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Abstract

Recruiting recent retirees to relocate from elsewhere has become an important economic development strategy in an increasing number of states. State governments have planned or enacted a variety of tax and fee incentives to lure retirees. The objective of this paper is to determine whether states can, in fact, influence the retirement destination of elder households using fiscal tools. To estimate the determinants of retiree location decisions we have developed an extensive data set on county attributes, and a methodology for estimating an individual-level discrete-choice model for a very large number of potential locations. Using 1990 county-to-county migration data, we estimate the effects of an array of tax and expenditures variables on the probability that a retiree locates in that county. We find that changes in tax burdens and service levels can affect location decisions. Of the fiscal variables, inheritance taxes, income taxes, and property taxes have the largest relative effects. However, very large tax reductions would be required to attract even one more retiree to the average county. Unless these tax breaks could be narrowly targeted to the group of retirees most likely to consider migrating, the revenue losses from such a program are likely to significantly outweigh the economic and fiscal benefits. Our results suggest that states should focus on marketing their amenities, rather than using fiscal policy to recruit retirees.

Introduction

Several factors have contributed to heightened interest in the migration and residential location decisions of the elderly. First, the growing proportion of the elderly in the United States makes elderly migration significant in absolute terms. Additional interest in migration has come as certain parts of the country have become elder "magnets," attracting large numbers of recent retirees and other older Americans (Frey, Liaw, and Lin 1999). Competing claims have been made about whether these older migrants drive a need for additional government services (Bryant and El-Attar 1984; Longino and Biggar 1981) or enhance a local government's economy and tax base without being heavy relative demanders of local services (Crown 1988; Longino and Crown 1989; Sastry 1992).

States, however, are not waiting for academic evidence on the benefits of migration. A number of states have developed marketing strategies for attracting recent retirees (Fagan 1988; Stallman and Siegle 1996; Wilkinson 1995), analogous to economic development programs aimed at attracting high-tech or manufacturing firms. Besides marketing their state's amenities, state governments have planned, enacted or encouraged a variety of tax and fee incentives to lure retirees (Stockbridge-Pratt 1997). For example, over 20 states have significantly reduced death- and gift-tax burdens since 1985, because they are viewed as an important cause of out-migration of the elderly (Eckl 1986; Dresher 1993).

While the residential location decisions of retirees may have major impacts on the ability of local governments to raise revenue and provide services, there has been relatively little research on whether state and local governments can, in fact, influence older persons' migration decisions. Are

tax and public service levels major considerations in retirees' residential decisions, or do amenity and place characteristics dominate such choices? We investigate whether state and local fiscal factors influence the migration decisions of retirees. We incorporate a broad range of amenity and cost factors found in the migration literature, and examine the determinants of retiree migration using Census county-to-county migration data for 1985 to 1990.

This paper makes several contributions to research on elderly migration. First, this is one of few studies of retirement migration to use the 1990 county-to-county migration flow data; most previous studies focus on interstate moves. Second, we develop a methodology for estimating an individual-level discrete-choice model utilizing grouped data in which the number of choices is very large. The discrete choice framework represents the decisions of nonmovers as well as those of movers. We also estimate differences by educational level in the effects of state and local attributes on migration and location decisions. Finally, we present a comprehensive analysis of the determinants of location decisions of all persons of retirement age in the continental United States in 1990 using our detailed set of tax, expenditure and amenity variables.

In the next section, we summarize the literature on elderly migration, focusing on the findings from previous research on fiscal influences on migration behavior. We then present the underlying model, data, and empirical methodology employed in our analysis. We conclude with a discussion of our empirical results and their implications for policy and future research.

Elderly Migration Literature

The 65-and-older population in the United States was close to 30 million in 1990, with women accounting for 62 percent of the total. The vast majority of this population—78 percent—did not move during the preceding five years. Almost 80 percent of moves were within a state. Thus,

out-of-state migration occurs in a small fraction of the elderly population, approximately 4.5 percent, or 1.3 million individuals. Similar patterns are true of the narrower group of persons close to retirement age. Despite the relatively small number of elder migrants, the success of certain destinations in the South and West at becoming "elder magnets," and the presumed advantages of being a "magnet," have prompted interest in using state policy to attract recent retirees.

Conceptualizations of elderly migration have evolved over the last several decades that reflect an improved understanding of the sequence of life events influencing elders' location decisions. Litwak and Longino's (1987) widely-cited article presents a threefold sequential classification of these residential mobility decisions (see also Wiseman and Roseman 1979; Meyers and Speare 1985). In the first stage, elders make decisions about where they are going to live during the early years of retirement. As noted above, the majority (80 percent) of retirees do not move at all, and over three-quarters of those who do move remain in the same state. However, recent retirees that do cross state lines tend to have higher incomes, education, and better health (Cuba and Longino 1991; Haas and Serow 1993). Locational amenities are thought to play a large role in first stage migration relative to the proximity of family or friends. In fact, this first move often results in elders living farther away from their children (Clark and Wolf 1992).

Second-stage migration may occur in the mid to late seventies, prompted by actual or pending health problems or the death of a spouse. Seniors at this stage generally migrate closer to kin for both health and financial support (Meyer 1989; Silverstein 1995; Choi 1996). Interstate migrants often return to their former homes to be closer to family and friends (Longino and Serow 1992). With worsening health some elders may make a third move into an institution for full time assistance. These are often intracounty moves, so that elders can remain accessible to family members.

In this study, we focus on the first stage of location decisions for several reasons. States are likely to focus their recruitment campaigns on the "young old," because they have higher incomes and lower service demands, particularly for health care. Moreover, recent retirees are more apt to be influenced by state policies since several alternative destinations may provide similar amenities. Finally, first stage migrants are less apt to be influenced by the location of kin, which is important given that the principal data source for this study, the decennial census migration files, does not have information on the location of kin. As our data source does not identify retirees, we analyze the migration and location decisions of persons in the age group that includes most transitions into retirement: persons 60 to 69 years old in 1985 (and, therefore, 65 to 74 years old in 1990).

Finding from Previous Studies

In response to direct survey questions regarding the preferred attributes of potential residential locations, retirees generally indicate that they value mild climate, scenic attractions, opportunities for recreation (particularly access to seacoasts or lakes), low crime rates, low living cost (including taxes and housing prices), access to an urban area with social and cultural amenities, and a good hospital (Pampel et al. 1984; Cuba and Longino 1991; Haas and Serow 1993; Longino 1995; Carlson et al. 1998). While suggestive, these survey findings are typically based on responses from a relatively small set of migrants to specific destinations, or to questions concerning hypothetical locations. Numerous studies have attempted to quantify the relationships between factors such as amenities, fiscal variables, and other economic and social characteristics, and migratory and residential patterns. The following is a brief review of this literature.

Fiscal Factors. While public sector factors have been considered in most studies of elderly migration, typically only a limited set of tax and public service variables have been included. Some studies have embedded the tax variables in an overall cost-of-living index, obscuring their impact (Serow et al. 1986; Fournier et al. 1988a, 1988b; Rasmussen et al. 1989). Only a few studies

have included a broad range of tax and public service variables (Clark and Hunter 1992; Dresher 1993; Clark et al. 1996; Conway and Houtenville 1996a, 1996b).

In general the effects of *tax burdens* holding service levels constant should be unequivocal: higher relative taxes in a location should reduce net migration to such locations. However, the impact of taxes is complicated by the fact that the elderly may be more or less affected by different taxes (MacKey and Carter 1995a, 1995b). Most studies find that higher per capita property taxes make a place less attractive (Cebula 1974; Clark and Hunter 1992; Assadian 1995; Clark et al. 1996), but several studies produce mixed results (Dresher 1993; Conway and Houtenville 1996a and 1996b). Death taxes (inheritance and estate taxes), which confiscate part of an individual's estate upon death, are also generally shown to deter elderly migrants (Clark and Hunter 1992; Dresher 1993; Clark et al. 1996), but Voss et al. (1996) find that higher death taxes reduce both out-migration and in-migration. The results for income taxes and sales taxes are quite varied with only a few studies showing the expected negative relationship between tax burdens and migration (Barnsby and Cox 1975; Cebula 1990).

