

ADAPTATION OF MOBILE HOMES
TO PROVIDE FOR INDEPENDENT LIVING
OF THE ELDERLY

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ABSTRACT

ADAPTATION OF MOBILE HOMES TO PROVIDE FOR INDEPENDENT LIVING OF THE ELDERLY

by Roxy Ann Pike

Concerned with adapting the interior space in one kind of housing for use by older people, this is a descriptive study of the present design status of mobile homes involving the inclusion of housing features considered desirable for independent living. The possible incorporation of these features in future mobile home designs and the adaptation of mobile units to the needs of the elderly would give an alternate choice of living arrangements for an increasing segment of the population.

The mobile home is one of the rapidly developing types of housing being chosen by many retired and older people. The essential low-cost and easy maintenance features of mobile homes are among the factors which attract older people to this way of living. Although many elderly people are presently living in mobile homes the addition of certain housing features would provide for safer and easier living.

This study had two primary objectives: first, to review the housing needs of older people as defined by physicians, gerontologists, architects and older people themselves and second, to construct a checklist which would examine the present design status of mobile homes regarding floor plan, furnishings and equipment in models presented by manufacturers for use by older persons. The influence of design-trained personnel on the manufacturer's perception of older people's housing needs was also studied.

Information regarding housing features which enable elderly persons to live independently was obtained from selected literature written by persons knowledgeable of older people's housing needs. From this information, a checklist-questionnaire was constructed and sent to 186 manufacturers of mobile homes measuring 10 or 12 feet wide by 47 to 52 feet long and retailing under \$6,000. Seventy-seven respondents to the checklist provided information concerning models in current production.

The checklist compiled items under eight headings: General Features, Heating and Cooling, Lighting and Wiring, Kitchen, Bedroom, Living Room, Bathroom and Hallways. Number of items contained in the sections ranged from three to 36 with a total of 102 items listed.

Manufacturers included in the sample exhibited varied reactions to producing mobile homes designed for older people. Some firms are realizing older people have

special housing needs and are providing for these needs by designing mobile homes for the elderly. Other firms felt no need to design specifically for older people and stated their present standard models were sufficient but the data from this study revealed these models were not adequate.

Less than one-fourth of the respondents in this study produce mobile homes designed for older people but a majority of the other firms indicated they would manufacture such a model if demand was evident. In mobile homes designed for elderly persons, highest percentages of items were reported in these sections: General Features, Lighting and Wiring, Bedroom and Bathroom. Over one-half of the items in the checklist are included in most units indicated as designed for older people. Manufacturers of the specially designed models indicated some items could be added in every section of the checklist without extra cost. However, an average of more items could be included at no extra cost in the Lighting and Wiring section and the Hallways section.

In this study, employment of design-trained personnel had little effect on the manufacturer's perception of older people's housing needs. Little evidence was found to indicate a positive relationship of interior designers, architects and/or home consultants to the number of items included.

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Roxy Ann Pike

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CHAPTER I

INTRODUCTION

Statement of the Problem

"There are, in the United States today, well over 16,000,000 persons age 65 or older; this is five times as many as we had in 1900, and it is predicted this number will double in the next 40 years."¹ The steadily rising number of older citizens and increased awareness of the changes in behavioral and physical abilities that accompany the aging process have brought attention to the need for specialized facilities for this portion of the population. One of the major concerns today is the provision of various kinds of housing arrangements suited to the elderly.²

One form of housing, the mobile home, has been rapidly increasing for use by older persons and as retirement housing in all parts of the United States. Mobile homes offer many features which are especially desirable for housing the elderly. At the present time various models are

¹Joseph J. Spengler, "II, Aging Populations: Mechanics, Historical Emergence, Impact," Employment, Income and Retirement Problems of the Aged, Duke University Press, 1963, p. 32.

²Leonard Z. Breen, "On the Nature of Aging," A. H. E. A. Workshop on Aging, 1962, pp. 6-7.

available with choice of size and number of rooms. But there are also many disadvantages of construction, equipment and floor plan if these models are to be used by elderly people.¹

Many physical characteristics in the housing structure are considered important in planning shelter for older people. An investigation of these features considered desirable for the elderly and their possible incorporation into mobile homes would lead to the provision of more suitable housing for this particular group. Mobile homes suggest one of the least expensive and most convenient housing arrangements which might be adapted to the various housing needs exhibited by the elderly.

The aims of this study are to describe the housing features desirable for old people who desire to live independently as identified by physicians, gerontologists, architects and old people themselves. These housing features which promote safety and a feeling of general well-being will then be listed by household sections in a checklist and sent to mobile home manufacturers. From the returned checklist, information will be gathered concerning the inclusion of the selected housing features in present mobile home designs, the possibilities of incorporating these features in future models at either no cost and extra cost,

¹George Beauchamp, "Trailer Courts and Retirement Towns," Building for Older People, The National Council on the Aging, 1961, p. 26.

and the influence of design-trained personnel upon housing units produced for use by the elderly. The responses of the manufacturers will be used as indicators of the suitability of mobile homes for older people.

The objective of the research is to investigate the adaptation of one type of housing to provide an alternate choice for independent living for some elderly people.

Review of the Literature

Considerable attention has been directed to a determination of the needs of the elderly in this country. Research has been undertaken also to investigate the housing needs of the retired and over-aged in the United States. Some of this research has reported findings in relation to congregate and protected living, but a substantial amount of research has been involved with independent living arrangements for the elderly. A broad treatment of the standards needed in caring for older people in congregate and protected living was presented in the research of Masur¹ and the report by Alt.²

¹Jack Masur, "Establishing Housing Standards for the Aged," Public Health Reports, LXVII (December, 1952), pp. 1192-1195.

²Edith Alt, Standards of Care for Older People in Institutions, Section I. (New York: Committee on Aging of the National Social Welfare Assembly.)

More important to this study are the investigations of the housing needs of the elderly for independent living which has been undertaken by individuals, educational institutions and government agencies of the United States. A survey by Clark and Clark presented worthwhile additions and changes in independent homes for older people as suggested by persons interested in safety and convenience.¹ Musson and Heusinkveld prepared an architectural check list by which a residence for older persons could be judged as providing facilities for unassisted, completely independent living. The Musson and Heusinkveld volume included requirements for physical and psychological well-being as well as the more usual features.²

Other studies concerning design features desirable in housing for the aged include those by Diamond and Loewenberg. In the Diamond report, recommendations of various items of furniture for use by older people are presented as suggested from a conference of furniture manufacturers, physicians, gerontologists and housing experts.³ The

¹Harold R. and Dorothy J. Clark, Standards for Homes at MEMA Related to Convenience and Safety, Revised June 1, 1966, Unpublished.

²Noverre Musson and Helen Heusinkveld, Buildings for the Elderly (New York: Reinhold Publishing Corp., 1963), p. 204.

³Beverly Diamond, Furniture Requirements for Older People (New York: The National Council on Aging, 1963).

Loewenberg study identifies and lists some special provisions in design which should be incorporated in the house plan as thoughtfully and unobtrusively as possible.¹

Reports completed by housing authorities for the government have produced much of the information presently available on housing conditions of the elderly. Most of these studies make recommendations for improvement of present housing facilities and some studies refer to particular housing projects. One publication describes the development, nature, and impact of a senior citizen's public housing project in Toledo, Ohio.² Another report which was prepared by the Housing and Home Finance Agency included data such as: household size, income, condition of dwellings, housing mobility, and types of structures utilized by the elderly of the United States.³ A report by the 1961 White House Conference on Aging presents a full picture of housing the elderly. This research provides information concerning

¹I. S. Loewenberg, "Designing Homes for the Aging," Wilma Donahue (ed.), Housing the Aging (Ann Arbor: University of Michigan Press, 1954).

²Department of Health, Education and Welfare, Special Staff on Aging. Patterns for Progress in Aging: A Low Rent Public Housing Project for the Elderly (Case Study #12). Washington, D. C.: Government Printing Office, 1961.

³Housing and Home Finance Agency, Senior Citizens and How They Live: Part I, The National Scene. Washington, D. C.: Government Printing Office, July, 1962.

trends and emerging patterns of housing needs and makes recommendations for housing older people.¹

A report by the Task Force on Senior Citizen Housing, Michigan Commission on Aging, considered certain trends which have implications for future housing of older people. The concern of this research was to present proper housing as one of the most important components of retirement life. The study emphasized satisfactory housing as enabling old people to live out their lives in dignity, self fulfillment, good health and as useful citizens.²

The North Carolina Governor's Coordinating Committee on Aging emphasized concern for the older person's housing by stating:

Providing clean, decent, inexpensive housing for our senior citizens is one of America's most pressing problems. The home for older people should keep pace with the changing times. Wise planning should be accomplished.³

The committee also listed guidelines of comfort, safety and convenience should be followed when planning housing for the elderly.⁴

¹White House Conference on Aging, The Nation and Its Older People, Washington, D. C.: Government Printing Office, 1961.

²The Task Force on Senior Citizen Housing, Michigan Commission on Aging, A Ten Year Plan for Housing Older People in Michigan, 1964.

³Apartments for Senior Citizens, Sponsored by the School of Design, North Carolina State, Governor's Coordinating Committee on Aging, Sept., 1963, p. 9.

⁴Ibid.

Other research in the field of independent living is presented in the form of retirement booklets. Such publications are written for the retiree and include recommendations to him regarding what to look for in a retirement home. A volume by Buckley discusses the different types of housing offered to the retiree with advantages and disadvantages for each.¹

Several unpublished Master's theses have dealt with different aspects of housing older people. Lynd² made a study in six retirement housing projects to report the reactions of the residents to such living. Warta³ reported on certain physical homemaking activities and the limitations which the age of the homemaker imposed on these activities. Jones⁴ compared the general needs of elderly people as compared to their social activities. Although

¹Joseph C. Buckley, The Retirement Handbook, (New York: Harper and Bros., 1962).

²Eunice Lynd, "A Study of the Housing Facilities and the Reactions of the Residents in Six Retirement Housing Developments in Ohio" (unpublished Master's dissertation, University Library, Ohio State University, 1961).

