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INFLUENCING THE LOCATION OF AN EVOLVING
RESIDENTIAL LAND USE.

Michigan State University, Ph.D., 1976
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**MOBILE HOME PARKS IN SOUTHERN MICHIGAN:
FACTORS INFLUENCING THE LOCATION OF
AN EVOLVING RESIDENTIAL LAND USE**

By

William Henry Cheek

A DISSERTATION

**Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of**

DOCTOR OF PHILOSOPHY

Department of Geography

1976

ABSTRACT

MOBILE HOME PARKS IN SOUTHERN MICHIGAN: FACTORS INFLUENCING THE LOCATION OF AN EVOLVING RESIDENTIAL LAND USE

by

William Henry Cheek

This study is concerned with the location of an evolving and often controversial residential land use. The recent accelerated rate of construction of mobile home developments in many areas of the nation has been documented. The accompanying changes and the numerous and important implications to those concerned with American housing and the growth of metropolitan areas are less well understood.

The study recognizes both the relative complexity of mobile home park location and the element of change. Within this context a large number of site and area factors expected to influence the intrametropolitan location of parks were enumerated. These include: (1) accessibility to the urban center, employment, and major highways, (2) availability of undeveloped land, (3) characteristics of the immediate area including land use, socioeconomic prestige level, and features incompatible to residential development, and (4) institutional factors of zoning and availability of municipal services. These factors were intended to encompass both older and more recent construction. However, in view of the evolutionary process, the

relative importance of the factors were expected to vary between different periods of mobile home park construction.

Analysis of these factors was conducted in Genesee County, Michigan of the Flint Standard Metropolitan Statistical Area. The sixty developments containing over 8,500 spaces constructed prior to January, 1974 were used in the analysis. Thirty-six parks were constructed prior to 1958, and the remaining twenty-four opened between 1965 and 1973.

Data for this research were obtained from a variety of sources. Much of the basic data were obtained from files and reports of the Michigan Department of Health which licenses all parks in the state. Low altitude aerial photography and high altitude RB-57 imagery provided adjacent and area land use data. Information pertaining to zoning and other site characteristics was obtained from published planning and zoning reports and maps. Pertinent social and economic data were extracted from 1960 and 1970 census materials. Field investigations were carried out primarily between January and July, 1973. Numerical description, cartographic presentation, and simple statistical techniques were employed in the research.

Findings indicate that the dichotomy of mobile home developments based on age and the use of site and

area factors is a valid approach in the analysis of park location. The substantial differences in size, density, and amenity features are indicative of internal change between the different periods of park construction. The relative importance of combinations of site and area factors influencing park location of the two periods also indicated change. Of particular significance was the increasing importance in factors of the area environment including adjacent and area land use, especially unmixed adjacent land use, the socioeconomic level of the immediate area, and the absence of nearby negative features.

Availability of municipal services were of less influence than had been expected. Modern mobile home developments, however, as indicated by adjacent and area zoning, were more greatly influenced by residential zoning and the absences of commercial and industrial zoning than were parks constructed during the earlier period.

The implications of this research center primarily on the evidence of change and of complexity involved in mobile home park location. The internal changes including larger size of parks, lower densities, and greater amenities are more easily recognized than those involving location. Evidence indicates, however, that the modern mobile home development has evolved in a relatively short time span so that a large number of site and area factors must be included in locational studies. The findings suggest a

convergence toward similar site and area factors influencing other forms of residential development and mobile home parks.

ACKNOWLEDGMENTS

There are many people who helped me during this research effort. I wish to express my thanks to my committee which was chaired by Dr. Gary Higgs and consisted of Dr. Gary Manson, Dr. Clarence Vinge, and Dr. Raleigh Barlowe. My colleagues in the Department of Geography and Geology at Southwest Missouri State University offered encouragement and criticism that was most appreciated. Ms. Betty Hindman did an excellent job in typing the manuscript. Finally I express a very special thanks to my wife Maret, and my daughter Karen, for their love, patience, understanding, and encouragement during the work on this dissertation.

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CHAPTER ONE

INTRODUCTION

Mobile Homes and the Housing Supply

The Increasing Importance of Mobile Homes

The single family dwelling has long been the dominant form of housing in the United States. As recently as 1958, approximately 80 percent of new dwellings added annually were single family detached homes (U.S. Department of Commerce, 1959) (Figure 1). In recent years, however, this percentage has decreased. Apartments have accounted for much of the decline. Comprising slightly over 10 percent constructed in 1956, two-or-more family dwellings made up over 35 percent of new housing starts between 1969-1973 (U.S. Department of Commerce, 1974).

A more recently emerged housing alternative is the mobile home. Since 1956, mobile home production increased proportionally from 10 percent to almost 22 percent of new housing additions by 1974. Between 1969-1974, the proportion has been in the 20-22 percent range (U.S. Department of Commerce, 1974).

Geographical Variation of Mobile Homes

Aggregate national data conceal very important

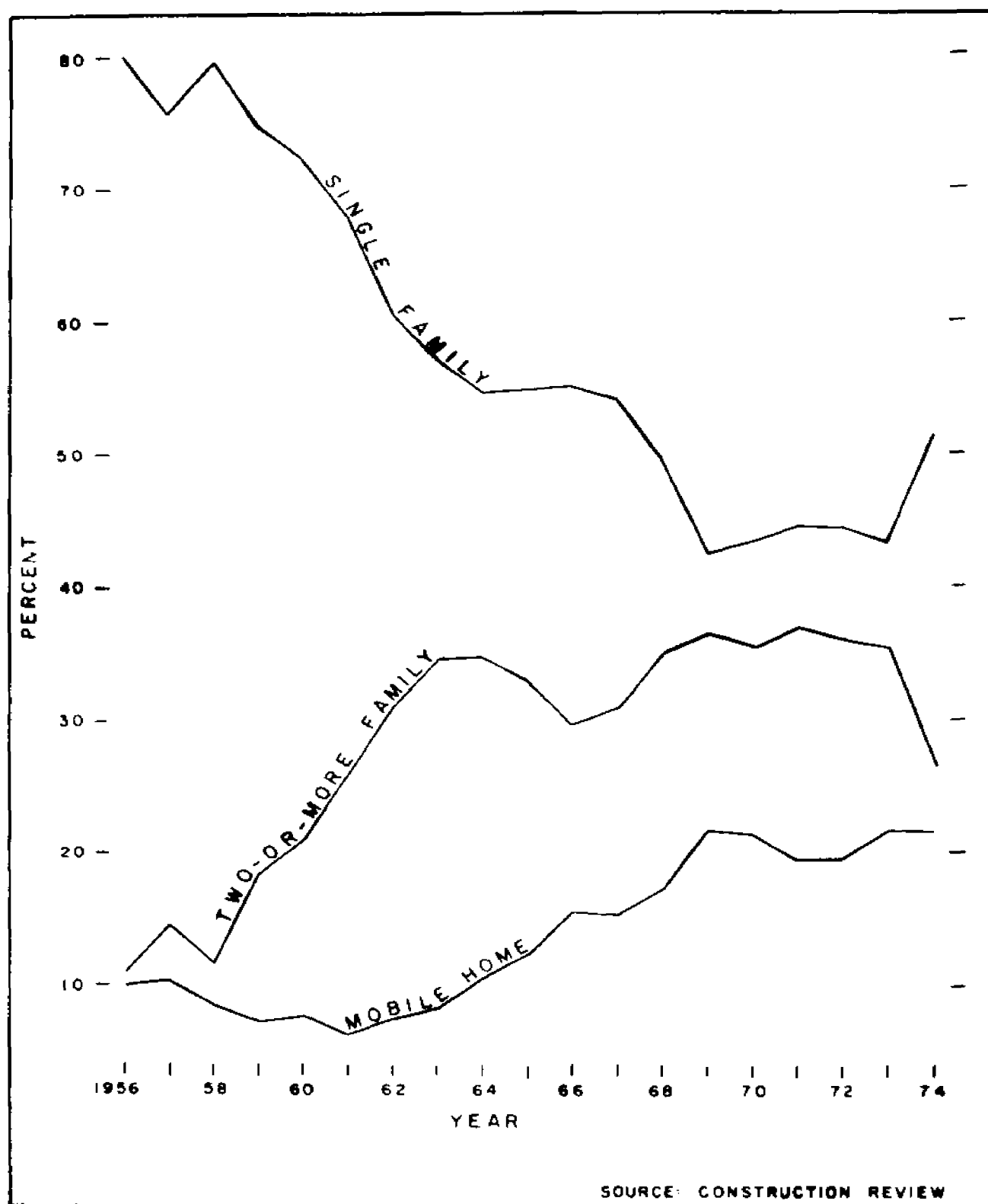


Figure 1. Percent of annual starts by type of housing: 1956-1974 (Source: Computed from data in Construction Review, U.S. Department of Commerce).

information about mobile housing. Figures derived from the 1970 Census of Housing show that mobile homes accounted for 3.1 percent of year-round housing in 1970 (U.S. Bureau of the Census, 1972b: 242-247). Based on census regions, however, this proportion varied from 1.45 percent in the Middle Atlantic States to 6.43 percent in the Mountain States. Within the 48 contiguous states, the extremes in proportions of mobile homes to year-round housing were from 0.59 percent in Massachusetts to Nevada's 11.95 percent (Figure 2).¹ Thus, mobile homes are an increasingly important part of the nation's housing, but their importance varies considerably from region to region.

Mobile Home Developments

At first glance, 3.1 percent of total year-round housing for the nation as a whole, or even Nevada's approximately 12 percent, seems almost insignificant. However, it should be remembered that only during the past ten years has annual production reached even 200,000 mobile homes. Presently, an estimated one-half of all mobile homes are on individual lots particularly in small towns and rural areas (Swaback, 1971: 327; Cloos and Birgells, 1972: 9). Within metropolitan areas, however, and

¹The computer mapping routine, CPLETH, was written by Dr. Waldo Tobler of the Department of Geography, University of Michigan. The program is on permanent file at the Computer Center, Southwest Missouri State University.

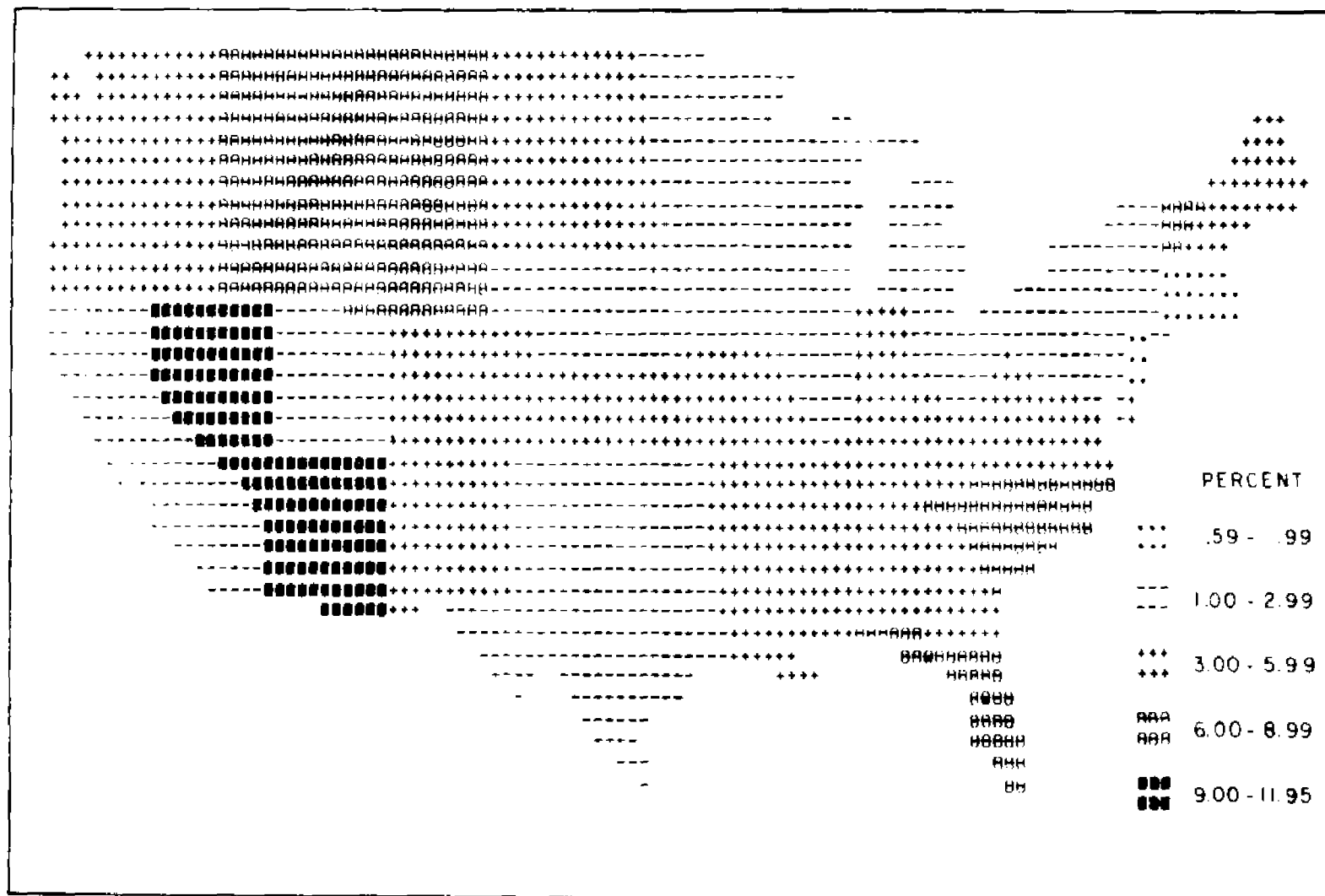


Figure 2. Mobile homes as a percent of year-round housing, 1970 (Source: U.S. Bureau of the Census, 1972b).

increasingly elsewhere, newly purchased mobile homes are being situated in mobile home parks (developments,² courts) (U.S. Department of Housing and Urban Development, 1968: 76, 111). Thus, as production of mobile homes has increased a new form of residential land use has emerged.

Mobile home developments have many implications to those concerned with American housing and the growth of metropolitan areas. For example, mobile homes are virtually the only form of low-cost housing available in today's housing market. Of housing which sold for under \$20,000 in 1972, 85 percent were mobile homes (Galetschky, 1974: 3) and low initial cost is often given as a major reason for the increasing sales of mobile homes (Boley in Newcomb, 1971: 5). While shipments have been over 300,000 annually for the past seven years, park spaces (lots, pads) have been added at less than one-half that rate (Knight, 1971: 216; Huntoon and Kirk, 1971: 65).

Assuming the placement of mobile homes in parks continues to increase with production and use, decisions

²The Federal Housing Administration defined a mobile home development as:

A parcel of land under single ownership which has been planned and improved for the placement of mobile homes for non-transient use (Federal Housing Administration, 1970: 51).

This definition will be used throughout this investigation and mobile home "parks" and "developments" will be used interchangeably.

concerning mobile home developments will be required by policy makers. The frequency of these decisions will increase as well as the number of places making such decisions. Yet all too little is known about mobile home developments.

Need for Research

Adequate information is a necessity before wise decisions can be made. Part of this information should include knowledge of how mobile housing, including mobile home developments, varies from place to place, but location is one of the most neglected topics in the limited literature on mobile housing.

Mobile housing has its greatest direct impact on local areas. It is at this level that most studies considering spatial variation of mobile housing have been conducted. There is need for more research at the local level as Knight (1971) suggested:

Planners and local governments should develop an active interest in the mobile home industry and its potential impact on urban life. Through its adaptability and technological advantages, the mobile home holds near absolute domination over the low-cost housing market, and gives promise of continuing its phenomenal market expansion. However, hard data and analysis--on the impact of mobile homes on the housing situation and urban form in general, and evaluation of public policy and its determinants--are meager. The need and opportunity for significant and immediately-usable research is great and should be answered (Knight, 1971: 213).

Compared to other housing forms, scholarly studies concerning any facet of mobile housing are few in number.

This is partly due to the recent emergence of mobile homes as an important part of American housing. Thus far, business writers, housing specialists, and economists have authored much of this literature and the main concern has been to provide basic technical, financial, and tax information. Geographers have largely ignored mobile housing.

Studies dealing with mobile home construction, taxation, and finance, as well as resident characteristics and zoning regulations, are necessary so that proper decisions can be made. Also needed are studies concerning the location of mobile home developments. This research is intended to provide part of that missing information.

The Changing Role of Mobile Housing

Mobile homes have evolved from a highly portable, often transient dwelling to a form of manufactured housing which is relocatable only with a great deal of difficulty. As mobile homes have changed, so too have mobile home parks. Instead of being a parcel of land designed for parking a small trailer, the modern mobile home development reflects a small subdivision in many ways.

The evolution of mobile homes has been documented (Newcomb, 1971: 7-14). Curiously absent, however, is an assessment of changes in the location of parks. More recently constructed developments are larger, have more amenities, and are designed for permanent (or at least

semi-permanent) placement of homes. One would expect that the combinations of site and area factors influencing the location of newer parks should differ from those of older ones. Yet few reports have considered these differences.

The role of mobile housing has changed and locational decisions based on past experience are often unsatisfactory today. Considering the nation's housing needs, the expanding use of mobile homes, the widespread concern about urban sprawl, coupled with the inadequate and often incorrect information about mobile homes, any knowledge of the spatial aspects of mobile home development should be viewed positively.

Many reports have actually perpetuated the confusion surrounding mobile homes. Lengthy discourses taking either a favorable or unfavorable stance concerning mobile housing have filled many reports. Whether or not public officials and members of the academic community are convinced that mobile homes are a viable housing alternative is irrelevant. The fact is over one-half million mobile homes have been manufactured and sold annually. This is sufficient evidence that a large segment of the population has already determined that mobile homes are a part of American housing. Public decision makers can no longer ignore or prohibit mobile homes and mobile home parks. Researchers must offer more than lengthy definitions, restatements of bias by public officials, and pages

of "typical" site plans of parks supplied by mobile home industry associations.

Purpose of Research

This dissertation is concerned with an evolving and often controversial residential land use. After reviewing pertinent literature, including a discussion of the geographic variation of mobile home developments in the United States and in Michigan, this study will:

- 1) Enumerate a set of site and area factors thought to influence the intrametropolitan location of mobile home developments.
- 2) Investigate these factors using Genesee County, Michigan as the primary study area.