The effect of *public services* net of tax costs on elderly migration is likely to vary depending on the nature of the service. Elderly individuals are expected to be heavy consumers of health services, and may also value expenditures on policing, public transportation, and recreation. Retirees may not, however, support spending on public welfare (unless they are direct beneficiaries of Medicaid or Supplemental Security Income) or public education (Poterba 1997). Ideally, the level of public services would be measured directly, but since outcome measures are difficult to obtain, per capita expenditures are typically used as a rough proxy for service levels. As expected, higher welfare spending (primarily AFDC and Medicaid) is generally found to be a deterrent to migration, but the results for health services and education spending are inconsistent.[1]

Other Location-Specific Factors. Most research on elderly migration research has focused on three broad categories of variables: amenities, cost factors, and health services (Walters 1994b). *Amenities* of an area include climate, physical attributes such as coastline, lakes, or parks, and cultural institutions or services attractive to tourists. Almost all past studies have included climate variables, which have tried to capture temperature in winter or summer, precipitation (particularly snowfall), humidity and sunshine.[2] As expected, most studies have found that elders are attracted to climates with warmer temperatures in the winter, lower humidity in the summer, and a higher number of clear days, however, these results are not uniform.[3]

Some studies have considered measures of various physical attributes in a location which may attract elderly migrants, such the existence of a sea coast (particularly in the South) and the presence of recreational lakes, parks or mountains (Meyer 1987; Fournier et al. 1988a and 1988b; Rasmussen et al. 1989; Clark and Hunter 1992; Schneider and Green 1992). As expected, southern coastal areas appear to attract migrants, but the findings for lakes have been mixed. Most studies also find a positive relationship between migration and tourism and urbanization variables.

A broad range of factors may affect the *costs of migration* from moving costs, to living costs, to the psychic costs associated with moving to a new area. Most studies find that higher relative living costs at destination is negatively related to migration rates. Moving costs are likely to have a direct relationship with distance of the move, and distance is universally found to be negatively related to migration. The psychic costs of moving may be affected by the uncertainties about a new location; hence we expect that higher crime rates in a destination would raise psychic costs, thus discouraging migration. The results for crime rates have been puzzling, with many studies finding the same results for the effects of crime on out-migration and in-migration.[4]

Given the high demand of many elders for *health services*, studies have often included some type of health-services variable, such as the relative number of physicians, number of hospital beds, and number of nursing home beds. The evidence on health care services is quite mixed with as many counter-intuitive and insignificant results as those showing that higher availability of health care services attract elderly migrants (Walters 1994b). One consistent result is that a higher relative number of nursing homes repels rather than attracts new interstate migrants, thus lending support to the hypothesis that most transitions to nursing homes are local moves.

Individual-Level Factors. Most past research on the effects of location-specific factors has ignored individual-level differences in migration behavior, while most past research on individual-level factors has investigated *who* moves but not *where* they move. A few studies have examined differences by income level, or educational attainment, or both, in individual propensities to move. Newbold (1996) and Chevan (1995) find that more-educated elders are significantly more likely to move; Chevan's study also includes an income measure that proves to have no independent marginal effect on move propensities. Kallan (1992) finds that income is directly related to the likelihood of moving, while Henretta (1986) finds no such effect of income; however, the latter studies fail to include measures of educational attainment. Very few studies have interacted either income or education with locational attributes; Newbold (1996) finds that more educated people are more likely to move long distances, while Dresher (1993) finds that higher-income individuals are less repelled by both income and sales taxes than are lower-income persons.

Thus, previous empirical research on elderly migration has not produced a consistent set of conclusions, especially with regard to fiscal variables. Many of the findings are counterintuitive. Significant differences in the data sources used, groups studied, and variables employed in this research may be partially responsible for this lack of consistency.

Methods and Data

Discrete Choice Model

Our analysis of county-to-county migratory flows is based on a discrete-choice model which encompasses both an individual's decisions to move and to select a given location given a move.[5] Conceptually, each individual is a potential migrant, and bases his or her locational decision upon a calculation of the net benefits of living in each potential location, including the current location. These net benefits, in turn, depend upon an evaluation of each location's array of services, amenities, and other location-specific attributes, as well as the prices faced (in the form of market prices and taxes paid) for these locational attributes. The comparison of the net benefit associated with a distant location to the net benefit associated with one's present location may indicate that well-being can be improved by changing locations. However, a move will take place only if the net benefit attainable through a move, minus the costs (including psychic costs) of moving, are positive.

Formally, we assume that potential migrant *i*'s evaluation of the net benefit of living in location *k*, given current location *j*, can be represented as

$$U_{ijk} = Z_k B_i + \delta_0 M_{jk} + \delta_1 D_{jk} + e_{ijk}. \qquad (1)$$

In (1) Z_k represents the array of services, amenities, and prices associated with location *k*, B_i the weights attached to respective elements of Z_k given *i*'s level of education, M_{jk} is a dummy variable indicating that *i* must move to locate in *k* (i.e., that $j \neq k$), D_{jk} represents the distance between locations *j* and *k* (which equals 0 when $j = k$), and e_{ijk} is a random factor. Given the definitions of M_{jk} and D_{jk}, δ_0, and δ_1 represent the fixed and the variable costs, respectively, of moving. Following the conventions of discrete-choice theory, we assume that each decision maker chooses

the location offering the greatest net utility. A move to location *k* will occur only if $U_{ijk} > U_{iij}$. In the next section we discuss the variables included in the arrays Z_k of location-specific attributes.

Locational Attributes

As noted above our geographic unit of analysis is the county. We have assembled an extensive data set on county attributes from many sources including the *Census of Retail Trade*, *Census of Service Industries*, *Census of Governments*, *Consumer Expenditure Survey*, *Significant Features of Fiscal Federalism*, and the *County and City Data Book.* Health system characteristics and population centroids came from the *Area Resource File* (Bureau of Health Professionals 1990), itself a combination of subsidiary data sources. The remaining variables (e.g., land features and climate) were hand coded.[6] Because migrants may have moved at any time between 1985 and 1990, a date from within this period for location features had to be selected and then applied consistently. Wherever possible data from the year 1987 was used for the location attributes.[7] The names, sources, and means of all location-specific variables used in our analysis are presented in Table 1. The following paragraphs provide additional details regarding those variables.

Fiscal Variables. Since the focus of our investigation is the influence of state and local government fiscal policies on elderly migration, we have constructed several tax and expenditure variables. While state and local governments utilize a number of revenue sources, our focus has been on the major tax systems of interest and visible to the elderly—personal income taxes, retail sales taxes, property taxes, and death taxes. Our tax variables are generally measured as the average tax burden on an elderly household with prescribed characteristics.[8]

There are two basic kinds of death taxes, estate taxes imposed on decedents' estates prior to disbursement to beneficiaries, and inheritance taxes assessed on beneficiaries in their state of residence. In general, the elderly can most directly control their estate tax burden since it applies to their state of residence. Each state's tax structure is different and interacts with the federal estate

tax.[9] In order to establish any level of variation in the death tax measures the estate size was set at the national average estate amount among estates on which any tax was paid, $822,000. The two variables, calculated for 1987 are; (1) the effective estate tax rate on an $822,000 estate, and (2) the effective inheritance tax rate for bequests to a spouse for the same size bequest. Federal tax law permits a deduction for a fixed amount of state inheritance taxes from the federal tax liability. Many states levy an inheritance tax exactly equivalent to this amount and consequently our variable captures only the variation in state inheritance taxes that exceed the level of the federal credit.