³Marjorie Hamon Warta, "The Relationship Between the Performance of Certain Household Bending Activities and the Age and Physical Limitations of 60 Aged Homemakers in Manhattan, Kansas" (unpublished Master's dissertation, Farrell Library, Kansas State University, 1961).

⁴Lois Jones, "Elderly Persons in Outagamie and Winnebago Counties: An Analysis of their Needs, Certain Social Activities, and their Attitudes Toward Selected Aspects of their Communities" (unpublished Master's dissertation, University Library, University of Wisconsin, 1963).

these theses concerned housing the elderly, the information contained was not pertinent to this study.

Little research pertinent to the use of mobile homes for housing older people has been completed. Information is scant except for the knowledge that older people are living in mobile homes. Drake focuses some attention on financing and standards in mobile home park living in providing homes for the aged.¹ In a report by the National Council on the Aging, Beauchamp reported that people who reside in mobile homes are generally satisfied. But the mobile home does have some disadvantages for the older person because it is not physically adapted to the requirements of the elderly.²

A nationwide survey of mobile home owners in the United States, compiled and edited by Edwards in 1966, indicated that 14 percent of the 1266 respondents were retired persons. An earlier study by the same researcher on a similar group of respondents revealed the retired group has increased from 10 percent to 14 percent in seven years.³

¹Joseph Drake, "Homes for the Aged," in Drake, Joseph T. The Aged in American Society (New York: Ronald Press, 1958), pp. 327-355.

²Beauchamp, loc. cit.

³Trailer Topics, A Survey of the Mobile Home Consumer, A Report Prepared by C. M. Edwards, Michigan State University, 1966, p. 3.

CHAPTER II

DEVELOPMENT OF THE MOBILE HOME

Historical Growth of the Industry

The present design and use of the mobile home has been brought about by the changing needs of the people living in them. To gain an understanding of mobile housing, it is necessary to examine the development of the mobile home.

The development of mobile homes might be traced back to the old world gypsy wagons, or to the pioneers' Conestoga wagons, though these wagons would be considered more like travel trailers today. During the 1920's when automobiles increased in popularity and power and better highways were built, mobile homes were first developed. By this time the number of families interested in camping had grown. Campers who experienced loading and unloading camping gear soon tired of such activity; so some enterprising campers devised the idea of carrying the equipment on wheels of its own. To avoid the work and inconvenience of pitching and breaking camp, a collapsible canvas cover

on a box was developed. Thus, the camping trailer was born.¹

By the early 1930's several firms were manufacturing trailers. Because of the economic depression, trailer production did not achieve very great success until the forties. During the year 1940, the trailer industry produced a scant 10,000 units. None of these early products could be termed adequate housing by today's standards. They were generally eight feet wide and no more than 35 feet long. Living in the one bedroom and kitchen-living room combination was, of necessity, compact. The units gradually gained more favor when such refinements as indoor plumbing were added.²

Stimulus to the production of trailers was contributed by World War II, when the population went through a transient period. Many war-related industries were located in areas unprepared for the additional influx of workers. Construction laborers employed at military installations, defense plant workers and military personnel selected the house trailer out of necessity because conventional housing was totally inadequate to meet the demand. Transit

¹C. M. Edwards, Mobile Housing, A Report to the 8th Conference on Improvement of the Teaching of Housing in Home Economics in Land Grant Universities, October 15, 1964, Michigan State University, p. 1.

²Amber Ludwig, "Mobile Homes Move into the Classroom," What's New in Home Economics, Vol XXIX No. 2 (Feb., 1965), p. 67.

laborers soon found they were able to move quickly and live comfortably in trailers. In spite of the lack of space provided, the mobile homes were more satisfactory than other kinds of existing housing facilities.¹

Immediately after the war, the country shifted gears from its wartime effort to peacetime domesticity. Servicemen returning from overseas faced an acute housing shortage. People turned once again to the way of life which had served them during the war. By 1947, mobile units up to 60,000 were produced. In seven years the industry was manufacturing six times the number it had produced during 1940.²

With owners demanding more space and facilities to provide for long-time living in mobile homes, manufacturers began producing units at lengths of 40, 45, and even 50 feet. These modified units included not only a bathroom but two bedrooms and complete kitchen facilities.³ While these large units were still mobile on their own wheels, it was almost impossible to move them with the family car. Therefore, special trucks were designed to pull the large mobile homes from one place to another.

¹Edwards, op. cit., p. 2.

²Ludwig, loc. cit.

³Edwards, loc. cit.

Since people were living in them rather than traveling, the units began to be referred to as mobile homes rather than trailers. This development marked the entrance of trailer manufacturers into the home manufacturing business. The longer length of trailers, now called mobile homes, still did not completely satisfy the demands of owners for more space. By the early 1950's, models 10 foot wide were being made and now in the 60's, a large number of 12 foot models are manufactured. Double-width mobile homes are also available to the consumer; two 10 or 12 feet units are moved individually and placed on a lot side by side to form a 20 or 24 feet wide mobile home. Mobile homes with tilt-out and pull-out rooms are also available.

Mobile homes may be getting less mobile every year, but they are becoming steadily more home-like. Some of the big, new units bear a closer resemblance to prefabricated houses than they do to the house trailers of a few years ago.¹

Identification of the Mobile Home and Trailer

The industry definitions distinguish the differences between a trailer and mobile home. Manufacturers describe trailers as:

¹John Woerpel, "The Elegant UnMobile Homes, and the Units Called Travel Trailers," Mobile Living, Detroit Free Press (April 4, 1965), p. 2.

Units less than 29 feet long, regardless of weight, or weighing less than 4500 pounds, regardless of length. These units are designed to be towed by the family passenger car and will go anywhere that an automobile can be driven. They are intended for family living while either traveling or on vacation trips. Today's modern travel trailers, when connected to water, sewer and electric service, at a trailer site, provide all the facilities of the home in a compact arrangement.¹

On the other hand,

The mobile home is a unit more than 29 feet long, regardless of weight, or weighing more than 4500 pounds regardless of length. The mobile home is a vehicular portable structure built on a chassis and designed to be used without a permanent foundation as a year around dwelling when connected to utilities.²

Economic Factors in Mobile Home Living

The economy of buying and living in a mobile home is expressed by many owners as the main objective in having one. One consumer survey reported 38 percent of the respondents lived in mobile homes because of lower purchase cost than comparable housing.³ Any model may be purchased with the ease of buying an automobile. All the purchaser needs is the down payment to move into a completely furnished, ready-to-live-in home. One of the main factors that attracts buyers is the elegance some of the units provide at low cost.

¹Edwards, op. cit.

²Ibid.

³Mobile Home Journal, Consumer Survey, A Report Prepared by Michigan State University (Davis Publications, Inc., 1963), p. 17.

The luxury units at the top of a manufacturer's line run \$10,000 and up, fully furnished. For an economy model of equivalent size, prices start at about \$3500. Most units sold are in the \$4500 to \$6000 bracket. Surveys show that mobile home buyers are paying \$10 per square foot compared with an estimated \$15 per square foot for a standard home.¹ Utility costs vary with the section of the country, but utilities generally cost less in the mobile home than a conventional house. One expense that is not required for conventional houses is the rent paid for the mobile home parking space in a park. Rent for a site in a mobile home park runs from \$15 to \$60 per month depending on the lot improvements (facilities) and the location of the park. However, in conventional housing, one has to pay land care expenses and taxes on the land.

Mobile home owners consider low maintenance requisites in mobile homes an advantage over other types of housing. In a mobile home consumer report conducted by researchers at Michigan State University, 44 percent of the 3,000 respondents gave "less upkeep" as their reason for living in a mobile home.² The mobile home exteriors are enameled metal and do not require painting. Interiors of units are mostly wood-paneled and wipe clean easily.

¹Woerpel, loc. cit.

²Consumer Survey, loc. cit.

There are no basements to leak or flood in a mobile home. And, if something happens to the neighborhood, such as an approaching forest fire or a foundry going up next door, the unit can be pulled to another place.¹

Standards of Construction in Mobile Homes

Many people criticize mobile homes by saying the units have lower building standards and lack safeguards against storm damage than conventional housing. Some of these same people judge mobile homes in terms of the ugly post-war trailer camps that still deface the country in some sections. However, most mobile homes and the parks they are placed in compare favorably with medium priced homes and subdivisions.²

The Mobile Home Manufacturer's Association and the American Standards Association have set up a code of construction and design standards and only those manufacturers making units which comply with the code may display the MHMA seal. Also, because of many local and city ordinances, standards of mobile homes have been raised from the early models to meet qualifications for parking the units within city limits.

¹"A Rather Appealing Care-free Approach to Living," Mobile Living, Detroit Free Press (April 4, 1965), p. 8.

²Edward Buker, "The Mobile Home-Rising New Giant in Housing," House and Home, Vol. 23 (June, 1963), p. 98.

Mobile Home Parks

Manufacturers are also trying to upgrade mobile home communities. Many parks in the past have been run by undercapitalized operators who have nothing to do with the sales of mobile homes and do little to maintain an attractive environment. Manufacturers, concerned with the image such parks give their product, are now encouraging dealers to develop and operate their own parks so better standards can be maintained. In Cleveland, Ohio, for example, a park run by a dealer offers 45 by 85 foot lots, streets 30 foot wide with concrete curbs and shade trees, underground wiring and a shopping center which the park owner built and is leasing. The city of Cleveland has included the park in its official street guide. Parks in California and Arizona are commonly built around golf courses and luxurious recreational and social centers. Many mobile home parks in Florida have private docks.¹

Even though there are advantages of mobile home living the mobile home owner faces several serious problems. There is a definite shortage of mobile home parks. As mentioned, some parks in existence are a threat to the industry because of poor accommodations and finding desirable land sites for new parks at reasonable cost is a real

¹"Mobile-home Makers Fill a Void in the Prefab Market," House and Home, Vol. 24 (December, 1964), pp. 78-79.

problem. Many communities have enacted zoning ordinances prohibiting mobile home parks. A set of minimum property requirements established by the Federal Housing Administration in 1955 helped reduce this kind of ruling by cities. The minimum property requirements were set up when the FHA inaugurated its program of insured mortgage loans for mobile home parks.¹

Another problem of establishing mobile home parks has been that of financing. The mobile home park has not yet proved to be a good investment. The FHA loan program on mobile home parks has not become popular and probably because of the following standards set by the FHA on borrowers:

1. The mortgage may be insured up to 75 percent of value.
2. The mortgage limit is \$1500 for each mobile home lot created.
3. The term of loan may not exceed 15 years.
4. The maximum amount of an insured loan on one court is \$500,000.
5. The maximum interest rate was 5-1/4 percent (1960).
6. The court must not have fewer than 50 units because it was felt that smaller courts could not be operated profitably.²

¹Beyer, op. cit., p. 227.

