"Why Did Grandpa Go? An Investigation of Elderly Migration"

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Abstract

In light of their unique economic situation, America's elderly population values certain government spending and taxation policies more than others. This paper employs data from the 2000 Census to investigate whether and the extent to which elderly migration is affected by state fiscal policies and climate considerations. Existing empirical research suggests that elderly migratory decisions are highly motivated by low cost-of-living, temperate climate, and low estate taxes. In addition, states that spend less on education and welfare are also preferred by the elderly. The estimates discussed in this paper suggest that climate considerations, state taxes (specifically income and property taxes) and government spending policies have the largest effect on elderly net migration rates.

Why Did Grandpa Go? An Investigation of Elderly Migration

I. Introduction

As the elderly population continues to grow in the United States, it is becoming increasingly important to study and understand the effects of government policies on their migratory behavior. The current political debate concerning the transfer of financial responsibilities in the direction of the states stresses the importance of understanding how the elderly respond to the differences in taxation and government spending the states exhibit (Conway and Houtenville, 1998).

Are the elderly sensitive to state policies when planning their migration? This is an important question because the elderly may have a significant impact on the states to which they migrate. It is often assumed that the migration of elderly into a particular state is necessarily a good thing. The elderly often provide a larger tax base, increased private spending and economic improvements to the service sector (Conway and Houtenville, 2001).

However, the elderly have different tax preferences which may not necessarily help the local economy. Possibly the most important attribute of an increased elderly population is the political power they exhibit. A significantly larger percentage of elderly vote in comparison to their youthful counterparts. In addition, the elderly are less inclined to support educational expenditures, especially if the elderly are new in the area (Conway and Houtenville, 2001).

In addition, weak linkages between government spending and taxes provide the elderly with opportunities to free-ride on the tax efforts of the non-elderly. The

preferences of the elderly for certain kinds of publicly provided goods differ in a systematic way from the preferences of other age groups. For example, the elderly have shown strong support for Medicaid and other health expenditures; however they retain little interest in education expenditures. In addition, the elderly's sources of income, mainly pensions and interest income, as well as their inclination to spend rather than save, imply that certain taxes are less burdensome than others (Conway and Houtenville, 1998).

The retired population is growing faster than the working population and by the year 2030 one out of every five people will be age 65 and older (U.S. Census Bureau, 1996). Florida had an estimated net gain of $5 billion in income from the elderly migrants it received between 1985 and 1990 (Longino and Crown, 1989). In addition, one new job is created for every 2.5 elderly migrants Florida received (Sastry, 1992). Some states are specifically focused on influencing the migratory decisions of elderly. Policy makers believe the elderly positively affect state and local economic development, viewing retirees as the ultimate "clean industry" (Clark, Knapp and White, 1996).

Although elderly in developed countries exhibit the fastest population growth, their migration remains little studied (Hugo, 1987). Projections from the 1990 U.S. Census show that by the year 2030, people aged 65 and older will comprise 22 percent of the population, doubling current levels (Clark, Knapp and White, 1996). Census data usually includes place of residence 1 and 5 years ago, which is extremely important in studying migration. Using census data to examine migratory patterns does not capture the entire picture because it is a sample of a subset of the population; however, it seems to be the best alternative (Hugo, 1987).

The purpose of this paper is to study the internal migration of the elderly during the period 1995 to 2000. Using data from the U.S. Census Bureau's 2000 census migration flows, we will study state fiscal policy and the repercussions of policy makers' decisions in influencing the elderly population to either stay or move away.

The models build on the work of Tiebout (1956), and Conway and Houtenville (1998), taking into account amenities, government spending, and taxes in elderly migration, as well as population and climate considerations. The model assumes migrants are utility-maximizers (as Tiebout asserts) who choose between locations that differ across the variables being tested.

II. Background

Much of the established research has focused on specific individual characteristics and selective attributes of locations as each pertain to the decision to migrate. Various authors consider the impact of retirees on receiving locations. The increase in economic base that retirees provide, alongside projected future increases in the numbers of elderly migrants, appear to verify the concerns of policy makers (Clark, Knapp and White, 1996). Other research focuses on the events that trigger migration of the elderly.

