

**AGING IN PLACE: PRE-RETIREEES' VIEW OF ENVIRONMENTAL ADAPTATION IN
MAINTAINING INDEPENDENCE**

Joan R McFadden and Jeanette A Brandt

Abstract

Aging in place means being able to live independently in one's current residence. This study examined the views of the future elderly to determine whether they plan to take a proactive stance in adapting their environment to meet their aging needs. Housing needs, preferences, policies, standards, and designs (barrier free, universal, accessible, and adaptable) are reviewed. An age stratified random sample of pre-retirees from three states (N=1033) assessed the feasibility of modifying their home to accommodate a wheelchair. The majority of the respondents were male, married, and 52 years old, with median family income between \$35,000 and \$49,999. Eighty-two percent of the respondents indicated a preference to retire in single family homes, and 92 percent were residing in same. Number of sources of retirement income and being married were identified in multiple regression analyses as related to feasibility of altering current housing to accommodate a wheelchair.

Introduction

Aging in place means many things to many people; however, in this paper it means being able to live independently in one's current residence as the relationship between personal competence and the environment varies as one ages. The changes that older adults are confronted with which most frequently precipitate a residential relocation are health, death of a spouse, or loss of income (Pastalan, 1990).

In old age, the decrease in strength, agility, and fine motor control may be exacerbated by arthritis, stroke, or other diseases. Lack of muscle tone and impaired muscle coordination contribute to increased tendency for falls and difficulty in negotiating the environment, which may be devastating for older people. In the age 75 and older population, injuries are the sixth leading cause of death with falls being the leading cause of injury-related deaths (Scannell & Baggett, 1989). The group of elderly over the age of 85 is most likely to have some form of physical disability, but the majority reside in non-institutional settings in the community (Introduction to the Series, 1989). Many older people will, through the process of time, be prone to spend periods of time in a wheelchair (Valins, 1988).

Purpose

The purpose of this study was to examine the views of the future elderly to determine whether they plan to take a proactive stance in adapting their environment to meet their aging needs. Do pre-retirees prefer to age in place? And, if they do, how do they view the potential of environmental adaptation and its role in maintaining independence?

Objectives

1. To analyze preference for *privacy* in living style as evidenced by residence in a single family dwelling and its association with preference for single family housing during the first 10 years of retirement
2. To analyze the extent to which pre-retirees preferred to age in place with the propensity to alter existing housing

Joan R McFadden is Professor in Home Economics and Consumer Education, College of Family Life, Utah State University. Jeanette A Brandt is Associate Professor in Apparel, Interiors, Housing and Merchandising, College of Home Economics, Oregon State University.

3. To determine if demographic variables, health status, gender, marital status, age, and education of respondent were related to positive response to adapt environment to meet their aging needs
4. To determine if level of income was related to propensity to alter the housing environment

Review of Related Literature

The person-environment interaction model, its expansion and the inclusion of a wider range of individual attributes is discussed in the first section of the review of related literature. This is followed by a look at the housing tenure of the elderly and how their housing needs are being addressed in national housing policy and specialized housing design: barrier free, universal, accessible, adaptable, supportive, and transgenerational.

Person-environment Interaction

The study of the interaction between the environment and the individual in social gerontology and adjacent fields has been most influenced by Lawton's ecological model of aging, first proposed in 1973 by Lawton and Nahemow (Wister, 1989).

The basic premise of this model is that individual behavior and satisfaction are contingent upon the dynamic balance between the demand character of the environment (press) and the individual's ability to deal with that demand (competence). (Pollack & Newcomer, 1986)

Expanding the person-environment model. Several of the weaknesses in the press-competence model that have been identified include dealing adequately with individual's needs and preferences (Carp), environmental resources as well as demands (Kahana), and the active role that the individual assumes, such as attitudes, knowledge, preferences, and perceptions (Rowles & Ohta) (cited in Wister, 1989).

