer continuing education programs that are popular with seniors. Thus, we include the presence or absence of at least one institution of higher learning.[14]

Model 5 includes measures of a county's dependence on particular economic sectors. We include a measure of agricultural dependence and a measure indicating the extent of state and federal government employment in a county.[15] Our logic is that counties with higher than average federal and state government employment will have a wider array of government provided services, including health care facilities, which may attract older in-movers. In contrast, we do not expect older movers to be attracted to counties with heavy dependence on agriculture.[16] Such places are mainly in the Great Plains, offer few environmental or cultural amenities and often lack access to nearby larger places. Moreover, agriculturally dependent counties are experiencing overall population decline and associated loss of services and economic establishments (Johnson and Rathge 2006; Johnson 1985).

Model 6 focuses on a county's geographic situation. We include an indicator of access to nearby metropolitan areas and two regional dummy variables. Adjacency to a metropolitan area provides older rural residents with access to extensive shopping

[14] We ran the analysis using the presence of 4 year colleges or universities, and the results were almost identical to those including both 2 and 4 year institutions. Because cultural amenities are provided by both 2 and 4 year institutions, our "presence of a college" measure includes both.
[15] Government dependence is indicated by 15 percent or more of average annual labor and proprietors' earnings derived from Federal and State government during 1998-2000 (USDA-ERS 2004).
[16] Farming dependent counties have either 15 percent or more of average annual labor and proprietors' earnings derived from farming during 1998-2000 or 15 percent or more of employed residents worked in farm occupations in 2000 (USDA-ERS 2004).

opportunities, major health care centers, museums, symphonies and other cultural amenities, professional sports franchises, and a wide range of job opportunities if desired and/or needed. Accordingly, we expect older in-migration to be higher in metro adjacent counties compared with their non-adjacent counterparts.

More than half of counties with 15% or higher in-migration at ages 60-74 are located in the South and Southwest, and relatively fewer are located in the Midwest or Northeast.[17] Therefore, we added regional dummy variables for the South and Southwest, with the remainder of the country being the omitted reference category. We expect counties in the South and Southwest to have higher average rates of older in-migration than is true elsewhere.

FINDINGS

To summarize, we believe that the presence of natural amenities often sets the stage for older in-migration, while a developed recreation industry sets particular amenity areas apart from the rest. We expect both of these variables to have strong positive relationships with older in-migration between 1990 and 2000. While the above two attributes will differentiate counties that attract older persons from those that do not, we believe that older migration is a path dependent process. Previous destinations for older in-migrants will continue to be attractive,[18] as successive cohorts of people are recruited by family and friendship networks, and as people with no prior experience in particular destinations are attracted by a place's identity and visibility as a retirement community. We believe, however, that the impact of natural amenities and the measures of path dependency will continue to be positive but will diminish in strength as successive blocks of variables that focus more directly on community characteristics associated with the dynamics of older residential mobility are added to the model. In particular, we think access to medical services and the presence of cultural amenities as indicated by local colleges and universities will have positive impacts on older in-migration rates.

[17] Southwest includes Arizona, Colorado, New Mexico, Nevada and Utah in this study.
[18] Note: Sofranko et al (1983) examined the "gang plank" hypothesis which proposes that people seeking environmental amenities will want to stop the flow of additional in-migrants. Hence, previous migration could have this alternate effect.

Moreover, we expect older in-migration to be geographically concentrated in counties with pre-existing concentrations of older persons, in smaller, more rapidly growing counties, in counties rich in government employment with easy access to metropolitan centers, and in the South and Southwest. In contrast, we expect high crime and poverty rates and high dependence on agriculture to have a negative effect on older in-migration.

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[Table 1 here]

The first model in Table 1 shows that counties high in natural amenities have higher rates of net in-migration at older ages. As discussed in the methods section, we are sensitive to the possibility that our results will be influenced by underlying spatial autocorrelation. The spatial clustering of high older in-migration counties displayed in Figure 1 and the significant Moran's I test indicate that spatial autocorrelation must be accounted for in this analysis. This is important because, if spatial correlation is found in the data's error structure, our analysis will violate assumptions of independence (Cliff and Ord 1981). Hence, all six of our models include the spatial error parameter "Lambda."

