

THE GROWTH OF THE MOBILE HOME INDUSTRY

by 1264

GIAN CARLO DURÌ

B.A., North Carolina State University, Raleigh, N.C., 1968

A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree

MASTER OF ARTS

Department of Economics

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1969

Approved by:


Major Professor

LD
2668
R4
1969
D87

ACKNOWLEDGMENTS

In acknowledging the help received in the writing of any manuscript, a writer has a brief chance of being personal, of showing warmth, in a context which, like the present report, is devoid of a truly human dimension. I am taking this opportunity with an awareness of its uniqueness, and the spontaneity of a first-timer. Thus, I extend my thanks to my family whose support has been critical, and to Phoebe, "senza di chi il nulla."

Having broken the rule, I can now offer my thanks to Professor Edgar S. Bagley, my advisor, and to Professor Orlo Sorenson for their insistence in requesting more than I would have otherwise given. Special thanks are also extended to Mrs. Minnie Belle Reid whose typing and editing is to be commended.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	ii
INTRODUCTION	1
EARLY GROWTH (1920 - 1940)	3
A. The Development of the House Trailer	
B. Technological Factors	
C. Sociological Factors	
RECENT GROWTH (1940 - 1965)	7
A. The Development of the Mobile Home	
B. The Diversification of an Idea	
PRESENT GROWTH (1965 - 1968)	12
A. The Concept of Prefabrication	
B. Modular Design	
C. The Mobile Home Industry	
NEW TRENDS (1968 -)	19
A. The Need for a New Technology	
B. Low-Cost Housing Units	
THE LOCATION OF THE U.S. MOBILE HOME INDUSTRY	24
A. The Location of the First Manufacturers	
B. Decentralization of the Production Area	
C. Further Decentralization of the Production Area	
THE U.S. MOBILE HOME MARKET	29
A. Regional Mobile Home Production	
B. Regional Mobile Home Sales	
C. Import and Export Regions	
KANSAS MOBILE HOME MARKET	33
KANSAS MOBILE HOME INDUSTRY	38
CONCLUSIONS	42
BIBLIOGRAPHY	44

INTRODUCTION

There has been an abundance of quotes and statements from both government officials and leading housing authorities predicting strong, continued growth of the mobile home industry and its by-product, manufactured or sectional homes.

Several market studies have been made on the growth of the mobile home industry. These studies show that while in 1961 mobile homes accounted for seven percent of the total U.S. dwelling units constructed that year, by 1967 that proportion had increased to 25 percent.

Dr. Robert Weaver, former Secretary of the U.S. Department of Housing and Urban Renewal, said in a press release, late in 1967, that "The mobile housing industry is one of the fastest growing industries. What they have done thus far, largely for the transient or seasonal housing field, can, we believe, be applied to long term, low cost housing."¹ Dr. Weaver's statement has been proved correct during these past two years. Mobile home production has continued to grow and has now expanded into the manufacture of modular or sectional homes.

It would be interesting to investigate how the mobile home industry's growth has been taking place--to try to understand which technological and sociological forces have contributed to this growth. Such an investigation is attempted in this report. Beginning with early and recent growth up to present growth and new trends, this report tries to discuss the forces that at different times have made the industry change, develop new products, and meet new challenges.

¹MH/RV Dealer, "Market Study," January 1969.

On a more specific level, an investigation is made which attempts to establish the role of the Kansas mobile home industry and its place in the U.S. mobile home market.

The extent to which these topics are covered cannot be very satisfactory in a brief report, especially considering that most of the sources found on the subject were either published by the industry itself or by some other non-scholarly publication. Nevertheless, a possible explanation of why the mobile home industry has undergone such a growth is offered.

EARLY GROWTH (1920 - 1940)

The information available about the first two decades of the mobile home industry is basically of a non-quantitative kind. Most books written about this period of the industry make rather general and interesting analyses of how the industry was born. One such book is Mobile Homes, by D. O. Cowgill, written originally in 1940 as a Ph.D. thesis for the University of Pennsylvania. The first chapter of this book is used as the basic source of this first section about the early growth of the mobile home industry.

The Development of the House Trailer

According to D. O. Cowgill,¹ most modern inventions do not generally occur by chance, but as the result of definite trends and causes. In fact, it could be stated that there is a high degree of predictability in modern invention, if one knows the technological antecedents and the parallel trends in the social world. This is the assumption underlying Cowgill's attempt to explain the growth of the mobile home industry.

Considering that most inventions are the result of the combination of several other inventions, Cowgill reasons, when two principles are known, or two mechanical processes are available which would produce a new article of utility if combined, it may be considered inevitable that this combination will be made. The house trailer, for example, Cowgill maintains, could have been predicted on the basis of developments in the technological world and trends in the social world which performed the dual function of creating a need and pointing to the means of satisfying that need.

¹D. O. Cowgill, Mobile Homes, 1940, open citation from the first chapter.

Technological Factors

Some of the technological processes and uses upon which, according to Cowgill, the development of the house trailer was contingent and which pointed the way to the trailer are:

(1) The "covered wagon," which came to be a term referring to all cloth-top wagons, was the name given to the first trailer built on a large scale commercial basis. This shows, by way of the name, that there is a recognition of continuity of development.

(2) The tent was another technological antecedent of the trailer. The tent, of course, is an ancient invention, but since about 1951, when automobiles began to be utilized by the masses in America, a new possibility to explore and to live for brief periods away from normal environments became an attractive possibility. The tent came back in use to satisfy the needs of this new kind of vacationers.

(3) Automotive travel, as noted, was an essential factor in the development of the freedom that brought back the return of the tent. Undoubtedly the idea of a house trailer was already in the air, but the original family car could not be trusted to bear the added burden--it was necessary to wait for the maturing of the automobile industry.

(4) The freight trailer grew by degrees out of the truck. The trailer was used for baggage and freight before it came to be used as a house. Since early in the twenties small baggage trailers were being used by vacationers to carry tents and other camping supplies.

(5) The cloth-top trailer came to be commercially built and advertized as early as 1921. This cloth-top trailer saved for campers the bother of having to set stakes, ropes, etc. They now simply had to unfold the tent and adjust the ridgepoles.

Sociological Factors

As Cowgill says, two elements are involved in the appearance of an invention. First, there are the required technological antecedents, which have already been discussed. Second, the new product must satisfy a need-- fulfill a function--otherwise it either will not be produced or will fall into disuse.

According to Cowgill, these are the social trends which gave the house trailer its utility:

(1) Smaller living units became a normal phenomenon in the first decade of this century due to increasing popularity of apartment-living and duplexes. In fact, this trend continued for some time even after the second World War. Thus, even though the first trailers were very small, they were not a radical step from many of the apartments and sleeping rooms.

(2) Smaller families have also been a noticeable trend since early this century. The size of the family, Cowgill reports, had fallen from 4.7 in 1900 to 4.1 in 1930, and the proportion of younger population, with small or no family was increasing each decade. This group of the American population must have been the one that used the trailer, for the trailer family of 1930 had an average of 2.5 persons.

(3) Separate housing for the aged has also been a noticeable trend since early this century. With the decline in size of dwellings and the increasing mobility of population, it was no longer possible in many cases for children to care for their parents within the same household. This produced a demand for small living units like house trailers for the aged people.