²Ibid.

The Mobile Home Consumer

Several surveys have been completed concerning the mobile home consumer. Of those buyers who desired the mobile home because it was mobile, the frequently transferred executive and industrial worker were high on the scale. Nearly half of all mobile home buyers were shown to be young married couples and almost a quarter were retired persons. These two groups considered mobile home ownership to be the least expensive way to live in a place of their own. The survey further showed that 21.4 percent of all mobile home owners are skilled craftsmen; 18.8 percent semi-skilled workers; and 6.8 percent are laborers. Those classified as "professional, technical, managers and proprietors," make up 10.2 percent of the total.¹

Another recent national survey of mobile home owners revealed 50 percent of mobile home owners are in the income group ranging from \$5000 to \$9000, while 30 percent are in the group with incomes ranging from \$2000 to \$5000, and 20 percent in the income group receiving from \$9000 to \$20,000 annually.² More information from the survey indicates:

Mobile home owners participate in community groups and assume local responsibilities in about the same proportion as families in other types of residences.

¹Howard James, "Don't Call it 'Trailer', These Travelers Stay at Home," The Christian Science Monitor, January 27, 1965.

²Consumer Survey, op. cit., p. 19.

Only 9 percent of the mobile homes do not have a registered voter. Over three-fourths of mobile homes have two or more registered voters. One-third of the mobile home owners do not belong to a community group, either social or professional. However, 40 percent are church members, 21 percent belong to a fraternal organization, 16 percent belong to a social club, and 11 percent belong to a professional organization. Two out of three mobile home owners belong to some community group.¹

Uses of Mobile Units

Mobile homes are finding their way into many uses other than as a family housing structure.

Mobile units are being established in the field of education. Employed as extra classroom space for schools with a particularly heavy enrollment one year, mobile units can be moved the next year to another school with the same problem. The College of Home Economics at the University of Missouri is incorporating a mobile home interior into their home management house set-up.² Many high schools are using a furnished mobile home unit as the home economics cottage.

Placed end to end, usually with the wheels removed, mobile home units are being utilized as motels. The construction industry has long been using them as temporary offices "on the job" and all over the country the drive-in branch bank is being housed in a mobile unit.

¹Edwards, op. cit., p. 6.

²Ludwig, op. cit., p. 70.

A prediction of the outlook for mobile homes is given by Edwards:

The future of mobile homes and other modular units depends on how effective the proponents are and also how effective the opponents are . . . With one-quarter to a third of the present housing factory produced, and with this figure on the increase, it is not difficult to predict a continued increase in this type of housing.¹

¹Edwards, op. cit., p. 7.

CHAPTER III

HOUSING THE ELDERLY

History of Public Housing for the Aged

Older people are individuals with problems like any other age group. Both young and old alike have interests and are faced with circumstances almost infinite in variety of combinations. However, in the past, society failed to recognize the needs of the older citizens. To a large extent the principle approach was to acknowledge the aged as a problem-ridden homogenous group of public charges requiring one kind of care.

During the early decades of this century the public care for all aged came in the form of the poorhouse. Even though it represented the lowest type of economic and social degradation, the poorhouse sheltered aged paupers, alcoholics, feeble-minded individuals, chronically ill persons and those whose only problem was age itself. The main objective of this type of institution was custodial care with no rehabilitational or recreational facilities.¹

¹Milton L. Barron, The Aging American (New York: Crowell Co., 1961), p. 188.

More recently, the poorhouse is being abolished to be replaced with nursing homes, chronic disease hospitals, mental hospitals and private homes for the aged. These establishments provide particular services and promote some rehabilitation and opportunities for recreation needed by those individuals who are not capable of living independently. Such homes and hospitals are classified as congregate and protected living facilities.¹

Independent Living

Although much of the public interest in the problems of housing the aging has been centered around the infirm and the chronically ill, a bigger need for thought and action is in housing for generally healthy but aging persons. In this group, there is also an economic problem especially among those who are renters of housing. As a result, many aging renters find themselves no longer able to afford the quarters which previously had satisfactorily housed them.²

According to the 1960 Census there were 16,560,000 people in this country over 65 and from the data available, it is estimated that approximately 14,000,000 live independently

¹Loc. cit., p. 189.

²E. Everett Ashley III, "Where and How Older People Live Today," Housing the Aging, U. of Michigan Press, Ann Arbor, 1954, p. 17.

in owned or rented homes.¹ These units represent all types of housing ranging from the rented flat to the luxury apartment and from the bungalow to the mansion.

The 1963 report from the President's Council on Aging stated that about one-third of the people 65 or older who lived independently used dilapidated, deteriorated housing which may or may not have all plumbing facilities. In addition, many older Americans live in housing units which are too large, too costly, too inefficient or too unsafe for the special needs which come with age.²

A more recent study of housing quality of persons receiving social security payments revealed:

Forty-five percent of all aged living households were classified as being in need of better accommodations, based on the quality of housing or the living arrangements of relatives . . . Eighty percent were living in houses at least 30 years old, and 40 percent were in houses at least 51 years old . . . The aged in poorest health, by and large, occupied the poorest housing.³

However, with the increase in number of older people and the realization that they have special needs, the housing situation for the elderly is gradually improving.

Glenn H. Beyer, director of Cornell University's Center for Housing and Environmental Studies makes the point

¹United States Census of Population, 1960. Eighteenth Census of the United States: 1960. Population, I.

²President's Council on Aging, The Older American (Washington: U. S. Printing Office, 1963) p. 24.

³Ibid.

that older people should live independently insofar as possible. Beyer also says that when an older person surrenders his independence, he surrenders the challenge which is necessary to enable him to live a responsible life. There is tremendous support for the belief that independent living is better than any other type of living for older people.¹

Generally, older persons want to remain in their own homes or other forms of independent housing as long as they are physically able and mentally competent. Researchers for the University of Wisconsin Agricultural Experiment Station supported this view by reporting a changing attitude toward family care of older members. Not only is there reluctance on the part of the younger generation to have the older people living with them, but also older people are anxious to maintain independence as far as possible. Independence implies at least some degree of financial adequacy, the ability to manage one's own affairs, and separation of living quarters.²

Many social services are enabling the elderly to remain in independent housing facilities. Part-time housekeeping and other homemaking services are available in some sections of the country with little or no cost. Meals on Wheels is another type of service which is becoming

¹Walter Ashley, Golden Years? (Ford Foundation, 1963), p. 23.

²May L. Cowles and Clara G. Sweeney, Housing Rural Aged People in Wisconsin, University of Wisconsin Agricultural Experiment Station Bulletin No. 536, p. 3.

increasingly popular. This service provides one hot meal a day or every other day to individuals in their homes at a low cost to the aged person.

Perhaps one of the most important factors enabling an elderly person or couple to maintain independent living is the structure of their living arrangement. Housing designed with older people in mind would definitely make independent living possible for more people. About 95 percent of the aging live out their lives in conventional houses, not necessarily their own, but at least in the homes of relatives or friends. It is obvious that any way in which housing for the elderly can be made safer, healthier and more pleasant would ease the economic burden on the aging themselves and on those who ultimately must care for them. This is particularly important for countless aging couples and single individuals who for economic reasons are doomed to live out their remaining years feeling themselves to be a burden upon relatives or friends. Equally significant, housing designed for older people would ease the burden on the taxpayers by substantially reducing the number of aging who might otherwise have to be cared for in institutions at public expense.¹

¹Ashley, op. cit., p. 17.

Mobile Homes for Independent Living

Older people who reside in mobile homes are somewhat satisfied, but the structural design of the units currently available does present some problems. Mobile home equipment, too, could be selected in view of physical limitations that age brings to most people. For example, the kitchen range should have controls clearly marked to compensate for failing eyesight. Electric models should be chosen over gas ranges to prevent possible asphyxiation due to an impaired sense of smell.

Probably the major factors influencing the satisfaction of elderly mobile home owners is the relatively low cost of the unit and social companionability with other mobile home owners. The initial cost of a mobile home is low, usually from \$4,000 to \$7,000 if purchased new. However, depreciation of a mobile home is high since it is estimated at 30 to 40 percent the first year and gradually decreasing to 12 percent. Also, rent for the ground space has to be included in mobile home costs. Utilities cost about the same for a mobile home as for an apartment. All things considered, the costs of investment in a small house and in a mobile home would be approximately the same. Taxes and upkeep on the mobile home would be less than for the conventional house.

The mobile home has several real advantages for the older couple or individual over the "old family home place."

First, the old home is usually too large for one or two persons to keep up and care-taking expenses are greater. Second, in terms of kinds of space, the old home may not accommodate newly formed interests whereas the plan of the mobile home unit could include specially designed space.

Companionability seems to be the real and major advantage of living in mobile homes. Beauchamp stated that typically, the mobile home is placed on a plot of ground 30 to 40 foot wide and 75 foot deep. This means that the retired couple of person in a mobile home has from 10 to 12 other families within a radius of 150 feet. Visiting is easy yet a degree of privacy is maintained by the sense of a definite lot line that marks where one man's domain leaves off and the other begins.¹ Also, the mobile home owner has the advantage of moving from one city to another or from one section of the park to another. In addition to the closeness of neighbors, most mobile home parks offer a community building for social activities. In many parks, this building becomes a "club" and a social center.

Isolation is the main disadvantage of any type of retirement accommodations designed for older people alone. Beauchamp has pointed out that no age or life should be lived surrounded only by those who are at the same stage of progress. Humans need constantly to be reminded that life is an

¹Beauchamp, op. cit., p. 2G.

ongoing process and that there are those both older and younger who have functions, responsibilities, joys, and limitations.¹ For these reasons, mobile home parks designed for the elderly alone are not recommended.

