To the Graduate Council:

I am submitting herewith a dissertation written by Manik Hwang entitled "Geographical and Structural Change of the Mobile Home Industry in the United States, 1960-1980." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Geography.

T. H. Schmudde, Major Professor

We have read this dissertation
and recommend its acceptance:

Accepted for the Council:

Vice Chancellor
Graduate Studies and Research

GEOGRAPHICAL AND STRUCTURAL CHANGE OF THE MOBILE HOME INDUSTRY IN THE UNITED STATES, 1960-1980

A Dissertation

Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

Manik Hwang

June 1982

3060826

TO MY MOTHER

ACKNOWLEDGEMENT

I wish to express my sincere appreciation and gratitude to Dr. Theodore H. Schmudde for his guidance, patience and suggestions for this study. I am indebted to the members of my committee, Drs. Sidney R. Jumper, Thomas L. Bell, John B. Rehder, and John R. Moore for their review and advice on the preparation of this manuscript.

In addition, I wish to thank Dr. James R. Carter, Department of Geography, and Dr. Ernest L. Hall, Department of Electrical Engineering, both at The University of Tennessee, Knoxville, for their encouragement and help. Special thanks are also extended to Mr. Joe Owens, Vice President, and Mr. John McGuire, both in the Manufactured Housing Institute; officials in Mobile-Modular Housing Dealer Magazine; and officials in mobile home manufacturing firms with whom I interviewed in the field, for providing valuable information in the study. I further wish to acknowledge Dr. Bethany K. Dumas, Department of English, The University of Tennessee, Knoxville, for her suggestions on the writing of the final draft, Dr. John S. Fox, Mr. Eddie A. Bright and Mr. John Morgan for their help; and Mrs. Georgia Bunn for her typing.

Finally, I wish to express appreciation to my wife, my two sons, and my two sisters for their patience. Most of all, I am grateful to my parents and my brother, Woo Ik Hwang, M. D. and Ph. D., for their love and support.

ABSTRACT

This is a study of the evolving pattern and the changing structure of the mobile home industry in the United States between 1960 and 1980. It focuses on the influence of the emerging large multi-plant firms on the present distribution of the industry. During the years 1960 to 1972, the industry grew and spread rapidly; since 1973 it has declined. The period of growth set the national and regional patterns of production plants, whereas the period of decline produced major changes in the structure of the industry. Large numbers of plants opened during the period of expansion, particularly plants belonging to single-plant firms. The period of decline resulted by 1980 in massive loss of single-plant firms and an industry more and more dominated by multi-plant firms, as measured by both number of plants and units of production.

The mobile home industry has experienced increased ratios of economic concentration during the period of decline. Such concentration is associated with the emerging dominance of multi-plant firms. They have a competitive advantage over single-plant firms through their absolute size, wide geographical reach to markets, and command of financial resources needed to survive the intense competition of a shrinking market. There are, however, successful single-plant firms. Some of these firms are vertically integrated into the market through owned sales outlets, giving them more secure access to a regional market; others have specialized products or an established reputation and thereby exploit a niche in the market.

A pattern of geographic concentration of mobile home manufacturing plants developed during the growth period of the industry, in many cases related to entrepreneurial spin-off. The nodes of concentration have persisted and the ratios of concentration increased over the 1973-1980 period.

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CHAPTER I

INTRODUCTION

The manufacture of mobile homes was a significant industry in the United States by 1960, and grew rapidly until 1972. Since then it has declined. As the number of plants declined from 1973 to 1980, the industry changed from one dominated by single-plant firms to one more and more dominated by multi-plant firms. Most of the previous studies in the geography of mobile home manufacturing have focused on the initial location decisions of individual producers.[1] This study focuses on the changing structure and location of the industry as a process of survival in response to a declining market.

I. PURPOSES

This study has two purposes. One is to describe the evolving pattern and the changing structure of the mobile home industry from 1960-1980, and the other is to explain these changes as an adaptation to the change from a rapidly expanding market to one of decline.

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[1]For example, see P. L. Knight, "Locational Analysis of Mobile Home Manufacturing in Georgia" (M. A. Thesis, University of Georgia, 1972); J. O. Wheeler, G. Callaghan and G. Brewer, "Locational Factors in the Growth of Mobile Home Manufacturing in the Southeastern United States," Southeastern Geographer, Vol. 8 (1974), pp. 92-104; and J. O. Wheeler, "An Application of Multi-dimensional Scaling to the Location of Mobile Home Manufacturing," Professional Geographer, Vol. 38 (1976), pp. 261-266.

Specific goals in this investigation are:

1. To show the changing distribution of mobile home manufacturing plants between 1960 and 1980;
2. To determine the changing importance of single-plant compared to multi-plant firms over the 1960 to 1980 period in terms of both the geography of the industry and shares of the market;
3. To explain the significance of coporate structure, particularly the emerging large multi-plant firms, on the survival of plants and the present distributional pattern of the industry; and
4. To explain the survival of some single-plant firms in an industry now dominated by large multi-plant firms.

II. THE APPROACH--AN ANALYSIS OF PLANT SURVIVAL AND INDUSTRIAL LOCATION

Industrial location patterns emerge and develop as the result of different rates in the opening, growth, and survival of plants. Some plants have remained at their present locations for years, even for decades. In trying to explain their continued presence, little is gained from determining the reasons for their original locations,[2] particularly when many competing plants locate in the same

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[2]Guy Steed, "Locational Implications of Corporate Organization of Industry," Canadian Geographer, Vol. 6, No. 1 (1971), pp. 54-56.

area. How and why a firm chooses a particular location is interesting, but of greater intrinsic interest is how particular locations are used, once selected.[3] A relevant inquiry for locational analysis, then, becomes the determination of the survival capacity of the plant at its present location.[4] This study concerns relationships between the survival ability of plants and such characteristics of the industrial structure as (1) the relative size of the firm, (2) the degree to which the firm is a single- or multi-plant operation within the industry, and (3) the effect of certain types of vertical integration (e.g., integration with marketing networks within the firm).

Corporations are dominant institutions in modern industry.[5] In the past, geographical research on locational patterns in manufacturing was preoccupied with single-owner and single-plant firms.[6] The role of the single-owner and the single-plant firm has become less significant in modern industry. Richard J. Barber describes the significance of size in American industry:

> Vast in size and wealth, diversified in their product and geographic orientation, reasonably secure in their preeminent

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[3]Robert B. McNee, "A System Approach of Understanding the Geographic Behaviour of Organizations, Especially Large Corporations," in Spatial Perspectives on Industrial Organization and Decision-Making, F. E. Ian Hamilton, ed. (London: John Wiley & Sons, 1974), pp. 47-76.

[4]Steed, p. 54.

[5]Guy P. F. Steed, "Internal Organization, Firm Integration, and Locational Change: The Northern Ireland Linen Complex, 1954-1964," Economic Geography, Vol. 47 (July 1971), pp. 371-383.

[6]Ibid., p. 372.

> place in the industrial hierarchy, and tightly interwoven with the banking and financial community, the big American corporations have become a world unto themselves.[7]

Large firms have accumulated economic power over time. The power to control their environment--cost, technical progress, prices, the responses of consumers and govenment--encourages growth.[8] Their spatial structures are local, regional or even national. Large firms may be enormous, having a large number of employees, customers, and shareholders, and operating many separate plants. Günter Krumme, who was one of the earliest to advocate a geography of "enterprise," argued that the neglect of "enterprise" as a combination of monetary, technological, and human components seemed to have been due to the "preoccupation of economic geographers merely with geographic implications of optimal combinations of productive factors rather than with the underlying forces."[9]

III. REVIEW OF THE LITERATURE

Three major studies of the mobile home manufacturing industry are found in the geographic literature.[10] Two studies by James O. Wheeler and his associates, and a third by P. L. Knight, investigated

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[7]Richard J. Barber, The American Corporation: Its Power, Its Money, Its Politics (New York: E. P. Dutton & Co., Inc., 1970), p. 73.

[8]Phillip I. Blumberg, The Megacorporation in American Society: The Scope of Corporate Power (Englewood Cliffs: Prentice-Hall, Inc., 1975), p. 45.

[9]Günter Krumme, "Toward a Geography of Enterprise," Economic Geography, Vol. 45, No. 1 (1960), pp. 30-40.

[10]Knight; Wheeler et al. (1974); and Wheeler (1976).

mobile home plants in the southeastern states. These studies analyzed the initial location decisions of individual mobile home producers in terms of proximity to markets, labor, and materials. They concluded that 85 percent of mobile home sales were within 300 miles of the manufacturing plants, and that the industry was highly sensitive in its regional location to market accessibility because of high transportation charges on the completed homes. They concluded that proximity to market was the most important factor for explaining the distribution of the industry in areas studied. These studies also emphasized the economies associated with proximity to labor and suppliers. Despite the fact that material costs generally run about 70 percent of total production costs, according to their studies, proximity to material suppliers was a secondary factor in location decisions concerning mobile home plants.

In another study of mobile home manufacturing, based on a national survey, Arthur D. Bernhardt indicated that material costs ranged from 61 to 71 percent, and labor costs from 8 to 14 percent of F. O. B. factory price, depending on the manufacturer.[11] In his analysis of cost structure of the industry, the significant determinants

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[11] Arthur D. Bernhardt, Building Tomorrow: The Mobile/Manufactured Housing Industry (Cambridge: The MIT Press, 1980), p. 60. In his study about 50 mobile home manufacturing firms were surveyed.

of material costs among producers were output composition, vertical integration of firms, and regional variation.[12]

Wheeler identified four primary clusters of mobile home plants in nine southeastern states.[13] The clusters are associated with four general market areas, with intense competition within the cluster of plants for a share of the local market and equally pronounced spatial competition where market areas overlap between the major clusters of plants.[14]

III. DATA SOURCES, DEFINITIONS AND PROCEDURES

Data Sources

Locations of all mobile home plants and firms are listed in the annual Directory of Mobile and Modular Housing Manufacturers, which has been published annually by the Mobile-Modular Housing Dealer Magazine since 1961.[15] This directory also lists information on the corporate structure within which a firm is embedded, that is whether a

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[12]Ibid., p. 140. Bernhardt's analysis showed that savings in material costs could be gained by producing one double-wide rather than two single-wide units. He found regional variation of the material costs difficult to explain.

[13]Wheeler (1976), p. 263.

[14]Ibid.

[15]At present, available directories published before 1970 are only those of 1962 and 1965.

given plant is an independent firm or a branch plant, a division, or a subsididary of another firm.

Definitions

A plant opening (or entry) or closure (or exit) was determined by the presence or absence of the name of an establishment in the annual Directory of Mobile and Modular Housing Manufacturers in the two consecutive periods. Although an ownership change may or may not accompany a new name of an establishment, a plant is classified as closed when its name and its key personnel changed in consecutive time periods.

A multi-plant firm is defined as a firm which has more than one branch (or division) plant in mobile home manufacturing as listed in the annual Directory of Mobile and Modular Housing Manufacturers. The subsidiary relationship with another firm is not classified as a branch plant by definition.[16]

Procedures

This study is presented in two parts. The first part describes changes of the location pattern as a result of the rapid growth and

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[16]Although firms are technically divided into single-plant and multi-plant firms in this study, the classification is subjective on many occasions. Organizational forms of manufacturing firms are far more complex than a dichotomous classification scheme would suggest. Furthermore, there are always dynamic situations among firms over a period of time. There have been single-plant firms which became multi-plant firms by establishing branch plants in one or more locations. Some of these new firms closed their branch plants after a period of time when the branches were not successful.

decline of the industry, and the changing significance of single-plant and multi-plant firms between 1960 and 1980. The second part investigates the growth and dominance of large multi-plant firms in the industry; analyzes the survival of plants using such factors as plant density, plant age, corporate structures of firms, and the size of multi-plant firms; and examines competitive and structural advantages of surviving firms since 1972 in case studies of three selected multi-plant firms and three single-plant firms in the southeastern states.

CHAPTER 2

DESCRIPTION OF MOBILE HOME MANUFACTURING: 1960 TO 1980

Mobile home manufacturing in the United States began in the 1930's; but has grown most rapidly since the early 1960's. Many changes have occurred in its output, production locations, and industrial structure. Part I of this chapter describes the changes in growth of the mobile home industry during the 1960 to 1980 period. Part II analyzes the changing locational patterns of the industry, and Part III examines the importance of single-plant firms and multi-plant firms in the industrial structure.

I. GROWTH AND DECLINE OF MOBILE HOME MANUFACTURING FOR THE 1960 TO 1980 PERIOD

General Trends

The first half (1960-1972) of this period was dominated by rapid growth in the production of mobile homes (Figure 1), the number of manufacturing plants (Figure 2), and the development of regional concentrations of production. Annual production expanded from 103,900 units in 1960 to 601,300 units in 1972 (Table 1).[1] The number of new firms, plants and branch plants of existing multi-plant firms

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[1] Mobile Home Manufacturers Association, 16th Annual Industry Review: Product/Product Placement Survey (Chicago: Mobile Home Manufacturers Association, 1967), p. 7; and Mobile Home Manufacturers Association, Mobile Home Financing: 22nd Annual Survey (Chantilly, Virginia: Mobile Home Manufacturers Association, 1973), p. 8.

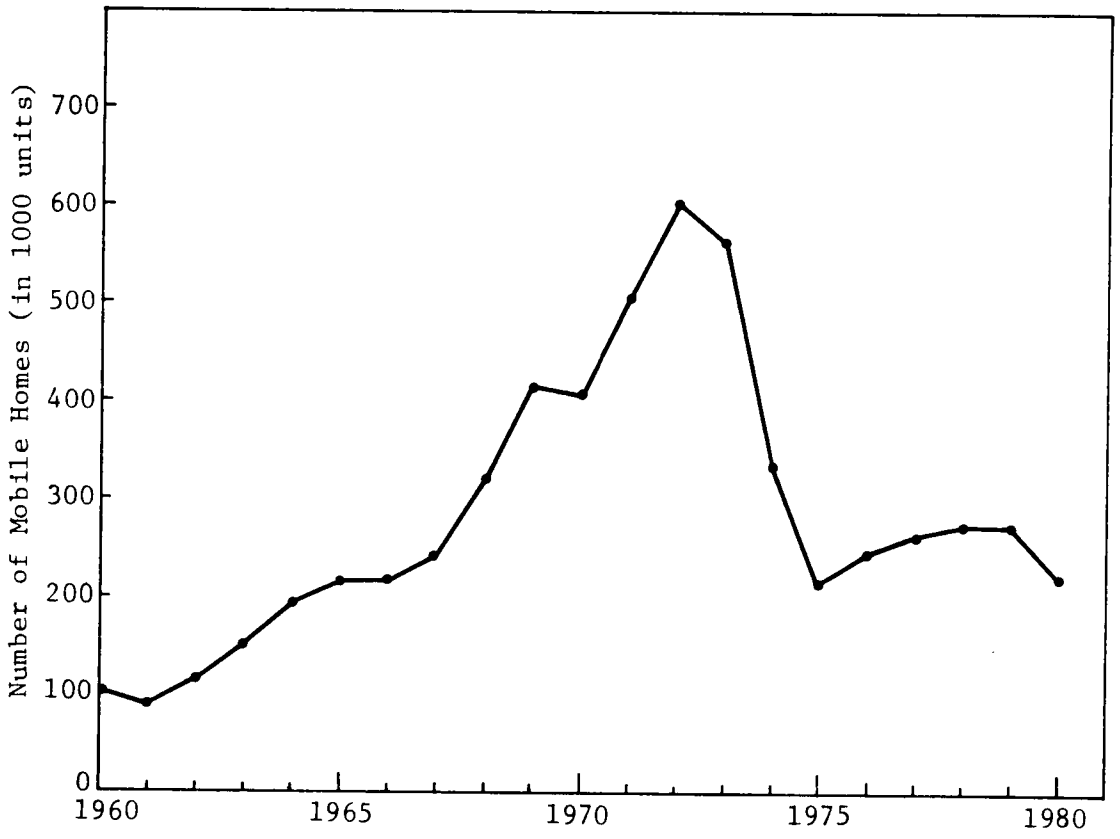

Figure 1. Mobile Home Production in the United States, 1960-1980.

Source: Mobile Home Manufacturers Association, Mobile Home Financing, Annual Survey, 1965-1976; and Manufactured Housing Institute, Manufacturing Reports, 1977-1981.

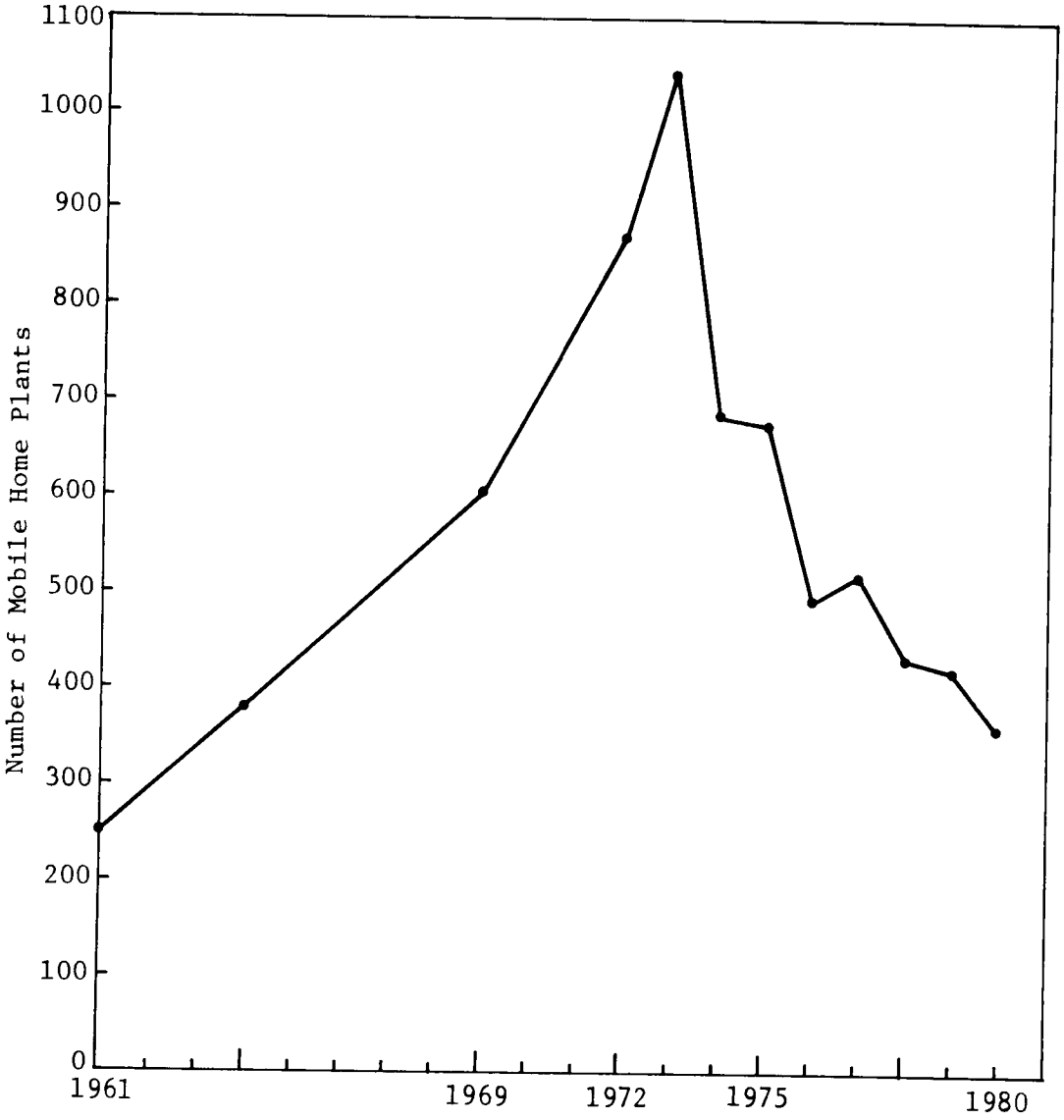

Figure 2. Number of Mobile Home Plants in the United States, 1961-1980.

Source: Manufactured Housing Dealer Magazine, Directory of Mobile and and Modular Housing Manufacturers, 1962-1981.

TABLE 1

MOBILE HOME PRODUCTION, AND NUMBER OF PLANTS AND FIRMS IN THE UNITED STATES, 1960-1980

Year	Mobile Home Production[a] (Unit in 1,000)	No. of Plants[b]	No. of Firms[b]	Average No. of Plants per Firm
1960	103.9			
1961	90.2	250	201	1.2
1962	118.0			
1963	150.8			
1964	192.3	379	285	1.3
1965	216.5			
1966	217.3			
1967	240.4			
1968	318.0			
1969	412.7	598	368	1.6
1970	408.4			
1971	507.2			
1972	601.3	858	546	1.6
1973	568.4	1040	693	1.5
1974	330.8	688	377	1.8
1975	213.0	675	423	1.6
1976	240.8	492	291	1.7
1977	265.6	520	331	1.6
1978	274.9	430	210	2.0
1979	275.9	450	211	2.1
1980	221.0	375	168	2.2

[a]SOURCE: Manufactured Housing Institute; production volumes in 1960-1969 are based on the shipments to states.

[b]SOURCE: Manufactured Housing Dealer Magazine, Directory of Mobile and Modular Housing Manufacturers, 1962, 1965, 1970 and 1973-1981. When a multi-plant firm listed more than one plant in the same town, only one of them are entered in the table. Firms that produce only modular housing units are not included in the figures.

increased each year until mid-1973, when the industry began a decline. The number of plants increased from 250 to 598 in a nine-year period from 1961 to 1969, and to 1040 plants in 1973 (Table 1).[2]

Following a decade of growth, the industry declined rapidly, and by 1975 its production was reduced to one-third of the 1972 level. Since then, production has increased only slightly, and actually decreased in 1980. The number of plants, however, continued to fall after 1973 (Figure 2). This period is characterized by a decline in the number of plants, consolidation and reorganization of the structure of production, and modifications of the pattern of regional concentrations. It also created an industry where one-fifth of the firms, the multi-plant firms, controlled three-fifths of all plants. Such a structure is in strong contrast to the mobile home industry of 1961, which was virtually all single plant firms. The change in the average number of plants per firm from 1.2 in 1961 to 2.2 in 1980 (Table 1) points out this change.

The average number of units produced per plant nearly doubled from 1961 to 1972 (Table 2), suggesting that new and old plants alike were becoming larger. Between 1972 and 1975, however, the average output per plant dropped to less than half of the 1972 output, which was brought about by reduction in production per plant more than by loss of producing plants (Table 1). Since 1976, the output per plant

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[2]Mobile-Modular Housing Dealer Magazine, Directory of Mobile and Modular Housing Manufacturers, 1962, 1965, 1970 and 1973 (Chicago: Mobile-Modular Housing Dealer Magazine, 1962-1973).

TABLE 2

AVERAGE MOBILE HOME PRODUCTION PER PLANT AND PER FIRM
IN THE UNITED STATES, 1961-1980

Year	Average Mobile Home Production	
	Per Plant	Per Firm
1961	361	449
1964	505	671
1969	691	1122
1972	691	1101
1973	546	820
1974	481	878
1975	316	503
1976	489	828
1977	512	802
1978	639	1309
1979	613	1308
1980	589	1315

SOURCE: Table 1.

nearly doubled while the number of plants declined by nearly one-fourth.

General Factors Underlying the Growth and Decline of the Industry in 1960-1980

Mobile homes became an important housing alternative for many low-income families beginning in the mid-1960's when conventional housing became increasingly expensive and in short supply.[3] The average mobile home costs much less than the conventional home. In 1973, 80 percent of all homes costing less than $20,000 sold in the nation were mobile homes.[4] Other major factors for the increased mobile home demand included favorable developments in financing for mobile home consumers,[5] continued growth in the number of young-marrieds and retirees who were major consumers of the homes, improved mobile home design and enlarged size, and greater use of mobile homes for vacation or second homes.[6]

After mid-1973, the industry suffered from a combination of tight money and high interest rates as a result of the oncoming national economic recession.[7] The industry had to cope not only with

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[3]L. A. Mayer, "The Housing Shortage Goes Critical," Fortunes (December 1968), p. 68.

[4]Standard & Poor's Corporation, Standard & Poor's Industry Survey, 1975, p. B-73.

[5]In 1968-1970, the federal government, for the first time, provided availability of Federal Housing Administration Insurance for mobile home loans, and the eligibility of mobile homes for guaranteed loans by the Veterans Administration.

[6]Harold A. Davidson, Housing Demand: Mobile, Modular, or Convential? (New York: Van Nostrand Reinhold Co., 1973), pp. 53-68; and Standard & Poor's Corporation, Standard & Poor's Industry Survey, 1977, p. B-114.

