Published in final edited form as:
J Hous Elderly. 2013 January 1; 27(1-2): 191–205. doi:10.1080/02763893.2012.754822.

Aging in Place in a Retirement Community: 90+ Year Olds

Annlia Paganini-Hill
Department of Neurology, School of Medicine, University of California, Irvine, California, USA

Abstract

Aging in place, an image of growing old in one's home and maintaining one's daily routine, is desired by most older adults. To identify variables promoting such independent living in the oldest-old, we examined the association between living situation of a population-based cohort of 90+ year olds with health and lifestyle variables. Of 1485 participants, 53% still lived in their home at a retirement community designed to foster wellness. Those living at home tended to be healthier, with smaller proportions having chronic diseases or hospitalizations in the preceding year and a greater proportion having normal functional ability. Dementia was the chronic disease most significantly related to living situation. In addition to not having dementia, not using a wheelchair or bath aid, receiving meals on wheels, and being married were jointly related to living at home. With the help of family and friends and with a medical and social support system, many 90+ year olds can age in place. This is often because they have a caregiving spouse or paid caregiver.

Keywords

aging in place; supportive services; leisure activities; activities of daily life; independent living; self-help devices

INTRODUCTION

The oldest-old are the fastest growing segment of the U.S. population. Approximately 2 million people were aged 90 years and older in 2010 (U.S. Census Bureau, 2011), but the number will increase to 8.7 million by the middle of the 21st century (U.S. Administration on Aging, 2010; U.S. Census Bureau, 2008).

Aging in place has emerged as a desirable societal image of growing old in a familiar environment (Rowles, 1994). The majority of older adults prefer to continue to live in their

Address correspondence to Annlia Paganini-Hill, Clinic for Aging Research & Education, 24361 El Toro Road #150, Laguna Woods, CA 92637 USA. annliahi@usc.edu.

current home and maintain their daily routines (AARP, 2000; Sabia, 2008). Research has illuminated the ways in which living at home promotes a sense of personhood and normalcy in spite of multiple personal losses, age-related declines and chronic illness (Rubenstein, 1989). The adverse consequences of relocation include stress, isolation, weight loss, depression, financial burden, and loss of personal possessions and personhood (Mollica & Jenkiins, 2001).

Aging in place has become a focal concept of researchers and policy makers to create communities that facilitate the preference of many seniors to remain in their homes as long as possible (Vasunilashorn, Steinman, Liebig, & Pynoos, 2012). Solutions to achieve aging in place include person and environment-related factors. Lawton and Nahemow (1973) developed a framework called the ecological model of aging, adding the interaction of person and environment. Person-related factors include physical and cognitive changes—chronic disease, decreasing strength, hearing and vision loss, and memory decline—which pose challenges for an older adult to meet the demands of the environment. According to the ecological model, when the demands of the environment are reduced to match an individual's decreasing capabilities, a successful interaction occurs.

Elder-friendly communities have been proposed to provide maintenance of one's physical environment, stimulation of health promoting behavior, and support services, which compensate for diminished or lost competencies (Davenport, Rathwell, & Rosenberg, 2009; Emlet & Moceri, 2012; Michael, Green, & Farquhar, 2006). The retirement community of Leisure World Laguna Hills, California, the focus of the current study, has an infrastructure reducing structural needs/barriers and a community fostering both social interaction and connectedness. Individuals are actively involved and supported in their needs.

Using a population-based cohort derived from Leisure World Laguna Hills, the current study examined the living situations of 90+ year olds and the potentially associated variables (i.e., demographics, medical history, use of assistive devices and supportive services, and functional and cognitive abilities) collected at the same time. We report the results in this large (nearly 1500), moderately affluent, well-educated cohort of 90+ year olds who resided in the retirement community in the 1980s and explore the following questions: Were the residents of this elder-friendly community with the advantages of wealth, education, and knowledge able to age in place? What factors protected those in poor health from having to relocate from their homes?

