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ELDERLY MIGRATION: HOUSEHOLD VERSUS INDIVIDUAL APPROACHES

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ABSTRACT This paper employs a household approach to elderly migration analyses and compares it with the traditional individual approach. The first part of the paper develops some concepts about household mobility and relates them to individual mobility. It then compares the two mobility measurements in a case study using the Public Use Microdata Sample (PUMS) from the 1990 Census. The results show that the mean household size for the elderly moving together tends to be smaller than that for elderly stayers. It also demonstrates the utility of the household approach on profiling elderly movers' living arrangement choices. The second part of the paper calibrates a set of discrete choice models based on the household and individual approaches. While in most cases the two approaches yield similar parameter estimates, new insights can still be gained through the household approach.

1. INTRODUCTION

The motivation for this study stems from the modeling of elderly migration choice. Most studies dealing with migration choice use individuals as the unit of analysis. These studies assume that decisions regarding whether and/or where to move are made on an individual basis. This approach, however, is appropriate only when one person in a household makes the decision about moving, i.e., all other members in the household follow the decision-maker. Economists though often argue that the decision to move is a household one, where household members (e.g., husband and wife) make a joint decision (Mincer 1978; De Jong and Fawceff 1981). Although this issue has surfaced many times, due to the lack of proper methods and the availability of data, few attempts have been made to empirically investigate it from a household perspective. As a result, our current knowledge is very limited regarding how migration measurements and modeling results might differ between an individual and a household analysis.

One must face data selection problems when modeling elderly migration. The individual approach works fine for modeling the choice of migration destination at the macro-level, i.e, if an area is attractive to individuals, it is likely to attract households as well. However, this approach lacks the ability to deal with certain migration strategies at the micro-level. For instance, the developmental model of Litwak and Longino (1987) posits three stages of elderly migration: amenity-related moves following retirement; return moves to be

closer to kin when the elderly become widowed or develop some chronic illness; and, moves to institutions. Here, the decision to move is based not only on destination characteristics, but more importantly on older persons' health and psychological needs (Wiseman and Roseman 1979; Wiseman 1980). At the first stage, elderly couples often move together, where the decision to move is likely to be a household decision. At the second stage, the decision to be close to or to live with adult children is likely to involve adult children, especially those who provide care (Speare et al. 1991). Since daughters are more likely than sons to care for elderly parents, and women generally outlive their husbands (Lee, Dwyer and Coward 1993), one would expect that elderly movers who are in need of assistance (e.g., widowed mothers) are more likely to live with daughters than sons. Furthermore, under the household approach, adult children may move to be near or live with their elderly parents, so that the elderly do not have to move to receive informal support. In the individual approach, the latter strategy would be excluded because elderly migration by definition deals only with elderly individuals.

Second, an important concept relating to the second stage of Litwak-Longino model is return migration (Longino and Serow 1992). However, using an individual as the unit of analysis will inevitably smooth the rate of return migration, because it is based on an individual's birth place (Rogers 1990). If a husband and wife were born in different states and both of their home states are their potential destinations, they must negotiate moving to one of these states to achieve the greatest satisfaction for both parties. One party's return migration may take the other party even farther from home. In this case, then, it may be more reasonable to use a household approach and treat both parties as return migrants.

Finally, inconsistencies may be introduced when some or all of the individuals from a household are included in an analysis. The Public Use Microdata Sample (PUMS) is perhaps the most widely used and the richest microdata source for migration analysts. Since all of the individuals in a household are listed in the PUMS, analysts using the individual perspective often risk double-counting and misinterpreting the husband's and wife's decision with respect to their individual characteristics. Particularly, if one earns an income and the other does not, the income effect may have wide variations. Due to these concerns, some researchers simply use gender-specific samples (Liaw 1986; Li 1992) in migration choice studies.

Early studies on household migration, which underlined mobility differences among different type of households, were not able to address the proceeding issues. Mincer's (1978) work is a typical example. In his theoretical model on family migration decisions, Mincer introduced the concept of a *tied mover*, whose net loss from moving is less than the net gain of the spouse. Because family members may have different employment prospects and community ties, a family moving together often involves a tied mover. For this reason, families that act together are less likely than individuals to move, and two-earner families are less likely than one-earner families to initiate a move. Using the Current Population Survey (CPS), Mincer confirmed his theoretical expectations finding that husband-wife families moved less frequently than separated and divorced persons (see also, Graves and Linneman (1979). How-

ever, Mincer's work was based on the household marker method (Plane and Rogerson 1994), where only one member of household is surveyed. This treatment is not directly applicable to the PUMS, where each member of a household identifies his/her relationship with the head of household and they collectively constitute a household *marker*.