Some older people are utilizing the mobile home in its present design, but with better planning and by incorporating certain features, the mobile home could be adopted for use by many more older people who are presently dwelling in unsatisfactory living accommodations.

¹Loc. cit., p. 3G.

CHAPTER IV

METHODOLOGY

Selection of the Method

After examining other means of data procurement, the mailed self-administering questionnaire was selected as the most useful technique for this study. Goode and Hatt emphasize the researcher must weigh the advantages for the purposes and conditions of the project when selecting a tool with which to gather data.¹ The researcher felt that short, uncomplicated statements with checklist answers and a few open-end questions would be best since the educational background of the respondents would be varied. Goode and Hatt further stated the mailed questionnaire has been very useful in social research and is a particularly useful tool for certain situations in which the respondents are dispersed geographically.² Since the participants for this study were selected from almost every section of the United States, the mailed questionnaire was the most feasible for use with this widely scattered group.

¹William J. Goode and Paul K. Hatt, Methods in Social Research (New York: McGraw-Hill Book Co., Inc., 1952) p. 182.

²Loc. cit., p. 174.

Development of the Instrument

The instrument (see Appendix B) was designed as a checklist to present an attractive, simplified format that would encourage replies. Also the checklist format was used for clarity in tabulating the returns. Space was provided for explanations and expression of individual reactions by the respondent and some open-end questions were included to provide data to enable better analysis of the checklist information.

To determine the format and content of the checklist, the mobile home was divided into sections: these sections included General Features, Heating and Cooling, Lighting and Wiring, Kitchen, Bedroom, Living Room, Bathroom and Hallways. These sections were the division headings of the checklist. Specific items needed by older people for independent living were listed in the appropriate section. The participants were requested to check one of three columns for each item listed (see Appendix B). The column headings were designated as presently included, could be included at no extra cost and could be included at extra cost. Presently included refers to housing features currently incorporated in a mobile home corresponding to the dimensions given on the checklist. Could be included at no extra cost refers to housing features which could be incorporated into the respondent's mobile home model. Could be included at

extra cost refers to housing features which could feasibly be included in a mobile home structure but would add cost to the \$6,000 ceiling price set on models used in the research.

The design of the instrument and the specific limitations set on the use of one mobile home model for a guide assured comparable results from the respondents.

The reliability of any test refers to and depends upon the extent to which repeated administrations to the sample population will yield the same results. The reliability of the instrument was determined to be positive unless the respondents changed production schedules before another instrument was issued.

The validity of an instrument or test refers to and depends upon "the degree to which a measurement procedure measures what it purports to measure."¹ As a result of a pretest, the instrument was judged as valid.

The instrument was developed upon the basis of information gathered from published sources and from the researchers experience of living in a mobile home.

Safety and convenience factors were included in the checklist as suggested by a paper compiled by Clark and Clark.²

¹Marie Jahoda, Morton Deutsch, and Stuart W. Cook, Research Methods in Social Relations (New York: The Dryden Press, 1951), p. 109.

²Harold R. and Dorothy J. Clark, loc. cit.

Their work was designed to furnish guidelines to architects, to give the Committee on Homes a means of judging the architect's plans and specifications, to provide contractors with a checklist of standards and to safeguard buyers who do not know how to read a blueprint. All the standards in the Clark report were based on research and not on personal tastes or opinions.

A publication by Parker¹ presented design considerations for architects, engineers and builders in the field of multi-unit retirement housing and emphasized easy maintenance and safety. Parker's report was the basis for suggested space allowances used in the instrument.

Another basis for the checklist was information from Steinberg² who devised a checklist for retirees selecting or designing a retirement house. Steinberg's report was concerned with the physical comfort and psychological well-being of individuals.

The architectural checklist of Musson and Heusinkveld³ also provided general information for the instrument by furnishing pertinent items which should be in a survey of this type.

¹W. Russell Parker, Multi-Unit Retirement Housing for Rural Areas, U. S. Dept. of Agriculture Bulletin No. 297 (Washington: U. S. Printing Office, 1965).

²H. A. Steinberg, A Checklist for Retirement Houses, issued by The Small Homes Council (Urbana: University of Illinois, 1958).

³Musson and Heusinkveld, loc. cit.

The Pretest

The purposes of the pretest were to provide a base of experience for the researcher, to examine the checklist format for effectiveness and to explore the interpretations the respondents might have of the checklist content.

The instrument was pretested by manufacturers of mobile homes producing models similar to those which compose the sample for the study. The instrument was mailed to 14 mobile home manufacturers in nine states who produce 12 x 47 to 52 foot mobile homes, containing 2 bedrooms and retailing for less than \$6,200.

As a result of the pretest, the format of the instrument was altered to include some open-end questions which provided for a clearer analysis of the data. The modified checklist-questionnaire was also pretested for clarity. The instrument was judged to be satisfactory for the research requirements.

Selection and Description of the Sample

The sample for the study was drawn from a list of mobile home manufacturers in the United States as published by Mobile Home/Travel Trailer Dealer magazine in November, 1965.¹ This list included all manufacturers known and was

¹"Mobile Home Manufacturers - Alphabetical Listing," Mobile Home/Travel Trailer Dealer (November 1965), pp. 186-240.

recommended by C. M. Edwards, former director of the Mobile Homes Industry Education Program, and currently extension specialist in housing problems in the Agricultural Engineering Department, Michigan State University, East Lansing, Michigan. The sample included individually owned businesses, small corporations and large firms with several branch factories.

Firms which produced a unit 10 or 12 x 47 to 52 foot including two bedrooms which retailed under \$6,000 were chosen for the study. The checklist was sent to the president or general manager of the firm according to the discretion of the researcher after reading information about the individual firms.

One hundred and eighty-three copies of the instrument were mailed. Ninety-eight copies were returned and 77 were usable for the study. The 77 returns represent 42 percent of the distribution of questionnaires. No incentive was offered to respondents as a bonus for returning a completed checklist other than a summary of the findings.

Method of Analysis

For the purposes of this study, the process of analysis included coding the responses to the instrument and tabulating the data. Such an analysis provided the basis for describing the present availability and future development of mobile homes designed especially for older people.

Definition of Terms

Several common words used in this research have a specific meaning to the study. The following definitions explain the meaning of these terms when used in the study.

The elderly and older person refer to people 60 to 75 years of age.

Independent living indicates that type of living possible for those who have sufficient health to care for themselves or manage with special features in separate dwellings.¹

Congregate living means a group of elderly people living under the same roof while protected living refers to those aged in such physical condition they have been provided with institutional care.²

Housing needs refer to the physical, psychological and economic requisites of shelter which can be met through suitable housing.

The general definition of mobile home for the study refers to units more than 29 foot long, regardless of weight, or weighing more than 4500 pounds regardless of length.³

The specific definition of mobile home as used as a basis for the checklist in this study is a unit measuring

¹Musson and Heusinkveld, op. cit., p. 17.

²Beyer, op. cit., p. 430.

³Edwards, op. cit., p. 8.

10 or 12 x 47 to 52 foot long, containing two bedrooms, and retailing under \$6,000.

Design-trained personnel was described in the checklist as any of the following: architect, interior designer, and home consultant.

CHAPTER V

MOBILE HOME PRODUCTION

The availability of mobile homes with certain desirable features for independent living of older people was determined through an examination of information from mobile home manufacturing firms. The material presented in this chapter is taken from the returned checklists (see Appendix B) which obtained information regarding the types of firm ownership, number of branch or cooperating factories, manufacturer's responses to housing items for the elderly, the effects of design-trained personnel on the manufacturer's perception of housing needs of older people and the reactions of firms to a specially designed model for older people.

Mobile Home Manufacturing Firms

The 77 mobile home manufacturers furnishing information for this study ranged from individually-owned businesses with one factory to large corporations with as many as 24 branch factories. Table 1 shows most of the participating firms were corporations with only three individually-owned and two partnership types.

Table 1. Number of factories and type of mobile home manufacturing firm ownership.

Number of Factories	Type Ownership		
	Individual	Partnership	Corporation
1- 5	3	2	55
6-10	-	-	4
11-15	-	-	3
16-20	-	-	8
21-25	-	-	2
Totals	3	2	72

Although the corporation type ownership included factories within all of the numerical ranges designated, 55 managed production within the numerical range of one to five factories. None of the individual and partnership firms included factories more numerous than three.

Manufacturers' Responses to Housing Items

The checklist sent to the mobile home manufacturers listed 102 housing items identified from the literature as desirable features for housing the elderly. These items were divided into eight sections which were designated as follows: General Features, Heating and Cooling, Lighting

and Wiring, Kitchen, Bedroom, Living Room, Bathroom and Hallways. (See Appendix B.) The number of items per section varied considerably with only three items under Hallways and 36 in the Bathroom section. The manufacturers' responses to the items in the checklist are summarized and presented under the heading of each of the eight sections.

General Features--Most of the items listed under General Features are presently included in mobile homes. However, over 1/3 of the manufacturers reported that to include drawers with a catch to prevent being pulled out and dropped, furnishings with rounded corners, and non-slip floor covering would add extra cost to the unit. All but two of the 77 manufacturers reported all rooms on the same floor level and the floor covering easily cleaned.

Heating and Cooling--Data indicate 3/4 or more of all the items under Heating and Cooling are presently included in mobile home models except for air conditioning, humidifier and de-humidifier. These items were reported by 68 of the manufacturers as extra cost items.

Lighting and Wiring--Only two items, appliance outlets over kitchen counter and adequate light for area, were listed by most of the manufacturers as being included in mobile homes. A master light control close to the bed was included by 23 manufacturers while 23 said it could be added

at no extra cost. A master light control was reported as an extra cost item by 29 manufacturers. Placement of electrical outlets 28 to 30 inches above the floor was indicated as presently included by 1/3 of the respondents while almost 2/3 said outlets could be so placed at no extra cost. Three way switches and luminous switch covers were reported to be extra cost items by 2/3 of the manufacturers.