(4) Mobility of population has become a widespread phenomenon since modern means of transportation make possible rapid movement and movement for

long distances. Although individual transiency was known prior to this century, it has at no previous time reached the proportions of this century. An increased demand for temporary living quarters has been the end result of such a mobility.

(5) *Leisure time, in the form of extended vacations and travel is* another social trend related to the increased demand for trailers. More frequent and longer vacations came to be demanded by labor unions. These vacations and the coming of the low-priced automobile gave the lower middle class a chance to enjoy travel, a pastime formerly an exclusive privilege of the rich.

Resuming, Cowgill says that the modern trailer appeared on the scene at a time when all the technological prerequisites had been fulfilled and when a need or utility arose for it. It would appear that technological prerequisites lagged behind the idea and the need, since previous attempts were made at commercial building of the trailer as early as 1921, but without success. The probable reason for this failure was in the lack of sufficient power in the automobiles at that time. Later when all things were combined favorably, the trailer industry became prominent and its manufacture profitable.

The sociological and technological reasons given by Cowgill to explain the growth of the house trailer bring us up to 1940. Since then, many more developments have taken place in the mobile home industry. New sociological and technological circumstances have influenced the growth of the industry. The following sections of this report will be concerned with these later developments.

RECENT GROWTH (1940 - 1965)

In the present section, an attempt will be made to trace the process by which the house trailer became the mobile home. This involves a review of the technological and sociological circumstances that have influenced the industry from 1940 up to 1965. Such a review is extracted from general information made available by the Mobile Home Manufacturers Association (M.H.M.A.).

The Development of the Mobile Home

Up to 1940, the infant trailer industry had turned out a total of about 10,000 units, virtually none of which were well-suited for permanent living. But after World War II, the market demanded something more--larger, better furnished units with modern baths, kitchens, hot water heaters, mechanical refrigerators and other equipment.

After World War II a major growth was experienced in the mobile home industry. This growth is generally attributed to the returning veterans, defense, and construction workers who moved to new areas with their families and needed temporary housing. Housing supply was short due to the stagnation experienced by the building industry during the war years. Thus, the demand for trailers increased, and by 1947 the first lot of 60,000 modern trailers was built.¹

The transition between house trailer and mobile home was directly related to size and furnishing improvements. Between 1947 and 1954, lengths increased steadily from the 27 foot standard length of the early 1940's. In 1954 there was a breakthrough in width as 10 foot wides came into production,

¹M.H.M.A., "Flash Facts", March 1966.

raising area in relation to length by 25 per cent and freeing internal design. Bedrooms opening to a longitudinal hall were virtually impossible with 8-foot widths, but became manageable at 10 feet.¹

Thus, by 1954 the travel trailer and the mobile home became separate and distinct. Construction and furnishing continued to improve for both, but the trailer remained small and highly portable as required for vacationing while the ever-growing mobile home became so large as to require commercial towing, and began to take on a variety of forms.

By 1965, the length of the mobile home approached the maximum practicable limits imposed by the difficulties of highway transportation: about 51 per cent of 1965 production was of 55 feet or longer, 32 per cent were 60 feet or more, and a few mobile homes were as long as 75 feet. In width also there was another revolution when in 1962, the 12 foot wide mobile home was introduced by industry manufacturers. Due to highway movement restrictions, it accounted for only a small percentage of total shipments that year. In 1963, this unit accounted for 6.61 per cent of shipments, and in 1964 this figure rose to 20.88 per cent.²

Around 1947, the standard floor area was about 216 square feet. The average unit in 1955 had reached about 320 square feet, and by 1966 the 12 by 60 feet models provided a floor area of 720 square feet. These dimensions are the maximum presently allowed on highways, but the "double-wide"* and the "expansible"* provide an escape from this apparent ceiling, and can be used in combinations to provide much larger dwelling units. The "triple-wide"*

¹M.H.M.A., "Flash Facts," March 1966

²MH/RV Dealer "Market Study", January 1969.

*See definitions on page 11.

can give up to 2,400 square feet of floor space.¹ Undoubtedly, floor area has ceased to be an important factor in deciding whether to live in a mobile home or not.

Evidently, by 1947 the trailer had become a different product, more suitable to semi-permanent living than its earlier prototypes. Accordingly, the social needs it was called to fulfill were different and so were the people interested in it. Again, by 1954, technological improvements made the trailer a different unit, more suitable for living than for travel. This development opened a new market of larger trailers or mobile homes--its spatial limits were mainly determined by regulations of highway traffic. Finally, in 1962, the 12-foot wides began transforming the market, and by 1965, had become the new standard mobile home--a product clearly distinct from the trailer.

The Diversification of an Idea

In the first part of this report, some reference was made to the sociological factors that brought about the trailer's evolution since the 1930's. Then, it was seen how in 1954 a new idea in housing was being developed, and how in 1962 changes in highway transport regulations allowed for still greater technological developments. In recent years the metamorphosis has been accelerated and a new era in prefabricated housing has begun. The mobile home seems destined to undergo some more changes that will make it suitable for modular design. That these new developments are very likely to succeed can be confidently predicted after noticing the many successful transformations the original trailer has had.

¹M.H.M.A. "Flash Facts", March 1966.

The M.H.M.A. has prepared a list of definitions to differentiate among the products that the industry has developed from the original trailer.¹ The diversity of these products is a proof that the idea that brought about the trailer is a fertile one--its prolific growth is still on the go.

A Motorized Home is a portable dwelling designed and constructed as an integral part of a self-propelled vehicle.

An Auto Camper is a lightweight unit that fits on top of the family automobile and into the trunk, with the cover removed. It is a low-cost recreational vehicle, with all the flexibility of the family car, but small in space.

A Camping Trailer is a canvas, folding structure, mounted on wheels, and designed for travel use.

A Pick-up Coach is a structure designed primarily to be mounted on a pick-up or truck chassis and with sufficient equipment to render it suitable for use as a temporary dwelling for travel, recreational and vacation use.

A Self-Contained Travel Trailer is one which may operate independently of connections to electricity, water and sewers for a period of from one to seven days.

A Travel Trailer is a vehicular, portable structure built on a chassis, designed to be used as a temporary dwelling for travel, recreational, and vacation use, permanently identified "Travel Trailer" by the manufacturer of the trailer. When factory equipped for the road, it has a body width not exceeding eight feet, and body length not exceeding 32 feet. It is towed with a standard auto.

¹M.H.M.A. "Flash Facts", March 1966.

A Mobile Home is a movable or portable dwelling constructed to be towed on its own chassis, connected to utilities, and designed without a permanent foundation for year-round living. It can consist of one or more units that can be folded, collapsed or telescoped when towed and expanded later for additional cubic capacity, or of two or more units, separately towable but designed to be joined into one integral unit, horizontally or vertically, capable of being again separated into components for repeated towing. Mobile homes are towed to their sites by trucks whose movements are controlled by state highway regulations or they are shipped on railroad flat cars.

