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Determinants of the Living Arrangements of the Elderly

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Abstract

The housing choices of the elderly are classified into five types: assisted communities, unassisted 60 plus communities, shared housing, supported housing and conventional housing. The selection of each of the first four is studied relative to the selection of conventional housing. Assisted communities are favored by older households (especially those with the oldest person over 85) and when there are no children living within ten miles, but, somewhat surprisingly, are unaffected by the presence of difficulties with activities of daily living or instrumental activities of daily living. Shared housing is favored by households who have difficulties with instrumental activities of daily living or with activities of daily living and by households without any non-resident children. Supported housing is favored by households having difficulties with activities of daily living or with instrumental activities of daily living. Education, income, net worth and sex have little to do with the selection of one of the living arrangements. Some racial differentials are observed.

Determinants of the Living Arrangements of the Elderly

By

Robert Schafer

America's elderly population is expected to grow from about thirteen percent of the population today to approximately 20 percent of the population in 2030, an increase of about 25 million persons. The growth is spurred by the aging of the 1942-64 baby boomers and the increased longevity of the elderly due to improved medical care and services. Housing market implications of this phenomenal growth depend on our understanding of the factors that bear on the living arrangements that elderly households select. This paper analyzes these choices for households with a person at least 70 years old.

Assisted communities have received widespread attention as a living arrangement that the elderly are expected to gravitate towards as they age. However, most survey data show quite the opposite. The elderly consistently state that they prefer to "age in place", and the percentage so responding increases with age. Figure 1 summarizes the results from a survey conducted by the American Association of Retired Persons in 1996. Over 90 percent of households at least 65 years old preferred to remain in their own home. (American Association of Retired Persons , 1996) The disparity between the fascination with assisted living arrangements and the stated preference of the elderly to remain in their home cries out for resolution.

This desire to "age in place" is now recognized as an important objective in the design and implementation of support services for the elderly as they age and develop needs for various forms of assistance. Health and the capacity for independent living are two important considerations in understanding the needs of the elderly and the support services required to respond to their desire to remain in their own home or at least in housing situated in their community. Some will require or prefer specialized support environments such as assisted living facilities. Many more will demand mechanisms for support services to be furnished in their own homes, whether they be renters or owners. Technological change is increasing the capacity to deliver more services in non-specialized settings. For example, a wider variety of professionals and paraprofessionals now provide supportive services that until recently were only available from doctors; and new drugs are replacing invasive and costly procedures. In this new

environment, there is need for a better understanding of who demands which type of housing/services combinations and what differentiates them.

Five types of living arrangements are delineated for analysis: assisted communities; unassisted 60 plus communities; shared housing; supported housing, and conventional housing. Approximately three-quarters of the elderly households reside in conventional housing arrangements. Only about three percent of the elderly households reside in assisted communities. Ten percent live in shared housing situations which were established for the specific purpose of the non-elderly member(s) of the household assisting the elderly member(s). Five percent reside in supported housing which involves the provision of support services by non-family members from outside of the home. About seven percent reside in unassisted 60 plus communities.

Data Source

The National Institute on Aging, one of the National Institutes of Health, has commissioned a longitudinal survey of a representative sample of all elderly persons in the United States who were 70 or more years of age in 1993. This survey is known as the Assets and Health Dynamics Among the Oldest-Old (AHEAD) survey. Persons living in long-term care facilities or other institutions at the date of the initial interview are excluded from the survey. Approximately 1.4 million persons aged 65 years or older were in nursing homes in 1995, which is about 4 percent of the elderly population. (National Center for Health Statistics, 1997)

The first wave of AHEAD data collection was completed in 1994, and the responses to the initial interviews are now available for analysis. Information on 8,222 elderly persons and 6,047 housing units are contained in the data. The respondents are to be re-interviewed every two years; for respondents who die or enter nursing homes, the interviews will be through proxy respondents. While the second wave of data collection was completed in 1996, the information is not yet available for analysis.

AHEAD contains a wealth of information on a wide variety of topics related to the elderly. An extensive series of questions gather information on the activities of daily living that the elderly need assistance with and on the physical and mental health of the respondents. The survey has information on income, assets, debts, net worth, education and many other

characteristics. In addition and of particular interest for the present paper, the survey contains information on the housing situation of the elderly.

Living Arrangements

The information in the AHEAD data permit a closer look at the living arrangements of the elderly. The questionnaire identifies whether a household lives in housing that is limited to occupancy by households with at least one person 60 or more years of age, and further identifies what, if any, services the residents receive, such as nursing care, meals or other services. This information is used to describe two types of housing arrangements: assisted communities (communities for the 60 or older combined with support services) and 60 plus housing without any support services. Although there is information on different combinations of assistance, the number of observations are too thin for much useful analysis of distinct service combinations. Approximately three percent of the 70 or older households live in age-restricted assisted communities.   Another 6.6 percent of these elderly households live in age-restricted elderly communities which do not provide assisted living.   Within the assisted communities, approximately one-third of them provide on-site nursing assistance, one quarter provide off-site nursing assistance and the remainder provide other services without any arrangements for nursing assistance. Apparently each occupant in these other communities is left to make their own arrangements for nursing assistance if any is needed. Nine out of ten of these assisted communities provide meals as a part of their services. Approximately 30 percent of these communities provide only meals. The definition of assisted community presented here is based on the information in AHEAD, and is not necessarily the same as other definitions found in the field of assisted living where there are many variations in the use of the phrase "assisted living facilities" and similar phrases such as congregate housing . The present definition is a useful approach to analyzing the data found in AHEAD and is closely related to the more common uses of "assisted living" found in the field.

Two other types of living arrangements are discernible from the AHEAD responses. They will be referred to as the shared living and the supported housing arrangements. A shared living arrangement is defined to exist in either of two situations a) when a non-elderly person who is at least 18 years old moves in with an elderly person for the purpose of assisting the elderly person or b) when an elderly person moves in with a non-elderly person who is at least 18

years old for the purpose of receiving assistance from the non-elderly person. (The non-elderly person does not need to be a relative.) The term is used in this paper to refer to shared housing units and is not intended to imply shared rooms. For example, over 80 percent of the shared housing is in single family houses, and about 93 percent involves four or more rooms. Approximately ten percent of the elderly reside in shared housing arrangements. A supportive housing environment is defined to occur when the elderly person is receiving supportive help in their home from an organization or from an individual who is not a family member. Supportive housing is less popular with about five percent of all elderly households residing in these situations.

These types of living arrangements are defined sequentially. The assisted community households are identified first and are followed by the other types in the following order (provided that no household assigned to a preceding type is allowed to be reassigned): unassisted 60 plus community (i.e., no support services in age restricted housing), shared housing, supported housing and the remainder of households not otherwise assigned (i.e., conventional housing). In light of the strong elderly preference for remaining in their home, it is not surprising that nearly three-quarters of the elderly are living in conventional housing without any special support arrangements (other than the help of family members). Approximately 25 percent of the households living in conventional housing receive some assistance from helpers, predominantly family members. These five types of housing are the basis of our analysis of the determinants of the choice of living arrangements by the elderly.

Each of the unconventional living arrangements are increasingly popular among the elderly as their age increases. Figure 2 illustrates this relationship. The percentage selecting conventional housing remains high except for the oldest group where it drops to 37 percent. As indicated above, approximately three percent of the elderly households live in assisted age-restricted communities which increases with the age of the oldest elderly person, especially after the age of 84. Approximately ten percent of the oldest elderly households live in assisted communities. Residence in age restricted communities that do not provide support services is favored by 6.6 percent of the elderly and is most popular in the middle age ranges; the share residing in these communities is 5.2 percent for the youngest group, rises steadily to a peak of 8.3 percent for the 85-89 year olds and then declines to 3.8 percent for the oldest group. This

pattern is expected for a living arrangement that does not provide support services; in this aspect it resembles conventional housing arrangements.

The utilization of shared and supportive housing arrangements is strongly consistent with the expectation that they would both become more popular with increasing age and associated frailties. The participation in shared housing increases steadily and strongly from 6.8 percent for the youngest group to 32 percent for the oldest group. Supportive housing also grows steadily with age from 2.5 percent for the youngest group to 16.4 percent for the oldest group. A detailed description of the persons and households in the AHEAD can be found in two papers by Schafer (1999a and 1999b).

Model

The choice of living arrangement is affected by the interplay of a number of household characteristics and not just the age of the people. One would expect frailty, the ability of the elderly to perform daily living activities, to be an important factor in their selection of living arrangement. There are several approaches to measuring frailty; the most reliable one appears to be the number of Activities of Daily Living (ADLs) that the elderly persons in the household require assistance with. There are six ADLs: walking, dressing, bathing, eating, getting in and out of bed, and using the toilet. An additional measure that is widely used is the number of Instrumental Activities of Daily Living (IADLs) that the person needs help with. There are five IADLs: preparing meals, grocery shopping, telephone use, taking medicine and money management. Other measures are directed to such aspects of functioning as affective health, cognition and the contribution of specific ailments.

Financial constraints limit the choices of elderly households. The various housing types have widely different cost profiles; assisted communities in the AHEAD sample had an average out of pocket cost of $1,461 per month compared to an average out of pocket cost of $351 per month for conventional housing. As a result, the income and net worth of the household should bear on the housing choice. Other factors, such as education, may also affect the decision as a representation of preferences.

Another area of influence is the availability of support from others. One important measure of this is the marital status of the household; for example, whether the household involves a married spouse present situation or a widowed individual. In addition, the presence of

adult children and their location nearby can make an alternative more attractive than it might otherwise be.

Finally, there are some individual characteristics that are important to control for because of historical differences or the possibility of decisions being affected by discrimination. These include the race and sex (of the oldest person) of the household. An additional control measure is the location of the household; both regional controls and a measure of the urbanization of the area are included.

The model examines the housing selection as a choice of five alternatives, and it is estimated as a multinomial logit process. This estimation approach requires that one of the choices be designated as the reference against which the other choices are compared. In this model, conventional housing has been designated as the base for reference. Several different versions of the model were estimated. The version that forms the basis for most of the discussion in this paper is presented in Appendix A, including information on the statistical significance of the various coefficients. The following sections discuss the findings with respect to each of several explanatory variables after taking all the other variables into account.

AHEAD inquired whether a limited income was required to live in the housing unit. Observations where the elderly household is required to have a limited income to reside in the housing are excluded from the sample being analyzed in this paper.

Age

The relationship between choice of housing types and the age of the oldest elderly person in the household are summarized in Figure 3. This figure and the following figures have been constructed to illustrate the results of the multinomial estimates. It is important to understand the assumptions used in constructing these figures. In particular, the figure consists of four separate figures, one for each of assisted communities, unassisted 60 plus communities, shared housing and supported housing. The bar for the 70-74 year old age group is set at 1.0 in each of the four sub-figures because the effect of age is shown for the other four age categories relative to the outcome for the youngest group. For example, the upper left figure shows that the probability of an 90 or older household selecting assisted communities is 7.25 times more likely than that of a 70-74 year old household. In other words, these are relative probabilities, calculated by dividing each age-specific probability of an outcome by the probability of that outcome for a 70-74 year

household. The probabilities used to construct these figures are derived from the multinomial logit estimates in Appendix A using a base reference household.[1]   The base reference household is located in a metropolitan area in the Mid-Atlantic region, 70-74 years old, married with spouse present, female respondent, with no ADLs and no IADLs. The base reference household also has less than seven years of schooling, is white non-Hispanic, lives in an owner occupied house and has mean values of income ($25,666 per year), net worth ($168,369), number of non-resident adult children (2.3), number of resident adult children (0.2) and number of non-resident adult children within ten miles (0.9).