Kitchen--Over 3/4 of the manufacturing firms reported the following items presently included in their mobile home models: kitchen located near the front door, dining space provided in kitchen, broom closet in kitchen, counter work space with light from window, counter surface fire resistant, light over sink, two compartment sink, swing type mixing faucet, easy-to-grip faucet handles, range controls in front or to side, knob-type range controls, exhaust fan over range, refrigerator compartments easily accessible and a freezer compartment in refrigerator. Manufacturers reported few items which could be added at no extra cost. However, 17 respondents indicated one item, downward reach limited to 18 inches from the floor, could be incorporated into their models without adding cost. Most of the extra cost items indicated by the manufacturers involved extra pieces of equipment such as fire extinguisher, dish washer, clothes washer and dryer and garbage disposer. Electric ranges and self-defrosting refrigerators were reported by 63 of the 77 participating manufacturers as extra cost items.

Bedroom--One-third of the respondents reported headboards, large night stands and low bedroom windows were items presently included while the other 2/3 firms reporting these items as adding cost. Forty-nine manufacturers indicated adequate light for reading in bed was available in their present models and 64 said closet shelves were less than 72 inches above the floor.

Living Room--All but 4 manufacturers included space for a favored old chair and a window low enough to see outside when sitting. A closet for general storage was presently included by 43 of the manufacturers while 24 called this an extra cost item.

Bathroom--Over 3/4 of the manufacturers reported the following items presently included in their models: bathroom located close to bedrooms, linen storage convenient to bathroom, flat bottom tub, mixing type faucet on tub, showerhead over tub, easy-to-grip lavatory faucet handles, toilet placed next to tub, sturdy toilet seat lid, toilet hidden from view of other rooms, sliding door on medicine cabinet and metal or plastic shelves in medicine cabinet. A wall-hung lavatory, free of floor supports could be included at no extra cost by 14 manufacturers. Equipment such as a ceiling heat lamp, ventilation exhaust fan, night light in switch plate and assist bars were reported as adding cost to the unit.

Hallways--All the manufacturers reported straight hallways except six. However five of these six manufacturers indicated straight hallways could be provided at no extra cost. Enlarging hall widths to three feet and four inches or wider and doorways to 30 inches were indicated as extra cost items by all the manufacturers.

Summary--Many items from the checklist are presently included in mobile home designs. Manufacturers reported few items which could be added at no extra cost. Most of the extra cost items involved pieces of equipment or major construction changes.

Effects of Design-trained Personnel

One or more of three types of design-trained personnel are employed by most of the firms participating in the study. Table 2 illustrates the employment of interior designers, architects, and home consultants in relation to firm ownership.

Table 2. Type of design-trained personnel employed by mobile home manufacturing firms by ownership.

Type Design-trained Personnel	Firm Ownership		
	Individual	Partnership	Corporation
Interior Designer	1	-	35
Architect	2	1	22
Home Consultant	1	-	7

The most frequently employed type of design-trained personnel was the interior designer utilized by 35 corporations. Almost as many, 22 corporations, hired architects. Whereas only seven hired home consultants.

Data were compiled to determine the effect of design-trained personnel on the manufacturer's perception of the housing needs of older people and its reflection in the

inclusion of items for the elderly in the manufacturer's mobile home model.

The number of firms employing designed-trained personnel and the average number of items from the checklist (see Appendix B) included in each unit produced by these firms is compared with the average number of items included by firms without design-trained personnel below:

<u>Type Personnel Employed</u>	<u>No. of Firms</u>	<u>Average No. Items</u>
Design-trained Personnel	48	50
No Design-trained Personnel	29	58

The employment of design-trained personnel had little effect on the overall number of features included in mobile homes as listed on the checklist. Those firms not employing design-trained personnel actually included an average of eight items more per mobile home than those firms utilizing interior designers, architects or home consultants. Tables 3, 4, 5, 6, 7, 8, 9, and 10 present the data for each section of the checklist to clarify which sections are influenced by employment of design-trained personnel. These tables show a comparison of features presently included and those features which could be included by firms employing and firms not employing design-trained personnel.

Table 3 shows percentages of items included in the General Features section of the checklist. This section contained seven items of a general nature and was principally concerned with items which promoted general safety for an older person (see Appendix B). Firms without design-trained personnel showed a slight tendency of offering more general features in their models under headings, both presently included and could be included, than those firms with design-trained personnel on their staffs.

Table 3. Comparison of percentages of general features included in models and the items which could be added by firms employing design-trained personnel and firms not employing design-trained personnel.

General Features				
	Presently Included	Could Be Included		No Response
		At No Extra Cost	At Extra Cost	
	%	%	%	%
Firms Not Employing Design-trained Personnel	67.5	9.3	20.2	3.8
Firms Employing Design-trained Personnel	66.1	7.4	19.9	6.5

Table 4 shows percentages of items included in the Heating and Cooling section of the checklist. This section contained 12 items concerning comfort of air temperature and the ease of maintaining desirable room and surface temperatures for older people (see Appendix B). Firms utilizing interior designers, architects and home consultants tended to include more features in present models and report more items as costing extra in the Heating and Cooling section than those firms without such personnel.

Table 4. Comparison of percentages of heating and cooling items included in models and the items which could be added by firms employing design-trained personnel and firms not employing design-trained personnel.

Heating and Cooling Items			
	Presently Included	Could Be Included	
		At No Extra Cost	At Extra Cost
	%	%	%
Firms Not Employing Design-trained Personnel	64.1	3.2	26.7
Firms Employing Design-trained Personnel	66.0	2.6	29.5

Table 5 shows percentages of items included in the Lighting and Wiring section of the checklist (see Appendix B). This section contained six items concerning provision of adequate light and convenient usage of electrical outlets and switches. Manufacturing firms not employing design-trained personnel indicated more lighting and wiring features could be included in their mobile homes at no extra cost than did the firms employing design-trained personnel.

Table 5. Comparison of percentages of lighting and wiring items included in models and the items which could be added by firms employing design-trained personnel and firms not employing design-trained personnel.

Lighting and Wiring Items				
	Presently Included	Could Be Included		No Response
		At No Extra Cost	At Extra Cost	
	%	%	%	%
Firms not Employing Design-trained Personnel	47.1	19.0	31.0	2.9
Firms Employing Design-trained Personnel	49.0	12.2	19.7	2.4

Little significant difference was noted in the features presently included by the firms employing design-trained personnel and those not employing design-trained personnel. However, those firms without interior designers, architects and home consultants reported 12 percent more Lighting and Wiring features could be included at extra cost.

Table 6 shows percentages of items included in the Kitchen section of the checklist. This section contained 29 items arranged in six categories pertaining to the kitchen.

Table 6. Comparison of percentages of kitchen items included in models and the items which could be added by firms employing design-trained personnel and firms not employing design-trained personnel.

Kitchen Items				
	Presently Included	Could Be Included		No Response
		At No Extra Cost	At Extra Cost	
	%	%	%	%
Firms Not Employing Design-trained Personnel	63.9	4.3	27.7	4.3
Firms Employing Design-trained Personnel	62.9	5.5	28.1	3.3

These categories included general kitchen items, cabinets, counters, sink, range and refrigerator and were mainly concerned with safety and convenience for the older person (see Appendix B). There was little significant difference in the kitchen items included and those items which could be included by the firms employing design-trained personnel and those manufacturers without design-trained personnel as Table 6 illustrates.

Table 7 shows percentages of items included in the Bedroom section of the checklist (see Appendix B). This

Table 7. Comparison of percentages of bedroom items included in models and the items which could be added by firms employing design-trained personnel and firms not employing design-trained personnel.

Bedroom Items				
	Presently Included	Could Be Included		
		At No Extra Cost	At Extra Cost	No Response
	%	%	%	%
Firms Not Employing Design-trained Personnel	48.3	6.2	40.7	4.8
Firms Employing Design-trained Personnel	43.3	11.3	42.5	1.3

section contained only five items but were of general nature concerning bedroom storage, adequate lighting and convenience for the older person who may be using the bedroom more for daytime relaxing than the average person. Five percent more bedroom items are presently included by firms not employing design-trained personnel than in models produced by firms with design-trained personnel. But, firms with design-trained personnel reported they could include five percent more bedroom items at no extra cost than the firms without interior designers, architects and home consultants could include. Little significant difference between the two types of firms regarding extra cost items in the bedroom was noted.

Table 8 shows percentages of items included in the Living Room section of the checklist (see Appendix B). This section contained three items concerning storage facilities, extra floor space to accommodate a favored old chair and low placement of window to enable the occupant to see outside while sitting. A high percentage of the living room items are presently included by the firms employing and those not employing design-trained personnel but little significant difference was noted between the two types of firms as indicated by Table 8.

Table 8. Comparison of percentages of living room items included in models and the items which could be added by firms employing design-trained personnel and firms not employing design-trained personnel.

Living Room Items				
	Presently Included	Could Be Included		
		At No Extra Cost	At Extra Cost	No Response
	%	%	%	%
Firms Not Employing Design-trained Personnel	80.5	2.3	12.6	4.6
Firms Employing Design-trained Personnel	79.9	4.2	13.2	2.8

Table 9 shows percentages of items included in the Bathroom section of the checklist (see Appendix B). This section contained 36 items arranged in six categories pertaining to the bathroom. These categories included general bathroom items, bathtub, separate shower, lavatory, toilet and medicine cabinet. More bathroom items are presently included by the firms not employing design-trained personnel than the other firms and much similarity is indicated between the two types of firms on the bathroom items which could be added.

Table 9. Comparison of percentages of bathroom items included in models and the items which could be added by firms employing design-trained personnel and firms not employing design-trained personnel.

Bathroom Items				
	Presently Included	Could Be Included		
		At No Extra Cost	At Extra Cost	No Response
	%	%	%	%
Firms Not Employing Design-trained Personnel	49.0	4.8	44.2	7.5
Firms Employing Design-trained Personnel	43.7	4.1	42.5	7.8

Table 10 shows percentages of items included in the Hallways section of the checklist. This section contained four items of importance to safety factors and convenience factors to an older person especially to one confined to a wheelchair (see Appendix B). Firms employing design-trained personnel presently include more hallway items and also more hallway items could be added in their models than the units manufactured by firms not employing design-trained personnel.

Table 10. Comparison of percentages of hallway items included in models and the items which could be added by firms employing design-trained personnel and firms not employing design-trained personnel.