As the given definition indicates, the new mobile home, with more than 60 feet in length and 12 feet in width, has become a good unit for modular design for L,T,U and other combinations--including vertical ones--in the building industry. Present technological advances offer the mobile home new functions to fulfill in the field of prefabricated housing. This will be the subject of further discussion, but first we need to analyze the concept of prefabrication and modular design.

PRESENT GROWTH (1965 - 1968)

Even though growth has been a normal feature in the mobile home industry, the growth that the industry has experienced during the last few years is the most impressive one. This exceptional growth seems to need more than the traditional explanations given by most literature written on the subject. New concepts are being advanced in the design of housing units, and the mobile home industry finds itself in the midst of such technological innovations. This can better be explained by reviewing first the concept of prefabrication and modular design.

The Concept of Prefabrication

Prefabrication is not a new method of construction, but a very old one. Indeed, the concept itself of prefabrication dates back to the times of the Egyptian civilization. In this continent, prefabrication is as old as the presence of the white man. When the English sailed to Cape Ann in 1624, they brought with them a panelized house of wood. Skillings and Flint, Boston plumber dealers, shipped a number of panelized houses to the Union Army during the Civil War. The Hodgson Company, now at Hartford, Connecticut, began prefabricating structures in 1892, and today remains the oldest home manufacturer.¹

Prefabrication means panelization, and a panel, in this use of the word, is defined as a completed or nearly completed section of a house. A wall section, for example, might be made up of wood framing, insulation, interior wallboard, and interior sheathing. Ordinarily, this panel is produced in four-foot widths and with the height of the interior wall. Roofs, interior

¹Arch. Record, "Prefabricated Housing," 141:187-194, March 1967.

partitions, and floors have all been panelized at one time or another. Nearly every home manufacturer in this country relies either partly or altogether on panels to produce its house shells. Panels are easy to assemble on a production line, store flat for shipment, and cut down erection time at the site.

Most homes and apartments contain a number of prefabricated elements. Windows, for example, are finished in the mill and shipped within their own casing, ready to drop into frames. Many exterior doors are produced and packaged in the same way. Kitchen cabinets arrive at the site ready to use--or at least in parts, not pieces. Indeed, technology has reached a point where a house, minus its foundation but otherwise completely finished and furnished, is assembled from prefabricated parts in about four hours.

Present technology in the United States is such that homes can be manufactured in a production line, just as cabin cruisers and Cadillacs. Up to a few years ago, what was left to do was to demonstrate in a more convincing way that a totally manufactured home was more economical on its site. For there were many cases in which shipping, land development, and financing costs added to the factory-assembled house in such a way as making it no more than competitive with conventionally built houses in the same area.¹

Such difficulties have been largely surpassed now. "Modular" design for small apartment units is well beyond the experimenting stage in this country. In Europe, modular design has also been successfully employed for larger apartment units.² This European know-how is now successfully being adapted in the more demanding American market.

¹Arch. Record, "Prefabricated Housing," 141: 187-194, March 1967.

²Business Week, "Prefab Housing....," p. 45-6, March 1, 1969.

Modular Design

Modular design, like prefabrication, is not a new concept. During the last two decades, for example, the Russians have been assembling multistory structures by piling prefabricated boxes upon prefabricated boxes. The French and the British are also using this technique rather extensively. This is evidenced by the fact that in France about 60 per cent of the new houses built in the past 15 years were prefabricated, in Britain 42 per cent, and in Russia 85 per cent.¹

Up to recently, this method of construction had not been used in the American continent. There had been many proposals, including one of erecting multistory frames and inserting into them prefabricated modular apartments, but none of them had been implemented.

In 1967, finally one such proposal became a reality in Montreal, when "Habitat" was built as part of Expo '67. This Canadian experiment has been termed as spectacular and wonderful, but also as a technological failure. The most important criticism has been that the modular concrete boxes used in building Habitat are too heavy.²

This criticism can be justified by comparing the characteristics of the prefabricated box, or modulus, used for Habitat, with some other of the prefabricated boxes which were being manufactured in 1967.

In Habitat, each modulus used in forming the apartments is a concrete box that weighs about 90 tons; it is 38 feet long, 10 feet high, and 17 feet 6 inches wide. That is, the concrete box weighs 27 pounds per cubic foot of total bulk. On the other hand, these are the weights of prefabricated

¹Business Week, "Prefab Housing....," p. 45-6, March 1, 1969.

²Arch. Forum, "Habitat," 126: 34-44, May 1967.

boxes manufactured using different technological methods available by 1967:¹

(1) The large metal containers manufactured for shipping, trucking and flat-car railroading measure about 8 feet by 8 feet by 40 feet long. They are steel-framed, aluminum finished and some are insulated. Their weight is about 5,200 pounds or a mere 2 pounds per cubic foot. They can be transported by air, water, road or rail, and are rigid enough to resist all the many different stresses and strains implied by this.

(2) The so-called Nutshell vacation house, manufactured in Massachusetts with an all-wood frame, measures 18 feet by 8 feet by about 8 feet six inches high. Its total weight is 5,000 pounds or 4 pounds per cubic foot, including interior partitions. The box can be, and has been, transported by helicopter.

(3) The typical prefabricated vacation house, or mobile home, is framed in wood and steel, measures 56 feet long, 11 feet wide (1967 averages) and about 8 feet 3 inches high. Its total weight, including interior partitions, equipment, etc., is 18,500 pounds or 3.6 pounds per cubic foot. It can be put on wheels and driven to its permanent site.

In all of the above examples, the weight per cubic foot is no more than 15 per cent of Habitat's. Moreover, in all of these examples the precision of dimensioning and of finishing is superior to that achieved at Habitat, so that a great deal of on-site patching could be avoided.² This proves that the technical means exist--and have existed for some time--to make the Habitat concept economical as well as beautiful. All that is necessary is to go outside the narrow confines of the traditional building industry and to use resources in other more advanced fields of manufacturing.

¹Arch. Forum, "Habitat," 126: 34-44, May 1967.

²Ibid.

The Mobile Home Industry

It is not easy to describe the "mobile home industry." One of the reasons for this difficulty is that it is not one industry but many. As stated in a previous section of this report, in "The Diversification of an Idea," a variety of different products are being produced and many firms specialize in only one or a few such products. In this report we shall limit ourselves to those firms that produce mobile homes--as this unit is defined by the Mobile Home Manufacturers Association. (See page 11).

The importance of mobile homes in the housing market can be appreciated by noticing the M.H.M.A.'s estimate that, in 1967, mobile homes accounted for 73 per cent of all single family homes sold for less than \$15,000, and comprised 86 per cent of all family homes sold for less than \$12,500.¹ The continuous growth of this demand derived from the housing market can be visualized in the following table.

TABLE 1
MOBILE HOME PRODUCTION BY YEAR

Year	Production	Year	Production
1968	325,000	1957	119,300
1967	245,804	1956	124,330
1966	222,564	1955	111,900
1965	223,375	1954	76,000
1964	197,023	1953	76,900
1963	158,452	1952	83,000
1962	118,673	1951	67,300
1961	93,321	1950	63,100
1960	105,705	1949	46,200
1959	130,254	1948	85,500
1958	102,000	1947	60,000

Source: M.H./R.V. Dealer, "Market Study," January 1969.