State and local income tax burdens on the elderly can vary across states because of different tax rates, and adjustment to the tax base including treatment of pension income, personal exemptions for the elderly, and other special provisions (MacKey and Carter 1995a). Without detailed information about a household's income, medical expenses and housing expenses, it is not possible to estimate an effective tax rate. Instead, we calculate the combined state and local effective rate (tax divided by income) for elderly filers with taxable incomes of $50,000.

Our sales tax variable reflects both state and county sales tax rates. To proxy the average sales tax rate facing the elderly, we applied these rates to the taxable portion of an average consumption bundle for a householder between 65 and 74 years of age.[10] City tax rates were included if they were different than the county rate, in cases where the county and city share common boundaries. Property tax rates relative to the market value of the property is not generally available, because market value estimates are not made at a national level. Instead, we used data from the *Census of Governments* on property tax revenues and divided this by the number of households to obtain the average property tax per household.

Ideally, public services should be measured by the quantity and quality of the services provided the public in a given county. Unfortunately, measures of public service outputs are rarely available. Spending per household provides a rough proxy for the level of public services. For

public safety and education we used per-household spending by all local governments in the county. For public welfare, public housing, and recreation, we combined per-household county spending with average state spending per household.

While a number of expenditure categories can be included in the model, we have focused on the types of expenditures most frequently mentioned as of interest to the elderly. Public services desired by the elderly may include public safety (fire and police), and public recreation (Dresher 1993). Public housing and welfare are of interest to those elders who potentially benefit from such programs, but may be viewed negatively by more affluent older migrants. The willingness of the elderly to vote for public schools is a topic receiving increasing attention. Recent research by Poterba (1997) suggests that a high share of elderly in a community reduces its per-child school spending, especially if the elders and school children are of different racial and ethnic backgrounds. We created two variables to capture the two factors driving education spending: the number of school age children in a county relative to the population (in 1986), and the level of education spending per household. We expect, if Poterba's argument is correct, that both of these variables would be viewed negatively by the elderly.

Other Factors. We have drawn on past elderly migration literature to identify measures of amenities, moving costs, and health services. We have included a range of variables to capture desirable *amenities* for the elderly. Three measures of climate are included in our analysis: (1) the average number of clear days, which captures both sunlight and precipitation, (2) the number of heating degree days, which measures how cold a place is, and (3) the relative humidity in July, used as a measure of comfort.[11] To measure physical amenities we have included the geographic size of the county, and dummy variables representing whether the county abuts the coast, or has one or more recreational lakes. To capture the possible existence of urban services attractive to the elderly, we have included measures of urbanization (population density, and the percentage population living

in urban areas). The tendency of migrants to seek locations with similar demographic groups is measured by the percentage of the population aged 65 and older, and the percent of population that is nonwhite.

Cost has several components. To capture the fixed costs of moving we have included a dummy variable (M_{jk} in equation (1)) indicating that the origin and potential destination counties are different. The variable costs of moving are reflected in the distance between origin and destination counties.[12] Since housing expenses represent one of the principal differences in cost of living across counties, we include median house value as a rough proxy for housing prices (McMahon 1991). Negative amenities about a location can raise the psychic costs of moving. Factors that may be viewed as indicators of a declining county with significant social problems include the housing unit vacancy rate, the unemployment rate, the percentage of female headed households, teen births per capita, and the crime rate. Crime rates, in particular, have received attention in the elderly migration literature. To capture the most visible and threatening crimes facing potential migrants we use the violent crime rate, and we allow for a possible nonlinear relationship by including the square of this variable.

To represent the health care services available in a county, we utilize the extensive data on physicians, specialists and care facilities available in *Area Resource File*. Specifically, we include measures of the number of specialists per household, the number of nursing home beds per capita, and the percentage of a comprehensive list of hospital services that are offered in the county.

Migration Data

Past studies of elderly migration in the United States have been based on prospective panel data, retrospective cross-sectional data, or indirect measures of population flows inferred from the components of population change. The most extensively used source of migration data is the decennial Census, which since 1940 has asked those enumerated to indicate their current place of

residence as well as that of five years ago. These Census data are attractive because they identify origin and destination of migrants at the county level, include both migrants and nonmigrants, and provide a complete enumeration of surviving elders at the end of the five-year period. However, such retrospective data does have shortcomings: they record transitions in locational space rather than moves (and, therefore, may miss intermediate and return moves); being retrospective in nature, they fail to record moves made during the relevant time interval by persons who fail to survive to the data-collection date; and, the values of possible correlates of moves are recorded at the end of, rather than at the beginning of, the time interval.

Despite these shortcomings, we have chosen to use the aggregate county-to-county migration flow data (CTC) from the 1990 Census for three reasons. First, the data cover the entire United States population for 1990, and thus provide a comprehensive picture of migration patterns. A second advantage of this data is that it is gathered at the county level of observation**,** which provides an improvement over previous studies using states or metropolitan statistical areas to track migration, thus reducing the likely heterogeneity of place characteristics within a given geography. While not providing the detail of the individual-level data, the CTC does include cross-tabulations of migration by some demographic characteristics (e.g., age, sex, education, and race), permitting separate analyses of migration for each such group.

To capture primarily first stage migration, we analyze the migratory flows of persons aged 60 to 69 in 1985 (65 to 74 in 1990), estimating separate models for four demographic groups, the combinations of male and female, and white and nonwhite. To avoid double-counting of married couples, gender groups must be estimated separately, but we expect similar coefficients across gender within the same racial group. Separate models are estimated for white and nonwhite elderly, because of the distinct migratory patterns of both African-American and Hispanic populations

(Longinoand Smith 1991; Angeland Angel 1988), which suggest that amenity and cost variables may affect these groups differently.

While individual attributes such as education and income have been shown in past research to influence migration, unfortunately all the demographic variables included in the CTC data are measured after rather than before migration. While it is possible that income and marital status could change during the period over which migration is recorded, it is unlikely that many elders invest in additional education during retirement. Therefore we examine migration models for three education groups: non high school graduates, high school graduates (including persons with some college but no college degree), and college graduates. Education captures differences in tastes and information, and also serves as a proxy for income level. Our own tabulation of microdata from the 1-percent Public-Use Microdata Sample (PUMS) data for 1990 indicates, for example, that the average of "personal income" (earnings, transfers, retirement and other nonwage income) among all 65 to 74 year olds is $10,135 for persons with less than a high school education, $16,362 for high school graduates, and $34,906 for college graduates.[13] Similar patterns exist for each race/sex group considered separately.

We confine our analysis to the 48 contiguous states plus the District of Columbia (treated as the equivalent of a county), but discard two counties from Texas (Loving and King Counties) that were found to be substantial outliers with respect to fiscal variables. After applying these restrictions a total of 3,068 counties appear in our analysis.

Estimation

We adopt the conventional assumption that all the elements of e_{ijk} for persons and locational choices are independently extreme-value distributed. This implies, in turn, a multinomial logit model for the probability of locating in each of 3,068 counties in 1990, given the 1985 county of residence (McFadden 1978). Our data consist of counts of the number of people in each

sex/age/education group that are located in county *j* in 1985 and county *k* in 1990, for positive-valued combinations of $j = 1, \ldots, 3068$ and $k = 1, \ldots, 3068$. Estimation of this model using the full set of 3,068 potential destination choices is, however, infeasible. Our estimation strategy is as follows: First, we employ the sampling-of-alternatives scheme shown by McFadden (1978) to produce consistent estimates of the unknown choice parameters. In this scheme, each individual's full choice set is replaced by a reduced set consisting of (1) the destination actually chosen and (2) a simple random sample of the rejected potential destinations. The property that makes possible this simplification is the assumption that the chosen alternative is the highest-ranked alternative: this alternative will remain the highest-ranked when compared with any subset of the rejected alternatives. Second, we treat the locational choices of all individuals from a given race/sex/education group in a given 1985 county as identically distributed. This allows us to apply the sampling-of-alternatives scheme to the grouped data found in the CTC files.