In response to this critique, the concepts of proactivity, reactivity, and individual resources have been incorporated into Lawton's revised model (cited in Wister, 1989). Regarding proactivity, Lawton stated that "it is people who create social structure; therefore, the volitional, proactive contribution of the person to the social structure needs to be acknowledged." Personal resources have been viewed as means by which one can engage in proactive behavior, whereas reactive behavior has been viewed as simply a response to environmental press. (Wister, 1989)

Wister (1989) studied the propensity of persons 74 years and older to alter their housing environment. He hypothesized that (1) income, (2) preference for privacy and independence in living style, and (3) social expectations to live separately would be positively related to the tendency to make alterations to the housing environment; and (4) health status and 5) perception of remaining length of life would be negatively related. Only income was not related in the direction hypothesized; it was negatively related. Wister suggested that perhaps the reason the data he gathered showed that persons with lower incomes were more likely to have changed the design of their homes was because the more affluent may purchase other dwellings that better suit their needs.

Several sociodemographic and environmental factors were also incorporated into the analyses for exploratory purposes and as control variables: measures of social support, living arrangement, dwelling type, age, gender, and marital status. Wister's sample lived in the Chicaner-Waterloo region in Ontario, Canada and was comprised of 280 elderly 74 years of age and over. The mean age of respondents was 79.2. Approximately 53 percent were women; 45 percent of the sample were married. Slightly more than 80 percent lived in a house, either owned or rented. Average income was \$10,500 (data collected in 1987). Living arrangements included 37 percent living alone, 37 percent living only with a spouse, and 26 percent living with others.

With regard to health status and propensity to alter their environment, Wister (1989) suggested persons 74 years and older engage in psychological adaptation to their physical environment more readily than they do to changing the physical or social environment. Wist-

er defined psychological adaptation as internal responses to the interaction of individual competence with environmental demands.

Future retirees. Since World War II the number of economically advantaged retired households has grown rapidly (Kart, Longino, & Ullmann, 1989). They are characterized as headed by married, noncentral-city home owners with residential stability and multiple income sources. Research on aging has been criticized for focusing on differences between age groups while substantial heterogeneity exists within age groups. The result is a gerontology of the usual or normal (Rowe & Kahn, 1987). Successful aging focuses on the heterogeneity within age groups and factors that explain success. Economic factors--demographics, socioeconomics, relational and environmental characteristics--should be examined. Hudson (1987) defined the "able" elderly as a growing number of older people who are socially integrated, vigorous, affluent, and well. Wister (1989) suggested that a deeper understanding of proactive environmental adaptation include a wider range of individual attributes. Are there future elderly who will take a more proactive stance in adapting their environment to meet their aging needs?

Housing Tenure

The national housing tenure statistics have placed the percent of the U.S. population that owns their home at 60-65 percent and the percent that rents at 35-40 percent. Recent data, however, show that about 75 percent of elderly householders own the home in which they live; in 1987, about one in four owner householders and less than one in six renter householders were elderly (Bureau of the Census, 1990). Housing occupied by the elderly is generally older and less adequate than the balance of the nation's housing with almost half of the units built prior to 1950 (Pastalan, 1990).

Although we need to examine ways of maintaining and adapting the existing housing stock, it is also important to guide the development of new housing. In the not too distant future, this will be the housing of older adults, most of whom prefer to remain in their previous environments and age in place. Thus, choices made today will have a significant bearing on future person-environment interaction (Howe & Chapman, 1989).

Addressing Housing Needs

Feeling independent and capable is an important need of all age groups. Independence can be enhanced by providing the necessary supports to assist the elderly in functioning at a level according to their capabilities (Scannell & Baggett, 1989). Options for maintaining and adapting single family housing can involve not only existing housing but also new construction (Howe & Chapman, 1989). Various reports and policies show the focus on design features.

National housing policy. Although the majority of the elderly age in place in single family dwellings, national housing policy for approaching the housing problems of older people has focused almost entirely on multiple family housing (Newman, 1986).

It is important to note that there are just as many disabled young people as there are disabled over retirement age. There is no justification for restricting design for the handicapped only to housing developed for the elderly. (Valins, 1988)

In a major step toward unifying the accessibility standards, the four agencies that are authorized by law to issue standards have issued a joint document entitled *Uniform Federal Accessibility Standards*, based on the Architectural Barriers Act, 42 USC 4151-4157.