Walters (2000), argues that migration is usually precipitated by "lifecourse events" such as retirement, marriage, career changes and nest-leaving. Each event can lead to a change in personal preferences or the ability to satisfy these preferences. For example, a pregnant couple may prefer a larger home; a worker who just got laid off may need to move to a less affluent neighborhood. While no "lifecourse event" always ends

with migration, each presents a need or an opportunity which may promote the move (Walters, 2000).

At least ten studies document the “lifecourse events” related to migration of the elderly. Each event grants a reason to migrate. Separate events correspond to a specific type of migrant and a specific set of geographic characteristics. For example, retirement is an incentive for married couples, assuming little attachment to their current residence, to migrate to places with attractive physical environments and leisure opportunities. (Walters, 2000)

Walters (2000), uses a model based upon four “lifecourse events”: retirement, moderate disability, the loss of a spouse, and severe disability. Retirement is important because it cuts the link between earnings and involvement in the job market; retirees no longer have to reside where jobs are available. Mild disability or chronic illness has been shown to encourage migration, most likely to the dwellings of children who have grown older. Widowed seniors are extremely likely to move in response to disability. In addition, the loss of a spouse may promote mobility even for non-disabled seniors by cutting elderly off from a primary source of emotional support and assistance. Severe disability often leads to migration to a nursing home or other institutional facility. (Walters, 2000)

Walters’ lifecourse model offers insight into the reasons for the migration of elderly. The research opens the door for further analysis of the economic variables that affect the migratory patterns of elderly. Among these variables, those related to amenities, cost-of-living and government policy seem to have a very large impact.

In addition to Walters' lifecourse model, Meyer and Speare (1985), introduce four different sociodemographic characteristics that are associated with different types of elderly mobility: Amenity mobility, which is related to younger age, better health, more affluence and few local ties; Assistance mobility, which is related to older age, bad health and lack of a spouse; Mobility in preparation for aging, which relates to old age, average income and education, bad health and small house size; General Mobility, which carries mixed socioeconomic and demographic characteristics, but is related closely to previous mobility, tenure status and local ties. (Meyer and Speare, 1985)

Wiseman and Roseman (1979), note that the most commonly reported reasons for moving are: (1) Unsatisfactory home, (2) moribund health requiring special care, (3) improvement in residential needs, (4) a desire to be near family, and (5) reductions in the cost of living. Meyer and Speare, 1985, point out that in addition to rates of mobility and reasons for such mobility, attention has also focused on sociodemographic factors related to elderly mobility. Elderly that migrate across country or state lines have tended to be younger, married, and to have higher education and income than those elderly who remain in the same county; local elderly movers have been more economically dependent and in poorer health than elderly nonmovers or long-distance migrants. Additional studies of the elderly movers and stayers at the local scale reveal that movers tend to: (1) have higher unemployment rates, (2) change homes regularly, (3) be single person households, (4) rent more often than own, and (5) earn lower than average income. (Wiseman and Roseman, 1979)

Rogers (1998), argues that empirical schedules of age-specific rates of migration show extremely constant regularities in age profile. These regularities seem to hold all

over the world and across time. The foremost regularity in migration schedules is the large numbers of young adults engaging in migration. Rates of migration are also high among children, peaking during the first year of life, falling steeply around age 16, turning sharply upward to a peak near 20-22, and declining regularly afterwards until the time of retirement. (Rogers, 1988)

It is common knowledge that the young migrate often as the old tend to stay put. Chevan and Fischer (1979), explain that during the period 1965-1970, greater than 10 percent of people under 60 changed their state of residence as compared to 4 percent of those over 60. Even still, this figure represents more than 1 million people (Chevan and Fischer, 1979).

Chevan and Fischer (1979), go on to argue that for most aged labor force members, migration would affect their career, as well as community and family attachments. Without considering the labor market, migration following retirement can be positive – allowing the retired worker the benefits of a more desired social and climactic situation. The growth of retirement communities is based on this principle. Elderly migration is responsible for the emergence of communities which have been distinctly altered in age structure to include disproportionate numbers of older people who possess special sets of characteristics and needs.