Our estimates are based on samples of 100 counties from the set of potential locations chosen by none of a given origin county's 1985 residents. Because the sampling-of-alternatives approach introduces a type of sampling error into our estimates, we repeat the estimation using 20 independent applications of the sampling-of-alternatives algorithm, averaging the resulting logistic regression coefficients to produce a single set of estimates. Finally, we substitute the average logistic regression coefficients into the likelihood function to obtain the covariance matrix of the coefficients. Because the latter step also involves application of the sampling-of-alternatives algorithm, we again repeat it 20 times, each with independently-selected samples of 100 universally-rejected counties. The variances upon which our significance tests are based are, like the coefficients themselves, the average of the variances obtained from those 20 computations. A more detailed explanation of our model and estimation approach can be found in a companion paper.

Interpretation of estimated coefficients in discrete-choice outcome models is difficult, particularly in the presence of very large choice sets such as ours. Furthermore, the probability that an individual will move from one county to any other individual county over a five-year period is extremely small. In order to develop a set of summary indices that permit us to determine the relative sizes of the response to a change in different county attributes, we computed the expected 1990 population in each county, using the expression

$$E[\text{pop90}_{\text{k}}] = \sum_{s=1,\ldots,3} \sum_{j=1,\ldots,3068} \text{pop85}_j \, p_{sjk},$$

where "popy_k" is the population of county k in year y, s denotes the three levels of education distinguished in our model, and p_{sjk} is the probability that a person in education group s will move from their origin county, j, to county k. We then computed the partial derivative of this expected population with respect to each explanatory variable. Each county has its own array of partial derivatives since it has its own fixed location relative to the fixed locations of all other counties, and these distances (i.e., relative locations) figure into all the county-to-county move probabilities. In order to summarize these partial derivatives, we simply averaged them across counties. Furthermore, in order to have comparable indices of the relative response of population size to changes in selected independent variables, we multiplied the average marginal changes by the standard deviation of each independent variable in turn. Thus, we present the average across counties of the change in the number of expected residents due to both unit changes, and to standard-unit changes, in a selection of local-area attributes.

Empirical Results

The logistic regression results are reported in Tables 2 through 5, for the groups white males, white females, nonwhite males, and nonwhite females, respectively. Our parameterization of the

choice model includes a "main effect" for each county attribute that pertains to high school graduates, the omitted group, as well as two "interaction effects," one pertaining to persons with a less-than-high-school education and one to those with a college degree. Our tables show the "total" effects (main effect plus relevant interaction effect, if any) for each education group within each race/sex group (first three columns), and the p-values associated with the two vectors of interaction effects (last two columns). We discuss our main findings by type of variable rather than by demographic group.

Taxes

Since government fiscal variables are the main focus of our analysis, we begin by examining the relationship between tax burdens and elderly migration. Of the fiscal variables under control of government officials, taxes are usually the most easily manipulated since it is possible to provide tax breaks to selected groups. We would expect that higher tax burdens would have a significant negative effect on the attractiveness of a location, particularly for estate taxes and property taxes. The results reported in Table 2 for white men generally fit these expectations. The coefficients on the property tax, sales tax, income tax and inheritance tax are negative and statistically significant for all education classes. On the other hand, the estate tax results don't fit our expectations. White males with the least education are repelled by estate taxes, although they are less apt to have estates to pass on, while the coefficients on men with high school diplomas or above are actually positive. As expected the results for white women are similar to that for white men (Table 3), but there are some differences between white and nonwhite elders. Location decisions of nonwhite men are generally not affected by income tax rates, but reveal an aversion to estate taxes among all education groups (Table 4). The tax coefficients for non-white women are almost uniformly negative, but many of the coefficients differ markedly from those of white women for estate and income taxes (Table 5).

How does education (and therefore income) affect responses to tax burdens? We expect that higher educated households would be more apt to be repelled by all taxes except sales taxes, because they are expected to bear a higher burden of the tax. Higher income households are more apt to have estates to pass on, to own property, and to have taxable retirement income (MacKey and Carter 1995a and 1995b). We expect lower income households to consume a larger share of income and thus to be more affected by sales taxes. For white seniors, the expected patterns emerge only with respect to inheritance and sales taxes. The coefficients on property taxes change little between education classes, and actually become less negative for income taxes and positive for estate taxes and income taxes with higher education levels. By contrast, the differences across education class for nonwhite seniors either fit the expected pattern, or are not statistically significant.

What explanations might exist for the mixed results by educational category? Estate taxes appear to negatively affect migration for only certain groups of migrants, and surprisingly the coefficients for college-educated whites are actually positive. Either elders are less affected by death taxes than is commonly believed, or our measures are not adequately capturing the tax burdens as perceived by potential migrants. Higher income taxes discourage migration among white seniors but the coefficient goes down with education. One possible explanation for this result may be that higher educated elders are more apt to be homeowners and can take advantage of the generous housing deductions in the income tax code.

Expenditures

Turning to public services, we would expect that services that are heavily used or valued by the elderly should attract them to a location. Commonly mentioned in this category are police services, recreation, and health services (to be discussed with amenities). Public education or public welfare programs, such as AFDC or food stamps, might fall in the category of services not used or

valued by the elderly. In the case of education, there is significant debate about whether the elderly oppose or support public schools.

The results of our migration model provide support for the view that some public services appear to affect elderly migration decisions. As expected, there is a positive relationship between the level of public safety expenditures per household, and the desirability of a destination for both white men and women, and nonwhite women. For white men, the coefficient is significantly higher for both non high school graduates and college graduates, than high school graduates. The first group may be more apt to live in a high crime area, while the latter group probably has more to property to lose. The results appear more mixed when considering nonwhite men. Nonwhite men with a high school diploma or less education appear to value public safety expenditures, possibly because they are trapped in high crime neighborhoods (Burkhauser et al., 1995). However, the coefficient on public safety is actually negative for nonwhite men that are college graduates. One explanation for this result may be that nonwhite college educated men are less apt to live in high crime areas, and more apt to have a negative experience with police than their white counterparts.

Higher spending on public welfare appears to deter migration to a location among white and nonwhite households in every education group. The coefficients are generally not statistically significant for nonwhite women. While public housing expenditures generally repel potential white migrants, the results are more mixed for nonwhite households. Surprisingly, the one group that might potentially benefit from public housing, lower income households (as proxied by education), are consistently repelled by spending in this area.

Confirming conventional wisdom, elder households appear to find higher recreation spending attractive. We might expect that recreation spending would be particularly attractive to non college graduates, since they may be less apt to take advantage of private recreational facilities. White

seniors fit this pattern, but nonwhite high school and college graduates are more apt to find public recreation attractive.

Finally, the coefficients on public education expenditures and school enrollment suggest how elders of different education backgrounds may view public education. We might expect that seniors with low educational attainment may be less apt to find high education spending attractive than high school or college graduates. The coefficients on school enrollment per capita is uniformly negative for all demographic and education groups. For nonwhite seniors the parameter estimate on school spending is statistically insignificant for non high school graduates, and is generally positive for high school or college graduates. The results for white households are generally the opposite: college-educated seniors are repelled by higher education spending, while households with lower education are attracted to such locations. These results portray a complex picture of how elders might react to public education. Contrary to the common perception, elders are not necessarily opposed to paying higher school expenditures per pupil.