Bartiaux's (1986) work is one of few that explicitly employed a household approach to study elderly migration. Using the 1980 PUMS, Bartiaux examined elderly movers' living arrangements. The author linked each household member to the head of that household, thus, representing a major methodological advance over other studies using PUMS data. However, the author still used the original classification scheme from the Bureau of Census (e.g., children, parents, siblings, in-laws) to present living arrangements, which cannot be compared with household/family based living arrangements from other survey data.

The purpose of this paper, therefore, is twofold: (1) With specific reference to the PUMS data a method for the empirical investigation of elderly migration at the household level is developed; (2) by comparing empirical results from the household and individual approaches, differences between the two approaches are assessed, and new insights that can be gained from the household approach are indicated.

2. HOUSEHOLD VS. INDIVIDUAL MOBILITY

This section establishes some relationships between individual and household measurements. King and Preston (1990) developed a set of relationships between household and individual measurements for analysis of living arrangements, and some of the relationships can be modified for household migration analysis. To calculate the individual elderly mobility rate, we should know the total elderly population (P) and the number of older persons who moved (M). To calculate the household mobility rate, we should have the number of households with an older person (H), and the number of households with an older person who moved (H_{EM}). The more elderly people who moved, the higher the level of individual elderly mobility. This is not necessarily true, however, for the household measurement. The elderly household mobility (i.e. the proportion of elderly households with an older mover) is H_{EM}/H. Note that according to this ratio, a married couple moving together will contribute the same weight as an older person moving alone. Thus, more relocation among married couples may not lead to a higher rate of household mobility. Conversely, if stayers have a larger household than movers, the household mobility tends to be greater than the individual mobility. These relationships can be seen more clearly by decomposing the above ratio into three components:

$$H_{EM}/H = (M/P)^* (P/H)^*(1/M/H_{EM}) \tag{1}$$

M/P is the individual elderly mobility;

P/H is the density of elderly in households;

$1/M/H_{EM}$ is the reciprocal of mean number of elders moving together in households.

The first term on the right hand side is the traditional individual measurement of elderly mobility. The middle term reflects density (the number of elderly people per household); the larger it is, the greater the probability that any randomly selected household will have an older mover. The last term is the reciprocal of the tendency of moving together, or more precisely, the reciprocal of the mean size of elderly individuals moving together within movers' households. For simplicity, those elderly households that have at least one elderly mover are labeled as a *mobile elderly household.*

Under this accounting framework, mobile elderly households with fewer members spread more widely (or are counted more often) than those with more members. In the case of one person household, the tendency of moving together reaches its minimum of 1. When all the mobile households are married couples and all the members are movers, then the tendency of moving together is 2 and its reciprocal equals 0.5. Elderly household mobility will decline as the tendency of moving together increases. In general, if the household mobility rate, the mean household size, and the mean size of mobile households are known, the individual mobility rate can be derived.

Another concept, which may be useful for policy-makers in states with a large retiree population, is the proportion of the population residing in mobile elderly households. This measures the percentage of the population in elderly households in which at least one person has moved. Since most economic resources are allocated according to household units, this measure can be more powerful than an individual mobility measure. Applying this concept to the elderly population, the proportion of the elderly population living in mobile elderly households is the number of people in the mobile households (P_M) divided by the total population in households containing an older person (P_H). This ratio can be further broken down into three components:

$$P_M/P_H = H_{EM}/H^* \left[(P_M/H_{EM})/(P_H/H)\right] \tag{2}$$

H_{EM}/H is the elderly household mobility;

P_M/H_{EM} is the mean size of mobile elderly households;

P_H/H is the mean size of all elderly households;

where the right side of the equation is elderly household mobility multiplied by the mean mobile household size and then divided by the mean size of all households. Equation 2 shows that the proportion of population in the mobile households increases as elderly household mobility and the mean mobile-elderly household size increase. A larger mobile-elderly household size implies that when the elderly move to live with extended kin or friends, they increase the total share of the population in the mobile households.