[7]Standard & Poor's Corporation, 1975, p. B-73.

adverse markets but also with escalating costs of raw materials.[8]

As the national economic recession continued, defaults on payments from individual buyers and retail dealers increased. Repossessions of mobile homes reached more than 100,000 units in the nation in 1973-1975 (national production in 1975 was only 213,000 units).[9] Producers and retail dealers faced an economic crisis. It was estimated that by the spring of 1975, total dealer inventories were down by as much as 75 percent of those of late 1973.[10] The situation was made worse by the withdrawal of many dealers from the business.[11] As a result, many producers had substantial losses or operated at significantly lower profit levels than in previous years. Many marginal manufacturers were forced out of business, and the large firms either substantially cut back expansion plants, closed, or consolidated some of their plants.

In recent years, continued high prices for conventional housing and effective housing market penetration by large-size mobile home units have helped the mobile home industry. Although prices of both mobile and conventional homes have increased in recent years, the gap in

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[8]Ibid., p. B-73.

[9]Harold A. Davidson, "How Promising is the Future for Mobile Housing?" Journal of Property Management, Vol. 43 (No. 6, 1978), pp. 309-311.

[10]Standard & Poor's Corporation, 1975, p. B-73.

[11]Ibid., p. B-73.

absolute amount of price has widened.[12] Best market penetration has been achieved in recent years by the 14-foot wide homes and double-wide units (or 24-foot wide) which accounted for more than 80 percent of the mobile home market in 1980.[13] The present trend of marketing larger units indicates that the industry has changed from the production of 8-foot wide, substandard and temporary "mobile" trailer homes in the 1950's to production of more permanent "manufactured" housing units today.

II. GEOGRAPHICAL PATTERNS OF MOBILE HOME MANUFACTURING

Plant Distributions for 1961, 1972 and 1980

The spatial distribution of mobile home manufacturing changed from a small number of locations in the early years of the industry (prior to 1960), to many places in the growth period (1960-1972), and to fewer locations in the most recent period of decline (1973-1980). Mobile homes of today originated from the trailer house industry which began in the 1930's. The trailer home industry in those days was concentrated in central and southern Michigan and northern Indiana, and dominated the national market. In the mid-1930's,

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[12] Manufactured Housing Institute, Quick Facts (Arlington, Virginia: Manufactured Housing Institute, 1977-1980). In 1979, according to this publication, the average mobile home price was $14,700 for single-units and $24,500 for multi-section units in comparison to $71,800 for the average sales price of conventional housing. The average sale price per square foot for mobile homes rose from $8.73 in 1972 to $16.76 in 1979 (an increase of 92 percent in that period) and the price for conventional homes increased from $15.35 to $32.00 in the same period (an increase of 108 percent in the period).

[13] Standard & Poor's Corporation, Standard & Poor's Industry Survey, 1980, p. B-114.

according to Meloan, seven of the twelve major house trailer manufacturers were located in Michigan; two of the remaining were in Elkhart, Indiana; and two others were in Illinois and Ohio.[14] House trailers manufactured in these areas were marketed even in California, although a secondary production center was established in southern California. C. L. Dunn described the trailer industry in 1948:

> Eastern trailers continue to find their way into the western market by the migration of people to the West via trailer coaches and by the sales efforts of eastern manufacturers. . . . Half of the present western trailer population lives in eastern- or mid-western built trailer coaches.[15]

In 1961, the mobile home industry was centered in areas of northern Indiana, southern California, and Michigan. These three states shared 41 percent of all plants (Table 3) and 47 percent of all mobile home production (Table 4) in the nation.[16] Indiana was the largest among the states in the industry. Elkhart, Indiana, had as many as 24 mobile home plants (10 percent of all plants in the nation) in 1961 and most of the plants in the state were located near that town (Figure 3). Elkhart was the leading center of the mobile home

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[14] T. W. Meloan, Mobile Homes: The Growth and Business Practices of the Industry, (Homewood: Richard D. Irwin, 1954), pp. 5-6. Locations of the twelve manufacturers were: Detroit (2 companies), Flint, New Hudson, Chesaning, Kalamazoo, Saginaw in Michigan, Elkhart, Indiana (2 companies); Chicago, Illinois; and Trotwood, Ohio. These twelve manufacturers produced 400 or more trailer coaches per year in the mid-1930's.

[15] Cecil L. Dunn, The Trailer Industry and the Trailer Coach Residents of Southern California (Los Angeles: Cecil L. Dunn and Company, 1948), p. 5, quoted in Elizabeth Y. Deran, "The Mobile Home in the West" (Ph. D. dissertation, University of California, Berkeley, 1955), p. 32.

[16] Table 4 shows production data of 1962 because production volumes by individual states for 1961 were not available.

TABLE 3

NUMBER OF MOBILE HOME MANUFACTURING PLANTS BY STATES
IN 1961, 1972 AND 1980

States by U. S. Census Region	1961	1972	1980
New England			
Connecticut	0	2	0
Maine	4	1	2
Massachusetts	0	1	0
New Hampshire	0	5	2
Rhode Island	0	0	0
Vermont	0	1	1
Mid-Atlantic			
New Jersey	0	1	0
New York	2	9	2
Pennsylvania	13	50	23
East North Central			
Illinois	1	2	0
Indiana	46	80	35
Michigan	26	31	4
Ohio	5	20	6
Wisconsin	3	18	8
West North Central			
Iowa	2	6	1
Kansas	6	22	13
Minnesota	4	15	9
Nebraska	7	13	5
North Dakota	0	1	1
South Dakota	2	3	0
South Atlantic			
Delaware	0	0	0
Florida	15	61	31
Georgia	10	59	21
Maryland	4	4	1
North Carolina	5	47	24
South Carolina	1	18	1
Virginia	1	10	3
West Virginia	0	2	0

TABLE 3 (CONTINUED)

States by U. S. Census Region	1961	1972	1980
East South Central			
Alabama	2	42	18
Kentucky	1	4	1
Mississippi	1	14	4
Tennessee	5	17	8
West South Central			
Arkansas	6	19	6
Louisiana	1	16	7
Oklahoma	3	16	2
Texas	19	81	36
Mountain			
Arizona	3	12	9
Colorado	4	9	7
Idaho	5	16	9
Montana	0	3	1
Nevada	0	0	0
New Mexico	0	3	0
Utah	1	4	1
Wyoming	0	1	0
Pacific			
California	31	97	49
Oregon	2	15	13
Washington	2	7	3
U. S. Total	250	858	375

NOTE: Number of plants did not include headquarters of the multi-plants firms. When more than one branch plants of the same multi-plant firm were listed in the same town, only one of the plants were counted for the convenience of tabulations.

SOURCE: Manufactured Housing Dealer Magazine, Director of Mobile and Modular Housing Manufacturers, 1962, 1973, and 1981.

TABLE 4

MOBILE HOME PRODUCTION BY STATES IN 1962, 1972 AND 1980

States by U. S. Census Regions	1962[a]	1972	1980
New England	(b)		
Connecticut		0	0
Maine		*	0
Massachusetts		0	0
New Hampshire		*	*
Rhode Island		0	0
Vermont		*	*
Mid-Atlantic	(7,250)	(46,771)	(10,358)
New Jersey	0	0	0
New York		2,919	0
Pennsylvania		42,446	10,358
East North Central	(47,530)	(101,153)	(27,809)
Illinois		2,106	*
Indiana	24,410	61,638	21,225
Michigan	17,970	14,779	48
Ohio		11,711	2,797
Wisconsin		10,919	3,737
West North Central	(13,250)	(52,087)	(15,066)
Iowa		*	*
Kansas		23,157	7,519
Minnesota		8,364	2,189
Nebraska		10,562	3,526
North Dakota		*	0
South Dakota		2,470	*
South Atlantic	(19,320)	(164,961)	(62,946)
Delaware		0	0
Florida		41,632	20,704
Georgia	9,230	69,334	24,340
Maryland		*	*
North Carolina		33,828	15,731
South Carolina		7,251	*
Virginia		11,105	2,171
West Virginia		*	0

TABLE 4 (CONTINUED)

States by U. S. Census Regions	1962[a]	1972	1980
East South Central	(c)	(70,742)	(24,431)
Alabama		43,980	15,858
Kentucky		3,680	*
Mississippi		13,562	3,244
Tennessee		9,520	5,332
West South Central	(13,750)	(78,833)	(37,170)
Arkansas		14,408	3,169
Louisana		9,524	3,088
Okalhoma		5,805	1,060
Texas		49,096	29,853
Mountain	(4,830)	(28,223)	(12,452)
Arizona		5,863	4,749
Colorado		5,378	2,379
Idaho		14,911	5,324
Montana		*	0
Nevada		0	0
New Mexico		*	0
Utah		*	*
Wyoming		0	0
Pacific	(14,540)	(58,480)	(25,399)
California	13,770	46,948	14,587
Oregon		8,053	8,521
Washington		3,479	2,291
U. S. Total	120,470	601,250	221,009

*Data are not available.

[a]Production figures for the individual states in 1962, except for the four major producing states of Indiana, Michigan, California and Georgia, were not available.

[b]Production figures for New England region was included in the figure of Mid-Atlantic region.

[c]Production figures for East South Central region were included in the figure of West South Central region.

SOURCE: Mobile Home Manufacturers Association, Annual Industry Review, 1967 and 1973; Manufactured Housing Institute, Manufacturing Report, 1981.

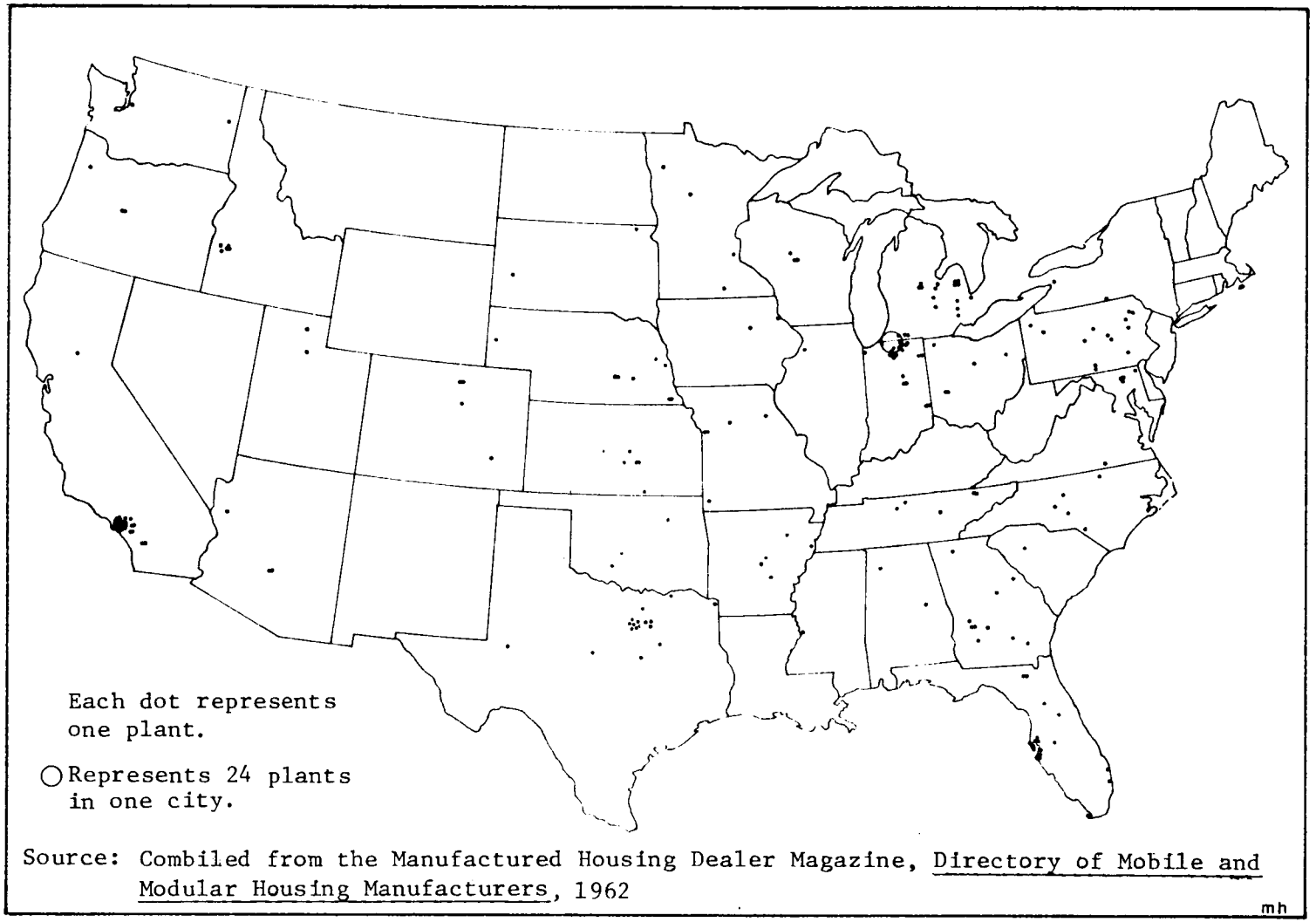

Figure 3. Distribution of Mobile Home Plants, 1961.

industry in the nation. Other major production areas where plants were clustered included southern California, Dallas-Fort Worth, Texas, and central Florida (Figure 3).

During the 1960's and the early 1970's, the industry was dispersed across the country (Figure 4). Many southeastern states and Texas were among the fastest growing areas. Georgia, Texas, Alabama, Florida and North Carolina were among the eight leading states in mobile home production in the nation in 1972 (Table 4). Whereas the degree of concentration of plants was intensified in the established major clusters in northern Indiana, southern California, Dallas-Fort Worth, Texas, and central Florida, new major clusters of plants developed in northern Alabama, southern Georgia, central North Carolina, and eastern Pennsylvania (Figure 4). Plants were also scattered outside of these new and existing production centers and spread into western states, such as Kansas, Idaho, and Oregon.

By 1980, the total number of mobile home plants declined to less than half the number of plants operating in 1972 (Table 3). There were no major changes in the general patterns among regions, but some changes occurred within each region (Figure 5).[17] Major regional clusters of plants experienced large reductions in numbers of plants by 1980. Areas bordering these major regional clusters, however, lost an even larger proportion of plants. For example, in South Carolina, 17 of the 18 plants which existed in 1972 were closed by 1980. In

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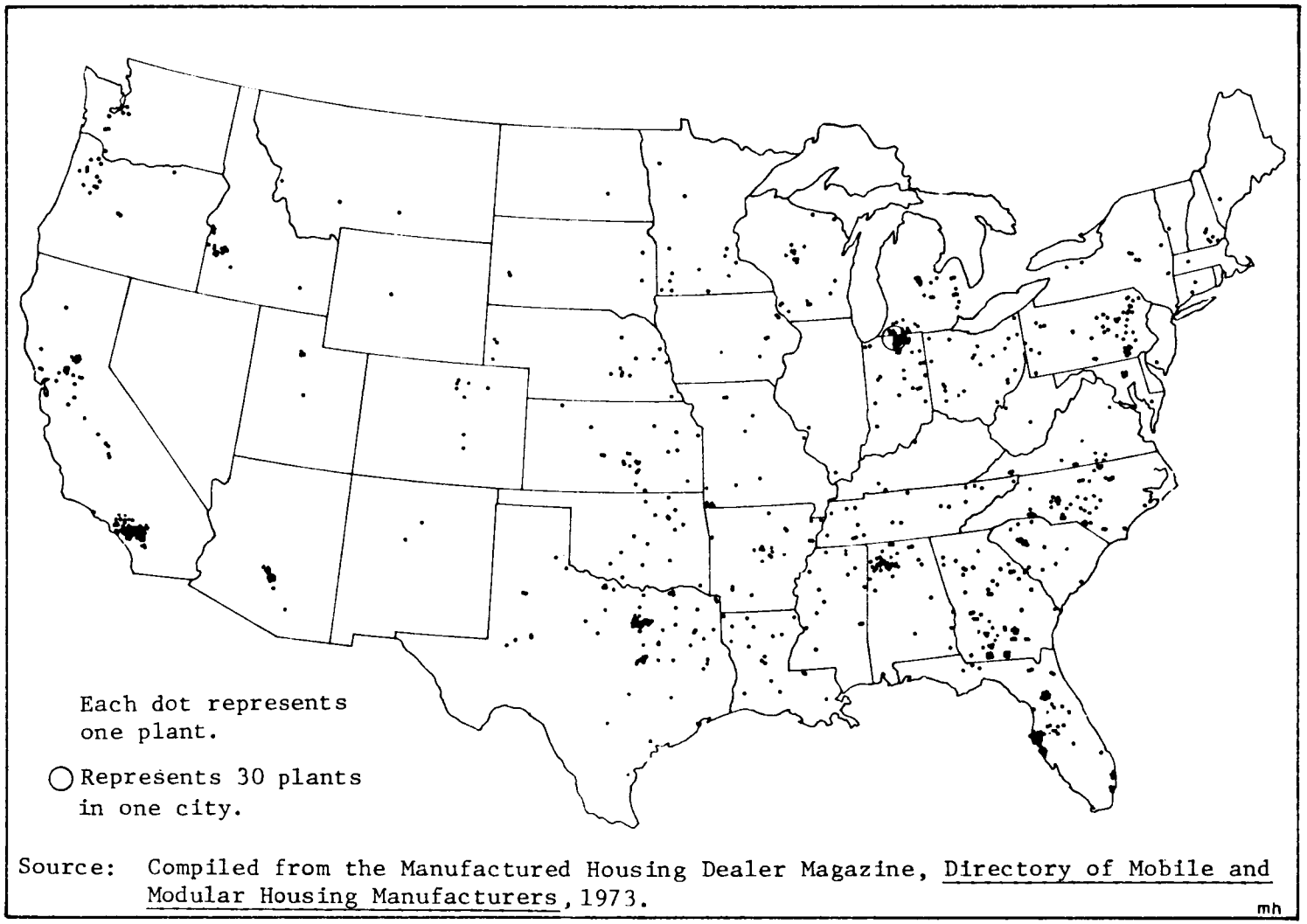
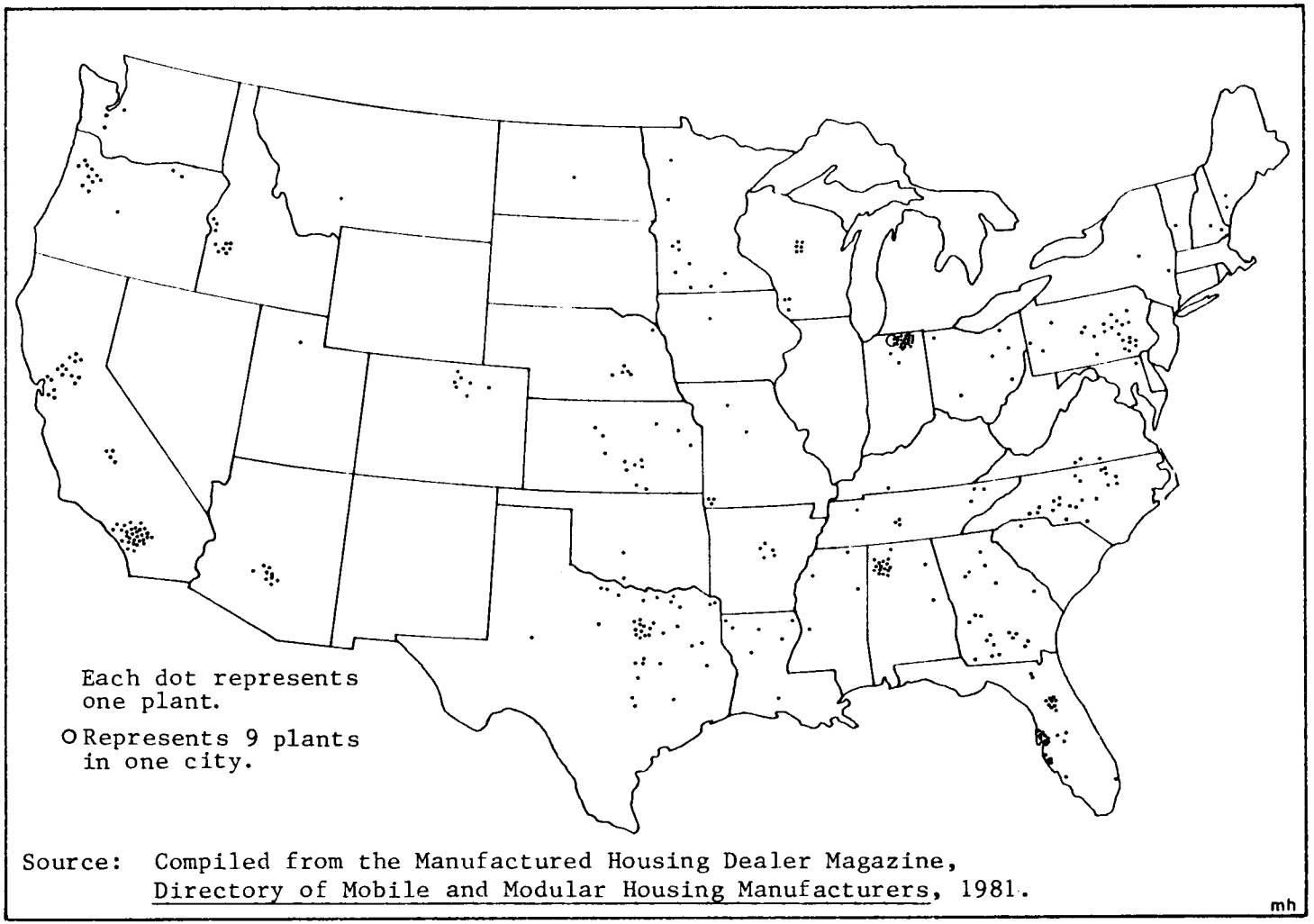
[17]The regions referred here are U. S. Census regions.



Source: Compiled from the Manufactured Housing Dealer Magazine, Directory of Mobile and Modular Housing Manufacturers, 1973.

Figure 4. Distribution of Mobile Home Plants, 1972.



Source: Compiled from the Manufactured Housing Dealer Magazine, Directory of Mobile and Modular Housing Manufacturers, 1981.

Figure 5. Distribution of Mobile Home Plants, 1980.

Michigan, 29 of the 31 plants ceased operations in the same period. As a result of these changes between major production nodes and peripheral areas, the concentration of production in nodal areas was increased.

Changes in Geographical Concentration and Dispersal in Production

The geographical concentration of production is related to the growth rate of the industry (Table 5). In 1962, for example, the four largest states in production accounted for 55 percent of total mobile home production. The ratio decreased to 38 percent in 1972, but in 1980, production in the four largest states had increased to 57 percent. The ratios for the next four largest states showed a similar trend, but to a lesser degree than the four largest states. The geographic concentration decreased during the period of rapid growth because new plants and firms characterized the expansion. By contrast, production became increasingly concentrated in the period of decline.

Each of the eight states that lead in production (Table 5) has at least one major cluster of plants. The literature on manufacturing has many examples of similar areal concentration and the most frequent explanation is that clustering provides firms with economies of agglomeration (or economies of localization) which are not available to firms in isolated locations.[18] In the long run, the result of

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[18]For example, see David M. Smith, Industrial Location (New York: John Wiley & Sons, Inc., 1971), pp. 82-88; Walter Isard,

TABLE 5

NUMBER OF MOBILE HOMES PRODUCED BY THE EIGHT LARGEST MOBILE HOME PRODUCING STATES AND THEIR SHARE OF NATIONAL TOTAL, 1962, 1972 AND 1980

	Mobile Home Production (1,000 Units)					
	1962		1972		1980	
The four largest states in number of mobile home	Indiana	24.4	Georgia	69.3	Texas	29.8
	Michigan	18.0	Indiana	61.6	Georgia	24.3
	California	13.8	Texas	49.1	Indiana	21.2
	Georgia	9.2	California	46.9	Florida	20.1
Total		65.4		226.9		96.0
Percentage of total U. S. production		55.4%		37.7%		56.8%
The next four largest states	Not Available		Alabama	44.0	Alabama	15.9
			Pennsylvania	42.4	N. Carolina	15.7
			Florida	41.6	California	14.6
			N. Carolina	33.8	Pennsylvania	10.4
Total of the eight largest states				388.7		152.6
Percent age of the U. S. total				64.6%		69.0%
Total U. S. production		118.0		601.3		221.0

these agglomeration economies should promote further concentration of growth. The most frequently cited economies of agglomeration in the literature are those which include skilled labor, component and material suppliers, and well-developed service and information institutions. The savings by the agglomerations are difficult to measure quantitatively, but they are generally considered real and significant as a locational force.[19] In the mobile home industry factors of skilled labor and proximity to suppliers, however, may not be all that significant to their agglomeration tendencies. Labor need only have low skill levels, and material inputs are widely available.

Entrepreneural spin-off seems to have been important, at least in some areas. In northern Alabama, for example, many independent firms were started by individual entrepreneurs who had acquired the necessary technical competence by working in a local plant and then gone into business for themselves in the same area.[20] The combination

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Location and Space Economy (Cambridge, Massachusetts: The M. I. T. Press, 1956), pp. 176-182; and Benjamin Chinitz, Freight and the Metropolis (Cambridge, Massachusetts: Harvard University Press, 1960), Chapter 4.

[19]Chinitz, p. 102.