Amenities

Among amenities, we would expect elders to be attracted to a county with a pleasant climate, good urban services, including health services, and access to recreational opportunities, such as a coastline or lakes. Among white households, college educated elders appear to be attracted to counties on the sea coast or those with recreational lakes. However, these locational amenities provide little attraction to most nonwhite households, or whites with lower educational attainment. The results for the climate variables provide an equally complex picture. Nonwhite households are generally attracted to warmer places with sunshine, and low humidity. White households are also attracted by a warm climate and low humidity, but do not necessarily locate in a county with above average sunshine. One explanation for this pattern is that coastal locations, which are more attracted

to white seniors, generally have below average sunshine. All counties average 105 days of sunshine compared to 96 days in coastal counties.

Both white and nonwhite seniors seem to prefer urban areas with lower population density, which generally describes suburban counties. The attractiveness of urban areas is much lower for white college graduates than other groups. Consistent with the findings from previous research, elders are generally attracted to locations where people are more like them. Seniors are attracted to locations with a higher elderly population, and a higher concentration of households with a similar racial background.

Among the health service variables, elders appear attracted to destinations with a significant number of hospital services, and the importance of these services generally goes up with education. Nonwhite seniors are also attracted to counties with a higher share of medical specialists, but the coefficient on this variable is negative for whites. Nonwhites seniors in this age group are generally in poorer health, and thus may be more apt to use medical specialists.[14] Greater availability of nursing home beds (per-capita nursing home beds) is negatively related to decisions to locate in that county. It is possible that recent retirees are not considering nursing home facilities in making their migration decisions, but it is not clear why such facilities should be a negative amenity.

Costs

Moving imposes tangible moving costs and intangible psychic costs on the migrating household. We would expect elders to be attracted to counties with lower cost of living, and lower moving costs, holding other factors constant. Assuming that housing value serves as a rough proxy for living costs, we find that higher costs diminish the attractiveness of a location, except among the college educated elderly. The college educated group may be more apt to move to destinations rich in locational amenities, and amenities may in turn be capitalized in higher housing prices.[15] One exception is nonwhite women, where the coefficient is positive across all education groups.

Consistent with past research, we find that higher variable costs of moving, reflected in distance, lower the probability of a move to a particular destination. The negative effect of distance goes down with education, which is consistent with previous research findings that higher income and educated elders are more apt to make interstate moves. The opposite pattern emerges with regard to the fixed costs of moving, which rise with education.

The uncertainty associated with moving to a new location imposes psychological costs on the potential movers. To minimize this uncertainty, households may look for cues about the social stability and security of a location. For example, households may be repelled by counties with high rates of crime, unemployment, teenage pregnancy, housing vacancy, and single parent households. A complex story emerges with regard to these psychic cost variables, which is consistent for men and women within a racial group but varies by race and educational attainment. A higher unemployment rate, which may proxy economic decline in an area, is associated with less migration for all race and education groups, but another indicator of economic vitality, the housing vacancy rate, is positively related to in-migration (holding housing prices constant). A higher share of female headed households is a strong deterrent to location of white seniors, but is positively associated with nonwhite location in a county, while a higher teenage pregnancy rate does not appear to discourage migration. It is possible that these variables are picking up urban effects that are not captured with our population and urban population variables. Since nonwhite working-age households are more apt to live in central cities and to be headed by a single parent, nonwhite seniors locating close to their children will also be drawn to these areas.

Crimes are included in most previous research on elderly migration, and the results are often counterintuitive, with higher crime rates appearing to attract elderly households. To capture the potential non-linearity in the relationship between crime and migration to a location, we include the violent crime rate and its square in the equation. The use of a quadratic term in the model appears

well justified, given that both terms are statistically significant for most groups. For all groups, the crime has an inverted U-shape with the probability of locating in a county, indicating crime becomes a deterrent only for the highest crime rates. The inflexion point where crime becomes a deterrent generally goes down with the level of education, and is lower for nonwhite than white households. For college educated white seniors, the inflexion point, a violent crime rate of approximately 13 percent, is in the 98th percentile of crime rates nationally, indicating that higher crime rates, *ceteris paribus*, does not necessarily discourage retirement migration. On the other hand, for nonwhite college educated men, the inflexion point is at 4.3 percent, which is the 68th percentile.

Importance of Fiscal Factors on Location Decisions

The findings from our model of retiree location decisions indicate that taxes and expenditures have a statistically significant effect on the county locations chosen by persons of retirement age. The signs on these variables generally fit our expectations—taxes discourage migration, and expenditures have a mixed effect depending on the service. Of more relevance for policy is the practical significance of our results. How large a decrease in taxes is required to attract one more retiree to a county? To assess this we have calculated marginal effects for each variable, averaged over all counties. Table 6 reports selected marginal effects with respect to white men. The first column of Table 6 estimates the average change in 1990 population in a county from a one unit change in each independent variable. Given the difference in units across variables, we have calculated a form of "standardized response" coefficient. The third column reports the average change in expected population due to a one standard deviation change in each independent variable.

The standardized coefficients make clear that the fiscal variables have a relatively small impact on location decisions compared to some climate variables and population characteristics. Among the tax variables, a one standard deviation decrease in tax burdens, a very large increase in taxes, is predicted to lead to population increases of between 2 and 5 elders in a county. A one

standard deviation decrease in property taxes, for example, which is an decrease in tax burdens of over 75 percent, may attract 5 more elders, on average, into a county. The impacts of the other taxes are even weaker. Except for public safety, none of the expenditure variables has a standardized coefficient above one. If public safety expenditures went up by 70 percent (one standard deviation), 1.5 additional elders would be induced to locate in the county. In contrast to the fiscal variables, if the number of cold days were to increase by one standard deviation, this would induce an out-migration of 20 elders. The standardized coefficients for hospital services, share of the population that is elderly, household composition, housing vacancy rates, and share of minority population all are above 4.

Conclusions

Recruiting potentially mobile households to spend their retirement years in one's state has become a key economic development strategy. Recent retirees are viewed as a fiscal windfall, because they have above average income and property wealth, thus expanding the local economy and tax base, but place relatively few demands on public service. While the potential benefits and costs of elderly in-migrants to a community are still not resolved, a more fundamental question is whether state and local governments can in fact recruit the elderly with the fiscal tools at their disposal. Beyond simply marketing the natural amenities that the state already possesses, can state governments induce increased migration (or reduce out migration) by lowering taxes or tailoring public services to match the preferences of potential migrants?

The objective of this paper has been to add to the growing research on elderly migration by focusing directly on the influence of state and local fiscal policies. We have made several contributions to the existing literature. One of the shortcomings of past migration research has been that empirical models have only considered the characteristics of origin and destination locations,

neglecting the role of non-selected alternatives. We have developed a method for estimating a discrete-choice model with a large number of locational choices using multinomial logit models for aggregate data and widely available software. As a result we can estimate the impact of policy changes in one state or county on the elderly migration flows to all other states or counties.

We estimated this model using data on a broad array of amenity, cost and fiscal variables that may affect the location decisions of seniors. Particular care was taken in the development of the tax variables to reflect the average rates facing a typical elder household. Instead of focusing solely on interstate migration, we provide a more disaggregated view of migration decisions by examining county-to-county migration flows. Migration was further decomposed by gender, race, and educational attainment.

Our findings generally conform to expectations. Higher tax rates for all the major taxes tend to repel potential elder migrants. The impact of "death taxes" on migration are mixed, suggesting that our measures of these taxes may need refining. Public safety and recreation spending is generally viewed positively, and welfare is viewed negatively by seniors. Seniors are generally deterred from locations with a high relative public school enrollment, but higher education does not necessarily discourage in-migration to an area.