DESIGN AND METHODS

Population and Sample

Leisure World Laguna Hills is a California retirement community designed to foster elements of wellness. This gate-guarded retirement community contains not only homes, but also a community infrastructure, services, and governance. The community offers several potentially health-enhancing features: common spaces for gathering, sport, play, and crafts (clubhouses, swimming pools, golf courses, tennis courts, lawn bowling greens, fitness centers, horse riding academy); low-traffic streets that promote walking; plots of land for gardening; and opportunities for social interaction and community involvement (e.g., clubs,

theater, governing boards). It has its own television station, library, and transportation service. The bus provides service within the community and to adjacent medical offices, hospitals, churches and synagogues, banks, and grocery and retail centers. The community also provides residents with information about support, home care, and case management services.

The 90+ Study (Corrada et al., 2008, 2010), a population-based longitudinal study of aging and dementia among people aged 90 years and older, was established in 2003. Participants were recruited in five waves from the Leisure World Cohort Study (Paganini-Hill, Kawas, & Corrada, 2007a, 2007b, 2011; Paganini-Hill, Ross, & Henderson, 1986): those aged 90+ years and alive on January 1 in the years 2003 and 2008–2011. The Leisure World Cohort was established in the early 1980s when 13,978 residents of the Leisure World Laguna Hills retirement community completed a postal health survey. Eighty-three percent (n = 1509) of the 1816 eligible individuals joined the 90+ Study. Of the 307 nonparticipants, 186 refused and we were unable to contact the other 121 participants or their next of kin. The population and the cohort are mostly Caucasian, well-educated and upper-middle class.

The institutional review boards of the University of Southern California and the University of California, Los Angeles approved the study.

Data Collection

Participants were asked to undergo an in-person evaluation, including a neurological examination and a neuropsychological test battery (completed in 49% of participants). Some participants' poor health, frailty, disability, or unwillingness did not allow for an in-person evaluation. Information about such participants was obtained by telephone (15%) or from informants (36%). All participants or their informants (spouse or equivalent, child or child-in-law, other relative, friend, or caregiver) completed a questionnaire that included demographics, living situation, use of assistive devices and supportive services, activities, alcohol use, smoking status, and medical history.

Informants for all participants were asked about the participant's cognitive status using the dementia severity rating scale (DSRS) (Clark & Ewbank, 1996) and their functional abilities on 8 activities of daily living (ADLs) and 12 instrumental activities of daily living (IADLs) (Katz et al., 1963; Pfeffer et al., 1982) using a mailed questionnaire.

Statistical Analysis

Comparisons between living situation groups (at home vs other) were tested using Chi-square tests for categorical variables and analysis of variance for testing differences in means of continuous variables. Multivariate logistic regression was used to identify variables jointly related to living situation and factors that might protect those in poor health from relocating from home. Statistical analyses were performed using SAS version 9.2 software (SAS Institute Inc., Cary, NC). No adjustment in the P values was made for multiple comparisons. Because many statistical tests were performed, $P < .001$ was considered as statistically significant.

RESULTS

Nonparticipants in the 90+ Study did not differ from participants on the variables measured 20 years previously in the Leisure World Cohort survey: sex, martial status, medical history (i.e., high blood pressure, angina, heart attack, stroke, diabetes, rheumatoid arthritis, cancer, glaucoma), medication use (i.e., nonprescription pain medication, blood pressure medication, digitalis), smoking status, alcohol or caffeine intake, active or less physical demanding activities, or body mass index. Mean age at the date of eligibility for the 90+ Study was 93.2 vs 93.5 years for nonparticipants and participants, respectively.

After excluding 24 participants who were not asked or did not answer the question about living situation, information on 1485 participants was analyzed. Participants ranged in age from 90 to 107 years (mean ± standard deviation = 93.5 ± 3.1 years). More than half of the participants still lived at home (34% lived alone, 12% with spouse, 9% with paid caregiver), whereas 8% lived with other relatives, 10% in assisted living, 13% in board and care, and 13% in nursing home.

Table 1 presents selected characteristics for the participants by living situation (at home or other). The information was provided by the participant (39%), spouse or equivalent (5%), child or child-in-law (36%), other relative (15%), friend (2%), or caregiver (3%). The cohort was highly educated (39% college graduates) and 78% were women. Those living alone tended to be younger, male, married, and healthier than those in other living situations. Although the two groups did not differ on angina/coronary artery disease, heart attack, heart valve disease, congestive heart failure, stroke, diabetes mellitus, osteoarthritis, rheumatoid arthritis, peptic ulcer disease, syncope, head trauma, cancer, glaucoma, macular degeneration, cataract, Parkinson’s disease, or thyroid disease, those living at home were less likely to have dementia, anxiety disorder, or depression; to have had a transient ischemic attack; or to have been hospitalized or fallen the preceding year. They were also less likely to use a walker, wheelchair, or bath aid or to have a caregiver and were more likely to drive and to drink alcohol.