¹M.H.M.A., "Flash Facts," October 1968.

The advantages of the technological innovations introduced by the mobile home industry can best be pointed out by referring to prices. The price range for modern mobile homes is between \$4,000 and \$13,000. The 1967 average retail price was \$5,700 for the 12 by 60 feet overall size, which gives about \$8 per square foot of living area. By comparison, the average price of site-built homes was about \$15 per square foot, unfurnished. Indeed, this factor alone goes a long way in explaining why mobile homes dominate the up to \$15,000 housing market.¹ These remarks are expanded on in the section about "Low-Cost Housing Units" on page 21.

According to a 1969 market study sponsored by the "Mobile Homes/Recreational Vehicles Dealer," a total of about 361 companies and/or their divisions and subsidiaries were producing mobile homes as of November 1, 1968. The larger plants operated by some of the major industry manufacturers have a capacity of producing up to 40 units per day, while others may build as few as one or two a week.

In 1967 and 1968, a number of the industry's leading producers continued their trend of expanding their operations either through acquisition of other companies or construction of branch plants in key market areas. This trend has made possible lower freight costs, design of a product for a particular market area, and a stronger position for the manufacturer in establishing a nationwide network of plants and dealer representation.²

Although there are 361 companies in the industry, only a dozen of them are listed on the various stock exchanges. During the last two years, the mobile home industry has been given favorable publicity in major business

¹M.H.M.A., "Flash Facts," October 1968.

²M.H./R.V. Dealer, "Market Study," January 1969.

and consumer publications as the one phase of housing which can help alleviate the shortage that now exists in the country. Thus, industry stock prices have shown a continuous increase, and more manufacturers and industry suppliers have decided to offer public stock. It is estimated¹ that by November 1, 1968, the industry had approximately 23 mobile home companies listed on either the New York Stock Exchange, the American Stock Exchange or traded over the counter. This trend is likely to continue, thus, bringing added capital investment into the industry.

Barring economic instability and based on a growth forecast of 15 per cent annually, the M.H.M.A. estimated that by 1973 production could reach 560,000 mobile homes.² Indeed, as the industry continues to move into the areas of urban renewal and sectionalized housing, the industry is likely to continue in its present growth.

¹M.H./R.V. Dealer, "Market Study," January 1969.

²M.H.M.A., "Flash Facts," October 1968.

NEW TRENDS (1968 -)

In discussing "The Concept of Prefabrication" and "Modular Design," it became evident that new concepts are being advanced in the design of housing units. The mobile home industry, more than traditional builders, has been developing the technological know-how necessary to implement such new concepts. Thus the manufacturing of sectionalized houses using the assembly-line technique is now becoming possible simply by switching mobile home assembly lines to the production of sectional houses, or modular units.

The Need for a New Technology

That there is an urgent need for developing a technology that will speed up the production of housing units can be shown by looking at the estimated demand for housing units for the next decade.

The Census Bureau estimated the 1967 increase in households at 943,000 units. This annual increase is expected to cross the 1-million mark by 1970, and the 1.3-million mark by 1980. Add to this annual increase the expanding market that is expected from urban renewal and low cost housing programs, plus the fact that the new Housing Act is calling for the building or renewal of some 26 million units during the next ten years and we have an expected housing demand, for the 1970's, which is approximately 3.5-million units per year.¹

To meet the challenge of such an increase in the demand for housing units, huge corporations and the government are joining efforts in reshaping the housing industry. On the one hand, efficiency can be enhanced simply by

¹M.H./R.V. Dealer, January 1969.

reforming many outmoded and unnecessarily complicated building codes. On the other hand, homebuilders must exploit the possibilities offered by new materials and processes.¹

The need for a new technology in the housing industry is also evidenced by the increasing shortage of skilled carpenters, bricklayers, plumbers, mechanics, etc. It is estimated that each year more skilled workers leave homebuilding than enter it through apprenticeship and training programs; some retire, others move up to better paying or more stable jobs in factories or in commercial and industrial construction. This movement toward the factory, of workers seeking stability, and of builders seeking better methods of production, results in a greater emphasis than ever before in pre-assembled building components.²

A viable idea presently being studied, and tentatively being implemented, in this search for a new technology in the housing industry is the factory-built home, or sectional home which uses the modular design. As a result of the relative simplicity in switching mobile home assembly lines over to the production of sectional houses, or modular units, some mobile home companies already are producing factory-built homes. Several others are either building plants for this purpose, or have experimental models of modular units ready to go into production.

It has now become evident that assembly-line construction offers many important advantages like mass production economies, time saving, the ability to manufacture homes with year-round immunity to weather, and the more efficient use of skilled labor.

¹Business Week, "Special Report," p. 84-108, May 6, 1967.

²Ibid.

Since early in 1968, experimental building with modular units has begun in most major U.S. cities and in Montreal and Toronto, Canada.¹ Indeed, the mobile home industry is becoming an integral part of the housing industry.

Low-Cost Housing Units

A statement frequently repeated in mobile home literature is that mobile homes have captured the low-cost housing market. To understand the import of this statement, it is necessary to follow the analysis that Professor C. M. Edwards, of Michigan State University, has made on this subject.²

Professor Edwards says that while the demand for mobile homes has increased, the demand for conventional homes has decreased. These changes in demand are to be understood as a shift in the economic balance because conventional housing units cannot compete in the low income housing market.

Professor Edwards presented his analysis by saying that (in 1967) in the U.S. only about 11 per cent of all yearly employed heads of households have \$10,000 or more annual income and that about 25 per cent of the families have incomes of \$10,000 or more. These are incomes which support homes of \$25,000 and up. Since few homes are being built for less than \$25,000 including site development, furnishings and all, it is easy to see that over three-fourths of the people in most communities cannot buy much of the new housing being built. Mobile home manufacturers' factory-built homes, on the other hand, sell for \$5,000 to \$10,000, including appliances and furnishings. These contain less square footage than conventional homes, but they have all the conveniences.

¹Business Week, "Assembly Lines....," p. 83-86, October 26, 1968.

²M.H./R.V. Dealer, January 1969.

Mobile homes, Professor Edwards continues, constitute about the only housing available under \$10,000. The importance of housing of this price is brought into focus when we realize that (in 1967) the median male worker's income was about \$6,500. Following the old rule of thumb of housing at two and one-half times annual income, the top earners in this group can pay \$15,000 for a home (\$10,000 for the house and \$5,000 for an improved lot.) Furthermore, 28.8 per cent of males have incomes between \$4,000 and \$7,000. Thus, mobile homes are well suited to many families in this nearly one-third of the U.S. population.