Finally, it is useful to introduce the concept of an adult-elderly migration ratio. As mentioned earlier, another way of defining elderly movers who are `at risk' is to treat *intended* elderly movers in the context of extended family. From the children's side, employment, marital disruption, or other personal problems may lead adult children to seek social support and other forms of aid via coresidence. From the parents' side, if an elderly person lives in an expensive house and intends to move to reduce the housing consumption (e.g., after all the adult children have left the home), an adult child moving in may offset some of the cost and reduce the parent's concern over the cost of living. If an elderly person intends to move for personal assistance, an adult child moving in may reduce that need, since the elderly person can be cared for by the adult child living at home. Thus, an alternative way of defining the at-risk population is to include all elderly movers and the elderly stayers whose adult children have moved into their households. One way to operationalize the concept is to use the adult-elderly migration ratio. It is defined as the proportion of adult children or other non-elderly moving into elderly stayers' household for every one hundred elderly mobile households. The higher the ratio is, the higher the proportion of adult children moving into elderly stayers' households. It is not known from the Census whether an elderly stayer intends to move or not. Nevertheless, a high prevalence of adult children moving into elderly stayers' households might suggest that the elderly stayers wish to move but do not do so because others have moved into their households.

3. CASE STUDIES

In the following section two case studies were carried out using the household approach. New York and Florida were selected, the former has the largest elderly outmigration flows, and the latter has the largest elderly in-migration flows (Rogers and Watkins 1987). Besides differences between the two states in amenities, the cost-of-living in New York is among the highest in the U.S., while Florida is among the lowest (Fournier et al. 1988). Thus, these two states were selected to capture the `most sensitive' differences between the household approach and the individual approach.

Case 1 - Household Mobility Measurements

This case study is based on the 5 percent Public Use Microdata Sample of the 1990 Census of Population and Housing. Geographic mobility is defined as a change in the respondents' permanent residence within the last five years before the census. The sample unit for the PUMS is the household, and all the members from a selected household are listed under the household with a serial household identifier. The sample base for this case study contained all the households with at least one person age 60 or over residing either in Florida or New York between 1985 and 1990. Also included were individuals age 60 and over in group quarters or institutions. Note that the household members in this sample included both the elderly and non-elderly. In order to relate individuals with a household, the household head (the person in whose name the home is own or rented) was selected and his or her spouse

TABLE 1. Elderly Household Mobility and its Components

	Notations/Formula	New York	Florida
Total Elderly Population	P	167339	162365
Total Elderly Households Population	P_H	250692	216228
Population in Mobile Households	P_M	51263	81247
Elderly Movers	M	28434	55549
Total Elderly Households[a]	H	121967	112410
Elderly Households with a Mover 60+	H_{EM}	23739	40700
Elderly Households with a Mover 18+	H_M	29981	44909
Elderly Household Mobility	H_{EM}/H	.1946	.3621
Elderly Individual Mobility	M/P	.1699	.3420
Density of Elderly In Households	P/H	1.372	1.444
Tendency of Moving Together	M/H_{EM}	1.20	1.37
Adult-elderly Mobility Ratio	$(H_M/H_{EM}-1)$	.26	.10
Percentage of Elderly Population in Mobile Households	P_M/P_H	20.45%	37.57%
Mean Size of Mobile Elderly Households	P_M/P_{HEM}	2.159	1.996
Mean Size of Stayer Elderly Households	$(P_H-P_M)/(H-H_{EM})$	2.030	1.891
Mean Size of All Elderly Households	P_M/H	2.055	1.924

a. Includes institutionalized older persons and each of them counted as one *household*.

or partner was attached by the household identification number. This is the sample of all the householders-the heads of households and their spouses. Finally, additional information regarding all other members in the household is attached to each household.

Applying the concepts developed in the previous section, separate statistics can be derived for individual and household measurements. The upper panel of Table 1 lists all the information needed for deriving individual and household mobility measurements; the lower panel lists the results. It shows that the differences in mobility between individual and household measurements are within 3 percent with the household mobility slightly higher than the individual mobility. Since most elderly households are one- or two-person

households, these two mobility measurements should be very close. In addition, a greater household mobility indicates (see equation 1) that the mean number of the elderly moving together is smaller than the mean number of older persons or the density of older persons in elderly households, and thereby smaller than the mean size of elderly stayers' households. This, in fact is consistent with Mincer's theoretical model—the larger the family, the less likely to move. However, this trend is reversed after the elderly movers were settled. The mean household size for movers is slightly bigger than that for stayers. This suggests that some of elderly movers must have joined with their adult children or other relatives, or got (re)married as a result of residential relocation.