Figure 3 shows that all the probability of selecting assisted housing communities, shared housing and supported housing increase with age. The strongest age dependent effect, controlling for all the other explanatory variables, is found for assisted communities. The two oldest groups show a sharp increase in the relative probability of selecting an assisted community; 85-89 year olds are 3.23 times as likely as 70-74 year olds to select an assisted community, and the 90 and older households are 7.25 times as likely to make this selection. The likelihood of selecting shared housing increases steadily with age; the 80-84 year old households, 84-89 year old households and the 90 and over households are 1.46, 1.58 and 2.36, respectively, times as likely as the 70-74 year olds to select shared housing. Supported housing exhibits a more mixed response to age, but the overall effect is an increase in the likelihood of selecting this housing type as households age; the oldest group is 2.67 times as likely as the 70-74 year olds to select supported housing. All these relationships are statistically significant.

Need for Assistance

The need for assistance is measured by the number of ADLs and the number of IADLs in the household. The results are presented in Figures 4 and 5. The relative probability of selecting any of the four alternative housing types rises with the number of ADLs. However, the rise is most pronounced for shared housing and supported housing; these are also the only ones for

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[1] The predicted values of each equation are converted to probabilities using the relationship

$$Pj = \exp(Ej)/(1 + \Sigma\exp(Ei))$$

where Pj is the probability of the j-th housing outcome, Ej is the predicted value from the j-th outcome's equation, the sum is over all four estimated outcomes and the "1" represents the base outcome (conventional housing).

which the coefficients are statistically significant. The situation is similar for IADLs. The strong relationship between need and the selection of shared housing and supported housing is expected.

The interesting dilemma is the lack of a significant relationship between need and the selection of an assisted community, which is designed for a population that has at least one of these needs. It appears that the owners and managers of assisted communities do not apply the design features as a binding screen; they seem to be perfectly happy to accept residents who do not need the additional services as long as they are willing to pay the extra costs. At the same time, there appears to be a reasonably sized demand from seniors who are not yet afflicted by any ADL or IADL to secure a residence in one of these communities. The demand for assisted communities seems to be driven by non-disability reasons such as a risk averse response to the expected presence of such needs at some time in the future, the desire to arrange for the future while still able to do so for oneself, reduction in time to care for oneself illustrated by the presence of meals, the absence of a spouse or the inability to drive.

Additional specifications of the model involving other measures of need were also estimated. One of these involved adding a measure of affective health, an index commonly referred to as CESD8. CESD8 is based on responses to eight questions concerning such matters as depression, happiness, restless sleep and feeling sad. A higher value on the CESD8 scale means that the person has more indicators of depression. CESD8 itself showed no significant relationship with any of the housing types. The inclusion of CESD8 had virtually no effect on the relationship between selection of living arrangements and the ADL and IADL measures of need, except that it made the relationship between ADLs and assisted communities statistically significant at the 10 percent confidence level (before it was just shy at the 11 percent level).

Cognition is another approach to measuring the need for assistance. AHEAD contains a measure of cognition known as TICS7. It reflects the ability of respondents to count backwards, remember the names of items or people and know dates. The higher the TICS7 value, the higher the cognition of the respondent. Adding this variable instead of CESD8 to the model did not alter the results, except that the ADL coefficients in the assisted community and in the unassisted 60 plus community equations became significant at the ten percent level. (Without TICS7, these two coefficients had an approximately 11 percent confidence level.) TICS7, itself, was not statistically significant (at the ten percent level) in any of the four relationships. Adding

both the CESD8 and TICS7 variables gave estimates similar to the model without them. The ADL coefficient in the assisted community equation once again became significant at the 10 percent level; however, that did not occur for the ADL coefficient in the unassisted 60 plus equation. With one exception, the CESD8 and TICS7 coefficients showed no statistically significant relationship to the selection of living arrangements. The exception occurs in the case of supported housing where TICS7 is positively related to the selection of supported housing at the 10 percent level. The average value of the TICS7 measure was 3.3.   A household with a zero TICS7 score would be approximately 16 percent less likely to select supported housing than a household with the average TICS7 score. This is consistent with the probable management requirements of supported housing which involves bringing help into the home. The manner of providing assistance probably demands more cognitive skill than some of the other alternatives.

AHEAD also provided information on the difficulty of six specific movements (i.e., driving, walking several blocks, climbing stairs, moving heavy objects, lifting ten pounds and picking up a dime) and on the presence of several queried ailments (i.e., high blood pressure, diabetes, cancer, lung disease, heart condition, psychiatric problems, arthritis, falls, incontinence, poor vision, poor hearing, bothered by pain, and unspecified other health problems). These were also examined for any relationship with the selection of living arrangement by adding them to a version of the model that included CESD8 and TICS7.

One of the specific movements had a consistent and statistically significant relationship with housing choice. Households that had at least one elderly person who could drive were half as likely to select assisted communities, shared housing or supported housing than were those without any elderly drivers, after controlling for the other factors.   The only other specific movement to have any relationship is difficulty climbing stairs, which increased the likelihood of selecting assisted communities and of supported housing. Elderly households with difficulty climbing stairs are more than twice as likely to select assisted communities than are those that do not report difficulty in climbing stairs. Similarly, elderly households with difficulty climbing stairs are about 1.6 times as likely to select supported housing than are those that do not report difficulty in climbing stairs.

The presence of specific ailments played no role in the selection of assisted communities or unassisted 60 plus communities. The presence of diabetes, cancer at any time and falls during the last twelve months made it more likely for the household to select shared housing, while the

presence of incontinence made the selection of shared housing less likely. The presence of diabetes or lung disease made the selection of supported housing more likely, while the presence of high blood pressure, hearing problems, pain or other (not listed in the AHEAD list) health problems decreased the likelihood of selecting supported housing.

Role of Children

The effect of children on the selection of living arrangement was examined through three measures: number of children living within ten miles; number of non-resident children 18 years old or older, and number of resident children 18 years old or older. The relative probability of selecting any of the four alternatives compared to conventional housing declines as the number of children residing within ten miles increases, which is probably due to assistance provided by the children living nearby. The results are shown in Figure 6. The effect is very strong for assisted communities with the relative probability of selecting one of these with two children nearby being only a third of that for no children nearby. Unassisted 60 plus communities exhibit a fairly strong effect with two children nearby reducing the probability to about 45 percent. The effect is more moderate for shared (around 75 percent for two children nearby) and supported housing (around 65 percent for two children nearby). The relationship is statistically significant in all four equations.

It is also likely that the number of non-resident children, whether or not they reside nearby, would have a bearing on the selection of some of the alternative living arrangements. The results of investigating this relationship are summarized in Figure 7. The relative probability of selecting assisted communities or unassisted 60 plus communities is essentially unaffected by the number of non-resident children. Their number has a slight upward impact on the likelihood of selecting an unassisted 60 plus community. However, the relative probability of selecting either shared housing or supported housing declines significantly as the number of non-resident children increase. Having three non-resident children lowers the relative probability to approximately 70 percent of the value without any non-resident children. These results are consistent with the expectation that the shared and supported housing alternatives are ones that are likely to be more attractive to elderly who have fewer family options.

Elderly households that are living with adult children are likely to behave differently than those without such co-residents. Figure 8 shows the effect of resident adult children on the

relative probabilities of selecting each of the four living arrangements. The presence of one resident adult child reduces the chance of selecting assisted communities, unassisted 60 plus communities and supported housing to one-twentieth, one-half and two-thirds the likelihood of doing so when there is no resident adult child. These are all housing types that are likely to be turned to when there is no family member to support a living environment for the elderly household. The results are opposite for shared housing where the presence of one resident adult child increases the chance of selecting this type of living arrangement to 4.5 times that of doing so when there are no resident adult children. Since the definition of shared housing does not exclude children of the elderly household from being the non-elderly person involved in the movement to live together, it is not surprising that many of these housing situations involve a child living with their elderly parents. Approximately 65 percent of those residing in shared housing have an adult child residing with them. All of the relationships with resident adult children are statistically significant.

Marital Status

In a manner similar to the impact and location of children, marital status is also expected to affect the selection of living arrangement. In general, those with spouses present are less likely to seek alternatives that provide supportive living environments with the help of others. Several different categories of marital status were included in the multinomial logit models. The results are summarized in terms of relative probability in Figures 9 through 12. All relative probabilities are measured relative to the likelihood of selecting a housing type for a married elderly household with the spouse present. Widowed persons and married persons who reported their spouse to be absent are more likely to select assisted communities (6.7 and 3.0 times, respectively, as likely as the married spouse present elderly households), a statistically significant result. Interestingly, other single status types such as divorced, separated or never married do not have a significant relationship with the selection of assisted communities (Figure 9). Marital status has no discernable effect on the selection of unassisted living in a 60 plus community (Figure 10).

The selection of shared housing increases for all marital categories relative to the likelihood of a married spouse present elderly household making this selection. The results shown in Figure 11 are large and significant. Never married, divorced/separated, and widowed

elderly are 21, 17 and 10 times, respectively, more likely to select shared housing; than married spouse present elderly households. Married spouse absent and living with someone else households are also more likely (about seven times so) to select shared housing. All these effects are statistically significant.

Supported housing is favored by married spouse absent, living with someone, divorced/separated and widowed households relative to married spouse present households. These households are three to ten times more likely to select supported housing than are the married spouse present ones (Figure 12). These relationships are also statistically significant. Although never married persons are somewhat more likely to select supported housing, the relationship is not meaningful or significant.

Socio-economic Factors

Household income, net worth and education of the oldest elderly household member are included to control for financial constraints on choice and preferences. Controls for race, sex, location and tenure are also included.

Although two-way frequency distributions between living arrangements and education suggest a possible relationship between the selection of either shared housing or conventional housing and education (Schafer, 1999b), education had no meaningful effect on the selection of any of the living arrangements after controlling for the other influences on choice of living arrangement with one exception. Elderly with more than a college education are less likely to select unassisted 60 plus communities.

Income only had a relationship with shared housing. Shared housing was more likely to be selected as income increased until it reached an annual figure of $77,800; after that point further increases in income began to reduce the likelihood of selecting shared housing. Doubling of the average annual income of approximately $25,000 slightly more than doubles the relative probability of selecting shared housing. However, shared housing is unusual because it always involves a non-elderly member of the household. As a result, households living in shared housing receive a substantial part of their income from these non-elderly household members; approximately one-half, on average, of household income comes from these non-elderly household members. It is this feature that accounts for the different housing choice and income relationship exhibited in shared housing.

Net worth had relationships with the selection of unassisted 60 plus communities and shared housing. The likelihood of selecting unassisted 60 plus communities or shared housing decreases as net worth rises. In both cases the relationship reverses, but only at high levels of net worth (over 1.5 million dollars). Net worth that is double the mean value decreases the relative probability of selecting unassisted 60 plus housing to about 70 percent of the value at the mean. A similar doubling decreases the relative probability of selecting shared housing to about 88 percent of the value at the mean. Although both of these effects are statistically significant, the impact on shared housing is slightly smaller than the statistically insignificant effect of net worth on selecting assisted communities.