TABLE 2

MOBILE HOUSING PRODUCTION COMPARED
TO SINGLE FAMILY HOUSING STARTS

Year	1 Single Family Housing Starts	2 Mobile Home Production	% Mobile Home Production is of column 1
1955	1,194,000	111,900	9.4
1956	990,000	124,330	12.6
1957	873,000	119,300	13.7
1958	975,000	102,000	10.5
1959	1,211,000	120,500	9.9
1960	972,900	103,700	10.7
1961	946,400	90,200	9.5
1962	967,800	118,000	12.2
1963	993,200	153,940	15.5
1964	994,500	191,320	20.3
1965	942,100	216,470	23.0
1966	794,700	217,300	27.3

Source: U.S. Department Commerce Construction Reports C20-67-6

The figures in Table 2 show how new starts of single-family houses have declined and the production of mobile homes has increased since 1961. The proportion of mobile homes produced in relation to new single-family houses has increased from about 10 per cent to nearly 30 per cent during the five year period 1961 - 1966. Thus, while the fixed-housing builders and developers are saying that tight money, high interest rates, etc. are reducing house sales, it is really the high cost of fixed-housing which causes people to seek the lower-cost housing such as manufactured homes.

THE LOCATION OF THE U.S. MOBILE HOME INDUSTRY

The Location of the First Manufacturers

Until early in the 1950's, there was a heavy concentration of mobile homes plants in the Detroit, Chicago and northern Indiana areas or other east-north-central areas. This plant location was perhaps influenced by the fact that the mobile home industry began as a trailer industry; thus it was a supplier for the automotive industry. Another probable factor was that many components used in mobile home manufacture are similar to those used in producing automobiles. Therefore, preferred plant locations were close to the automotive suppliers who furnished these component parts.

Some decentralization of these plants began to occur in 1955, when the trailer industry developed into the mobile home industry. This development made the industry independent of the automotive industry, for the mobile home began being accepted as a permanent dwelling which had a potential market of its own.

Thus, other considerations, like the location of suppliers and market areas, wage rates and labor legislation, land values and building costs became important in deciding where to locate new plants.

Considering that mobile homes are homes which are sold with furniture, appliances, etc., it is important for a manufacturer to be located in an area where he can have a quick access to these supplies, for supplies constitute 65 per cent of the cost of producing a mobile home.¹ Manufacturers need a constant supply of items such as lamps, draperies, furniture, tires,

¹M.H./R.V. Dealer, "Market Study," January 1969.

undercarriages, couplers, lumber, plywood, plumbing fixtures, etc. The supplies needed in the manufacturing of a mobile home are so many and of such a wide range that it is virtually impossible for a manufacturer to locate the plant where "the major suppliers are." Besides, these suppliers may be far away from the consumer market that the mobile home plant wants to serve. Therefore, it is simpler to locate the plant near the consumer market and transport the needed supplies. If the consumer market is good, the suppliers will soon follow the mobile home manufacturers and will tend to locate near them.

Thus, in deciding where to locate, a mobile home manufacturer should observe which regions are mobile home consumers and which are producers, rather than where the suppliers are.

Decentralization of the Production Area

As stated above, the initial pattern of production areas was determined by the location of the automotive industry, in the east-north-central area. Then, after 1955, the area of production began widening as new plants were built closer to the expanding consumption markets.

Table 3 indicates the increase in production of mobile homes and travel trailers in the years 1957, 1962, and 1963 for the nine leading states. Notice that California was the leading supplier of mobile homes and travel trailers during the indicated years. This can be explained by observing that the Pacific and mountain areas are so far away from the east-north-central area as to constitute an isolated market. That is, California was the first state where new mobile home manufacturers began competing effectively with the original producers.

TABLE 3
LEADING STATES IN 1957 - 1962 - 1963 PRODUCTION
(Mobile Homes and Travel Trailers)

State	Number of Plants			Total Units Produced			% U.S. Volume		% U.S. Wholesale \$ Value	
	1957	1962	1963	1957	1962	1963	1962	1963	1962	1963
California	63	97	104	33,536	58,210	75,204	26.45	23.10	20.94	21.69
Indiana	57	74	90	28,208	40,852	61,101	18.56	18.74	17.74	18.30
Michigan	51	52	53	36,108	37,672	39,349	8.98	12.07	11.11	11.16
Ohio	11	--	11	2,850	--	18,403	2.65	5.65	3.08	3.41
Georgia	--	13	16	---	11,173	16,486	5.08	5.05	6.61	6.98
Kansas	4	13	16	---	12,226	15,529	5.55	4.76	4.73	4.92
Pennsylvania	--	22	23	---	9,519	12,169	4.32	3.74	5.15	5.17
Texas	24	25	29	8,732	8,734	10,922	3.97	3.35	4.11	3.88
Florida	--	25	30	---	6,186	10,153	2.81	3.12	3.62	4.02

Source: M.H./R.V. Dealer. These figures were taken from the "Market Study" of each of the given years.

The expenses involved in transporting mobile homes across the mountain region of the U.S. acted like a protective tariff for California. Thus, this state had all the Pacific and part of the mountain consumer markets secured for itself, and soon California became the leading state in the production of mobile homes and travel trailers.

After the first successful subdivision of the consumer market between the two major producer regions, other plants moved to distant states where they could capture the local consumer market. Thus, as indicated by the 1962 and 1963 figures of the table, even Kansas, Florida, and Texas became leading producer states.

Further Decentralization of the Production Area

As stated previously, in 1962 the 12 foot wide mobile homes came into production and, under special conditions, were allowed to be transported on the highways. The increasing width and length of the standard mobile home, and the traffic restrictions imposed upon their movement on the highways resulted in still higher transportation costs. Therefore, many more new mobile home plants were located all through the U.S. to satisfy the local consumer markets. This change in locational factors had the effect of diminishing the importance of California, Michigan, Ohio and others as leading producers while it helped other states to increase their share of production.

Table 4 indicates the 1967 share of the U.S. production held by the ten leading states. These figures, it must be noticed, do not include travel trailer units or plants. They include only mobile homes and special units (like portable classrooms, offices, motel rooms, etc.).

TABLE 4
LEADING STATES IN 1967 PRODUCTION
(Mobile Homes and Special Units)

State	No. Plants	Total Units	% U.S. Volume	Wholesale \$ Value	% U.S. Wholesale \$ Value
Indiana	49	44,549	17.27%	\$190,709,157	17.37%
Georgia	33	33,145	12.85	127,472,191	11.61
Pennsylvania	29	22,849	8.86	96,654,345	8.81
California	37	17,352	6.73	95,425,704	8.69
Michigan	24	16,263	6.31	70,195,425	6.39
Alabama	16	14,771	5.73	57,139,717	5.21
Florida	29	14,083	5.46	62,552,453	5.70
Texas	23	13,983	5.42	56,639,968	5.07
Kansas	16	13,452	5.22	63,260,087	5.76
North Carolina	14	7,309	2.83	29,344,535	2.07
All other states	119	60,129	23.32	249,317,822	23.32
Totals	389	257,885	100.00%	\$1,097,711,404	100.00%

Source: M.H./R.V. Dealer, "Market Study", January 1969.

The table shows that by 1967 Indiana, or the east-north-central region, was again the national leader and that the south Atlantic region, represented by Georgia, had become the second important area of production. This shift toward the south Atlantic is typically explained in terms of favorable labor wages and legislation, low land values and building costs, and mild climate. Yet, in this case, the most important factor was probably the growth of the local demand or sales of mobile homes. (See Table 6).

THE U.S. MOBILE HOME MARKET

Regional Mobile Home Production

In order to know which region is importer or exporter of mobile homes, it is necessary to know the level of production and sales occurring in each region. Table 5 will be helpful in determining which regions are the main producers of mobile homes.