III. Data and Methods

The dependent variable Net Migration Rate was gathered from The U.S. Census Bureau's 2000 Census. The net migration rate is the 1995 to 2000 net domestic migration multiplied by 1,000 and divided by the approximated 1995 population. A positive net

migration rate implies more inmigrants than outmigrants. The data measures migration between the years 1995 and 2000, and is broken down by age group. Elderly persons are defined as being 65 years or older at the time of the 2000 Census. The dependent variable Net Migration Rate is superior to its alternative, Net Migration, because it takes into account the total population of the state.

To explain elderly migration, we select independent variables that capture the factors identified as catalysts for elderly mobility: Taxes per capita (including a breakdown of specific taxes such as estate & gift, sales, income, and property taxes), Weather conditions (including the amount spent on cooling and heating within each particular state during the year), and spending variables such as education and health spending per capita.

Originally included in some of the models were variables such as median household income, crime rates, state size in square miles, and average percentage of sunshine. These variables were later removed due to correlation problems (correlation coefficients greater than .5).

The tax variables used in the first four models were compiled from U.S. Census Bureau data from the year 2000 Census. They include Total Tax Per Capita broken down by state, as well as a ranking from 1 to 50 assigned to each state based upon their total tax per capita. States with lower rankings exhibited lower total taxes per capita.

Although introducing total tax per capita gives a good impression of the overall effects that taxes have on elderly migration, we also broke down these taxes into sub-categories to evaluate the importance of each individual tax. Models 5 and 6 analyze specific taxes such as Estate & Gift Tax, Sales Tax, Income Tax, and Property Tax. All

tax variables are defined as taxes per capita. The Estate and Gift tax is defined as State Tax Collections for the year 2000. All other taxes are defined as State and Local Government Finances for the year 2000. Estate and Gift Tax was originally defined in dollars per capita terms, while sales, income, and property taxes variables had to be divided by total population to arrive at a per capita amount (in thousands of dollars). Total population was taken from the Statistical Abstract of the United States.

Previous empirical studies show that climate considerations are often a large factor in elderly mobility. For this reason, we included the Heatingd and Coolingd variables. These variables estimate heating and cooling requirements for each state and were taken from the Statistical Abstract of the United States. Heating degree days is defined as average normal seasonal heating degree days, for periods through 2000; each degree of temperature below 65 °F is counted as one heating degree day. Cooling degree days is defined as average normal seasonal cooling degree days, for periods through 2000; each degree of temperature above 65 °F is counted as one cooling degree day. The data is an average of all years surveyed through year 2000. The length of record was different for most states, however most kept 30+ years of records.

Due to the seasonal variations in climate, Heatingd and Coolingd provide a better representation of climate conditions than average temperature. In addition, having two separate variables explaining climate allows for two separate regressions against each variable. This allows us to further test the claims that climate is a catalyst in elderly mobility.

Additionally, it was also our intent to show that spending variables also had an effect on elderly migration. Previous empirical research has shown that the elderly are

often influenced by education and health spending, among other spending variables. For this reason, we included Models 7 and 8. These models take into account health spending per capita (in dollars) and education spending per capita (in thousands of dollars).

The health spending variable is defined as Total State Health Expenditures for year 2000. This was then divided by total population (taken from the Statistical Abstract of the United States Year 2000) to arrive at a per capita amount. The education spending variable is defined as expenditures for public elementary and secondary education and other related programs. This variable was then divided by total population to arrive at a per capita amount.

IV. Results

Table 2 reports the first four specifications. Because tests showed some evidence of heteroskedasticity, all specifications report robust standard errors. The first four specifications show the significance of climate and overall tax collections in affecting the decisions of elderly movers. We chose two similar tax variables, total taxes per capita and a numeric ranking from 1 to 50 based on the level of total taxes per capita (1 = lowest taxes). Also included in the first four specifications are two inversely related climate variables, heating degree days and cooling degree days. Heating degree days is defined as average normal seasonal heating degree days, for periods through 2000; each degree of temperature below 65 °F is counted as one heating degree day. Cooling degree days is defined as average normal seasonal cooling degree days, for periods through 2000; each degree of temperature above 65 °F is counted as one cooling degree day.