In the context of the stated purpose, the following statements are made to guide the research effort:

- 1) A large number of site and area factors are necessary to account for the intrametropolitan location of mobile home developments. These include:
 - a) Accessibility to the urban center, employment opportunities, and to major highways.
 - b) Availability of undeveloped land.
 - c) Characteristics of the physical and social environment of the immediate area.
 - d) Institutional factors including zoning and the availability of municipal services.
- 2) Different types of parks will be influenced by varying combinations of site and area factors.

The Study Area

Michigan provides excellent opportunities for research concerning mobile housing. Mobile home manufacturing originated in southern Michigan and northern Indiana (Wheeler, Callahan, and Brewer, 1973: 92). Michigan is among the ten leading states in numbers of mobile homes (U.S. Bureau of the Census, 1972: 242-247), in mobile home sales (Mobile and Recreational Vehicle Merchandiser, 1974: 16), and in numbers of developments and spaces (Woodall's, 1971). Michigan also has statewide minimum requirements for developments (Michigan Department of Health, 1971). One agency, the Department of Health, licenses mobile home parks and certain basic information is available from this agency.

This research specifically concerns development location within metropolitan areas. The majority of the state's development spaces are located in Standard Metropolitan Statistical Areas (SMSA's). Of Michigan's seventeen metropolitan counties, Genesee County of the Flint SMSA was chosen as the specific study area for a variety of reasons (Figure 3). Among the factors influencing the selection of Genesee County were:

- 1) Absence of features such as military establishments, large universities, or retirement attractions which would underemphasize the housing supply aspect of parks (Newcomb, 1971: 41).
- 2) Importance of mobile home developments. There were sixty developments with more

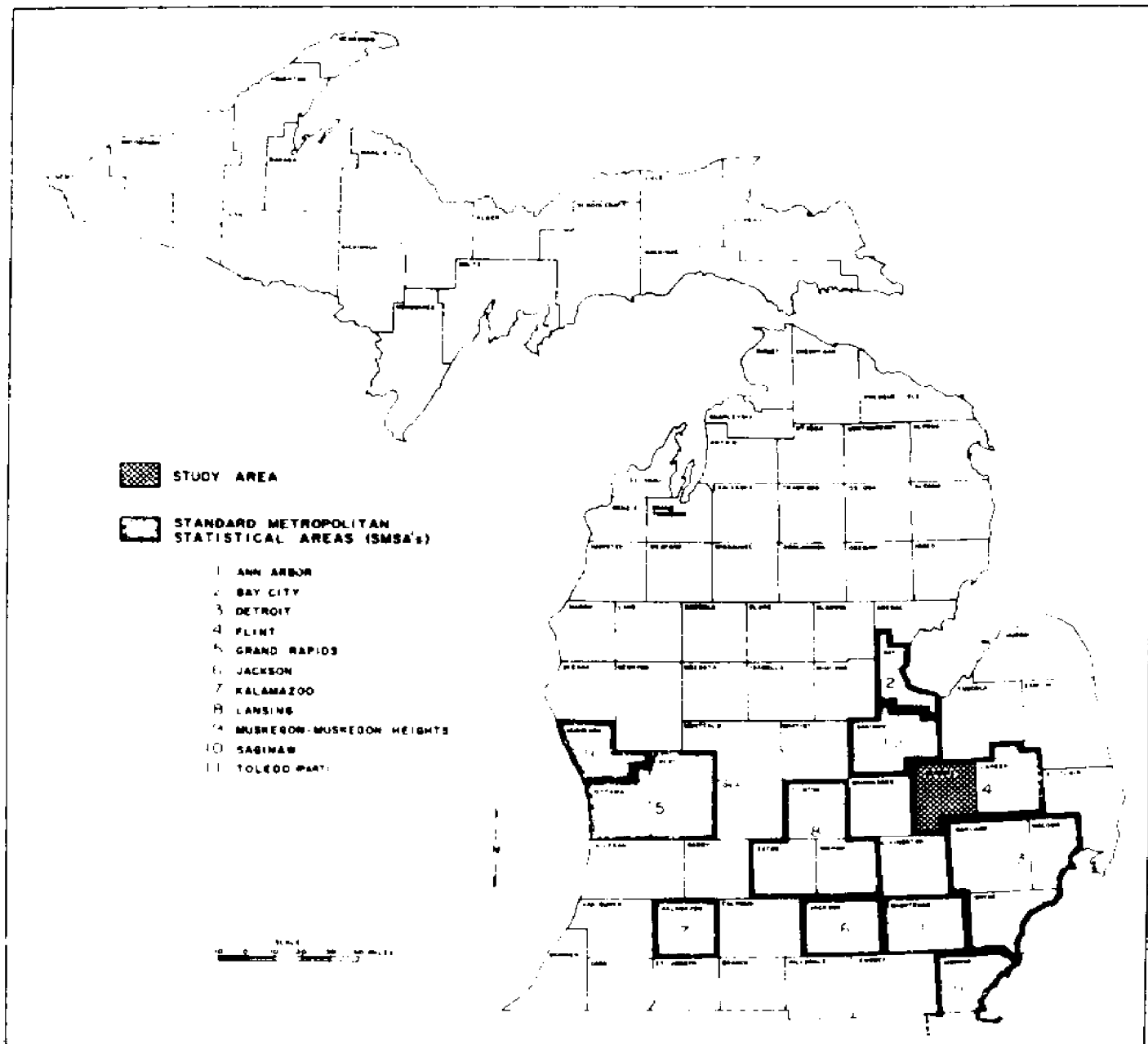


Figure 3. Michigan showing study area and SMSA's.

than 8500 spaces at the end of 1973 (Figure 4).

- 3) Variety in size, ages, and amenities of the sixty developments.

Organization of the Study

Chapter Two is devoted to a review of literature pertinent to the problem. Also included will be a description of the regional variation of mobile home developments and of the approach used in this research. The determination of site and area factors is presented in Chapter Three. Chapter Four is an overview of mobile home developments in Genesee County (Flint), Michigan. The analysis of site and area factors influencing parks in the study area is found in Chapter Five. Chapter Six presents the major implications and conclusions of this research.

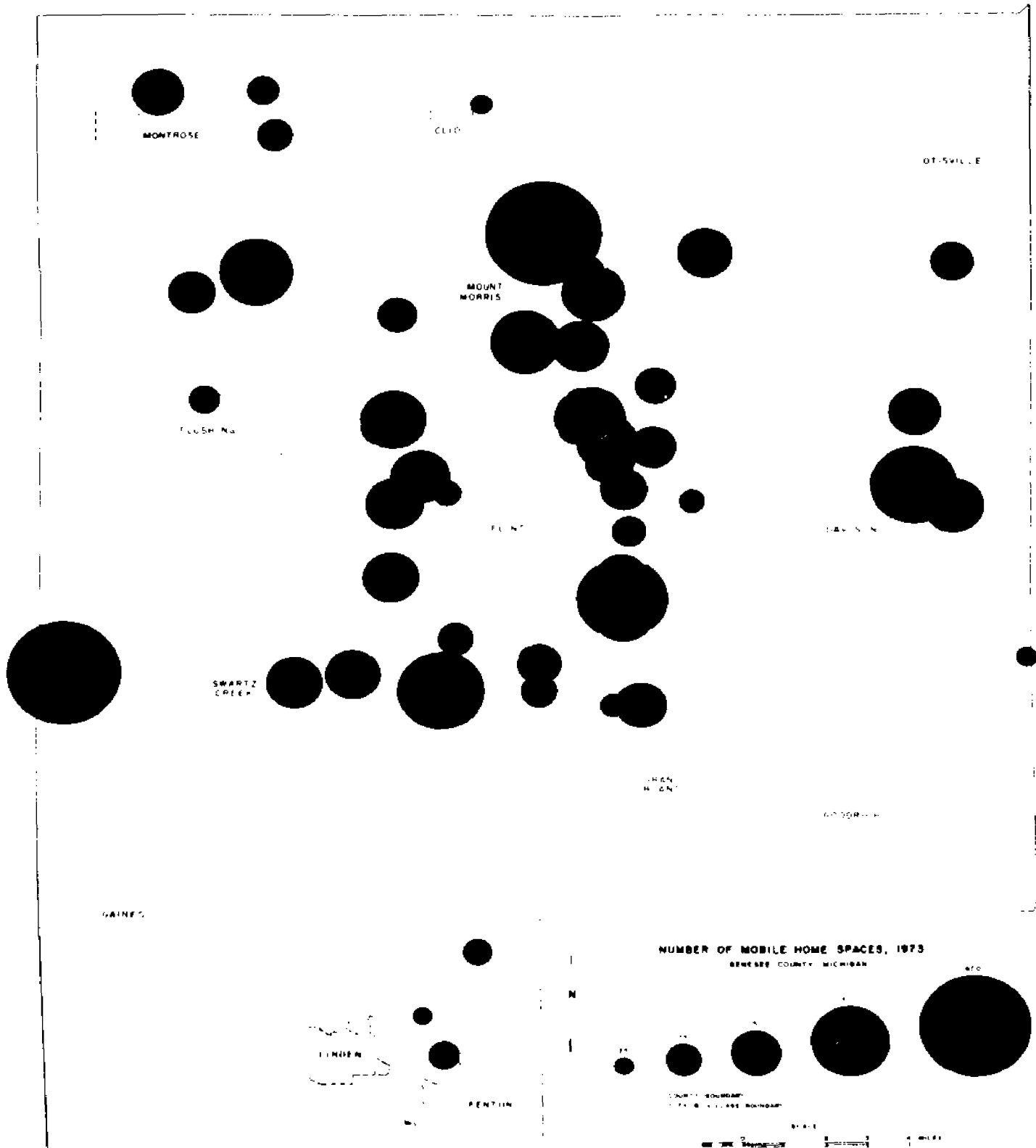


Figure 4. Location and size of mobile home developments in the Genesee County study area (Source: Michigan Department of Health and field data).

CHAPTER TWO

A BACKGROUND TO THE RESEARCH

Introduction

Even with the rapid increase in the use of mobile housing in the United States, literature concerning many of its facets is limited. It is true that articles concerning mobile housing in the popular press are more numerous than in the past. These tend to be reports on the rapid growth of their manufacture and sale or expressions of concern about the effects mobile homes and parks have on American housing or the local community. Except as sometimes interesting reading, these reports are of little direct utility to either public decision makers or researchers.

Of concern in this section will be that portion of the literature consisting of research reports. These too are limited but perhaps this should be expected. Mobile homes comprise only slightly over 3 percent of the nation's housing supply. Further, mobile home developments are of very recent origin as a part of residential land use. It could be that mobile housing has been thought too inconsequential to date to be of major concern. As stated in a recent publication:

It may well be in the future that the mobile home industry will play a much larger role in providing housing for Americans, especially for lower-income people, and land conversions to this type of residential occupancy will thus grow in importance (Clawson, 1971: 91).

Mobile Home Research

A common characteristic of much mobile home research has been an all inclusive approach. The tendency has been to cover numerous topics; a typical format includes a brief history of the industry, a section describing household characteristics, perhaps one on manufacturing, and a portion devoted to mobile home parks. No doubt there has been a need for this approach in the past. The time has come, however, to concentrate on certain identifiable problems of mobile housing.

The focus of this research is location of mobile home developments. Location has not been an important consideration in most previous studies of mobile housing. This is partly due to few geographers conducting research on the subject (See Abu-Ayyash, 1972: 28-30). With few exceptions whenever location was considered, it has been treated superficially. It should also be noted that few researchers have separated mobile home location in general from mobile home development location. While parks are obviously related to the distribution of mobile homes, an estimated 50 percent are on individual lots and there are likely to be different factors involved. However, certain information from this literature bears on

the question of development location and provides a starting point for this study.

The desire to know more about the characteristics of mobile home households has been one of the most common themes and dates back to the 1940's (Cowgill, 1941). At first, the concern was the adverse effects of "trailer life" (Fuller and Meyers, 1941). Later, findings indicated a rather wide range of characteristics and more heterogeneous mobile home households than originally thought (Lemert, 1951; Edwards, 1964; French and Hadden, 1965: 136-138; Drury, 1972: 53-71; Newcomb, 1971: 27-32).

One of the problems with drawing definitive conclusions from these studies was the sample on which they were based (Newcomb, 1972: 28-30). For example, a survey taken by the Census Bureau for the Department of Housing and Urban Development in 1965-66 was not a survey of all mobile home households (U.S. Department of Housing and Urban Development, 1968: 66-148). Rather, it was a sample of purchasers of new mobile homes. It found the "typical" mobile home household (meaning modal group or median) to be younger and smaller than the national average. The head of household typically had a high school education and was employed in a blue collar occupation. Additionally, the family's income was generally below the national median. This report, however, indicated a wide range of

characteristics for purchasers of new mobile homes. Interestingly, the spatial variation of these characteristics was not reported even in tabular form.

The most comprehensive report of the social and economic characteristics of mobile home residents to date was a special publication of the 1970 Census of Housing (U.S. Bureau of the Census, 1973b). The sample was drawn from all mobile home households and thus provided a much broader base from which to draw conclusions than did previous surveys. Certain of the findings are important to the present investigation.

Several items are particularly striking (Table 1). The vast majority of mobile homes were owner occupied (84.5 percent compared to 62.9 percent of all housing)³ and an even higher percentage were occupied by whites (97.7 percent compared to 89.2 percent nationally). Most mobile homes were classified as rural (60.9 percent) and were located outside Standard Metropolitan Statistical Areas (55 percent).

The rural, non-metropolitan location was reported in studies based on the more limited information contained in the 1960 Census of Housing. For example, it was found that mobile homes, whether in a park or on an individual lot, were inversely related to population densities within

³National data used for comparative purposes in this section were derived from the 1970 Census of Population (U.S. Bureau of the Census, 1972e) and Census of Housing (U.S. Bureau of the Census, 1972f).

Table 1

Mobile Home Household Characteristics: 1970

General

Owner occupied units	84.50%
In SMSA's	45.01
Rural	60.92
Urban	39.08
Percent with Black Head of Household	2.35
Total mobile home units	2,073,994

Family Income

Below \$4,000	18.77%
\$4,000-\$9,999	52.71
\$10,000-24,999	27.69
over \$25,000	0.83
Median family income	
Owner occupied	\$7,800
Renter occupied	5,800

Age, Head of Household

Under 25	18.11%
25-34	24.33
35-64	40.35
65 and over	17.21

Occupation, Head of Household

Professional, technical & kindred	6.30%
Managers and Administrative	4.99
Clerical and Sales Workers	8.42
Craftsmen & kindred	17.97
Other Blue Collar	22.56
Farm Workers	2.71
Service, including private household	6.17
Occupation not listed	30.88

Source: U.S. Bureau of the Census, 1973^b

SMSA's (French and Hadden, 1965: 133-134). They were most important in metropolitan counties not containing the central city and were "in fact, a kind of suburbia" (French and Hadden, 1965: 133). The HUD survey mentioned previously concluded that new mobile homes typically were located in parks and:

. . . contribute significantly to housing supply outside of the central city and particularly in smaller communities outside of Standard Metropolitan Statistical Areas (U.S. Department of Housing and Urban Development, 1968: 67-68).

The special report on mobile homes (U.S. Bureau of the Census, 1973b) substantiates previous surveys in other respects as well. For example, the median income of owner occupied mobile homes was almost \$1,800 below that of the national norm. Further, while all income categories were represented, almost three quarters (71.5 percent) had an income under \$10,000 in 1969. Nationally, 52.7 percent of all families were in that category.

Compared to national norms, two age groups were more heavily represented in mobile home households. There were 17.2 percent of household heads in the age 65 and over category in mobile homes. The largest single age group occupying mobile homes were under age 35 with 41.4 percent in this category.

While all occupation categories were represented, "craftsmen and kindred workers" and "other blue collar workers" comprised two-fifths (40.5 percent) of the occupations of heads of households. This supports the

findings of previous reports.

The Census Report tabulated data from a sample of all mobile homes with no distinction between units located in parks or on individual lots. As mentioned previously, this has been typical of most articles, reports, and surveys.

Such information is important, but it also raises certain questions. How do these characteristics vary within the United States? Are the factors associated with mobile home location the same as those associated with the location of mobile home developments?

It has been assumed that growth in population and formation of households are important reasons for mobile home sales (Close and Birgell, 1972: 5; Goldblatt and Pitcher, 1972: 7). Particularly important are concentrations of younger families with lower incomes. These reasons at least partially help to account for the rapid increase of mobile home sales in the Southeast (Wheeler, Callo, and Brewer, 1973: 95) and the West.

Not only has the South led the nation in sales of mobile homes, but it also was the leading region in total numbers of homes in 1970 (Powell, 1975: 28). However, mobile home developments are relatively unimportant in that region.

Mobile Home Developments in the United States

Data Source

No public data sources are available concerning developments for the country as a whole. The most complete source presently available on state-by-state park characteristics is Woodall's Mobile Home and Park Guide published annually by the Woodall Publishing Company of Chicago. Not all parks are listed in this directory. Of the some 24,000 parks (Knight, 1971: 216) in the United States, approximately 13,000 were listed and rated on the basis of quality in the 1972 edition (Woodall's, 1971). It can be assumed, however, that the vast majority of larger and better quality parks were included. Since all parks were not listed, rankings are used instead of actual numbers in the following discussion.

Distribution of Developments

Developments, based on numbers of spaces, were concentrated in two regional clusters of states (Figure 5). In the West, California alone contained some 19 percent of the country's more than 1,100,000 spaces listed (Woodall's, 1971). The four states adjacent to California combined had fewer spaces than in California, but had greater numbers than could be expected on the basis of population. For example, Arizona, Washington, and Oregon ranked fifth, tenth, and twelfth respectively in numbers of spaces and Nevada ranked twenty-first. In total, these



Figure 5. Number of mobile home development spaces by state, 1970
(Source: computed from data contained in Woodall's, 1971).

five Western states contained some 29 percent of the development spaces in the United States.

A second cluster was apparent in the Great Lakes area. Michigan, Ohio, and Illinois had the greatest numbers but when adjacent Midwestern and Middle-Atlantic states were included, the ten states from Minnesota and Missouri to New York and Pennsylvania had approximately 29 percent of the nation's developments.

Separated from the two main clusters of states, Florida and Texas ranked second and sixth respectively in developments. The concentration (16 percent) in Florida was particularly striking because of the low numbers found in the remainder of the Southeast. Of the Southeastern states, Georgia had the greatest numbers after Florida, yet ranked fifteenth in the nation. Most of the Southern states (Census definition) had fewer than 10,000 spaces listed.

The number of spaces was, as expected, associated with the number of mobile homes in each of the states. The primary exceptions were Southern states where developments were less numerous than could be expected on the basis of mobile homes.