Those living at home also differed on their reported leisure activities (Table 2). They were more likely to go outside, shop, ride in the car, or travel overnight, as well as to talk with family and friends on the telephone, read, listen to the radio/television, garden, or be with animals.

Table 3 shows the abilities of the participants as judged by a relative (7% spouse, 59% child or child-in-law, 19% other relative), friend (10%), or caregiver (5%). A greater proportion of those living at home were rated normal for each of these abilities. Although more than half of those living at home were rated normal on all these abilities, only 12% of those in other living situations could perform normally.

The proportions of individuals able to perform normally on functional activities (ADLs and IADLs) are shown in Table 4. Only 18% of participants could perform normally on all ADLs and only 14% on all IADLs. Difficulty in mobility was the most frequent problem for these individuals. Ability to move about indoors was 35% in those living at home vs 9% in those in other living situations, and ability to move about outdoors was 30% vs 5%,

respectively. Excluding mobility, 27% of participants performed normally on all of the other ADLs: 44% of those living at home vs 10%. More than half of those living at home could perform all IADLS except driving a car (30%) vs less than one-third of those in other living situations.

Multivariate analysis identified marital status as a major determinant of living situation ($P < .0001$); dementia ($P < .0001$), depression ($P < .0001$) and transient ischemic attack ($P = .0006$) as the most significant medical history variables; use of wheelchair and bath aid for assistive devices ($P < .0001$); and paid and unpaid caregivers ($P < .0001$) and meals on wheels ($P = .008$) for supportive services. Among the 1355 participants with the chronic diseases, the variables related to aging in place were being married, not using a wheelchair, having meals on wheels, and having a paid caregiver (although the latter was not statistically significant).

DISCUSSION

Our study extends the available literature on aging in place to 90+ year olds. Most of the 90+ year olds in our study continued to live independently; more than half lived at home either alone or with their spouse or caregiver. The associations found between living situation (at home vs other) and current health, functional abilities, and leisure activities were in the direction expected.

Centers for Disease Control and Prevention's (2005) healthy aging research network defined healthy aging as:

> the development and maintenance of optimal physical, mental and social wellbeing and function in older adults. It is mostly likely to be achieved when physical environment and communities are safe, and support the adoption and maintenance by individuals of attitudes and behaviors known to promote health and well-being; and by the effective use of health services and community programs to prevent or minimize the impact of acute and chronic disease on function.

This ecological model of healthy aging (Lawton & Nahemow, 1973) merges two separate but related models reflecting the interplay of individual and community-level factors. To age in place, the decline associated with chronic disease and frailty must be managed and support services to maintain wellbeing in old age must be available. "The older person must continually take from the environment what he needs, control what can be modified, and adapt to conditions that cannot be changed" (Emlet & Moceri, 2012, p. 2).

The neighborhood has a profound effect on aging in place (Michael et al., 2006) and has led to a real estate trend of retirement communities for seniors (Otis, 2008, Simpson, 2010). Originating with the ecological perspective, elder-friendly and service-rich communities are designed to maintain optimal functioning in older age, with senior-designed housing, outdoor spaces and public buildings, transportation, social participation, social inclusion, civic participation, community support, and information and health services (Plouffe & Kalache, 2010). One of the oldest of these elder-friendly communities is Leisure World Laguna Hills, established in 1964. Founder Ross Cortese stated "I want to supply the basic

needs of life for people aged 52 and older, create a serene atmosphere of beauty, provide security, recreation and religious facilities … then leave the living to the individuals" (Zimmerman, 1980, p. 25). In Leisure World, community factors (e.g., housing, neighborhood, parks and recreation, security, and transportation, as well as aging services with nearby health care facilities) are a common denominator for the residents. In addition to the physical built environment, social inclusion and participation are key features of elder-friendly cities (Emlet & Moceri, 2011; Ploutte & Kalache, 2010). This aspect of Leisure World is illustrated by more than 250 community clubs and organizations. In addition, civic participation by residents resulted in Leisure World becoming the first legally incorporated retirement city in 1999. Although not a focus of our study, social determinants of health (social economic status and social environments) are relatively constant across individuals. More than 20 years after moving into this community, more than half of the 90+ year olds have aged in place. Others have found that aging in place is most likely in such service-rich communities (Davenport et al., 2009).

