

Gender Differences in Living Arrangements among Older Persons in India*

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Disclaimer: *The findings and conclusions in this paper are those of the authors and do not necessarily represent the views of the respective institutions.*

Abstract

The 52nd round of National Sample Survey data was used to explore gender differences in the living arrangements of older persons in India. Data demonstrate that older women, aged 60 and older are more likely to live alone than older men, after controlling for demographics, socioeconomic characteristics, health status, economic independence, and property ownership. Economic independence is a statistically significant determinant of living arrangements for both older men and women. Worse health in terms of physical immobility increases the likelihood of living alone or with spouse only for older men. Results indicate that having sons decreases the likelihood of living alone for older women, particularly if they are immobile. In contrast, immobility has no significant association with living arrangement choice for older men who have no children or only have daughters, and instead significantly increases the likelihood of living alone for older women with only daughters.

Introduction

Populations worldwide, with the exception of the African continent, are rapidly growing older as a result of declining fertility rates, improvements in life expectancy, and medical breakthroughs. Populations in developing countries that have recently experienced demographic transitions are projected to age faster than those in developed nations (Palloni, 2000), which will challenge the developing world to grapple with economic development and aging concurrently. The lessons learned from developed countries might not be able to guide policymakers, because the nature of challenges in the developing world is different. Hence, studying the various facets of aging that are unique to developing countries is critical to help inform policy-makers.

The Madrid International Plan of Action on Aging of 2002 (United Nations, 2002) pointed to the topic of living arrangements of older persons as one of the areas requiring major thrust because living arrangements of older persons is a key aspect of their well-being. Co-residence might be viewed as a fundamental means of ensuring daily needs of the older population in the absence of social security nets as well as a source of mutual support for younger and older adults in certain cultures. Knowledge is limited regarding the actual living conditions and how they affect the well-being of older populations in different countries.

The key questions that we explore in this paper are: what are the determinants of living arrangements for older Indians? Are there any gender differences in living arrangements for older persons in India? To what extent do economic independence and other socioeconomic factors influence living arrangement choice?

Early literature regarding this topic encompasses sociological and anthropological works that theorize about living arrangement choice (Goode, 1963). In the last few decades, empirical studies

attempted to find correlates of living arrangement choice for older persons in different parts of the world. More recently, the United Nations published two reports (United Nations, 2001 and 2005) that provide an overview of living arrangements of older persons worldwide as well as research agendas that can help fill the knowledge gap in this area. Although studies are available on the topic of older persons' living arrangements in Korea (Lee and Palloni, 1992; Martin, 1989), Taiwan (Hermalin, 2002; Hermalin and Yang, 2004), Singapore, Indonesia, (Frankenberg et al., 2002), Malaysia (DaVanzo and Chan, 1994; Martin, 1989), Fiji, Philippines (Martin, 1989), Vietnam (Friedman et al., 2003), Lesotho (Mba, 2002), Latin America (DeVos and Holden, 1988), sub-Saharan Africa (Zimmer and Dayton, 2005),ⁱ South Asia (Martin, 1990) rural Pakistan (Kochar, 2002) , and rural Bangladesh (Ghuman and Ofstedal, 2004), very few articles are available that specifically study the living arrangements of older Indians.

India has the second largest and the fastest growing older population in the world. The decadal growth rate of this group between 1991 and 2001 was almost double that of the general population (Sharma and Xenos, 1991, JaiPrakash, 1999). According to the Indian Census projectionsⁱⁱ, number of older persons in India was 71 million in 2001 and is projected to rise to 173 million by 2026. This will increase the proportion of aged Indians from 6.9% in 2001 to 12.4% in 2026. Hence, what France has experienced during the past 100 years in terms of an aging population, India will have to grapple with in 25 years. Unlike the West, India is still steeped in the traditional ways of living where multiple generations reside in the same household. Older and retired Indians expect to live with their children as a source of security. With improved health infrastructure and increased life expectancy, older persons are expected to live longer. At the same time that the population of India is steadily increasing, immense changes in standards of living and levels of development are occurring. Joint family systems are on the decline and more urban families are becoming nuclear. More rural families are relenting to the pressures of a developing society with increased rural-to-urban migration of younger working adults. Longer life

spans will create pressures on families to fund postretirement requirements of their parents and grandparents. Although India has had a long tradition of providing pension support, this has been limited exclusively to those who ever worked in the organized sector, which covers only 11% of the older population (Chanana and Talwar, 1987). Certain Indian states have policies regarding providing older indigent persons financial support, but this system is under funded and the older population is grossly underserved (Chanana and Talwar, 1987; Ponnuswami, 1999; Dandekar, 1996).

An important facet of aging is the gender composition among older persons. Women tend to marry older men; hence, women are more likely to be widowed and live in the widowed state for longer periods. The earning capacity of women, and consequently, their ability to maintain themselves, is less than that of men. In India, unlike other countries, sex ratio favors males for persons 60 and older (Visaria, 2001), which reveals incidence of higher mortality and lower status of women. However, more women than men live to be age 80 years or older. As a result, the majority of older Indian women live longer than their spouses, live as widows, live in poverty, and frequently live as dependents of their children or extended families.