Further comparison of mobility measurements between New York and Florida reveals that the proportion of the elderly population living in mobile-elderly households is much higher in Florida (37.57 percent) than in New York (20.45 percent). This is expected, since the elderly in-migration rate in Florida is among the highest in the nation. Moreover, elderly migrants in Florida tend to move together, while those in New York tend to move alone echoing the first and second stages of Litwak-Longino stage migration model (Litwak and Longino 1987), respectively. For every 100 elderly mobile households in Florida, there are 137 elderly movers, while this figure in New York is 120. Since retirement movers tend to be married and Florida tends to attract retirees, elderly migrants in Florida as a whole (including in-migrants and intra-state migrants) are more likely to be married and moving together (shown also in Table 2 later).

Finally, elderly persons who are concerned about a need for personal care or the cost of living could either move out of their houses or have someone move in. The adult-elderly mobility ratio is a measurement reflecting the proportion of intended movers using each strategy. It shows that for every 100 elderly mobile households, there are 26 and 10 non-elderly adults moved into elderly stayers' households in New York and Florida, respectively. Since elderly movers in these states have a similar age (mean age of 71.58 and 70.42 for New York and Florida respectively), this result may not directly relate to the health conditions of elderly movers. An apparent reason would be the opportunity factor. Florida has the highest concentration of elderly individuals, therefore, older Floridians are less likely than older New Yorkers to find someone from younger generations to share their households.

To further demonstrate the utility of the household approach, a household living arrangement profile was constructed and compared with individual living arrangement measurements. The upper panel of Table 2 lists thirteen types of living arrangements for elderly mobile households and compares them with individual measurements of living arrangements. These living arrangements were based on households with members age 60 and over in which at least one of the householders moved. Because some members in a household might move from a state while other members might move within a state, the numbers for interstate and intrastate migration were based on the heads of households. The lower panel of the table uses the individual approach and includes all the householders age 60 and over from the upper panel.

TABLE 2. Living Arrangements of Elderly Mobile Households Vs. Mobile Individuals[a]

The Household Measurements	Intra-state Movers[b]		Inter.-state Movers		Inter-state Movers	
	New York	Florida	*From* New York Florida *To* Other States		*From* Other States *To* New York Florida	
Elderly is Widowed/Divorced Father						
Son Only	3.9	2.9	2.6	2	3.7	2.5
Daughter Only	2.5	2	2	1.6	2.7	1.9
Elderly is Widowed/Divorced Mother						
Son Only	2.9	2.1	1.3	1.2	2.5	1.1
Daughter Only	2.6	1.7	1.5	1.2	1.9	1.0
Elderly Householder(s) Live With						
Son and Daughter	1.8	0.8	0.6	0.5	3.7	0.5
Aging Parents Only	0.6	0.3	0.1	0.1	0.4	0.1
Parents and Children	1.8	1.8	1.4	1.1	1.4	1.4
Siblings	2.1	1.7	1.1	0.9	1.1	0.9
Grand Child	0.3	0.3	0.2	0.3	0.1	0.2
Other Relatives	1.6	1.7	1.1	1	1.1	1.0
Spouse	33.7	45.4	54.7	42.2	37.7	61.8
Alone	43.1	36.2	31.4	46.1	41.5	26.0
Others	2.9	3.1	1.9	1.6	2.2	1.6
Total Observations	14752	18973	6373	3523	1606	14510
The Individual Measurements						
Elderly Mover Lives with						
Spouse	53.36	63.44	72.82	60.38	59.74	78.33
Kin	7.79	5.83	4.02	4.50	7.18	2.96
Alone	37.12	28.67	21.66	33.86	31.35	17.29
Others	1.74	2.07	1.45	1.25	1.73	1.42
Total Observations	17141	23968	9243	4799	2131	21795
Non-Household Movers						
Institutionalized	3430	3907	418	408	148	483

a. Both the household measurements and the individual measurement do not include institutionalized movers.
b. Interstate movers include the flows between New York and Florida.