Successful aging (well-being in old age) is not shared equally among the elderly and is influenced by personal factors outside of the individual's control, such as frailty and infirmities of aging. Our participants experienced the same infirmities of aging of older adults in the general population including chronic disease, falls, and resulting hospitalizations. Although one of three adults aged 65+ years falls each year, the rate of fall injuries for adults 85 years and older is almost four times that for adults 65 to 74 years (Centers for Disease Control and Prevention, 2011). More than half of our participants fell in the past year. Likewise, approximately 40% had been hospitalized in the preceding year. More than 95% of our 90+ year olds reported a chronic disease; the most frequent, and often debilitating, were cardiovascular disease (34%), stroke (22%), osteoarthritis (43%), cancer (26%), macular degeneration (29%), and dementia (24%). Dementia incidence increases exponentially from ages 65 to 90 years, doubling every 5 years (Jorm & Jolley, 1998). This doubling continues even into the tenth decade of life, with rates as high as 41% per year in centenarians (Corrada et al., 2010), making this disease a major disability in the oldest-old. Dementia is likely to lead to the need for more care and a move to a living situation offering such care. In our study, dementia was the most significant disease condition associated with not living at home. Nonetheless, 10% of those living at home had dementia. A study on aging in place with dementia found that couples where one partner had been diagnosed with dementia desired to go on as before and remain a couple (Beard, Sakhtah, Imse, & Galvin, 2012).

To live independently, older adults must maintain various ADLs within the home. More than half of Americans older than 85 years old experience difficulty performing one or more ADLs (e.g., eating, bathing, dressing, getting in/out of chair/bed, walking, and toileting) (US Administration on Aging, 2010), In our 90+ year olds, this was 74% of participants. Even more experience difficulties with instrumental tasks such as driving and keeping track of current events (85% and 89%, respectively, in our study). In another study, more than 25% of community-resident Medicare beneficiaries older than 65 years had difficulty in performing one or more ADLs and an additional 15% reported difficulties with IADLs (US Administration on Aging, 2010). The rate of limitations in activities among individuals 85 years and older is much higher than it is for individuals aged 65 to 74 years. As shown in

our study, these rates continue to increase in 90+ year olds. In our study, use of a wheelchair (difficulty with mobility) and a bath aid (difficulty with bathing) were significantly associated with not living at home.

Previous exploratory analyses determining the amenities that individuals currently used to age in place in the home versus in other settings highlight the importance of community care. Home care services, home delivered meals, transportation, senior centers, adult day centers, family caregiver support and respite care, home nursing, and case management provide both service and opportunity for elders to remain in their homes longer (Gaugler, Kane, Kane, & Newcomer, 2005). All of these services were used by a portion of our elderly. Among our participants who lived at home, we found little use of Meals on Wheels (4%), senior center service (5%), or transportation (10%), but 36% of participants had assistance from a paid caregiver. Among individuals with chronic disease, having Meals on Wheels and a paid caregiver were related to living at home. Secondary data analysis from the Community Partnership for Older Adults survey found that among “vulnerable” adults (those at significant risk of needing long-term care services in the near future, which included 54% because they were aged 75+ years), 25% use senior centers, 24% use visiting nurses, 9% use personal assistance, 10% use transportation, and 10% use senior lunchs (Tang & Lee, 2010). The authors suggest that low use of these services may be due to lack of perception of need, unawareness of the availability of these services, or ineligibility for some services. In fact, some studies have found that older adults are often not aware of long-term care and services that are available in the community (Tang & Pickard, 2008).