A location on the coast with warm weather and low humidity is viewed positively by white elders, while nonwhites appear to be more drawn to warm, dry inland destinations. With regard to health services, elders are attracted to destinations with a significant number of hospital services, but nursing homes do not appear to be such an inducement. Moving costs and high housing prices discourage migration to an area among most elder groups. However, we find significant variation in results across socio-economic groups. The most consistent findings we get are for men and women of the same racial and education group. While the disparate results of this study require further investigation, they do suggest the importance of controlling for individual characteristics in

estimating migration models. Returning to the question posed in the title of this paper, state and local fiscal policies do appear to influence location decisions, but they represent a secondary consideration in the migration decisions of most households.

What are the policy implications of our findings for state policymakers contemplating strategies for attracting elder migrants? Changes in tax burdens and service levels can affect elder location decisions. Of the fiscal variables, inheritance taxes, income taxes, and property taxes have the largest relative effects. However, very large tax reductions would be required to attract even one more elder migrant to a county. Unless these tax breaks could be narrowly targeted to the group of elderly most likely to consider migrating, the revenue losses from such a program are likely to significantly outweigh the economic and fiscal benefits. Our results suggest that states should focus on marketing their amenities, rather than using fiscal policy to recruit retirees.

Endnotes

1. See Barnsby and Cox (1975), Clark and Hunter (1992), Dresher (1993), Assadian (1995), Clark, Knapp and White (1996), and Conway and Houtenville (1996a and 1996b).

2. Walters (1994a) has provided the most thorough treatment of climate in elderly migration research. Using factor analysis, he identifies six broad classes of climate variables, cold winters, snow, high summer humidity, high wind speeds, and high winter cloud cover, that might repel elderly migrants from a particular destination.

3. The exceptions include Fournier, Rasmussen and Serow (1988a), Voss, Gunderson and Manchin (1988), and Rasmussen, Fournier and Charity (1989).

4. These anomalous findings are not even consistent across studies. For example, Fournier, Rasmussen and Serow (1988a and 1988b) find that crime is positively related to both out-migration and in-migration to a state, while Rasmussen, Fournier and Charity (1989) get the opposite result.

5. Our approach, like that of Pampel et al. (1984), assumes that the decision whether to move and where to move are elements of a single decision. To assume that people make a final decision to move without reference to the characteristics of possible destinations, in our view, is unrealistic. Instead, both of these decisions are part of an interactive process where the characteristics of the present location are compared to various alternatives over an extended period (Haasand Serow 1993). Since migration data capture the final stage of this decision process, it seems more appropriate to treat this process as one decision, than to artificially divide it into stages.

6. State and county maps of the United States were used in order to identify significant county land features, including the presence of recreational lakes, coastline, and state and national parks. Wherever possible, maps typically available to retail consumers were used with the heaviest reliance upon a road atlas (Rand-McNally 1987).

7. To capture the influence of factors prior to all migrations covered in this data, independent variables from 1984 should be used. We have chose to use data from 1987, instead, because the fiscal data for all counties is only available for 1982 and 1987, and the data for 1987 is likely to be a more accurate representation of the fiscal environment facing most potential migrants.

8. Although marginal tax rates are theoretically what determine continuous economic decisions, our model is expressed in terms of a "typical" (average) person in a given age, sex, race, and education group. Therefore we use effective average tax rates in our empirical analysis.

9. A number of states in the last several decades have dropped traditional inheritance and estate taxes in favor of what is called a "pickup tax." A pickup tax is an estate tax that takes

advantage of an exemption in the federal tax law that "allows a state to 'pickup' a portion of the federal estate tax revenue without increasing the total tax liability of the estate's heirs. The tax is equal to the maximum credit allowed for state death taxes under federal estate tax laws" (Eckl 1986: 293). States with only a pickup tax would have an effective tax rate of zero, since the state is not imposing any new tax burdens on the estate.

10. The creation of the sales tax variable involved seven different steps and a number of sources. Details of the calculation is available from the authors upon request.

11. Weather features were obtained from the United States Department of Commerce, National Atmospheric and Oceanic Administration (NOAA 1987). This data provides annual and historical observations from weather stations across all states and from all major metropolitan airports. Weather stations were enumerated and counties assigned the number of the closest weather station or that which was closest within the same weather plane. Weather planes were those bounded by large mountain ranges and coastline. Where missing values occurred for a county, values for the contiguous counties were then averaged and assigned to the counties with the missing values.

12. To calculate distance between geographies, latitude and longitude are used for population centroids, which is the theoretical point upon which a geographical plane would balance if persons of equal weight were the only objects of mass upon it. Thus. the point tends to be located closer to the densest population centers of a geography as opposed to the geographical center.

13. The sample sizes for these means are 75,823, 88,048, and 21,011 respectively. The data were obtained from the Census Bureau's Data Extraction System, found at <http://www.census.gov/DES/www/welcome.html.>

14. "Among persons aged 65 to 74, non-Hispanic black persons were 1.7 times as likely and Hispanics were 1.4 times as likely to be in fair or poor health as non-Hispanic white persons" (U.S. Department of Health and Human Services 1999). Lin (2000) found that disability rates for elderly African-Americans were higher at all education levels than for white elders.

15. Graves and Knapp (1988) argue that place amenities may be reflected in lower wages or higher housing prices in an area. While working age families may be indifferent to this issue, retirees are not since most of their income is not from earnings. All else equal, they will seek places with widely dispersed amenities, such as warm climate, which are likely to be capitalized into wages, and avoid locations with place specific amenities (lakes and seacoasts) more apt to be reflected in housing prices. Our finding suggests that higher educated elderly may be less deterred by higher housing prices, than suggested by Graves and Knapp (1988).

Table 1: Definitions, Sources, and Mean Values of County-Attribute Variables

Variable	Definition	Source[a]	Mean
Estate Tax	Average state tax rate on $822,000 bequest to spouse	CCH	0.009
Inheritance Tax	Average state tax rate on $822,000 bequest from spouse	CCH	0.085
Income Tax	Effective state + local tax rate on $50,000 taxable income	ACIR	0.045
Property Tax	County property tax revenues per household (thousands)	CCDB	1.172
Sales Tax	Average effective state + local tax rate (x 1000), persons aged 65 to 74	A	0.860
Expenditures: Public Safety	Local spending on police and fire per household ($)	CCDB	0.202
Expenditures: Welfare	State + local spending per household ($)	CCDB	0.791
Expenditures: Housing	State + local spending per household ($)	CCDB	0.066
Expenditures: Recreation	State + local spending per household ($)	COG	0.067
Expenditures: Education	Total expenditures per household ($)	CCDB	1.936
Clear Days	Annual days of sunshine	NOAA	105.033
Cold	Annual heating degree days	NOAA	49.643
Humidity	Relative humidity in July	NOAA	0.563
Housing Costs	Median housing values ($1,000s), 1980	CCDB	34.954
Vacancy Rate	1 - (Occupied Housing Units/Total Housing Units)	CCDB	0.135
Crime Rate	Violent crimes per 1,000 population	CCDB	2.269
Land Area	Ln (Area in square miles)	CCDB	6.516
Coast	Dummy: county borders ocean	A	0.097
Lakes	Dummy: county has recreational lake(s)	A	0.423
Population Density	1986 Population (1000s) ¸ Area in square miles	CCDB	0.173
Urban	Proportion of population in urban areas	CEN	0.365
Enrollment	School enrollment per household	CEN	0.519
Unemployment	Unemployment rate of persons 16 and older	BLS	0.077
FH Households	Proportion of households headed by women, 1985	CCDB	0.083
Teen Pregnancy	Births to teen mothers per 1000 population, 1980	CCDB	2.925
Nonwhite	Proportion of population in nonwhite groups	CCDB	0.060
Age Group	Proportion of population in age range 65-74	CCDB	0.067
Medical Specialists	Specialist physicians per 1000 population	ARF	0.198
Hospital Services	Proportion of all available services provided in area hospitals	ARF	0.317
Nursing Home Beds	Beds per 1000 population	ARF	9.701

[a] Key: CCH=Commerce Clearing House; ACIR=Advisory Council on Intergovernmental Relations; CCDB=*City and County Data Book*; COG=*Census of Governments*; NOAA=National Oceanic and Atmospheric Administration; A=authors; BLS=Bureau of Labor Statistics; ARF=*Area Resource File*.