In model 2, we introduce the indicators of path dependency. Dependence on recreation and lodging during the twenty years prior to the migration interval produces the expected positive results. The second indicator of path dependency, older net migration in the 1980s, is also positively associated with older migration during the decade being studied in this analysis.

Moreover, the amenity scale continues to be strongly positive, even after inter-county variability in recreation development, previous rates of older net migration and spatial error are accounted for. This analysis lends support to our expectations that older in-migration streams are most likely to arise in attractive counties that have developed their natural amenities for tourism and recreation. In model 3, we introduce demographic and socioeconomic attributes of nonmetropolitan counties. As expected, the data show that older in-migration is higher in counties that were relatively small, and those that are already older than average at the beginning of the migration interval. In addition, older in-migration is positive in counties that had already established a positive population

growth trajectory during the1970s. However, the rate of population growth during the 1980s, a decade of low overall nonmetro population growth, is not associated with the rate of older in-migration during the following decade. In contrast with our expectations, the relationship between older in-migration and a county's poverty rate is strongly positive. We are somewhat unsure how to interpret this counter-intuitive finding. Research by Glasgow and Reeder (1990) showed that rural retirement destinations had lower incomes than non-retirement counties because many are located in historically poor regions such as the mountains of North Carolina, Texas Hill Country, The Ozarks and cut over areas of the Upper Midwest. Perhaps poorer places have lower costs of living, more affordable housing and/or a greater stock of vacant dwellings. It is also possible that older persons are attracted to low income areas with histories of mining, fishing or forestry. Moreover, since our universe is the nonmetropolitan counties, poverty may work differently than it would in a predominantly urban setting. Relatively larger (micropolitan) places within the nonmetropolitan universe may have higher poverty rates, despite being more successful otherwise. Needless to say, this issue merits further research. In contrast, older in-migration does not respond to inter-county variability in crime rates. While prospective migrants may know which large cities are reputed to have higher than average crime rates, that they may not have accurate information on the variability in crime rates among nonmetro areas. Accordingly, the lack of association between crime and older net in-migration is unsurprising. The impacts of natural amenity endowment, dependence on recreation employment, and prior migration at older ages remain positive and statistically significant once these demographic variables have been added to the model, but the recreation coefficient is weaker than in model 2.

In model 4, we introduce two institutional measures that are expected to be positively associated with the rate of older in-migration. We measure access to health services by whether a 100 bed hospital is located in or within 10 miles of a county. Given that older persons have higher than average utilization of emergency services, we reasoned that access to such facilities would attract older in-migrants (Aminzadeh and Dalziel 2002), and we found empirical support for this expectation.

The second institutional measure is whether a county is home to a college or university. Since colleges typically have cultural and athletic programs and activities, we

reasoned that the presence of higher education would make certain nonmetro counties more attractive to older in-migrants than others. Our data do not support this expectation. All coefficients reported earlier are virtually unchanged after these two institutional measures are entered into the model and spatial error has been accounted for.

In model 5, we add two measures of a county's economic structure that were thought to be associated with older in-migration. We expected counties with higher than average government employment to attract older in-migrants, and conversely, counties highly dependent on agriculture to have low in-migration at older ages. As expected, this model shows that agricultural dependence has a clear negative effect on older in-migration. Also as expected, the effect of government employment is positive. Similar to model 4, all coefficients reported earlier are virtually unchanged after these two economic measures are entered into the model and spatial error has been accounted for.

Model 6 adds geographic location and situation to the analysis. As expected, being situated next to a metropolitan area is advantageous for attracting older in-migrants. Six out of ten nonmetro counties with 15% or higher net migration at ages 60-74 are adjacent to metro areas compared with only 50 percent of counties with lower rates of older in- migration.