The homes of older individuals have increasingly become the sites of long-term care. Unpaid informal caregivers, chiefly families and secondarily friends and neighbors, provide more than 80% of home care to dependent older individuals (Binstock & Cluff, 2000). Although less than 10% of our 90 year olds lived with a paid caregiver, approximately half used paid caregiver services, and one-quarter had unpaid caregivers. Having a caregiver (paid and unpaid) was associated with living situation in our study and was likely a primary reason many of our 90+ year olds were able to continue to live in their own home. Because being married was highly associated with living at home, it is likely that the spouse is the primary caregiver for many of the elderly. In an aging society, the caregiver role is projected to expand.

Lau, Scandrett, Jarzebowski, Holman, and Emanuel (2007) described aging in place as a systems-based, multi-causal framework consisting of three levels: micro, mezzo, and macro. The ability of an older adult to age in place depends on (1) micro: the person’s biological and psychological characteristics, such as mental, physical, and functional health, as well as attitude, knowledge, and health-risk behaviors; (2) mezzo: the individual’s social network of family, friends, and neighbors and his association with the medical/social systems; and (3) macro: economic, social, and political forces including Medicare and social service systems.

Each of these levels of framework appears at work in our population sample of 90+ year olds. The physically healthy and cognizant individuals can continue to live independently even into very old age. As physical or cognitive capacity declines with age, older individuals need additional support, accessible infrastructure, and social resources to maintain

independence. Men, who tend to marry younger women and to have wives who outlive them, are often able to live with a spouse into old age despite chronic disease. The single woman (which accounted for 94% of women in our study) who experiences increasing age and disability is more likely to maintain independence with a paid caregiver. However, this option may be unavailable to some due to the economic costs and the individual's financial situation. Nonetheless, increasing age, ill health, hospitalizations and falls, need for bathing assistance, and wheel chair use often lead to a move to assisted living situations, board and care facilities, and nursing homes (especially for those who are bedridden). Board and care homes, also known as residential care homes, are group living arrangements, usually in a private residential home, designed to meet the needs of people who cannot live independently, but do not require nursing home services. Most provide help with some of the ADLs. Moves to these different kinds of facilities are associated with reduced leisure activities, decreased ability to perform ADLs and IADLS, and increased problems with memory, orientation, and judgment.

Our epidemiological study has several strengths and limitations. Notable strengths include its large sample of adults in very late life and its incorporation of many variables. However, the cross-sectional nature of living situation and most variables precludes the ability to determine the temporal relationships among these. Our participants are from a select population—moderately affluent, highly educated, health conscious, and primarily Caucasian—which limits the generalizability of our results but indicates how the most advantaged (those with wealth, education, knowledge, and health care) might fare. With constant community-level factors, the current study was able to focus on individual factors (e.g., demographics, personal health, and functional ability) and the individual's interaction with the environment (e.g., use of assistive devices and supportive services and participation in activities). We have no data on home modification or management of interior home maintenance difficulties all exterior maintenance is provided by the community.

Aging in place is a complex issue that should be investigated from different perspectives and using different methodologies (Fange, Oswald, & Clemson, 2012). Different aspects of aging in place have come from diverse disciples of sociology, psychology, occupational therapy, nursing, architecture, public planning, social work, and, with this study, epidemiology.

CONCLUSION

Aging is not easy, and the infirmities of aging can be limiting. Nonetheless, for the majority of older people, the home is the preferred residence in which to grow old. Our study shows that despite ill-health and increased functional disability but in an elder-friendly community with the help of family, friends, and paid caregivers and with a medical and social support system, many 90+ year olds can continue to live independent lives at home. With knowledge and provision of in-home assistance, many of the very old may maintain the desirable goal of aging in place.

REFERENCES

AARP. Fixing to stay: A national survey of housing and home modification issues. Washington, DC: Author; 2000.

Beard RL, Sakhtah S, Imse V, Galvin JE. Negotiating the joint career: couples adapting to Alzheimer's and aging in place. Journal of Aging Research. 2012; 2012:797023. [PubMed: 22220277]

Binstock, RH.; Cluff, LE., editors. Home care advances: Essential research and policy issues. New York, NY: Springer; 2000.

Centers for Disease Control and Prevention Research Centers Healthy Aging Research Network. The HAN network. 2005. Retrieved from http://www.prchan.org/docs/logicmodnarrative.pdf.