Table 2. Estimates of Logistic Model by Education Group: White Males Aged 65 to 74 in 1990

Variables	Total Parameter Estimates[a]			P-values for Difference between Parameters for High School Graduates and:	
	Non-High School Graduates	High School Graduates	College Graduates	Non-High School Graduates	College Graduates
Taxes					
Estate tax	-0.2495	0.1707	0.8273	0.000	0.000
Inheritance tax	-0.5851	-0.7567	-0.6735	0.000	0.000
Income taxes	-4.4378	-4.1715	-1.5116	0.025	0.000
Property tax	-0.2101	-0.1789	-0.2175	0.000	0.000
Sales tax	-0.1437	-0.1106	-0.0532	0.000	0.000
Expenditures					
Public safety	0.4501	0.2411	0.5181	0.000	0.000
Welfare	-0.0110	-0.0224	-0.0190	0.000	0.140
Housing	-0.5112	-0.2132	0.1550	0.000	0.000
Recreation	0.3433	0.5812	0.3592	0.000	0.000
Education	0.0152	-0.0002	-0.0269	0.021	0.000
Climate					
Clear days	-0.0026	-0.0021	-0.0018	0.001	0.148
Cold days	-0.0301	-0.0320	-0.0283	0.000	0.000
Humidity	-0.3680	-0.7286	-0.8547	0.000	0.000
Cost Factors					
House value	-0.0135	-0.0077	0.0071	0.000	0.000
Violent crime rate	0.0876	0.1370	0.1107	0.000	0.000
Violent crime rate squared	-0.0026	-0.0051	-0.0042	0.000	0.000
Fixed cost of moving	-2.0807	-2.4078	-3.2820	0.000	0.000
Variable cost: distance	-2.0169	-1.8497	-1.5664	0.000	0.000
Location Characteristics					
Land area	0.3610	0.4240	0.3425	0.000	0.000
Coast	-0.0125	0.0055	0.1715	0.013	0.000
Lakes	-0.0156	-0.0176	0.0266	0.663	0.000
Population Characteristics					
Population density	-0.0528	-0.0316	-0.0441	0.000	0.000
Urban area	0.1999	0.2269	0.0158	0.001	0.000
School enrollment	-0.7502	-1.0367	-0.9417	0.000	0.006
Housing vacancy rates	1.5312	2.5026	2.5299	0.000	0.429
Unemployment rate	-1.5676	-3.5100	-6.8208	0.000	0.000
Female headed households	-8.0109	-10.5602	-6.2803	0.000	0.000
Teenage pregnancy rate	0.0571	0.0538	0.0690	0.214	0.000
Non-white population	-1.4270	-1.3808	-1.0924	0.168	0.000
65-74 population	5.8772	7.3089	6.9653	0.000	0.000
Health Services					
Medical specialist	-0.0078	-0.0639	-0.0022	0.000	0.000
Hospital services	0.8676	1.1697	1.4639	0.000	0.000
Nursing home beds	-0.0141	-0.0196	-0.0309	0.000	0.000
No. of persons (percent of total)	2,696,510 (38.0)	3,235,766 (45.6)	1,159,892 (16.4)		

[a]Maximum likelihood estimates using multinomial logit. Results are for 3068 U.S. counties with a random sample of 100 destinations not chosen for each origin-destination pair. Alaska and Hawaii are excluded from the analysis. Parameter estimates and standard errors are calculated as averages of 20 repetitions of the model with different random samples of non-selected destinations.

[*]p-value is greater than 1 percent.

Table 3. Estimates of Logistic Model by Education Group: White Women Aged 65 to 74 in 1990

Variables	Total Parameter Estimates[a]			P-values for Difference between Parameters for High School Graduates and:	
	Non-High School Graduates	High School Graduates	College Graduates	Non-High School Graduates	College Graduates
Taxes					
Estate tax	-0.1084	0.2147	0.5286	0.000	0.000
Inheritance tax	-0.3114	-0.6409	-0.4798	0.000	0.000
Income taxes	-3.5323	-3.4202	-0.2630	0.291	0.000
Property tax	-0.1762	-0.1387	-0.1259	0.000	0.074
Sales tax	-0.0959	-0.1075	-0.0430	0.030	0.000
Expenditures					
Public safety	0.3106	0.2969	0.4056	0.596	0.003
Welfare	-0.0278	-0.0186	-0.0220	0.000	0.181
Housing	-0.3263	-0.1429	-0.1392	0.000	0.921
Recreation	0.5804	0.5351	0.2999	0.293	0.000
Education	0.0412	0.0076	-0.0590	0.000	0.000
Climate					
Clear days	-0.0023	-0.0009	-0.0013	0.000	0.042
Cold days	-0.0227	-0.0264	-0.0231	0.000	0.000
Humidity	-0.6069	-0.5498	-0.3346	0.027	0.000
Cost Factors					
House value	-0.0081	-0.0002	0.0106	0.000	0.000
Violent crime rate	0.0638	0.1245	0.1001	0.000	0.000
Violent crime rate squared	-0.0024	-0.0049	-0.0039	0.000	0.000
Fixed cost of moving	-1.8580	-2.3467	-3.6366	0.000	0.000
Variable cost: distance	-2.0243	-1.8362	-1.5500	0.000	0.000
Location Characteristics					
Land area	0.2768	0.3565	0.4017	0.000	0.000
Coast	0.0150	0.0172	0.0997	0.742	0.000
Lakes	-0.0153	-0.0149	-0.0027	0.922	0.050
Population Characteristics					
Population density	-0.0401	-0.0411	-0.0312	0.586	0.000
Urban area	0.2677	0.1601	0.0384	0.000	0.000
School enrollment	-0.4483	-0.9358	-1.0433	0.000	0.009
Housing vacancy rates	0.4924	1.6792	1.4959	0.000	0.000
Unemployment rate	-1.5290	-3.8880	-4.2608	0.000	0.006
Female headed households	-5.1483	-7.5875	-4.1250	0.000	0.000
Teenage pregnancy rate	0.0488	0.0522	0.0598	0.184	0.021
Non-white population	-1.2475	-1.2776	-1.1892	0.298	0.039
65-74 population	4.6751	6.2927	5.2567	0.000	0.000
Health Services					
Medical specialist	-0.0260	-0.0584	0.0658	0.000	0.000
Hospital services	1.0919	1.2724	1.2834	0.000	0.563
Nursing home beds	-0.0173	-0.0148	-0.0149	0.000	0.900
No. of persons (percent of total)	3,310,512 (37.0)	4,480,359 (54.0)	809,056 (9.0)		

[a]Maximum likelihood estimates using multinomial logit. Results are for 3068 U.S. counties with a random sample of 100 destinations not chosen for each origin-destination pair. Alaska and Hawaii are excluded from the analysis. Parameter estimates and standard errors are calculated as averages of 20 repetitions of the model with different random samples of non-selected destinations.

[*]p-value is greater than 1 percent.