Hallway Items				
	Presently Included	Could Be Included		
		At No Extra Cost	At Extra Cost	No Response
	%	%	%	%
Firms Not Employing Design-trained Personnel	46.6	11.2	27.6	14.7
Firms Employing Design-trained Personnel	50.5	14.6	37.0	12.5

Summary

Data indicate the employment of design-trained personnel had little effect on the manufacturer's perception of older people's housing needs. Little evidence was found to show a positive relationship of employment of interior designers, architects and/or home consultants to the number of housing items included in mobile homes.

Manufacturers' Reactions to Producing a Mobile Home
Especially for Older People

The checklist offered the respondents an opportunity to give their ideas and reactions to producing a mobile home designed for the elderly if the firm did not already produce such a model. The manufacturers responded with various ideas concerning specially designed units. Some of the reactions mentioned most often are given as follows:

<u>Reaction of Manufacturers:</u>	<u>Number of Mentions</u>
Would manufacture such a model if demand was sufficient (a minimum of 10 units ordered).	27
Standard models adequate, no need to re-design for elderly.	11
No standard designed model for elderly would suffice. Each order would be custom designed.	12

Responses of manufacturers indicated that sufficient demand for a specially designed model for elderly people would be the primary factor in producing such a model. However, "sufficient demand" seemed to mean the manufacturer had to receive an order for such a model before it would be constructed. Most firms who indicated this, also mentioned that an order of 10 units would be the minimum order considered for production.

CHAPTER VI

MOBILE HOMES DESIGNED FOR THE ELDERLY

Sixteen manufacturers, representing 20 percent of the respondents, indicated their production included a mobile home designed for use by older people. In this chapter data will be presented which concerns the firms currently producing models designed to fulfill the needs of elderly people. Mobile homes produced by manufacturers who special design them for older people are compared with the products of those firms who do not manufacture such a model. Information is also presented on features which could be added to current production models.

Geographic Distribution of Firms Producing Mobile Homes Designed For Older People

The researcher observed from the data that of the 16 firms producing a mobile home especially for the elderly, seven firms were located in Florida. The geographic distribution by states of the firms manufacturing a mobile home designed for older people is indicated as follows:

<u>Location of Manufacturing</u> <u>Firms by State</u>	<u>Number of Firms Manufacturing</u> <u>Mobile Homes for Older People</u>
Florida	7
Georgia	1
Indiana	2
Michigan	1
Nebraska	1
Oklahoma	1
Pennsylvania	1
Tennessee	2

Florida leads all states in the production of mobile homes suited to use by older people. Tennessee and Indiana are the only other states with more than one firm producing mobile homes suited to older people. Forty-four percent of all the firms making a model for the elderly are located in Florida. This is undoubtedly due to the large concentration of older people living in that state. The Florida market potential could have influenced the high number of firms manufacturing mobile homes designed for use by older people.

Features Included in Mobile Homes Designed
For Elderly Persons

The 77 manufacturing firms participating in the study were asked if they currently produce a model for older people.

Compilation of data show that 16 firms reported they did manufacture such a model. A summary of the manufacturers responses for items will be discussed under each checklist section (see Appendix B).

General Features--Eleven or more of the sixteen firms presently include all the general features listed on the checklist.

Heating and Cooling--Manufacturers indicated all the items under Heating and Cooling are presently included in models except air conditioning, humidifier and dehumidifier which were reported by all firms as extra cost items.

Lighting and Wiring--One-third of the 16 manufacturers reported master light controls close to bed, electrical outlets 28 to 30 inches above floor, and three-way switches presently included while 1/3 reported these as extra cost items. Luminous wall switches were mentioned by 12 manufacturers as extra cost items.

Kitchen--Over 3/4 of the manufacturers reported most of the items as presently included. The extra cost items were indicated by all the manufacturers as follows: fire extinguisher, dishwasher, clothes washer and dryer, garbage disposer, electric range and self-defrosting refrigerator. These could be provided but not within the limitations of cost as set by this study.

Bedroom--Adequate reading light over bed and closet shelves less than 72 inches above floor are presently included by all manufacturers. Half of the respondents indicated headboards, large night stands and a low window in the bedroom as presently included. Half of the respondents reported these as extra cost items which could be included.

Living Room--Most manufacturers reported all items in this section presently included in their models.

Bathroom--Over 3/4 of the manufacturers reported the following as extra cost items: ventilation exhaust fan, ceiling heat lamp, built-in night light, non-skid tub surface, built-in tub seat, assist-bars, recessed soap dish, adjustable shower head, and wall-hung water closet. The other items in this section are presently included by all the manufacturers. Manufacturers indicated few items could be added at no extra cost.

Hallways--Six manufacturers reported they could straighten the hallways without adding cost and seven indicated this would add cost to their production. Three-fourths of the manufacturers reported the other items presently included.

Summary--Table 11 summarizes the number of items per section included in the specially designed units for older people.

Table 11. Number of items of total possible items in the checklist included in mobile homes designed for older people by 16 individual firms.

Sections of the Checklist	Total Possible Items	Individual Firms Producing a Model Designed for Elderly															
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
General Features	7	4 ^a	5	4	5	6	7	6	7	5	5	6	6	7	7	3	7
Heating and Cooling	12	9	7	6	7	8	7	10	9	7	9	9	9	9	9	8	9
Lighting and Wiring	6	2	4	4	3	2	3	3	3	3	5	4	5	3	2	4	5
Kitchen	29	15	18	16	18	19	20	21	20	19	20	19	20	23	17	20	20
Bedroom	5	1	2	2	2	2	3	5	2	3	3	3	5	4	2	4	5
Living Room	3	2	2	2	3	1	1	3	2	2	2	3	2	3	2	3	3
Bathroom	36	14	21	13	18	24	14	18	15	21	16	16	20	31	18	20	28
Hallways	4	1	2	2	1	3	1	3	2	2	2	2	2	3	2	3	2
TOTALS	102	48	61	49	57	66	57	69	60	62	62	62	70	82	60	64	79

^aNumber of items of the total possible items included by manufacturer A.

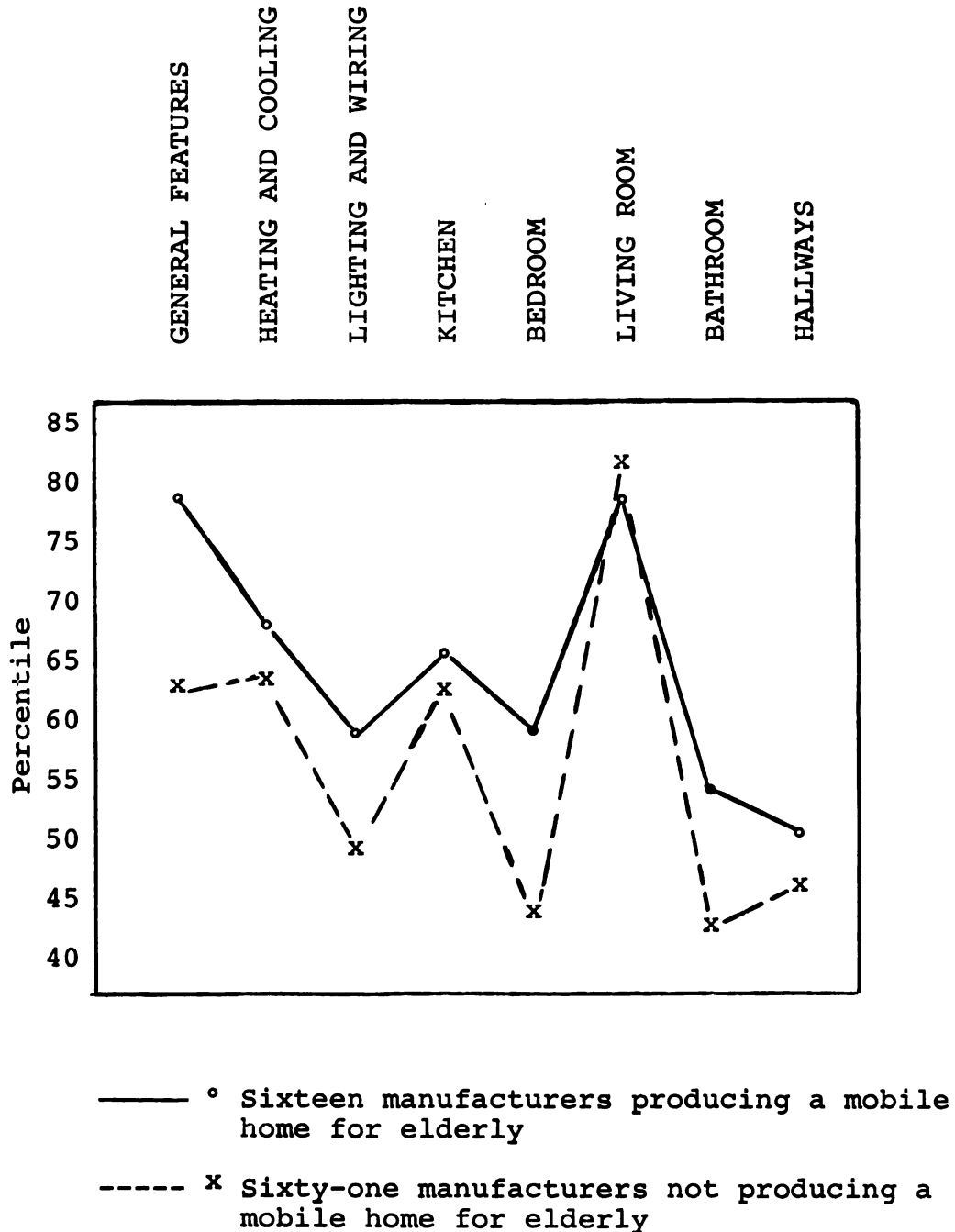
The total number of housing features included in mobile homes designed for older people ranged from 48 to 82 items while those included in standard models by manufacturers not making a specially designed unit ranged from 11 to 82 items.

A comparison of the average number of items contained in a standard model mobile home to the ones specially designed for use by older people would indicate if the latter actually contained more features needed by elderly people. To determine the extent of the features included, percentages were compiled for each section of the checklist for both types of mobile home units, those specially designed units for older people and standard models. Figure 1 illustrates the findings.