Centers for Disease Control and Prevention. Falls among older adults: An overview. 2011. Retrieved from http://www.cdc.gov/HomeandRecreationalSafety/Falls/adultfalls.html.

Clark CM, Ewbank DC. Performance of the dementia severity rating scale: A caregiver questionnaire for rating severity in Alzheimer disease. Alzheimer Disease and Associated Disorders. 1996; 10:31–39. [PubMed: 8919494]

Corrada MM, Brookmeyer R, Berlau D, Paganini-Hill A, Kawas CH. Prevalence of dementia after age 90: Results from the 90+ study. Neurology. 2008; 71:337–343. [PubMed: 18596243]

Corrada MM, Brookmeyer R, Paganini-Hill A, Berlau D, Kawas CH. Dementia incidence continues to increase with age in the oldest old. The 90+ study. Annals of Neurology. 2010; 67:114–121. [PubMed: 20186856]

Davenport J, Rathwell TA, Rosenberg MW. Aging in Atlantic Canada: Service-rich and service-poor communities. Healthcare Policy. 2009; 5:e145–e160. [PubMed: 20676245]

Emlet CA, Moceri JT. The importance of social connectedness in building age-friendly communities. Journal of Aging Research. 2012; 2012:173247. [PubMed: 22162807]

Fange AM, Oswald F, Clemson L. Aging in place in late life: theory, methodology, and intervention. Journal of Aging Research. 2012; 2012:547562. [PubMed: 22619718]

Gaugler JE, Kane RL, Kane RA, Newcomer R. Early community-based service utilization and its effect of institutionalization in dementia caregiving. The Gerontologist. 2005; 45:177–185. [PubMed: 15799982]

Jorm AF, Jolley D. The incidence of dementia: a meta-analysis. Neurology. 1998; 51:728–733. [PubMed: 9748017]

Katz S, Ford AB, Moskowitz RW, Jackson BA, Jaffe MW. Studies of illness in the aged. The index of ADL: A standardized measure of biological and psychological function. JAMA. 1963; 185:914–919.

Lau DT, Scandrett KG, Jarzebowski M, Holman K, Emanuel L. Health-related safety; A framework to address barriers to aging in place. The Gerontologist. 2007; 47:830–837. [PubMed: 18192636]

Lawton, MP.; Nahemow, L. Ecology and the aging process. In: Eisdorfer, C.; Nahemow, L., editors. The psychology of adult development and aging. Washington, DC: American Psychology Association; 1973. p. 464-488.

Michael YL, Green MK, Farquhar SA. Neighborhood design and active aging. Health Place. 2006; 12:734–740. [PubMed: 16159710]

Mollica, RL.; Jenkins, R. State assisted living practices and options. A guide for state policy makers. Portland, ME: National Academy for State Health Policy; 2001.

Otis, KA. PhD Dissertation. Chapel Hill, NC: University of North Carolina; 2008. Everything old is new again: A social and cultural history of life on the retirement frontier, 1950–2000.

Paganini-Hill A, Kawas CH, Corrada M. Type of alcohol consumed, changes in intake over time and mortality: The Leisure World Cohort Study. Age Ageing. 2007a; 36:203–209. [PubMed: 17350977]

Paganini-Hill A, Kawas CH, Corrada M. Non-alcoholic beverage and caffeine consumption and mortality: The Leisure World Cohort Study. Preventive Medicine. 2007b; 44:305–310. [PubMed: 17275898]

Paganini-Hill A, Kawas CH, Corrada MM. Activities and mortality in the elderly: The Leisure World Cohort Study. Aging in Place in a Retirement Community 205 Gerontology Series A Biological Sciences and Medical Sciences. 2011; 66:559–567.

Paganini-Hill A, Ross RK, Henderson BE. Prevalence of chronic disease and health practices in a retirement community. Journal of Chronic Diseases. 1986; 39:699–707. [PubMed: 3734024]

Pfeffer RI, Kurosaki TT, Harrah CH Jr, Chance JM, Filos S. Measurement of functional activities in older adults in the community. Journal of Gerontology. 1982; 37:323–329. [PubMed: 7069156]

Plouffe L, Kalach A. Toward global age-friendly cities: Determining urban features that promote active aging. Journal of Urban Health. 2010; 87:733–739. [PubMed: 20549569]

Rowles, G. Evolving images of place in aging and “aging in place”. In: Shenk, D.; Achenbaum, WA., editors. Changing perceptions of aging and the aged. New York: Springer; 1994. p. 115-125.