Even though non-Hispanic blacks, Hispanics and other minorities are one-half to two-thirds as likely in terms of relative probability as non-Hispanic whites to select assisted communities, these racial differences are not statistically significant. There is also quite a variation in the relative probabilities for different races to select supported housing with non-Hispanic blacks and Hispanics about 1.3 times as likely as non-Hispanic whites to select supported housing in relative probability terms, but the differences are again not statistically significant. (Other non-Hispanics have essentially the same chances as non-Hispanic whites to select supported housing.)

Non-Hispanic blacks and Hispanics are much less likely to select unassisted 60 plus communities than are non-Hispanic whites with relative probabilities of 26 and 34 percent of the chances of non-Hispanic whites, respectively. These are statistically significant relationships. Other non-Hispanics are also about half as likely as non-Hispanic whites to select unassisted 60 plus communities, but the effect is not statistically significant. Shared housing has an opposite relationship. Non-Hispanic blacks and other non-Hispanic minorities are more likely than non-Hispanic whites to select shared housing with relative probabilities of 1.6 and 2.0 times the chances of non-Hispanic whites. Both of these effects are statistically significant. Hispanics have essentially the same chances as non-Hispanic whites of selecting shared housing.

The selection of living arrangement is not affected by the sex of the oldest elderly household member after taking the other factors into account.

Selections vary with location. Households within metropolitan areas are more likely to select assisted communities, unassisted 60 plus communities and shared housing than non-metropolitan area households with relative probabilities of 6.8, 3.4 and 1.4 times the chances of

non-metropolitan area residents, respectively. Supported housing is unaffected by the metropolitan /non-metropolitan location of the household.

Selection of assisted communities exhibits substantial variation by census division.[2] The results are illustrated in Figure 13 in terms of relative probability. The East South Central region is similar to the Mid Atlantic region. New England, East North Central, West South Central and Pacific regions are similar with relative probabilities of selecting assisted communities equal to five to eight times that of the Mid-Atlantic region. The South Atlantic region has a relative probability of selecting assisted communities about twelve times that of the Mid-Atlantic region. The most likely regions for selecting assisted communities are the Mountain and West North Central with relative probabilities of 22 and 27 times that of the Mid-Atlantic region. All the differences from the Mid-Atlantic/East South Central are statistically significant.

The other housing types show regional variations, but only four of the 24 coefficients are statistically significant. These are that unassisted 60 plus communities are favored in the South Atlantic, Mountain and Pacific regions with relative probabilities of approximately 3.8, 4.2 and 1.9, respectively, times the likelihood of households in the Mid-Atlantic region selecting this type of community. See Figure 14. The other significant regional effect is that households in the West South Central favor shared housing relative to those in the Mid-Atlantic region by a relative probability of 1.5. There are other variations, but they generally fall within a relatively narrow band around the Mid-Atlantic region and lack statistical significance.

The last control variable is tenure. AHEAD had three responses to the tenure inquiry: owning, renting and "other than rent or own home". Tenure has no relationship with the selection of supported housing. In the case of shared housing the "other" category of tenure has a significant relationship with the relative probability of households with "other" tenure selecting shared housing being 4.2 times that of similarly situated owners or renters. This may in part

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[2] Census Divisions contain the following states:
New England - Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont
Middle Atlantic - New York, New Jersey and Pennsylvania
East North Central - Indiana, Illinois, Michigan, Ohio and Wisconsin
West North Central - Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota and South Dakota
South Atlantic - Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South
     Carolina, Virginia and West Virginia
East South Central - Alabama, Kentucky, Mississippi and Tennessee
West South Central - Arkansas, Louisiana, Oklahoma and Texas
Mountain - Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, Utah and Wyoming
Pacific - California, Oregon and Washington

reflect the somewhat unconventional arrangements that sometimes accompany sharing situations. Approximately 42 percent of the households living in shared housing reported that they neither owned nor rented the house compared to three to eleven percent for the other types of living arrangements. Assisted communities are strongly favored by renters and households with "other" tenure situations. Renters are 47 times as likely to be found in assisted communities as are similarly situated owners in relative probability terms. Similarly, "other" tenure households are 17 times as likely as owners in relative probability to be found in assisted communities. Very few (approximately eight percent) of the households selecting assisted communities are owner-occupants. Renters are somewhat more likely in relative probability terms than owners to select unassisted 60 plus communities with a relative probability 3.9 times that of the owners. These effects are statistically significant.

Summary

The housing choices of the elderly are classified into five types: assisted communities, unassisted 60 plus communities, shared housing, supported housing and conventional housing. The selection of each of the first four is studied relative to the selection of conventional housing.

In summary, education, income, net worth and sex have little to do with the selection of one of the living arrangements. However, the choices of each type does vary with other characteristics of the households.

Assisted communities are favored by older households (especially those with the oldest person over 85) and when there are no children living within ten miles. Somewhat surprisingly, the presence of difficulties with activities of daily living or instrumental activities of daily living have little relationship to the selection of assisted communities. However, households that lack an elderly driver or have difficulty climbing stairs are more likely to select assisted communities. Assisted communities are also more commonly found in metropolitan areas; in the West North Central, South Atlantic and Mountain census divisions, and to be rented or in the "other" tenure category (as opposed to owned).

Unassisted 60 plus communities are generally favored by healthy persons. They are found more commonly in metropolitan areas, and in the South Atlantic, Mountain and Pacific census divisions. They are also favored by white non-Hispanic households.

Shared housing is favored by households who have difficulties with instrumental activities of daily living or with activities of daily living and by households without any non-resident children. Willingness of adult children to establish a shared housing arrangement with a parent substantially increases the likelihood of selecting this alternative. However, far from all these housing situations involve children; fully 35 percent do not involve any children. Divorced/separated, widowed and never married households also favor shared housing. Many of these living arrangements involve unconventional tenure arrangements that are neither renting nor owning. Households that lack elderly drivers also gravitate towards this alternative. Non-Hispanic blacks and non-Hispanic other minorities also are more prevalent in this alternative.

Supported housing is favored by households having difficulties with activities of daily living or with instrumental activities of daily living. Households with greater cognition tend to favor supported housing. Divorced/separated and widowed households also favor supported housing while the likelihood of selecting this alternative decreases as the number of non-resident children increases. Households without an elderly driver also turn to this alternative as a solution to their lack of mobility.

Conventional housing is preferred by households that are younger, married with spouse present and have children living nearby or resident children. It also tends to be owner-occupied and is more prevalent in non-metropolitan areas.

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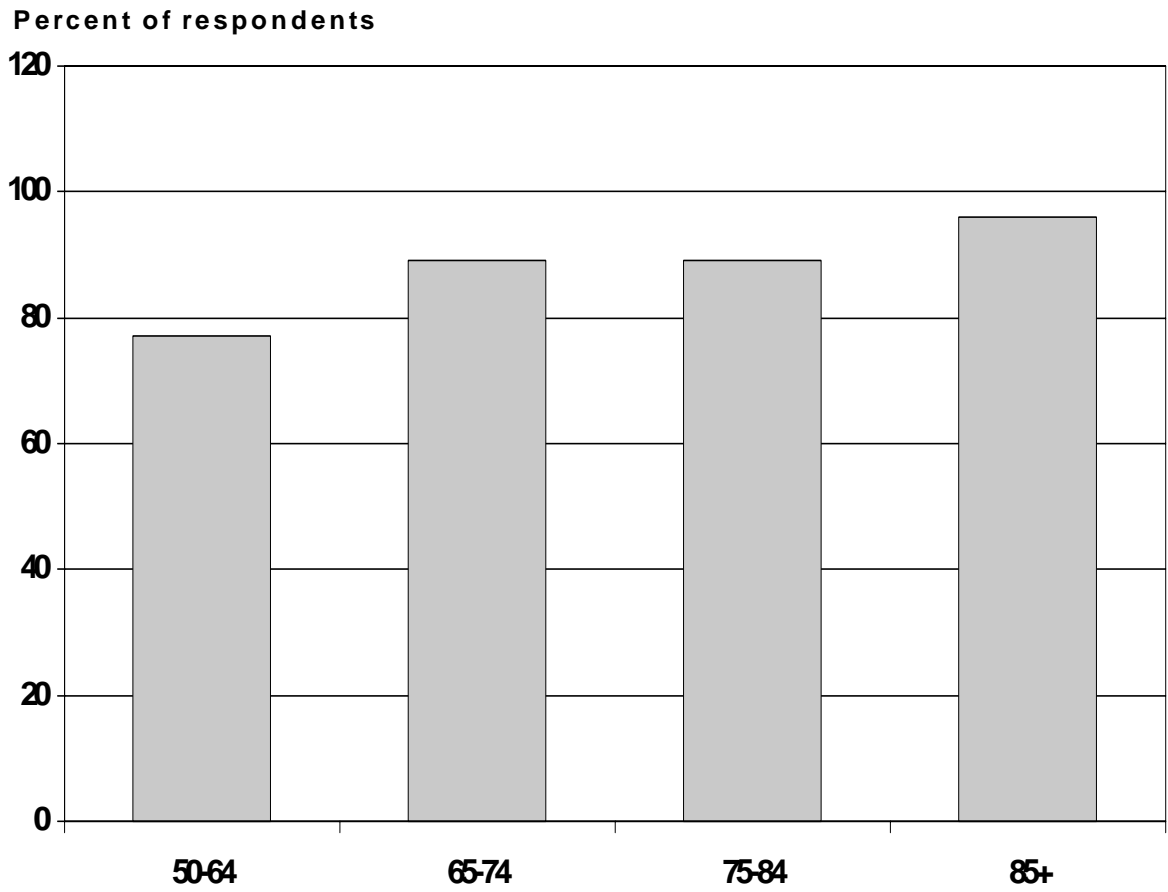
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Figure 1