Relative Importance

In many respects the relative importance of developments in the various states is of as much significance as total numbers. A simple yet useful way to

measure the relative importance of mobile home parks is a ratio of the number of development spaces to the total number of mobile homes in each state. In order to more easily compare the relative importance among the states, a development quotient was computed. This was obtained by dividing the ratio of spaces to mobile homes for each state by the ratio for the United States which was .53. The potential value of the development quotient for any state would range from 0 to infinity. The actual development quotients ranged from a low of .25 for West Virginia to California's 2.00.

Development quotients tend to be high in traditional retirement states such as California, Arizona, and Florida (Figure 6). Yet the values are also high in the North Central states and in southern New England where this retirement aspect would be less important. The low quotients in the South and northern New England where percentage increases in mobile homes have been highest suggest an inverse association between mobile home growth rates and developments. Additionally, most of the states with higher than expected quotients have a greater percentage of their mobile homes in metropolitan areas than the national average. It also could be expected that the income of mobile home households would be highest in these same areas.

In order to assess the strength of association, Spearman's Rank Order Correlation Coefficient (r_s) was computed between each of the factors and the development

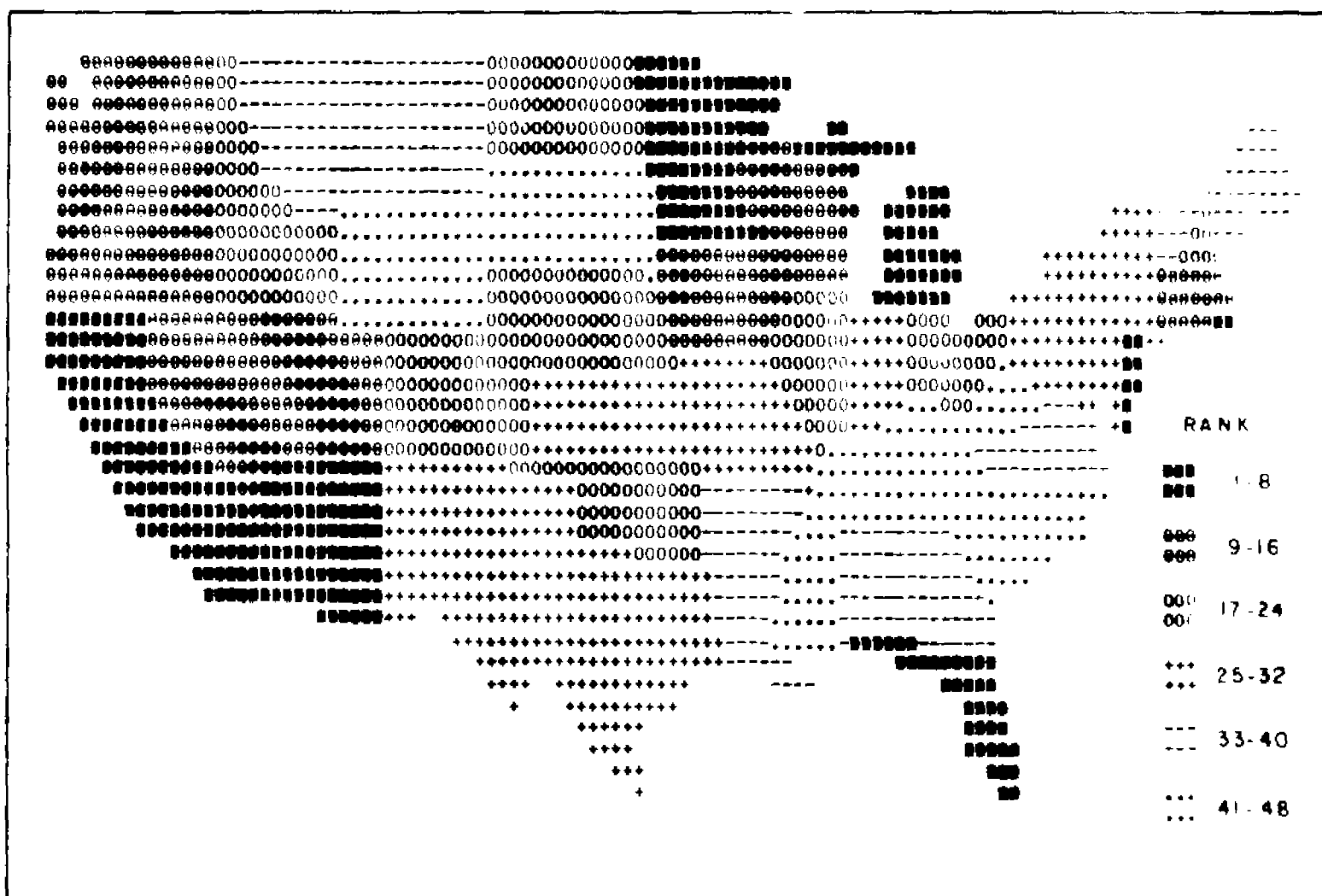


Figure 6. Development quotient by state, 1970 (Source of data: Woodall's, 1971 and U.S. Bureau of the Census, 1973b).

quotient. For a basis of comparison the coefficient was also computed between each of these variables and the mobile home quotient.⁴

Younger households make up the largest age group purchasing mobile homes. However, in terms of relative development importance, the association tends to be with older residents (Figure 7). The correlation coefficient between the development quotient and the percent of mobile home heads of households age sixty-five and over was moderately high ($r_s = .60$) (Table 2). On the other hand, there was a slight negative association between older families and the mobile home quotient ($r_s = -.24$).

The highest coefficient computed was between the development quotient and percent of mobile homes in SMSA's (Figure 8). This positive association ($r_s = .62$) supports the contention that the relative importance of mobile homes and mobile home developments are not one and the same. Mobile homes are generally rural and nonmetropolitan; developments tend to be metropolitan.

Mobile home families generally have lower incomes than families as a whole; however, the higher the income of these families the higher the development quotient ($r_s = .50$). The greatest departures from this association were for Wyoming where parks were relatively unimportant

⁴The mobile home quotient was obtained by dividing the percent of mobile homes to year-round housing for each state by the 3.1 percent national figure.



Figure 7. Percent heads of mobile home households age 65 and over by state, 1970 (Source of data: U.S. Bureau of the Census, 1973b).

Table 2
Development and Mobile Home Location
Quotient and Selected Variables

Variable	Rank Order Correlation Coefficient	
	Development Quotient	Mobile Home Quotient
Percent head of household age 65 and over	.60	-.24
Percent mobile homes in SMSA's	.62	-.53
Median family income	.50	-.38
Percent increase, mobile homes 1960-1970	-.53	.28

Source: Computed from data in Woodall's, 1971 and U.S. Bureau of the Census, 1972b.



Figure 8. Percent of mobile homes in SMSA's by state, 1970 (Source of data: U.S. Bureau of the Census, 1973b).

at one extreme and the retirement states of Florida and Arizona at the other (Figure 9).

Developments tend to be more important where percentage increases in mobile homes were low (Figure 10). The negative association was moderately high ($-.53$) and suggests that areas may go through a sequence of events in regard to mobile housing. For example, as mobile homes become more numerous, household preference, the profit motive, or public regulation create a need for developments. If this holds true, the relative importance of mobile home developments should increase in the South. This idea could be better substantiated if past development data were available for all sections of the nation.

The interstate pattern of mobile home developments adds to the understanding of general regional variation. However, using states as units of observation masks certain information because one or a very few metropolitan areas may contain the bulk of developments in any one state. Unfortunately, few studies of intrastate development location from which comparisons can be drawn have been conducted.

An exception was a Massachusetts study conducted in the mid-1960's (El Gammal, 1966). It was found that mobile home parks in Massachusetts were associated with population, metropolitan areas, main roads and highways, and special function areas--meaning military establishments and universities (El Gammal, 1966: 74-75). The



Figure 9. Median income of owner occupied mobile homes by state, 1969
(Source of data: U.S. Bureau of the Census, 1973b).



Figure 10. Percent change in mobile homes 1960-1970 by state (Source of data: U.S. Bureau of the Census, 1962b; 1972b).

study also indicated the metropolitan location of developments contrasting to the rural location of mobile homes.

Mobile Home Developments in Michigan

Distribution

Unlike Massachusetts which had only 10,928 mobile homes in 1970 (U.S. Bureau of the Census, 1972b), Michigan has ranked consistently high in several measures of mobile housing. In 1970, the state ranked ninth in number of mobile homes with 75,012 units (U.S. Bureau of the Census, 1972b). This was only a slight change from its eighth ranking in 1960, and sixth in 1950 (rankings derived from the 1950 and 1960 Census of Housing). Of more direct concern, however, are developments. Michigan ranked tenth in number of parks, third in number of spaces (rankings derived from Woodall's, 1971), and sixth in relative importance of developments.

In January, 1975, there were over 950 developments with some 87,000 spaces licensed in Michigan (Michigan Department of Health, 1975).⁵ Developments were highly concentrated in the southern portion of the state, particularly in the seventeen counties comprising the state's SMSA's (Figure 11). These metropolitan counties contained approximately 72 percent of Michigan's total developments

⁵Data for this section were compiled from the files of the Michigan Department of Health, Lansing, Michigan. This agency licenses all parks in the state.

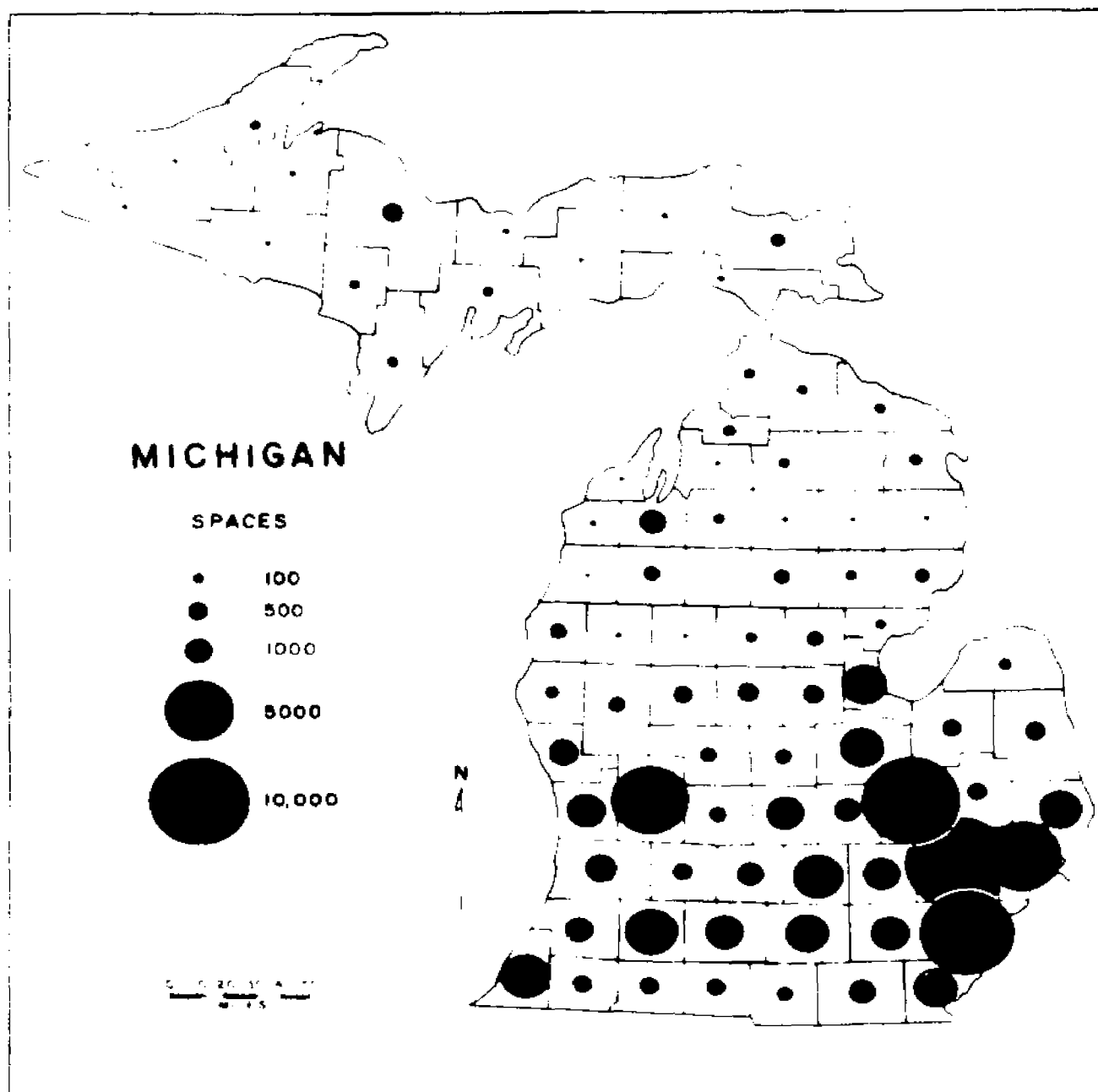


Figure 11. Number of mobile home development spaces in Michigan by county, 1975 (Source of data: Michigan Department of Health).

(spaces). This is similar to the distribution of population, i.e., slightly less than the 77 percent of the state's inhabitants were in metropolitan counties in 1970 (U.S. Bureau of the Census, 1971b).

Unlike mobile homes in general which were 51 percent metropolitan in 1970 (U.S. Bureau of the Census, 1973b), developments were concentrated in SMSA's in 1960 as well. Using the same seventeen counties,⁶ 78 percent of the state's 21,900 spaces were metropolitan in 1960.

The changes that have occurred between 1960-1975 were essentially increases in numbers (Table 3). For example, there was an increase of over 65,000 spaces and 550 developments. The average size of developments increased from 54 spaces in 1960 to 91 in 1975 and only three counties contained no developments in 1975 compared to nineteen in 1960.

Relative Importance

It was generally in metropolitan counties that mobile home developments were of greatest relative importance in Michigan (Figure 12). Three counties (Berrien, St. Clair, and Roscommon) in which the development quotient exceeded one were not in SMSA's. Roscommon County contains few mobile homes or development spaces and the high quotient can partly be accounted for by its importance

⁶There were fourteen counties in SMSA's in 1960. The three counties not included in 1960 were Lapeer (Flint SMSA), Monroe (Toledo), and Ottawa (Grand Rapids).

Table 3
Summary of Michigan Development Characteristics, 1960-1975

Year	No. of Developments	No. of Spaces	Avg. Size of Devpt.	% Spaces in Met. Counties*	Increase over prev. five years	
					total	%
1960	407	21,877	54	78	-	-
1965	511	28,716	56	73	6,839	31.3
1970	747	56,071	75	72	27,355	95.3
1975	956	87,259	91	72	31,188	55.6

Source: Michigan Department of Health

*1970 Definition

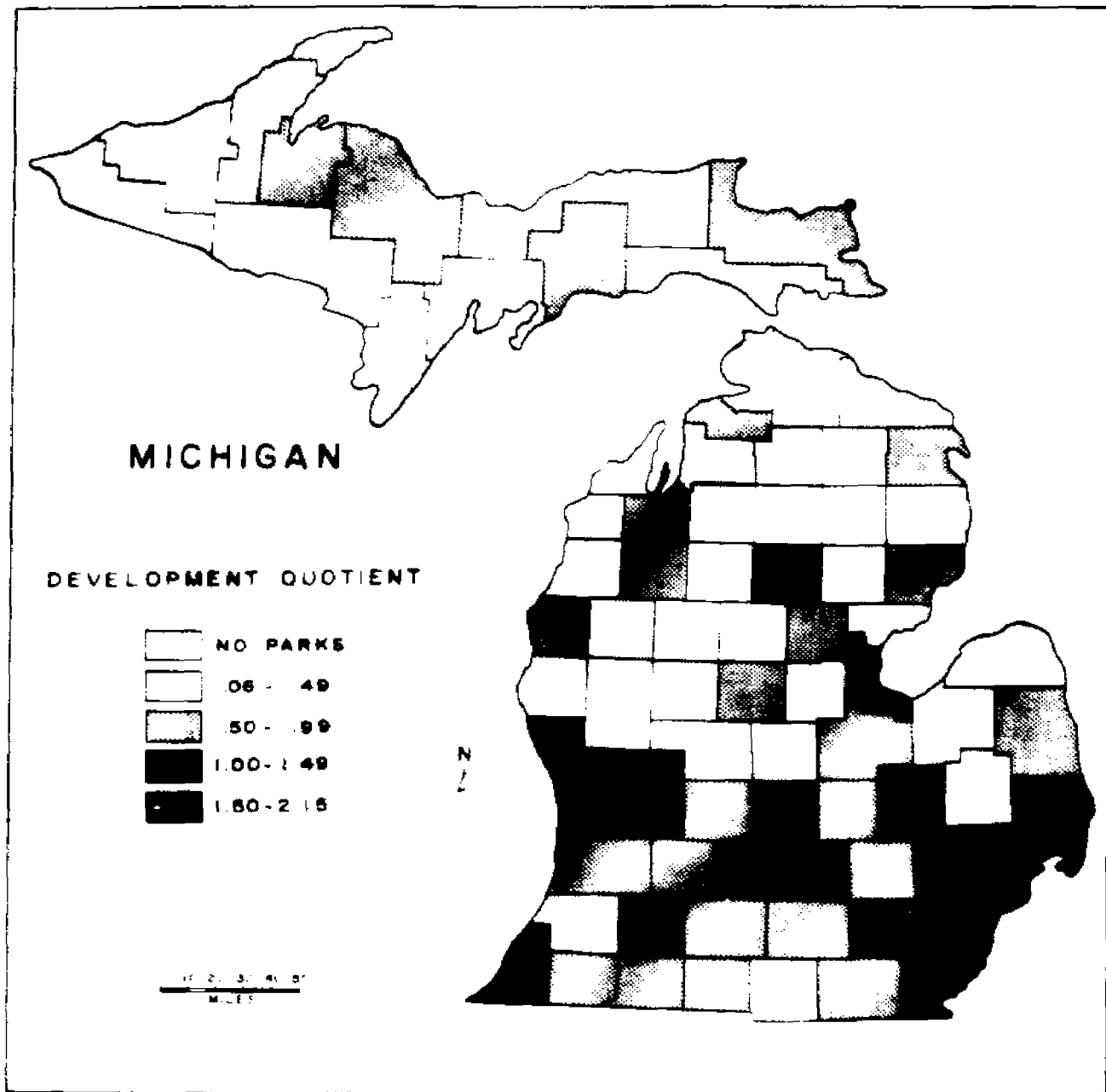


Figure 12. Development quotient in Michigan by county, 1970 (Source: computed from data obtained from Michigan Department of Health and U.S. Bureau of the Census, 1972c).

as a recreation area. St. Clair and Berrien both have comparatively large numbers of developments and are adjacent or nearby SMSA's. Counties with low quotients are, with few exceptions, in the northern portions of the state where mobile homes on individual lots predominate.