Most living arrangement categories between the two approaches are not comparable, except living alone and living with a spouse. Both measures show

that elderly movers to Florida are most likely to be married and living together, but the discrepancies here are considerable. In general, the individual approach reports a greater share of living with a spouse and a smaller share of living alone. These differences are due to different ways of calculating living arrangements. A married couple in the household approach is counted only once, while the spouses are counted twice (e.g., the husband reports living with his wife and the wife reports living with her husband) in the individual approach (see a recent example in Longino and Serow 1992). Although neither calculation is incorrect, the household approach seems able (in the case of the PUMS) to depict a wider range of living arrangements.

The household approach used here also provides new insights into elderly living arrangement choices. Most results from Table 2 concerning household living arrangements are consistent with empirical findings from other household surveys (Siegel 1993). Elderly movers in New York are more likely to live alone or to live with adult children, while elderly movers in Florida are more likely to be married and live with spouses. These results are also reflected from the results of the individual approach. However, there are some inconsistent findings between this and other household studies. For instance, unlike some national surveys of elderly persons with long-term care needs (Soldo, Wolf, and Agree 1990), this sample does not support the claim that elderly movers are more likely to live with daughters than sons. It is true only for very old elderly movers (80 and over) or for the parents of female householders (not shown in Table). For the latter, a case in point is widowed mothers[1]. When males (sons or the husbands of daughters) are the heads of household, 67.6 percent of widowed mothers moved into their sons' houses. When females are the heads of households (daughters or the wives of sons), 95.5 percent of widowed mothers move into their daughters' houses. This pattern is consistent throughout the sample regardless of in-migrations, outmigrants, or the state of residence.

Case II - Household Migration Choice

The above descriptive analysis shows that researchers can benefit from the household approach with respect to several substantive issues. To see how the results might differ and what new insights might be gained under the multivariate analysis of migration behaviors, a household-destination choice model was calibrated and compared to typical individual choice models. Here, the sample of all the elderly outmigrants from New York and Florida were used in a multinominal logit model (discrete choice model) to examine the migration decisions of elderly households, with a choice set including the 48 contiguous states and the District of Columbia.

For the household approach, it is necessary to define an appropriate decision unit at the outset. This problem does not exist for the individual approach because each person is the proper decision unit. However, the census defined household might be too broad for analysis of elderly migration. It includes almost everyone under the same roof of an independent unit. Because some of the adult children or elderly siblings living in a household might not move in the same manner as the elderly householders, it is necessary to separate some of the members in a household from others under the migration decision

framework. For the purpose of this study, married elderly householders or the parents of householders were considered as joint decision-making units[2]. The remaining household members were treated as independent decision-makers (e.g., siblings, other relatives, and non-relatives). Therefore, an elderly couple or an old person may move to live independently, to join their parents, or to live with their children or with others. Cases where members of a couple moved from different states were deleted because it was unclear whether the individuals were married before or after moving.

The variable selection was guided by Liaw and Ledent (1988), who modeled Canadian elderly migration choice under a similar context. Total population in a given state reflects the general attractiveness and opportunities of that state. The unemployment rate reflects economic conditions, and the housing growth rate, to some extent, reflects both the area economy and the chance for elderly migrants to find an appropriate type of housing. Mean temperature is a key amenity indicator. The state centroids were used to calculate the logarithm of Euclidean distance from the origin states to each destination state. Crime rate and median household rent were not included, since they are more appropriate for metropolitan or citywide destinations (Fournier et al. 1988). All the variables were from the *Statistical Abstract of the United States* for 1988.

In addition to the above destination-specific variables, a set of dummy variables measuring movers' characteristics were also included. To measure a potential income effect, both personal income and retirement income were included in the preliminary analysis. Personal income was found to be not significant, probably due to great variations of the variable and a large number of elders who reported zero income. It was found that retirement income used as a binary variable (with/without retirement income) performed better in the calibration process. Since the educational level of the respondents often highly correlates with income, it was included as another dummy variable (with/without college degree) to determine whether it would give a more consistent parameter estimate in substitution of income. Also included, were race (black or other), gender, and whether or not the respondents had moved to metropolitan areas. Based on the discussion of Watkins of popular retirement migration states, 10 popular migration destination states (i.e., Texas, Arizona, New Mexico, Nevada, Alabama, Louisiana, Mississippi, Georgia, South Carolina, North Carolina) were selected. California was not included in these southern states because the stream of elderly migrants from New York or Florida was too small (Rogers and Watkins 1987; Longino 1995). The comparisons were made between the 10 popular migration destinations and the rest of country for all of the variables except race. According to empirical evidence (Longino and Smith 1991), African-American retirees are more likely to return to states (i.e., Alabama, Louisiana, Mississippi, Georgia, South Carolina, North Carolina) with high concentrations of Black populations, thus, the comparison was made between these states and the rest of the country (see Ben-Akiva and Lerman (1985) for a detailed discussion of how to implement choice-specific dummy variables).