Given this background, exploring the nature of living arrangements among older Indians, with a special focus on gender differentials appears to be an important task. Previous research on older Indians had been limited because of a lack of availability of large scale data that could provide enough details on the older persons. Recent studies have examined the extent of well-being of older persons (Cain, 1986; Vlassof, 1990; Dandekar, 1996; Ponnuswami, 1999; Chanana and Talwar, 1987, Rajan, 2006), provided a description of living arrangements of the aged (Rajan and Kumar, 2003) and analyzed the connection between living arrangements and poverty among older rural residents (Pal, 2003; Pal, 2006). However, to the best of our knowledge no previous studies exist that examine the gender differences in living arrangements among older adults in India.

This paper addresses this gap by analyzing the socioeconomic correlates of the living arrangement choices of older persons in urban and rural India, focusing in particular on gender differences. Data from the 52nd round of National Sample Survey (NSS) are used for this analysis. In this paper, older persons have been defined as those who are aged 60 years or older, which is consistent with the definition of older persons used in other parts of the world (Visaria, 2001, Palloni, 2000). Although most studies have analyzed the likelihood of older co-residence with children and others as a source of old-age support, we take a slightly different approach in this paper by seeking to determine the statistically significant correlates that might explain the likelihood of older persons living alone. We define 'living alone' as those who live alone or with a spouse only. This kind of living arrangement is widespread in developed countries and on the increase in the developing world. In India, approximately one in seven older Indians belonged to this group according to the 52nd NSS data (See Table 1). They are also likely to be the most vulnerable in the face of an income or health shock or even a disaster. In this paper, we analyze who these older persons are and what are the factors associated with living alone. This might be an important exercise in helping inform policymakers about certain groups at high risk. The analysis is timely because India is engaged in careful reassessment, planning, and implementation of national retirement policies. Careful attention to the needs of the growing proportions of aged, especially older widows is rapidly becoming the need of the day.

Methodology

Theoretical Underpinnings

Different theories have offered explanations for determinants of living arrangements. In the absence of government-supported social security schemes or private pension plans, traditional living arrangements, where older persons live with their children and extended families, provide a form of

social safety net. Classical theories purported that multigenerational shared living arrangements became less common with industrialization, largely as a result of a loss of status and control by older persons (Cowgill and Holmes, 1972). However, these classical theories did not withstand empirical testing, which led to alternative explanations (Elman and Uhlenberg, 1995). The main explanations offered were demographic, economic, and cultural. Demographically, changes in mortality, fertility, migration, and marriage can explain living arrangements. Although kin availability and kin composition can influence living arrangement choice toward co-residence (Elman and Uhlenberg,ⁱⁱⁱ 1995; Palloni, 2000), an increase in life expectancy and reduction in fertility that leads to more older persons and fewer children to look after them, can lead to decreases in co-residence (Wolf, 1984). Urbanization and migration can also reduce likelihood of co-residence (Mba, 2002). Desire for reciprocity, mutual exchange, economies of scale, and greater security from economic risks are suggested economic explanations that determine living arrangement choice. With modernization and ability to earn higher incomes, the trend is toward dissolution of traditional living arrangements. Privacy tends to become a normal good, and economically independent older persons tend to prefer living alone, not with the extended family (Costa, 1997). In contrast, high cost of living can encourage co-residence even after controlling for income (DaVanzo and Chan, 1994). Studies have reported that after controlling for socioeconomic characteristics, number of married children decreases the likelihood of living alone; homeownership and higher income increases the likelihood of living alone; disability decreases the likelihood of living alone; and education increases the likelihood of living alone (Martin 1989, Palloni, 2000).

Traditional obligations and duties, sense of family values, and cultural factors are non-economic reasons that can explain living arrangement choice. Certain cultures expect filial piety and sons to take responsibility for older parents, which might explain greater likelihood of co-residence when sons are present. A study from the Indian state of Maharashtra demonstrated that older widows are happiest when

living with their sons, while regularly receiving visits from their daughters (Vlassof, 1990). A study of older Hispanic persons in the United States indicates that cultural desirability factors are most important in determining living in institutional facilities (Burr and Mutchler, 1992). These existing theories and findings are useful as they offer testable hypotheses regarding living arrangement choice for older persons in the Indian context.

We applied economic modeling to explain the different living arrangement choices of older persons. In addition to covariates that are determined from the existing theories, we use covariates such as economic independence and property ownership to proxy for financial and emotional empowerment for the aged. Bargaining models of the family would suggest that older persons and adult children can negotiate a living arrangement to optimize their objectives. Economically independent older persons or those with property probably negotiate a transfer to their children in return for free goods and services that they might otherwise have to buy. This means that economically independent older persons are also more socially and emotionally involved and likely to co-reside with their children and extended family. However, this can mean that their living space is more constrained with less privacy. If privacy were a normal good, one might predict that economically independent older persons would choose to live on their own. How economic independence affects living arrangements is therefore an empirical question to explore.