Equation 1 establishes high significance for the heating degree days variable, as well as even higher significance for the tax rank variable. The coefficient for heating degree days is negative. This corresponds to elderly migration away from states with higher heating requirements. Each degree of temperature below 65 °F corresponds to a decrease of .0039 in the statewide net migration rate. This means that there is a net loss of .0004 people on a per capita basis for a one hundred unit increase in heating degree days. Previous empirical research has shown that the elderly prefer warmer climates. This model maintains the assertions made in the previous statement. The t-score of -2.082 establishes significance for the variable at the 0.05 level.

The coefficient for State Tax Rank is also negative ($t = -2.630$, $p < 0.01$) meaning a one unit increase in tax ranking will lead to a negative impact on the net migration rate of .369. This means that there is a net loss of .004 people on a per capita basis for a one unit increase in tax rank. The tax ranking variable is defined from 1 to 50, 1 being the state with the lowest per capita total taxes (South Dakota) and 50 being the state with the highest per-capita total taxes (Connecticut). It is interesting to note that the 2 highest ranked states reported no income tax, while the 3rd and 4th highest ranked states had extremely low per-capita income taxes.

Equation 2 attempts to recreate the results provided in Model 1, this time using cooling degree days instead of heating degree days. Though this model only achieved significance at the 0.10 level for cooling degree days (t-score 1.650), the coefficient was positive and re-affirms the conclusions realized in the previous model. The more there is a need for cooling, the more attractive the area is to the elderly. The coefficient for cooling is .0085, whereas the coefficient for heating was -.0039. These coefficients imply

that the elderly are more highly motivated by very warm weather than very cold weather. Model 2 also reports a similar coefficient and slightly lower significance level for the State Tax Rank variable, which has been discussed earlier.

Equation 3 uses heating degree days alongside Total Taxes Per Capita to test the robustness of the tax result. The Total Tax variable captures the exact economic picture, thus providing us with a slightly better model. This model shows that a one unit change in heating degree days will affect net migration by -.004 ($t = -2.636$, $p < 0.01$) and also a one unit change in total taxes will affect net migration by -.014 ($t = -2.216$, $p < 0.05$). This means that there is a net loss of .0004 people on a per capita basis for a one hundred unit increase in heating degree days, while there is a net loss of .014 people on a per capita basis for a one thousand dollar change in per-capita total taxes. Again, the signs in front of both coefficients correspond to the predicted effects; greater heating requirements have a negative impact on net migration rate, and higher taxes have a negative impact on net migration rates.

Equation 4 tests cooling degree days alongside Total Taxes Per Capita to round off the discussion of climate and tax variables. The coefficient for the tax variable is nearly the same as that reported in equation 3 (-.014) while the coefficient for the cooling degree days variable is almost the same as that reported in equation 2 (.008). These results add to our confidence in the previously stated equations.

It is interesting to note that while the heating degree days are generally significant at higher levels, cooling degree days have twice the impact. It seems the migratory decisions of the elderly are more strongly influenced by climate in regards to warm weather than cool. That is, the elderly are highly motivated to move toward places in

which there are a large number of very warm days, while they are slightly less motivated to move away from places with a vast number of very cold days.

While the first four models establish significance for a general tax variable, the next two specifications examine specific taxes and their influence on elderly migration. The four taxes identified in the model are Sales Tax Per Capita, Estate & Gift Taxes Per Capita, Income Taxes Per Capita, and Property Taxes Per Capita. Two separate models were used to examine the tax variables because Property Taxes and Estate Taxes showed extremely high rates of correlation, and thus could not be used in the same model.