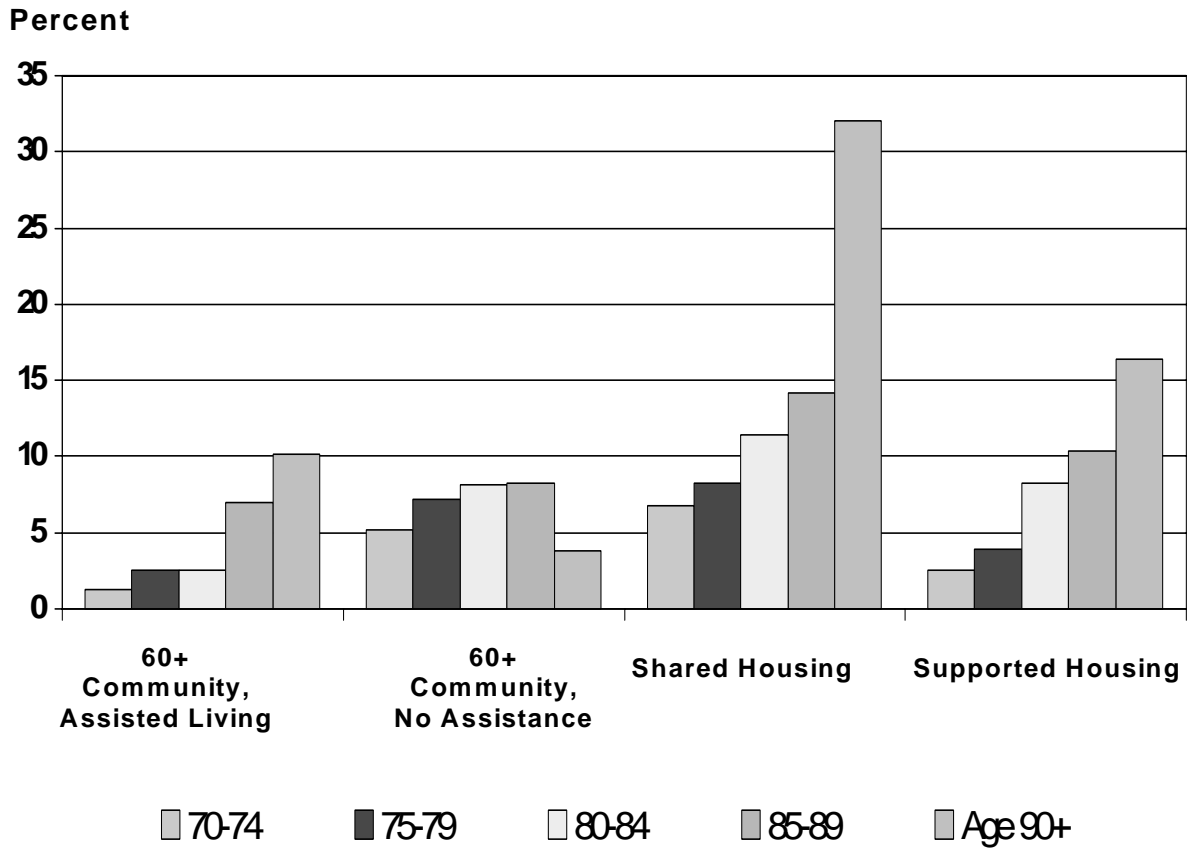## Share of Seniors Preferring to Stay in Own Home by Age
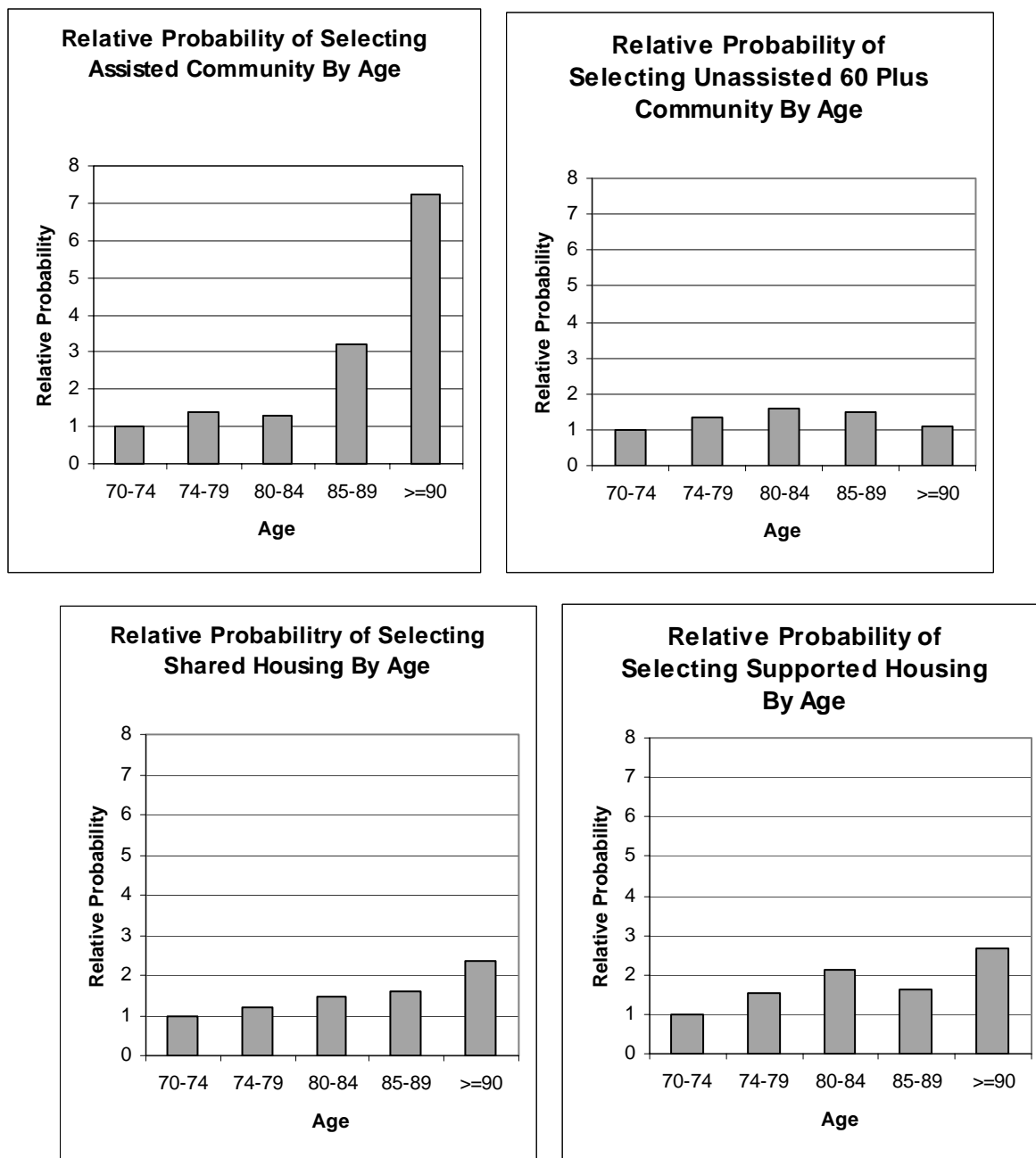
Percent of respondents

Figure 2

Seniors More Likely to Live in Unconventional Housing as they Age

Share of Households in Seniors Housing Types by Age of Oldest Senior

Percent

| | 70-74 | 75-79 | 80-84 | 85-89 | Age 90+ |

Source: Joint Center tabulations of the 1993 AHEAD survey

Figure 3: Impact of Age

Relative Probability of Selecting Assisted Community By Age

Relative Probability of Selecting Unassisted 60 Plus Community By Age

Relative Probabilitry of Selecting Shared Housing By Age

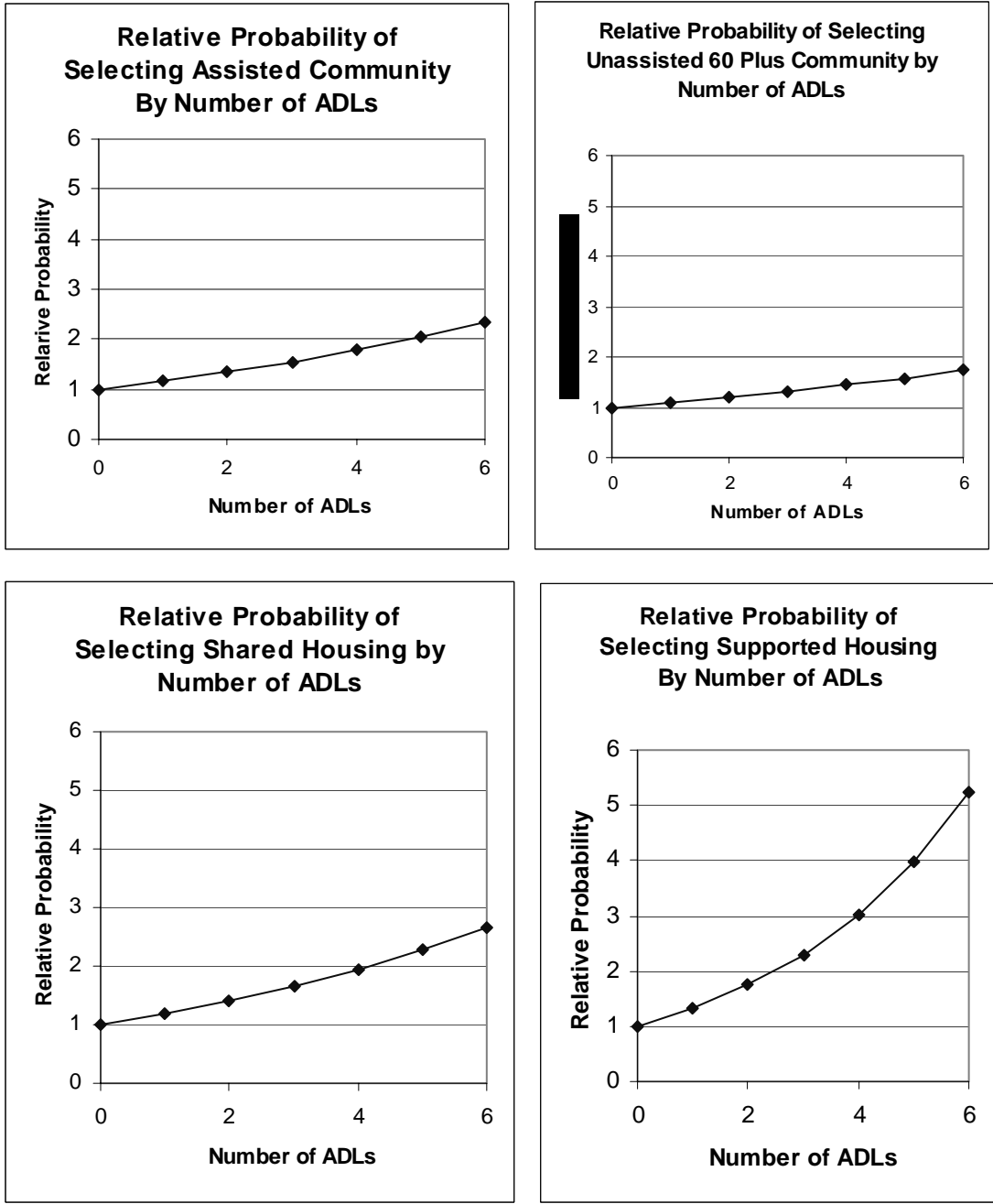**Relative Probability of Selecting Supported Housing By Age**

Note: Relative Probability of selecting a specified housing type (RPj) equals the probability of
selecting that housing type (Pj) when the age equals X
divided by the probability of selecting that housing type when the age is 70-74.
Or,

$$RPj = Pj(Age = X) / Pj(Age = 70\text{-}74)$$

where j denotes the housing type.