Location in the South and Southwest was also examined in model 5. Southern and Southwestern locations are thought to be high in natural amenities and recreation opportunities, both of which have been shown to attract older migrants. Similar to the case for adjacency, the data in model 5 show that location in both of these regions is positively and statistically associated with older in-migration. Adding these geographic variables has little effect on the coefficients reported in earlier models except that the recreation variable's significance level increased from .05 to .01. While this is still lower than in model 2 where only natural amenities and path dependency were entered in the analysis, it is a stronger relationship than reported in models 3-5 that included socio-demographic, institutional and economic structure variables. The spatial error variable, lambda, is strongly significant throughout the analysis, which indicates the presence of spatial autocorrelation.

CONCLUSIONS

This research has paid particular attention to both temporal and spatial processes as they affect retirement migration in nonmetro areas. Our investigation was shaped and guided by a framework of path dependency, and we have sought an explanation of why retirement migration occurs in certain locations and not in others. We have argued that retirement-age migration streams are often established in amenity rich areas that developed their natural resources for recreation and tourism during the 20 years prior to the current migration interval. In certain instances, visitors build strong connections with vacation places and move there in later life. These destinations for older in-migrants continue to be attractive as successive cohorts are recruited by family and friendship networks, and as older people with no prior experience in particular destinations are attracted to places that have gained notoriety and visibility as retirement destinations. While the nature of our data precludes a robust examination of this path dependent process, our analysis provides evidence that places with previous experience as retirement destinations, and those that developed recreational infrastructure at a branching point in the past, are highly likely to continue to attract older in-migrants at higher than average rates.

We showed that high rates of older in-migration tend to concentrate in particular regions, and we sought to illuminate why retirement in-migration is more likely in certain types of areas and less likely in others. Our final multivariate model provides evidence for the importance of geographic place in the formation and development of nonmetro retirement communities. Unsurprisingly, nonmetro retirement destinations are most likely in the South and Southwest, and adjacent to a metropolitan area. In addition, they tend to be smaller places, with easy access to hospital care, and higher than average public sector employment. In contrast, retirement destinations are largely absent in the nation's agricultural heartland. People tend to leave such areas during youth and seldom return in older age. Somewhat surprisingly, older persons are attracted to places with higher than average poverty rates. While this, result was unexpected, it is consistent with some previous findings (Glasgow and Reeder 1990) and reflects the location of retirement destinations in a number of classically poor rural regions..

While regional location and place attributes are important for differentiating retirement destinations from other nonmetro areas, the developmental process that produces retirement migration destinations has less to do with contemporary characteristics and more to do with historical processes. Framing older migration as a path dependent, historical process exposes the social structures that guide older persons to rural destinations, the social relationships through which they adapt to their new communities, and the pathways through which older migration affects local social organization. As Brown (2002:3) observed, "…the structures that contextualize migration behavior are also the structures that are affected by migration-induced demographic change." In other words, migration and community are mutually interrelated. Simply comparing counties at one point in time provides little insight into the determinants of inter-county variability, whether it is in rates of older in-migration, poverty, economic development, race and ethnic relations or any other issue. All of these issues are historically embedded, and contemporary relationships are affected by the legacy of the past. We are not proposing that a place's history predetermines its contemporary situation, but we do contend that previous experiences establish parameters that influence current circumstances.

This research suggests that, by investing in recreation and tourism, many amenity rich areas established conditions that increased their chances of being a destination for retirees at a later time. While not a sufficient condition for retirement migration to occur, developed amenities can set the process in motion. When amenities are commodified as recreation and tourism, migration streams tend to be established that ultimately produce sustained in-migration of older persons to selected destination communities. Once such streams are established, they often develop logics of their own and become self-perpetuating, even if the recreation and tourism that gave rise to them diminishes significantly (Massey 1990).