Equation 5 establishes significance for the income tax variable ($t = -2.048$, $p < 0.05$) with a negative coefficient. Not surprisingly, higher per capita income taxes lead to lower net migration rates among elderly. This implies a net loss of .021 people on a per-capita basis for a one thousand dollar increase in per-capita income taxes. Although we expect estate and gift taxes to be significant with a negative coefficient, the other tax variables included in this model, sales tax and estate taxes, are insignificant.

Equation 6 finalizes our in-depth analysis of taxes by replacing the estate tax variable with a property tax variable. This model re-establishes the significance of the income tax variable ($t = 2.005$, $p < 0.05$), while also providing evidence that property taxes have a large effect on elderly net migration rates ($t = 3.093$, $p < 0.01$). This implies a net loss of .019 people on a per-capita basis for a one thousand dollar increase in per-capita income taxes, while implying a net loss of .021 people on a per-capita basis for a one thousand dollar increase in per-capita property taxes. It seems that higher income and property taxes strongly influence the elderly to flee the area. This conclusion is appropriate as the elderly are highly likely to own large amounts of property.

Equations 7 and 8 attempt to capture the effects of spending variables on elderly migratory decisions. Using health and education spending variables, we examine the hypothesis that the elderly favor health spending over education spending. Note: These two models have n=49, as opposed to n=50 for all previous models. Health spending data was not available for Florida.

Equation 7 exhibits a failed attempt at proving the hypothesis that the elderly are opposed to education spending and favor health spending. In fact, it tells the opposite story for the health spending variable. The education spending variable is significant at the 0.01 level with the correct sign, however the health spending variable is significant at the 0.05 level with the opposite sign as expected. The coefficient for the health spending variable is -.0007, implying a net loss of .0007 people on a per-capita basis for a one thousand dollar increase in health spending per-capita. This model incorrectly suggests that increases in health spending will lead to an outflow of elderly persons.

Our initial assessment of this equation was that, although the coefficient for health spending is negative, this may be due to correlation in the opposite direction. It is possible that instead of health spending causing net migration rate to change, the opposite is the case. In fact, an increase in the net migration rate may push health spending per capita down. A large influx of elderly residents puts a strain on the health system, and adjustments cannot be made immediately to allocate resources for new residents. For this reason, health spending may show a negative coefficient as an independent variable with net migration rate as the dependent variable.

To correct for simultaneity, we instrument for health spending per-capita using the log of total population. Equation 8 reports the results with the fitted value for health

spending per-capita. Following the correction, health spending is no longer significant. This suggests that the significance of health spending in Equation 7 was the result of migration causing health spending, not the reverse.

These last two models offer strong evidence that elderly net migration rates are highly negatively influenced by higher levels of education spending per capita. This evidence coincides with previous empirical studies on elderly migration, specifically Conway & Houtenville, (1998). In contrast to the previous hypothesis, the elderly are not influenced by varying levels of health spending.

V. Conclusion

The consequences of elderly migration are of political, economic, and social significance. With an elderly population growing at unprecedented rates, it is extremely important that policymakers understand the factors that govern the migration of elderly across state borders. Although some papers attempt to pin down one or two main factors that affect elderly migratory patterns, we conclude that elderly migration is affected by a variety of complex forces. We also reject the idea that certain forces proposed in previous empirical studies affect elderly migration.

We find strong evidence that overall taxes have a large effect on elderly migration. Specifically, high property and income taxes seem to drive away the elderly. In contrast, taxes such as estate & gift tax and sales tax seem to have very little effect on the decisions of the elderly in relation to migration.

There is strong evidence to support the conclusion asserted in many previous empirical studies on elderly migration that climate has a rather large effect on the

movement of elderly. The idea that the elderly enjoy moving to warmer locations is verified in equations 1-4 using the heatingd and coolingd variables in conjunction with tax variables.

An important distinction is also made in this model in regards to climate. The model maintains the assertion that the elderly are attracted to a more temperate climate. However, the model tested suggests the elderly are highly motivated to move towards very warm weather, while being slightly less motivated to move away from very cold weather.

Finally, we find evidence that government spending variables also have an effect on the migratory decisions of the elderly. Increases in education spending seem to drive away the elderly with high levels of significance. In contrast, and also quite surprisingly, increases in health spending have little to no effect on elderly mobility.