The document embodies an agreement to minimize the differences between the standards previously used by four agencies (the General Services Administration, the Departments of Housing and Urban Development and Defense, and the United States Postal Service) and between those standards and the access standards recommended for facilities that are not federally funded or constructed. (General Services, 1988)

Barrier free design. Builders believe that meeting the needs of the disabled is difficult because this population is diverse and needs vary. "But generally, what the handicapped would like would be for builders to provide an option package that would create houses with

barrier-free design" (McLeister, 1987, p. 78). This was the conclusion of a group convened recently by the National Association of Home Builders' Vice President and Treasurer, Shirley McVay Wiseman. Options, such as doors three feet in width throughout a home, or a ramp rather than a fireplace, flashing lights instead of a doorbell, or braille controls on appliances, would allow consumers options.

A report by the Department of Housing and Urban Development (HUD) showed that renovating a single-family house increased costs by approximately 21 percent compared to new construction. But to build a barrier free design initially increases costs by 2 to 3 percent, according to HUD. (McLeister, 1987)

One 24-unit rental project financed by HUD, designed specifically for people with ambulatory difficulties, has enjoyed the success of no vacancy and a waiting list that more than exceeds the number of units available. The intent was to provide financially affordable housing that was architecturally accessible for physically disabled. The community demanded that the project not look institutional. This project has enjoyed an enviable success record (Lemov, 1985).

Barrier free design is not a new concept. In 1973, an architect started a firm called Barrier Free Environments. The demand for homes designed for the disabled and elderly far exceeded the expectations. Medical technology has enabled more disabled to return to the family setting where they can function if structural barriers do not prevent their devices from traversing the residential setting. Although disabled from polio, the architect has not sacrificed visual appeal or value in the designs and housing concepts he promotes. "Indeed, some architects believe the universal appeal of accessible housing--combined with recent aesthetic improvements--can actually improve a home's resale value." (Godwin & Van Cott, 1988)

Universal design. The intent of the universal design concept is to simplify life for everyone by making more housing usable by more people at little or no extra cost. Universal design is an approach to design that incorporates products as well as building features and elements which, to the greatest extent possible, can be used by everyone (Binsacca, 1990).

Accessible housing. Legislation requiring accessibility in public buildings has been in effect over twenty years. Yet little attention has been paid to mandating accessible private housing.

The Fair Housing Act of 1988 specified that:

All covered dwellings for occupancy after March 18, 1991, shall be designed and constructed to have at least one building entrance on an accessible route (defined as a continuous unobstructed path). Specifically, all covered multifamily dwellings for first occupancy after March 13, 1991 shall be designed and constructed in such a manner that:

- (1) The public and common use areas are readily accessible to and usable by handicapped persons.
- (2) All the doors designed to allow passage into and within all premises are sufficiently wide to allow passage by handicapped persons in wheelchairs, and
- (3) All premises within covered multifamily dwelling units contain the following features of adaptable design:
 - (i) An accessible route into and through the covered dwelling unit;
 - (ii) Light switches, electrical outlets, thermostats, and other environmental controls in accessible locations;
 - (iii) Reinforcements in the bathroom walls to allow later installation of grab bars around the toilet, tub, shower stall and shower seat, where such facilities are provided;
 - (iv) Usable kitchens and bathrooms such that an individual in a wheelchair can maneuver about the space. (Federal Register, 1991)

Adaptable housing. An adaptable house is built with elements that can be easily modified or replaced depending on the needs of an occupant. It would require some further modifications to accommodate an occupant with physical impairments; in that respect it differs from an accessible house (Howe & Chapman, 1989).

Supportive housing. The National Affordable Housing Act would make supportive housing an important element in a strong national housing policy.

Housing for the elderly and disabled persons must be more than a decent, safe, and sanitary structure. It must be supportive housing. That is, it must be housing that accommodates special physical needs of tenants that includes a range of supportive services. (Committee on Banking, 1989)

Transgenerational housing. Transgenerational housing addresses the usefulness of adaptable features by inhabitants of all ages. Such housing minimizes environmental obstacles and provides unobtrusive aids to movement and perception. Comfortable surroundings for the old are also more comfortable for the young according to Gaskie, 1988 (cited in Peritt, 1990). Consequently, the purchase of a transgenerational home by a middle-aged couple would enhance living throughout the life cycle while extending capabilities for independent living and aging in place well into older adulthood.