TABLE 5

REGIONAL MOBILE HOME PRODUCTION, 1967

Region	No. Plants	No. Units Produced	% U.S. Prod.	Wholesale \$ Value	% U.S. Wholesale Volume
East-north-central (Ill., Ind., Mich., Ohio, & Wisc.)	82	65,721	26.73	294,143,584	27.85
South Atlantic (D.C., Del., Ga., Fla., Md., N.C.)	88	65,042	26.46%	\$258,342,976	24.45%
West-north-central (Iowa, Kans., Minn., Mo., Neb., N.D. & S.D.)	37	22,096	8.98	101,125,717	9.57
Mid-Atlantic (N.J., N.Y., & Pa.)	31	21,900	8.91	92,714,165	8.78
East-south-central (Ala., Ky., Miss., Tenn.)	28	21,457	8.73	79,278,106	7.51
Pacific (Cal., Hawaii, Ore., Wash.)	42	20,752	8.44	112,043,043	10.61
West-south-central (Ark., La., Okla., Texas)	39	20,660	8.41	82,063,384	7.77
Mountain (Ariz., Colo., Ida., Mont., Nev., N.M., Utah & Wyo.)	18	8,076	3.30	36,033,408	3.41
New England (Conn., Me., Mass., N.H., R.I., & Vt.)	1	100	.04	500,000	.41
Totals	366	245,804	100.00%	\$1,056,244,383	100.00%

Source: M.H./R.V. Dealer, "Marketing Study", January 1969.

Table 5 indicates that the west-north-central region is the third most important region of production after the east-north-central and the south Atlantic regions.

The Pacific region is shown as ranking ninth in the per cent scale of total U.S. production, yet it ranks third in the per cent scale of the U.S. wholesale dollar value. This might indicate that the units produced in that area are of a more expensive kind than those of other areas.

The table shows that the mid-Atlantic region is the fourth largest producer. Thus, it could be thought of as an exporter of mobile homes, yet it sells locally more units than it produces and it is, therefore, an importer. (See Table 6.)

Regional Mobile Home Sales

The regional demand, or sales, for mobile homes is assumed to be equivalent to the mobile home distribution pattern to retail dealers. This is a rather safe assumption because most mobile homes remain in the mobile home park in which they are sold and because a practical buyer would buy a mobile home within a radius of no more than a few hundred miles from where he lives.

Table 6 shows, for the period 1961 - 1967, a decline in the share of total U.S. sales for the Pacific, mountain, west-north-central, east-north-central, mid-Atlantic, and New England regions while showing, for the same period, an increase for the west-south-central, east-south-central, and south Atlantic regions. These changes indicate a growing demand in the three southern regions rather than a decline of sales in the other regions. Thus, for the given years, consumption areas were simply spreading over the continental U.S. in a more even fashion than in earlier years.

TABLE 6
MOBILE HOME DISTRIBUTION PATTERN
TO RETAIL DEALERS

Region	1961	1962	1963	1965	1966	1967
South Atlantic	16.21%	18.95%	23.03%	22.91%	23.23%	25.11%
East-north-central	21.42	19.90	17.54	17.73	18.89	16.25
West-south-central	4.71	6.38	6.72	10.25	7.50	10.47
Mid-Atlantic	12.16	11.37	10.34	9.08	10.74	9.69
West-north-central	11.27	10.73	10.20	8.40	9.56	9.66
East-south-central	4.63	5.49	6.21	10.33	9.87	8.72
Pacific	16.09	13.87	13.97	9.97	9.98	8.60
Mountain	8.67	9.35	8.71	7.36	6.85	6.50
New England	4.10	3.41	2.80	2.89	3.46	3.33

Source: M.H./R.V. Dealer, "Market Study", January 1969.

Import and Export Regions

Comparing the 1967 figures of Tables 5 and 6, it is possible to determine the quantity of production and sales of each region. Thus it is possible to see whether a region imports or exports mobile homes. This is done in Table 7. This table shows that the east-north-central region is by far the largest exporter of mobile homes. The south Atlantic, on the other hand, in spite of having a volume of production of more than a fourth the total U.S. production, sells locally almost all of the mobile homes it produces, leaving only a small volume for export.

The mountain, west-south-central, and New England regions are the largest importers of mobile homes. Their local production, with the exception of New England, is rather high, especially in the west-south-central region, but their local sales have increased at a faster rate than their production.

TABLE 7
REGIONAL MOBILE HOME PRODUCTION
AND SALES, 1967

Region	A	B	A-B=C
	Production (% of U.S. Prod.)	Sales (% of U.S. Distrib. to retail dealers)	(+) imports (-) exports
East-north-central	26.73%	16.25%	(-) 10.48
South Atlantic	26.46	25.11	(-) 1.35
West-north-central	8.98	9.66	(+) 0.68
Mid-Atlantic	8.91	9.69	(+) 0.78
East-south-central	8.73	8.72	(-) 0.01
Pacific	8.44	8.60	(+) 0.16
West-south-central	8.41	10.47	(+) 2.06
Mountain	3.30	6.50	(+) 3.20
New England	.04	3.33	(+) 3.29

Source: M.H./R.V. Dealer, "Market Study", January 1969.

The west-north-central, mid-Atlantic, east-south-central, and Pacific areas have a large volume of local production which satisfies most of the local consumer market. In these regions, export or import of mobile homes is predominantly internal rather than interregional.

Resuming this analysis of the U.S. mobile home market, it is found that the east-north-central and south Atlantic regions produce more than 53 per cent of the mobile homes manufactured in the U.S. and are the two major interregional exporters. The west-south-central, mountain, and New England regions are the major consumer markets, while three more regions--the west-north-central, mid-Atlantic, and Pacific--are rather self-sufficient in the sense that satisfy their market with local production.

KANSAS MOBILE HOME MARKET

As shown in Table 3, in 1957 Kansas had four plants producing mobile homes and travel trailers. In 1962, there were 13 manufacturing plants and by 1963 this number had increased to 16. Kansas's per cent share of the U.S. volume of production for the year 1962 was 5.55 per cent and for 1963 it was 4.76 per cent. This per cent share made Kansas rank as the fourth largest producer in 1962 and the sixth largest producer in 1963. But considering Kansas's per cent share of the U.S. wholesale dollar value, the state ranked sixth in the nation for both the indicated years.

By 1967, as shown in Table 4 and according to the Kansas Economic Development Commission, Kansas had 16 plants manufacturing mobile homes alone, 37 more plants producing travel trailers, and 23 plants serving as suppliers to the industry. Kansas's total production for that year was 13,452 units, or 5.22 per cent of the U.S. volume of production and 5.76 per cent of the U.S. wholesale dollar value. These per cent shares made Kansas rank as the ninth and sixth largest producer with respect to the total U.S. production and U.S. wholesale dollar value respectively.

In the section on the U.S. mobile home market, in Table 7, it was determined that the east-north-central and south Atlantic regions produce more than 53 per cent of the total U.S. mobile home production. The west-north-central region, of which Kansas is a part, seems to be a rather self-sufficient region, like the mid-Atlantic and Pacific regions, in the sense that it satisfies its consumer market with local production. The mountain, west-south-central, and New England regions, on the contrary, are the major consumer markets.