[20]Interviews with Mr. James C. Caldwell, General Manager, Buccaneer Homes Corporation, Addison, Alabama; and Mr. B. W. Whitman, The Commodore Corporation, Haleyville, Alabama. The first mobile home plants in northern Alabama was opened in Haleyville, Alabama in 1959 as a branch plant of Frontier Corporation, Omaha, Nebraska which had two other mobile home plants in other areas at that time (Frontier Homes Corporation became a division of The Commodore Corporation, Omaha, Nebraska in 1968). In 1972, there were as many as 32 establishments of mobile home manufacturing in five counties around Haleyville, Alabama. The first plant in Haleyville of 1959 has been operating at present.

of industry-specific know-how and a relatively small capital investment made the start-up of new plants relatively easy as long as markets were growing. The choice of locations may, in part, be a matter of inertia, but if a location is perceived by others as being successful, it may act as a nucleus around which imitators tend to cluster.[21]

General Factors Underlying the Changing Pattern of Location

Some characteristics of mobile home manufacturing, in addition to the housing demand, contributed to the spread of the industry across the country. Among these characteristics were high transportation costs of the finished products, availability of unskilled labor, low capital requirements, and the widespread availability of components and other supplies. Transportation of mobile homes has become expensive and difficult with the trend toward larger units and encouraged spatial expansion of the industry. The width of mobile homes was gradually increased from 8 feet in the 1950's to 10 feet and 12 feet in the 1960's, and to 14 feet in the 1970's.[22] At present,

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[21]F. E. Ian Hamilton, ed., Spatial Perspectives on Industrial Organization and Decision-Making (London: John Wiley & Sons, 1974), p. 7; and Michael J. Weber, Impact of Uncertainty on Location (Cambridge, Massachusetts: The M. I. T. Press, 1972), pp. 91, 274-275; and Peter Lloyd and Peter Dicken, Location in Space: A Theoretical Approach to Economic Geography (New York: Harper and Row, Publisher, 1972), pp. 157-159.

[22]Mobile homes of 14-foot wide are not produced in some states where individual state highway regulations restrict transportation of units exceeding given maximum dimensions.

14-foot wide, and double-wide or multi-section mobile homes are increasing in the proportion of total mobile homes (Figure 6).[23] The mobile home industry employs mostly unskilled rural labor at low wages.[24] Plants are often located in small rural communities. For example, 16 percent of all mobile home plants in the nation in 1972 were located in towns of less than 2,500 in population, and another 24 percent were in places of 2,500 to 6,000 population. Only 7 percent of all plants were located in places with more than 150,000 residents (Table 6). In rural areas the cost of land is relatively cheap, and loyalty of employees to jobs seems greater than in urban areas.[25] Few plants are located in metropolitan areas because the shipment of bulky housing units is easier from rural areas, and demand in urban areas is relatively low.[26]

The manufacturing of mobile homes does not require expensive equipment nor complex technology in comparison with many other forms of manufacturing. Elizabeth Y. Deran described the mobile home industry of 1955:

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[23]A double-wide unit is two sections produced and shipped separately and joined at the site. At present, the length of the units, including single-wide units, varies from 50 feet to 75 feet, but it is generally in excess of 65 feet.

[24]Interviews with mobile home manufacturers in this study.

[25]An interview with Mr. Ralph L. Camp, Jr., Production Manager, Mascot Homes, Inc., Grambling, South Carolina, December 1979.

[26]Arthur D. Bernhardt, Building Tomorrow: The Mobile/Manufactured Housing Industry (Cambridge: The MIT Press, 1980), p. 79

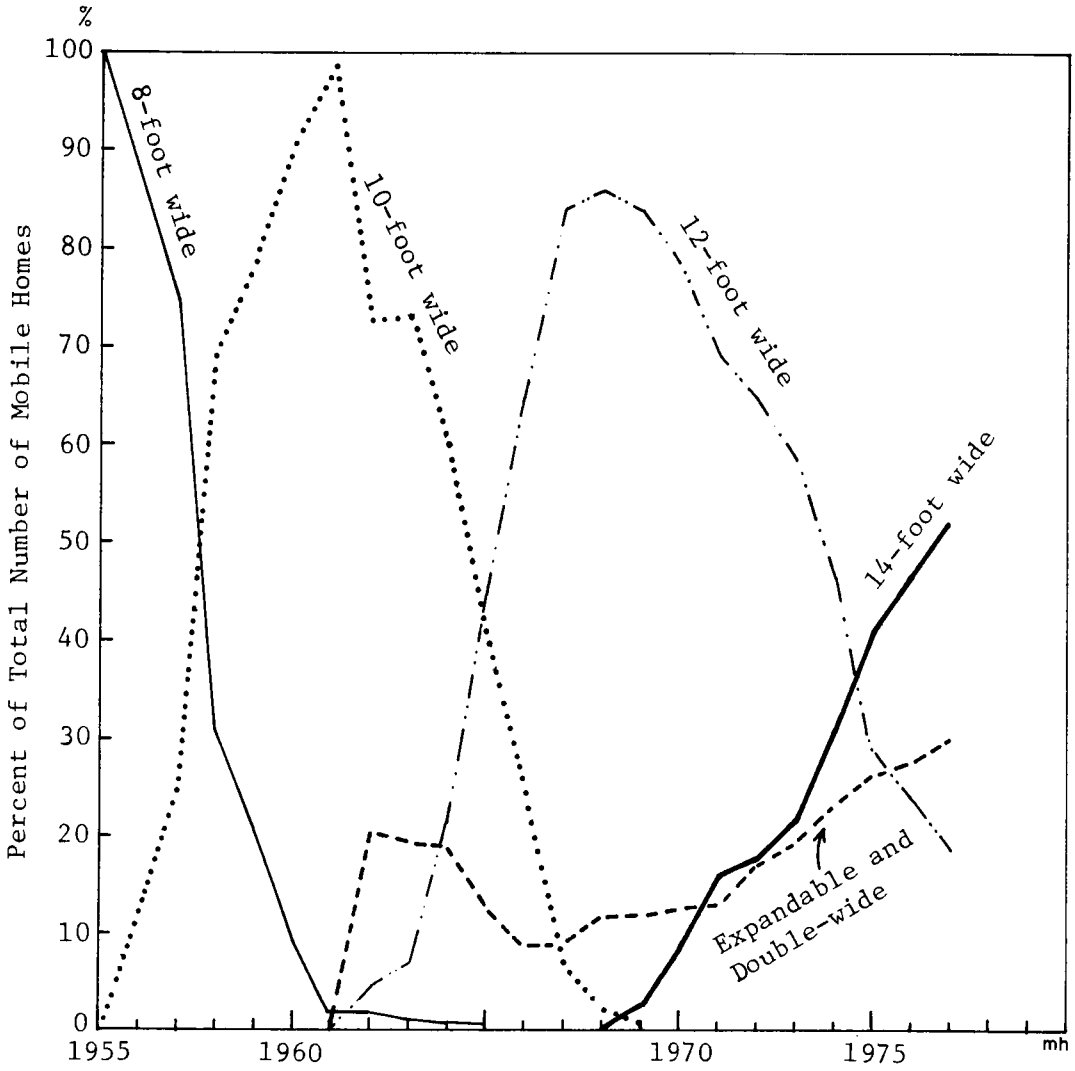

Figure 6. Mobile Home Shipments to Retail Dealers by Sizes, 1955-1978.

Source: Mobile Home Manufacturers Association, Mobile Home Financing, Annual Survey, 1965-1976; and Manufactured Housing Institute, Data Book, 1974-1976.

TABLE 6

LOCATIONS OF MOBILE HOME PLANTS BY TOWN SIZE
IN THE UNITED STATES, 1972

Town Size by Population[a]	Number of Plants[b]	Percent of Total Plants
Less than 2,500	137	16%
2,500 - 5,999	203	24
6,000 - 29,999	312	36
30,000 - 150,000	150	17
More than 150,000	56	7
Total		100%

[a]The number of population is based on U. S. Census of Population, 1970.

[b]Locations of each plant are based on the Directory of Mobile and Modular Housing Manufacturers, 1973, published by the Manufactured Housing Dealer Magazine.

> Among the ninety-eight western manufacturers . . . in some plants it would appear that a few hammers and saws were the extent of the capital equipment, whereas in others, wood welding equipment, electric screwdrivers, power saws, and the like were abundant.[27]

The capital requirements for initiating a mobile home plant have historically been low. It was estimated that, in 1966, a manufacturer could begin production with as little as $10,000 and a good credit standing with suppliers.[28] Many small-scale producers entered the industry because of the low capital and technical requirements. The U. S. Census of Manufacturers reported that 39 percent of all trailer coach manufacturers in 1967, and 27 percent of all mobile home producers in 1977, had less than 20 employees.[29]

The industry consists primarily of the assembly of processed components and parts, most of which are the same as those used for commercial construction and conventional home-building. Material suppliers are widespread. The 16th Annual Directory and Buyer's Guide for Mobile & Modular Housing and Recreational Vehicles published by the Mobile Home and Recreational Vehicle Dealer Magazine in 1971 listed

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[27]Elizabeth Y. Deran, "The Mobile Home in the West" (Ph. D. Dissertation, University of California, Berkeley, 1955), p. 32.

[28]Robert H. Hoel, "The Mobile Home-Recreational Vehicle Industry in Indiana," Indiana Business Review, Vol. XLI, 1966 (May), pp. 1-11.

[29]U. S. Bureau of the Census, Census of Manufacturers, 1967 and 1977. Before 1972, mobile home industry was included in the trailer coaches manufacturing in the Census classification.

1332 suppliers in 1648 locations in the nation.[30] This number of locations was more than three times the number of mobile home plants in 1970. Major areas where a large number of suppliers were located include both major mobile home production states such as California and Indiana, and non-major mobile home production states such as Illinois where only a few mobile home plants existed (Figure 7). Not only is it less expensive to transport parts and components than to transport mobile homes, but also the mobile home manufacturing demand represents only a limited portion of some suppliers' total sales.[31] The distribution of suppliers does not appear to be an important factor affecting the pattern of the mobile home industry.

Mobile home housing demand and regional shifts of the industry. Growth in the number of mobile home plants among regions in the 1960's was a response to the regional growth in mobile home housing consumption (Figure 8).[32] During the 1960's, the industry in most regions had moderate growth rates in both number of plants and demand when compared to the national trend. Exceptions were the East South Central, West South Central and South Atlantic regions each of which, particularly the former, had considerable increases in number of plants and

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[30]Mobile Home and Recreational Dealer Magazine, 16th Annual Directory and Buyer's Guide, Mobile & Modular Housing and Recreational Vehicles, 1971, pp. d214-d285.

[31]Bernhardt, p. 51.

[32]The regions referred here are U. S. Census regions.

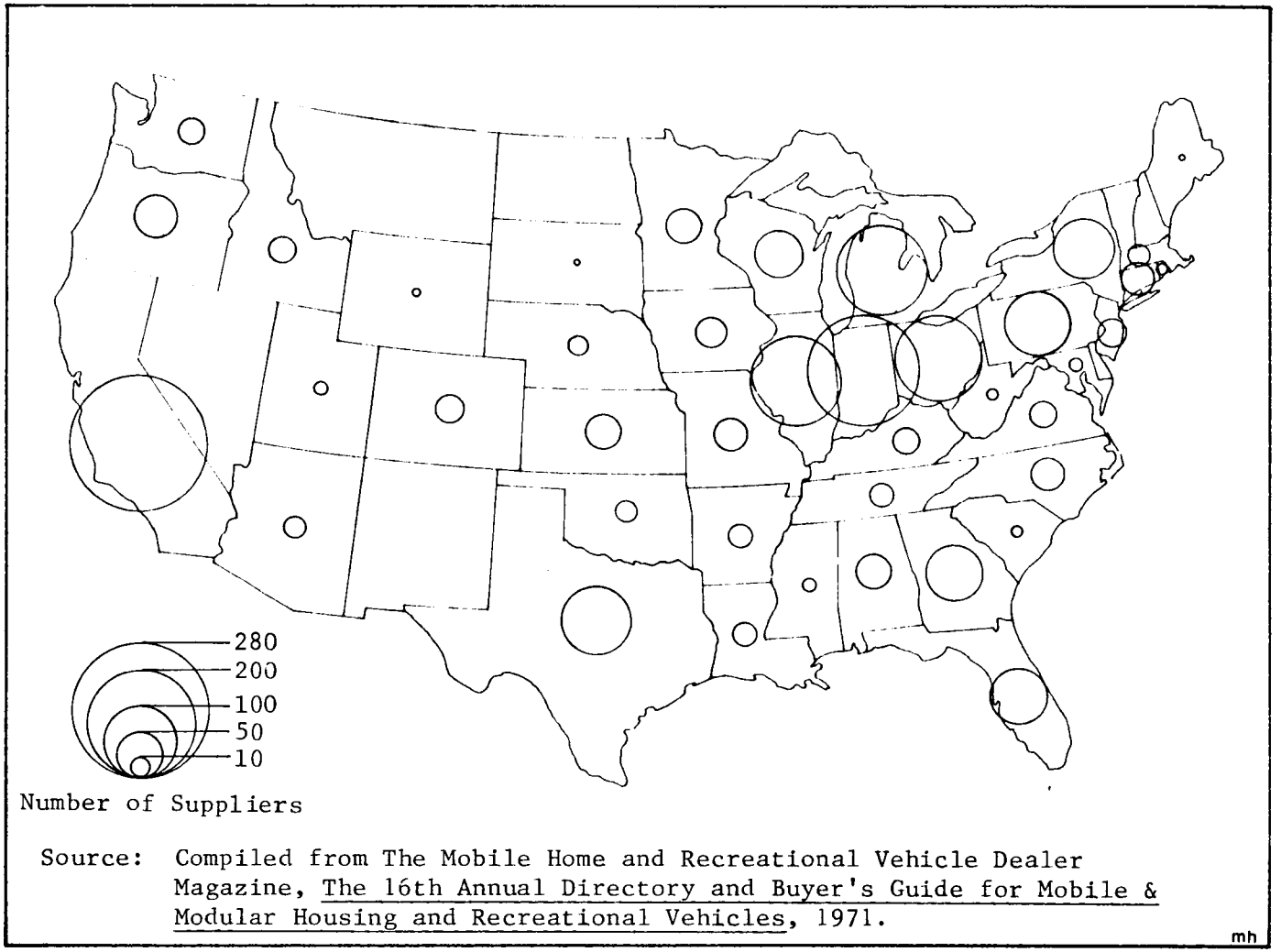
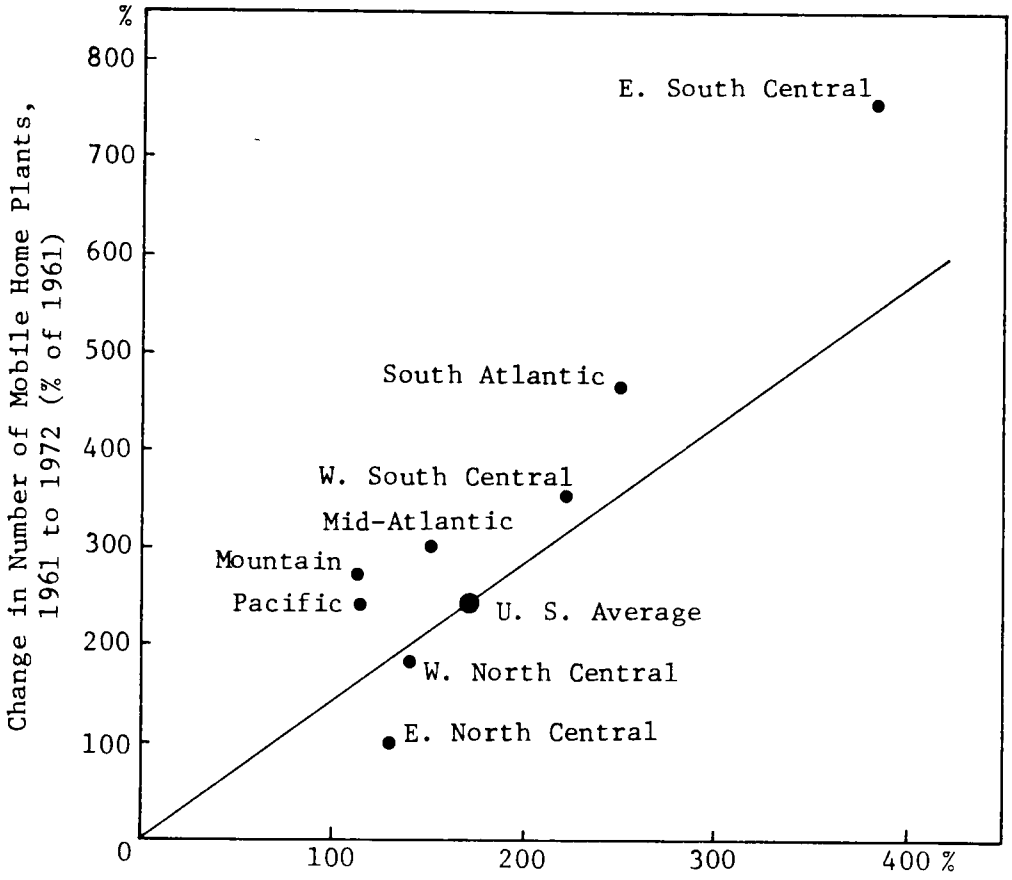
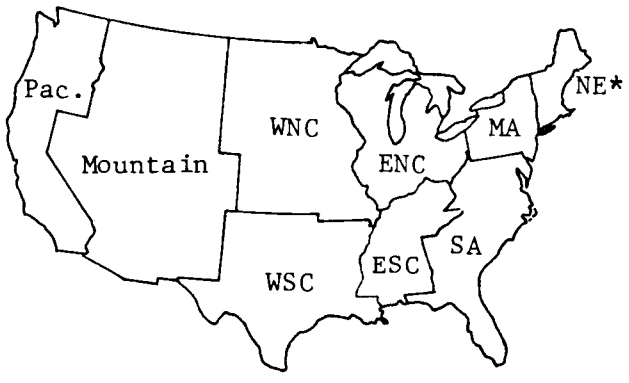


Figure 7. Number of Suppliers who Sell to the Mobile Home Industry, Totals by State, 1971.





*New England region is not shown in the figure because of few mobile home plants in 1961 and 1972.

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Figure 8. Growth of the Mobile Home Industry in Comparison to Change in Number of Mobile Home Households among U. S. Census Regions Between 1960 and 1970.

Source: Manufactured Housing Dealer Magazine, Directory of Mobile and Modular Housing Manufacturers, 1961 and 1972; and U. S. Bureau of the Census, Census of Housing, 1960 and 1970.

in demand for mobile homes. By contrast, the East North Central region, which includes Indiana and Michigan, had the smallest growth rate among regions because many plants had already been established in this region by the early 1960's.

Prior to the early 1960's, mobile home units were small in size and transportation costs were minor compared with overall expenses.[33] There was little impetus to decentralize from the traditional mobile home production centers in Indiana and Michigan. In the 1960's, a vigorous spatial expansion of the industry occurred because mobile home units became larger, and their transportation became increasingly expensive and more difficult. Regional shifts in the locational pattern of the mobile home manufacturing in the 1960-1972 period were a response to regional variations in nationwide demand for mobile homes.

An extremely high growth rate in the number of plants compared to mobile home demand occurred in the East South Central region in the 1960's, resulting in a considerable loss of plants after 1972. The Mountain region (Figure 8), by contrast, had the smallest loss in number of plants among regions between 1972-1980. The Mountain region had proportionally the largest number of mobile homes to total number of housing units in 1970 (Figure 9). Many states such as Idaho, Montana, Nevada and Wyoming are among the states which had the highest

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[33] Bernhardt, p. 38.

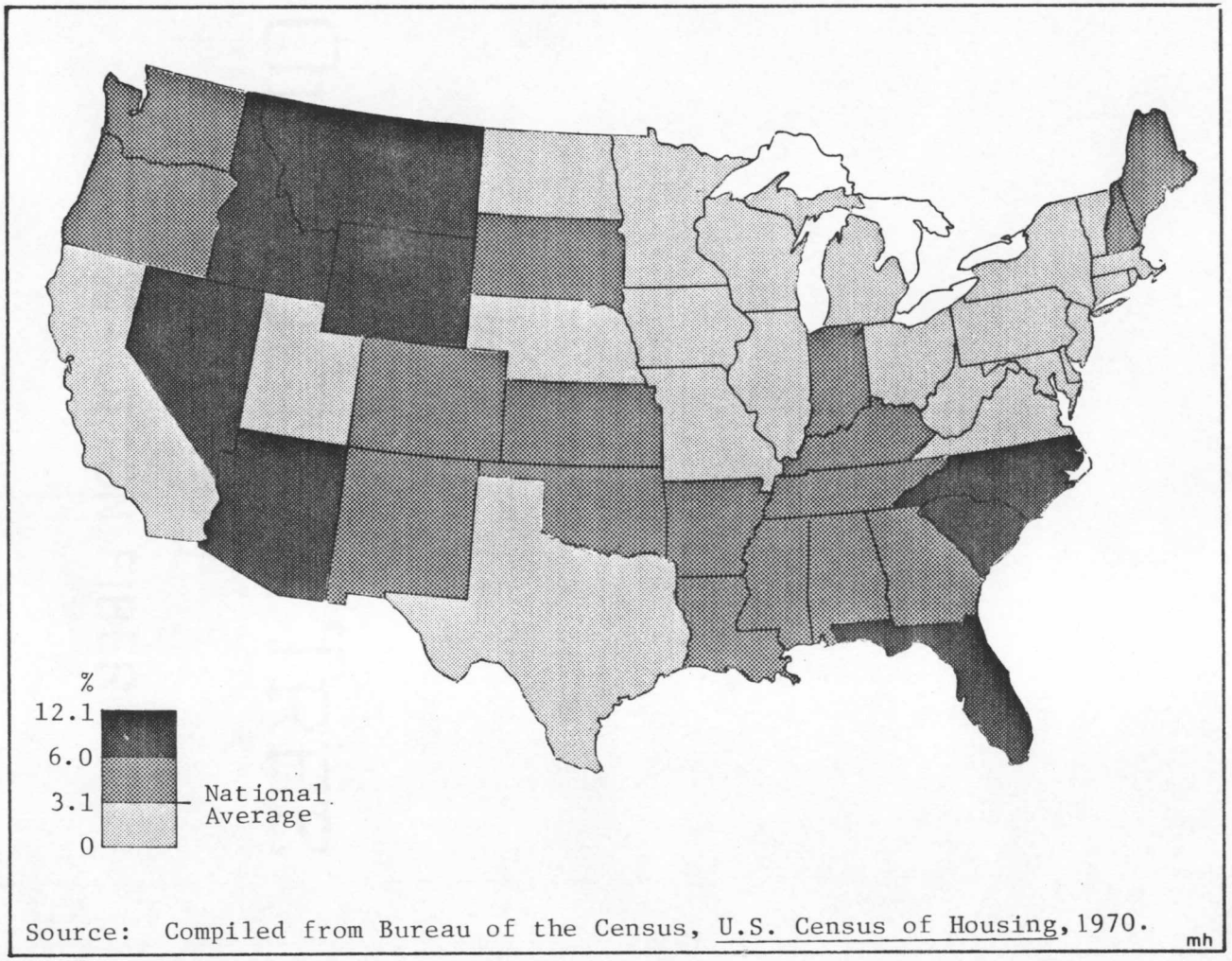

Figure 9. Mobile Homes as Percentage of Total Housing Units, 1970.

proportion of mobile homes. Furthermore, there was no excessive growth of the industry in that region, in contrast to the southern region in the 1960's. The strong regional mobile home demand and the moderate growth rate of mobile home plants in 1960's left the industry in the Mountain region in a relatively strong position to maintain itself during the nationwide decline of the 1970's.