Rubenstein RL. The home environments of older people: A description of the psychosocial processes linking person to place. Journal of Gerontology. 1989; 44:S45–S53. [PubMed: 2921478]

Sabia JJ. There’s no place like home: a hazard model analysis of aging in place among older homeowners in the PSID. Research on Aging. 2008; 20:3–35.

Simpson, D. Third age urbanism: Retirement utopias of the young-old. New York: Columbia University of New York; 2010. (unpublished dissertation).

Tang F, Lee Y. Home- and community-based services utilization and aging in place. Home Health Care Services Quarterly. 2010; 29:138–154. [PubMed: 20845175]

Tang F, Pickard JG. Aging in place or relocation: Perceived awareness of community-based long-term care and services. Journal for the Elderly. 2008; 22:404–422.

U.S. Administration on Aging. A profile of older Americans: 2010. Washington, DC: Administration on Aging; 2010. Retrieved from http://www.aoa.gov/AoARoot/Aging_Statistics/Profile/2010/index.aspx.

U.S. Census Bureau. Projected population by single year of age, sex, race, and Hispanic origin for the United States: July 1, 2000 to July 1, 2050 (NP 008_D1.xls). 2008. Retrieved from http://www.census.gov/population/www/projections/downloadablefiles.html.

U.S. Census Bureau. Age and sex composition: 2010. Census Bureau Briefs. 2011. Retrieved from http://www.census.gov/prod/cen2010/briefs/c2010br-03.pdf.

Vasunilashorn S, Steinman BA, Liebig PS, Pynoos J. Aging in place: evolution of a research topic whose time has come. Journal of Aging Research. 2012; 2012:120952. [PubMed: 22175020]

Zimmerman P. Ross W. Cortese: The man who made retirement fun. Leisure World History. 1980; 1(1):20–31.

TABLE 1

Characteristics of the cohort by living situation

	At home	Other	Total
Number	823	662	1485
Percent of total	55	45	100
Age (years)*			
90–91	39	21	31
92–93	26	27	27
94+	35	52	42
Female*	72	84	78
Married (missing = 9)*	24	6	16
Smokes (missing = 73)	1	1	1
Drinks alcohol (missing = 128)*	55	29	43
Drives a car (missing = 7)*	35	6	22
Education (missing = 4)*			
<= high school graduate	25	36	30
Some college or vocational school	36	26	31
College graduate	39	38	39
Medical history			
Angina or coronary artery disease (missing = 139)	13	14	14
Heart attack (missing = 103)	13	9	11
Heart valve disease (missing = 123)	6	6	6
Congestive heart failure (missing = 122)	13	18	15
Stroke (missing = 187)	21	22	22
Transient ischemic attack (missing = 177)*	16	28	21
Diabetes (missing = 74)	7	7	7
Osteoarthritis (missing = 148)	41	46	43
Rheumatoid arthritis, lupus or scleroderma (missing = 118)	9	7	8
Peptic ulcer disease (missing = 114)	7	8	8
Syncope or fainting (missing = 125)	9	9	9
Head trauma with loss of conscience (missing = 139)	4	7	6
Cancer	28	26	27
Glaucoma (missing = 114)	19	16	18
Macular degeneration (missing = 107)	29	30	29
Cataract (missing = 167)	75	70	73
Dementia*	10	36	22
Parkinson’s disease (missing = 84)	1	3	2
Anxiety disorder (missing = 99)*	6	14	10
Depression (missing = 117)*	12	28	19
High cholesterol (missing = 195)*	34	22	29