Methods

Data for this study were obtained from a survey conducted in spring 1990 as part of a Western Regional Agricultural Experiment Station (W-176) project entitled "Housing and Locational Decisions of the Maturing Population: Opportunities for the Western Region" (McFadden & Brandt, 1991). Three western states (Idaho, Oregon, and Utah) and Michigan participated in the data collection. A discussion of the questionnaire, sample selection, and treatment of the data follows.

Description of the Questionnaire

The researchers modified a 10-page mail questionnaire, "Thinking Ahead to Retirement: Community and Housing Choices," that had been developed as a part of this project for previous data collection. The Total Design Method (TDM) for Mail Surveys by Dillman (1978), a survey method used to elicit a higher response rate, was employed in designing the questionnaire and in collecting data. The response rate for Idaho, Oregon, and Utah was 55 percent. Data from Michigan is not reported in this paper.

Sample Selection

An age-stratified random sample of each state's population between 40 and 65 years of age was purchased from a commercial sampling firm. The age delineation was selected to allow representation of persons on the age continuum to compare those near retirement as well as those who have considerable time until retirement. Data from the three western states (N=1033), Idaho, Oregon, and Utah, were used in this study and included 99 renters and 934 home owners.

Treatment of the Data

Independent variables. Demographic variables and personal preferences of pre-retirees were used as independent variables. These included gender, marital status, health, age, education, income, and ageplace, a variable that utilized preference to retire in place, and likelihood of moving upon retirement data.

Dependent variables. The feasibility of modifying the respondent's present home to accommodate a wheelchair was used as the dependent variable. Modifying to accommodate a wheelchair was selected because wheelchair confinement requires the most changes of any of the mobility impairments. If a home can accommodate a person in a wheelchair, it can also accommodate a person who uses a cane or a walker. Respondents were asked to analyze structural features in their own homes and indicate one of these responses: (a) can accommodate a wheelchair, (b) can be modified to accommodate a wheelchair, or (c) costs to modify are prohibitive. Structural features included exterior walkways, outside entrances, interior hallways, kitchen doorways, bathroom doorways, height of storage shelves, and height of working spaces, such as counters. These data were recoded into two variables for use in this study. "Modify" was the name given to a variable created by counting the number of times the respondent marked that space could accommodate a wheelchair or could be

modified to accommodate a wheelchair. The modify scores had the potential to range from 0-7. A second variable was created by summing the responses called "accommodate" reported for the seven structural features, giving the *now accommodates* a value of 3, the *could be modified* a value of 2 and the *cost to modify prohibitive* a value of 1. The accommodation score had the potential to range from 7-21.

Statistical Analyses

Descriptive statistics were computed on the socio-demographic variables for the sample description. Data from the three western states (N=1033) were used for the sample description as well as for the analysis of the first hypothesis. Thus, 99 renters and 934 homeowners, those who make up the total sample (N=1033), were included in the descriptive analysis and analysis of the first hypothesis. Only respondents who owned their homes (n=934) were included in the analyses of data related to testing the remaining hypotheses (2-5), because respondents who occupy rented property would be unlikely to be in a position to determine the feasibility of structural modification to the property in which they reside.

Data were analyzed to determine respondents' preferences for an independent living environment. Preference for independent living was determined by response to preferred type of residence. Single family dwellings or mobile homes were the most independent options, while multiple family structures were the less independent or less permanent option. Preferences to retire in place and unlikelihood of moving upon retirement were analyzed for relationship with respondents' assessment of feasibility of altering existing housing. The level of significance was set at .05.