Local Studies

Local studies are more numerous, but these too have limited comparative value. Some studies have looked at all mobile homes, others only at developments. There has also been a wide range of methodology employed.

The most numerous local studies are those prepared by planning agencies. Some local agencies have prepared reports dealing exclusively with mobile homes (Maricopa County Planning Commission, 1963; Detroit Region Transportation and Land Use Study, 1969; and Macomb County Regional Planning Commission, 1969). However, most have devoted a small section to mobile housing in general housing reports (examples include: Tri-County Regional Planning Commission, 1971; Genesee Metropolitan Planning Commission, 1968: 40-50). The concern of these reports has been a description of local features, forecasts of future demand, and regulation of mobile homes and parks within their specific jurisdiction.

Studies of mobile home developments within metropolitan areas have tended to emphasize zoning as the most important factor influencing development location but other

factors have also been noted. Included have been employment opportunities particularly in "blue collar" occupations (Field, 1970: 24), proximity to highways (El Gammal, 1966: 72-73; Freed, 1969: 202), and land availability in fringe locations (El Gammal, 1966: 113; Freed, 1969: 202; Field, 1970: 24). However, zoning restrictions together with the manner in which they are applied is usually considered the most important single factor influencing development location (El Gammal, 1966; Field, 1970).

It appears that the location of the mobile home parks within a particular community has been more the result of chance and the presence or absence of public regulation than of choice (Wehrly, 1972: 11).

Zoning restrictions clearly eliminate the mobile home alternative from the spectrum of choice for many urban and suburban residents (Knight, 1971: 216).

One of the main reasons why most mobile home parks have been located in the less desirable residential areas is the reluctance of zoning and planning officials to permit this type of land use in residential areas reserved for conventionally built housing (Goldblatt and Pitcher, 1972: 7).

There is no doubt that mobile home parks are the most highly restricted residential land use. Industry sources state that obtaining favorable zoning rulings is a major problem in park construction (Wehrly, 1972: 29) and restrictive zoning practices are common (Freed, 1969: 150-155). But municipal zoning ordinances are only one of many factors which influence park location.

There are two reasons for this. First, zoning

ordinances are not final. Restrictions against mobile home parks can be and have been changed (Goldblatt and Pitcher, 1972: 7). Even though public officials often hold mobile home developments in low esteem (El Gammal, 1966: 127), the absolute prohibition of developments is decreasing (Business Week, 1970: 74; Drury, 1972: 137-138). Municipal ordinances are guidelines which affect the location of most land uses. They are not, however, the only factor.

The second reason for believing municipal decisions have been overemphasized is perhaps more pertinent to the problem at hand. The modern mobile home park is a sizeable investment often amounting to hundreds of thousands of dollars.⁷ With an investment of this size, it is unlikely that the developer would jeopardize an investment by locating at submarginal locations merely because zoning allowances were easily obtained⁸ (Jacobson, 1965: 348).

Mobile home parks are normally located at the

⁷Wehrly (1972) found from a survey of mobile home developers that the cost of developing a park (ready for occupancy) ranged from approximately \$3,000 per site plus land costs in the South to almost \$4,000 per space plus land costs on the West Coast (Wehrly, 1972: 36). The average total cost for FHA insured developments in 1971 was \$3,600 per space (U.S. Department of Housing and Urban Development, 1972).

⁸This would not necessarily hold true for smaller parks such as those constructed behind the owner's house; a type referred to by one writer as "parks in the pasture" (Wehrly, 1972: 19). The trend, however, has been toward larger and more expensive developments. For example, FHA insured developments in 1971 averaged 186 spaces (U.S. Department of Housing and Urban Development, 1972: 254).

outskirts of metropolitan areas or even in rural portions where population densities and land values are lower (Knight, 1971: 216). Perhaps it follows that zoning restrictions are absent or more liberal in these areas as well. But it should be noted that mobile home developments are important and numerous in areas such as the Midwest and West Coast where zoning restrictions are stringent.

Even though parks are a moderate density residential use, the modern park requires a considerable amount of land (Freed, 1969: 202), commonly exceeding twenty-five acres (Knight, 1971: 216). As can be seen on the graph of housing density ranges (Figure 14), mobile home parks overlap density ranges of single family, duplexes, and townhouses. Unlike apartments which have density figures allowing them to compete almost anywhere in an urban area (Bourne, 1971: 325), mobile home developments would be much more limited. Regardless of zoning ordinances or the way the restrictions are enforced, the peripheral location is a normal outcome.

Within the context of the general peripheral location, are parks located anywhere in the less developed portions of metropolitan areas? Do parks display "no particular pattern of location" as was noted in one report (Macomb County Planning Commission, 1968: 11)? Are zoning restrictions the important factor that has so often been assumed? Or are there a large number of site and area

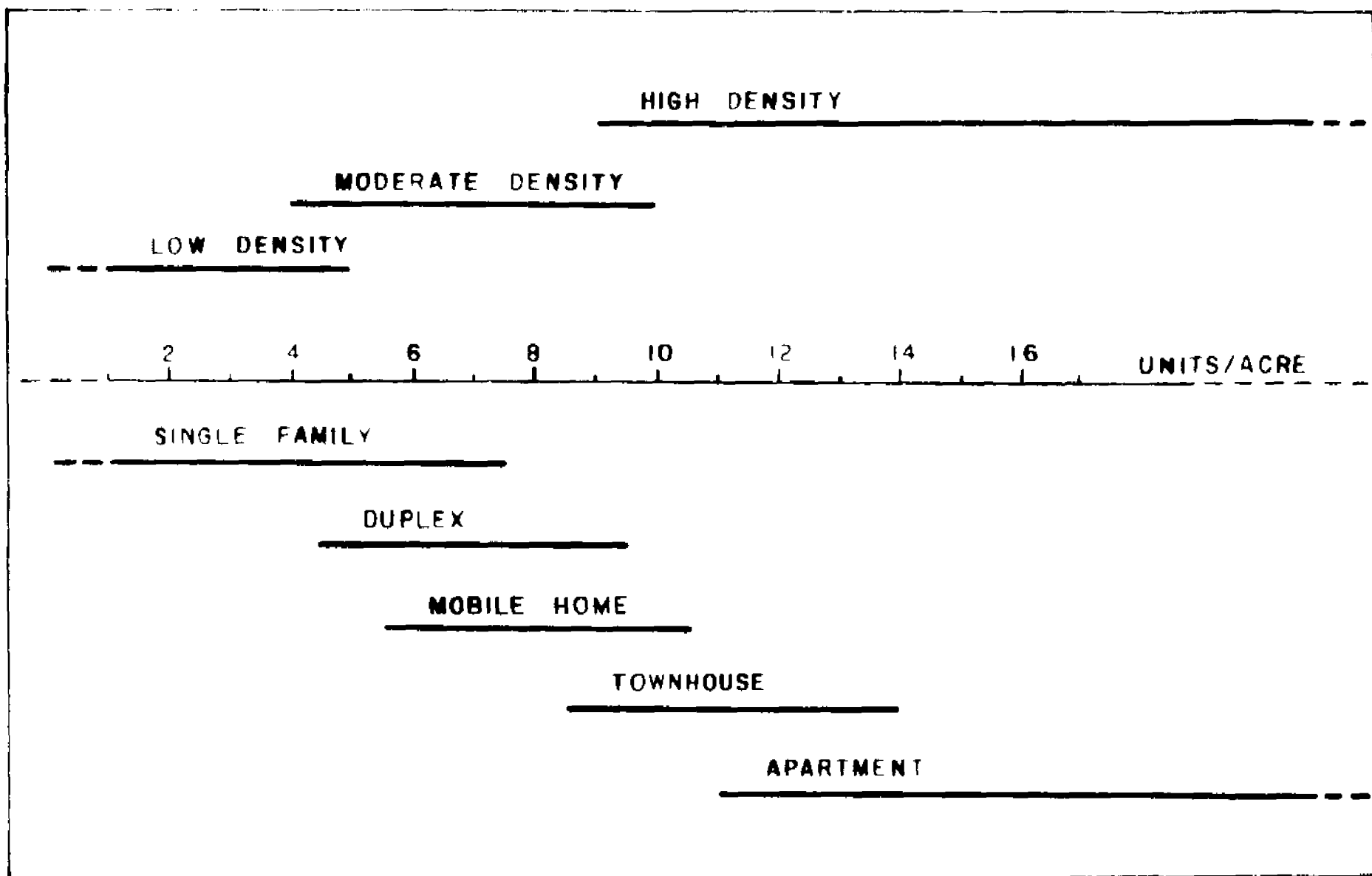


Figure 13. Density ranges by type of residential development (Source: adapted from Genesee County Metropolitan Planning Commission, 1971; Figure III-1).

factors that influence development location? Are different types of parks influenced in different ways by these site and area factors? Has the location of parks changed through time? These are representative questions that have been inadequately addressed in previous studies.

An Approach to the Investigation

Most studies relevant to mobile home development have viewed public regulation, or lack thereof, as the most important factor of location. This is contrary to most research of other residential forms which have normally focused on the actions of the household consumer (Kaiser, 1968: 351).

In reality, as is true with virtually all activities, a large number of factors would be necessary to account for the location of mobile home developments. Kaiser (1966) found that the spatial distribution of single family developments was associated with the spatial distribution of what he termed site characteristics within the context of the type of developer, and price range of the home. Three classifications of site characteristics were devised in Kaiser's study. These were termed: 1) physical, 2) locational, and 3) institutional (Kaiser, 1966: 63-64).

1. Physical Characteristics

- a. Size of the tract of raw land
- b. Topography
- c. Soil conditions
- d. Ground cover

2. Locational Characteristics

- a. Social characteristics of location
- b. Proximity to transportation arterials
- c. Accessibility to schools
- d. Accessibility to shopping
- e. Accessibility to employment centers
- f. Proximity to existing development
- g. Visual quality of the approach route to the site
- h. Proximity to incompatible uses

3. Institutional Characteristics

- a. Governmentally imposed boundaries and content of regulations, services, and policies for:
 - 1) Water and sewer service
 - 2) Zoning regulation
 - 3) Subdivision regulation
 - 4) School districts
- b. Ownership patterns including:
 - 1) Size of individual parcels under separate ownership
 - 2) Whether or not the raw land parcel is on the market and
 - 3) The terms of availability (terms of payment price)
- c. Marketability rating by financial institutions determining the availability and the terms of financing available to developer.

Bourne (1968 and 1971), in a Toronto study, enumerated six major kinds of area and site factors expected to influence apartment location. These factors included measures of: 1) the existing housing inventory, 2) accessibility, 3) clusters of existing apartment developments, 4) the physical and social environment of the immediate area, 5) the cost and availability of land, and 6) availability of municipal services (Bourne, 1971: 328).

The factors influencing the location of single family subdivisions and apartment development are not unlike many of those found in a recent extensive publication on mobile home and recreational vehicle park management. In the report, the authors suggest the following items as being significant in the site location of mobile home development (Nulsen and Nulsen, 1971: 259-260):

- 1) Cost of land
- 2) Size of parcel
- 3) Terrain
- 4) Soil condition (if septic system is used)
- 5) Likelihood of flooding
- 6) Accessibility (to major streets and highways)
- 7) Nearness to shopping facilities, employment, and schools
- 8) Availability of public services (water, sewer, gas, phone, etc.)
- 9) Favorable zoning
- 10) Nearness to public transportation

This similarity is not surprising for:

There is usually little disagreement among the various segments of the land development industry regarding the major items (aside from land cost) which should be considered in selecting a piece of land for any given use (Wehrly, 1972: 37).

The results of a survey of selected mobile home park owners and managers,⁹ conducted by the Urban Land Institute regarding important site location factors can be summarized in the following list (Wehrly, 1972: 37):

- 1) Location

⁹Only parks with Woodall's rating of "four" and "five" stars were included in the survey. These are the highest quality parks listed and rated in Woodall's Mobile Home and Park Guide. Of the over 12,840 parks listed in the 1972 edition (Alaska - 65 parks and Hawaii - 0 were not counted), slightly more than 1,100 were in this category (Woodall's, 1971).

- 2) Public utilities and services
- 3) Access
- 4) Terrain
- 5) Surrounding land uses
- 6) Amenities

These are the kinds of site and area characteristics found to be important to the location of single family subdivisions and apartment development and suggested considerations for mobile home parks. From this literature base, a set of site and area factors thought to be important in the location of mobile home developments were enumerated. Because of the nature of mobile home parks, certain modifications to this foundation were necessary. These modifications, the rationale for the changes, and the list of factors used in the study area will be presented in Chapter Three.

CHAPTER THREE

RESEARCH DESIGN

Introduction

Evidence indicates that mobile home parks are increasing in importance as a form of residential development particularly in metropolitan areas. If it is assumed that this will continue, then it would be desirable to be able to anticipate where within these areas parks are likely to occur. The first step is a better understanding of the present spatial distribution.

Evidence also indicates that mobile home parks are evolving. Changes, such as larger size, decreased densities, and more amenities within recently constructed parks, have been documented (Newcomb, 1971; Wehrly, 1972). What has not been fully documented but can be assumed is that location is also evolving. Determining the degree of change, if any, should aid the understanding of mobile home developments.

While recently constructed mobile home developments resemble more the single family subdivision of the 1950's than those of the 1970's (Wehrly, 1972: 12), it is assumed that they have evolved to where similar sets of site and area factors would influence the location of both types

of residential development. The set of site and area factors found to influence the location of single family development and those thought to influence the location of apartment construction discussed in Chapter Two form the base for those used in this investigation. However, mobile home parks have features unlike other forms of residential development and certain modifications to these sets are necessary. The reasons for these changes are presented below.

There is some question as to just where mobile homes fit in the nation's housing supply. They are "detached" and are almost always owner occupied. Therefore, they could be considered a form of single-family dwelling¹⁰ and it is in this manner that they are usually portrayed (Bair, 1965; El Gammal, 1966; Cheek, 1967; Drury, 1972; Freed, 1969; and Newcomb, 1971). However, the majority of all new homes are located in parks (U.S. Department of Housing and Urban Development, 1968: 76, 111).

In a sense, a mobile home park can be considered a "horizontal apartment complex" (Bartley and Bair, 1960: 13-14. See also Scheff and Bleck, 1973: 15). In a park

¹⁰The Department of Commerce does not include mobile homes when compiling new housing starts (in Construction Review and Construction Reports). Instead, they are listed separately using figures supplied by the Mobile Homes Manufacturers Association. An associated problem is that the government reports only national sales figures, not state, county, or city breakdowns. State sales data can be obtained in certain trade publications.

setting, they represent a moderate density housing form; usually seven to ten spaces (homes) per acre. Also, mobile home park lots are normally rented, not sold, with the home itself usually purchased independently of the site.¹¹ A distinct possibility is that mobile housing represents a compromise between the traditional importance of home ownership and the smaller initial outlay for multiple family housing. There is validity in considering mobile homes as single family housing when the dwelling is located on an individual lot. However, when considering mobile housing within a park setting, it is the development, not the unit, which becomes important.

Unlike conventional subdivisions, the park developer must construct and maintain utilities, streets, recreational facilities, and other features of the park. There is a continuing relationship between the household and management similar to multi-family developments. But unlike apartments, the housing unit is not part of this relationship. Thus it is possible that the locational characteristics of mobile home parks, while similar in many respects to other housing alternatives, will have certain unique features as well.

¹¹There are mobile home subdivisions where the lot is sold instead of rented, but these are not common. Of the approximately 13,000 parks listed in Woodall's Mobile Home and Park Guide (1971), only 217 parks sell lots. Fifty-nine of these are in Arizona with another fifty-one in Florida. Even fewer parks, most of which are located in Florida, sell the mobile home and lot as a package.

Improvements in mobile home parks have lagged behind certain improvements in the production of the mobile home itself. For example, the introduction of ten foot wide units in the mid-1950's and even larger units during the 1960's and 1970's made obsolete many existing parks. The sites in these parks, designed for the often transient homes no wider than eight feet, were too small. However, the general shortage of mobile home parks meant that crowding was a common result of locating the larger homes in parks ill-equipped to serve them. This lag between production advancements and improvements in parks has been one of the more serious problems of mobile housing. One way in which this lag has affected mobile home parks is that municipalities were caught unprepared for contemporary mobile housing (Knight, 1971: 218). Ordinances designed for transitory trailers are often not appropriate for modern manufactured (mobile) housing, but change is often slow.¹²

Determination of Site and Area Factors

Literature Base

Research has shown that three major categories of

¹²In a recent publication by the Urban Land Institute, Newcomb (1971) lists several examples of inappropriate regulations. These include: the requirement of some municipalities that parks have communal restroom, bathing, laundry, and even cooking facilities; confining parks to commercial districts; and establishing time limits on the length of stay in the municipality (Newcomb, 1971: 37-38). As the author states, these may be appropriate for recreational vehicle (travel trailer) parks, but not for mobile home developments (Newcomb, 1971: 37).

site and area factors influence the location of single family subdivisions (Kaiser and Weiss, 1969). These are:

- 1) Accessibility:
 - a) to downtown
 - b) to employment
 - c) to an elementary school
 - d) to the major street system
- 2) Environment of the immediate area:
 - a) socioeconomic prestige level
 - b) amount of contiguous residential development
- 3) Institutional factors:
 - a) zoning protection
 - b) availability of public water and sewerage (Kaiser and Weiss, 1969: 76-77).

Modification

The principal modifications of this set involve the inclusion of additional factors. Mobile home developments require relatively large parcels of land and the availability of undeveloped land should be an important factor. Additional items should be included with the list of environmental factors because of the supposed negative locations of parks in general. Also, due to greater public restrictions on mobile home parks, additional zoning measures were included. The modified set of site and area factors include:

- 1) Accessibility:
 - a) to the urban center
 - b) to employment
 - c) to major highways
- 2) Availability of undeveloped land
- 3) Environment of the immediate area:
 - a) Surrounding land use:
 - 1) residential development

- 2) nonresidential development
 - b) Adjacent land use
 - c) Proximity to an elementary school
 - d) Socioeconomic prestige level
 - e) Number of incompatible uses
- 4) Institutional factors:
- a) zoning
 - 1) surrounding residential zoning
 - 2) adjacent zoning
 - 3) zoning of the site
 - b) type of sewer system
 - c) type of water system

This set of site and area factors thought to influence the location of mobile home parks is based on two considerations: 1) the assumed similarities between modern mobile home parks and other forms of residential development, and 2) the responses of mobile home developers to a national survey conducted by the Urban Land Institute (Wehrly, 1972). It is not the purpose of this research to conduct an additional survey of park owners and managers. Instead, these factors were enumerated to specifically answer the following questions:

- 1) What combinations of site and area factors influence the location of mobile home developments?
- 2) What are the similarities between site and area factors influencing other forms of residential developments and mobile home parks?
- 3) What changes in the combinations of site and area factors have occurred between parks opened during different construction periods?