Altruism models predict that household income matters and not individual incomes. Children might live with their parents not because of financial reasons but because of the knowledge that parents are taken care of. Alternatively, children might send transfers of income to support their parents. Economic independence for older persons might be a substitute for this income transfer, in which case, older persons might choose not co-reside. In contrast, economic independence or transfers might have

no influence on co-residential choice if some unobservable reason drives co-residence. Hence, influence of economic independence on living arrangements is again an empirical question.

Further, studies demonstrate that family composition matter more than family size (Wolf and Soldo, 1988), and if more than one child is present, bargaining between siblings can determine a parent's living arrangements and lead to a breakdown in co-residence (Pezzin et al., 2007). Depending on the cultural expectation, whether children are sons or daughters will influence living arrangement outcomes. Hence, number and sex composition of children are critical determinants of living arrangements, driven empirically.

Data

Data were taken from the 52nd round of the National Sample Survey, conducted by the National Sample Survey Organization (NSSO) of India, which primarily focuses on health care and education, including the problems of older persons (≥ 60 years). The survey period was July 1995–June 1996, and data were collected from all Indian states and union territories, except Andaman and Nicobar Island, Dadra and Nagar Haveli, Lakshadweep, and certain remote areas of Arunachal Pradesh and Nagaland. A stratified two-stage random sampling design was adopted. The first-stage units (FSU) were villages (determined by the National Census of 1991) in the rural sector and blocks (depending on population, as determined by NSSO) in the urban sector. The second-stage units are households in both sectors. Of each FSU, 10 households were selected independently from the second-stage grouping by circular systematic sampling with a random start.

The survey provides information on all the older members of the households, including number of sons and daughters, number of dependents, economic status and activities during work life, living arrangements, whether physically immobile, disabilities, self-reported health status, chronic health

conditions, reasons for retirement, retirement benefits, ownership and management of assets, management of social matters, religious matters, and daily chores and availability of food, clothes, and medicines. The sample consists of 26,643 households. Total number of older persons is 34,084 (5.4 percent), of which 17,211 (50.5 percent) were men and 16,873 were women.

Empirical Estimation

Our empirical model is a reduced form logistic regression that estimates the likelihood of living alone for men and women separately. We used a dummy dependent variable that equals 1 if living alone, and 0 otherwise. An older person is defined as 'living alone' if the person is living with a spouse and no other kin or is unmarried and living with no other kin (in an old age home or not). Palloni (2000) uses the same definition in a survey of living arrangements of older persons. When living with at least one child (or other kin), 'co-residence' or 'not living alone' is used. The NSSO question on living arrangement choice captures information on whether the older person lives alone, in an old age home or not, whether he or she lives with spouse only, whether he or she lives with spouse and children, whether he or she lives with children only, or whether he or she lives with other relatives or nonrelatives.

The explanatory variables used were *age* (age of the person in years), *age2* (age squared), *female* (equals 1 if female; 0 if male), *curmar* (equals 1 if currently married; 0 otherwise [i.e., either never married, divorced, separated or widowed]), *scstcode* (equals 1 if person belongs to scheduled caste or scheduled tribe; 0 otherwise), *urban* (equals 1 if urban; 0 if rural), *kids* (total number of sons and daughters), *nolit* (equals 1 if not literate; 0 otherwise^{iv}), *quart2* (those in the second quartile of household per capita consumption expenditure), *quart3* (those in the third quartile), *quart4* (those in the fourth quartile), reference category if in the lowest socioeconomic quartile, *ownprop* (equals 1 if the person owns property, either managing or not managing that property, and 0 if the person does not own

property), *ecind* (equals 1 if person is not economically dependent on others and 0 if partially or wholly dependent^v), *imobl* (equals 1 if physically immobile and confined to the bed or home; 0 otherwise), and *oldhomeknow* (equals 1 if person has knowledge of old age home,; 0 otherwise).

The regression analysis examined the demographic and socioeconomic factors associated with living arrangements for older persons. Survey estimation methods were used to correct for stratification and clustering.^{vi} We performed robustness checks by estimating alternative specifications, stratifying samples, and conducting Chow tests (Chow, 1960) to test the validity of results. All estimations and descriptive statistics were weighted to generate nationally representative estimates. To test for gender differences in living arrangement choice as a result of composition of children, we ran regressions of different samples.

Results

Descriptive Statistics

Table 1 presents the mean and standard errors of variables used in the analysis for the pooled sample, as well as for men and women separately. The difference in means for men and women, along with results from significance tests, are reported in the last two columns of the table. A much higher proportion of older men are married, economically independent, and literate, compared with older women.