Figure 4: Impact of Number of ADLs

Relative Probability of Selecting Assisted Community By Number of ADLs

Relative Probability of Selecting Unassisted 60 Plus Community by Number of ADLs

Relative Probability of Selecting Shared Housing by Number of ADLs

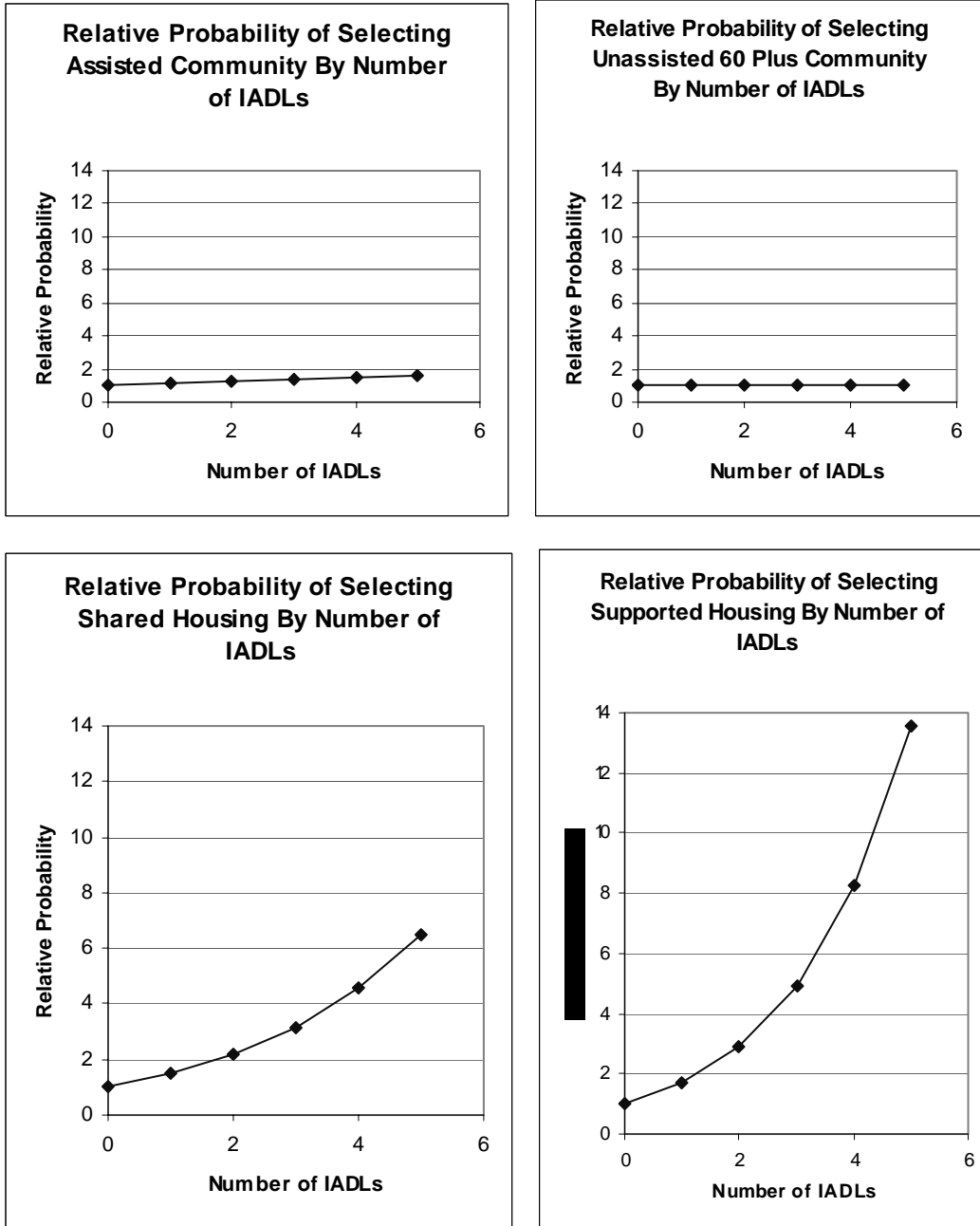Relative Probability of Selecting Supported Housing By Number of ADLs

Note: Relative Probability of selecting a specified housing type (RPj) equals the probability of
   selecting that housing type (Pj) when the number of ADLs equals X
   divided by the probability of selecting that housing type when the number of ADLs
    is zero. Or,

   $RPj = Pj(\# ADLs = X) / Pj(\# ADLs = 0)$
   where j denotes the housing type.

Figure 5: Impact of Number of IADLs

Relative Probability of Selecting Assisted Community By Number of IADLs

Relative Probability of Selecting Unassisted 60 Plus Community By Number of IADLs

Relative Probability of Selecting Shared Housing By Number of IADLs

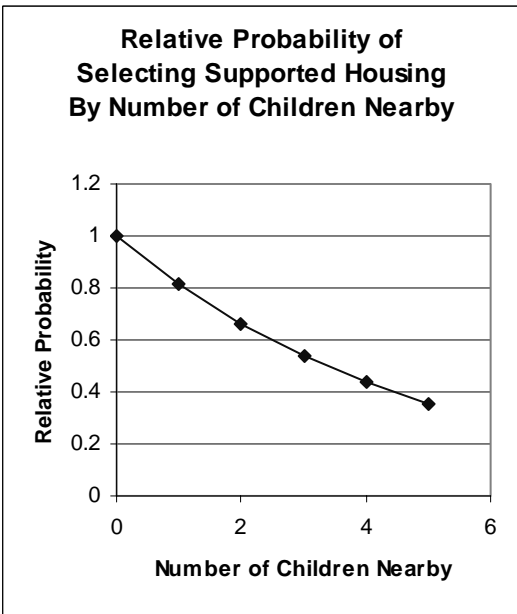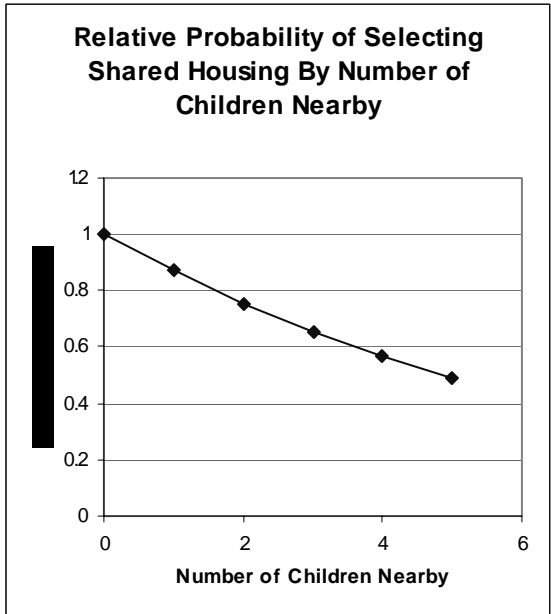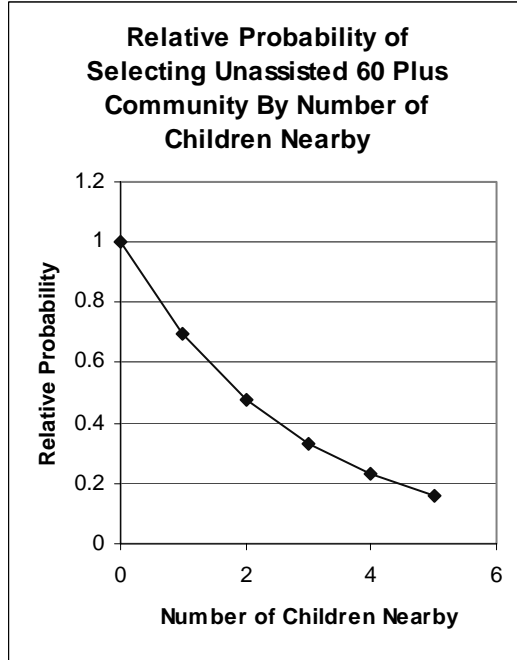Relative Probability of Selecting Supported Housing By Number of IADLs

Note: Relative Probability of selecting a specified housing type (RPj) equals the probability of selecting that housing type (Pj) when the number of IADLs equals X divided by the probability of selecting that housing type when the number of IADLs is zero. Or,

$$RPj = Pj(\# \text{ IADLs} = X) / Pj(\# \text{ IADLs} = 0)$$

where j denotes the housing type.

Figure 6: Impact of Number of Children Living Nearby

Relative Probability of Selecting Assisted Community By Number of Children Nearby

Relative Probability of Selecting Unassisted 60 Plus Community By Number of Children Nearby

Relative Probability of Selecting Shared Housing By Number of Children Nearby

Relative Probability of Selecting Supported Housing By Number of Children Nearby
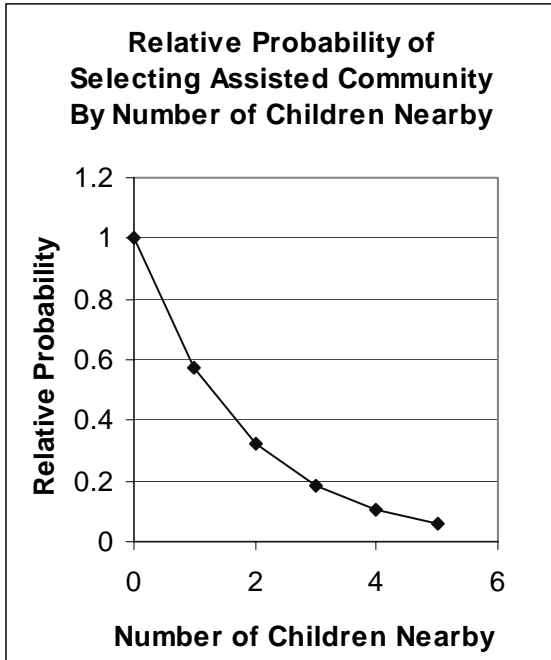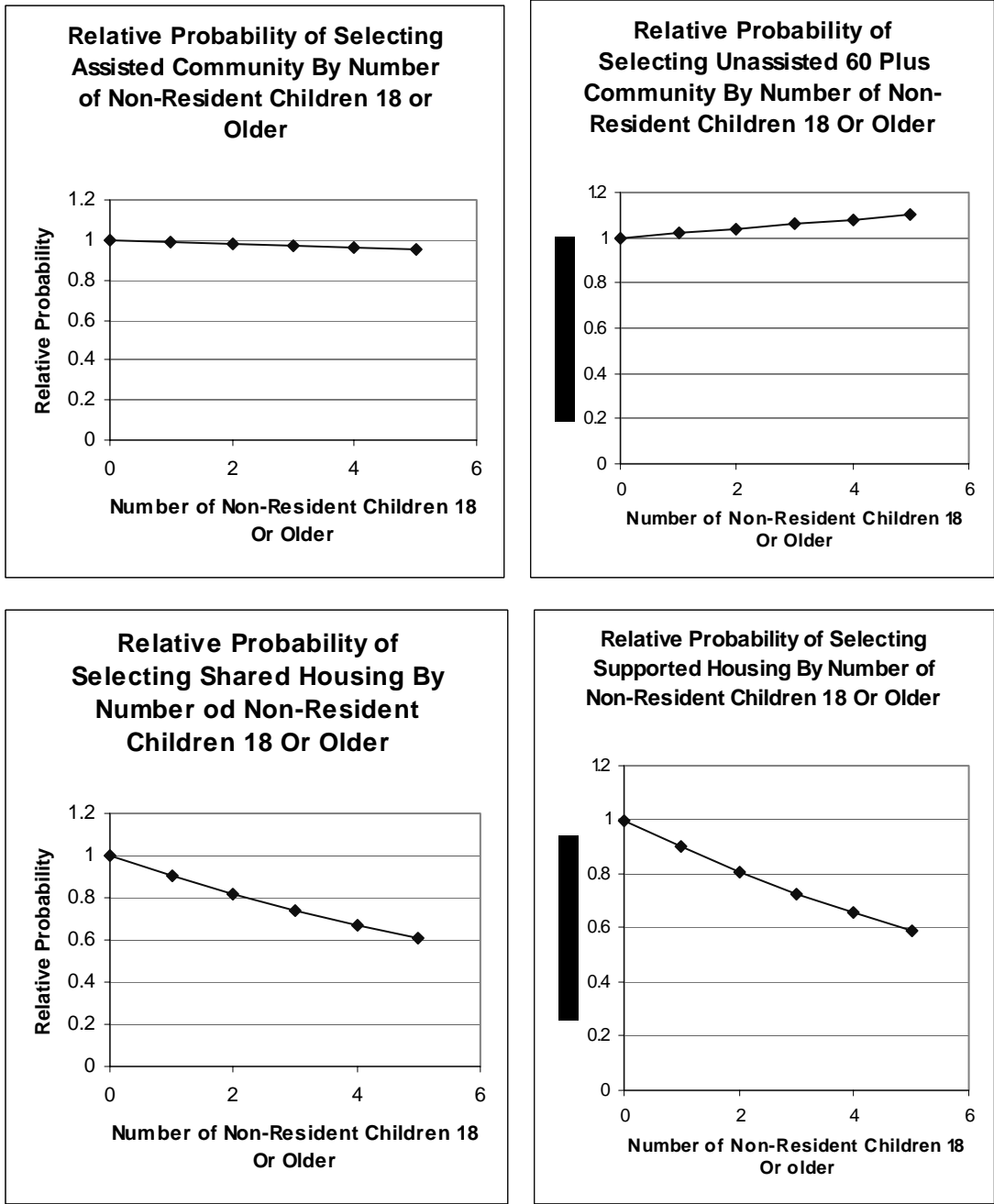

Note: Relative Probability of selecting a specified housing type (RPj) equals the probability of
selecting that housing type (Pj) when the number of children nearby equals X
divided by the probability of selecting that housing type when the number of children
nearby is zero. Or,

$$RPj = Pj(\# \text{ Children Nearby} = X) / Pj(\# \text{ Children Nearby} = 0)$$

where j denotes the housing type.