The sections showing the highest significant difference were general features, lighting and wiring, bedroom and bathroom. These sections indicated the specially designed units for older people contained from 12 to 17 percent more items per section than the standard mobile home units. Only the living room of the standard model indicated one percent more items included than the specially designed models and was the only section showing a higher percentage for the standard model over the mobile homes designed for older people.

The total average number of items included in a mobile home designed for use by older people is 62 percent

Figure 1. Average percentage of items in each section of checklist by manufacturers producing and those not producing a mobile home for older people.

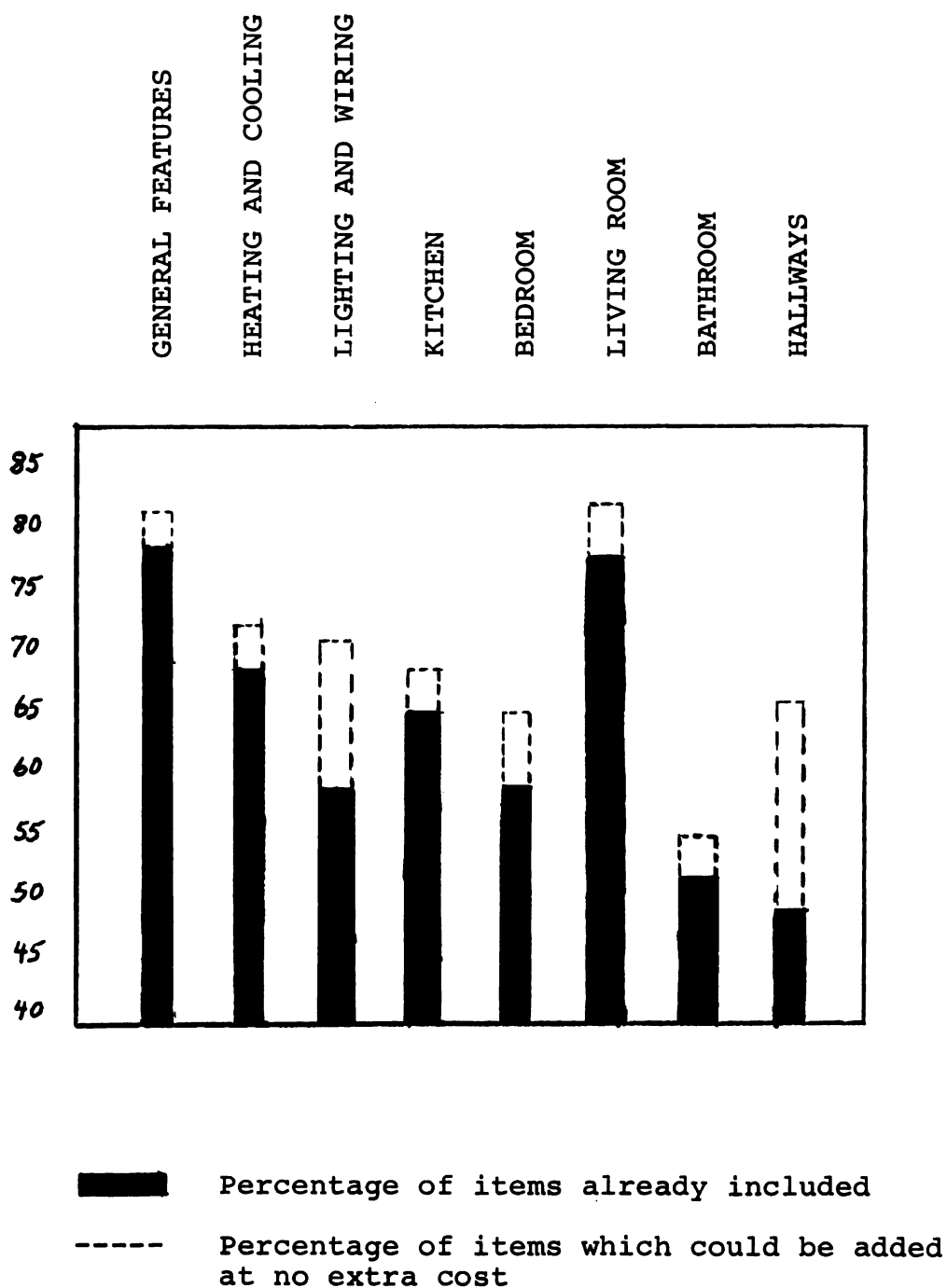


while the average number included in a standard model is 57 percent. This comparison shows the firms who indicated they produced a mobile home with features for older people actually included five percent more items than those firms not producing such a model. However, the specially designed units still had a 48 percent deficiency of items from the checklist.

Features Which Could be Added to Present Models
at no Extra Cost

Features desirable for older people that could be added to current mobile home models at no extra cost were investigated in the study. The data were compiled by sections of the checklist, Figure 2, and indicated each section could include more features at no extra cost. The two sections which the manufacturers reported the highest possibility of increase were in the hallways and the lighting and wiring sections. Seventeen percent of hallway items and 13 percent of lighting and wiring items could be added at no additional cost to the consumer.

Figure 2. Percentage of items per unit which could be added to current models at no extra cost by manufacturers producing a mobile home designed for older people.



CHAPTER VII

SUMMARY AND RECOMMENDATIONS

Summary

To help alleviate the problem of housing elderly people, living arrangements which conform to modern standards of decency and comfort first have to be made available to the aged who are financially and physically able to provide for themselves. Housing for older people has to be within a social environment where the inhabitants will continue to be a functioning part of the larger community.

One housing media will not suit the needs of all older persons, even that segment who could manage independent living. Therefore, this study is neither suggesting a retirement community nor is it proposing to solve all housing problems of the elderly.

The study is, however, concerned with adapting the interior space in one kind of housing for use by older people. The possible utilization of mobile homes adapted to the needs of older people would give some an alternate choice of living arrangements.

The mobile home is one of the most rapidly developing types of housing and is being chosen by many retired

and older people. The mobile home is essentially low-cost, easy to maintain and attracts many older people as a new and exciting way of life. Although many elderly people are presently living in and enjoying mobile homes there are certain housing features which, if included in the units, would provide for safer and easier living.

This study has two primary objectives: first, to review the housing needs of older people as defined by physicians, gerontologists, architects and older people themselves and with this information, construct a checklist to be sent to mobile home manufacturers to discover the present design status of mobile homes regarding floor plan, furnishings and equipment, and to more closely examine the models advertised as special-designed for elderly persons (see Appendix B). The influence of design-trained personnel on the manufacturer's perception of older people's housing needs is also presented.

Information regarding housing features which enable elderly persons to live independently was obtained from selected literature written by persons knowledgeable of older people's housing needs. These works were authored by physicians, gerontologists, architects and lay older persons. From this information, a checklist-questionnaire was constructed and used for collection of data from 77 mobile home manufacturers. These participants were asked for information which revealed factual knowledge of current

production. The checklist-questionnaire permitted the expression of opinions and viewpoints, especially concerning future development of mobile homes designed for the elderly.

A majority of the firms participating in the study are corporations with several branch factories. More than half of the manufacturers employed an architect, interior designer and/or home consultant.

Manufacturers included in the sample exhibited varied reactions to producing mobile homes designed for older people. Some firms are realizing older people have special housing needs and are providing for these needs by designing mobile homes for the elderly but some do not. Less than one-fourth of the respondents in this study produce mobile homes designed for older people but a majority of the other firms indicated they would manufacture such a model if demand was evident. Some firms felt no need to design specifically for older people and stated their present standard models were sufficient but the data from this study revealed these models were not adequate. Also, some manufacturers felt a specially designed model for older people, produced as a standard model, would not suffice for all.

A compilation of the features included in mobile homes designed for elderly persons indicates the sections containing the highest number are general features, lighting and wiring, bedroom and bathroom. Over one-half of the

items in the checklist are included in most mobile homes reported as designed for older people.

Manufacturers of the specially designed models indicated features could be added in each section without extra cost. An average of more items could be included at no extra cost in the lighting and wiring section and the hallways than the other sections.

In this study employment of design-trained personnel had little effect on the manufacturer's perception of older people's housing needs. Little evidence was found to indicate a positive relationship of employment of interior designers, architects and/or home consultants to the number of items included.

Recommendations

Much information is available about the housing problems of elderly people. Abundant literature illustrates the needs and desires of old people concerning their living arrangements. However, there has been a lack of interpretation of these needs by manufacturers of housing.

Replication of this study utilizing the instrument developed for gathering data might yield valuable information concerning other segments of the housing industry. Also an in-depth study of extra cost features could prove helpful in planning shelter for the elderly.

An investigation of housing promoted as being developed for the elderly such as high-rise apartments or cottages within retirement villages would allow knowledge of what features are included in those structures.

Social groups, other than the elderly, have housing problems, as exemplified by the migrant worker, displaced families of urban renewal and even young marrieds. An investigation of these people's housing needs and the possibilities the mobile home might hold for them could prove important.

In riot or storm torn areas, the mobile home could be studied as possible temporary shelter for those in need. Such an investigation would be beneficial, not only to increase knowledge of a type of housing, but also might lead to some suggestions for improving situations which present national problems.

The mobile home as the second home, compared to other kinds of low-cost housing, could be significant investigation in establishing the importance of the mobile home in another segment of housing.

A study devised to investigate possible uses of the mobile home other than as a living structure would be significant in establishing the potential of the industry.

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APPENDIX A

The provision of suitable housing for an increasingly large number of elderly persons is the concern of many segments of the housing industry. Since the mobile home is viewed as an important type of housing, many persons are interested in the adaptation of units to meet the specific needs of those elderly capable of independent living.

An exploration of the present design of mobile homes and the possibility of developing units in accordance with the housing needs considered essential by architects, physicians and older people themselves has been initiated by the College of Home Economics of Michigan State University. As part of the research for a Master's degree under the direction of Dr. Elinor Nugent, we are attempting to determine those features that can be included in mobile homes.