Statistically significant and higher proportions of older women live in urban areas, have a disability, are immobile, are in the lowest income quartile, and live alone. Fewer older women own property, have a social life outside of home, are married, or receive a pension. Overall, older women fare worse than older men. In the pooled sample, slightly greater than 4 percent live by themselves, and approximately 10 percent live with their spouse only. Together, older persons who live alone or with a spouse only are slightly greater than 14 percent. Description of variables for this subsample is presented in Table 2. Of

all the men and women who live alone, a higher proportion of women are not currently married (30% more women), not literate (27% more women), and in the lowest income quartile, whereas a higher proportion of men are economically independent, own property, receive a pension, are literate, and are currently married. Interestingly, of those who live alone, greater proportions of men than women are immobile.

Regression Results

Table 3 presents results from the logistic regressions that estimate the likelihood of living alone. Results for the pooled sample are in column 1. As older persons advance in age, the likelihood of living alone decreases. Those living in urban areas and with children are less likely to live alone than their rural and childless counterparts. Being illiterate and of lower caste is associated with higher likelihood of living alone. The pooled results indicate that older women are approximately 75 percent more likely to live alone than older men.

We split the pooled sample into separate female and male samples and present the results in columns 2 and 3, respectively. Although both men and women tend to value privacy and have a 4–5-fold higher likelihood of living alone in higher consumption quartiles, property ownership is associated with higher likelihood of living alone for women but lower likelihood of living alone for men. Economic independence is associated with higher likelihood of living alone for both men and women but approximately double the likelihood for women than men. F-statistic shows that the null hypothesis that all of the slope parameters are jointly equal to zero is rejected. This indicates a significant relationship between the regressors and the dependent variable. Further, adjusted Wald test results indicate that the sample estimates for men and women are significantly different from each other.

Although number of children can be considered endogenous to the living arrangement decisions of older persons, the sex composition of children can be considered exogenous. The sex composition might matter more for living arrangement choice of men and women and might for the most part be culturally driven. Tables 4 and 5 contain *logit* estimation results for women and men, respectively, for five different samples — older with at least one child (column 1), older with more than one son (column 2), older with exactly one son (column 3), older with no children (column 4), and older with only daughters (column 5). Comparing columns 1 and 4 in Table 4, property ownership and economic independence are associated with much higher likelihood of living alone for older women with no children than with at least one child. Comparing men and women with no children, older men are less likely to live alone in urban areas (no significant effect for women), whereas property ownership or economic independence has no significant correlation with living alone for men, unlike for women.

Property ownership is correlated with higher likelihood of living alone for women. Interacting the property ownership variable with widowhood,^{vii} we determined that widows with property have a higher likelihood of living alone. Therefore, if women have the means to support themselves, they are more likely to live alone. This finding supports Wolf and Soldo's (1988) conclusion that older men have greater need for domestic services, and older women need financial support. Finances can be provided externally; hence, more unpartnered men are likely to co-reside than unpartnered women. Further, this is possible if children believe that their older mothers are egalitarian when bequeathing assets to children. However, children might not be that sure of their fathers' bequest motives, and hence, older men who own property will have children living with them to perhaps ensure their inheritance. Examining the sample of older men with one son, we determined that property ownership does not have a statistically significant correlation with living arrangement. However, if the older men have more than one son,

owning property significantly reduces the likelihood of living alone. This might mean that more options decrease the likelihood of living alone, or it might be validating the inheritance motive.

Finally, health status measured as whether physically immobile is not a significant covariate for women, but physical immobility for men is associated with a higher likelihood of living alone. Possibly, men are inherently more independent and stoic and do not want to burden their children. These men (86 percent are currently married) are mostly living with a spouse who provides most of the care. Interacting immobility with age^{viii} reveals that as older men with physical immobility age further, the odds of living alone declines. Only 8% of immobile women live alone, which might be why health status is not a significant determinant of living arrangement for older women. For samples of older persons with one son or multiple sons, the only son might live on a separate property, but when they have multiple sons, their log odds of living alone declines possibly because one of the sons might co-reside with the father. For older women, when they have more than one son, immobility becomes a significant covariate related to lower likelihood of living alone, possibly because these women possibly have more living arrangement choices.

Figure 1 plots the mean predicted probabilities for living alone, according to consumption quartiles and region of residence. Highest likelihood of living alone seems to be for women in the highest expenditure quartile. Men in the highest quartile also have a higher probability of living alone than men in lower expenditure quartiles. This finding is contrary to the idea that in developing countries, higher socioeconomic status is associated with lower likelihood of living alone. In contrast, it tends to corroborate the ‘privacy is a normal good’ hypothesis. Also, contrary to expectations, likelihood of living alone is more pronounced for older persons in rural areas than in urban areas. However, this is not too surprising because more space is available for rural families than for urban households. This finding is consistent with findings from 1986–87 National Sample Survey data (Ponnuswami, 1999).