III. CHANGING CORPORATE STRUCTURE OF MOBILE HOME MANUFACTURING, 1961-1980

One of the most pronounced changes in the structure of the mobile home industry in the 1960's and 1970's was the emergence of multi-plant corporations. In the early years of the industry small, single-plant firms dominated the industry. Meloan described the mobile home industry of the 1930's as follows:

> The industry was highly atomistic during this period. Most firms were small garages and wood working shops that fabricated a limited number of custom built trailers each year. Only the better financed companies, who advertised and hired imaginative designers and skilled production employees, managed to survive.[35]

During the period of expansion in the 1960's and early 1970's, many firms, even small-scale firms, were able to open new branch plants in other areas because of lack of locational barriers and minimal capital requirements. For example, in the three states of Alabama, Georgia and Tennessee, there were only five branch plants of

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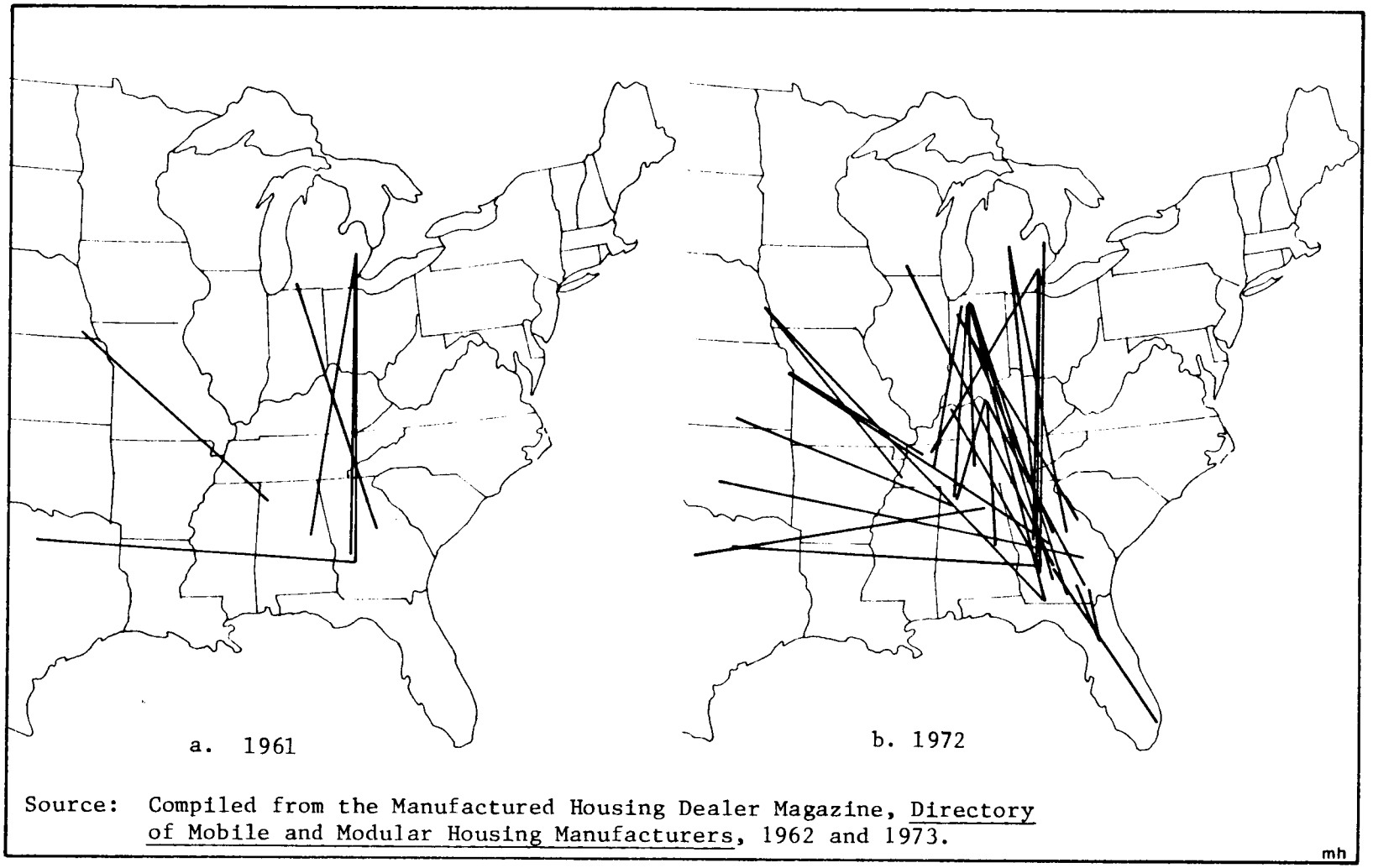
[35]Meloan, p. 26.

other mobile home firms in 1961, and all of their parent firms were located outside of the three states (Figure 10-a). In 1972, these three states had 30 branch plants of firms from outside the three states (Figure 10-b), and four head offices of multi-plant firms which operated 24 mobile home plants (four in these three states and the remaining elsewhere).

Table 7 indicates the growth of multi-plant firms and their branch plants for the 1961-1980 period. The number of plants belonging to multi-plant firms increased from 66 (17 firms) to 356 (44 firms) between 1961 and 1972, and then declined to 239 (32 firms) plants by 1980.

The proportion of all plants made up of branch plants of multi-plant firms increased as the industry grew during the last two decades. Branch plants comprised only 26 percent of all plants in 1961, grew to 42 percent by 1972, and accounted for 62 percent in 1980 (Figure 11). A minor discontinuity in the trend occurred in 1973 because of the massive entry of new single-plant firms in the 1972-1973 period. During the last seven years, a period of substantial decline, both independent plants and branch plants declined but the rate of decline of branch plants was considerably less than that of independent plants. As a result, branch plants comprised an ever larger share of all mobile home manufacturing plants. The emergence of the multi-plant firms significantly influenced not only structural changes in the industry, but also modified the distribution of plants as discussed in the next chapter.



Source: Compiled from the Manufactured Housing Dealer Magazine, Directory of Mobile and Modular Housing Manufacturers, 1962 and 1973.

Figure 10. Branch Plants in the Mobile Home Industry in Alabama, Georgia, and Tennessee from the Outside Areas, 1961 and 1972.

TABLE 7

NUMBER OF PLANTS BELONGING TO MULTI-PLANT AND SINGLE-PLANT FIRMS IN THE UNITED STATES, 1961-1980

Year	Number of Plants Belonging to Multi-Plant Firms	Number of Plants Belonging to Single-Plant Firms	Total
1961	66	184	250
1964	118	261	379
1969	272	326	598
1972	356	502	858
1973	402	638	
1974	360	328	688
1975	297	378	675
1976	245	247	492
1977	228	292	520
1978	260	170	429
1979	257	172	429
1980	239	136	375

SOURCE: Mobile-Modular Housing Dealer Magazine, Directory of Mobile and Modular Housing Manufacturers, 1962, 1965, 1970, and 1972-1981. See footnotes on Table 1 for the calculations of multi-plant firms.

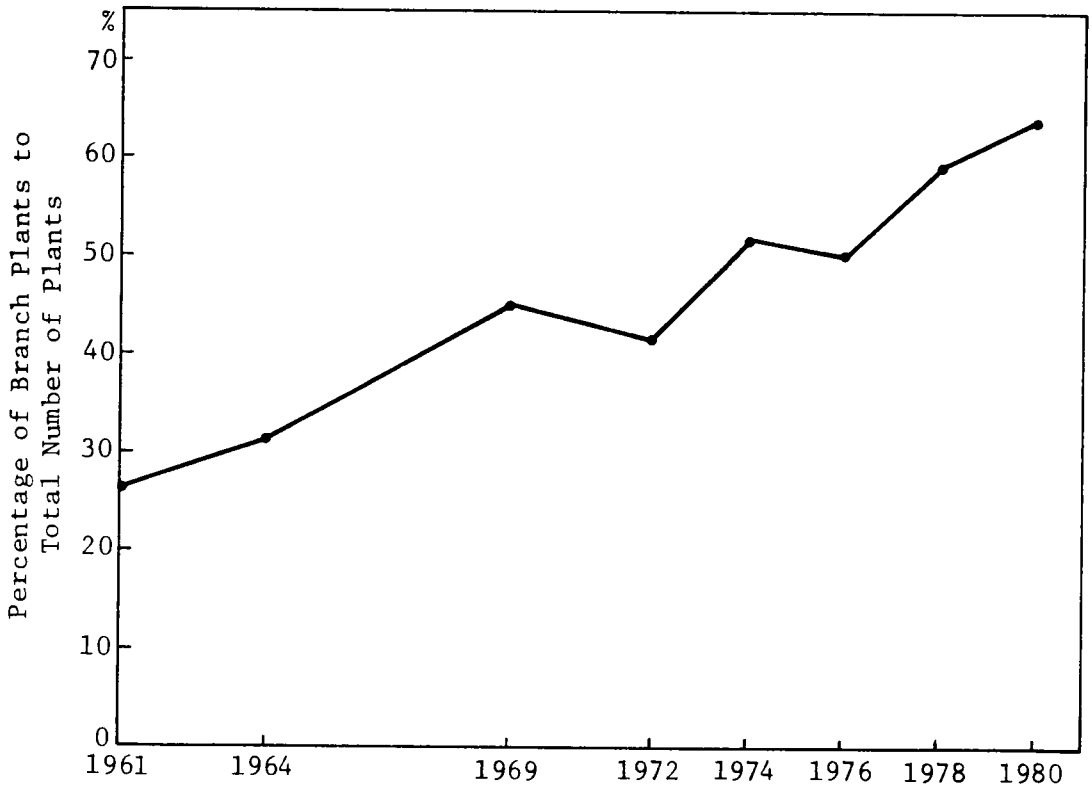


Figure 11. Percentage of Branch Plants of Multi-plant Firms to Total Number of Plants in the Mobile Home Industry in the United States, 1961-1980.

Source: Compiled from Manufactured Housing Dealer Magazine, Directory of Mobile and Modular Housing Manufacturers, 1961-1981.

IV. SUMMARY

Important changes in the mobile home industry in the 1960 to 1980 period were the spread of mobile home manufacturing nationwide and the rise to dominance of multi-plant firms. The national and regional patterns of plant locations were developed during the growth period of 1960-1972, whereas locational changes since 1973 have been mostly within the regional concentrations. Traditionally, the mobile home industry was centered in Michigan and Indiana. In the 1960's the industry was dispersed over the entire nation, but particularly in the southern states. The rapid dispersion was a response to housing demand, high transportation costs of mobile homes, and few locational constraints from production inputs for new entrepreneurs attracted by growing markets. The low-capital and low-technical characteristics of the industry encouraged the proliferation of relatively small establishments. In addition to the well established centers of northern Indiana and southern California, new centers of production developed in the Dallas-Fort Worth area, Texas, southern Georgia, central Florida, northern Alabama and eastern Pennsylvania.

After 1973, many marginal firms and plants were closed as a result of national economic recession and the depressed housing market. By 1980, the number of plants was reduced to half of those extant in 1972. The geographical concentration of production increased as the industry declined. Multi-plant firms have expanded steadily since the 1960's and, as a result, the structure of the industry

has changed from the dominance of single-plant firms earlier to the dominance of branch plants of multi-plant firms during the 1970's.

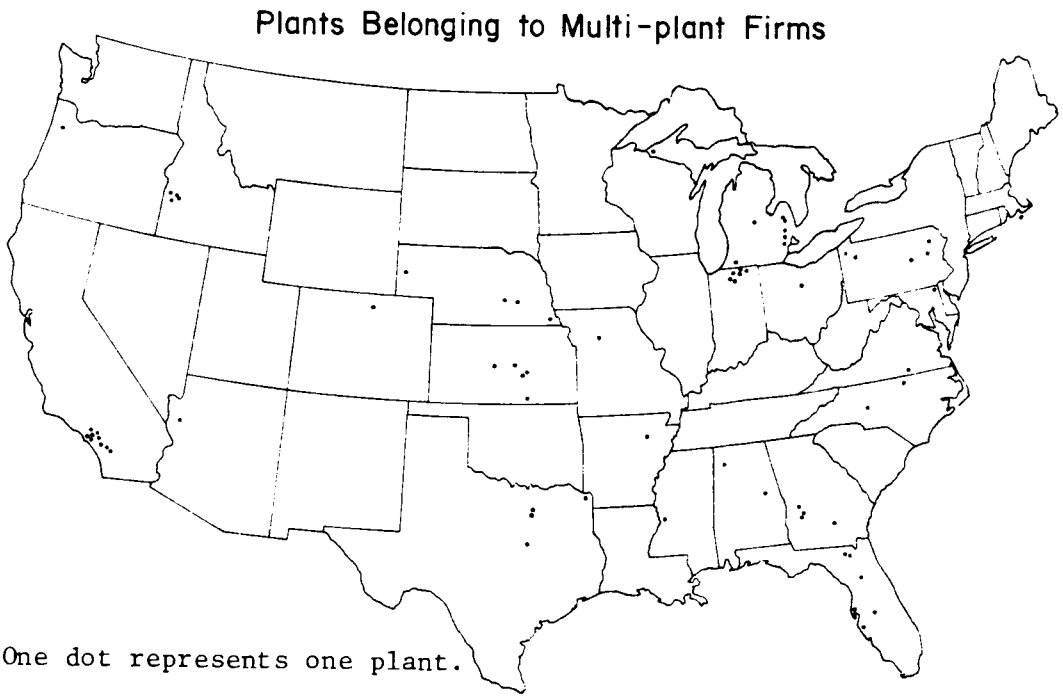
CHAPTER 3

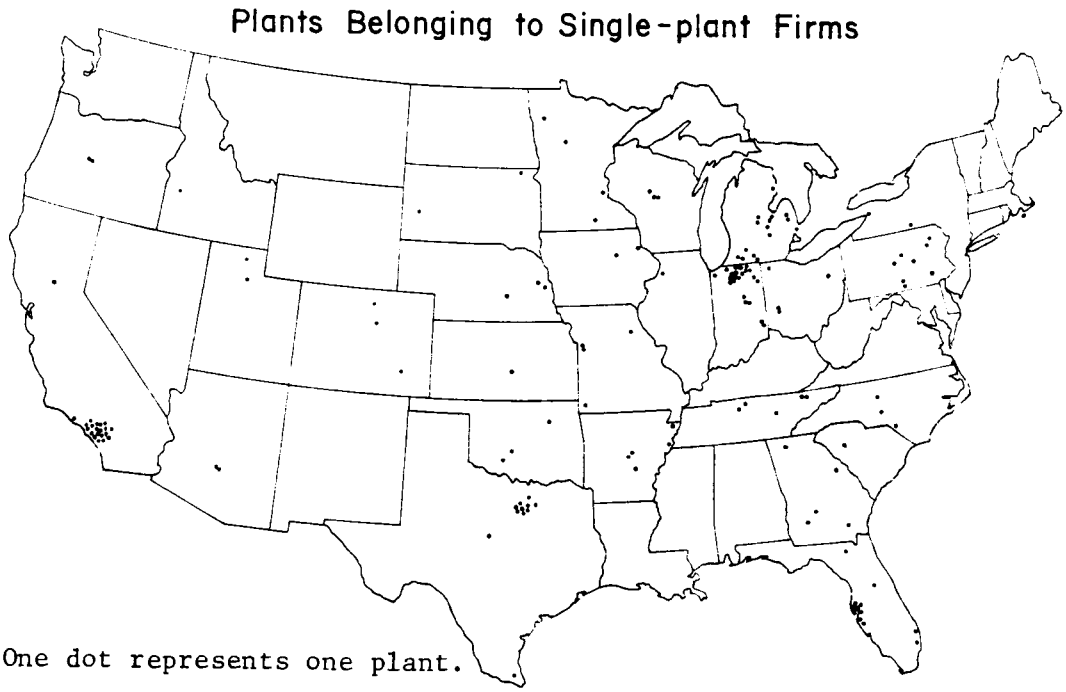
THE STRUCTURE OF MOBILE HOME MANUFACTURING IN 1980

Most large corporations in the industry enlarge their markets and market areas by building new branch plants or through acquisition of competitors. This chapter describes the development of multi-plant firms in the mobile home industry during 1960 to 1980 period. The first part of the chapter describes the distribution of multi-plant and single-plant firms. The second part analyzes the emerging dominance of the industry by large multi-plant firms. The third part examines plants which have survived in the period of decline of the industry from 1973 to 1980. The fourth part of the chapter examines competitive advantages of multi-plant firms and analyzes the survival of single-plant firms in case studies of both single-plant and multi-plant firms.

I. PATTERN OF MULTI-PLANT FIRMS AND SINGLE-PLANT FIRMS IN 1961 AND 1980

The patterns of branch plants of multi-plant firms and single-plant firms are shown in Figure 12 for 1961 and Figure 13 for 1980. Comparison of the two different years vividly protrays the changing relative importance of single-plants in 1961 to branch plants in 1980.





Source: Compiled from the Manufactured Housing Dealer Magazine, Directory of Mobile and Modular Housing Manufacturers, 1962.

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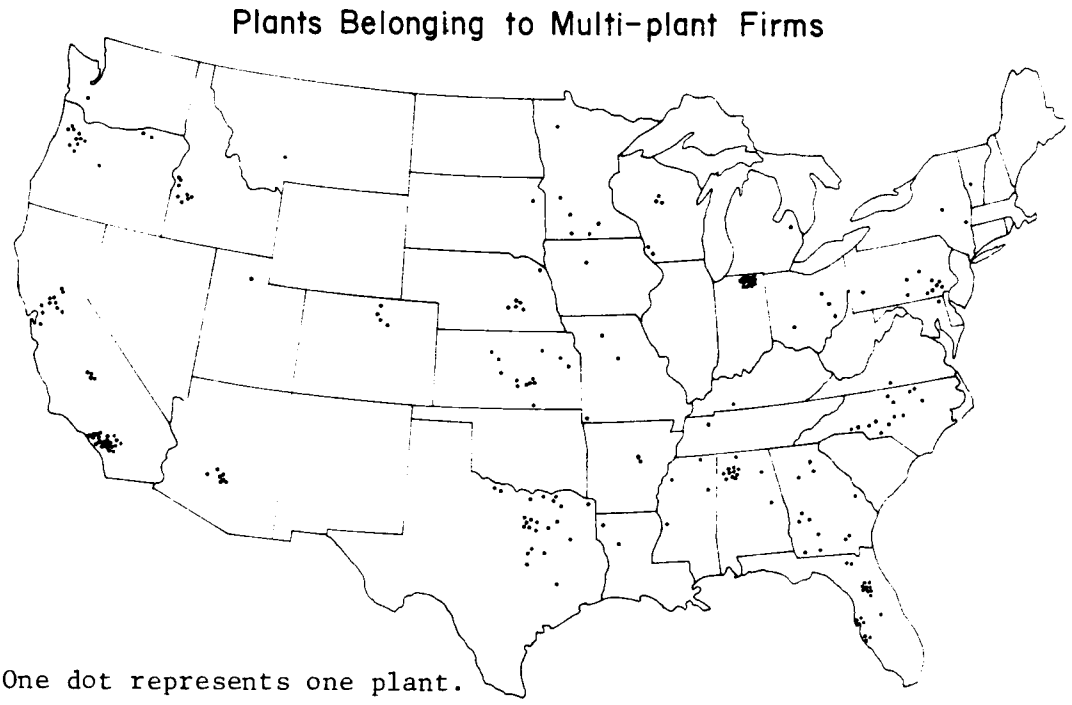
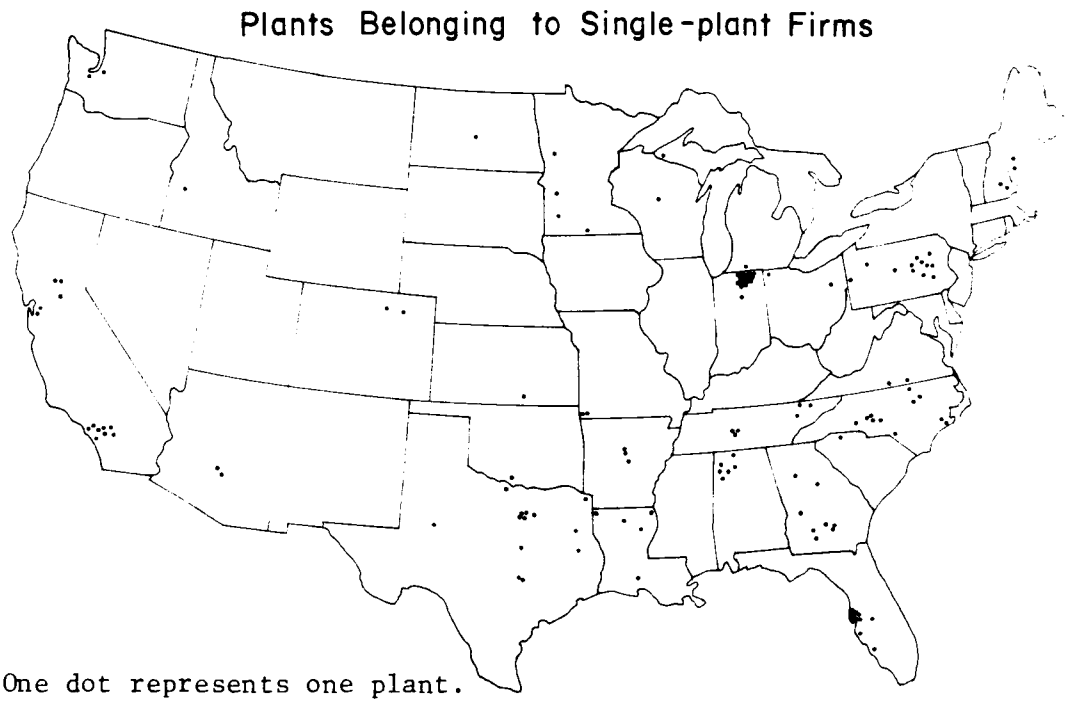
Figure 12. Comparative Distribution of Mobile Home Plants Belonging to Multi-plant and Single-plant Firms, 1961.





Source: Compiled from the Manufactured Housing Dealer Magazine, Directory of Mobile and Modular Housing Manufacturers, 1981.

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Figure 13. Comparative Distributions of Mobile Home Plants Belonging to Multi-plant and Single-plant Firms, 1980.

When the number of branch and independent plants for the ten largest states in mobile home production in 1980 are listed, it shows that these ten states shared about 71 percent of all branch plants and 69 percent of all single-plant firms in the nation (Table 8).

The locations of head offices of multi-plant firms in 1980 are shown in Figure 14. An important area for headquarters of multi-plant firms is northern Indiana. Four of the ten largest firms were in or near Elkhart, Indiana, reflecting the early locational concentration of mobile home manufacturing in this area.

Geographical Spread of Multi-plant Firms

Growth of multi-plant firms is accomplished by either building new plants or acquiring existing firms. Either strategy allows penetration into new market areas beyond the range of acceptable transportation costs from existing plants. Transportation costs, particularly, constrain the market area that can be served from a single plant. For example, Vintage Homes, Inc., operated two mobile home plants in Gainesville, Georgia, and Clarksdale, Mississippi. With the introduction of 14-foot wide mobile home units in the late 1960's and a strong market for these units in many western states,[1] Vintage's Mississippi plant, which had a product line for the 14-foot wide units, was too far removed from Texas and other western markets to compete with local

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[1]Mobile home plants in many northern, eastern, and southeastern states did not produce the 14-foot wide units in late 1960's and early 1970's because such an oversize unit was not allowed to transport on highways.

TABLE 8

NUMBER OF PLANTS BELONGING TO MULTI-PLANT AND SINGLE-PLANT FIRMS IN THE TEN LARGEST MOBILE HOME PRODUCING STATES, 1980

Ten Largest States in Mobile Home Production in 1980	Number of Branch Plants	Number of Single Plant Firms	Total
1. Texas	25	11	36
2. Georgia	13	9	22
3. Indiana	13	22	35
4. Florida	21	10	31
5. Alabama	12	6	18
6. North Carolina	15	9	24
7. California	36	13	49
8. Pennsylvania	10	13	23
9. Oregon	13	0	13
10. Kansas	12	1	13
Subtotal	170	94	264
U. S. Total	239	136	375
Percent of U. S. Total	71%	69%	70%

SOURCE: Manufactured Housing Dealer Magazine, Directory of Mobile and Modular Housing Manufacturers, 1981.