Understanding the dynamics of retirement migration in the context of path dependency can help scholars and policy makers promote positive self-reinforcing mechanisms that are capable of sustaining older in-migration over decades. Rather than focusing on short term incentives, effective programs take a longer view. One example of such an approach is employed by Alabama through its Robert Trent Jones Golf Trail

(Reeder 1998). While the program's explicit focus is not retiree attraction, enticing golfers to the state during younger adulthood or middle age is likely to generate social relationships and community knowledge that will result to some degree in residential relocation there later in life.

Older in-migration has a widespread impact across nonmetro America. Only 277 counties meet the USDA's 15 percent net in-migration threshold, but fully 466 counties have 10 percent or higher net in-migration at older ages, which is still more than twice the nonmetro average. Moreover, most of these areas do not actively recruit retirees (Brown and Glasgow 2008). Rather, their current attractiveness as places for retirement living results from a process that often was set in motion many years ago. While many contemporary retirement destinations may actively do little to sustain their stream of older in-migrants, it is not clear that they could stop the flow even if they wanted to. Accordingly, their well being is contingent on realizing the opportunities posed by older in-migration and minimizing the problematic challenges. As Glasgow and Brown (2008) observed, older migrants can be "grey gold," but they may also pose difficulties, such as the possibility of increased demand for public services as they age-in-place.

Older in-migration should neither be seen as a panacea for strapped rural communities nor as a "pensions and care issue." In-migration of retirement age persons has a positive impact on the real estate market and on construction. In-migrants provide financial and technical assistance to a wide array of civic endeavors, and they invigorate the arts and cultural scene. Older in-migration, however, can be problematic in each of these institutional domains. Rising real estate prices can displace young families. Volunteering reduces public sector costs, but it can undermine the demand for paid professional work. And older in-migrants who become active in civic and cultural affairs can be insensitive to the needs and preferences of longer term residents. Hence, thoughtful long term planning that is sensitive to both costs and benefits can frame older in-migration as a significant human and social capital asset for rural community development.

Our research examines the process through which particular rural areas become retirement communities. While our findings are consistent with a path dependent development process, our county-level secondary data analysis is too remote from actual

community decisions and community histories to elucidate fully the dynamics that differentiate the development paths of rural retirement communities and similar places that do not become destinations for older migration. Future research should combine secondary data analysis, such as we have conducted here, with in-depth case studies that examine the political economy of public and private decisions that result in developing natural resources for recreation and tourism and, in some cases, explicit strategies to attract older retirees. In-depth knowledge of decisions and policy actions taken at various points in a place's history will provide fundamental insights into why some attractive nonmetro places become retirement destinations while others do not.

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Table 1
Factors Associated with Inter-county Variability in Older In-migration, 1990-2000

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
Natural Amenities	0.393**	0.151**	0.126**	0.128**	0.119**	0.091**
1969-1989 Percent of Earnings from Recreation and Lodging		0.043**	0.028*	0.029*	0.031*	0.033*
1980s Net Migration Rate 60-74		0.687**	0.560**	0.558**	0.554**	0.554**
1990 Population Size (Natural Log)			-0.040*	-0.050**	-0.086**	-0.092**
1970s Population Growth (Exponentiated			0.210**	0.211**	0.205**	0.206**
1980s Population Growth (Exponentiated)			0.009	0.011	0.007	-0.001
1990 Percent Age 65+			0.195**	0.198**	0.211**	0.221**
1989 Percent Under Poverty			0.091**	0.092**	0.091**	0.072**
Overall Crime Rate			0.001	0.003	-0.001	-0.007
Presence of Hospital of 100 Beds (10mi Radius)				0.045**	0.050**	0.047**
Presence of Any College				-0.014	-0.019	-0.013
2000 Government Dependent					0.038**	0.039**
2000 Farming Dependent					-0.092**	-0.090**
2000 Adjacent to Metropolitan County						0.042**
South Region						0.067**
Southwest Region						0.066**
Spatial Error Coefficient	0.568**	0.328**	0.304**	0.301**	0.277**	0.258**
Pseudo R-Square	0.418	0.676	0.705	0.706	0.712	0.716
Log Likelihood	-2389.938	-1740.988	-1642.406	-1637.481	-1613.766	-1598.071