Figure 7: Impact of Number of Non-Residential Children 18 or Older

Relative Probability of Selecting Assisted Community By Number of Non-Resident Children 18 or Older

Relative Probability of Selecting Unassisted 60 Plus Community By Number of Non-Resident Children 18 Or Older

Relative Probability of Selecting Shared Housing By Number od Non-Resident Children 18 Or Older

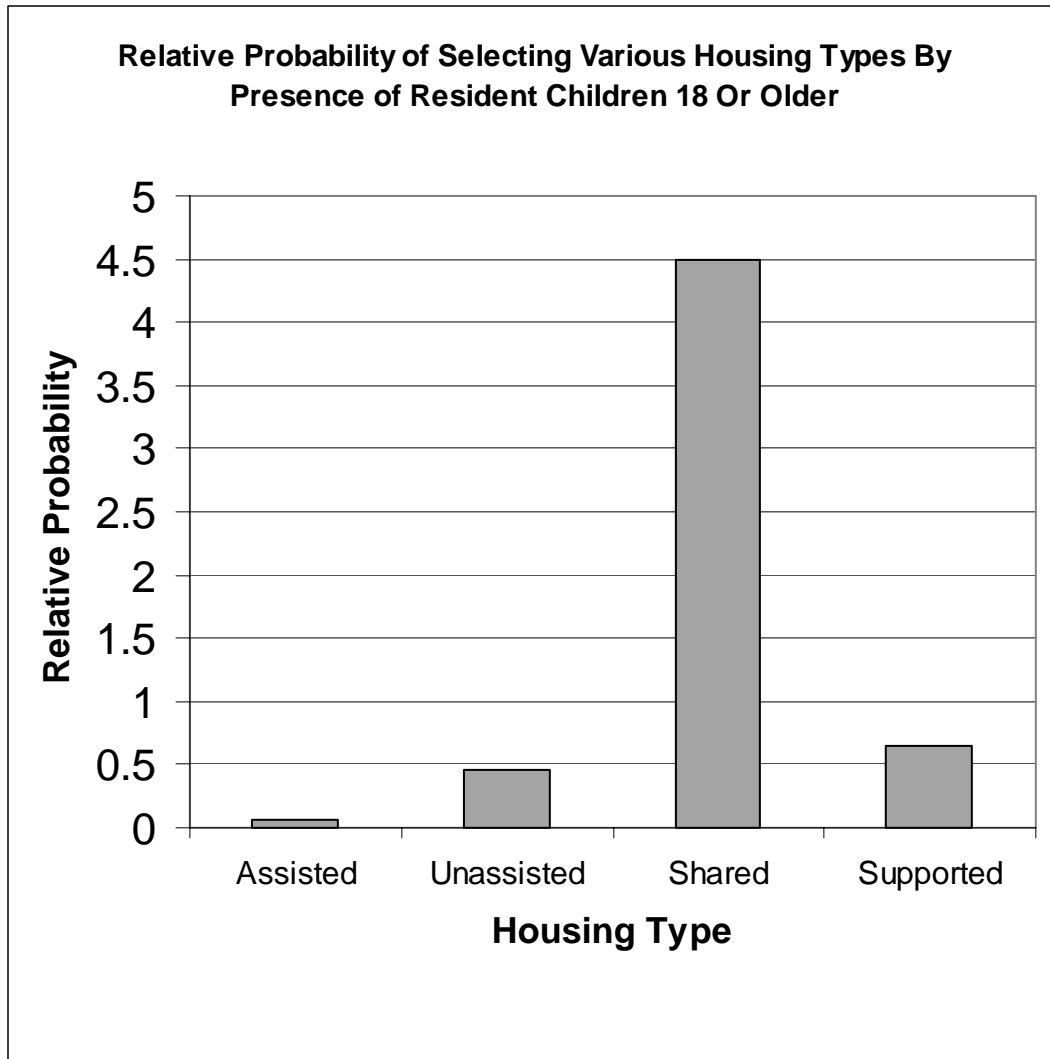### Relative Probability of Selecting Supported Housing By Number of Non-Resident Children 18 Or Older

Note: Relative Probability of selecting a specified housing type (RPj) equals the probability of selecting that housing type (Pj) when the number of non-resident children equals X divided by the probability of selecting that housing type when the number of non-resident children is zero. Or,

   RPj = Pj(# non-resident Children = X) / Pj(# non-resident children = 0)

where j denotes the housing type.

Figure 8

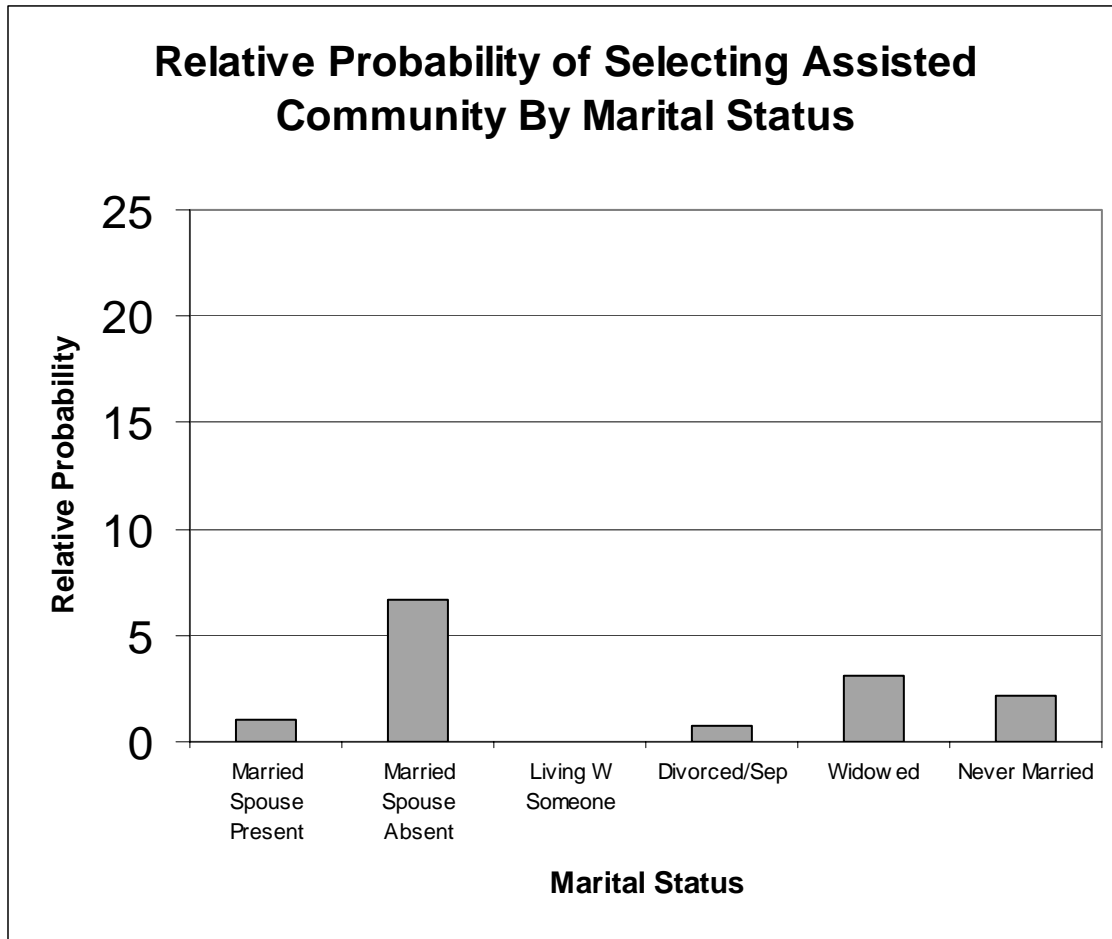**Relative Probability of Selecting Various Housing Types By Presence of Resident Children 18 Or Older**

Note: Relative Probability of selecting a specified housing type (RPj) equals the probability of
selecting that housing type (Pj) when the number of resident children equals one
divided by the probability of selecting that housing type when the number of resident
children is zero. Or,

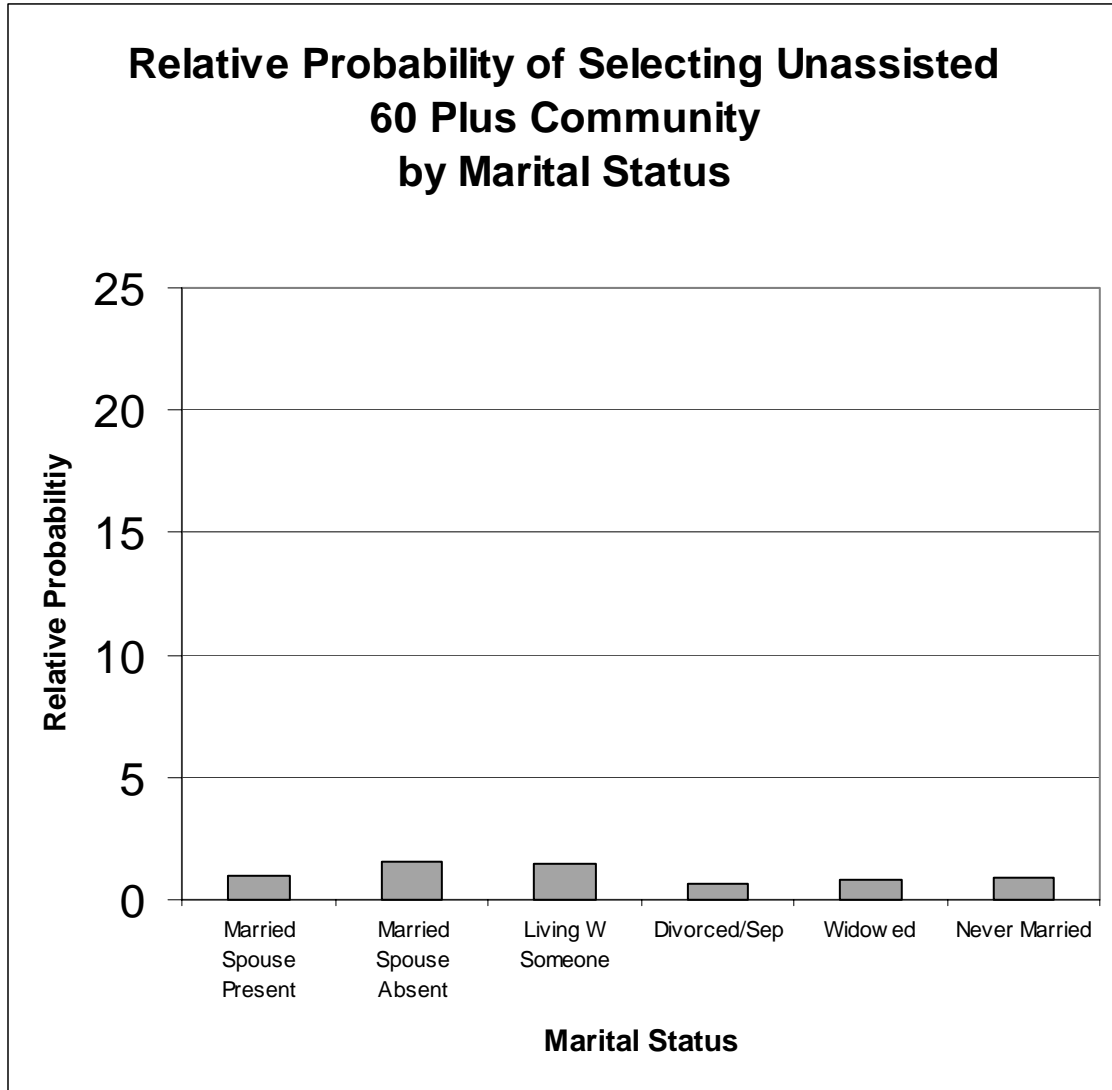$RPj = Pj(\text{\# resident Children} = 1) / Pj(\text{ \# resident children} = 0)$
where j denotes the housing type.