In the remaining sections of this chapter, the factors are operationalized, the sources of data are given, and the procedure of data analysis is described.

Description of Factors Used in Study

Accessibility

Since they (mobile home parks) are a residential use, they should follow the general criteria of other residential land uses and consider the park site's location in relation to employment, schools, commercial activities, recreation facilities and the transportation network (Macomb County Planning Commission, 1969: 11).

The developers, desiring to quickly obtain tenants and to keep the park as fully occupied as possible, will attempt to locate the mobile home development as close as possible to those factors thought to be important. Mobile home parks are usually constructed in the less built up portions of metropolitan areas. Within the context of this generalization, however, it is expected that differences exist in the combinations of these factors influencing parks opened during different construction periods.

Distance to central business district. Distance was measured along the most direct major street from the park entrance to the center of the central business district of Flint. This point was defined as the intersection of Saginaw and Detroit streets (U.S. Bureau of the Census, 1967) and measured in tenths of a mile. It is expected that more recently constructed parks will be located at greater distances from the central business district than older ones.

Distance to employment center. The major source of employment in the Flint SMSA is manufacturing. Of the

area's 186,616 person non-farm labor force in 1970, 45.8 percent were employed in manufacturing (U.S. Bureau of the Census, 1973a: 560). Thus, for Flint, it can be assumed that access to manufacturing employment would be the most important.

The center of manufacturing employment was obtained by plotting all manufacturers employing 500 or more workers (Consumers Power Company, 1965), and using the computer routine CENTRO¹³ to obtain the mean geographic center. The measurement was in tenths of miles along the most direct route from the development entrance to the mean geographic center of manufacturing employment. It is expected that newer parks are located at greater distances from the center of employment than those constructed during the early period.

Distance to nearest state or federal highway. This variable was measured in tenths of a mile from the development boundary to the nearest state or federal highway. Since recently constructed parks serve a more permanent residential function than older ones, it is expected that newer parks are located at greater distances from highways.

Availability of Undeveloped Land

The variable used to measure availability of land

¹³The CENTRO routine was written by John F. Hultquist and is on permanent file at the Southwest Missouri State University Computer Center.

was the percent of undeveloped land in the area surrounding the park. The data were obtained from 1957 and 1972 aerial photography. Because of the increased size, newer parks are expected to be located in areas of greater undeveloped land.

Environment of the Immediate Area

Though important to developers of most land uses including mobile home parks, accessibility measures are insufficient to account for the location of mobile home developments. Of the numerous other factors, those involving amenities or the attributes of the immediate environment are becoming increasingly important.

Today, residential development emphasizes aesthetic or site amenities, not access. The automobile has made most suburban sites almost equal in access terms, people are free to look for other things like site qualities (Abler, Adams and Gould, 1971: 361).

Often the setting in which parks are found is listed as a major problem to mobile home park acceptance by municipalities and the general public as well. "Much of the poor image of the mobile home parks in the past has revolved around their setting" (Wehrly, 1972: 19). As stated in a recent planning report:

Some communities feel, or have felt in the past, that the best locations for mobile homes are next to railroads or within industrial or commercial areas (Macomb County Planning Commission, 1969: 11).

Mobile homes are an important part of our housing supply, yet in terms of location, there has been a

tendency in the past for mobile home developments to be more similar to commercial and industrial development than residential. Often adjacent and surrounding land use would not have been considered desirable for other residential forms. The trend in recent years has been the location of parks within residential areas (Wehrly, 1972: 19), but this trend is slow. In a recent survey 74 percent of four and five star (highest rating) parks were " . . . partially or wholly surrounded . . ." by residential developments (Wehrly, 1972: 19).¹⁴ This quality rating includes a very small percentage of mobile home parks for the nation as a whole (10 percent) and for Michigan (7 percent) (Percentages derived from listings in Woodall's, 1971). It is believed that as mobile home parks have become an increasingly important part of residential land use, the influence of the environment of the immediate area on the location of parks has also increased in importance.

Surrounding land use. Surrounding land use was divided into two categories and ascertained from air photographs taken in 1957 and 1972. The categories were:

- 1) Percent of residential development (excluding mobile home parks) in the immediate area.
- 2) Percent of nonresidential land use in the immediate area.

¹⁴In that report, single-family housing was defined as residential while apartments were included in commercial figures. It was reported that 50 percent of the parks were adjacent to single-family developments and 24 percent were adjacent to apartments (Wehrly, 1972: 19).

For all parks constructed prior to 1957, Soil Conservation Service aerial photographs taken in August, 1957 were used to measure land use in the immediate area. NASA RB-57 high altitude photography taken in June, 1972 was used in measuring land use around parks constructed from 1965 to 1972.

Since the acreage of the sixty mobile home developments in Genesee County varied considerably, it was necessary to devise a method which assured consistency in measuring surrounding land use. This was accomplished by the following procedure:

- 1) The study area was divided into units of one-quarter mile square.
- 2) A circle with a one-half mile radius was drawn from the center of each unit containing land in mobile home parks.
 - a) Each circle contained sixty-eight one-tenth mile square cells.
 - b) Several parks were large enough to be found in more than one quarter-mile square unit. There was, therefore, the possibility of multiple counting of the cells. Each tenth mile square cell was counted only once.
- 3) Surrounding land use was measured as the proportion of cells totally devoted to the categories of land use in the one mile circles from the centers of the units for each park.

It is expected that the land use of the immediate area will be more residential in character for recently constructed parks.

Land use adjacent park boundary. A third land use variable was that immediately adjacent to the park boundary. This was measured to elicit the effects of mixed land uses on park location. Data were divided into five categories and were:

- 1) Mainly residential with no mixed uses.
- 2) Mainly undeveloped with no mixed uses.
- 3) Mixed but majority residential.
- 4) Mixed and majority nonresidential.
- 5) Mixed but majority undeveloped.

As with the other land use measures, data were obtained from 1957 and 1972 air photography. Newer parks are expected to be located at sites where adjacent unmixed land use predominates.

Distance to nearest elementary school. This factor, measured in tenths of miles, was along the most direct route from the development entrance to the nearest elementary school. School district boundaries were recognized and nearest elementary school at the time of the park's construction was used. The influence of proximity to an elementary school is expected to be of greater importance for newer parks.

Socioeconomic index. An additional variable measuring features of the site and area environment was socioeconomic index. This is an index of four measures of each census tract population in relation to the population of

the metropolitan area as a whole. An occupation ratio, an education ratio, median family income, and the median value of single-family homes were used.¹⁵ Each was standardized on a scale of 0-100 and the four ratios averaged to obtain an index for each census tract. Data were obtained from the 1960 census (U.S. Bureau of the Census, 1962a) for all parks constructed prior to 1957 and the 1970 census (U.S. Bureau of the Census, 1972a) for those opened after 1965. It is expected that recently constructed parks are located in tracts with higher socioeconomic index values.

Incompatibility index. Newer parks should be located in areas of fewer incompatible uses. In order to determine if this is true, a crude index of incompatible uses was computed. This was a scale ranging from 0 to 8 and was obtained by:

- 1) Railroad -- adjacent score: 2
 within one-quarter mile score: 1
- 2) Industrial -- adjacent score: 2
 in surrounding area score: 1
- 3) Highway -- adjacent score: 1
- 4) Commercial -- adjacent score: 1
- 5) Other incompatible uses -- adjacent score: 2
 (salvage yards, sewer plants, etc.) in area
 score: 1

Data were obtained from 1957 and 1972 aerial photography.

¹⁵The procedure for this measurement was outlined in Kaiser (1966: 223-226) who adapted the methodology from Eshref Shevky and Wendell Bell, 1955, Social Area Analysis, Stanford Sociological Series, No. 1; Stanford, California, Stanford University Press.

Institutional Variables

Municipalities do much to encourage or retard development within and adjacent to their boundaries. In order to take into account the importance of the municipal role, the following institutional variables were used:

Zoning. "Zoning protection" was found to be significant in the location of single-family developments (Kaiser, 1966). Mobile home parks are often for what the "protection" is intended (Babcock, 1966). Restrictive zoning practices are listed as a major concern to the industry (Wehrly, 1972: 29).

One of the main reasons for the more rural location of mobile home developments than other forms of medium density housing may be due to restrictive municipal zoning practices. If municipalities prohibit mobile home developments or maintain unduly restrictive ordinances, it is reasonable that developers will seek more rural locations which generally have less restrictive ordinances. However, it is assumed that like other land developers, operators of more recently constructed parks would seek those areas which have formalized policy regarding their investment.

Three measures of zoning were obtained. These were:

- 1) Percent of surrounding area zoned residential.
- 2) Zoning immediately adjacent to the park boundary.
- 3) Zoning of the specific site where the development was located.

Data were obtained from municipal zoning maps.

Because of the increasing residential function of parks, as well as recent changes in municipal ordinances, newer parks are expected to be more often located at sites and in areas zoned for residential purposes.

Type of sewer system used. This variable was measured on the following schedule:

- 1) if the park used septic tanks
- 2) if the park used a lagoon system
- 3) if the park used a private sewer treatment plant
- 4) if the park was connected to a municipal sewer system

Data on the type of sewer systems used by the parks in the study area were obtained from the Michigan Department of Health. Availability of municipal sewer service is expected to be a greater influence for the location of newer parks.

Type of water system used. This variable was measured on a dichotomy of:

- 1) private water system
- 2) municipal water system

This information was obtained from the Michigan Department of Health. As with availability of municipal sewers, newer parks should be more often connected to municipal water systems than older ones.

Type of Development

It was expected that different types of parks would be influenced in varying ways by these factors. While mobile home parks are not usually differentiated, differences have been observed for single-family subdivisions (Kaiser and Weiss, 1969: 77) and apartments (Bourne, 1968). For example, research findings suggest that large developers tend to locate single-family subdivisions in a different spatial pattern than small developers. Small developers tend to locate in portions of the urban area which have fewer services and less desirable accessibility than large developers (Kaiser and Weiss, 1969: 77).

There is a growing trend for large corporations to enter mobile home park development (Business Week, 1970: 74-75; Cloos and Birgells, 1972: 10). Often these firms will construct parks with several hundred spaces. However, mobile home park construction is normally not a continuing activity. There are a few firms which specialize in mobile home park construction and those which develop and manage several parks, but the majority are owned by individuals or firms owning only one park. For example, the listing of mobile home parks in Michigan indicates that the vast majority are proprietorships¹⁶ and the

¹⁶There was one corporation with nine parks in seven counties containing a total of 810 spaces. Additionally another firm (listed as an individual) controlled nine parks containing over 4,000 spaces located in five counties (Michigan Department of Health, 1974).

average size is only 91 spaces (Michigan Department of Health, 1975).

The type of development used in this research was a dichotomy based on age of development. The literature as well as careful observation substantiates this classification. Older parks generally lack the amenities of modern developments. They were smaller both in number of spaces and acreage, the densities were greater, and features such as recreation facilities, open space, and other design features were lacking. Additionally, older parks were designed for smaller often transient trailers. The types of developments were:

- 1) Developments constructed prior to 1960.
- 2) Developments constructed 1960 or after.

Data Analysis

The area and site characteristics enumerated in this chapter were examined by the use of crosstabulation tables. Crosstabulation tables are most often used in the social sciences for survey research, but this technique has applicability for other forms of research as well (Baker and Lee, 1975). Some of the reasons for using this technique of analysis are elaborated below.

First, it was felt that research into mobile home park location has not progressed to the level where meaningful predictive statements can be made. This was essentially a preliminary study where a descriptive base, as

accurate as possible, was needed.

Secondly, many of the variables were obtained from information sources such as high altitude imagery, aerial photography, and small scale maps. Often it was possible to obtain only nominal or ordinal scale data from these sources. Crosstabulation provides a way of presenting and analyzing such data.

Also, this research was concerned with not only measuring site and area factors influencing the location of mobile home parks in general, but also the different ways these factors influence types of parks. By categorizing parks and factors, a way was provided to better discern these differences.

What was needed, then, was a technique that allowed numerical description and one in which relationships between variables could be examined without the assumptions of inferential statistics.

In this research, the type of park (classified on the basis of age) was entered as a row variable and the area and site factors as column variables (Figure 14). Four pieces of information are printed in each cell of the table. The upper number in each cell is the actual cell count or absolute frequency. The second number is the percent of the total row frequency in the cell, and the third is the percent of the total column frequency in the cell. The fourth or bottom number is the cell's percentage of the total number of parks. Additionally, column

and row totals in both actual count and percent of total are printed at the bottom and right of the table respectively.¹⁷

¹⁷The specific computer routine used was CROSSTABS. CROSSTABS is fully described in Statistical Package for the Social Sciences (Nie, Bent, and Hull, 1970: 115-128). The program is on file at the Computer Center at Southwest Missouri State University where the data were processed. The format of the table display printout from CROSSTABS (Figure 14) was used in typing the tables presented in this dissertation.

CHAPTER FOUR

MOBILE HOME DEVELOPMENT IN GENESEE COUNTY: DESCRIPTION

Introduction

Mobile home developments are associated with metropolitan areas and Michigan is no exception. For example, approximately 48 percent of Michigan's parks and 72 percent of park spaces were found in the state's Standard Metropolitan Statistical Areas. Genesee County of the Flint SMSA is one of the more important units of the state for mobile home developments.

Sixty mobile home developments constructed in Genesee County prior to December, 1973 were used in this study (Figure 15).¹⁸ These parks contained 8,570 licensed spaces by the end of 1974 making Genesee second only to Oakland County of Metropolitan Detroit among Michigan's eighty-three counties (Michigan Department of Health, 1975).

Growth of Mobile Home Developments

The Early Period

There were two distinct phases of park construction

¹⁸Two additional parks were opened during 1974.

in Genesee County. The first of these was between 1951-1957 and thirty-five parks with 2,285 spaces were constructed during those seven years (Table 4). While these parks ranged in size from 5 to 251 spaces, most were small. The average size of parks constructed during this period was sixty-four spaces.

Two things are readily apparent from the pattern of parks constructed during this period (Figure 16). First, twenty-five of the thirty-six developments were located either in the City of Flint or within two miles of the city limits. The City of Flint alone contained twelve of the early developments all in the eastern part. In contrast, nine of the remaining parks were constructed at sites at least seven miles from the city limits of Flint. Secondly, precisely one-half of these early parks were located adjacent to or within one-half mile of one highway, what is now M-54.

In addition to the small number of spaces, parks constructed during this time had a high density by modern standards. The ten-foot wide mobile home did not become widely accepted until the mid-1950's. The older parks were built for eight-foot wide units, many of which were small enough to be pulled by automobile. Averaging only eight acres, the typical park's density was approximately fourteen units per acre.

Additional characteristics of parks of this earlier period should be mentioned. Aerial photography clearly

Table 4

Mobile Home Development Construction in Genesee County by Year: 1950-1973

Political Unit	Year	1950	51	52	53	54	55	56	57	58-64	65	66	67	68	69	70	71	72	73	Total
City of Flint	1*		4			2	2	2	1		1	1								14
City of Davison																	1			1
City of Flushing						1														1
Burton Township (City)			2	2	1															5
Clayton Township														1						1
Davison Township						1	1							1						3
Fenton Township			1	1			1													3
Flint Township			2			1	1									4	1	1		10

Table 4 - Continued

Political Unit	Year	1950	51	52	53	54	55	56	57	58-64	65	66	67	68	69	70	71	72	73	Total
Flushing Township													1				1			2
Genesee Township				1		1		1								1	1	1		6
Grand Blanc Township					1		1													2
Montrose Township						1	1												1	3
Mt. Morris Township				1															3	4
Thetford Township																1				1
Richfield Township															1			1		2
Vienna Township				1															1	2
Total		1*	5	10	2	7	7	3	1	0	1	1	1	2	1	6	4	3	5	60

*Licensed in 1947

Source: Michigan Department of Health

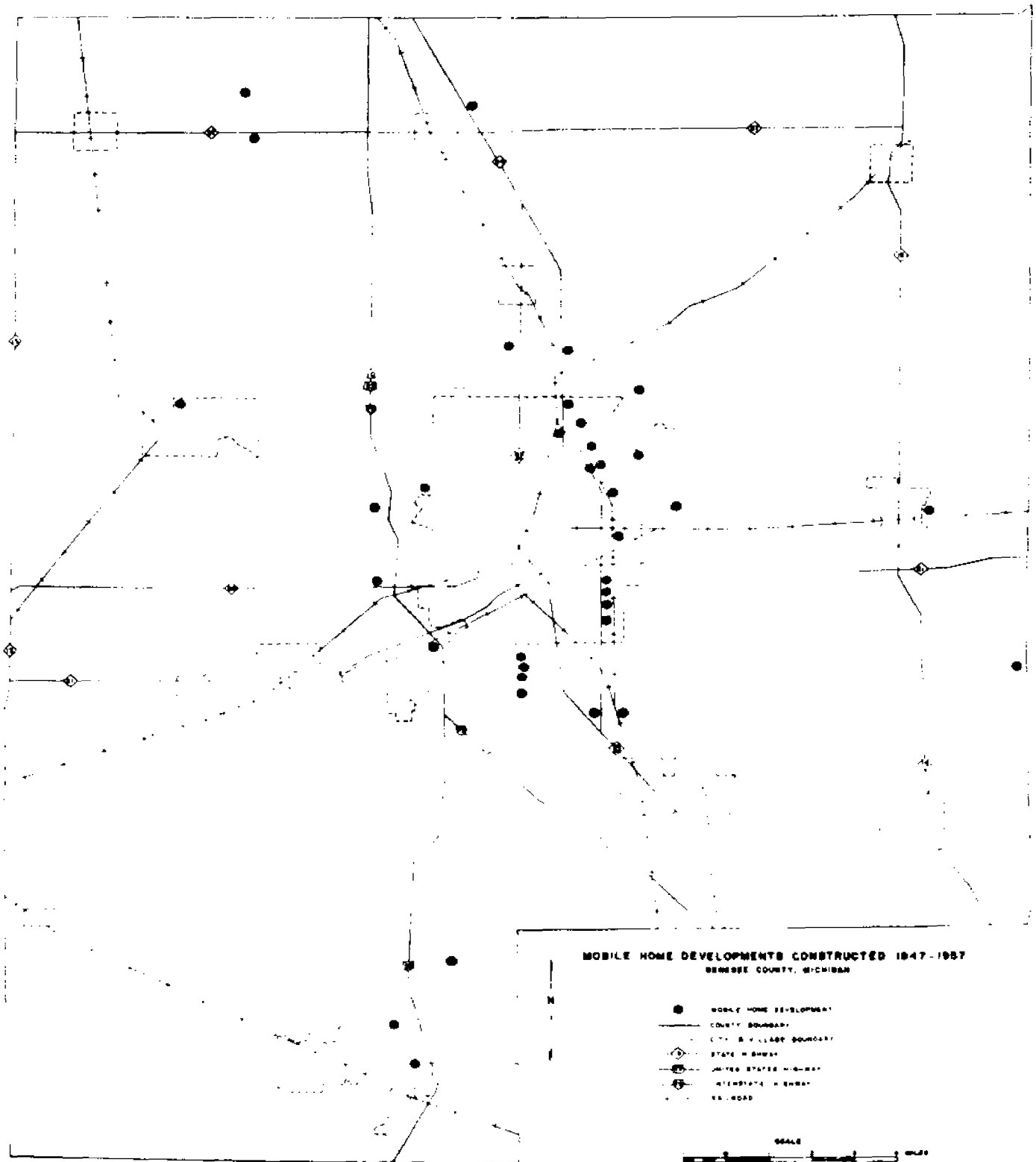


Figure 16. Location of mobile home developments constructed prior to 1957 (Source: Michigan Department of Health and field data).

indicated two things both relating to park design and layout. The first is straight alignment of park streets with the resulting diagonal or perpendicular "parking" of the mobile homes.