Null Hypotheses

Null hypotheses tested included the following:

1. There is no relationship between preference for privacy in living style as evidenced by residence in single family dwelling and the frequency with which pre-retirees prefer single family dwellings during the first ten years of retirement.
2. There is no relationship between pre-retirees who prefer to age in place and those who prefer to move their assessment of their present home to accommodate a wheelchair or the potential to accommodate one.
3. There is no relationship between the extent to which pre-retirees prefer to age in place and their assessment of whether their home could accommodate a wheelchair, be modified to accommodate one, or whether cost to modify is prohibitive.
4. There is no relationship between selected demographic variables (health status, gender, marital status, age, and education of respondent) and respondent's assessment of the feasibility of altering his/her present housing.
5. There is no relationship between anticipated number of sources of retirement income and respondent's assessment that his/her current housing could accommodate a wheelchair or be modified to accommodate one, as evidenced by the wheelchair modify score.

Findings

Description of Respondents

The majority of the respondents were male (81.8 percent) and married (81.2 percent). Median age was 52 years (range, 40-80). Many respondents had earned a college education: a doctoral degree (5.2 percent), masters degree (10.8 percent), a bachelors degree (18.9 percent), a 2-year degree (7.2 percent); others had schooling or technical training beyond high school (30.3 percent), or a high school diploma or less (27.6 percent).

The median total family income was in the \$35,000 to \$49,999 category (25.5 percent). Fewer respondents had family incomes above the median category \$50,000 and more (31.4 percent). More respondents had family incomes below the median category (\$25,000-

\$34,999), 19.8 percent; and less than \$25,000, 23.3 percent). Some respondents (2.6 percent) did not report their income.

Hypotheses Testing

The null hypotheses and the statistical analysis used to test each are described in the order the objectives and hypotheses were identified in this study.

H₀1. There is no relationship between preference for privacy in living style and the frequency with which pre-retirees prefer type of housing consistent with their current housing during the first ten years of retirement.

Respondents' responses to present type of housing and preferred type of housing were recoded into two categories; multi-family housing structures were coded 1 and single family structures were coded 2. Respondents who preferred a recreation vehicle as their primary residence during the first 10 years of retirement were deleted from this analysis (n=20).

The type of housing preferred for the first 10 years of retirement (hereinafter called retirement housing) and the type of housing in which the respondent currently resided were analyzed. Twelve percent (n=117) preferred multi-family dwellings, and 20 percent of these respondents (n=23) resided in multifamily units. Eighty-eight percent (n=849) of the respondents preferred single family retirement housing, and 90 percent (n=821) were residing in single family homes. Only three percent (n=28) preferred single family retirement housing but currently resided in multi-family units, and 10 percent (n=94) preferred multi-family retirement housing but reside in single family dwellings. The chi square value was significant (X²=51.8, 1 df, p<.00000). Over 100 percent more than currently resided in multi-family dwellings (n=51) expressed a preference to live in multiple family housing during the first ten years of retirement (N=117). Data in the table indicate that respondents in this study lived in single family type housing, and they preferred single family housing during the first 10 years of retirement (Table 1).

H₀2. There is no relationship between the extent to which preretirees prefer to age in place and their assessment of their present home to accommodate a wheelchair or the potential to be modified to accommodate one.

Data from two questions were recoded into a new variable created to study respondents' propensity to age in place; the new variable was named "ageplace." Respondents who preferred the present type of housing and indicated they were unlikely to move were recoded into group 1, called stayers (n=535), and those who indicated that they preferred elsewhere and they were likely to move were recoded group 2, called movers (n=230).

Table 1. Respondent's current housing and preferred retirement housing (chi-square analysis).

Retirement housing	Current Housing		Row Total
	Multi-family	Single family	
Multi-family	23	94	117
Single family	28	821	849
Column Total	51	915	966

Missing observations=67; X²=51.8, 1df, p>.00000.

A wheelchair accommodation score was calculated for use in the analysis to test this hypothesis. Utilizing respondents' estimates of the extent their present home could accommodate a person in a wheelchair--now accommodates or could be modified to accommodate--in each of seven structural spaces, a score called modify" was calculated. A modify mean score was calculated for both the movers and the stayers and had the potential to range from 0 to 7.

Using SPSS (1990), a t-test for independent samples was conducted with the ageplace groups, movers-stayers categories, using the wheelchair modify scores. The F value calculated to test whether the groups were different was significant at the .04 level. The t value for separate variance estimate, selected when groups are different, indicated that the modify

mean score of the stayers (5.9) was significantly different ($t=2.14$, 396 df, $p=.032$) than the modify mean score of the movers (5.6) (Table 2).