** p <.01; * p <.05

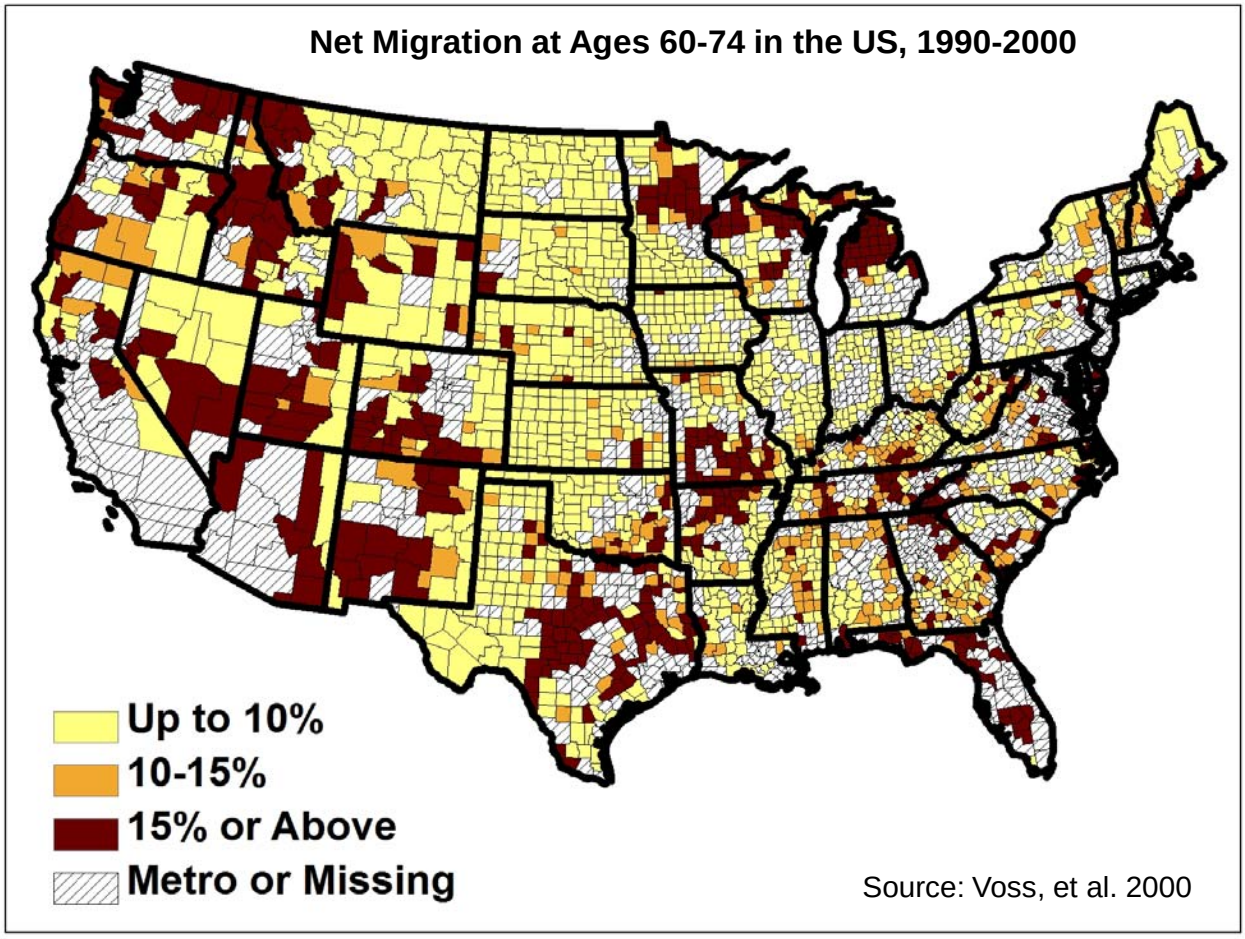

Figure 1. Net migration at ages 60-74, 1990-2000