The second design feature is the lack of open space and recreation facilities. While some had laundry facilities and perhaps small playgrounds, "community" buildings, recreation facilities, and open space were not characteristic of parks in this early stage of mobile home developments.

The Intervening Years

In the seven year period between 1957 and 1964, no parks were developed in the Flint area. However, expansion of existing parks consisted of 359 spaces added during this time period. By 1964 there were 2,700 spaces in Genesee County, and the average size of the developments had increased to seventy-five spaces.

The Latter Period

The second period of park construction began in 1965 and was still in progress at the end of 1973. The twenty-four parks constructed during this latter period were larger, had a lower density per acre, and contained more amenities within the park.

The 5,929 spaces constructed during this time brought the average size of all parks to 141 spaces. The average size of the newer parks, however, was 204 spaces.

Developments were also larger in total acres; sixteen contained more than twenty acres.

Density of the newer parks was greatly reduced over the older parks. With the average of twenty-eight developed acres, the average density of the newer parks was seven units per acre. This brought the density of all sixty parks in the county to eleven units per acre.

In addition to larger mobile homes (12-foot wide units were introduced in the mid-1960's and 14-foot wide homes were allowed in Michigan beginning in 1972), an additional reason for decreased densities was the increased amount of open space in newer parks. Larger recreation facilities were common in these parks and a greater distance between units was apparent.¹⁹

The pattern of the recent phase of construction differed from that of the earlier period (Figure 17). A more dispersed pattern is apparent for the more recently constructed developments. For example, only two of the newer parks were constructed in the City of Flint compared to twelve of those opened prior to 1957. There was also a shift in the direction of development growth. During the first period the construction of developments was in the eastern part of the county. Dividing the study area into eight sectors, twenty-three of the thirty-six

¹⁹Significant also in reducing overall densities was the needed space for sewer treatment lagoons in four of the suburban parks not served by municipal sewer.

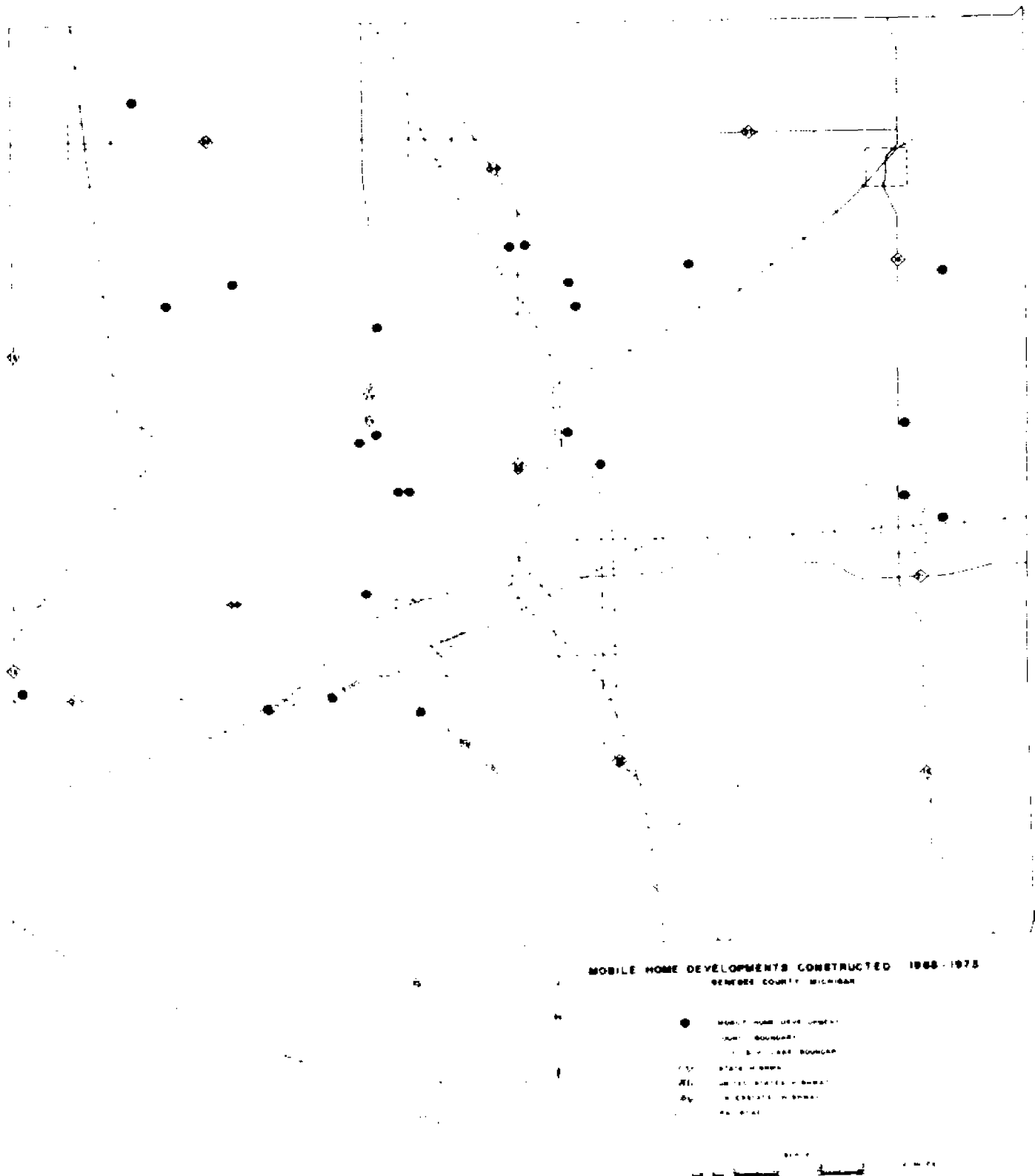


Figure 17. Location of mobile home developments constructed 1965-1973 (Source: Michigan Department of Health and field data).

older parks were located in the four eastern sectors (Figure 18). While sector one, and to a lesser extent sector two, continued to be important directions of growth during the latter period, none of the newer parks were constructed in areas to the southeast (sectors three and four) (Figure 19). In fact, only five of the twenty-four newer developments were constructed in the southern part of the county.

Location by Political Type

Maps presented previously in this chapter (Figures 15, 16, and 17) reveal a general fringe location of mobile home parks in Genesee County. It is significant, however, that sixteen were located within incorporated cities. Using a modification of a classificatory scheme used by the Genesee County Metropolitan Planning Commission (1971: 36), the twenty-six political entities were grouped into five municipal types. The eighteen townships were grouped into three categories: Rural, Suburban, and Urban. Using this categorization, there are seven rural, six suburban, and five urban townships. The seven smaller cities²⁰ comprised the fourth group and the City of Flint by itself made up the fifth one.

Mobile home developments were most numerous in the five urban townships (Table 5). There were twenty-seven developments with 3,496 spaces accounting for almost 41

²⁰There were in addition five villages in the county. These were included in the township figures.

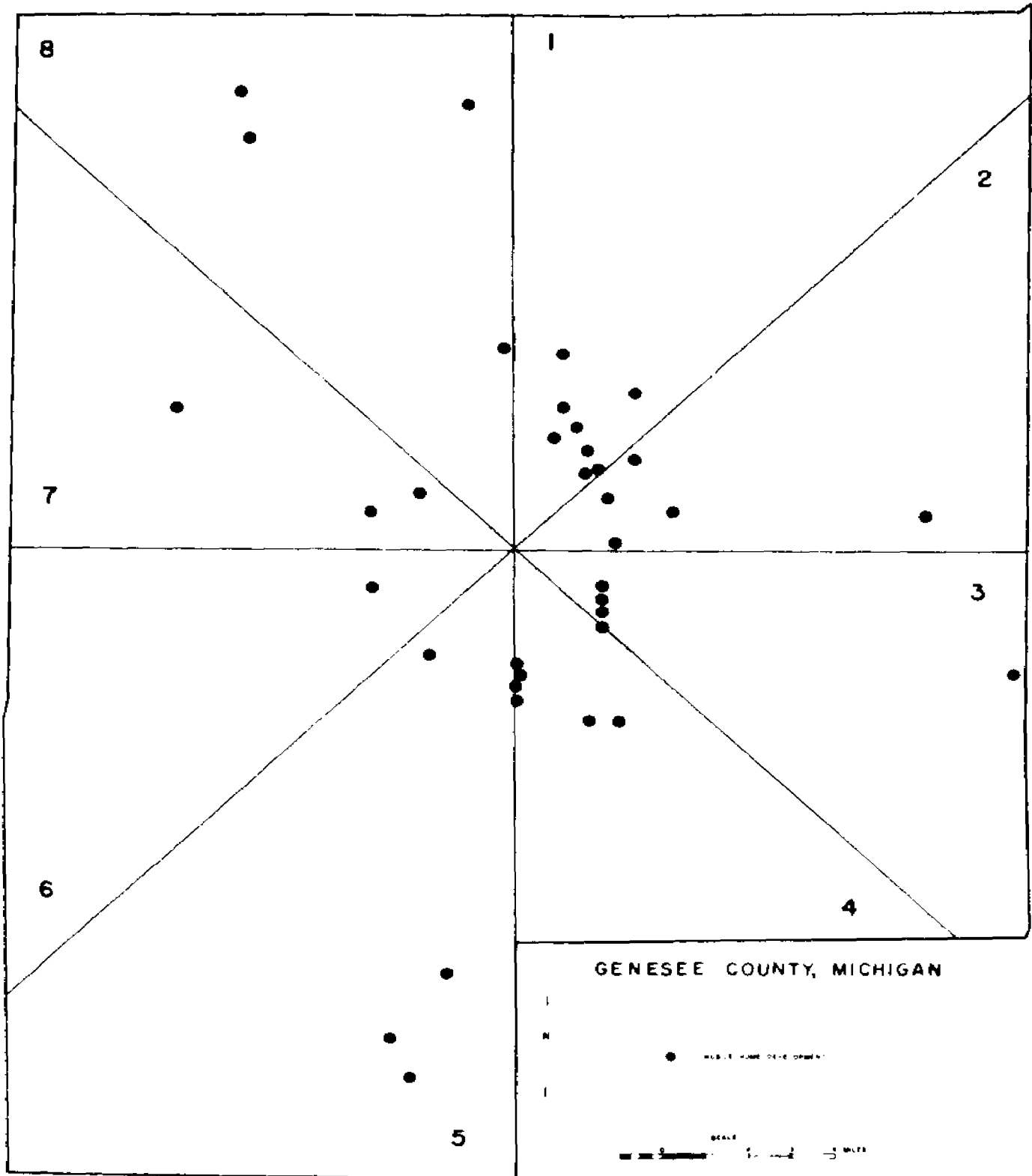


Figure 18. Location of pre-1957 mobile home developments by sector (Source: field data).

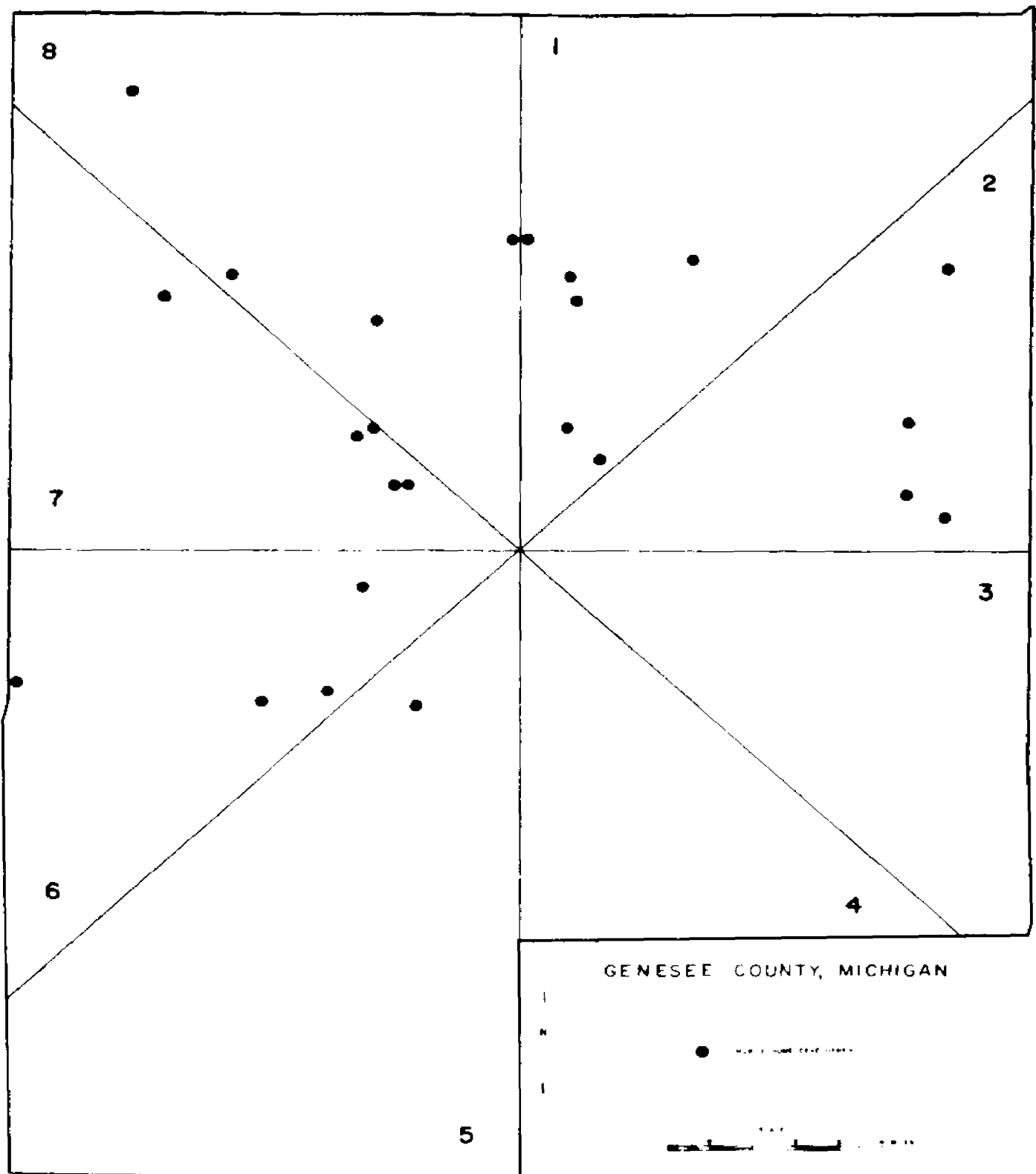


Figure 19. Location of mobile home developments constructed after 1965 by sector (Source: field data).

Table 5

Mobile Home Developments in Genesee County by Political Type: 1951-1974

Political Type	1951			1955			1960			1965			1970			1975		
	Pk	Sp	%	Pk	Sp	%	Pk	Sp	%	Pk	Sp	%	Pk	Sp	%	Pk	Sp	%
Flint	2	120	29	10	975	48	12	1402	52	13	1723	55	14	1920	35	14	1920	22
Small City	-	-	-	1	26	1	1	26	1	1	26	1	2	161	3	2	424	5
Urban Township	5	208	50	14	805	39	15	995	37	15	1087	35	20	2107	38	27	3496	41
Suburban Township	2	85	21	6	158	8	6	211	8	6	211	7	9	609	11	12	1245	15
Rural Township	-	-	-	2	79	4	2	79	2	2	107	2	4	707	13	5	1485	17
Total	9	413	-	33	2043	-	36	2713	-	37	3154	-	49	5504	-	60	8570	-

Source: Computations based on data from the Michigan Department of Health.

percent of all spaces in Genesee County. Of least importance were the county's seven smaller cities. Only two, Davison and Flushing, contained any parks, each with only one development. Combined, these had approximately 5 percent of the total development spaces.

While only five developments were found in the seven rural townships, two were the largest in the county. In fact, these two parks with 1,206 spaces accounted for 14 percent of all development in the county. Four of the seven rural townships contained no parks.

This pattern has changed through time. In 1955 the City of Flint had ten of the thirty-two parks and 48 percent of the 2,043 spaces in the county. The peak proportion for Flint was reached in 1965 when the city's thirteen parks contained 55 percent of the 3,154 spaces in the county. Since that time only one park has been constructed in the city and Flint's share had decreased to 22 percent by the end of 1973.

The five urban townships have remained important, with the share never below 35 percent (1965) but construction has fluctuated in these townships. In 1955, the share was approximately the same as in 1973 (39 percent compared to 41), with proportionally less construction in the intervening years. The greatest amount of park construction in the urban townships has occurred since 1965 with an addition of twelve parks and 2,405 spaces.