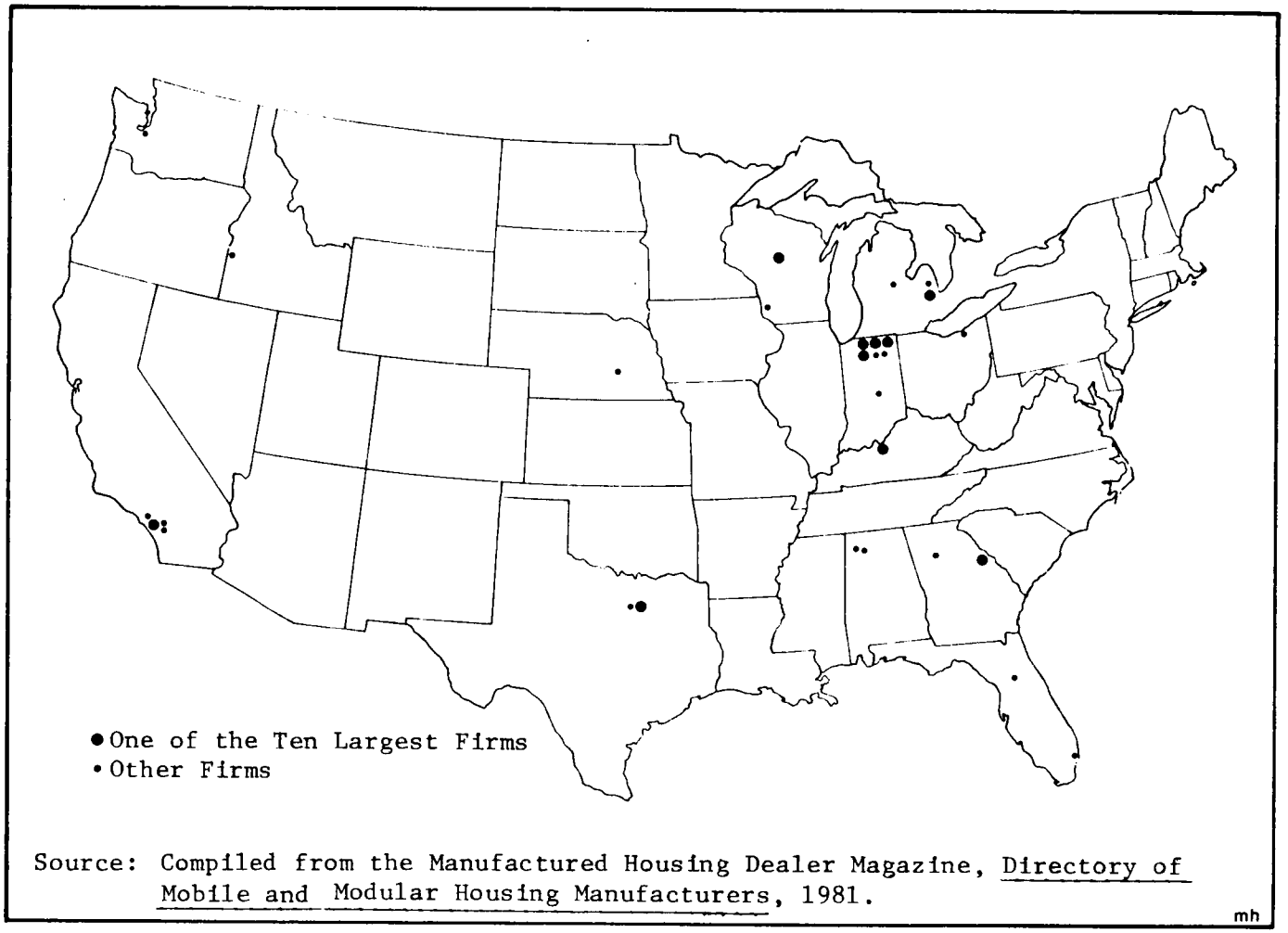

Figure 14. Locations of Head Offices of Multi-plant Firms in the Mobile Home Industry, 1980.

producers. Vintage thus chose to build a plant in Breckenridge, Texas for production of 14-foot wide units in 1968.[2]

Geographical expansion through the building of new plants or through the acquisition of existing plants (or firms) to gain access to new and more distant markets was evident even in the early period of expansion. One of the largest mobile home manufacturing firms, Skyline Corporation, based in Elkhart, Indiana, grew by building new plants and acquiring other plants, but largely by the building strategy (Figure 15). Its first plant outside the Elkhart area was in Ocala, Florida in 1958, followed by a plant in Kansas in 1959, and one in California in 1960.[3] Florida and California have been two of the largest mobile home markets in the nation for decades, when measured by the number of mobile home shipments annually to each state in the nation.[4] By 1972, the corporation had 32 branch plants in 20 states. Skyline closed seven existing plants, but added five new plant locations in the 1973-1980 period, a time when the industry as a whole lost more than half of its producing plants.

Another form of growth occurs when a firm acquires another multi-plant firm. The history of Guerdon Industries, Inc., Louisville,

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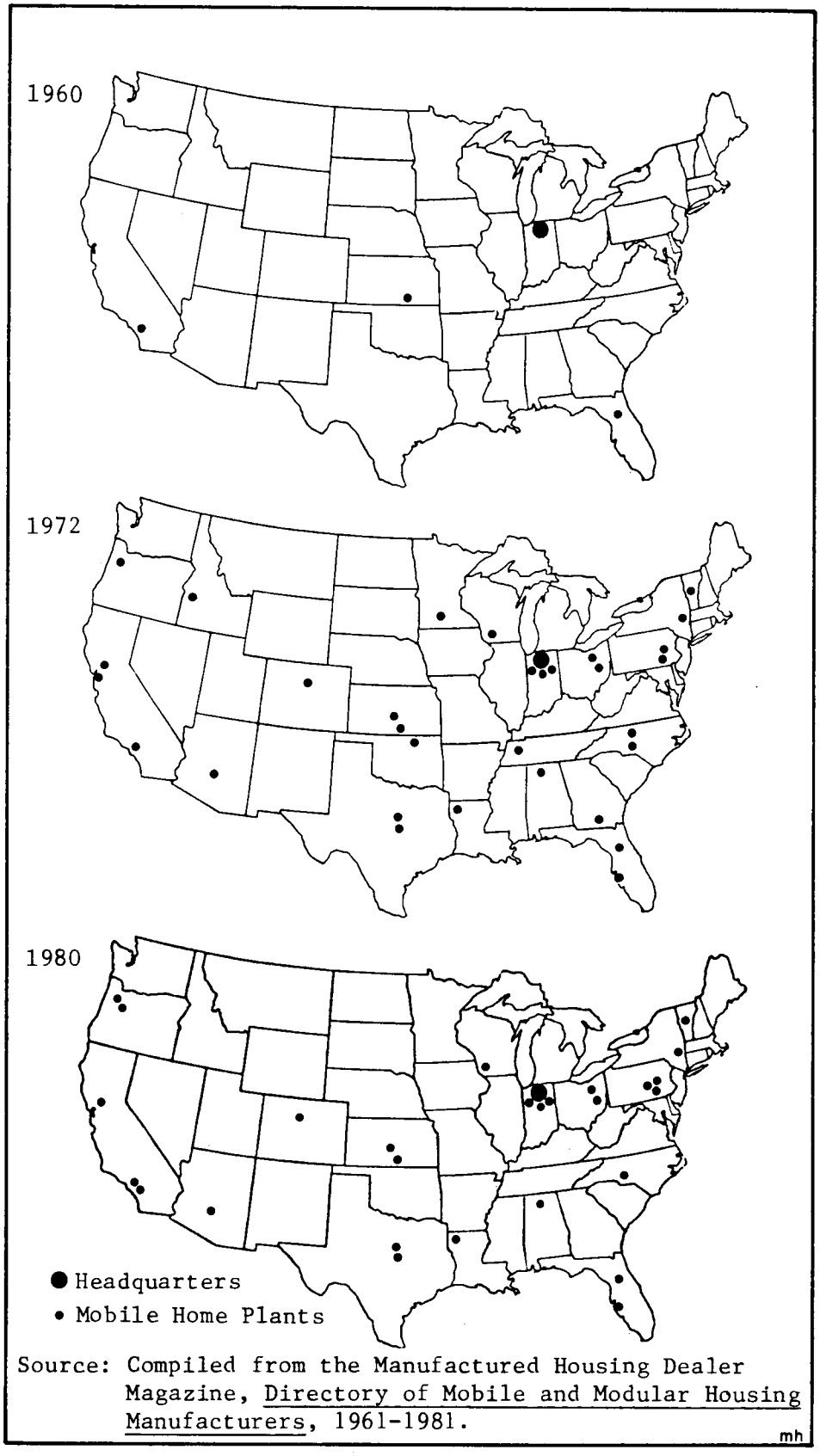
[2]Interview with Mr. William H. McCormack, Controller, Vintage Homes, Inc., Atlanta, Georgia. (In 1968 the head office of Vintage was in Gainesville, Georgia.)

[3]Carlton M. Edwards, Homes for Travel and Living: The History and Development of the Recreational Vehicle and Mobile Home Industries (East Lansing: Carl Edwards & Associates, 1977), p. 133.

[4]Mobile-Modular Housing Dealer Magazine, Directory of Mobile and Modular Housing Manufacturers, Thirteenth Annual Edition (Chicago: Mobile-Modular Housing Dealer Magazine, 1973).



Source: Compiled from the Manufactured Housing Dealer Magazine, Directory of Mobile and Modular Housing Manufacturers, 1961-1981.

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Figure 15. Growth of Skyline Corporation, Elkhart, Indiana.

Kentucky, one of the leading mobile home producers in the nation, illustrates such growth.[5] Guerdon opened its first mobile home manufacturing facility in Marlette, Michigan in 1954,[6] and expanded by opening a second plant in Newton, Kansas in 1955. The company grew to six plants by 1964, and in the same year it acquired Vagabond Corporation based in New Hudson, Michigan, which was, at that time, the country's oldest and most respected manufacturer of high-quality mobile homes. This acquisition gave Guerdon three additional plants in Alabama, Michigan, and Arizona, and enabled the company to offer a complete line of mobile homes in all price ranges. In subsequent years the company acquired several additional multi-plant firms,[7] which not only increased its production facilities but also its connections with markets through the acquired firm's dealer network. Acquisitions also can diversify the product line.

II. FIRM SIZE AND DOMINANCE IN PRODUCTION

Size Distribution of Firms

A few multi-plant firms have grown much faster than other firms. This trend is illustrated in Table 9, which shows the eight largest firms in mobile home production in 1972 and 1980 and their shares in

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[5] Guerdon Industries, Inc., The Guerdon Story (Louisville, Kentucky, 1979).

[6] The head office of Guerdon moved to Louisville, Kentucky in 1969.

[7] For detailed lists of acquisitions by Guerdon, see p. 85 of this study.

TABLE 9

THE DISTRIBUTION OF MOBILE HOME MANUFACTURING FIRMS BY SIZE IN THE UNITED STATES, 1972 AND 1980

	1972	1980
4 Largest firms		
Number of plants	112	84
% to total number of plants	13%	22%
Average no. of plants per firm	28	21
Next 4 largest firms		
Number of plants	46	42
% to total number of plants	5%	11%
Average no. of plants per firm	12	10
Remaining firms	538	160
Average no. of plants per firm	1.3	1.6
U. S. Total		
Number of all plants	858	375
Number of all firms	546	168

SOURCE: The number of plants and firms is based on Mobile-Modular Housing Dealer Magazine, Directory of Mobile and Modular Housing Manufacturers, 1973 and 1981.

the industry (these firms are listed in Table 10). In 1972 the four largest firms owned 13 percent of all plants in the nation, and the next four largest firms operated 5 percent of all plants (Table 9). Although the industry experienced a dramatic retrenchment after 1973, the share of the largest four firms to total number of plants rose to 22 percent of total plants in the nation in 1980, and the proportion for the next four largest firms was 11 percent. In 1972, the four largest firms operated 112 plants with an average of 28 plants per firm, and the next four largest had only 46 plants (an average of 12 plants per firm (Table 9). In 1980, the four largest companies controlled 84 plants with an average of 21 plants per company, and the next four largest had a total of 42 plants (an average of 10 plants per company). The remaining 160 firms operated an average of only 1.6 plants per firm.

Dominance in Production by the Large Multi-plant Firms

The cumulative market share of the 20 largest firms in mobile home production was plotted by rank of firms in 1970-1980 (Figure 16).[8] The rank of firms was measured by the number of mobile homes produced by individual firms in each year (Table 11). When a curve lies entirely above another, it represents a higher level of concentration ratio in production by the given number of firms. The ratio decreased in 1970-1973, when a large number of new single-plant firms entered in the industry. Between 1976 and 1980 the 20 largest firms gradually increased their share of national output from 53 percent to 67 percent. The

[8] Production of mobile homes by individual firms before 1970 are not available at present.

TABLE 10

THE EIGHT LARGEST FIRMS IN MOBILE HOME PRODUCTION IN 1972 AND 1980

Year	Rank	Name of Firm	Mobile Home Production (Units)	Number of Plants
1972	1	Skyline Corporation, Elkhart, IN	57,000	32
	2	Redman Industries, Inc., Dallas, TX	36,937	16
	3	Champion Home Builders Co., Dryden, MI	32,534	29
	4	Guerdon Industries, Inc., Louisville, KY	30,000	35
	5	The Commodore Corp., Omaha, NB	15,685	11
	6	Bendix Home Systems, Inc., Atlanta, GA	15,066	15
	7	D. M. H. Corp., St. Louis, MI	14,800	10
	8	Shelter Resources Corp. (Winston and Lancer), Double Springs, AL	12,500	10
		U. S. Total	601,250	858
1980	1	Skyline Corp., Elkhart, IN	16,390	29
	2	Champion Home Builders Co., Dryden, MI	15,193	22
	3	The Commodore Corp., Syracuse, IN	13,068	12
	4	Guerdon Industries, Inc., Louisville, KY	12,179	21
	5	Redman Industries, Inc., Dallas, TX	11,033	17
	6	Liberty Homes, Inc., Goshen, IN	10,367	8
	7	Wick Building Systems, Inc., Madison, WI	7,715	10
	8	Brigadier Industries Corp., Thomson, GA	7,657	7
		U. S. Total	221,009	375

TABLE 11

NUMBER OF MOBILE HOMES PRODUCED BY EACH OF THE 20 LARGEST FIRMS, 1970-1980 (IN 1000'S OF UNITS)

Rank of Firms	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
1	45.0	55.0	57.0	52.0	29.5	18.8	23.2	24.9	25.6	26.0	16.4
2	30.0	36.7	36.9	41.5	27.4	17.1	18.2	15.6	15.6	15.4	15.2
3	19.1	29.0	32.6	36.4	21.3	9.4	11.3	13.6	14.8	15.1	10.1
4	18.7	27.6	30.0	27.5	15.6	8.7	9.1	10.4	12.9	14.5	12.2
5	16.1	25.5	15.7	15.0	7.7	7.0	7.0	9.8	12.3	14.2	11.0
6	15.5	14.8	15.1	12.1	7.6	5.5	6.6	8.7	11.6	12.8	10.4
7	12.3	13.3	14.8	12.0	7.4	5.5	6.1	8.1	9.2	7.8	7.7
8	10.8	10.4	12.5	10.8	6.9	4.2	5.6	6.7	6.7	7.4	7.7
9	8.0	10.3	12.3	10.8	6.2	4.1	5.2	6.3	6.3	7.0	6.5
10	7.4	11.0	11.1	9.9	5.7	4.1	4.6	5.5	6.1	6.7	5.9
11	7.3	9.3	11.0	9.0	5.5	4.0	4.4	5.0	5.9	6.6	5.8
12	7.2	8.5	10.6	8.2	5.2	3.5	4.2	4.8	5.8	6.4	5.3
13	6.9	8.2	10.6	8.0	5.0	3.2	4.1	4.6	5.0	5.3	4.7
14	6.8	8.1	9.2	8.0	4.9	3.0	3.7	4.5	4.8	5.0	4.6
15	6.2	7.7	8.6	7.9	4.8	2.7	3.2	4.4	4.3	4.4	4.5
16	6.1	6.3	8.5	7.5	3.9	2.6	3.6	4.1	4.2	4.3	4.3
17	5.1	6.0	7.4	7.0	3.9	2.5	3.1	3.7	3.8	3.6	3.5
18	5.0	6.0	6.4	6.6	3.7	2.3	2.7	3.7	3.4	3.3	3.4
19	4.7	5.6	6.4	6.3	3.4	2.3	2.6	3.7	3.2	3.0	3.0
20	4.3	5.5	6.0	5.3	3.2	2.3	2.5	3.4	3.0	3.0	3.1
U. S. Total	408.4	507.2	601.3	568.4	330.9	213.0	247.7	265.6	274.9	275.9	221.0

SOURCE: Mobile/Manufactured Home, Merchandiser, 1973-1980; and Automation in Housing and Systems Building News, 1970-1981.

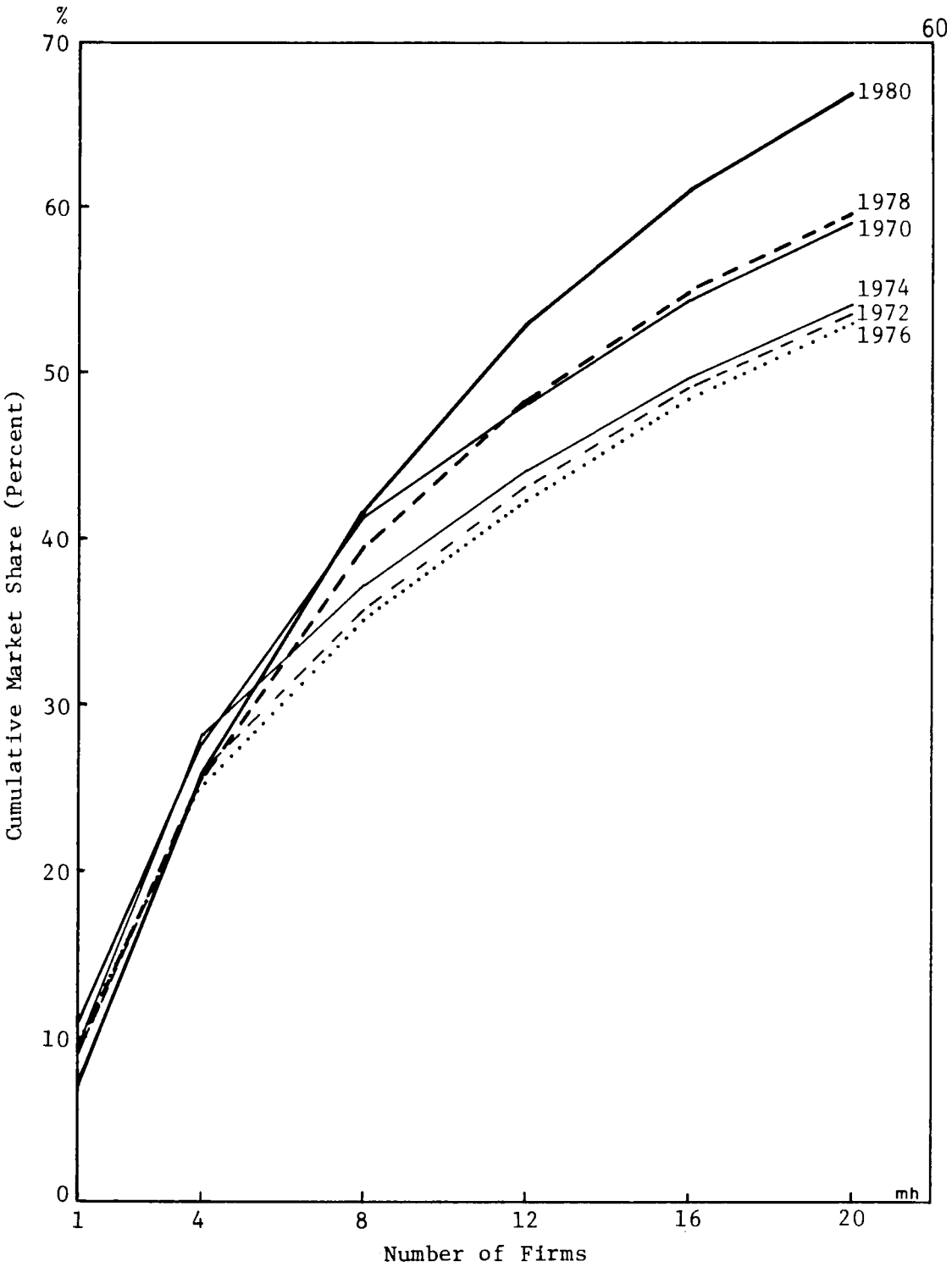


Figure 16. Cumulative Market Shares by the 20 Largest Firms in the Mobile Home Industry in the United States, 1970-1980.

Source: Compiled from Automation in Housing & Systems Building News, 1971-1981; and Mobile/Manufacturer Home Merchandiser, 1973-1980.

remaining 153 firms had only 33 percent of total production in 1980. These changes in concentration ratios indicate that the production share of the large firms had increased during the period of general decline in the industry.

The results so far discussed relate to the increasing role of large multi-plant firms and their plants in the industry. A small number of large multi-plant firms operate relatively large numbers of plants. Proportions of branch plants of these large firms to total number of plants and to total production volume have been increasing. As a result, branch plants of these large multi-plant firms are found in all major production areas of the nation; thus in all regions other producers must compete with these large multi-plant corporations.

III. PROCESS OF GROWTH AND DECLINE AMONG MOBILE HOME FIRMS

This part of the chapter examines plants which have survived in the period of decline of the mobile home industry from 1973 to 1980. Emphasis is placed on the characteristics of the organizational structure of plants and their survival in the period. The major aspects to be examined in the organizational structure are: firm size and extent to which a firm is a single-plant or multi-plant operation. All plants which existed in 1972 are reexamined in 1980 to determine if they have survived or closed (hereafter these are referred to as surviving plants or closed plants).

Distribution of Surviving Plants

A total of 195 plants among 858 plants making mobile homes in 1972 survived to 1980, and these survivors comprised 52 percent of the

375 plants existing in 1980 (Table 12). The proportion of plants in 1972 surviving to 1980 is shown for states in Figure 17. Several states in the west, such as Colorado, Oregon, Kansas, Idaho, and Nebraska, showed the highest survival ratios in the nation. These are areas where the industry did not grow vigorously in the 1960's. Traditional mobile home production centers in Indiana, Michigan, and California, where the industry developed early and plants were highly concentrated, had high losses. In most southern and southeastern states (except South Carolina and Oklahoma), where the industry expanded the most rapidly in the 1960's, survival of plants was around the national average.

When plants that survived are divided into branch plants and single-plant firms, the two groups show contrasting patterns (Figure 18). The distribution of branch plant survival follows the general pattern of the industry as a whole, whereas surviving single-plant firms are highly dispersed.

An Analysis of Plant Survival

Though the reasons for survival of individual plants over the 1972-1980 period may involve unique aspects for each case, the following analysis seeks to establish more general circumstances for survival. Four measures, for which data for all plants in 1972 and 1980 were available, were selected to represent general factors deemed important in the competitive atmosphere of mobile home manufacturing in the 1970's. These are: (1) plant clustering as a measure of spatial or regional

TABLE 12

NUMBER OF PLANTS BELONGING TO MULTI-PLANT AND SINGLE-PLANT FIRMS IN 1972 AND 1980, AND NEW PLANTS AND SURVIVING PLANTS, 1972-1980

Census Regions	Number of Plants in 1972		Surviving Plants Since 1972		Number of New Plants Since 1972	Number of Plants in 1980		Total
	Branch Plant	Single-Plant	Branch Plant	Single-Plant		Branch Plant	Single-Plant	
New England								
Connecticut	0	2	0	0	0	0	0	0
Maine	0	1	0	0	2	0	2	2
Massachusetts	0	1	0	0	0	0	0	0
New Hampshire	2	3	0	0	2	0	2	2
Rhode Island	0	0	0	0	0	0	0	0
Vermont	1	0	1	0	0	1	0	1
Mid-Atlantic								
New Jersey	0	1	0	0	0	0	0	0
New York	3	6	1	0	1	2	0	2
Pennsylvania	21	29	7	4	12	10	13	23
East North Central								
Illinois	1	1	0	0	0	0	0	0
Indiana	34	46	12	6	17	13	22	35
Michigan	14	17	1	1	2	2	2	4
Ohio	9	11	3	1	2	4	2	6
Wisconsin	6	11	5	1	2	6	2	8
West North Central								
Iowa	0	6	0	0	1	1	0	1
Kansas	16	6	10	0	3	12	1	13
Minnesota	8	7	3	1	6	5	5	10
Nebraska	8	4	5	0	0	5	0	5
North Dakota	0	1	0	0	1	0	1	1
South Dakota	2	1	1	0	1	2	0	2
South Atlantic								
Delaware	0	0	0	0	0	0	0	0
Florida	22	37	12	4	15	21	10	31
Georgia	29	29	9	4	9	13	9	22
Maryland	1	3	1	0	0	1	0	1

TABLE 12 (Continued)

Census Regions	Number of Plants in 1972		Surviving Plants Since 1972		New Plants Since 1972	Number of Plants in 1980		Total
	Branch Plant	Single-Plant	Branch Plant	Single-Plant		Branch Plant	Single-Plant	
South Atlantic (Cont'd.)								
North Carolina	21	26	7	4	13	15	9	24
South Carolina	1	17	0	1	0	0	1	1
Virginia	2	8	1	1	1	1	2	3
West Virginia	0	2	0	0	0	0	0	0
East South Central								
Alabama	14	28	9	1	8	12	6	18
Kentucky	2	2	1	0	0	1	0	1
Mississippi	7	7	3	0	1	4	0	4
Tennessee	11	6	1	3	3	1	6	7
West South Central								
Arkansas	4	15	3	0	3	3	3	6
Louisiana	6	10	2	1	4	3	4	7
Oklahoma	6	10	1	1	0	0	2	2
Texas	36	43	16	2	18	25	11	36
Mountain								
Arizona	4	8	3	0	6	8	1	9
Colorado	6	3	4	1	2	4	3	7
Idaho	10	6	7	0	2	9	0	9
Montana	0	3	0	0	1	1	0	1
Nevada	0	0	0	0	0	0	0	0
New Mexico	0	3	0	0	1	0	0	0
Utah	0	4	0	0	1	1	0	1
Wyoming	0	1	0	0	0	0	0	0
Pacific								
California	39	54	14	2	22	36	13	49
Oregon	10	5	8	0	5	13	0	13
Washington	1	6	1	1	1	1	2	3
U. S. Total	356	502	153	42	180	239	136	375

SOURCE: Manufactured Housing Dealer Magazine, Directory of Mobile and Modular Housing Manufacturers, 1973 and 1981 (Agoura, CA: TL Enterprises, Inc., 1973 and 1981).