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Table 1. Descriptive Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
NetRate	3.57	26.43504	-45	114.2
Heatingd	5003.14	2202.494	0	8812
Coolingd	1274.74	990.2078	0	4561
StaxRank	25.5	14.57738	1	50
Taxpercp	1906.763	399.2603	1228.39	2986.65
EstateTAX	26.904	19.07154	3.9	102.8
Ptaxpcap	.8493278	.3373793	.3013541	1.717169
Itaxpcap	.6587356	.4021565	0	1.509214
Staxpcap	1.035826	.3292872	.2666348	1.947916
Educpcap	1.323063	.234147	1.002391	2.228766
Healthpc	5319.355	6545.39	300.9	33264.4
Lnpop	15.05993	1.019968	13.10985	17.33809

NetRate: Net migration rate of persons age 65 and older during the period 1995-2000. The net migration rate is the 1995 to 2000 net domestic migration multiplied by 1,000 and divided by the approximated 1995 population.
Heatingd: average normal seasonal heating degree days, for periods through 2000 (estimates heating requirements). Each degree of temperature below 65 °F is counted as one heating degree day.
Coolingd: average normal seasonal cooling degree days, for periods through 2000 (estimates cooling requirements). Each degree of temperature above 65 °F is counted as one cooling degree day.
StaxRank: States Ranked by Total Taxes and Per Capita Amount: 2000 (1=lowest tax, 50=highest tax).
Taxpercp: Total Taxes Per Capita: 2000.
EstateTAX: State Government Tax Collections: Year 2000 – Estate and Gift Taxes Per Capita (in dollars).
Ptaxpcap: State and Local Government Finances: 1999-2000 – Property Tax / Total Population Year 2000 (in thousands of dollars).
Itaxpcap: State and Local Government Finances: 1999-2000 – Income Tax / Total Population Year 2000 (in thousands of dollars).
Staxpcap: State and Local Government Finances: 1999-2000 – Sales Tax / Total Population Year 2000 (in thousands of dollars).
Educpcap: Expenditures for public elementary and secondary education and other related programs: 1999-2000 (in thousands of dollars).
Healthpc: Total State Health Expenditures: Year 2000 / Total Population Year 2000.
Lnpop: Natural Log of the population: Year 2000.

Table 2. Climate and Taxes – Net Rate as Dependent Variable

Variable	Equation 1	Equation 2	Equation 3	Equation 4
Heatingd	-.0039546 (-2.082)**		-.0040999 (-2.636)***	
Coolingd		.0085596 (1.650)*		.0089739 (1.775)*
StaxRank	-.3692298 (-2.630)***	-.3463576 (-1.799)*		
TaxPerCP			-.0141909 (-2.216)**	-.0140101 (-1.950)*
R-Square	0.1906	0.1821	0.1964	0.1923
n	50	50	50	50

t-value in parentheses. ***=significant at 0.01 level, **=significant at 0.05 level, *=significant at 0.10 level

Table 3. Taxes Breakdown – Net Rate as Dependent Variable

Variable	Equation 5	Equation 6
EstateTAX	-.0531427 (-0.318)	
Itaxpcap	-21.11935 (-2.048)**	-19.32315 (-2.005)**
Staxpcap	12.01197 (0.738)	8.663533 (0.565)
Ptaxpcap		-21.27416 (-3.093)***
R-Square	0.1538	0.2230
n	50	50

t-value in parentheses. ***=significant at 0.01 level, **=significant at 0.05 level, *=significant at 0.10 level

Table 4. Spending Variables – Net Rate as Dependent Variable

Variable	Equation 7	Equation 8
Educpcap	-44.28739 (-5.548)***	-46.00569 (-5.334)***
Healthpc	-.0007511 (-2.296)**	
Healthpc = Lnpop		-.0005103 (-1.071)
R-Square	0.2417	0.2382
n	49	49

t-value in parentheses. ***=significant at 0.01 level, **=significant at 0.05 level, *=significant at 0.10 level