Figure 9

Relative Probability of Selecting Assisted Community By Marital Status

Note: Relative Probability of selecting a specified housing type (RPj) equals the probability of selecting that housing type (Pj) when the marital status equals X divided by the probability of selecting that housing type when the marital status is married spouse present. Or,

$RPj = Pj(Marital\ Status = X) / Pj(Marital\ Status = married\ spouse\ present)$

where j denotes the housing type.

Figure 10

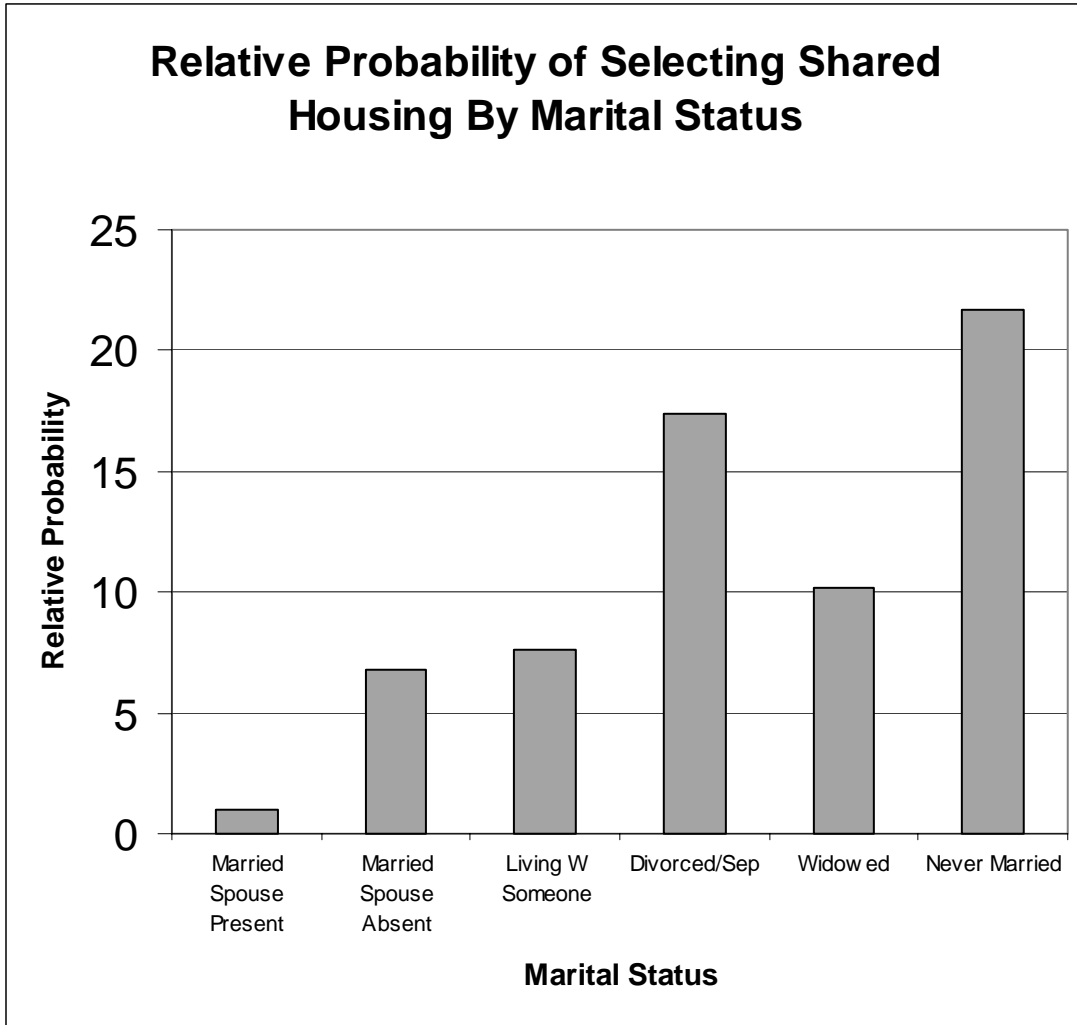# Relative Probability of Selecting Unassisted 60 Plus Community by Marital Status

Note: Relative Probability of selecting a specified housing type (RPj) equals the probability of
selecting that housing type (Pj) when the marital status equals X
divided by the probability of selecting that housing type when the marital
status is married spouse present. Or,
   RPj = Pj(Marital Status = X) / Pj(Marital Status =married spouse present)
where j denotes the housing type.

Figure 11

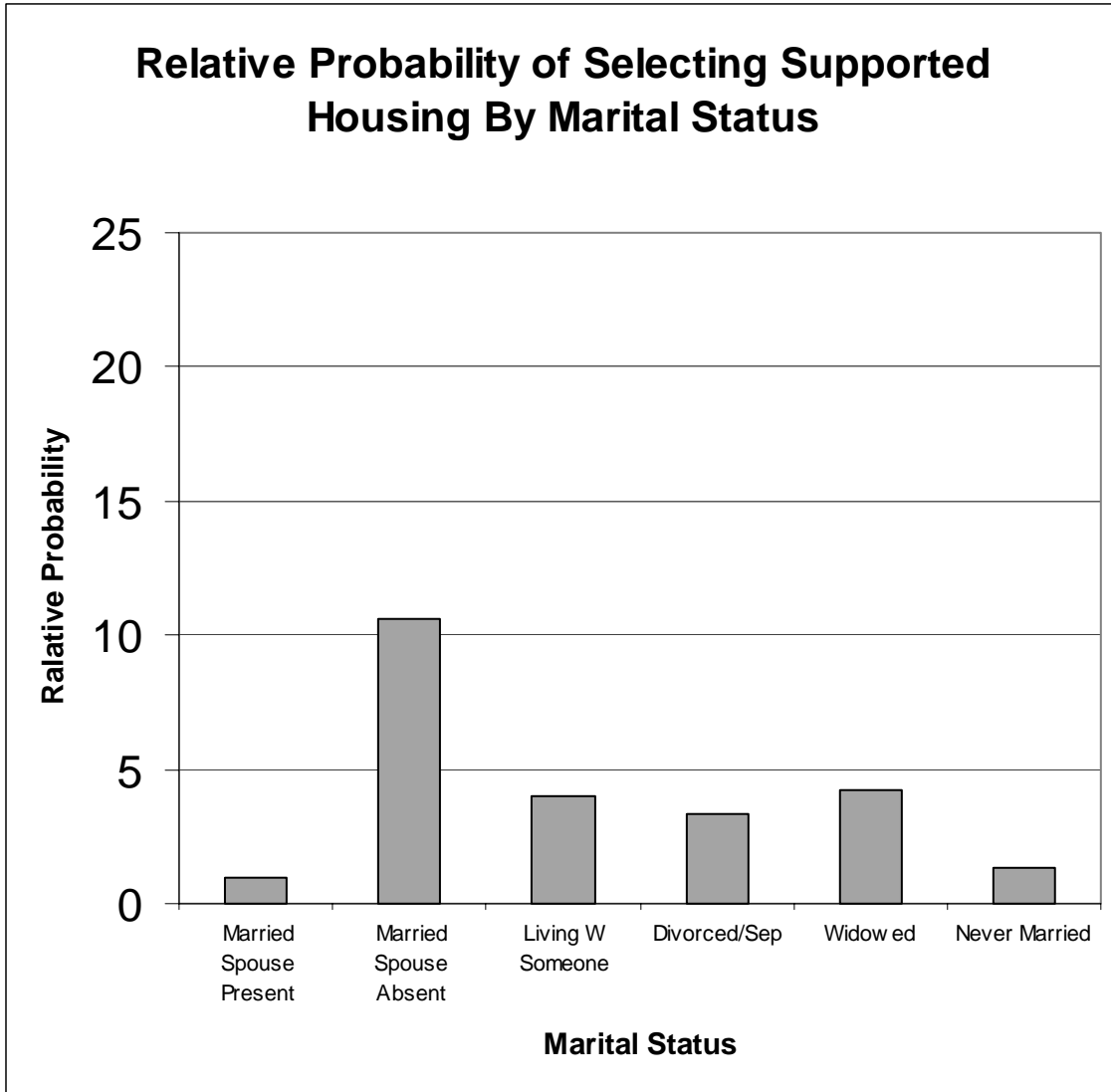**Relative Probability of Selecting Shared Housing By Marital Status**

Note: Relative Probability of selecting a specified housing type (RPj) equals the probability of selecting that housing type (Pj) when the marital status equals X divided by the probability of selecting that housing type when the marital status is married spouse present. Or,

RPj = Pj(Marital Status = X) / Pj(Marital Status =married spouse present) where j denotes the housing type.