Variable coding for a household proves to be more problematic than for an individual, because there is no single rule for the process. For instance,

a person with retirement income can simply be coded as one, and zero otherwise. For a married couple, however, the income variable can be coded in two different ways. It can be coded as one if both the husband and wife have retirement incomes, or if at least one of them has retirement income. The former option is more stringent, requiring everybody in a household meet certain criteria. The latter option is more liberal, requiring only one person in a household meet the criteria. Here, the liberal coding scheme is adopted. In the case of retirement income, if one of them had retirement income, the couple was coded one. This principle was also applied to race, education (with college degree), and migration to metropolitan areas. Gender was coded one only for widowed women because in the household approach, a female householder is not uniquely defined if she is married.

After defining and coding each variable, a mixed conditional logit model is estimated. Formally, the probability of a person/household living in state i migrating to state j is

$$Prob[Y_i, j] = \frac{e^{\beta' X_{ij} + \alpha' Z_i}}{\sum_j e^{\beta' X_{ij} + \alpha' Z_i}} \tag{3}$$

Where β' and α' are unknown parameters to be estimated for the destination and personal attributes respectively. X_{ij} is the vector of destination attributes for state j, and Z_i is the personal attribute for person i. This equation was estimated for three different sampling schemes; elderly household as the unit of observation, total elderly individual movers, and female elderly movers. These three destination choice models were calibrated separately for elderly persons moving from New York and Florida[3], yielding a total of six sets of results (Table 3).

The first and fourth columns of Table 3 list the results from the household models for New York and Florida respectively. All the destination choice variables were statistically significant and had *correct signs*. Elderly movers tended to move short distances or to states with large populations, ceteris paribus. Elderly movers from New York preferred states with warm weather, low unemployment, and healthy housing markets (measured by housing growth). While other parameter estimates for choice attributes were similar to those for the New York model, the elderly household model for Florida had insignificant estimates for unemployment. This suggests that elderly movers from Florida, in certain sense, are similar to those of *return* migrants, who have less concern for regional economic conditions.

With respect to individual attributes, which, in this case, were the household characteristics, the results were consistent with general expectations. Having an older person age 75 or over in a household significantly decreased the odds of the household moving to the southern states, or in the case of Florida moving within southern states. Having an African-American in a household increased the odds of moving to a state with a higher concentration of African-Americans, supporting the claim that elderly African-Americans tend to move back to states with high concentrations of that population group. Females from New York, as opposed to males and married couples, had no distinct preference among retirement states. In contrast, women moving alone

TABLE 3. Estimation Results of the Destination Choice Models for New York and Florida - Household vs. Individual Models[a]