	At home	Other	Total
High blood pressure (missing = 98)	54	47	51
Thyroid disease (missing = 146)	26	29	27
Hospitalized in last year (missing = 130)*	32	43	37
Fell in last year (missing = 74)*	48	57	52
Assistive devices			
Dentures (missing = 105)	38	38	38
Glasses (missing = 560)*	93	85	89
Hearing aide (missing = 571)	44	44	44
Bath aid (missing = 613)*	56	80	67
Cane (missing = 94)	34	27	31
Walker (missing = 55)*	44	56	49
Wheelchair (missing = 64)*	17	53	33
Bedridden (missing = 57)*	3	13	7
Supportive services			
Paid caregiver (missing = 94)*	36	57	45
Unpaid caregiver (missing = 214)*	20	36	26
Meals on wheels (missing = 585)*	4	1	2
Senior Center services (missing = 587)	5	4	4
Transportation (missing = 585)	10	6	8
Medication supervision (missing = 585)	2	5	4
Case management (missing = 585)	5	10	7
Adult day care (missing = 589)	1	1	1

* $p < 0.001$.

TABLE 2

Leisure activities by living situation

	At home	Other	Total
Number	514	215	729
Percent of total	71	29	100
	%	%	%
Being outside, going for walks, enjoying nature[1*]	66	45	60
Being with animals[3*]	28	41	32
Getting together with family and friends[1]	58	61	59
Talking to family and friends on the telephone[1*]	75	59	71
Going to movies, museums, entertainment[2]	23	19	22
Going to church, synagogue, religious events[2]	29	23	27
Going shopping[1*]	42	13	34
Going for a ride in the car[1*]	52	28	45
Travel (overnight)[3*]	35	19	31
Reading or having stories read to you[1*]	83	65	78
Listening to radio, watching TV[1*]	98	91	96
Playing games or cards, doing crosswords, puzzles[2]	39	30	36
Doing vigorous exercise[2]	42	30	39
Doing handiwork or crafts[2]	19	13	17
Gardening[2*]	26	12	22
Sitting and thinking[1]	81	88	83

[1] number > = a few times per week.

[2] number > = a few times per month.

[3] number > = a few times per year.

* $p < 0.001$.

TABLE 3

Observational questionnaire by relative, friend or caregiver

	At home	Other	Total
Number	457	438	895
Percent of total	51	49	100
	%	%	%
Memory[1]	81	47	64
Orientation	65	28	47
Judgment	51	16	34
Social interactions	43	11	27
Home Activities	48	11	30
Personal care	69	23	46
Speech / language	57	26	42
Recognition	70	30	51
Feeding	75	33	55
Continence (n=38 missing)	57	19	39
Mobility	57	14	36
All	54	12	33

[1] number reported normal; for memory normal also includes occasional benign forgetfulness and for mobility also includes occasional difficulty with driving or public transportation but fully independent for walking.

$p < 0.0001$ for all observations.

TABLE 4

Functional activities[1] questionnaire completed relative, friend or caregiver by living situation

	At home	Other	Total
Number	419	409	828
Percent of total	51	49	100
	%	%	%
Activities of daily living (ADLs)			
Feeding, including cutting meat or buttering bread	74	33	53
Bathing, either sponge bath, tub bath or shower	60	17	39
Dressing, including getting clothes from closet and drawers and using fasteners	63	21	42
Getting in and out of bed or chair	53	22	38
Going to toilet room for bowel and urine elimination and cleaning self after (missing = 175)	66	26	46
Controlling urination and bowel movement	64	26	45
Moving about indoors	48	15	32
Moving about outdoors	35	9	22
All ADLs	30	5	18
All ADLs except moving	44	10	27
Instrumental activities of daily living (IADLs)			
Paying bills, writing checks, balancing a checkbook, keeping financial records	60	17	39
Assembling taxes, managing business affairs or papers	55	14	35
Shopping alone for clothes, groceries, and household necessities	53	13	33
Playing a game of skill or working on a hobby	61	24	42
Heating water, making a cup of coffee (tea) and turning off stove	74	28	51
Preparing a balanced meal	60	14	37
Keeping track of current events	73	31	53
Paying attention and understanding a TV program, discussing a book or newspaper article	72	32	52
Remembering appointments, plans, household tasks, car repairs, family occasions, holidays, or medications	62	25	44
Driving a car	30	5	18
Traveling out of the neighborhood, arranging to take bus or taxi	54	14	34
Using the telephone	69	33	51
All IADLs	24	3	14

[1] Does without difficulty or advice or doesn't do regularly but can do if he/she had to. $p < 0.0001$ for all variables.