Changes in Parks

The first period saw development in the outer portions of the central city or at great distances. Later development has concentrated in the urban and suburban townships. The parks have changed; they are larger in total acres, in lot size, and in total numbers of spaces. Parks have also changed in the function they serve. For example, all parks in Flint were adjacent to or within one-quarter mile of M-54 (or the Dort Highway). The highway orientation of smaller trailers can partially account for this as well as the zoning ordinances of the City of Flint which specified that parks be located in commercial districts.

One of the greatest differences between older and newer parks is size (Table 6). Two-thirds of the older parks had fewer than 100 spaces, and only three of the thirty-six parks in this category exceed 200 spaces. While four newer parks were small, these were in incomplete stages of development. Thirteen of the newer parks were medium sized but seven exceeded 200 spaces.

Related to size are the number of acres in the parks and the density of units per acre. These measures also point to changes in mobile home developments. Mobile home parks are becoming significantly larger (Table 7). Twenty-six of the older parks have fewer than nine developed acres. A full one-third of the newer parks exceed thirty developed acres compared to none of the older ones.

Table 6

Size of Parks in Number of Spaces

		Number of Spaces			
		1-99	100-199	200-608	Total
Parks Constructed Prior to 1957	Number	24	9	3	36
	Row %	66.7	25.0	8.3	
	Column %	85.7	40.9	30.0	
	% of Total	40.0	15.0	5.0	60.0
Parks Constructed 1965-1973	Number	4	13	7	24
	Row %	16.7	54.2	29.2	
	Column %	14.3	59.1	70.0	
	% of Total	6.7	21.7	11.7	40.0
Total number		28	22	10	60
Column % of total		46.7	36.7	16.7	

Source: Michigan Department of Health.

Densities are also decreasing. All but two of the older parks exceed nine units per gross acre and nineteen exceed fourteen units per acre (Table 8). Only two of the twenty-four newer parks exceed nine spaces per acre.

Summary

In the twenty-three years between 1950 and 1973 fifty-nine parks with 8,514 spaces were constructed in Genesee County. During this time, parks have increased in both acres and number of spaces, have lower densities, and have greater amenities than older parks.

There has been fluctuation in park construction through the years in Genesee County. Since 1951, there have been seven years (1958-1964) in which no parks have

Table 7

Size of Parks in Number of Developed Acres

		Number of Acres					Total
		3-9	10-19	20-29	30-39	40-85	
Parks Constructed Prior to 1957	Number	26	8	2	0	0	36
	Row %	72.2	22.2	5.6	0	0	
	Column %	100.0	50.0	20.0	0	0	
	% of Total	43.3	13.3	3.3	0	0	60.0
Parks Constructed 1965-1973	Number	0	8	8	3	5	24
	Row %	0	33.3	33.3	12.5	20.8	
	Column %	0	50.0	80.0	100.0	100.0	
	% of Total	0	13.3	13.3	5.0	8.3	40.0
Total number		26	16	10	3	5	60
Column % of Total		43.3	26.7	16.7	5.0	8.3	

83

Source: Field data.

Table 8
Density of Parks in Spaces Per Acre

		Spaces Per Acre				Not	Total
		5-9	10-13	14-17	18-21	Complete	
Parks Constructed Prior to 1957	Number	2	15	12	7	0	36
	Row %	5.6	41.7	33.3	19.4	0	
	Column %	10.0	100.0	92.3	100.0	0	
	% of Total	3.3	25.0	20.0	11.7	0	60.0
Parks Constructed 1965-1973	Number	18	1	0	0	5	24
	Row %	75.0	4.2	0	0	20.8	
	Column %	90.0	7.7	0	0	100.0	
	% of Total	30.0	1.7	0	0	8.3	40.0
Total number		20	16	12	7	5	60
Column % of Total		33.3	26.7	20.0	11.7	8.3	

Source: Michigan Department of Health and field data.

opened. The leading year for park construction was in 1952 when ten parks were opened. Seven parks were opened in 1954 and 1955, with six opening in 1970.

There has been a shift in both municipal type and direction of growth. From a peak of 55 percent of total county development in 1965, the proportion in the City of Flint decreased to 22 percent in 1973. The urban townships, particularly Flint and Genesee Townships, have become most important with some 41 percent of the developed spaces. The direction of growth has shifted to the northern and western portions of the county.

CHAPTER FIVE

MOBILE HOME DEVELOPMENTS IN GENESEE COUNTY: ANALYSIS OF SITE AND AREA FACTORS

Introduction

The previous chapter provided a base for the analysis of site and area factors influencing the location of mobile home developments in the Genesee County study area. It is the purpose of this chapter to: 1) identify locational factors influencing park construction in the study area, 2) note similarities between factors influencing the location of other forms of residential development, and 3) elicit changes in combinations of site and area factors influencing the location of mobile home developments constructed in different time periods.

Accessibility Factors

Distance to Urban Center

Mobile home developments in the study area were located at sites with a wide range of distances from the urban center. The range extended from a low of 2.8 road miles to the CBD to a maximum observed distance of 20.8 miles. The median distance from the CBD for all sixty parks was 5.4 miles. For early parks the median distance

was 4.6 miles compared to 8.1 miles for the more recently constructed ones. However, in both periods of construction there was a wide range between minimum and maximum distances.

Even though the ranges were considerable, there was moderate concentration of parks at locations of intermediate distance from the CBD (Table 9). For example, 68 percent were located within nine miles and over 53 percent within six miles of the urban center. Unlike early parks which were most often constructed at distances under six miles, recently constructed parks were more evenly distributed through the categories. It is apparent, however, that even parks of the recent period were not constructed in great numbers in the more distant portions of the county. Eighteen of the twenty-four newer developments were within twelve miles of the urban center.

Distance to the Center of Employment

Distance to the mean geographic center of manufacturing employment revealed differences between the two categories of developments (Table 10). However, for the study area, this measure adds little to the overall spatial understanding of mobile home developments because the center of employment was only 0.4 miles from the urban center. The median distance to the center of employment for all sixty parks was identical to that for the distances to the CBD (5.4 miles) and similar to that measured for early

Table 9
Distance to the Urban Center

		Road Miles					Total	
		2.8- 5.9	6.0- 8.9	9.0- 11.9	12.0- 14.9	15.0 or more		
Parks Constructed Prior to 1957	Number	25	2	3	2	4	36	
	Row %	69.4	5.6	8.3	5.6	11.1		
	Column %	78.1	22.2	42.9	40.0	57.1		
	% of Total	41.7	3.3	5.0	3.3	6.7	60.0	
Parks Constructed 1965-1973	Number	7	7	4	3	3	24	∞
	Row %	29.2	29.2	16.7	12.5	12.5		
	Column %	21.9	77.8	57.1	60.0	42.9		
	% of Total	11.7	11.7	6.7	5.0	5.0	40.0	
Total number		32	9	7	5	7	60	
Column % of Total		53.3	15.0	11.7	8.3	11.7		

Source: Field data.

Table 10
Distance to Center of Employment

		Road Miles					Total
		2.8- 5.9	6.0- 8.9	9.0- 11.9	12.0- 14.9	15.0 or more	
Parks Constructed Prior to 1957	Number	25	2	3	3	3	36
	Row %	69.4	5.6	8.3	8.3	8.3	
	Column %	78.1	22.2	42.9	50.0	50.0	
	% of Total	41.7	3.3	5.0	5.0	5.0	60.0
Parks Constructed 1965-1973	Number	7	7	4	3	3	24
	Row %	29.2	29.2	16.7	12.5	12.5	
	Column %	21.9	77.8	57.1	50.0	50.0	
	% of Total	11.7	11.7	6.7	5.0	5.0	40.0
Total number		32	9	7	6	6	60
Column % of Total		53.3	15.0	11.7	10.0	10.0	

Source: Field data.

and recent parks (4.4 miles and 8.5 miles respectively).

Distance to Highways

Proximity to state or federal highways was an important factor for development location in the study area²¹ (Table 11). Twenty-five of the parks were located adjacent to highways at the time of their construction and the median distance was only 0.2 miles. Only seven of the sixty parks were located at distances exceeding one mile from a highway with 3.9 miles the maximum distance observed. While similar percentages of both early and recent parks were located within one half mile of a highway, a higher percentage of newer developments were located adjacent to highways.

Influence of Accessibility Factors

It is apparent that of the three accessibility factors measured, proximity to highways had the strongest influence on the location of mobile home parks. It is also apparent that this was an important factor in both construction periods. While not as important as highway proximity, distance to the urban center and to employment was more important for parks in the study area than the literature suggests. This conclusion is based on the concentration of parks at locations of intermediate distance

²¹Only six parks were not located on major thoroughfares as defined by the Genesee County Metropolitan Planning Commission (1970c). Five of these were older parks.

Table 11
Distance to State or Federal Highway

		Miles					Total
		Adja- cent	0.2- 0.5	0.6- 1.0	1.1- 2.0	2.1 or more	
Parks Constructed Prior to 1957	Number	13	16	3	2	2	36
	Row %	36.1	44.4	8.3	5.6	5.6	
	Column %	52.0	69.6	60.0	100.0	40.0	
	% of Total	21.7	26.7	5.0	3.3	3.3	60.0
Parks Constructed 1965-1973	Number	12	7	2	0	3	24
	Row %	50.0	29.2	8.3	0	12.5	
	Column %	48.0	30.4	40.0	0	60.0	
	% of Total	20.0	11.7	3.3	0	5.0	40.0
Total number		25	23	5	2	5	60
Column % of Total		41.7	38.3	8.3	3.3	8.3	

Source: Field data.

and that only seven of the developments were located at distances exceeding fifteen miles from the CBD. Since most developments were constructed at intermediate distances and in close proximity to major highways, the commuting distance from the majority of the newer parks would not seem excessive.

Availability of Undeveloped Land

Related to the general peripheral location of mobile home developments is the percentage of land not in urban development in the immediate area of the park. The range for the fifty-two developments for which data were available was considerable; from a low of 13 percent for one development in the City of Flint to 99 percent for two rural parks. The median for all parks was 60 percent and the medians for both early and recent parks were similar (60 and 63 percent respectively). Approximately four-fifths of the developments were located where at least 40 percent of the immediate area was undeveloped and approximately 58 percent of the parks where the value exceeded 60 percent (Table 12).

As might be expected, recently constructed parks were found more often in areas of greater percentages of undeveloped land. Only three were in areas where the value was less than 40 percent of surrounding undeveloped land while thirteen recent parks were in areas where the percentage exceeded 60.

Table 12

Percent of Surrounding Area Not in Urban Development

		Percent				Total
		1-19	20-39	40-59	60 or more	
Parks Constructed Prior to 1957	Number	1	6	7	17	31
	Row %	3.2	19.4	22.6	54.8	
	Column %	33.3	85.7	58.3	56.7	
	% of Total	1.9	11.5	13.5	32.7	59.6
Parks Constructed 1965-1973	Number	2	1	5	13	21
	Row %	9.5	4.8	23.8	61.9	
	Column %	66.7	14.3	41.7	43.3	
	% of Total	3.8	1.9	9.6	25.0	40.4
Total number		3	7	12	30	52
Column % of Total		5.8	13.5	23.1	57.7	

Source: Field data.

Area Environmental Factors

Socioeconomic Prestige

A socioeconomic index was computed for all census tracts in the study area for both 1960 and 1970. The index based on the 1960 census figures was used for parks constructed prior to 1957 and data from the 1970 census were used for those constructed after 1965. Both indexes had a potential range of 0-100 with 100 indicating the highest socioeconomic prestige level.

The actual range for tracts where mobile home parks were located was from 15 to 62 with a median index of 39. The majority of all parks (88 percent) were located in tracts with a value between 25 and 54 (Table 13). The socioeconomic prestige of the immediate area was a stronger influence for recently constructed parks. This was reflected in a higher median (43 compared to 33) and a higher modal interval; none of the recent parks were in tracts which had an index below 28. Interestingly, the index increased between 1960-1970 for tracts in which twenty-one of the early parks were located. Of the thirteen early parks in which the index was lower in 1970, eleven were in the City of Flint.

Land Use in the Immediate Area

An important feature of the area environment is surrounding land use. Three factors were used in this measurement: 1) surrounding residential land use

Table 13
Socioeconomic Prestige of Area

		Index					Total
		15-24	25-34	35-44	45-54	55 or higher	
Parks Constructed Prior to 1957	Number	8	14	3	9	2	36
	Row %	22.2	33.9	8.3	25.0	5.6	
	Column %	100.0	77.8	21.4	60.0	40.0	
	% of Total	13.3	23.3	5.0	15.0	3.3	60.0
Parks Constructed 1965-1973	Number	0	4	11	6	3	24
	Row %	0	16.7	45.8	25.0	12.5	
	Column %	0	22.2	78.6	40.0	60.0	
	% of Total	0	6.7	18.3	10.0	5.0	40.0
Total number		8	18	14	15	5	60
Column % of Total		13.3	30.0	23.3	25.0	8.3	

Source: Computed from: U.S. Bureau of the Census, 1962a; 1972a.

(excluding mobile home developments), 2) surrounding non-residential land use, and 3) land use immediately adjacent to the park boundary. Land use data were obtained from 1957 and 1972 aerial photography and were available for fifty-two developments.

Surrounding residential land use. All but six of the parks for which data were available had some residential development in the immediate area. The median percentage was 16 and the range was from no surrounding residential land use to 68 percent. There were only slight differences between the two age groups. For example, the median value of 15 percent for newer parks was similar to the 16 percent median for parks constructed prior to 1957. Also, the modal interval for both age categories was the 1-19 percent range and the differences between early and recent parks in the other intervals were not great (Table 14).

Surrounding nonresidential land use. Fewer parks in the study area were in areas of nonresidential land use than might be expected on the basis of the general literature. While the overall range was from 0 to 59 percent, fifteen developments had no surrounding area devoted to nonresidential uses. The median for all parks was 4 percent. Early parks were more often located in nonresidential areas than those constructed after 1965. The median for newer parks was 2 percent compared to 8 percent for

Table 14

Residential Land Use in Surrounding Area

		Percent					Total
		None	1-19	20-39	40-59	60 or more	
Parks Constructed Prior to 1957	Number	3	13	12	1	2	31
	Row %	9.7	41.9	38.7	3.2	6.5	
	Column %	50.0	56.5	63.2	50.0	100.0	
	% of Total	5.8	25.0	23.1	1.9	3.8	59.6
Parks Constructed 1965-1973	Number	3	10	7	1	0	21
	Row %	14.3	47.6	33.3	4.8	0	
	Column %	50.0	43.5	36.8	50.0	0	
	% of Total	5.8	19.2	13.5	1.9	0	40.4
Total number		6	23	19	2	2	52
Column % of Total		11.5	44.2	36.5	3.8	3.8	

Source: Field data.

early parks. Only one recent park was in an area exceeding 19 percent nonresidential uses compared to six older developments (Table 15).

Land use adjacent park boundary. Only slightly over one-half of the parks had no contiguous mixed land use (Table 16). This reveals the general tendency for mobile home parks to be located in areas less desirable than is generally true for single family subdivisions. There were, however, apparent differences between older and newer parks. One example is the greater percentage of older parks with adjacent mixed land use. Over one-half of the parks constructed prior to 1957 had contiguous mixed land use compared to fewer than one-third of the more recently constructed ones. For the study area, the absence of mixed adjacent land use was a more important influence on the location of newer parks than those opened during the earlier period.

Index of Incompatible Uses

A crude index of uses generally considered incompatible with residential development was computed for fifty-six parks. The potential range was from 0 (no negative features in the immediate area) to 8 (high negative index). The actual range was from 0 for sixteen developments to 7 for one early park.

The primary difference between early and recent parks was at the high negative end of the scale (Table 17).

Table 15
Nonresidential Land Use in Surrounding Area

		Percent				
		None	1-19	20-39	40-59	Total
Parks Constructed Prior to 1957	Number	9	16	6	0	31
	Row %	29.0	51.6	19.4	0	
	Column %	60.0	53.3	100.0	0	
	% of Total	17.3	30.8	11.5	0	59.6
Parks Constructed 1965-1973	Number	6	14	0	1	21
	Row %	28.6	66.7	0	4.8	
	Column %	40.0	46.7	0	100.0	
	% of Total	11.5	26.9	0	1.9	40.4
Total number		15	30	6	1	52
Column % of Total		28.8	57.7	11.5	1.9	

Source: Field data.

Table 16
Land Use Adjacent Park Boundary

		Type					Total	
		Residen- tial	Undevel- oped	Mixed ¹	Mixed ²	Mixed ³		
Parks Constructed Prior to 1957	Number	3	11	0	6	11	31	100
	Row %	9.7	35.5	0	19.4	35.5		
	Column %	75.0	47.8	0	85.7	84.6		
	% of Total	5.8	21.2	0	11.5	21.2	59.6	
Parks Constructed 1965-1973	Number	1	12	4	1	3	21	
	Row %	4.8	57.1	19.0	4.8	14.3		
	Column %	25.0	52.2	100.0	14.3	21.4		
	% of Total	1.9	23.1	7.7	1.9	5.7	40.4	
Total number		4	23	4	7	14	52	
Column % of Total		7.7	44.2	7.7	13.5	26.9		

Source: Field data.

¹Majority residential

²Majority nonresidential

³Majority undeveloped

Table 17
Index of Incompatible Uses

		Index					Total
		0	1 - 2	3 - 4	5 - 6	7 - 8	
Parks Constructed Prior to 1957	Number	9	12	6	4	1	32
	Row %	28.1	37.5	18.8	12.5	3.1	
	Column %	56.3	48.0	60.0	100.0	100.0	
	% of Total	16.1	21.4	10.7	7.1	1.8	57.1
Parks Constructed 1965-1973	Number	7	13	4	0	0	24
	Row %	29.2	54.2	16.7	0	0	
	Column %	43.8	52.0	40.0	0	0	
	% of Total	12.5	23.2	7.1	0	0	42.9
Total number		16	25	10	4	1	56
Column % of Total		28.6	44.6	17.9	7.1	1.8	

Source: Field data.

None of the recent parks had a score exceeding 4 compared to five early developments. Recently constructed parks tended not to be located adjacent to railroads or in industrial areas as was true for many older ones. Location near freeways was the major contributor to negative scores for newer parks.

Only sixteen of the parks were located in areas free from any nearby negative features indicating that the absence of these factors has not been an especially strong influence on park location. Also indicated by this measure, however, is that there has been an upgrading of sites during the recent period of construction.