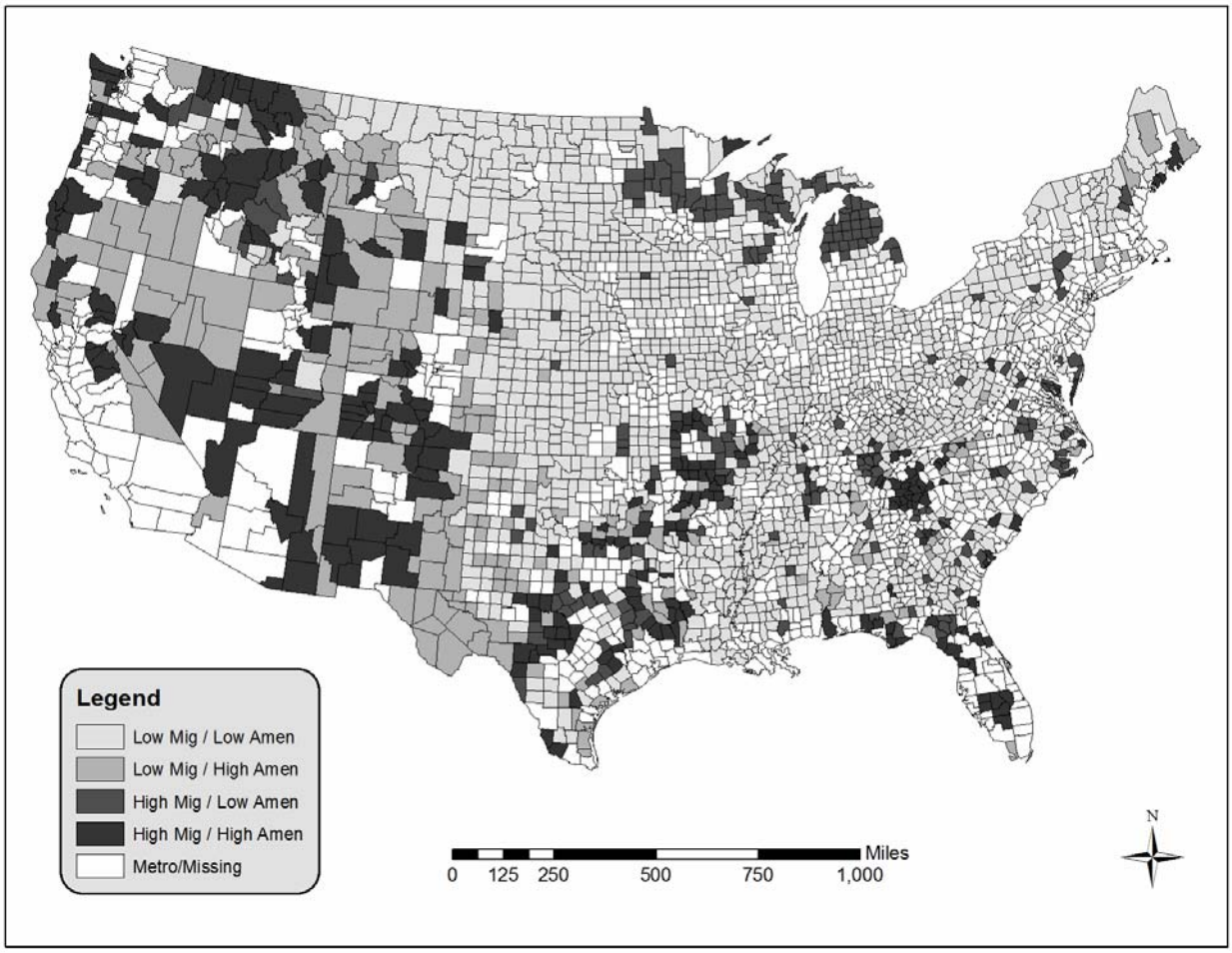

Figure 2. Percent net migration at age 60-74 for the top quartile of the amenity index