	From New York			From Florida		
	House-hold	Individual		House-hold	Individuals	
		All movers	Female movers		All movers	Female movers
Choice Attributes						
Population	.12E-3	.12E-3	.12E-3	.12E-3	.12E-3	.12E-1
	(41.41)	(52.36)	(40.04)	(42.44)	(51.10)	(41.03)
Log Distance to State Centroid	-1.076	-.1.120	-1.121	-1.443	-1.431	-1.437
	(-29.89)	(-38.48)	(-29.66)	(-33.38)	(-39.83)	(-31.51)
Mean Temperature	.118	.123	.129	-.28E-1	-.29E-1	-.28E-1
	(26.27)	(33.73)	(27.24)	(-7.69)	(-9.72)	(-7.36)
Housing Growth	.32E-1	.31E-1	.22E-1	.27E-1	.29E-1	.28E-1
	(4.50)	(5.34)	(2.86)	(4.44)	(5.83)	(4.28)
Unemployment	-2.13	-.237	-.158	.13E-1	-.355	.62E-1
	(-11.04)	(-15.15)	(-11.77)	(.98)	(-.033)	(.459)
Individual Attributes						
College Degree	.45E-1	-5.8E-1	-.152	.287	.162	.162
	(.35)	(.57)	(-.97)	(1.21)	(1.30)	(.87)
Retirement Income	.315	.393	.92E-1	.78E-1	.16E-1	-.60E-1
	(4.40)	(6.67)	(1.49)	(1.21)	(.293)	(-.725)
African-American	1.861	1.809	1.781	1.326	1.23	1.223
	(19.73)	(24.16)	(18.28)	(7.75)	(8.07)	(5.90)
Female	.21E-1	.128		-.144	(8.07)	
	(.30)	(2.39)		(-2.43)	-.84E-1	
Metropolitan	-.491	-.518	-.540	-.325	-.341	-.400
	(-6.97)	(-9.32)	(-7.41)	(-5.58)	(-7.13)	(-6.72)
Older than 75	-.731	-.740	-.829	-.535	-.598	-.589
	(-10.12)	(-12.54)	(-11.27)	(-9.39)	(-12.65)	(-10.11)
Rho Square	.194	.201	.205	0.091	0.093	.093
Total Number	4507	7213	4239	4647	6730	4163

a. t-ratios are in parentheses.
Except age, which uses the mean age, all other individual dummy variables are based on the minimum criterion that any household member meets, e.g. *Retirement income* is 1 if a mover in a household has retirement income, 0 otherwise.
All the dummy variables except race are popular retirement migration destination (Texas, Arizona, New Mexico, Nevada, Alabama, Louisiana, Mississippi, Georgia, South Carolina) specific dummy. African-American is destination specific dummy to six southern states (Alabama, Louisiana, Mississippi, Georgia, South Carolina) with high concentrations of African-American population.

from Florida, as expected from the Litwak-Longino' second stage of migration, were less likely to move within the southern states, and more likely to move to the northern states. Finally, those who moved to the southern states were less likely to choose metropolitan areas regardless of their states of origins. In other words, those who moved to the northern states were more likely to choose metropolitan areas, a pattern also resembling return migration streams.

The next step was to compare the above two household models with corresponding individual models for each origin state (columns 2 and 3 for New York and columns 5 and 6 for Florida). The results showed that parameter estimates based on the household approach were, in most cases, similar to those based on the individual approach. The destination choice estimates were identical for the three models, with only a few differences existing between the two approaches for variables describing movers' characteristics. Elderly women from New York (column 3) with or without retirement income did not show a difference in their decisions to move to the southern states. However, if female movers were considered jointly with their husbands (the household approach), the retirement income became significant. Elderly New York movers with retirement were more likely to move to the southern states. Likewise, taking elderly migrants as a whole, those with retirement income were also more likely than those without the retirement income to settle in the southern states. Similarly, the three models for Florida movers had consistent signs and significant levels for all parameter estimates except sex. In the household model, elderly women moving alone from Florida were less likely than males or married couples to choose popular southern migration destinations. In the individual model (fifth column), however, females, when compared with males as a whole, did not show a significant regional preference. Evidently, those who moved alone could be distinguished from those who moved with their husbands, and this tends to smooth the result from the individual approach.

It is also worth pointing out that a possession of college degrees did not influence elderly movers' preference for moving to the southern states, regardless of the individual or household models.

4. DISCUSSION

Examining migration at the household level has broadened the scope of elderly migration analysis. The at-risk populations are expanded to include not only those who moved, but also those who had their adult children or relatives move into their own households. This exercise shows that elderly stayers in New York are more likely than those in Florida to let their children or other relatives move in. It is known that the cost of living in New York is higher than that in Florida. Hence, New Yorkers have a greater need to reduce housing costs, and a shared household would benefit both generations. Fortunately, elderly New Yorkers had a greater share of their population from younger generations than older Floridians: 18.3 percent of Florida population are age 65 and over versus 13.1 percent in New York (Bureau of Census 1992).This factor, as pointed out earlier, tends to increase the probability of adult children moving into elderly stayers' households.