Table 4. Estimates of Logistic Model by Education Group: Nonwhite Males Aged 65 to 74 in 1990

Variables	Total Parameter Estimates[a]			P-values for Difference between Parameters for High School Graduates and:	
	Non-High School Graduates	High School Graduates	College Graduates	Non-High School Graduates	College Graduates
Taxes					
Estate tax	-0.5748	-0.5567	-1.0715	0.926	0.129
Inheritance tax	-0.5807	-0.6104	-1.1944	0.678	0.000
Income taxes	0.3088	-1.9562	0.1716	0.000	0.006
Property tax	-0.1141	-0.1286	-0.0916	0.497	0.290
Sales tax	-0.0720	-0.1005	-0.1714	0.167	0.032
Expenditures					
Public safety	0.5755	0.5410	-0.6027	0.709	0.000
Welfare	-0.0140	-0.0763	-0.0309	0.000	0.003
Housing	-0.2549	0.1639	0.1105	0.000	0.723
Recreation	0.1953	1.3063	1.1775	0.000	0.603
Education	-0.0150	0.0533	0.0646	0.005	0.787
Climate					
Clear days	0.0029	0.0053	0.0108	0.000	0.000
Cold days	-0.0290	-0.0242	-0.0297	0.000	0.000
Humidity	-0.4223	-0.7647	-0.5618	0.000	0.132
Cost Factors					
House value	-0.0070	-0.0040	0.0165	0.001	0.000
Violent crime rate	0.1113	0.1060	0.0334	0.487	0.000
Violent crime rate squared	-0.0063	-0.0055	-0.0039	0.052	0.017
Fixed cost of moving	-3.5057	-3.5752	-3.7289	0.153	0.053
Variable cost: distance	-1.7074	-1.5784	-1.4901	0.000	0.000
Location Characteristics					
Land area	0.3295	0.2193	0.3236	0.000	0.000
Coast	-0.0429	-0.0650	-0.1041	0.359	0.301
Lakes	-0.0492	-0.0780	-0.1426	0.103	0.025
Population Characteristics					
Population density	-0.0567	-0.0597	0.0176	0.599	0.000
Urban area	0.2511	0.2559	0.3589	0.832	0.003
School enrollment	-0.6148	-1.3474	-0.9016	0.000	0.025
Housing vacancy rates	0.5413	0.6774	1.4288	0.350	0.001
Unemployment rate	-1.4030	-2.3712	-0.6677	0.006	0.006
Female headed households	9.8678	6.6290	7.1086	0.000	0.565
Teenage pregnancy rate	0.0021	0.0215	-0.0326	0.029	0.001
Non-white population	0.7323	0.4414	0.3722	0.001	0.653
65-74 population	0.2288	2.3386	2.3404	0.000	0.996
Health Services					
Medical specialist	0.1030	0.0648	0.2404	0.086	0.000
Hospital services	1.1547	1.5792	1.9415	0.000	0.000
Nursing home beds	-0.0212	-0.0404	-0.0208	0.000	0.000
No. of Persons (percent of total)	547,995 (67.8)	204,817 (25.3)	44,814 (6.8)		

[a]Maximum likelihood estimates using multinomial logit. Results are for 3068 U.S. counties with a random sample of 100 destinations not chosen for each origin-destination pair. Alaska and Hawaii are excluded from the analysis. Parameter estimates and standard errors are calculated as averages of 20 repetitions of the model with different random samples of non-selected destinations.

[*]p-value is greater than 1 percent.

Table 5. Estimates of Logistic Model by Education Group: Nonwhite Women Aged 65 to 74 in 1990

Variables	Total Parameter Estimates[a]			P-values for Difference between Parameters for High School Graduates and:	
	Non-High School Graduates	High School Graduates	College Graduates	Non-High School Graduates	College Graduates
Taxes					
Estate tax	-0.5753	-1.3271	0.7850	0.000	0.000
Inheritance tax	-0.4207	-0.2951	-0.8963	0.055	0.000
Income taxes	0.8010	-1.9508	-3.0447	0.000	0.152
Property tax	-0.1431	-0.0403	-0.1012	0.000	0.076
Sales tax	-0.1116	-0.0996	-0.1430	0.488	0.166
Expenditures					
Public safety	0.5350	0.3782	0.1777	0.047	0.169
Welfare	-0.0086	-0.0614	-0.0204	0.000	0.004
Housing	-0.4275	-0.0173	0.6743	0.000	0.000
Recreation	-0.1408	0.3917	0.3551	0.000	0.883
Education	0.0208	0.0738	0.1317	0.011	0.147
Climate					
Clear days	0.0089	0.0032	0.0054	0.000	0.008
Cold days	-0.0275	-0.0239	-0.0355	0.000	0.000
Humidity	-0.1239	-0.6361	-0.7352	0.000	0.417
Cost Factors					
House value	0.0047	0.0020	0.0182	0.000	0.000
Violent crime rate	0.0948	0.1077	0.0541	0.042	0.000
Violent crime rate squared	-0.0038	-0.0061	-0.0036	0.000	0.000
Fixed cost of moving	-3.7033	-3.5121	-4.6195	0.000	0.000
Variable cost: distance	-1.6574	-1.6062	-1.4239	0.000	0.000
Location Characteristics					
Land area	0.3657	0.4070	0.2500	0.002	0.000
Coast	0.0539	-0.0010	0.1680	0.007	0.000
Lakes	-0.0559	-0.0825	-0.1332	0.073	0.069
Population Characteristics					
Population density	-0.0531	-0.0341	-0.1132	0.000	0.000
Urban area	0.2155	0.2482	0.1689	0.077	0.027
School enrollment	-0.7997	-1.3149	-1.6303	0.000	0.102
Housing vacancy rates	-0.5609	0.2584	-0.5654	0.000	0.001
Unemployment rate	-0.6058	-3.1781	-0.5441	0.000	0.000
Female headed households	12.2723	9.9930	11.5203	0.000	0.038
Teenage pregnancy rate	-0.0726	0.0065	-0.0104	0.000	0.297
Non-white population	0.4190	0.5818	0.0150	0.028	0.000
65-74 population	-0.0090	1.2006	0.7204	0.000	0.165
Health Services					
Medical specialist	0.0384	0.1044	0.1984	0.000	0.002
Hospital services	1.1640	1.5293	1.3518	0.000	0.039
Nursing home beds	-0.0178	-0.0317	-0.0254	0.000	0.092
No. of persons (percent of total)	772,076 (66.8)	314,503 (27.2)	68,906 (6.0)		

[a]Maximum likelihood estimates using multinomial logit. Results are for 3068 U.S. counties with a random sample of 100 destinations not chosen for each origin-destination pair. Alaska and Hawaii are excluded from the analysis. Parameter estimates and standard errors are calculated as averages of 20 repetitions of the model with different random samples of non-selected destinations.

[*]p-value is greater than 1 percent.

Table 6. Marginal Effects of Selected Independent Variables on County Population: White Men Aged 65 to 74 in 1990

Variables	Average Change in Population from a One Unit Change in Variable	Standard Deviation of Variable	Average Change in Expected Population Due to a Standard Deviation Change in Variable
Taxes			
Estate tax	5.040	0.037	0.186
Inheritance tax	-20.017	0.134	-2.677
Income taxes	-108.361	0.026	-2.834
Property tax	-5.712	0.920	-5.257
Sales tax	-3.181	0.534	-1.700
Expenditures			
Public safety	10.500	0.141	1.485
Welfare	-0.530	1.703	-0.903
Housing	-6.726	0.102	-0.686
Recreation	13.506	0.063	0.851
Education	-0.024	0.714	-0.017
Climate			
Clear days	-0.063	26.609	-1.689
Cold days	-0.893	22.492	-20.096
Humidity	-18.729	0.155	-2.908
Population Characteristics			
Population density	-1.182	0.912	-1.079
Urban area	5.136	0.337	1.732
School enrollment	-27.074	0.122	-3.291
Housing vacancy rates	64.355	0.098	6.292
Unemployment rate	-104.134	0.037	-3.867
Female headed households	-259.807	0.031	-8.135
Teenage pregnancy rate	1.684	1.323	2.228
Non-white population	-38.941	0.115	-4.478
65-74 population	198.037	0.065	12.936
Health Services			
Medical specialist	-1.001	0.374	-0.374
Hospital services	33.075	0.262	8.670
Nursing home beds	-0.588	6.879	-4.046

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