Discussion

Our findings demonstrate that older women are more likely to live alone than older men, even after controlling for age, socioeconomic characteristics, health status, economic independence, and property ownership. Our data demonstrate that this is because men are more likely to be married at older ages than women and are more likely to live with a spouse or children than women. We found that older persons in rural areas are more likely to live alone. This is consistent with findings in other Asian countries where housing costs in urban areas seem to influence more co-residence than in urban areas. However, unlike Western countries, where older persons are more likely to live in urban areas, our study indicates that greater proportions of older persons live in rural India. Rural areas are by and large underserved with respect to health care and other civic amenities. If more of older persons live in rural areas and alone, this makes this population especially vulnerable.

Disaggregating older men and women, we found that physical immobility does not significantly influence living arrangement choice of older women, but it does for older men. Older women who own property and are economically independent have a higher likelihood of living alone. Of all those who live alone, children or grandchildren live out of town or village for 28 percent of older women and 30 percent of older men. This means that the majority of older persons have a child or a grandchild living either in the same house or same village.

Number of children decreases the likelihood of living alone for both men and women, and the decrease is slightly more for women. Sex composition of children is important. Number of sons matters for older men and women in determining their choice of living arrangements. Economic independence and health status are both significant covariates of living alone for samples of both older men and women with sons. Economic independence and immobility are not significant correlates of living alone

for older men who either have only daughters or do not have children. For older women, in contrast, immobility is associated with a higher likelihood of living alone if they have daughters.

Hence, a consistent theme that emerges is that older women are more disadvantaged than older men in India. As life expectancy increases and fertility rates drop, older women will likely be more negatively affected by living longer, but having fewer resources. An analysis that examines transitions from one living arrangement to another during the life course might be helpful. However, that type of analysis requires more detailed data of a longitudinal nature. Characteristics of children, their marital status, location, and income will also be useful in determining living arrangements, but unfortunately, these data were not available to us. Future research should also examine changes in aggregate living arrangements among older persons over time.

From a policy perspective, understanding the nature of the needs of the aged, gender differences, and the changes over time might also be valuable. The government of India announced the National Policy on Older Persons in 1999^{ix}, which is at different stages of fact-finding and implementation. This policy promotes the role of extended family in providing informal support to the aged in the absence of any formal financial support. In a resource-constrained environment, identifying the most vulnerable persons and implementing targeted policies might be important.

Notes

ⁱ Bongarts and Zimmer (2002) provide a cross-country analysis of living arrangements by using Demographic and Health Survey data.

ⁱⁱ Census of India, 2001, Population Projection for India and States 2001-2006 (revised December 2006), Office of the Registrar General and Census Commissioner of India.

ⁱⁱⁱ In the case of the United States, using Census data from 1910.

^{iv} 'A person who can read and write a simple message in any language with understanding is considered literate' (NSSO codebook).

^v A person is considered to be economically dependent on others if he or she is required to take financial help from others to lead a normal life.

^{vi} Stata[®] 8.0 (StataCorp LP, College Station, Texas) was used for the statistical analysis.

^{vii} Result not included in the tables but available on request.

^{viii} Results not reported but available upon request.

^{ix} <http://www.ilcindia.org/gov-policy.pdf> retrieved May 10, 2007

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Table 1
Weighted summary statistics for all older men and women

	All		Male		Female		Male-Female	
	Mean	Std Error	Mean	Std error	Mean	Std error	Difference	P value
Age	67.7926	0.0741	68.0291	0.0949	67.5602	0.0975	0.3411	0.0000
Age-squared	4643.8140	10.6980	4674.5170	13.7684	4613.6850	14.0514	42.9045	0.0001
Currently married	0.5818	0.0056	0.7734	0.0066	0.3950	0.0071	0.3798	0.0000
Female	0.5058	0.0041						
Scst code	0.2354	0.0057	0.2393	0.0068	0.2310	0.0067	0.0087	0.0563
Urban	0.2190	0.0049	0.2169	0.0053	0.2211	0.0054	-0.0181	0.0006
Number of children	4.0810	0.0319	4.1426	0.0372	4.0210	0.0407	0.1185	0.0001
Not Literate	0.7030	0.0053	0.5532	0.0076	0.8492	0.0049	-0.3017	0.0000
Lowest income quartile	0.3112	0.0073	0.3005	0.0086	0.3212	0.0081	-0.0149	0.0014
2 nd income quartile	0.2699	0.0056	0.2723	0.0065	0.2677	0.0068	0.0006	0.8960
3 rd income quartile	0.2366	0.0051	0.2407	0.0061	0.2327	0.0060	0.0067	0.1479
Top income quartile	0.1823	0.0047	0.1865	0.0055	0.1784	0.0053	0.0076	0.1052
Economically independent	0.3104	0.0053	0.5017	0.0080	0.1229	0.0049	0.3895	0.0000
Manage social life	0.7449	0.0062	0.8090	0.0074	0.6822	0.0078	0.1402	0.0000
Own property	0.6277	0.0062	0.8030	0.0063	0.4561	0.0083	0.3384	0.0000
Disability	0.6413	0.0128	0.5954	0.0150	0.6851	0.0171	-0.0893	0.0000
Immobile	0.1025	0.0036	0.0956	0.0048	0.1094	0.0047	-0.0201	0.0000
Know about old homes	0.2283	0.0058	0.2721	0.0071	0.1858	0.0060	0.0918	0.0000
Receive pension	0.0352	0.0020	0.0628	0.0038	0.0081	0.0010	0.0618	0.0000
Live alone	0.0439	0.0020	0.0269	0.0021	0.0605	0.0034	-0.02193	0.0000
Live with spouse	0.1018	0.0040	0.1307	0.0050	0.0735	0.0037	0.038859	0.0000
Live with spouse and children	0.4674	0.0060	0.6263	0.0067	0.3122	0.0068	0.322288	0.0000
Live with kids	0.3379	0.0051	0.1791	0.0051	0.4928	0.0070	-0.31679	0.0000
Live with others	0.0491	0.0024	0.0370	0.0027	0.0610	0.0038	-0.02243	0.0000
Number of observations	34,084		17,211		16,873			