The results from decomposing household mobility show that the mean size of elderly households that move together is smaller than the mean size of stayers' households. In the literature, the statement that larger families are less likely than smaller families to move (Mincer 1978; Odland and Ellis 1988) is referred primarily to working age people for potential earning differentials among family members. This is not a concern for elderly families, because retirement or social security incomes are not location specific. Nonetheless, the results of this study imply that a tied mover may still exist in elderly migration. Elderly women have a stronger family tie than elderly men, and they are more likely to be tied when moving with husbands to Sunbelt retirement communities. Their net loss may be related to the family network. When their husbands die, they may move back to regain their family ties. This can be seen more clearly from the results of the multivariate analyses of household migration choices. Elderly women moving alone are more likely to choose northern states, typically the Snowbelt states where many retirees migrate to the Sunbelt states (Siegel 1993).

One advantage of the household approach, is its flexibility for defining household units, living arrangements profiles, and household variables. By constructing a rather detailed living arrangement profile, this study revealed that elderly movers in general do not appear to be more likely to live with daughters than sons. It further revealed that when daughters are claimed to be the heads of households, the likelihood of moving into daughters household was very high. Presumably, elderly movers not claiming to be the heads of households are more likely to be assistance or dependent movers (Wiseman 1980; Clifford et al. 1982). Although it is not necessarily true for all older nonhouseholder movers, the result does collaborate with the work of Clifford et al. (1982) based on the 1980 PUMS, whose findings suggest that when older parents are not the householders, they may follow their adult children from nonmetropolitan areas to metropolitan areas for intergenerational support. Due to the fact that many national surveys on the elderly do not have a complete household profile, see comments by Spitze et al. (1992: 249), and a detailed geography, state or metropolitan specific, PUMS can be a good source for testing hypotheses relating to household composition and mobility at a finer geographic level.

Although household choice models, when compared with individual choice models, do not introduce substantially different estimates for destination choices, they provide a wider array of underlying migration processes. A host of behavior outcomes inside households (e.g., moving alone, moving to live with an adult child, moving as a function of spousal characteristics) can be modeled along with migrants' destination choices. With the intention of achieving greater comparability, the current study includes only five individual/household variables in its multivariate analysis. Nevertheless, it found some interesting results. Under the household approach, elderly women moving alone (from New York) were found to be indifferent about Sunbelt destinations. Had the modeling process stopped at the individual level, this result would have not been revealed. Similarly, retirement income was not a significant factor for the individual model based on female elderly movers from New York. However, this should not be interpreted so that elderly women

without retirement incomes are indifferent about their destination choices. In fact, many of them moving with their spouse pensioners did prefer Sunbelt states as indicated from the corresponding household model. These results demonstrate that more household analyses are needed to expand our scope, and to address a wider range of substantive issues.

In the summary of his comparative study of cross-sectional and longitudinal analyses of residential mobility and migration, Clark (1992: 1301) remarked that longitudinal analysis increases our understanding of the processes and provides a richer understanding of migration and mobility, but does not undermine the work that has been produced from cross-sectional analysis. With a slight modification, this remark is well suited to conclude this paper. Even though some of the results from the household and individual approaches appear to be similar, new insights can still be gained by delving inside movers' households. The current study, which provides a general accounting framework and an empirical basis for household migration analyses, has paved the way for better understanding of elderly migration at the household level.

NOTES

1.There were a total of 767 households where elderly parents, who were not householders, moved into their adult children's households. All of the elderly parents moved as individuals. Among them, 84 elderly out-migrants remarried and live with their adult children (including step children), 110 widowed fathers live with their adult children, and both groups do not show any preferences of living with daughters or sons.

2. Following Odland and Ellis (1988), an assumption was made about the household migration behavior. If a husband and the wife were in the same region (A county or a set of counties) five years ago and they have both moved to a new location, they were assumed to have moved together. Similarly, if an elderly couple live with their parent(s) now and all of them were in the same region five year ago, they were considered to have moved jointly. However, if the couple live in one region while the parent(s) lives in another region, the couple and their parent(s) were treated as two independent decision-making units. Adult children less than 60 years old were considered as independent decision makers.

3. Due to an extremely large leverage point carried by the flow from New York to Florida (more than 40 percent of elderly out-migrants from New York settled in Florida), individual characteristics and destination variables from all other states become less important. Given that flows to other states had reasonable variations, and the emphasis in this paper is on revealing variations in the importance of personal characteristics between the two approaches, the flows between these two states were deleted. A similar practice was taken by Fotheringham (1986) although in a different context.

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