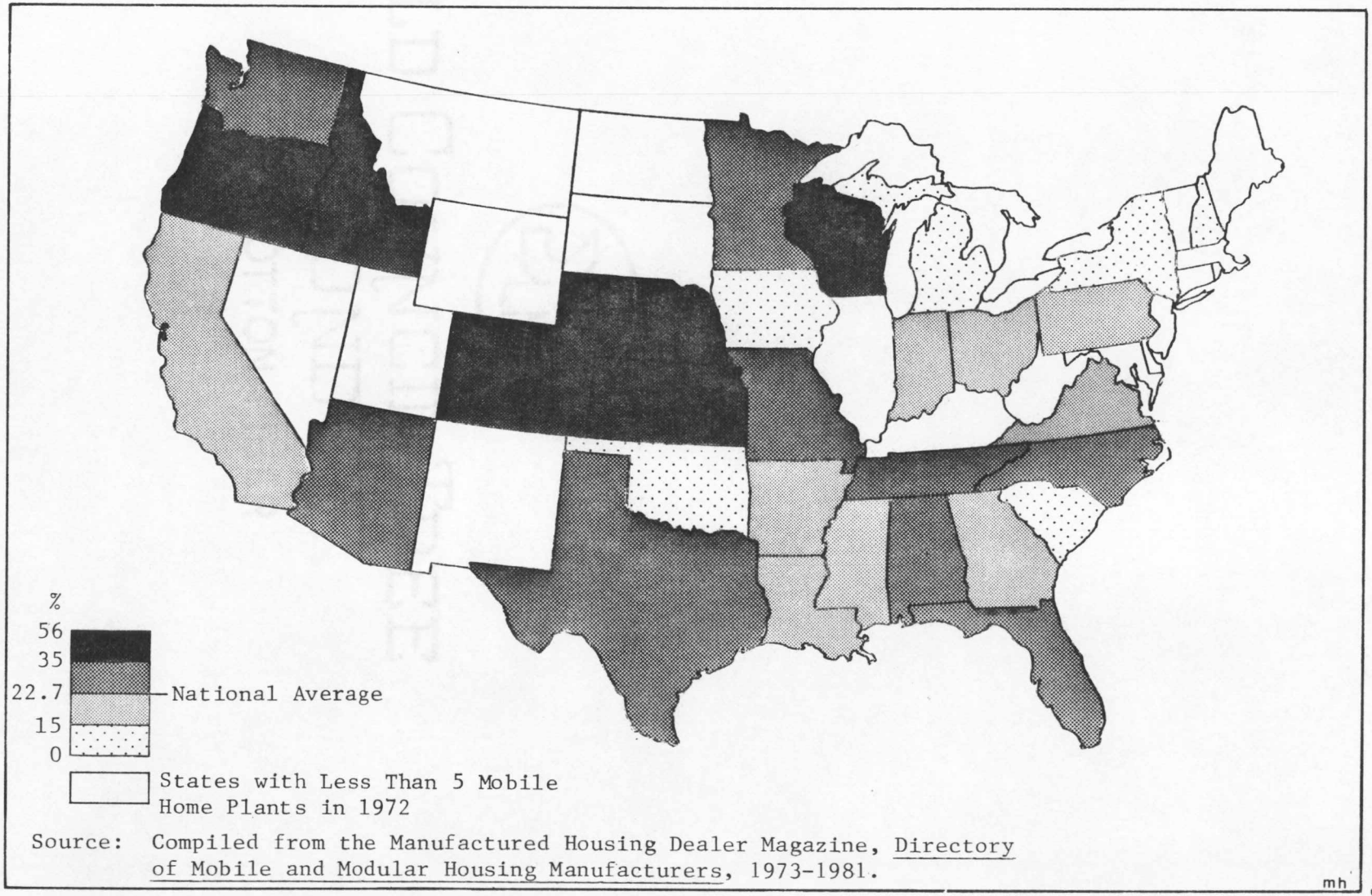
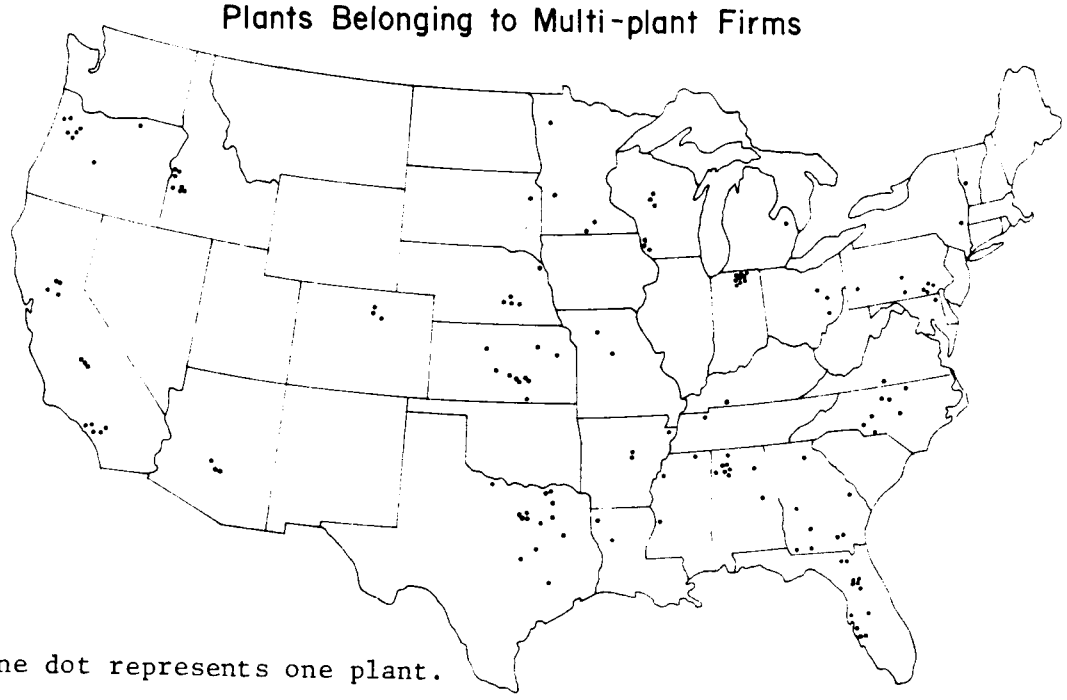
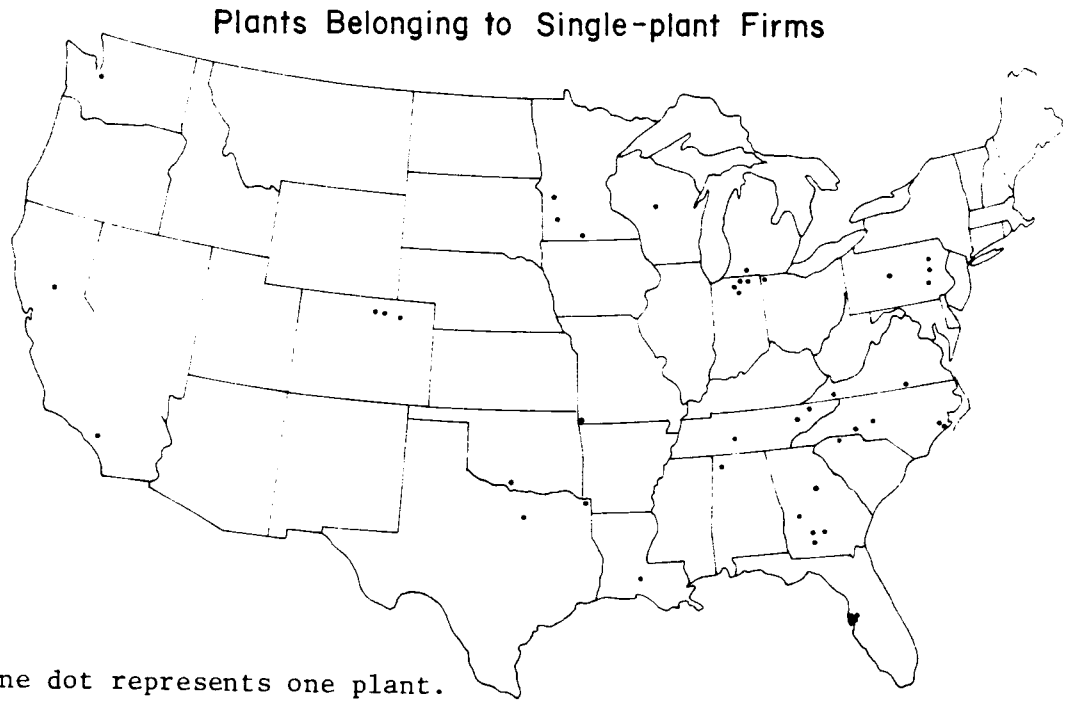


Figure 17. Percentage of Mobile Home Plants in 1972 that Survived into 1980.





Source: Compiled from the Manufactured Housing Dealer Magazine, Directory of Mobile and Modular Housing Manufacturers, 1972 and 1981.

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Figure 18. Distributions of Surviving Mobile Home Plants Belonging to Multi-plant and Single-plant Firms, 1972-1980 Period.

competition;[9] (2) length of continuous operation as a measure of past success and reputation; (3) branch plant vs. single-plant firms as a measure of corporate structure, and (4) the rank of individual multi-plant firms based on the number of mobile home units produced as a measure of the size of the multi-plant firms.

Spatial competition among producers in a given market area is measured in this study by the degree of plant clustering within an area of 50 miles radius around each plant. A large number of producers clustered in an area should intensify the competition among plants for a share of the regional market. Alternatively, an area of 100 or 150 miles radius can be chosen for the measurement, but the measurement in a large area considerably increases overlapping zones of competition among plants at the limits of the given measuring area. The 50-mile radius is chosen here as a reasonable measure of common competition for the market.

The length of time a plant or firm has existed provides some measure of successful management and reputation, both of which reflect competitive advantages over newer ones. Their market connection tends to be more extensive and more firmly established. A successful past record appears to be an enormous aid to further advances. The measure used here is the year the plant or firm began operations.

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[9]Because of high transportation costs competition among producers is limited to the regional rather than national level. Three hundred miles is about the maximum feasible distance to transport a mobile home.

The survival of plants is analyzed according to structural characteristics of firms (single-plant firm or branch plant) and the size of multi-plant firms because of the shift from the dominance of single-plant firms prior to 1972 to the dominance of branch plants by 1980, as indicated in the previous chapter.

Plant clustering. The number of surviving plants by five groups of plant clustering shows that the lowest survival rate among the five groups occurs in the highest degree of plant clusters in which more than 50 mobile home plants are clustered within a 50 mile radius from each plant (Table 13). Among the remaining four groups of plant clusters, differences in the survival rates are, however, very small; the rates vary between 21 and 27 percent. Such a small variation in the survival rate among the four groups suggests no direct relationship between plant survival and plant clustering, unless plants are excessively clustered.[10]

Length of continuous operation. A relationship between survival rates of plants and their date of origin is shown in Table 14. The oldest group of plants were those established before 1961 and this

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[10] In a Chi-square statistic using the same data in Table 13 (plant clustering within 50 mile radius), the Chi-square value was 8.595 at 4 degrees of freedom with the significant level at 0.074. In another Chi-square test using survival rates of plants in five categories of plant clustering within 100 miles radius from each plant, the Chi-square value was 5.918 at 4 degrees of freedom with the significance level at 0.205. The five categories of plant clustering used in this second test were 1-5, 6-14, 15-40, 41-60, and 61-74 plants within 100 miles radius from a given mobile home plant. When using the convention of 0.05 level of significance, these two statistical results suggest that there might not be a significant relationship between survival or closure of a mobile home plant and the degree of plant clustering.

TABLE 13

NUMBER OF SURVIVING PLANTS BY FIVE CATEGORIES OF PLANT CLUSTERING IN THE MOBILE HOME INDUSTRY IN THE UNITED STATES IN 1972-1980 PERIOD

	Number of Plants within a 50-mile Radius[a]					
	1-3	3-5	6-25	26-50	More than 50	Total
Surving plants	25 (21%)	36 (21%)	84 (25%)	41 (27%)	9 (12%)	195
Closed	96 (79%)	138 (79%)	252 (75%)	110 (73%)	67 (66%)	663
Total	121 (100%)	174 (100%)	336 (100%)	151 (100%)	76 (100%)	858

[a]Number of plants in a 50-mile radius circle was counted from the base map of Figure 4. The scale of this base map before reduction was 1:7,500,000.

TABLE 14

NUMBER OF SURVIVING PLANTS BY THE FIVE AGE CATEGORIES IN THE MOBILE HOME INDUSTRY IN THE UNITED STATES IN 1972-1980 PERIOD

	Number of Plants Started in the Period of				
	Before 1961	1961-1965	1966-1970	1971-1972	Total
Surviving Plants	38 (44%)	18 (24%)	67 (21%)	72 (19%)	195
Closed Plants	49 (56%)	58 (76%)	257 (79%)	299 (80%)	663
Total	87 (100%)	76 (100%)	324 (100%)	371 (100%)	858

SOURCE: Directory of Mobile and Modular Housing Manufacturers, 1973 and 1981.

group had the highest survival rate (44 percent) among the four age groups. The second oldest group had the second highest survival rate and the plants in the youngest age group, which opened in 1971-1972, tended to close most frequently. It is evident that a direct relationships exists between the age factor and survival of plants.[11]

An interpretation of the age factor in the above statistics, however, requires caution. Only plants that had survived to 1972 were analyzed. Unsuccessful firms pre-dating 1972 were not around and by definition the firms existing as of 1972 were all survivors compared to the population of firms beginning after 1972, many of which did not survive for long. Thus the pre- and post 1972 groups of firms are not exactly comparable; one has been partially weeded of unsuccessful firms.

Corporate structure of firms. The number of single-plant firms decreased rapidly after 1972 in comparison to branch plants of multi-plant firms (Table 15). Fifty-nine percent of the single-plant firms which existed in 1972 had closed by 1975, or within three years. By contrast, only 31 percent of branch plants had closed over the same period.

Table 16 shows the striking differences in survival rates between branch plants and single-plant firms. Of the 356 branch plants of multi-plant firms in 1972, 43 percent (or 153 plants) survived to 1980, but only 8 percent (or 42 plants) of the 502 independent plants survived over the same period. Because branch plants were the dominant survivors, further analysis of surviving branch plants is made.

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[11] Using the data in Table 14, a computed Chi-square value was 24.887 at 3 degrees of freedom with 0.0 significance level. This result indicates that survival of plant is related to the age of plant.

TABLE 15

NUMBER OF CLOSED MOBILE HOME PLANTS IN THE UNITED STATES IN 1972-1980 PERIOD

	Number of Plants in 1972	Number of Plants Closed in the Period of			
		1972-1973	1974-1975	1976-1977	1978-1979
Single-Plant Firms	502 (100%)	156 (31%)	142 (28%)	77 (15%)	85 (17%)
Branch Plants of Multi-Plant Firm	356 (100%)	43 (12%)	67 (19%)	35 (10%)	58 (16%)

SOURCE: Directory of Mobile and Modular Housing Manufacturers, 1973-1981.

TABLE 16

NUMBER OF SURVIVING PLANTS BELONGING TO SINGLE-PLANT AND MULTI-PLANT FIRMS IN THE UNITED STATES IN 1972-1980 PERIOD

	Number of Single Plant Firms	Number of Branch Plants of Multi-Plant Firms	Total
Surviving plants	42 (8%)	153 (43%)	195
Closed plants	460 (92%)	203 (57%)	663
Total	502 (100%)	356 (100%)	858

SOURCE: Directory of Mobile and Modular Housing Manufacturers, 1973 and 1981.

The survival of branch plants between 1972 and 1980 is further analyzed according to the size of their parent firms because it has been shown elsewhere in this chapter that the largest multi-plant firms have had the greatest growth in their share of total number of plants since 1972. Multi-plant firms in 1972 are grouped into four categories of production of mobile home units: (1) the four largest firms, (2) the next four largest firms, (3) the next 12 largest firms, and (4) the remaining multi-plant firms (Table 17).[12] Among the four size categories of parent firms, the highest survival rate at 61 percent of branch plants is found in the groups of largest firms (consisting of the four largest firms) as shown in Table 18. Sixty-nine plants of their 113 branch plants in existence in 1972 survived by 1980. Plants belonging to the second largest size group (fifth through eighth in size) show the lowest survival rate of branch plants at 26 percent. Branch plants of the third largest size group (ninth through twentieth in rank) have a survival rate of 43 percent, and the group of fourth largest firms (consisting of the remaining multi-plant firms) has a survival rate of 33 percent. A direct relationship is evident between the size of multi-plant firms and the survival rates of their branch plants,[13] although there is a discrepancy in the second largest size group.

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[12]Divisions of the firm size such as the four largest, the eight largest, and the twenty largest are adopted from the U. S. Census of Manufacturers.

[13]A stepwise discriminant analysis of the survival of branch plants supports this conclusion. The dependent variable in the analysis was a dichotomous variable, survived vs. closed. The independent variables used in the analysis were three: the degree of the plant clustering (all 356 branch plants which existed in 1972

TABLE 17

FOUR SIZE GROUPS OF MULTI-PLANT FIRMS ACCORDING TO THE NUMBER OF MOBILE HOME UNITS PRODUCED IN 1972

Name of Multi-Plant Firms[a]	Mobile Home Production (Units)
1. The four largest firms:	(156,471)
Skyline Corp., Elkhart, IN	57,000
Redman Industries, Inc., Dallas, TX	36,937
Champion Home Builders, Dryden, MI	32,534
Guerdon Industries, Inc., Louisville, KY	30,000
2. Firms ranked fifth through eighth:	(58,051)
The Commodore Corporation, NB	15,685
Bendix Home Systems, Inc., Atlanta, GA	15,066
National Gypsum Co. (DMH), Buffalo, NY	14,800
Shelter Resources Corp. (Winston and Lancer)	12,500
3. Firms ranked ninth through twentieth:	(108,016)
National Homes Corp., Lafayette, IN	12,272
Kaufman & Broad, Inc., Los Angeles, CA	11,109
The Wickes Corp., Saginaw, MI	11,000
Richardson Homes Corp., Elkhart, IN	10,583
Liberty Homes, Inc., Goshen, IN	10,566
Tidwell Industries, Inc., Haleyville, AL	9,166
Wick Building Systems, Inc., Mazomanie, WI	8,620
Schult Mobile Homes Corp., Middlebury, IN	8,491
The Midland Co., Cincinnati, OH	7,400
Marlette Homes, Inc., Marlette, MI	6,427
De Rose Industries, Inc., Indianapolis, IN	6,382
Poloron Products, Inc., New Rochelle, NY	6,000
4. The remaining firms:	Not
All other multi-plant firms	Available

[a]Fleetwood Enterprises, Inc., Riverside, California is not classified here as a multi-plant firm by the definition used on page 7.

SOURCE: Automation in Housing & Systems Building News, April 1973, p. 42.

TABLE 18

NUMBER OF SURVIVING BRANCH PLANTS OF MULTI-PLANT FIRMS BY THE FOUR SIZE GROUPS OF FIRMS IN THE MOBILE HOME INDUSTRY IN THE UNITED STATES, 1972-1980 PERIOD

	Number of Plants of Multi-Plant Firms in Each Rank Category				
	1st-4th	5th-8th	9th-20th	Remaining Firms	Total
Surviving plants	69 (61%)	12 (26%)	36 (43%)	36 (33%)	153
Closed plants	44 (39%)	35 (75%)	48 (57%)	74 (67%)	201
Total	113 (100%)	47 (100%)	84 (100%)	110 (100%)	354

SOURCE: Directory of Mobile and Modular Housing Manufacturers, 1973 and 1981; and Automation in Housing & Systems Building News, April 1973, p. 42.

The reason for the low survival rate of branch plants in the second largest firm size group was an ownership change of plants of Bendix Homes Systems which operated 15 plants in 1972 and belonged to this second firm size group. In 1978 all mobile home operations of Bendix Homes, including 10 mobile home plants (five of the 15 plants in 1972 were already closed by that time), were acquired by another multi-plant mobile home manufacturing firm.[14] At present, eight of these 10 acquired plants are operating.

Results of the analysis. Plants belonging to multi-plant firms dominated surviving plants. Among multi-plant firms, branch plant survival is positively related to the size of the multi-plant firm. These results lead to the conclusion that the most important characteristic for survival of a plant is to be a branch plant of a large multi-plant firm.

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were classified into one of the five categories of plant clustering which was measured as the same way in Table 13); age of plants (all the 356 branch plants were classified into the same categories as shown in Table 14); and size of parent firms (Table 17). Results of this analysis showed that discriminant function coefficients of the three independent variables were: 0.7377 for the size of parent firm; 0.6268 for the age of branch plants; and 0.2219 for the plant clustering factor. When measured by these coefficient values, the size of firm was the most important factor discriminating between plants that survive or closed; a larger percentage of plants of larger firms tended to survive than plants of smaller firms. This analysis classified correctly 62 percent of closed branch plants and 64 percent of surviving plants. No regional pattern for the misclassified cases was identified.

[14]In 1972, Bendix Homes System, Inc., based in Atlanta, Georgia, a subsidiary of Bendix Corporation, owned 15 mobile home plants. Bendix started mobile home manufacturing business by acquiring these 15 plants of Boise Cascade Corporation in the same year. In 1978 Bendix sold entire mobile home manufacturing operations to Commodore Corporation, a multi-plant mobile home firm based in Syracuse, Indiana.

Large multi-plant firms have influenced the locational pattern of the mobile home industry. This is because more branch plants of the large firms have survived than those of smaller or single-plant firms. These large firms not only increased their share of plants to total number of plants but also of production volume. Relative advantages by large multi-plant firms in comparison with single-plant firms and reasons for the continued existence of single-plant firms need to be further discussed.

IV. THE POSITION OF MULTI-PLANT AND SINGLE-PLANT FIRMS IN THE DECLINING INDUSTRY

This portion of the chapter examines the competitive advantages of multi-plant firms and factors that contribute to survival of single-plant firms in competition with multi-plant firms in a stable or declining market. The case study approach is used to illustrate the particular qualities of surviving firms whether of multi-plant or single-plant firms.

Most of the information presented is derived from personal interviews with officials of individual firms. Multi-plant firms were selected to represent nationally and regionally oriented firms. The three single-plant firms were selected from Tennessee and South Carolina to minimize interviewing expenses; they seem as representative of surviving single-plant firms as many others that could have been selected. These three firms represent 75 percent of the surviving single-plant firms in the two states in 1980, compared to 23 single-plant firms in 1972.

Advantages of Large Multi-plant Firms

An important competitive advantage of large multi-plant firms over single-plant firms results from their financial capability to survive during periods of intense competition. Edith T. Penrose emphasizes the importance of access to capital and large internal operating funds enjoyed by large firms.[15] She explains advantages of large size of firms as:

> Their [large firms] market connection tend to be more extensive, their standing in the capital market better, their internal funds larger. . . . They have accumulated valuable experience and, by virture of their size, they can take advantage of many technological and organizational economies not possible at smaller scale of operation. These are not "monopolistic" advantages in the restrictive sense, nor are they easily removable--they are corollaries of size, experience, and successful past.

The economic literature has long recognized the possible advantages of the large multi-plant firms.[16] The factors often mentioned as favorable to large multi-plant firms are: management by specialists, economies of large scale sales, promotion, monetary savings resulting from the large firm's bargaining position, and the backing of large reserves.

A large multi-plant firm can afford to employ specialists in financial control, market research, sales forecasting and marketing.

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[15] Edith T. Penrose, The Theory of the Growth of the Firm (Oxford: Basil Blackwell, 1959), p. 218.

[16] For example, see Joseph Steindl, Small and Big Business, Economic Problems of the Size of Firms, Oxford University Institute of Statistics Monograph No. 1 (Oxford: Basil Blackwell, 1947), p. 14; F. M. Scherer et al., The Economics of Multi-plant Operation, An International Comparison Study (Cambridge: Harvard University Press, 1975), Chapter 7.

There are also selling and promotional economies related to the savings in the unit costs to advertise and develop an image. For example, advertising through the national media (such as television) is only feasible where a large sales volume is assured. Advantages of the large multi-plant firms also come from the firm's bargaining position. As a result of the firm's large absolute size, the firm may receive lower prices from suppliers of components and raw materials than a smaller firm would. The advantage of massed reserves comes from averaging out random demand fluctuations, seasonal variations, and the risks of localized price wars or erroneous marketing decisions.[17]

It is possible that some of these reductions in costs may be available to a very large single-plant firm.[18] Usually, however, economies such as these are likely to come into effect once the firm has grown beyond the size of one plant.[19]

Competitive advantages for large firms also occurred when new federal government regulations to improve the housing quality and safety of mobile homes, particularly with regard to fire hazard, became

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[17]Scherer et al., The Economics of Multi-plant Operation, pp. 274-275.

[18]A very large mobile home plant, either belonging to multi-plant or single-plant firms, is, however, rare. For example, the U. S. Census of Manufacturers in 1977 reported that only 3 percent of total 597 mobile home manufacturing establishments in the nation had more than 250 employees. About 61 percent of all the 597 establishments had employees between 50 and 99 people or 100 and 249 people.