H_03 . There is no relationship between the extent to which pre-retirees prefer to age in place and their assessment of the wheelchair accommodation of their present home or the feasibility of altering their present home to accommodate a wheelchair.

The ageplace data, movers-stayers categories, and the wheelchair accommodation data were used in the analysis to test this hypothesis. Respondents were asked to estimate the extent their present home could accommodate a person in a wheelchair in each of seven structural spaces by responding that it (1) now accommodates, (2) could be modified to accommodate, or (3) modification is prohibitive. Using these responses, an accommodation score was calculated. If they responded that their home could accommodate a person in a wheelchair in a given area, their response was recorded as a "3" for this calculation; if the

Table 2. Comparison of the accommodation of present home to a person in a wheelchair by "movers" and "stayers" (t-test analysis).

Groups	M	Mean	Standard Deviation
(1) Stayers	542	5.9	1.9
(2) Movers	232	5.6	2.1

Separate variance estimate: $t=2.15$, 396 df*, $p=.032$.

*This is a weighted average; it does not equal N.

respondents indicated that their home could be modified to accommodate a person in a wheelchair, the response was entered as a "2"; and if the respondents indicated that the cost to modify their home to accommodate a wheelchair in this area would be prohibitive, the response was entered as a "1". Thus, the higher the overall accommodation score, the more the existing home could accommodate or be modified to accommodate a wheelchair. Means had the potential to range from 7 to 21.

Using SPSS (1990), a t-test for independent samples was computed with mean accommodation scores for the stayers and movers as the dependent variable. The first part of this test determines if the groups are statistically different from each other and reports an F value; the F value for this test was .178, not significant at the .05 level. Therefore, the pooled variance estimate was used to determine if the means of the two groups were significantly different. The pooled variance estimate was significant ($t=2.48$, 763 df, $p=0.013$), indicating that the mean accommodation score of the stayers (15.2) is statistically different than the mean accommodation score of the movers (14.6) (Table 3).

H_04 . There is no relationship between selected demographic variables (health status, gender, marital status, age, and education of respondent) and respondent's assessment of the feasibility of altering his/her present housing.

Health of respondent (excellent=4, good=3, fair=2, poor=1), gender (male=1, female=0), marital status (married=1, other=0) age (40-49=1, 50-59=2, 60 and above=3), and education (less than 12 years=1, high school graduate=2, technical school=3, some college=4, 2-year degree=5, bachelors=6, masters=7, doctorate=8) were independent variables in a stepwise multiple regression analysis conducted using the SPSS (1990) regression procedure with wheelchair accommodation score as the dependent variable.

Table 3. Comparison of respondents' preference for present home and unlikely to move, "stayers," and preference for another location and likely to move, "movers" (t-test analysis).

Groups	M	Mean	Standard Deviation
(1) Stayers	535	15.2	2.98
(2) Movers	230	14.6	3.20

Pooled variance estimate: $t=2.48$, 763 df, $p=.013$.

Only marital status entered the procedure ($F=11.09$, 1/977 df, $p=.0009$), but the R square value of .01 suggests that the variable could not be used with confidence in prediction.

H_05 . There is no relationship between anticipated number of sources of retirement income and respondent's assessment that his/her current housing could accommodate a wheelchair or be modified to accommodate one, as evidenced by the wheelchair modify score.

Source of retirement income was the independent variable used in a stepwise multiple regression procedure conducted using the SPSS regression procedure with wheelchair modify score as the dependent variable. Source entered the equation ($F=24.8$, 1/1031 df, $p<.0000$) but accounted for only 2 percent of the variance ($R^2=.02$).

Summary and Conclusions

The respondents were predominantly married males ranging in age from 40-78 years, with median age at 52 years. Educational levels included 42.1 percent with college degrees, 30.3 percent with schooling or technical training beyond high school, and 27.6 percent with high school degrees or less. Median total family income was in the \$35,000 to the \$49,999 category.

The majority of the respondents currently resided in single family housing and preferred to do so in the first ten years of retirement. More than would be expected, however, expressed a preference to live in multiple family housing during the first ten years of retirement, thus indicating that they would be willing to give up a preference for privacy in living style.