Figure 12

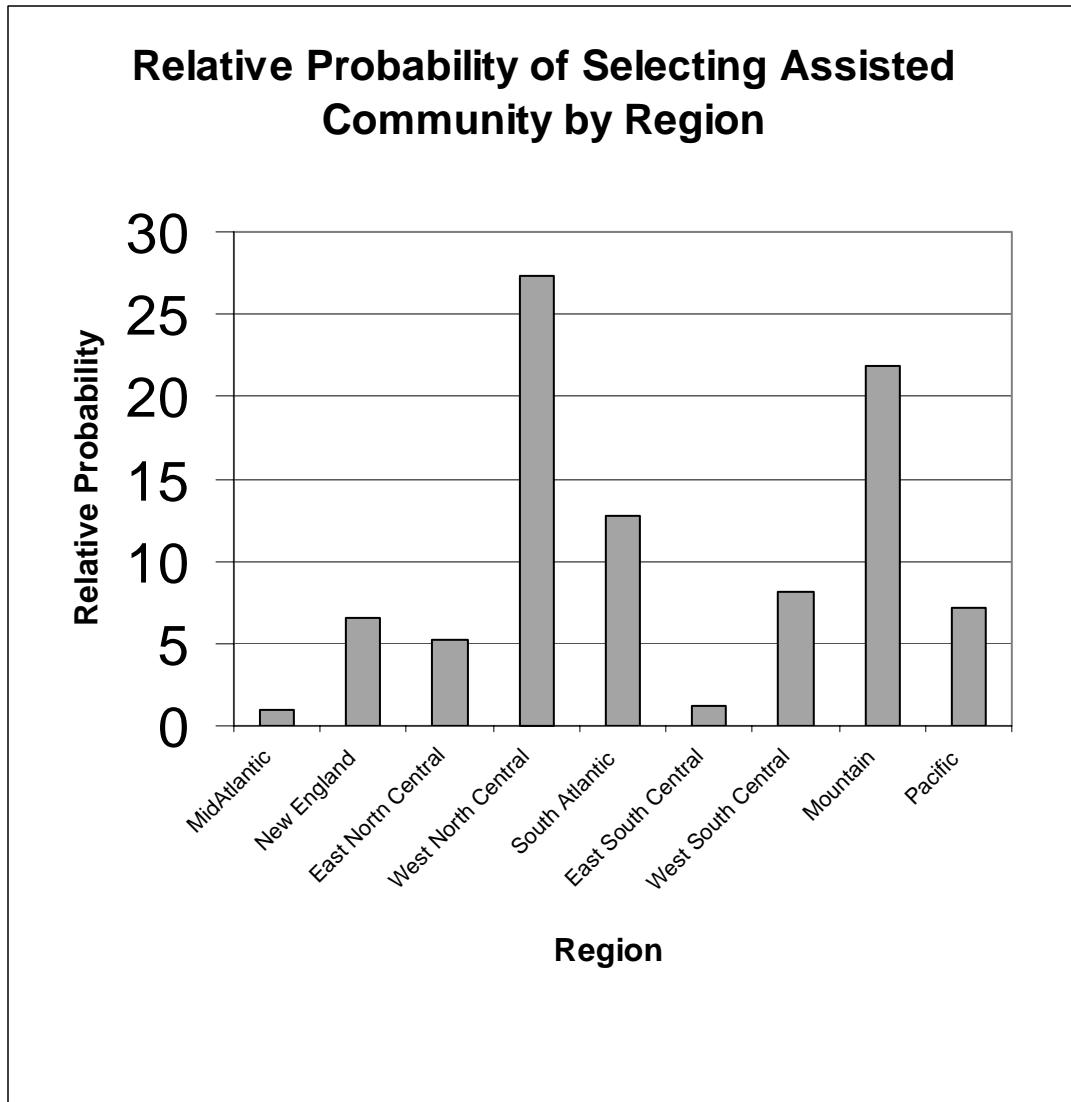# Relative Probability of Selecting Supported Housing By Marital Status

Note: Relative Probability of selecting a specified housing type (RPj) equals the probability of selecting that housing type (Pj) when the marital status equals X divided by the probability of selecting that housing type when the marital status is married spouse present. Or,

RPj = Pj(Marital Status = X) / Pj(Marital Status =married spouse present)

where j denotes the housing type.

Figure 13

Relative Probability of Selecting Assisted Community by Region

Note: Relative Probability of selecting a specified housing type (RPj) equals the probability of
   selecting that housing type (Pj) when the region equals X
   divided by the probability of selecting that housing type when the region
   is Mid-Atlantic. Or,
       RPj = Pj(Region = X) / Pj(Region = Mid-Atlantic)
   where j denotes the housing type.

Figure 14

Relative Probability of Selecting
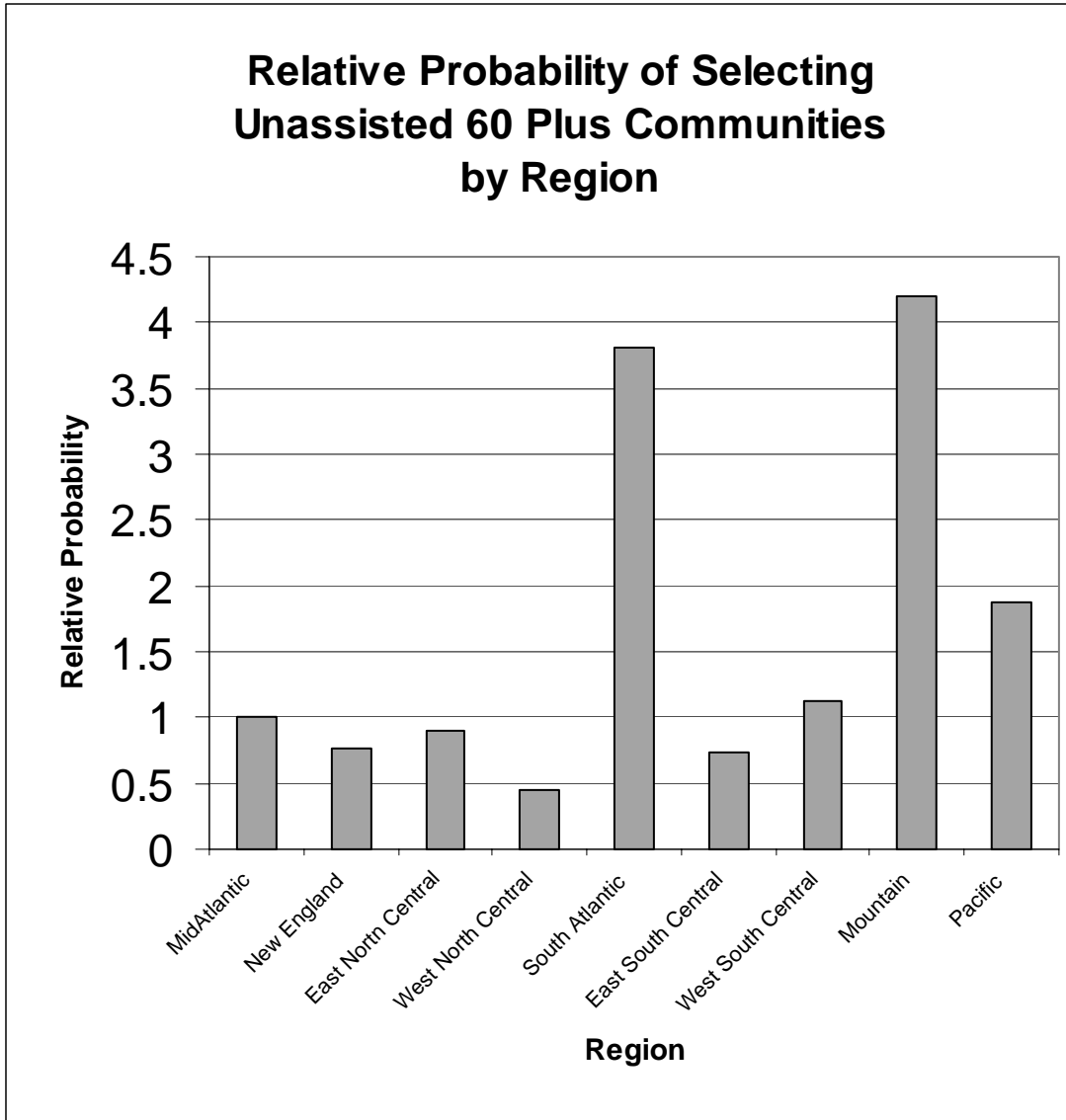Unassisted 60 Plus Communities
by Region

Note: Relative Probability of selecting a specified housing type (RPj) equals the probability of
  selecting that housing type (Pj) when the region equals X
  divided by the probability of selecting that housing type when the region
  is Mid-Atlantic. Or,
      RPj = Pj(Region = X) / Pj(Region = Mid-Atlantic)
  where j denotes the housing type.

Appendix A

Multinomial Logit Model of the Choice of Living Arrangements

Estimated from the AHEAD Data Collected in 1993

Variable	Assisted Community	Unassisted Living in a 60 Plus Community	Shared Housing	Supported Housing
Race of Oldest (relative to White non-Hispanic)				
Black Non-Hispanic	-0.4138	-1.3480a	0.4494a	0.2104
Other Non-Hispanic	-0.9027	-0.7239	0.7043c	-0.0135
Hispanic	-0.3906	-1.0912a	0.0276	0.2913
Sex of Oldest (relative to Male)				
Female	0.3538	0.2647	0.1919	0.0025
Location				
Inside MSA	1.9364a	1.2477a	0.3724b	-0.0913
Region (relative to Mid-Atlantic)				
New England	1.8809b	-0.2700	-0.2931	-0.0015
East North Central	1.6425a	-0.1132	0.1708	-0.3998
West North Central	3.2963a	-0.7941	-0.16602	-0.1321
South Atlantic	2.6013a	1.3965a	0.1375	-0.2108
East South Central	0.2362	-0.3214	0.3540	-0.4693
West South Central	2.1056a	-0.1193	0.4436c	-0.0598
Mountain	3.1500a	1.4989a	-0.0980	-0.5017
Pacific	1.9838a	0.6498b	0.3457	-0.2914
Tenure (relative to Owning)				
Renting	3.9111a	1.4216a	0.1561	-0.1038
Other	2.8276a	-0.2869	1.4519a	0.0330
Age of Oldest (relative to 70-74)				
75-79	0.3338	0.3237c	0.1965	0.4271c
80-84	0.2736	0.4745b	0.4023b	0.7842a
85-89	1.1900a	0.4325c	0.4760b	0.5144b
90 or older	2.0016a	0.0956	0.8785a	1.0031a
Marital Status (relative to Married Spouse Present)				
Married Spouse Absent	2.0166a	0.5466	2.0304a	2.4717a
Living with Someone	-30.4294	0.4463	2.1008a	1.4618c
Divorced/Separated	-0.2154	-0.2937	2.9609a	1.3099a
Widowed	1.1894a	-0.1283	2.3952a	1.5107a
Never Married	0.8892	0.0502	3.2017a	0.4303
Education of Oldest (relative to 0-6 years of school)				
7-8	-0.6336	0.0041	0.1078	-0.2131
9-11	0.1180	-0.0795	0.2433	-0.0141
12	0.1947	0.0457	0.0438	-0.1815

13-15	0.5556	0.0587	-0.3415	0.0819
16	0.3901	0.0428	-0.4940	-0.0212
17 or more	0.1934	-1.0151b	-0.2744	0.0544
Number of ADLs	0.1507	0.0952	0.1716a	0.2841a
Number of IADLs	0.1232	0.0311	0.3975a	0.5450a
Number of Non-resident Children 18 or older	-0.0102	0.0185	-0.1000a	-0.1068b
Number of Resident Children 18 or older	-2.8853a	-0.7653a	1.5023a	-0.4283b
Number of Non-resident Children Within Ten Miles	-0.5696a	-0.3757a	-0.1499b	-0.2134a
Household Income				
Income	1.2e-5	5.58e-8	7.08e-5a	-5.17e-6
Income Squared	-6.33e115	-2.07e-12	-4.55e-10a	5.66e-12
Net Worth				
Net Worth	9.54e-7	-2.14e-6a	-8.14e-7c	4.85e-7
Net Worth Squared	-9.73e-14	1.26e-13	5.66e-14	-1.54e-13
Constant	-10.9644a	-4.3456a	-6.8550a	-4.3572a

Number of Observations: 5,010
Log Likelihood: -2878.77
Pseudo R-Squared: 0.3365

a = one percent confidence level
b = five percent confidence level
c = ten percent confidence level