[19]M. A. Utton, Industrial Concentration (Harmondsworth: Penguin Books, 1970), p. 22.

effective in 1976. Many of the producers, primarily the small manufacturers, could experience a cost increase of up to $1,000 per unit to comply with the new standards.[20] Most of the large firms, by contrast, could meet the new regulations with an increased cost of only $100-300 per mobile home, resulting in a significant cost advantage over small firms.[21]

Case Studies of Three Multi-plant Firms

The examination of multi-plant firms focuses particularly on the flows of capital, materials, and services within each organization, and the interactions between the corporate headquarters and its plants. The three firms studied are: Guerdon Industries, Inc., Louisville, Kentucky; Brigadier Industries Corp., Thomson, Georgia; and Winston Industries, Double Springs, Alabama. Each is described briefly (Table 19).

Guerdon Industries, Inc. Guerdon is the fourth largest mobile home manufacturing firm in the nation in mobile home production in 1980. It operates 21 plants in 12 states, primarily in the southwestern, central, and western states (Figure 19), and has regional offices in Georgia (Atlantic Division), Arkansas (Central Division), and California (Western Division). In 1980, Guerdon had 2550 employees[22]

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[20]Standard & Poor's Corporation, 1977, p. B-114.

[21]Ibid., p. B-114.

[22]Dun and Bradstreet Corporation, Million Dollar Directory (Parsippany, New Jersey, 1982), Vol. I, p. 1111.

TABLE 19

THREE SURVEYED MULTI-PLANT FIRMS IN THE MOBILE HOME INDUSTRY

	Year Business Started	Ranks of Firms in Production in 1980	Number of Branch Plants in 1980
Guerdon Industries, Inc., Louisville, Kentucky	1954	4th largest	21 plants in 12 states
Brigadier Industries Corp. Thompson, Georgia	1967	8th largest	7 plants in 4 states
Winston Industries, Inc., Double Springs, Alabama	1965	[a]	6 plants in 4 states

[a]The Winston Industries, Inc. is a subsidiary of the Shelter Resources Corp., Beachwood, Ohio. This company was ranked 15th in mobile home production in 1980.

Source: Interviews with individual firms. Ranks of firms were compiled from the Automation in Housing & Systems News, August 1981, pp. 11-24.

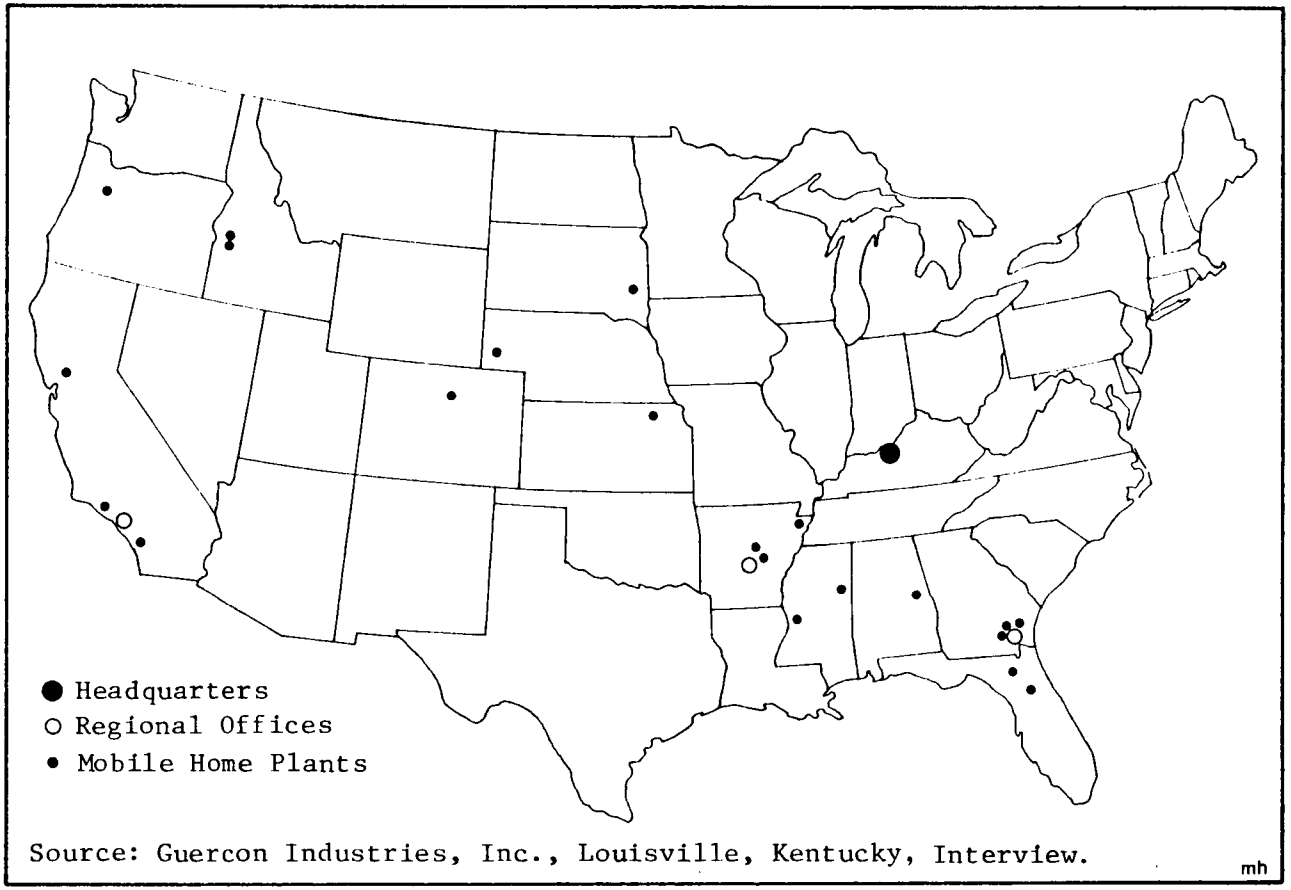

Figure 19. Location of Mobile Home Plants, Guerdon Industries, Inc., 1980.

and manufactured 12,197 mobile homes which accounted for 5.5 percent of the total mobile home production in the nation.[23]

Since Guerdon opened its first mobile home plant in Marlette, Michigan in 1954, it has expanded its market area and facilities by building new plants and by acquisition of other mobile home manufacturing firms, especially the latter. Most of the acquisitions occurred between 1964 and 1972. Major expansion of the company's market areas occurred when it acquired Vagabond Corporation, which operated three plants at the time of acquisition in 1964; Magnolia Homes with 13 plants in 1966; Great Lakes Mobile Homes with six plants in 1968; Lonergan Corporation with four plants in 1969; and Intra-America Homes with nine plants in 1972[24] (Table 20). Since 1972 Guerdon has added only two plants by acquisition, but has closed and consolidated many of the plants previously acquired. Most closures were related to plants belonging to different acquired firms but having the same market area. Among the 35 mobile home plants which Guerdon operated in 1972, 16 have continued production and five were added in 1980. Of these 21 plants, 10 were built by Guerdon.

The company markets mobile homes through approximately 940 independent dealers and 44 company-owned sales outlets.[25] Sales through

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[23]"The Top 100 Home Producers of 1980: Feeling Pinch Between Prime/Price," Automation in Housing & Systems Building News, Vol. 18, No. 8 (1981), pp. 11-24.

[24]Guerdon Industries, Inc., The Guerdon Story.

[25]Moody's Investors Service, Moody's Industrial Manual (1981), p. 926.

TABLE 20

MAJOR ACQUISITIONS OF MOBILE HOME FIRMS BY GUERDON INDUSTRIES, INC., 1961-1980

Year	Acquired Firm	Number of Plants
1964	Vagabond Corp., New Hudson, MI	3 plants
1966	Magnolia Homes, Vicksburg, MS	13 plants
1968	Great Lakes Mobile Homes	6 plants*
1968	Carolina Mobile Homes, Rockwell, NC	1 plant
1969	Lonergan Corp., Elkhart, IN	4 plants*
1972	Intra-America Homes	9 plants
1979	Dualwide Homes	1 plant*
1979	Pacific Living Systems	1 plant*

*Estimated

SOURCE: Guerdon Industries, Inc., The Guerdon Story.

company-owned outlets have increased since the company began direct retailing in Georgia in 1975,[26] but still only account for about 8 percent of its production.[27]

At present, Guerdon is a wholly owned subsidiary of GDV, Inc. of New York, one of the nation's leading residential home builders. Through recent acquisition, GDV is owned by City Investing Company of New York.

Guerdon fully owns all of its plants and maintains centralized control over many of the operations at its plants (Table 21).[28] The corporate office maintains full control over annual operating budgets and accounting for all plants. Each plant is allowed to spend within the budget; any excess spending must be approved by the corporate office. The headquarters office selects suppliers for materials and parts used in large volume by its plants. It also provides services such as engineering, legal, and data processing, and it hires and trains employees for key management and sales positions in individual plants.

Control over other operating aspects of plants including production levels, price of products, and selection of retail dealers

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[26]Guerdon Industries, Inc., The Guerdon Story.

[27]Moody's Investors Service, Moody's Industrial Manual (1981), p. 926.

[28]The degree of internal control apparatus within the firm is not described in great detail, nor shown much difference among firms in Table 21. A major purpose of the interview with company officials, by which Table 21 was constructed, was a general understanding of centralized or decentralized responsibilities for various operating affairs for plants.

TABLE 21

SUMMARY TABLE OF INTERNAL CONTROLS OF THE THREE SURVEYED MULTI-PLANT FIRMS

	Decisions Made by the Corporate Office or Branch Plants:		
	Guerdon	Brigadier	Winston
Selection of suppliers for raw materials	Corp.[a]	Corp.[b]	Corp.
Selection of suppliers for parts	Corp.	Corp.[b]	Corp.
Control for production and price of products	Plant	Corp	Corp.
Selection of retailers	Plant	Plant[c]	Plant
Marketing	Plant	Plant	Plant
Plant ownership	Corp.	Corp.	Corp.
Sources of initial capital investment	Corp.	Corp.	Corp.
Finance	Corp.	Corp.	Corp.
Selections between the corp. office and branch plants	Strong	Strong	Strong

[a]Corp. - Corporate Headquarters

[b]Corporate office controls the national contracts only.

[c]Plant - Branch plant.

SOURCE: Interviews with Mr. Eugene R. Best, Corporate Credit Manager and Assistant Secretary, and Mr. Craig L. Panther, Marketing Services Specialist, Guerdon Industries, Inc., Louisville, KY; Mr. H. B. Moorehead, Vice President, Finance, Brigadier Industries Corporation, Thomson, G. A.; and Mr. George Hammett, Vice President, Engineering, Winston Industries, Inc., Double Springs, AL.

are left to local plant management. Dealer credit, however, must be approved by the corporate office.

Brigadier Industries Corporation. Brigadier is the eighth largest mobile home manufacturing firm in the industry. It owns and operates seven plants in four states (Figure 20), and has 1080 employees at present.[29] In 1980 it manufactured 7657 mobile homes at seven plants, or 3.5 percent of the total mobile home production in the nation.[30] In 1972 by contrast the company produced only 4600 units at four operating plants. At that time it was the 25th largest firm in the industry and had about 0.8 percent of the total national production.

In addition to the seven mobile home plants, the corporation has two subsidiaries: Knox Homes Corporation in Spring Home, North Carolina, which operates two mobile home plants; and Leisure Products, Inc., which sells mobile home parts and accessories. Brigadier acquired Leisure Products in 1974.[31]

Almost all financial expenditures of individual plants are paid through the corporate headquarters. It also controls production, inventories, prices, and selects suppliers. Design and quality control of products as well as the training of plant personnel are handled

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[29]Dun and Bradstreet Corporation, Million Dollar Directory (Parsippany, New Jersey, 1982), Vol. I, p. 322.

[30]"The Top 100 Home Producers of 1980: Feeling Pinch Between Prime/Price," Automation in Housing & Systems Building News, Vol. 18 No. 8 (1981), pp. 11-24.

[31]Moody's Investors Service, Inc., Moody's OTC Industrial Manual (New York, 1979), p. 627.

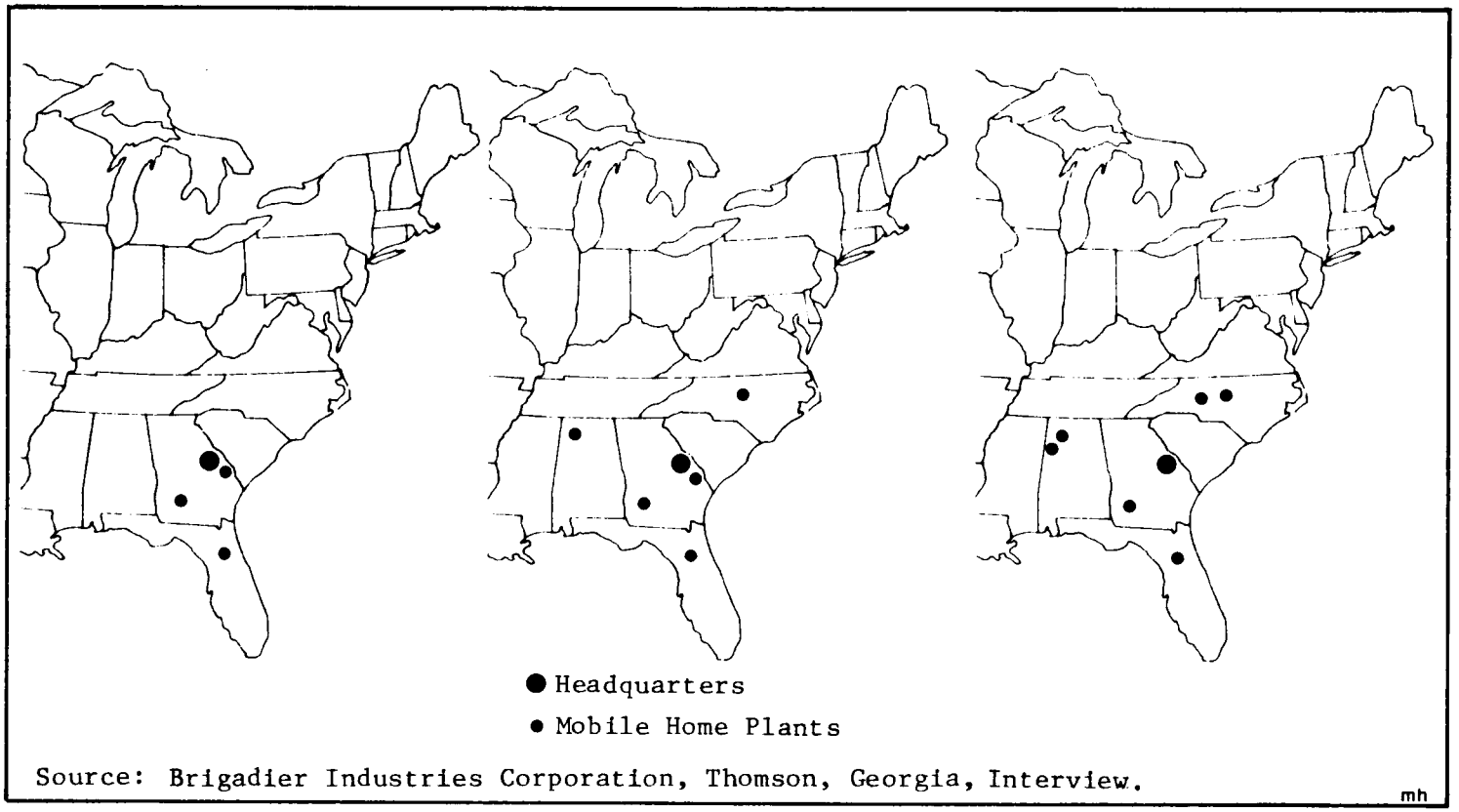

Figure 20. Location of Branch Plants of Brigadier Industries, Inc., 1970-1980.

by the corporate headquarters. Selection of retail dealers is a branch plant function because of more direct information on local market conditions, consumers, and competitors.

Winston Industries Inc. Winston operates six mobile home plants in four states (Figure 21) and employs about 800 people at present.[32] The company is one of two subsidiaries of Shelter Resources Corporation, which owns another multi-plant mobile home firm based in California.[33] There is, however, no direct relationship between the two subsidiaries.

In 1972, Winston was a regional firm with five of its six plants in Alabama and the remaining plant in Louisiana. Since then, it has closed two plants in Alabama and expanded to Missouri and North Carolina.

Until 1972, all of Winston's plants were operated independently. After 1972, however, the company centralized and now controls about 97 percent of all capital expenditures of its individual plants. Other internal controls are similar to those of the Brigadier Corporation.

Continued Existence of Single-plant Firms

Some single-plant firms have survived and grown in spite of the survival advantages of multi-plant firms. Though the functions and

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[32]Dun and Bradstreet Corporation, Million Dollar Directory (1982), Vol. I, p. 2626.

[33]Lancer Homes, Inc., the other subsidiary of Shelter Resources Corporation, locates all of its three plants in California, while Winston has its plants in Alabama, Louisiana, Missouri, and North Carolina.

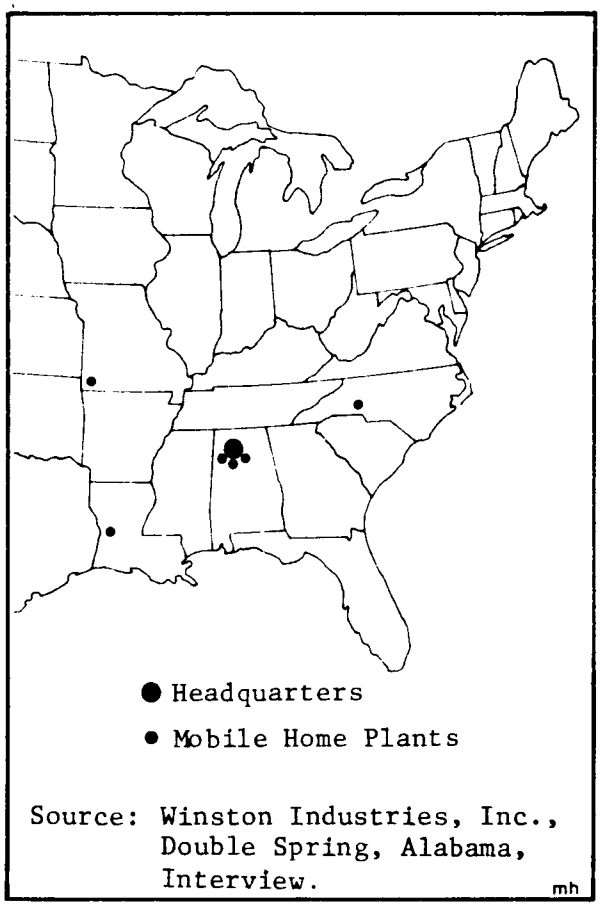

Figure 21. Location of Branch Plants, Winston Industries, Inc., 1982.

performances of small firms have been examined in the literature, such studies have not distinguished between single-plant and multi-plant firms. Penrose, for example, suggests that the opportunities for small firms are "interstices" in the economy.[34] Small firms thus represent the action of entrepreneurs who perceive opportunities left open in the market by large firms.

In the mobile home industry, however, single-plant firms often compete directly with larger multi-plant firms for the same markets and market areas. The survival and growth of such single-plant firms is illustrated by the following cases.

Market access strategy: a case study of a firm. Clayton Homes, Inc., a single-plant mobile home firm in Knoxville, Tennessee, is vertically integrated into the market through company-owned retail outlets, and is engaged in the development and operation of mobile home parks. Clayton began as a mobile home retail dealership in 1966 and entered the mobile home manufacturing business in 1970. By 1981 it had 23 company-owned retail lots, operated two mobile home parks which were acquired after 1970, and had interest in a third mobile home park in a joint venture with a local community. All three parks are located in Knoxville, Tennessee, where Clayton is located.

Several measures of the firm show its expansion over the past 10 years. The number of employees grew from 44 in 1973 to more than

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[34]Penrose, p. 223.

250 in 1981 (Table 22).[35] The company expanded the market area by establishing company-owned mobile home retail lots or acquiring established retail dealerships. In 1976, for example, most of the company's mobile homes were marketed through 13 company-owned retail outlets and 35 independent dealerships in the four states of Tennessee, Kentucky, North Carolina, and Virginia (Figure 22). By 1981, the company had 23 owned outlets and 60 independent retailers in 11 states. About half of its production is sold through the owned lots and the other half to independent dealers. The success of what might be called a marketing strategy has meant expanded production at its home plant in Maynardville, Tennessee, and the establishment of a branch plant in Savannah, Tennessee, in 1981, and stands in contrast to the general decline experienced by the mobile home industry as a whole. As a result of its success, Clayton is no longer a single-plant firm, though its case history demonstrates that a single-plant firm is able to survive in direct competition with multi-plant firms.

The product specialization strategy. Norris Industries, Inc., in Bean Station Tennessee, and Mascot Homes, Inc., in Grambling, South Carolina, are cases of two other surviving mobile home manufacturers. Norris was one of the earliest mobile home producers (1960) in eastern Tennessee. The company has specialized in multi-section housing units in addition to building single-unit mobile homes, and has gained a

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[35] Number of employees in 1973 are based on Department of Economic and Community Development, Directory of Tennessee Manufacturers (Nashville, 1973).

TABLE 22

THREE SURVEYED SINGLE-PLANT FIRMS, THEIR ESTABLISHED YEAR AND EMPLOYMENT SIZE IN 1972 AND 1980

	Year Started	Employment Size 1972	1980
Mascot Homes, Inc., Grambling, S. Carolina	1965	50-99	105
Clayton Homes, Inc. Knoxville, Tennessee	1970	44	250
Norris Industries Bean Station, Tennessee	1966	150	260

SOURCES: Interview with individual firms; Industrial Directory of South Carolina, 1973; and Tennessee Directory of Manufacturers, 1973.

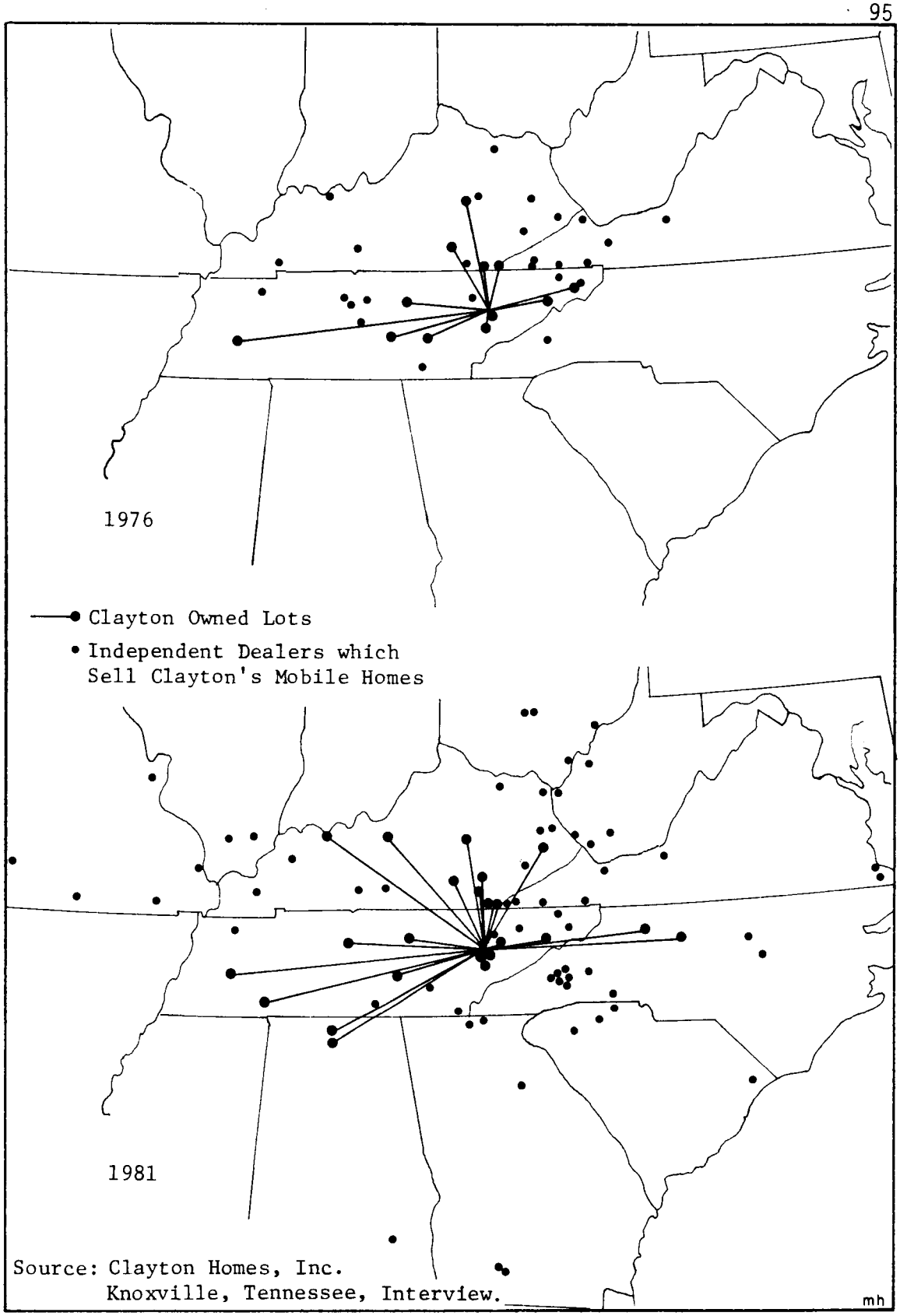

Figure 22. Distribution of the Clayton's Owned and Independent Retail Lots, 1976 and 1981.

reputation for high quality.[36] Much of its production is for non-residential units, special order for use as motels, offices, and hospitals. At present, units are shipped to 135 independent dealers in 13 states around Tennessee (Figure 23).[37] The increasing market for large multi-section homes in recent years, coupled with an early start and reputation for high quality, seemingly have given it a strong position in the area, which is reflected in an employment increase from 150 in 1972 to 260 in 1980.[38]

Mascot Homes also has a reputation for high quality homes.[39] The company sells largely in South and North Carolina, and in portions of Virginia, West Virginia, and eastern Tennessee (Figure 24) through 33 established retail dealers; it does not sell to "speculative" dealers. Production and employment level have remained very stable since 1972. Mascot is the only surviving firm in South Carolina from among 18 mobile home producers (17 of which were single-plant firms) that existed in 1972. Norris and Mascot are examples of single-plant firms that have survived in a regional market in part on reputation

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[36]Interview with Mr. Jim Gose, General Manager, Norris Industries, Inc., Bean Station, Tennessee.