Table 2
Weighted summary statistics for older men and women who live alone

	All		Male		Female		Male-Female	
	Mean	std error	Mean	std error	Mean	std error	Difference	<i>P</i> value
Age	67.3524	0.1809	68.2040	0.2384	66.3722	0.2095	1.8900	0.0000
Age-squared	4574.8090	25.7716	4693.6667	34.3328	4438.0140	28.9702	262.6295	0.0000
Currently married	0.7211	0.0127	0.8653	0.0113	0.5552	0.0191	0.2848	0.0000
Female	0.4649	0.0092						
Scst code	0.2775	0.0144	0.2909	0.0164	0.2621	0.0169	0.0181	0.1997
Urban	0.1896	0.0080	0.1849	0.0084	0.1950	0.0097	-0.0010	0.9456
Number of children	3.5508	0.1020	3.4762	0.0776	3.6367	0.1806	-0.1751	0.1243
Not Literate	0.7094	0.0115	0.5894	0.0167	0.8475	0.0111	-0.2719	0.0000
Lowest income quartile	0.2069	0.0133	0.1913	0.0138	0.2249	0.0159	-0.0304	0.0123
2 nd income quartile	0.2349	0.0149	0.2504	0.0171	0.2171	0.0169	0.0073	0.5649
3 rd income quartile	0.2543	0.0133	0.2447	0.0146	0.2652	0.0167	-0.0031	0.8192
Top income quartile	0.3039	0.0139	0.3136	0.0160	0.2927	0.0160	0.0262	0.0942
Economically independent	0.5326	0.0141	0.6873	0.0167	0.3534	0.0190	0.3719	0.0000
Manage social life	0.7680	0.0129	0.8026	0.0161	0.7282	0.0167	0.0895	0.0000
Own property	0.6972	0.0136	0.8004	0.0160	0.5783	0.0192	0.2239	0.0000
Disability	0.6009	0.0285	0.6396	0.0391	0.5564	0.0348	0.0109	0.7226
Immobile	0.0981	0.0088	0.1219	0.0137	0.0707	0.0089	0.0342	0.0004
Know about old homes	0.2520	0.0125	0.2807	0.0149	0.2190	0.0150	0.0781	0.0000
Receive pension	0.0454	0.0071	0.0771	0.0126	0.0088	0.0021	0.0708	0.0000
Number of observations	3,902		2,118		1,784			

Table 3
Logit estimations of living arrangements for older men and women

	(All) livingalone	(Female) livingalone	(Male) livingalone
Age	1.450*** (4.75)	1.485*** (3.84)	1.497*** (3.21)
Age2	0.998*** (4.47)	0.997*** (3.87)	0.997*** (2.91)
Female	1.765*** (7.96)		
Curmar	2.580*** (10.84)	2.395*** (8.45)	2.604*** (8.10)
Scstcode	1.678*** (6.11)	1.526*** (3.94)	1.798*** (6.17)
Urban	0.581*** (6.53)	0.619*** (4.69)	0.530*** (6.54)
Kids	0.840*** (7.62)	0.862*** (4.20)	0.819*** (8.86)
Nolit	1.529*** (5.33)	1.535*** (3.39)	1.483*** (4.21)
Quart2	1.424*** (3.07)	1.264* (1.73)	1.597*** (3.61)
Quart3	2.151*** (6.93)	2.225*** (6.06)	2.139*** (5.91)
Quart4	4.919*** (12.74)	4.725*** (10.47)	5.350*** (11.53)
Imobl	1.410*** (3.01)	0.874 (0.87)	1.956*** (4.49)
Ecind	3.334*** (13.75)	4.791*** (13.77)	2.818*** (10.25)
ownprop	1.067 (0.79)	1.306*** (2.85)	0.750*** (2.64)
North	0.436*** (7.32)	0.474*** (5.27)	0.424*** (6.54)
East	0.567*** (4.16)	0.614*** (2.76)	0.568*** (3.82)
Central	0.597*** (4.85)	0.646*** (3.34)	0.570*** (4.63)
West	0.702*** (3.36)	0.678*** (2.87)	0.745** (2.44)
Islands	0.298*** (3.87)	0.344* (1.68)	0.299*** (3.58)
Oldhomeknow	0.829** (2.12)	0.901 (0.84)	0.775*** (2.59)
Observations	32,773	16,175	16,598
F	37.23	27.39	25.71
Degrees of freedom	20	19	19
P value	0.0000	0.0000	0.0000
Adjusted Wald test^	F(20, 10002) = 10.42 Prob > F = 0.0000		