Because you and your firm make an important contribution to the mobile home industry, we are asking for your participation in our study. The information will be kept confidential and responses to items will be used to compile figures on the industry as a whole and not to give detailed analyses of individual firms. A summary will be mailed to you upon request.

Thank you for your cooperation and assistance. We would appreciate having the information from your firm at your earliest convenience.

Sincerely,

(Mrs.) Roxy Ann Pike
Graduate Student

(Mrs.) Elinor R. Nugent
Associate Professor

APPENDIX B

MOBILE HOME STUDY

Adapting Mobile Homes for the Elderly

In completing the following questions, write your answer in the space provided or check the most appropriate choice.

How many factories are now operated by the firm? _____

Does your firm employ an _____ Architect
_____ Interior Designer
_____ Home Consultant

The present firm ownership is: _____ Individual
_____ Partnership
_____ Corporation

To assist in determining the features appropriate for older people presently included in mobile home interiors, please select one of your models measuring 10 x 47 to 52 feet, containing 2 bedrooms, retailing under \$6,000 and check those items which are included in that model. If the item is not included in the model, please check one of the other columns which is appropriate for your answer.

	Presently Included	Could be included in mobile homes at:	
		<u>no extra</u> cost	<u>extra</u> cost
<u>GENERAL FEATURES</u>			
All rooms on same floor level.....	_____	_____	_____
No thresholds in doorways	_____	_____	_____
Furnishings with rounded corners and edges.....	_____	_____	_____
All drawers with a catch to prevent being pulled out and dropped.....	_____	_____	_____
Furnishings high enough off floor to permit cleaning underneath.	_____	_____	_____
Non-slip floor covering.....	_____	_____	_____
Floor covering easily cleaned.....	_____	_____	_____

	Presently Included	Could be includ- ed in mobile homes at:	
		<u>no extra</u> <u>cost</u>	<u>extra</u> <u>cost</u>
<u>HEATING AND COOLING</u>			
Water temperature not exceeding 115° at any faucet.....	_____	_____	_____
Heating system capable of maintain- ing 75° in each room.....	_____	_____	_____
Automatic heating equipment.....	_____	_____	_____
Oil and gas heaters vented to outside.....	_____	_____	_____
Thermostat placed 2-1/2 to 4 feet above floor.....	_____	_____	_____
Air conditioning.....	_____	_____	_____
Humidifier.....	_____	_____	_____
De-humidifier.....	_____	_____	_____
Thermostat placed away from windows.....	_____	_____	_____
Full length draperies for all large windows.....	_____	_____	_____
Floors, walls, and ceilings insu- lated to maintain a surface temperature within 5° of room temperature.....	_____	_____	_____
Water and sewer pipes in the floor insulated.....	_____	_____	_____
<u>LIGHTING AND WIRING</u>			
Master light controls close to bed	_____	_____	_____
Electrical outlets 28 to 30 inches above floor.....	_____	_____	_____
Appliance outlets over kitchen counter.....	_____	_____	_____
Three-way switches in rooms with more than one entrance.....	_____	_____	_____
Wall switches with luminous cover plates.....	_____	_____	_____
Lighting fixtures to supply ade- quate light for area.....	_____	_____	_____

	Presently Included	Could be includ- ed in mobile homes at:	
		<u>no</u> cost	<u>extra</u> cost
<u>KITCHEN</u>			
Located near front door.....	_____	_____	_____
Concealment of clutter from living room.....	_____	_____	_____
Dining space provided in kitchen..	_____	_____	_____
Space for trash container away from traffic.....	_____	_____	_____
Fire extinguisher.....	_____	_____	_____
Dishwasher.....	_____	_____	_____
Clothes washer.....	_____	_____	_____
Clothes dryer.....	_____	_____	_____
<u>Cabinets</u>			
Sliding or folding doors.....	_____	_____	_____
All storage reached without use of stool.....	_____	_____	_____
Broom closet in kitchen.....	_____	_____	_____
Upward reach limited to 66 inches from floor.....	_____	_____	_____
Downward reach limited to 18 inches from floor.....	_____	_____	_____
<u>Counters</u>			
One area of work space with light from window.....	_____	_____	_____
Work space on both sides of sink..	_____	_____	_____
Counter surface fire resistant....	_____	_____	_____
<u>Sink</u>			
Light over sink.....	_____	_____	_____
Two compartments.....	_____	_____	_____
Mixing faucet, swing type.....	_____	_____	_____
Easy-to-grip faucet handles.....	_____	_____	_____
Garbage disposer.....	_____	_____	_____
<u>Range</u>			
Electric.....	_____	_____	_____
Controls in front or to side of elements.....	_____	_____	_____
Knob-type controls.....	_____	_____	_____
Controls with extra-legible settings.....	_____	_____	_____
Exhaust fan over range.....	_____	_____	_____

	Presently Included	Could be includ- ed in mobile homes at:	
		<u>no extra</u> <u>cost</u>	<u>extra</u> <u>cost</u>
KITCHEN (Continued)			
<u>Refrigerator</u>			
Completely self-defrosting.....	_____	_____	_____
Food compartments accessible with minimum of bending.....	_____	_____	_____
Freezer compartment.....	_____	_____	_____
<u>BEDROOM</u>			
Headboard on bed.....	_____	_____	_____
Large night stand.....	_____	_____	_____
Window low enough to see outside when reclining.....	_____	_____	_____
Adequate light for reading in bed.	_____	_____	_____
Closet shelves less than 72 inches above floor.....	_____	_____	_____
<u>LIVING ROOM</u>			
Closet for general storage.....	_____	_____	_____
Some space to accommodate favored old chair.....	_____	_____	_____
Window low enough to see outside when sitting.....	_____	_____	_____
<u>BATHROOM</u>			
Located close to bedrooms.....	_____	_____	_____
Ventilation exhaust fan.....	_____	_____	_____
Ceiling heat lamp.....	_____	_____	_____
Linen storage convenient to bath- room.....	_____	_____	_____
Sliding or folding door to bath- room.....	_____	_____	_____
Built-in night light in switch plate.....	_____	_____	_____

	Presently Included	Could be includ- ed in mobile homes at:	
		<u>no extra</u> <u>cost</u>	<u>extra</u> <u>cost</u>
<u>BATHROOM</u> (Continued)			
<u>Bathtub</u>			
Easy-to-grasp handles.....	_____	_____	_____
Non-skid surface.....	_____	_____	_____
Built-in seat.....	_____	_____	_____
Assist-bars for getting in and out	_____	_____	_____
Flat bottom.....	_____	_____	_____
Slant back design.....	_____	_____	_____
Mixing faucet.....	_____	_____	_____
Showerhead over tub.....	_____	_____	_____
Shower curtain rod can withstand 300-500 lb. pull.....	_____	_____	_____
Recessed soap dish.....	_____	_____	_____
<u>Separate Shower</u>			
Shower door translucent plastic...	_____	_____	_____
Showerhead adjustable in height...	_____	_____	_____
Non-skid bottom.....	_____	_____	_____
<u>Lavatory</u>			
Easy-to-grip faucet handles.....	_____	_____	_____
Automatic mixing faucet.....	_____	_____	_____
Lavatory wall-hung, free of floor supports.....	_____	_____	_____
Recessed tumbler holder.....	_____	_____	_____
Recessed soap dish.....	_____	_____	_____
<u>Toilet</u>			
Water closet wall-hung.....	_____	_____	_____
Toilet placed next to tub.....	_____	_____	_____
Arched assist-bar next to toilet..	_____	_____	_____
High style toilet seat.....	_____	_____	_____
Sturdy seat lid.....	_____	_____	_____
Toilet hidden from view of other rooms.....	_____	_____	_____
Paper holder mounted to avoid twisting or reaching.....	_____	_____	_____

Presently
Included

Could be includ-
ed in mobile
homes at:
no extra extra
cost cost

BATHROOM (Continued)

Medicine cabinet

Extra large.....	_____	_____	_____
Flush, non-projecting type.....	_____	_____	_____
Sliding door.....	_____	_____	_____
Metal or plastic shelves.....	_____	_____	_____
Adjustable shelves.....	_____	_____	_____

HALLWAYS

All halls at least 3'4" wide.....	_____	_____	_____
Halls straight.....	_____	_____	_____
Doors sliding or folding.....	_____	_____	_____
Doorways with 30 inches free space	_____	_____	_____

At present does your firm manufacture a mobile home speci-
fically for older people? _____. If your answer was NO,
would you consider making such a model? _____ Please ex-
plain your last answer _____

What are your ideas and/or comments concerning a mobile home
especially designed for older people? _____

APPENDIX C

The questionnaires concerned with the production of mobile homes suitable for older people are coming back to us with very interesting and valuable information. However, the forms are not signed and firms already participating in our project can not be determined. If you have returned the questionnaire, we thank you for your quick reply.

If your response has been delayed would you please take a few moments to complete the questionnaire and return it to us by June 7. We want to include information from all firms producing mobile homes so the information you give is important and should be a part of our study.

We express again our appreciation for your cooperation and assistance in completing this research.

Sincerely,

(Mrs.) Roxy Ann Pike
Graduate Student

(Mrs.) Elinor R. Nugent
Associate Professor

NOTICE: If your firm produces a mobile home unit as described on the questionnaire but only in 12 foot width, please make a note of this on the questionnaire and then fill it out for us.

Recently you received a letter concerning a survey of mobile homes for the elderly. Enclosed was a questionnaire which, when completed, would supply us with information about your firm. We think your response may have been delayed, so we have taken this opportunity to send you another questionnaire and envelope for your convenience.

We hope you will give this second request thorough consideration. There is increasing interest by many housing consultants in the expanded use of mobile homes for older people. We know many retirees are taking advantage of mobile home living but there remains an untapped market of those elderly who are not familiar with this way of life. In our study, we are not only considering older people who are home owners but also that segment of elderly people who rent. It seems to us that the mobile home unit presents possibilities of low cost housing for many old people who presently live in undesirable and inconvenient housing.

Many have already responded to our original request for information. Your firm being a part of the industry should have as many important facts to contribute to the whole picture as other firms. We would appreciate receiving your reply very soon.

Sincerely,

(Mrs.) Roxy Ann Pike
Graduate Student

(Mrs.) Elinor R. Nugent
Associate Professor

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