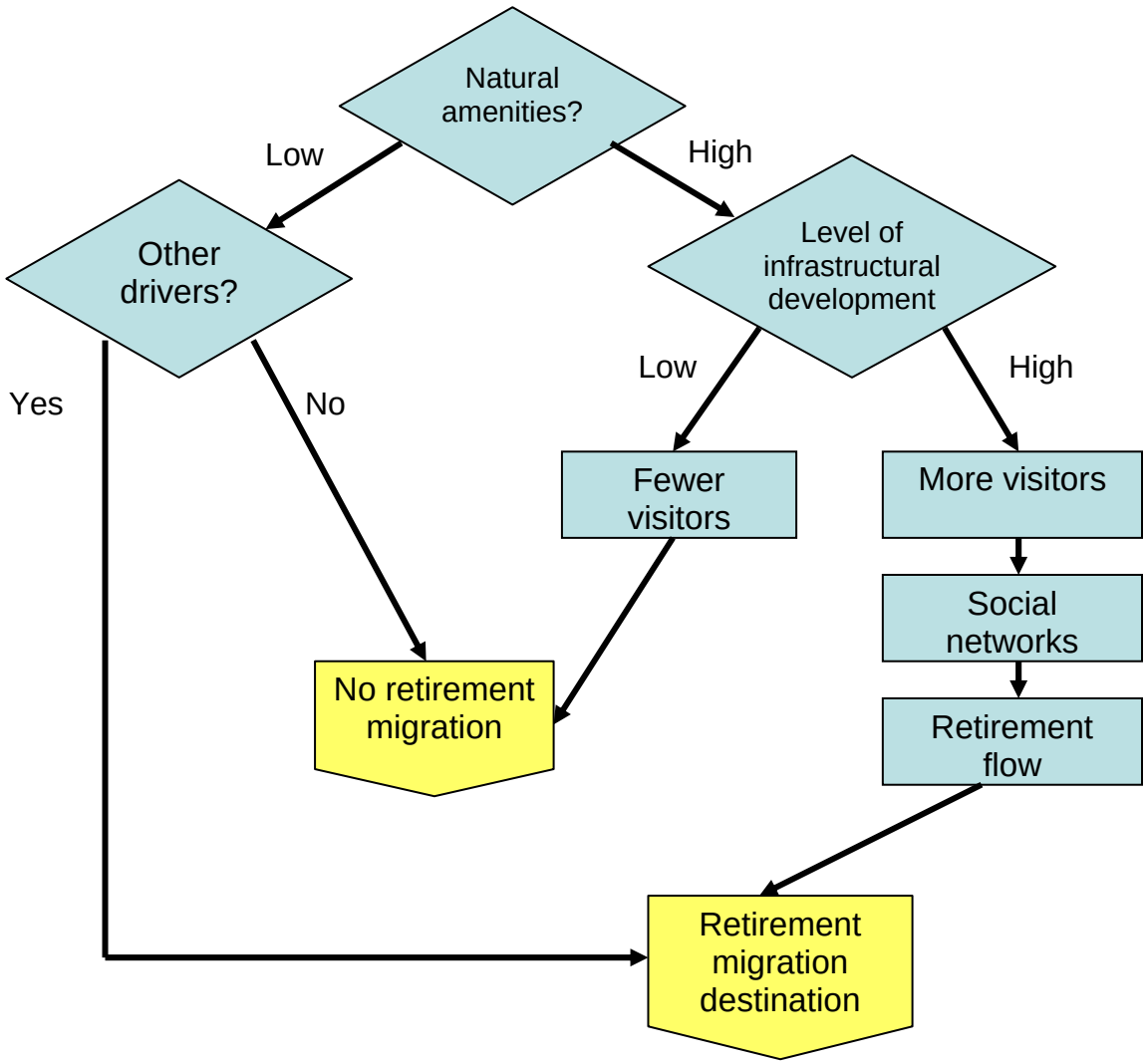

Figure 3. Hypothetical paths of the establishment of retirement migration destinations