Absolute value of t statistics in parentheses; *significant at 10%; ** significant at 5%; *** significant at 1%; ^males and females are significantly different from each other.

Table 4
Logit estimations of living arrangements for older women, according to number and sex composition of children

	(at least one child) livingalone	(more than one son) livingalone	(exactly one son) livingalone	(no children) livingalone	(only daughters) livingalone
Age	1.403*** (3.24)	1.497*** (3.08)	1.278 (0.95)	2.475** (2.33)	1.414 (0.74)
Age2	0.998*** (3.28)	0.997*** (3.03)	0.998 (1.11)	0.993** (2.37)	0.997 (0.86)
Curmar	2.235*** (7.70)	2.791*** (7.60)	2.037*** (3.48)	4.435*** (4.83)	2.369* (1.78)
Scstcode	1.575*** (4.02)	1.849*** (4.27)	1.386 (1.36)	1.268 (0.67)	0.695 (0.84)
Urban	0.593*** (4.84)	0.567*** (4.32)	0.525*** (2.76)	0.791 (0.76)	1.025 (0.07)
Nolit	1.520*** (3.11)	1.541*** (2.64)	1.763* (1.72)	1.643 (1.18)	3.185* (1.89)
Quart2	1.397** (2.28)	1.389* (1.84)	1.680* (1.86)	0.392** (2.31)	1.907 (0.89)
Quart3	2.331*** (5.94)	2.122*** (4.46)	3.743*** (4.32)	1.076 (0.18)	2.487 (1.42)
Quart4	4.853*** (10.11)	4.766*** (8.44)	7.519*** (6.47)	2.924** (2.32)	4.009** (2.05)
Imobl	0.843 (1.02)	0.687* (1.78)	1.096 (0.27)	1.283 (0.50)	3.128* (1.77)
Ecind	4.658*** (12.39)	4.329*** (9.10)	6.751*** (8.59)	6.367*** (5.69)	1.296 (0.57)
Ownprop	1.323*** (2.89)	1.219* (1.70)	1.622** (2.36)	2.028** (2.38)	1.559 (1.18)
North	0.443*** (5.44)	0.359*** (5.43)	0.486** (2.43)	0.412** (1.99)	2.718 (1.11)
East	0.575*** (2.97)	0.653** (2.07)	0.525* (1.96)	0.630 (1.07)	0.230 (1.63)
Central	0.624*** (3.43)	0.576*** (3.26)	0.545** (2.20)	0.509* (1.73)	1.201 (0.34)
West	0.655*** (2.90)	0.640** (2.40)	0.515** (2.34)	0.570 (1.32)	1.026 (0.05)
Islands	0.403 (1.48)	0.411 (1.01)	0.306 (1.13)		
Oldhomeknow	0.920 (0.63)	0.765* (1.71)	1.284 (0.82)	0.586 (1.58)	2.157 (1.39)
Observations	15,479	10,750	3,718	696	408
Wald Chi-square	482.50	331.61	233.38	106.95	35.44
Degrees of freedom	18	18	18	17	17
P value	0.0000	0.0000	0.0000	0.0000	0.0054