[37]Telephone interview with Ms. Linda Carpenter, Norris Industries, Inc., Bean Station, Tennessee.

[38]Tennessee Division of Industrial Development, Tennessee Directory of Manufacturers (Nashville, 19), 1973 and 1981.

[39]Interview with Mr. Ralph L. Camp, Production Manager, Mascot Homes, Grambling, South Carolina.

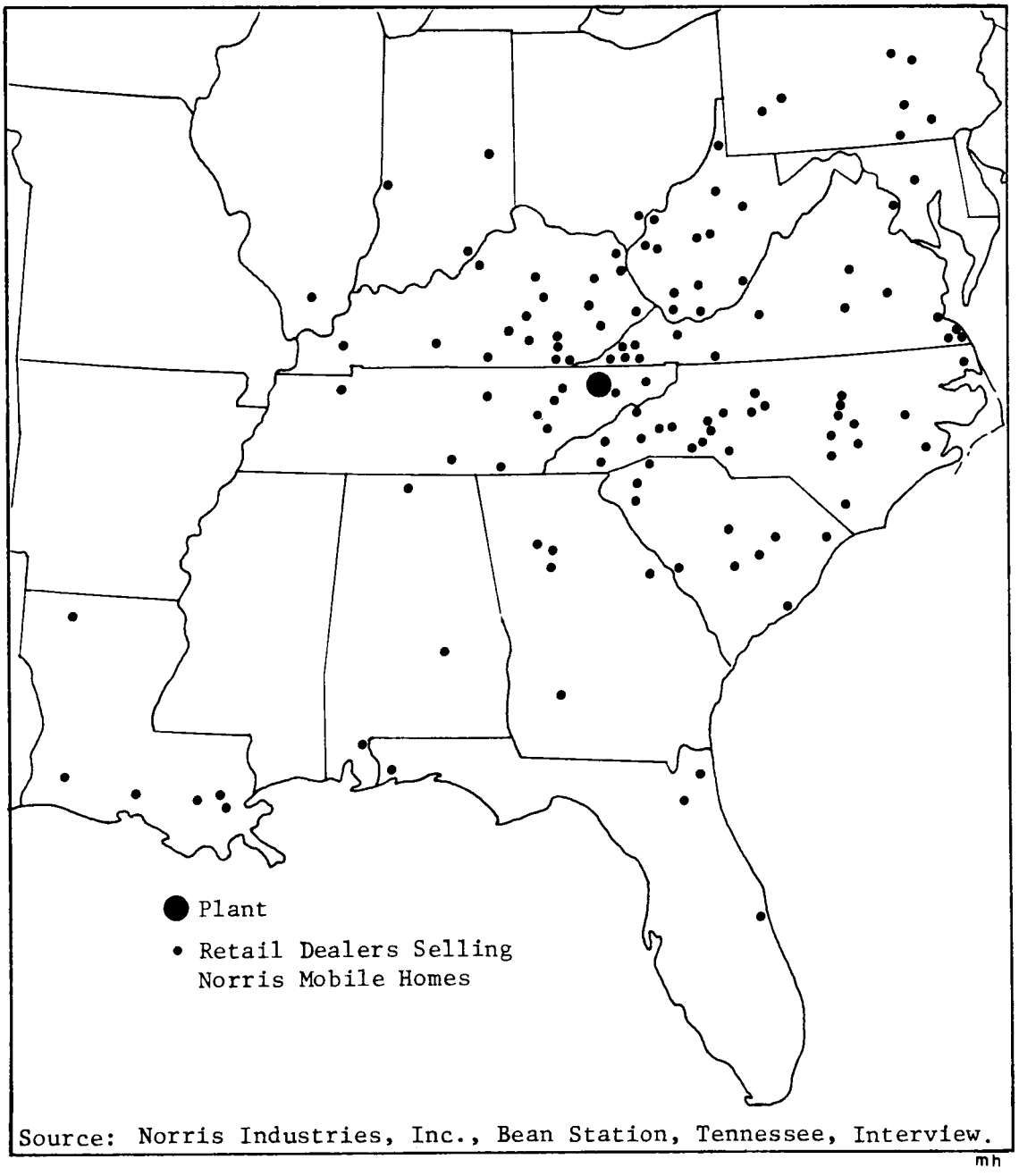

Figure 23. Distribution of Retail Dealers Selling Norris Mobile Homes, 1982.

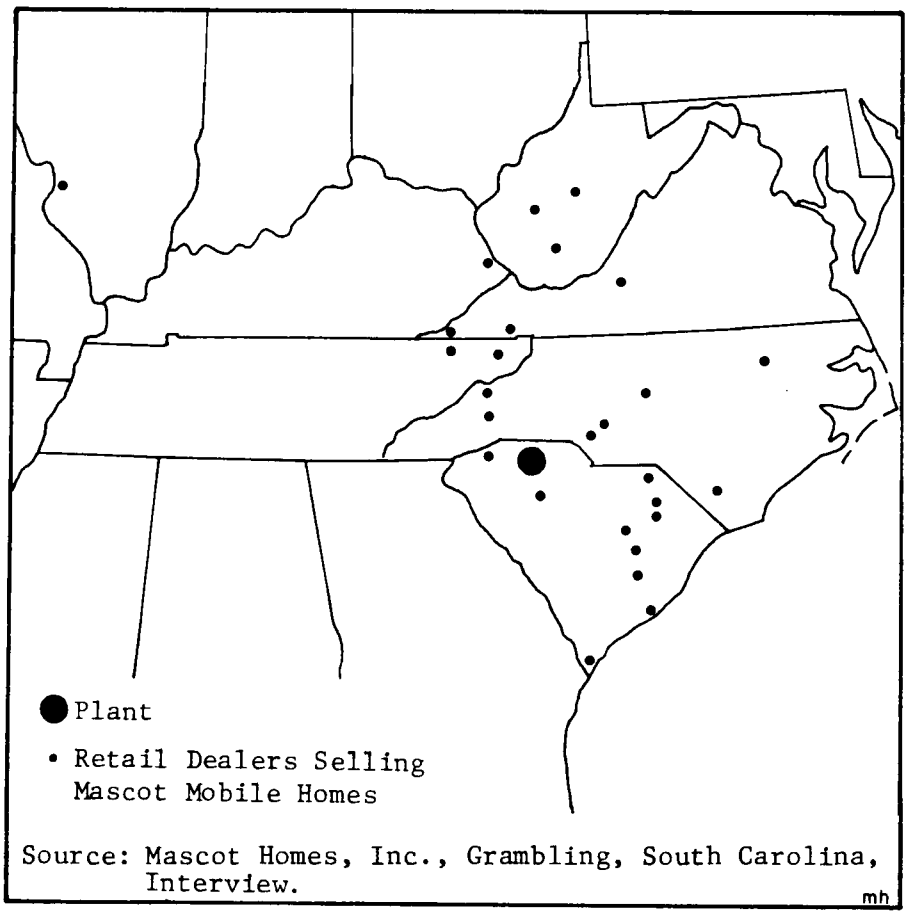

Figure 24. Distribution of Retail Dealers Selling Mascot Mobile Homes, 1980.

for high quality[40] and in part, at least for Norris, by specializing in units for commercial users.

V. SUMMARY

Large multi-plant firms have come to dominate the present industrial structure and location pattern of the mobile home industry. The period of rapid growth in the 1960's was dominated by entry of many single-plant firms, but in the period of decline in the 1970's, the large multi-plant firm emerged as the competitive survivor. In the period of decline, single-plant firms were less able to secure capital and compete in the shrinking market than corporations with multi-plants and better access to credit. As a result, the large multi-plant firms increased their share of the number of plants and of total production. Production also occurred in fewer locations. Some single-plant firms survived in the later stage, but their relative importance in the industry was much reduced compared to the period of rapid growth.

Competitive advantage for multi-plant operation lies not only in the firm's geographical expansion of markets, but also in its financial strength and economies of multi-plant operations. These

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[40]Mr. Ralph L. Camp, Production Manager at Mascot Homes located in Grambling, South Carolina, indicated that most of the low-quality mobile home producers in South Carolina in the past were closed. This example suggests that product differentiation by producing lower-quality homes could not provide a niche in the market of the declining industry.

advantages arise by virtue of the large absolute size of the firm and from the strong interactions between the corporate office and its plants.

Case studies of multi-plant firms indicate that the most extensive controls by the head office of a multi-plant firm occur in the financial matters of its branch plants. The corporate office decides almost all major capital expenditures of its plants and pays bills for them. The head office also selects suppliers of major materials, parts, and components for its plants. As a result, it is possible for the firm and its branch plants to enjoy competitive advantages because of access to the large pool of corporate assets.

Case studies illustrate two types of successful single-plant firms among many different types. One is a marketing approach where production is vertically integrated into company-owned retail outlets. Firms of this type have shown rapid growth and expansion of their market areas. Another type of successful single-plant firm rests on specializing in high-quality products and good reputation which gives it a special place in the regional market. Firms of this type have shown stable or increased production in a period of industry decline.

Small single-plant firms tend to arise frequently because low-capital and technical requirements make entry easy compared to most other manufacturing industries. Turnover rates among these single-plant firms are likely to be high, but some persist and even expand if they have either superior entrepreneurial ability, superior access to market, or can establish a reputation for a good product in the

regional market. At a later date some of these successful single-plant firms might develop into multi-plant firms. In fact, the four largest mobile home manufacturing firms of today, which operate 84 plants, began with a single plant in the past. Their substantial growth has been followed by geographical expansions through the establishment of branch plants. There were frequent acquisitions and merger activities, particularly among multi-plant firms, by which firms expanded not only their production facilities but also markets through the acquired firm's dealer networks, and diversified product lines. Survival and growth are important motivations for branch establishments either through building new plants or through acquisition.

A successful example of a regional firm is the Clayton company, which was successful as a single-plant firm. It eventually became multi-plant to serve its expanding dealer network.

CHAPTER 4

SUMMARY AND CONCLUSIONS

I. SUMMARY

In the period 1960 to 1973, the mobile home industry was characterized by rapid growth in production and in number of plants, and by the development of several major regional concentrations of plants. The expansion and spread of the industry in the 1960's resulted from a growing housing demand, the lower cost of mobile homes compared to conventional homes, the high transportation cost of a mobile home, the relatively low capital and the technical requirements to open a new plant, and the wide availability of suppliers of materials, parts and components. Beginning in 1973, by contrast, the industry had to adjust to declining demand which resulted in reductions in the number of plants and firms. The rapid decline was related to several factors, including the economic recession of the mid-1970's, increasing costs of production, and rising interest rates.

Major production areas before 1960 were limited to Michigan, northern Indiana and southern California. In the 1960's additional regional concentrations developed in the southeastern states. These new areas grew most rapidly whereas the earlier areas of production grew the least. After 1972, the number of plants decreased considerably in all areas, but regional patterns largely remained the same as those of the early 1970's. Large declines in plant numbers occurred in major regional production nodes but, in relative terms, areas

bordering these nodal areas lost an even larger proportion of plants. Because of this relative change, concentration of production in these regional centers increased in the 1970's.

Single-plant firms dominated the industry in the period of growth as a result of most new openings being single-plant firms. Even small-scale single-plant firms were able to initiate production because of growing markets and low capital and technical requirements. Some expanded by opening one or more branch plants. Existing multi-plant firms also grew but mostly by adding plants in market areas beyond the reach of existing plants.

The recent period of decline is marked by a growing dominance of multi-plant firms. The largest multi-plant firms have relatively increased their share of production and plants the most rapidly. In the analysis of factors that may explain survival of plants, the most important one appears to be the corporate structure of a firm. Plants of multi-plant firms show significantly higher rates of survival than single-plant firms in the 1972-1980 period; 43 percent for branch plants of multi-plant firms and only 8 percent for single-plant firms. Among multi-plant firms, the size of firm relates positively to plant survival rates: plants of larger firms have higher survival rates than plants of smaller firms.

Competitive advantages of large multi-plant firms over single-plant firms arise not only from the multi-plant operation reaching a wide geographical market, but also from the financial capacity to survive during periods of intense competition. Large multi-plant firms also have advantages in specialized management, economies of large

scale sales promotions, savings resulting from quantity purchasing, and the financial backing of cash reserves and better access to credit. It is possible under these circumstances for large multi-plant firms to support branch plants even if they are not profitable for a time in the competitive market. As long as the firm desires to keep any particular plant for other reasons, such as to serve a regional market, financial support can continue until the plant has a better market position in relation to its competitors. Single-plant firms with smaller cash reserves or credit are less able to survive during extended periods of decline and are forced to close.

Case studies of successful multi-plant and single-plant firms provide evidence for specific survival strategies. Among multi-plant firms, corporate offices retain almost complete control over major capital expenditures of branch plants. The head office also selects suppliers of major inputs and makes contracts for its branch plants. Such controls provide each plant of the firm with potential access to the entire pool of corporate assets.

In spite of disadvantages of financial strength, there are successful surviving single-plant firms. The single-plant firms studied here were effectively competing in a regional market through their own sales outlets and mobile home parks, or through specialized products and an established reputation. The integration of retail outlets into the corporate structure provides the manufacturer with surer access to markets; specialized product and reputation exploit niches in the market where competition may be less keen.

II. CONCLUSIONS

This study focuses upon the survivability of mobile home manufacturing plants as an explanation of current locational patterns in the industry. This approach is in contrast to many other locational studies which ask such questions: where is the optimal location for production facilities (with given production factors)?; or why was a particular location for a plant chosen? A basic assumption of these "classical" inquiries is that, in the long run, the initial choice in location determines survival. For example, Edgar M. Hoover states that "Competition, in so far as it prevails, will reward and encourage well-located enterprises and shorten the lives of poorly located ones."[1] The classical inquiries are important for understanding locational patterns of manufacturing activities. Other factors which are not well explained by these classical approaches are, however, often included into a residual category such as "geographical inertia," "the historical factor" or other external factors. For locational understanding there is a need to dissect the factor of geographical inertia, and to take a look at "the multitude of process as subsumed under such headings."[2]

This study has shown that the corporate structures such as large multi-plant operations or a particular type of the vertical integration

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[1] Edgar M. Hoover, The Location of Economic Activity. (New York: McGraw-Hill Book Company, Inc., 1963), p. 10.

[2] D. Harvey, "Models of the Evolution of Spatial Patterns in Human Geography," p. 550 in R. J. Chorley, and P. Haggett, eds, Models in Geography (London: Methuen & Co. Ltd., 1967); and Steed (1971), p. 54.

with marketing networks within the firm are important forces influencing survival of plants. Studying locational pattern as a product of survival is not inconsistent with "classical" approaches; rather, it broadens the basis for understanding the spatial patterns of particular industrial activities. For most industrial corporations today, large size, spatial dispersion, vertical integration, and product diversification as well as multi-plant production are the rule rather than exceptions. In most industries a few large firms provide a much greater share of total production than their number would suggest. The mobile home industry shifted rapidly toward that structure during the 1973-1980 period.

Economic Concentration and Geographic Concentration

The mobile home industry has shown that ratios of both economic concentration and geographical concentration declined in the period of rapid growth of the industry and generally increased in the period of decline. These tendencies are also found in many other manufacturing industries. Other studies indicate that economic concentration becomes more pronounced in slowly growing or declining industries and is less prnounced for most rapidly growing industries,[3] and those industries that declined in size or grew at very slow rates

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[3]Ralph L. Nelson, Concentration in the Manufacturing Industries of the United States (New Haven: Yale University Press, 1963), p. 10. Similar type of relationships are also indicated in William G. Shepherd, "Trends of Concentration in American Manufacturing Industries, 1947-1958," Review of Economics and Statistics, Vol. 46, 1964, pp. 200-203; and Willard F. Mueller and Larry G. Hamm, "Trend in Industrial Market Concentration, 1947-1970," Review of Economics and Statistics, Vol. 56, 1974, pp. 511-520.

tended to show increased geographical concentration, whereas rapidly growing industries tended to show a decrease in concentration (increase in scatter).[4] The growth rate can diminish even without such interruptions as national economic recessions. According to the growth cycle theory of industrial development, most industries tend to exhibit a common course of evolution involving a period of experimentation, a period of rapid growth, a period of diminished rate of growth, and period of stability or decline.[5] In an industry in the declining (or at the later) stage of evolution, then, geographical concentration is a normal companion of economic concentration. In the mobile home industry, this has been the trend since 1973, and it can be expected to continue.

There is a difference between the mobile home industry and other industries in the degree of both economic and geographical concentration. Although there are national firms producing mobile homes, their individual plants basically compete in regional markets because of the high transportation costs. This characteristic of the mobile home market allows small firms and single-plant firms to continue if they have well established access to their regional market.

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[4]Victor R. Fuchs, Changes in the Location of Manufacturing in the U. S. Since 1929 (New Haven: Yale University Press, 1962), p. 284.

[5]Evance B. Alderfer and H. E. Michl, Economics of American Industry (New York: McGraw-Hill Book Co., 1957), p. 12-16; John H. Thompson, "Some Theoretical Considerations for Manufacturing Geography," Economic Geography (Vol. 42, 1966), pp. 356-365; and Simon Kuznets, Economic Change: Selected Essays in Business Cycles, National Income, and Economic Growth (New York: W. W. Norton & Co., 1953), p. 254.

Future of the Mobile Home Industry

Mobile home demand is expected to grow because of the lower cost housing the industry offers compared to the sharply rising prices for conventional homes in recent years. Although prices of both mobile and conventional homes has increased, the gap in absolute amount of price has widened. The mobile home industry today is producing homes of large size and more durable construction than ever before. Another trend is away from single-section units to multi-section units which are similar to modular housing units.[6] Mobile home sales also show a strong movement toward multi-section housing installed on permanent foundations. In the past, much of the negative image of mobile homes resulted from the transient nature of their use. At present, the terms "modular" and "mobile" are often used interchangeably by the Manufactured Housing Institute, a national association of manufacturers and suppliers in the mobile and modular homes industry, because both of the products are factory built homes and the only difference between them is the construction code to which the homes were built.[7]

George J. Stigler has suggested that vertical integration should be the typical development in a declining industry, with vertical

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[6]A modular home is a type of manufactured housing which complies with a construction code other than the National Mobile Home Construction and Safety Standards Acts of 1974. Like a multi-section mobile home, a modular home is built in two or more sections in a factory, transported and assembled. In general, it has comparable quality to that of a conventionally built structure.

[7]The Manufactured Housing Institute, Quick Facts (Arlington, Virginia, 1980), p. 2.

disintegration prominent in growing industries.[8] It is very unlikely that the mobile home industry will move to backward integration into building materials because of the high absolute costs of entry into the aluminum, lumber or steel industries. It is possible, however, that mobile home firms might integrate with manufacturing of furniture, or the selling of mobile home parts and components. It is expected that vertical integration into marketing (retail dealerships) will increase by acquisition of existing multi-outlet mobile home dealerships. This form of integration has already proven successful.

In the future some modifications of present patterns of the mobile home industry are likely with further closures of existing marginal plants and firms as the industry either declines or grows very slowly. Present regional production concentrations will increase in relative importance even though the size of mobile homes continue to be increased. Basic regional patterns of today, however, are expected to remain. They have evolved for decades in relation to many factors such as markets, transportation, and competition among producers, and they represent a great deal of inertia.

A Policy Implication

Small rural communities often seek out and are attractive to industries that require low-technical and low-professional skills. If there is a choice between a single-plant firm (often owned by a local

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[8]George J. Stigler, "The Division of Labor is Limited by the Extent of the Market," The Journal of Political Economy, Vol. 59, No. 3 (1951), pp. 185-193.

entrepreneur) or a branch plant of a large multi-plant firm, the branch plant would appear to offer greater stability in employment. Though the branch plant is controlled from outside the local area, it has the advantages, as this study shows, of better ability to survive in time of business downturn or economic recession than a single-plant firm.

Possible Improvements in Future Studies

Needs for improvements on this study include investigations of multi-product (multi-industry) firms and their influences on the growth and the survival of plants. Many large corporations produce more than one product through their divisions or subsidiaries. The product-diversified firm may or may not operate multi-plants in mobile home industry. Another improvement can be achieved by examining ownership changes of plants while the production facility remains in the same location, and by investigating transfer of plants into another area by the same ownership.

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APPENDIXES

APPENDIX A

QUESTIONNAIRE TO SINGLE-PLANT FIRMS

IN MOBILE HOME MANUFACTURING

1. History of this company:

   a. Year this plant was established_____
   b. Previous experiences in business of the founder(s):
      ____Mobile home manufacturing
      ____Mobile home (or recreation vehicle) sales
      ____Conventional housing construction
      ____Others_____
   c. Was the founder(s) a local people at time this plant opened?_____
   d. Was this plant relocated from other area?_____

2. Form of organization of this company
   Please indicate whether this establishment is a:
      ____Independent firm with no branch plants of its own.
      ____A division or a subsidiary of another mobile home manufacturing firm.
      ____A division or a subsidiary of a firm which is in other industry.

3. Type of business.
   What are the major product(s) and secondary product(s) you produce at this plant?
      ____Mobile homes.
      ____Modular housing units.
      ____Recreational vehicles.
      ____Non-residential units such as motel, office or hospital units.
      ____Others_____

   Does your company have any other kinds of business besides mobile home manufacturing? Yes___, No___; if yes, what kinds?
      ____Manufacturing of mobile home parts and components.
      ____Mobile home retailing or wholesaling.
      ____Wholesaling of mobile home parts and components.
      ____Wholesaling of lumber and wood products, aluminum or steel.
      ____Mobile home park development and/or operation.

4. Employment.
   Present number of employees:
   ____less than 20 employees.
   ____20-49
   ____50-99
   ____100-249
   ____250 and more

   What percentages of the employees are part time employment in peak season?_____

5. Please list the locations of retail sales outlets for your mobile homes by town and state for the last three months.

APPENDIX B

QUESTIONNAIRE TO PARENT FIRM IN MOBILE HOME MANUFACTURING

The following questions are about the interdependency of your branch plants to their parent company.

1. Do you select (or provide) the suppliers for raw materials (such as lumber and wood products, aluminum and steel) for your branch plants? Yes___, No___; if yes, what proportion do you select?_____

2. Do you select (or provide) the suppliers for parts and components of mobile home manufacturing for your branch plants? Yes___, No___; if yes, what proportion do you select?_____

3. Do you control the amount of production and the price range of mobile home of your branch plants? Yes___ No___; if yes, what proportion do you control?_____

4. Do you select retailers of mobile homes for your branch plants? Yes___ No___; if yes, what proportion do you select?_____

5. Do you totally own your branch plants? Yes___, No___; Which ones do you own?_____

6. Were parent corporation funds used to start your branch plants? Yes___, No___; if yes, what proportion of the parent funds were used?

7. Do your branch plants borrow funds from the parent company for their operations? Yes___, No___; if yes, what proportion of the funds for their operations do you provide?_ _____

8. Overall, how strong are the ties between you and your branch plants? _____

VITA

Manik Hwang was born in Korea on January 4, 1940. He graduated from Kyong-Book High School, Teagu, Korea, in 1958. He entered the Seoul National University, Seoul, Korea, in 1959, received a Bachelor of Arts degree in Geography in 1963 and a Master of Arts degree with a major in geography in 1967. He came to the United States in 1969 to study at the University of Colorado at Boulder in 1969 and received a Master of Arts degree with a major in geography in 1972. He also studied briefly at the University of Alberta, Edmonton, Canada, from September 1972 to June 1973. In September 1973, he enrolled in The University of Tennessee, Knoxville and received the Doctor of Philosophy degree with a major in geography in June 1982.

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