Pre-retiree homeowners who indicated that they preferred to age in place, termed stayers, exhibited a proactive stance in regard to whether or not they felt their homes could accommodate or be modified to accommodate a wheelchair. Demographic variables, including health status, gender, marital status, age, and educational level, were not found to be related to a proactive stance, but expected number of sources of retirement income was found to explain two percent of the variability in whether or not respondents felt their homes could accommodate a wheelchair or could be modified to accommodate one.

References

- Binsacca, R. (1990, August). Universal design. *Builder*, p. 68.
- Bureau of the Census. (1990). *Housing Arrangements of the Elderly*. U.S. Department of Commerce SB-2-90.
- Committee on Banking, Housing, and Urban Affairs. (1989). *Supportive Housing Needs of Elderly and Disabled Persons* (23-004). Washington DC: U.S. Government Printing Office.
- Dillman, D.A. (1978). *Mail and telephone surveys: The total design method*. New York: John Wiley and Sons.
- Federal Register (1991, March 6). *Section 3. Fair housing act design and construction requirements*, (56),44. Washington, DC: Government Printing Office.
- Godwin & Van Cott. (1988). Homes without barriers. *Changing Times*, (42),101-106.
- General Services Administration, Department of Defense, Department of Housing and Urban Development, & U.S. Postal Service. (1988). *Uniform Federal Accessibility Standards (FED-STD-795)*. Washington DC: U.S. Government Printing Office.
- Howe, D., & Chapman, N.J. (1989). Aging in place: Maintaining independence in the single family residence. *Livable environments for older people*. Portland, OR: Institute on Aging, School of Urban and Public Affairs, Portland State University.
- Hudson, R. (1987). Tomorrow's able elders: Implications for the state. *The Gerontologist*, (27), 405-409.
- Introduction to the Series (1989). *Livable environments for older people*. Portland, OR: Institute on Aging, School of Urban and Public Affairs, Portland State University.

- Kart, C.S., Longino, C.F., & Ullmann, S.G. (1989). Comparing the economically advantaged and the pension elite: 1980 census profiles. *The Gerontologist*, (29)6, 745-749.
- Lemov, P. (1985, July). Barrier-free, stigma-free. *Builder*, (8), 92-95.
- McFadden, J.R., & Brandt, J.A. (1991). *Housing and locational retirement decisions: A study of pre-retirees in four states* (Research Report No. 139). Logan: Utah State University, Agricultural Experiment Station.
- McLeister, D. (1987). Program looks at housing needs of the handicapped. *Professional Builder*, (52)78.
- Newman, S.J. (1986). Demographic influences on the future housing demand of the elderly. In R. J. Newcomer, M. P. Lawton, & T. O. Byerts (Eds.), *Housing an aging society: Issues, alternatives, and policy* (pp. 21-32). New York: Van Nostrand Reinhold.
- Pastalan, L.A. (1990). Preface. *Journal of Housing for the Elderly*, 6(1/2), ix-xii.
- Perritt, M.R. (1990, October). *Design for aging: A study of elderly housing*. Paper presented at the meeting of the American Association of Housing Educators, Columbia, MO.
- Pollack, L.M., & Newcomer, R.J. (1986). Neighborhoods and the aged. In R.J. Newcomer, M.P. Lawton, & T.O. Byerts (Eds.), *Housing an aging society: Issues, alternatives, and policy* (pp. 119-126). New York: Van Nostrand Reinhold.
- Rowe, J.W., & Kahn, R.L. (1987, July). Human aging: Usual and successful. *Science*, (237), pp.143-149.
- Scannell, A., & Baggett, S.A. (1989). Physical changes with age. *Livable environments for older people*. Portland, OR: Institute on Aging, School of Urban and Public Affairs, Portland State University.
- SPSS Reference Guide (1990). Chicago, IL: SPSS, Inc.
- Valins, M. (1988). *Housing for elderly people*. New York: Van Nostrand Reinhold.
- Wister, A.V. (1989). Environmental adaptation by persons in their later life. *Research on Aging*, 11(3), 267-291.