Robust z statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

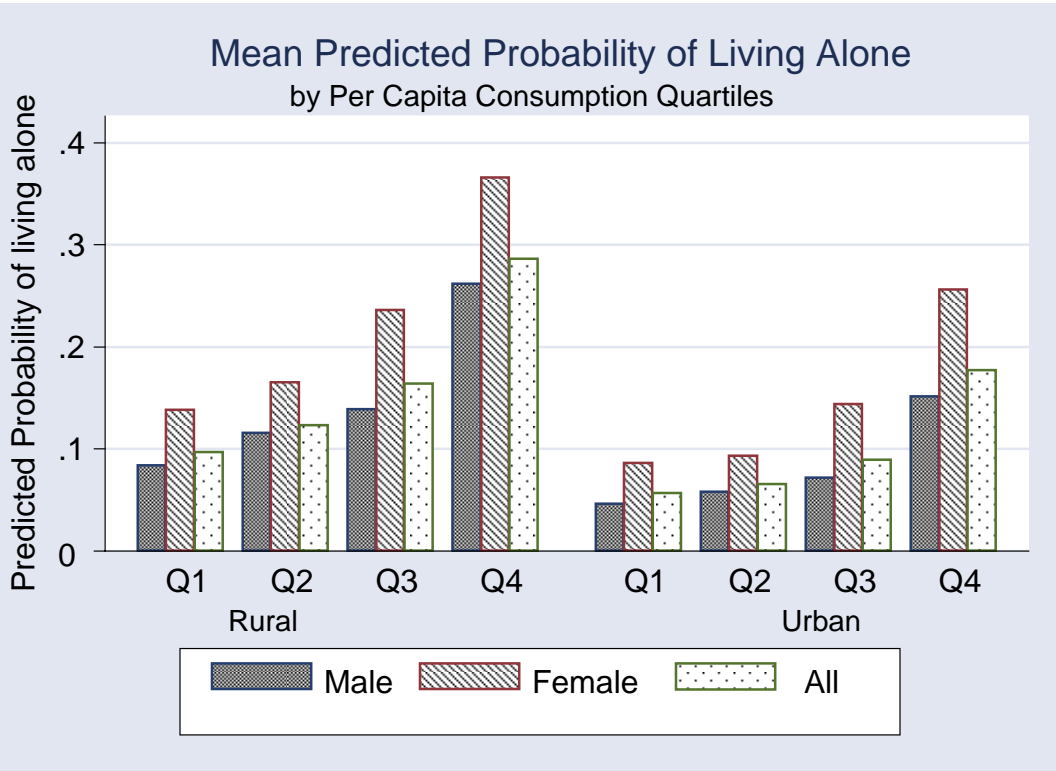
Table 5
Logit estimations of living arrangements for older men, according to number and sex composition of children

	(at least one child) livingalone	(more than one son) livingalone	(exactly one son) livingalone	(no children) livingalone	(only daughters) livingalone
Age	1.447*** (2.93)	1.395** (2.39)	1.644** (2.07)	1.118 (0.28)	2.226 (1.33)
Age2	0.998*** (2.67)	0.998** (2.03)	0.997** (2.04)	0.999 (0.24)	0.994 (1.46)
Curmar	2.287*** (6.25)	2.410*** (5.17)	3.177*** (3.70)	15.114*** (8.25)	1.079 (0.14)
Scstcode	1.746*** (5.65)	2.079*** (5.90)	1.367 (1.50)	1.619 (1.31)	0.777 (0.53)
Urban	0.531*** (6.20)	0.532*** (5.16)	0.426*** (4.01)	0.463** (2.20)	0.859 (0.36)
Nolit	1.504*** (4.16)	1.577*** (3.68)	1.365 (1.41)	1.006 (0.02)	0.874 (0.28)
Quart2	1.670*** (3.85)	1.684*** (3.18)	1.780** (2.15)	0.881 (0.26)	0.910 (0.15)
Quart3	2.098*** (5.61)	2.249*** (4.97)	2.316*** (2.78)	1.854 (1.23)	1.019 (0.03)
Quart4	5.346*** (11.33)	5.374*** (9.45)	5.240*** (5.51)	7.396*** (3.81)	4.700** (2.24)
Imobl	2.020*** (4.54)	1.764*** (2.79)	3.347*** (4.86)	0.803 (0.45)	1.802 (0.92)
Ecind	2.966*** (10.29)	3.464*** (9.27)	2.280*** (3.90)	1.526 (1.25)	2.227 (1.31)
Ownprop	0.705*** (2.98)	0.688*** (2.61)	0.747 (1.27)	1.762 (1.64)	0.382* (1.83)
North	0.388*** (6.99)	0.365*** (5.83)	0.373*** (3.58)	0.151*** (3.77)	0.893 (0.17)
East	0.533*** (4.11)	0.604*** (2.70)	0.291*** (4.25)	0.258** (2.41)	0.810 (0.33)
Central	0.536*** (4.99)	0.592*** (3.45)	0.356*** (4.28)	0.283*** (3.18)	0.395 (1.44)
West	0.742** (2.36)	0.781 (1.45)	0.536** (2.33)	0.634 (0.95)	2.012 (1.32)
Islands	0.263*** (3.28)	0.378* (1.75)	0.016*** (4.33)	0.338 (1.33)	
Oldhomeknow	0.771** (2.55)	0.802* (1.76)	0.833 (0.81)	0.883 (0.39)	0.211*** (3.49)
Observations	15,914	11,546	3,541	684	323
Wald Chi-square	416.31	315.37	153.30	116.57	29.68
Degrees of freedom	18	18	18	18	17
P value	0.0000	0.0000	0.0000	0.0000	0.0287

Robust z statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Figure 1: Predicted probability of living alone, by consumption quartile and region of residence



Note: Q1-Q4 denotes lowest to highest household per capita consumption quartile.