In discussing the data given in Table 7, it was determined that Kansas touches the two most important consumer markets, the mountain and west-south-central regions. Considering that, as shown in Tables 3 and 4, Kansas is one of the largest producer states, it is possible that Kansas is a major exporter state even though the region in which it is located, as a whole, must import seven per cent of its regional sales. This hypothesis can be ascertained by observing the figures presented in the following table.

TABLE 8
MOBILE HOME DISTRIBUTION PATTERN
TO RETAIL DEALERS FOR THE
WEST-NORTH-CENTRAL REGION

State	1965	1966	1967
Iowa	.82%	1.03%	.99%
Kansas	1.37	1.61	1.69
Minnesota	1.60	1.96	1.97
Missouri	2.22	2.59	2.41
Nebraska	.72	.86	1.08
North Dakota	.70	.67	.61
South Dakota	.97	.84	.91
Total	8.40%	9.56%	9.66%

Source: M.H./R.V. Dealer, "Market Study," January 1969.

The above table shows that in 1967, Kansas local demand for mobile homes was 1.69 per cent of total U.S. demand or sales. For the same year, as shown in Table 9, Kansas production or supply of mobile homes was 5.45 per cent of total U.S. production. Therefore, Kansas exported as much as 3.76 per cent of the total national production. That is, Kansas exported 69 per cent of the mobile home units it produced.

TABLE 9

MOBILE HOME AND SPECIAL UNIT PRODUCTION, 1967
FOR THE WEST-NORTH-CENTRAL REGION

State	No. of Plants	Mobile Home Production	Wholesale \$ Value	Special Unit Production	Wholesale \$ Value	% of U.S. Production (Mobile Homes Only)
Iowa	2	453	2,577,300	103	268,500	0.18%
Kansas	16	13,410	63,159,337	42	100,750	5.45
Minnesota	2	1,220	4,850,720	32	65,580	0.50
Missouri	8	1,584	5,809,931	29	119,452	0.63
Nebraska	8	4,885	22,167,709	374	1,306,400	1.98
North Dakota	--	--	---	--	---	--
South Dakota	2	544	2,560,720	55	247,471	0.22
Total	38	28,096	101,125,717	634	2,108,153	8.98%

Source: M.H./R.V. Dealer, "Market Study", January 1969.

Table 8 gives the sales of mobile homes in each of the states that form the west-north-central region. In order to see which of these states is importing or exports mobile homes, it is necessary first to know the level of local production. This data is offered in Table 9.

The figures presented in Table 9 show that Kansas is indeed the largest mobile home producer of the west-north-central region. The state of Nebraska is the second largest producer of the region. But with respect to special units production, Nebraska is far ahead of its co-regional states.

Comparing the 1967 data of Tables 8 and 9 for sales and production of mobile homes, it is possible to determine which state imports or exports mobile home units. This is done in Table 10.

TABLE 10
MOBILE HOME PRODUCTION AND SALES, 1967
FOR THE WEST-NORTH-CENTRAL REGION

State	A	B	A+B=C	
	Production (% of U.S. Prod.)	Sales (% of U.S. Distrib. to Retail Dealers)	(+) imports (-) exports % of U.S. Market	(+) imports=C/B (-) exports=C/A % of Local Market
Iowa	0.18%	0.99%	(+) 0.81%	(+) 82%
Kansas	5.45	1.69	(-) 3.76	(-) 69
Minnesota	0.50	1.97	(+) 1.47	(+) 75
Missouri	0.63	2.41	(+) 1.78	(+) 74
Nebraska	1.98	1.08	(-) 0.90	(-) 45
North Dakota	--	0.61	(+) 0.61	(+) 100
South Dakota	0.22	0.91	(+) 0.69	(+) 76
Total	8.98	9.66	(+) 0.68	----

Source: M.H./R.V. Dealer, "Market Study," January 1969.

Table 10 shows that Kansas and Nebraska are the only exporter states in the west-north-central region. These two states export 69 per cent and 45 per cent of their total mobile home production respectively. The volume of Kansas exports is indeed very high even with respect to the national market--it exports 3.76 per cent of the U.S. mobile home production. All the other states in the west-north-central region are basically importers. They consumed more mobile homes than they presently produce. Indeed, this demand is so high that the whole region figures as an importer.

KANSAS MOBILE HOME INDUSTRY

As it was established in previous sections, in 1967, Kansas was the largest exporter of mobile homes in the west-north-central region, exporting 69 per cent of its local production or 3.76 per cent of the nation's production. In the same year, Kansas ranked as the ninth and sixth largest producer of mobile homes with respect to the total U.S. production and U.S. wholesale dollar value respectively.

A favorite explanation for the success of the mobile home industry in Kansas is given in terms of favorable labor wages and legislation, low land values and building costs, a mild climate, and an exceptionally good labor market. All these factors are undoubtedly present in Kansas, yet a better reason is that Kansas borders with the mountain and west-south-central regions, the two most important consumer markets for mobile homes. Also it is very likely that the presence of the aircraft industry was a favorable factor, at least for the early establishment and growth of the mobile home industry in Kansas: both the aircraft and mobile home industry used aluminum shells and had other common characteristics. Maybe this would also help explain the importance of the California mobile home industry.

Some estimates of Kansas mobile home production for the year 1968 have been made by the Kansas Economic Development Commission. These estimates have been modified to take into account the results of a questionnaire which was sent to each of the Kansas mobile home manufacturers. Due to the unsatisfactory result of this questionnaire and the purely estimative value of the K.E.D.C.'s figures, the data presented in Table 11 should be taken "with a grain of salt."

TABLE 11
MOBILE HOME MANUFACTURERS IN KANSAS

City	Firm	Prod. Started	Estimated 1968 Production
Arkansas City	Skyline Homes, Inc.	1959	700
Great Bend	Falcon Coach Co., Inc.	1964	300
Great Bend	Marlette Coach Co.	1959	1,600
Halstead	Skyline Homes, Inc.	1965	1,500
Hutchinson	Detroit Mobile Homes	1959	1,500
Hutchinson	Ultra Inc.	1965	300
Manhattan	Lonergan Corp. (Ks. Div.)	1966	400
McPherson	Kit Mfg. Co.	1960	1,000
Newton	American Coach Co.	1956	1,400
Newton	Guerdon Industries, Inc.	1955	1,800
Newton	Manco Industries, Inc.	1965	1,200
Ottawa	Star Mobile Homes (Div. Divco, Wayne, Ind., Inc.)	1965	1,400
Parsons	Princess Homes, Inc.	1962	800
Plainville	Schult Mobile Homes Corp.	1968	1,200
Wellington	Concord Mobile Homes (Titan Div.)	1964	500
TOTALS	Plants - 15	Estimated Total - 15,600	

Source: Data estimated by the Kansas Economic Development Commission and by a questionnaire sent to the manufacturers.

Notice that Table 11 indicates that in 1968 there were 15 mobile home plants operating in Kansas, while other sources indicated a total of 16. This discrepancy adds weight to the warning that this data has been gathered very recently and has not been thoroughly verified yet.

Bringing up to date the list of firms indicated in Table 11, these are the changes that occurred up to May 1969:

- (1) The firm, Ultra Inc., located at Hutchinson, ceased operating.
- (2) Another firm, Liberty Homes of Kansas, Inc., located at Yoder began production in May 1969.
- (3) Kit Manufacturing Co. stated in the questionnaire that it is building an additional plant in McPherson.
- (4) The Kansas Economic Development Commission reports that the following firms have announced plans for Kansas plants in 1969:
 - (a) DeVoe Industries, Inc., to be located at Augusta.
 - (b) Vintage Homes, Inc., to be located at Hutchinson.
 - (c) Allen Homes, Inc., to be located at Junction City.
 - (d) Modular Industries Co., Inc., located at McPherson.

Thus, resuming the above information, by the end of 1969 there will be approximately 20 mobile home plants in Kansas. This will increase annual production and will help Kansas to maintain its share of the U.S. production market.

According to the Kansas Economic Development Commission, by 1968 there were 15 mobile home plants in Kansas, ten of which have started production within the last six years. In addition to mobile home plants, there were 37 other plants that produced pick-up coaches, travel trailers, etc.; 31 of these have started production in the last six years. To supply all

these manufacturers, a large group of suppliers have moved nearby the areas of more intense production, and by 1968 there were 26 supplier plants, 19 of which have started production in the last six years.

CONCLUSIONS

In analyzing the growth of the mobile home industry, it has been noticed that the industry has undergone several major metamorphoses since its birth. At first, in the late 1920's, it was built as a vacation "trailer." In the 1930's it became a rather permanent dwelling for the low middle class that suffered the privations of the depression years. After World War II, the urgent need for more dwellings with acceptable facilities brought about the first series of modern mobile homes. Then, by 1954, transportation laws allowed a very important expansion on the width of the mobile home: the 10 foot wides came into production. By this time the length had been increasing, space had become rather abundant, and interior design was liberated from its major dimensional obstacle.

In 1962, another breakthrough on width took place: the 12 foot wides were allowed to travel on the major highways, and length increased to a practical maximum of 60 feet. By 1965 the 12 foot wides became the new standard size and double-sizes began being used for homes consisting of several mobile units.

The discussions presented on the concepts of prefabrication and modular design, on the seeming inability of conventional building technology to produce low-cost housing units, and on the solution offered by the manufacturers of sectional homes explained why these are being preferred to conventional housing units.

The analysis of the U.S. market for mobile home units revealed that Kansas is located next to important consumer markets for mobile homes, namely, the mountain and west-south-central regions. This favorable location has been a major factor for the concentration of manufacturers and suppliers

found in Kansas, even though other factors, like labor and climate conditions, and a well developed transportation system, must have been influential also.

A closer analysis of the Kansas mobile home industry showed that two-thirds of the plants operating by the end of 1968 had been established within the last six years. According to information made available by the Kansas Economic Development Commission, in the year 1969 the number of plants producing mobile homes will increase by another thirty per cent; a similar growth has been reported also for the related industry of travel trailers-- eighty-four per cent of which has been established in Kansas within the last six years.

BIBLIOGRAPHY

Cowgill, D. O., Mobile Homes, University of Pennsylvania, 1940, Thesis (Ph.D.)
Publ. by American Council on Public Affairs (pref. 1941) Washington, D.C.

_____ Mobile Home Manufacturers Association, "Flash Facts About Mobile
Homes and Recreational Vehicles," March 1966.

_____ Mobile Home Manufacturers Association, "Flash Facts About Mobile
Homes and Recreational Vehicles," October 1968.

_____ Architectural Forum, "Habitat," 126: 34-44, May 1967.

_____ Architectural Record, "Prefabricated Housing," 141: 187-194, March
1967.

_____ Business Week, "Assembly Lines...", pp. 83-86, October 26, 1968.

_____ Business Week, "Special Report," pp. 84-108, May 6, 1967.

_____ Business Week, "Prefab Housing...", pp. 45 - 46, March 1, 1969.

_____ M.H./R.V. Dealer, "Market Study," January 1969.

THE GROWTH OF THE MOBILE HOME INDUSTRY

by

GIAN CARLO DURI

B.A., North Carolina State University, Raleigh, N.C., 1968

AN ABSTRACT OF A MASTER'S REPORT
submitted in partial fulfillment of the
requirements for the degree

MASTER OF ARTS

Department of Economics

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1969

This report consists of an analysis of the growth of the mobile home industry in the U.S. and in Kansas. With the exception of some out-of-date books, most of the recent literature on the subject has been published by the industry itself and by other non-scholarly periodicals. Some additional data has been gathered by means of a questionnaire sent out to the Kansas mobile home manufacturers, and some more was received from the Kansas Economic Development Commission. However, these were found to be conflicting and, therefore, doubtful.

The growth of the mobile home industry was analyzed in a chronological fashion to simplify the presentation: Early Growth (1920 - 1940), which was drawn from D. O. Cowgill's Mobile Homes, was a discussion of how the idea of the house trailer grew out of the sociological and technological needs of the early 1920's; Recent Growth (1940 - 1965) was a description of the gradual transition from the house trailer to the mobile home; Present Growth (1965 - 1968) was an analysis of the adaptation of the mobile home concept to prefabricated, modular housing units; and New Trends (1968 -) was in essence a conclusion drawn from the previous discussion and from the fact that a new technology seems to be needed in the production of low-cost housing units. Thus, the current growth of the mobile home industry was found to be stimulated by the social need for low-cost housing units and by the advanced technology that the mobile home industry can offer in the manufacturing of modular units.

The location of the mobile home industry was also analyzed in parts to facilitate the discussion. First, some remarks were offered as to the location of the first manufacturers and the formation of the first production areas. Second, a regional analysis of production and sales was offered so that import and export regions could be determined. Third, a

discussion of the Kansas mobile home market was offered, including some indications of the relative place that Kansas occupies with respect to the U. S. mobile home market. Fourth, the Kansas mobile home industry was described in terms of its component firms, estimated production, location, etc. This data for this fourth part was partially gathered by the mentioned questionnaire and by the Kansas Economic Development Commission.

The analysis of the U.S. market for mobile home units has revealed that Kansas is located next to the main consumer markets for mobile homes, the mountain and west south central regions. This locational advantage plus other factors like favorable labor and climate conditions, as well as a highly developed transportation system helped to explain the concentration of manufacturers and suppliers in Kansas.

Kansas was found to be one of the national leaders in the production of mobile home units. In 1967, Kansas industry produced 5.45 per cent of total U.S. production and exported 3.76 per cent of it or 69 per cent of its local production. Thus, in 1967, Kansas ranked as the ninth and sixth largest producer of mobile homes with respect to the total U.S. production and wholesale dollar value respectively. The importance of this industry in Kansas seems to be secured by its continuous expansion: two-thirds of the plants operating by the end of 1968 had been established within the last six years; and in the year 1969 the number of plants producing mobile homes is expected to increase by another thirty per cent.

This report concluded that the mobile home industry's capability to adapt its technology to the building of modular or sectional homes is a sign that the industry will continue to grow. The state of Kansas seems to benefit from this trend.