Distance to Elementary School

It was thought that newer parks would be more greatly influenced by proximity to elementary schools. This factor, however, appears to be of little importance to development location (Table 18). The overall range varied from 0.4 to 7.9 miles and the median distance to an elementary school was 1.8 miles. The median for older parks was 1.6 miles compared to 2.0 miles for parks constructed after 1965. Only eight of the developments were within walking distance of schools which was defined as three-quarters of a mile (Genesee County Metropolitan Planning Commission, 1970a: 6).

Table 18

Distance to Nearest Elementary School in District

		0.8 or less	0.9- 1.5	1.6- 3.0	3.1- 4.5	4.6 or more	Total	103
Parks Constructed Prior to 1957	Number	5	10	11	4	6	36	
	Row %	13.9	27.8	30.6	11.1	16.7		
	Column %	62.5	62.5	52.4	50.0	85.7		
	% of Total	8.3	16.7	18.3	6.7	10.0	60.0	
Parks Constructed 1965-1973	Number	3	6	10	4	1	24	
	Row %	12.5	25.0	41.7	16.7	4.2		
	Column %	37.5	37.5	47.6	50.0	14.3		
	% of Total	5.0	10.0	16.7	6.7	1.7	40.0	
Total number		8	16	21	8	7	60	
Column % of Total		13.3	26.7	35.0	13.3	11.7		

Source: Field data.

Influence of Environmental Factors

When considering the general location of all parks in the study area, the environmental quality of the immediate area was not a strong influence on the location of mobile home parks. This conclusion is based on the following:

- 1) Most parks were located in areas where the residential land uses were not in the majority.
- 2) Most parks were located in tracts which had a relatively low socioeconomic level.
- 3) Most parks were located at considerable distances from elementary schools.
- 4) Most parks were in areas where nearby negative features were present.

However, four of the six environmental factors used in this study indicated changing locational considerations for newer parks. Parks constructed after 1965 were more often located in areas which had a moderate instead of low socioeconomic level as was true for older parks. Mixed land use, both in terms of surrounding area and that adjacent to the park boundary, was not as common for recent mobile home developments. Additionally, absence of nearby features which might distract from the residential quality of the area was a stronger influence for modern parks. These factors indicate transition, but this transition has not progressed to the point where the quality of the immediate environment is the same location influence as is generally true for single family subdivisions.

Institutional Factors

Zoning

As presented in Chapter Two, zoning is a critical factor to establishing mobile home developments. The assumption has been that zoning permitting mobile home development would be more easily obtained in rural areas. Related to this is the absence of rural zoning in many parts of the nation. When parks are allowed in urban areas, the assumption has been that they would more likely occur in those portions zoned for nonresidential purposes.

All jurisdictions in Genesee County have zoning ordinances and only ten parks were established prior to zoning regulations in three of the townships. Three items pertaining to zoning were measured. These were: 1) percentage of residential zoning in the surrounding area, 2) zoning immediately adjacent the park boundary, and 3) zoning of the specific site. Zoning data were available on fifty-seven of the sixty developments.

Surrounding residential zoning. Almost three-quarters of the parks were located where at least 40 percent of the immediate area was zoned residential and only seven were located where none of the surrounding area was zoned residential. There were few differences between early and recent developments (Table 19).

The range for all parks varied from 0-95 percent of the surrounding area zoned residential with a median

Table 19
Residential Zoning in the Surrounding Area

		Percent					
		None	1-19	20-39	40-59	60 or more	Total
Parks Constructed Prior to 1957	Number	3	1	5	14	12	35
	Row %	8.6	2.9	14.3	40.0	34.3	
	Column %	42.9	100.0	62.5	70.0	57.1	
	% of Total	5.3	1.8	8.8	24.6	21.1	61.4
Parks Constructed 1965-1973	Number	4	0	3	6	9	22
	Row %	18.2	0	13.6	27.3	40.9	
	Column %	57.1	0	37.5	30.0	42.9	
	% of Total	7.0	0	5.3	10.5	15.8	38.6
Total number		7	1	8	20	21	57
Column % of Total		12.3	1.8	14.0	35.1	36.8	

Source: Municipal Zoning Maps¹.

¹Cities--Davison, Flint; Townships--Burton, Clayton, Davison, Fenton, Flint, Flushing, Genesee, Grand Blanc, Montrose, Mt. Morris, Thetford, Vienna.

percentage of 51. The two age groupings were similar. Older parks had a median of 54 percent compared to 48 percent for those constructed after 1965.

Zoning adjacent to boundary. Examination of the zoning designation of land immediately adjacent to park boundaries provides additional insights. Most had mixed contiguous zoning and only eight had all commercial or all industrial zoning adjacent to the park (Table 20). Thirty had mixed contiguous zoning, two-thirds of which were older parks. Precisely one-half of the recent parks had all the adjacent land zoned residential compared to 23 percent of the early developments.

Specific site zoning. Considerable differences were apparent between older and newer parks when specific site zoning was examined (Table 21). Ten early parks were established prior to zoning regulations in their jurisdictions, but there were other differences as well. For example, only three recent parks were located on sites zoned for nonresidential purposes compared to fifteen older developments. Additionally, a greater proportion of recent parks were located on parcels zoned residential.

Type of Sewer System

A recent national survey reported that 69 percent of higher quality mobile home parks were connected to municipal sewer systems (Wehrly, 1972: 23). Within the

Table 20
Zoning Adjacent Park Boundary

		Type					Total
		Residen- tial	Mixed ¹	Mixed ²	Commer- cial	Indus- trial	
Parks Constructed Prior to 1957	Number	8	8	12	4	3	31
	Row %	22.9	22.9	34.3	11.4	8.6	
	Column %	42.1	61.5	75.0	100.0	75.0	
	% of Total	14.0	14.0	21.1	7.0	5.3	61.4
Parks Constructed 1965-1973	Number	11	5	5	0	1	22
	Row %	50.0	22.7	22.7	0	4.5	
	Column %	57.9	38.5	38.5	0	25.0	
	% of Total	19.3	8.8	8.8	0	1.8	38.6
Total number		19	13	17	4	4	57
Column % of Total		33.3	22.8	29.8	7.0	7.0	

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Source: Municipal Zoning Maps³.

¹Residential and commercial

²Residential, commercial, and industrial

³Cities--Davison, Flint; Townships--Burton, Clayton, Davison, Fenton, Flint, Flushing, Genesee, Grand Blanc, Montrose, Mt. Morris, Thetford, Vienna.

Table 21
Specific Zoning of Site

		Type				Total
		Residen- tial	Mobile Home	Nonresi- dential	No Zoning	
Parks Constructed Prior to 1957	Number	8	2	15	10	35
	Row %	22.9	5.7	42.9	28.6	
	Column %	47.1	16.7	83.3	100.0	
	% of Total	14.0	3.5	26.3	17.5	61.4
Parks Constructed 1965-1973	Number	9	10	3	0	22
	Row %	40.9	45.5	13.6	0	
	Column %	52.9	83.3	16.7	0	
	% of Total	15.8	17.5	5.3	0	38.6
Total number		17	12	18	10	57
Column % of Total		29.8	21.1	31.6	17.5	

Source: Municipal Zoning Maps¹.

¹Cities--Davison, Flint; Townships--Burton, Clayton, Davison, Fenton, Flint, Flushing, Genesee, Grand Blanc, Montrose, Mt. Morris, Thetford, Vienna.

study area, however, 77 percent of all parks were on municipal systems. Almost identical proportions were found for early or recent developments (Table 22). The major differences between the two groups were that only one newer park utilized septic tanks and that four newer parks used lagoon sewer treatment systems.

Type of Water System

The availability of municipal water supply was not a critical factor of location for parks within the study area. Only 27 percent were connected to municipal water systems. An almost identical proportion of recent and early parks utilized municipal supplies (Table 23).

Influence of Institutional Factors

Parks within the study area were most often located at sites and in areas zoned for some form of residential use. This partially reflects changes in the ways municipalities designate mobile home parks in zoning ordinances. Beginning in the mid-1950's, Michigan courts have generally ruled against municipalities prohibiting mobile home parks outright or excluding them by making no provision for parks in their ordinances (exclusionary zoning). This has been noted frequently in the literature (examples include: Newcomb, 1971: 38; Gibson, 1972: 36-37; Galetschky, 1974: 12-13; Elias, 1974: 171). In only four political units containing parks in Genesee County are they presently

Table 22
Type of Sewer System Used

		Type				
		Septic	Lagoon	Private	Municipal	Total
Parks Constructed Prior to 1957	Number	8	0	1	27	36
	Row %	22.2	0	2.8	75.0	
	Column %	88.9	0	100.0	58.7	
	% of Total	13.3	0	1.7	45.0	60.0
Parks Constructed 1965-1973	Number	1	4	0	19	24
	Row %	4.2	16.7	0	79.2	
	Column %	11.1	100.0	0	41.3	
	% of Total	1.7	6.7	0	31.7	40.0
Total number		9	4	1	46	60
Column % of Total		15.0	6.7	1.7	76.7	

Source: Michigan Department of Health

Table 23

Type of Water System Used

		Type		
		Private	Municipal	Total
Parks Constructed Prior to 1957	Number	20	16	36
	Row %	55.6	44.4	
	Column %	60.6	59.3	
	% of Total	33.3	26.7	60.0
Parks Constructed 1965-1973	Number	13	11	24
	Row %	54.2	45.8	
	Column %	39.4	40.7	
	% of Total	21.7	18.3	40.0
Total number		33	27	60
Column % of Total		55.0	45.0	

Source: Michigan Department of Health.

restricted to commercial districts in their zoning ordinances.²² In the remaining eleven municipalities, parks are allowed in mobile home, mobile home and apartment, or residential districts. Most of these (eight) presently have specific mobile home districts.

It should be noted, however, that the majority of these changes in designation are recent. Within the study area, regardless of the ways parks were designated at the time of construction, they were most often located at sites and in areas zoned for some form of residential use.

The high percentage (77 percent) of parks connected to municipal sewer systems may be unique to the study area.

²²A list of municipal zoning ordinances and maps consulted is found in Appendix C.

Genesee County began a program in 1961 to provide sewerage service to all developed areas of the county (Banks, 1972: 16). Additionally, state law requires connection to a public sewer system " . . . where a public sewer system is available and accessible" (Michigan Department of Health, 1971: 12).

Summary

The idea that mobile home developments display "no particular pattern of location," at least for parks within the study area, should be modified. It is felt that statements as the above indicating a "random" pattern of location result from failure to analyze park location in detail. Seven of the site and area factors measured in this study were associated with general park location. Distance to the urban center and to employment opportunities was of greater importance than the literature suggests. There was no doubt of the general peripheral location, yet 68 percent of all parks were within nine miles of the urban center and the center of employment, and 80 percent were within twelve miles. Proximity to highways has been emphasized in other studies (El Gammal, 1966: 72; Freed, 1969: 202) and this was also an important factor for parks in Genesee County. Slightly over 80 percent were adjacent to or within one-half mile of highways.

Related to the peripheral location, an additional important factor for all parks was the availability of

undeveloped land. Approximately 58 percent were located in areas where undeveloped land exceeded 60 percent and 81 percent where the surrounding area exceeded 40 percent undeveloped.

When all parks were considered, area environmental factors tended not to be of great importance. For example, the presence of mixed adjacent land use was not a major inhibiting factor. Only the absence of excessive numbers of nearby noxious elements seemed to be an important influence for all sixty parks.

Two institutional factors--surrounding residential zoning and availability of municipal sewers--were of importance to the location of all parks. Approximately 72 percent were located where surrounding residential zoning exceeded 40 percent. Approximately 77 percent were connected to municipal sewers.

The findings also show that certain site and area factors were not of great importance to park location in general. This was indicated by low socioeconomic levels of areas where parks were located, the variety of surrounding land use, and low importance of proximity to elementary schools. It was also found that site and adjacent zoning and availability of municipal water supplies were among the least important factors influencing general mobile home park location.

Also important were the varying combinations of factors influencing the location of parks constructed

during the early and recent phases. There were differences between the two categories in two of the distance factors and in availability of undeveloped land. As could be expected, the larger recently constructed parks were located at greater distances from the urban center and employment opportunities. The median distance for recent parks on both measures was 8.1 miles compared to 4.6 miles for early parks. While the ranges and medians for both categories of parks were similar for the percent of undeveloped land, a slightly higher percentage of recent parks were in areas where undeveloped land exceeded 40 percent.

The greatest differences between early and recent parks were found in the measures of the immediate environment. Newer parks were more likely to be located in areas where the socioeconomic level is higher, where the surrounding nonresidential land use is lower, and where unmixed adjacent land use is present. Also an important factor influencing the location of recently constructed parks was the absence of nearby incompatible features. This last characteristic would have shown even greater differences were it not for the tendency for newer parks to be located adjacent to freeways.

There were also differences apparent in two institutional measures. Zoning of the specific site for newer parks was most often residential or specifically mobile home designation. Only three recent parks were located at

sites zoned nonresidential compared to fifteen early ones. The importance of residential zoning was also found in the measure of the type of zoning immediately adjacent the park boundary. Older parks were most often located where mixed adjacent zoning was present and particularly where commercial or industrial zoning was predominant. For newer parks, however, the absence of mixed zoning was the most important.

Site and area factors influencing the location of mobile home developments are not identical to those found to influence the location of single family subdivisions. However, the findings of this study show certain changes in location of parks opened in the two construction phases. These changes indicate a convergence toward locations which are more typically residential in character for newer parks and these changes have several implications which are presented in Chapter Six.

CHAPTER SIX

SUMMARY AND IMPLICATIONS

Introduction

The rapid increase in the use of mobile homes is easily documented. From approximately 8 percent of all housing additions in 1960, mobile homes comprised some 22 percent in 1974. This rapid increase has been attributed to a variety of factors including the cost of single family housing, improvements in mobile homes, smaller family size, and changing housing preference. Regardless of the reasons, the more widespread use of mobile housing presents challenges to those concerned with housing and the growth of metropolitan areas.

One of the challenges concerns the topic of this research--mobile home development location. Development construction has not kept pace with mobile home manufacturing, and presently about one-half of all mobile homes are located on individual lots. However, within metropolitan areas and increasingly elsewhere, the normal setting for mobile homes is in mobile home developments.

Development construction has been most rapid in recent times. For example, in Michigan 47 percent of all parks and 67 percent of all spaces have been constructed

since 1965. Within the Genesee County study area, the figures for the same period are 40 percent and 63 percent, respectively. This recent rise in construction has often resulted in inadequate policy, or at least charges of inadequate policy, related to mobile home developments.

Much of the criticism directed toward public officials, in regard to development policy, is only partially justified. Experience with mobile home parks has been limited and many of the early parks provided considerable negative experience. Older parks tended to be small, overcrowded, and had few amenities considered basic for residential uses. Densities in parks constructed prior to 1957 in the study area ranged up to 21 and averaged some 14 spaces per acre. Many early parks were also poorly located. Industrial areas, heavy commercial districts, adjacent railroads and salvage yards offer few positive residential features.

The poor location of many early parks was no doubt partially due to decisions (or lack of decisions) of public officials. There was a tendency to exclude mobile home developments from residential areas. Within the study area, for example, four municipalities containing mobile home parks presently allow parks only in commercial areas.

There are, however, other factors influencing park location. The influence public policy, such as zoning, has on the location of mobile home developments may have

been overemphasized. For one thing, the role and function parks perform have changed and what are now considered poor locations was a typical result.

Early parks, for example, were constructed for a small, highly portable, often transient dwelling. There was less need for the amenities, internal or locational, basic for more permanent housing. Modern parks, however, are residential developments designed for manufactured housing that is usually permanent. They are larger with the twenty-four parks in the study area constructed since 1965 averaging 29 developed acres and 204 spaces. Average densities have also decreased to seven homes per acre. These newer parks approximate more the densities of town-houses than the much higher densities of older parks. The curvilinear street design, the variety in home placement, increased open space, and recreational facilities are other examples of internal amenity features in many newer parks.

Failure to recognize these changes is one policy criticism that is justified. It is still common to find statements in policy positions which reflect this failure to recognize change:

The relatively transient and non-permanent housing characteristics of the modern mobile home require carefully planned site facilities which are designed for the unique group living needs of the mobile home dweller (Tri-County Regional Planning Commission, no date, 3a).

The argument is not with the requirement for "carefully

planned site facilities." This should be true for any land development. The question is with "relatively transient and non-permanent characteristics" of mobile housing and the "unique" needs of mobile home residents. These features were no doubt true in the past, but not necessarily so now.

In the present study, locational change in mobile home parks was less apparent than those internal to the park. However, it was apparent that different combinations of site and area factors influenced the location of early and recent parks.

Summary of Factors

Parks constructed prior to 1957 were located closer to the urban center and to employment opportunities than those opened after 1965. The majority of modern mobile home developments were within reasonable commuting distance, but the range extended to over twenty miles. Proximity to highways, however, remained an important factor with only slight differences between older and newer developments. One-half (twelve) of the newer parks were adjacent to highways; six of these were adjacent to expressways.

Availability of undeveloped land was a strong influence in park location. With the relatively large parcels necessary for recent parks this was an expected characteristic and all but three of the newer developments

were constructed where surrounding undeveloped land exceeded 40 percent. This factor, however, should be examined in combination with other measures. The most distant and most rural portions of the study area were not the areas of greatest park construction. Instead parks were located in the less developed portions of urban and suburban townships in moderate proximity to the City of Flint. Recent mobile home developments were influenced by availability of undeveloped land, but proximity to the urban center and particularly automobile transportation were also of importance.

Several measures of the immediate environment indicated changes in park location. For example, the trend was for newer parks to be constructed in areas of moderate socioeconomic prestige levels. Mobile home developments cater to moderate income households so this characteristic is important primarily because of the contrast to the areas where older parks were located. The trend is clearly toward location in areas where the general socioeconomic level is higher.

The surrounding developed land for the majority of parks was predominantly residential. Few of the recent parks were in areas where the surrounding nonresidential land use exceeded 5 percent and only one where it exceeded 19 percent. This general residential location was further indicated when land use adjacent to the park boundary was examined. Only eight recent parks had mixed adjacent land

use compared to seventeen (over 50 percent) of the early developments. The trend is away from location in areas of mixed land use.

Considerable concern has been expressed about adverse effects parks may have on the land use surrounding them. Since this concern is seldom based on actual measurement, it was thought appropriate to determine actual changes that had occurred surrounding parks opened during the early phase of construction in the study area. It was possible to measure land use changes surrounding thirty of the thirty-six mobile home parks in existence at the end of 1957. This was accomplished by comparing measurements taken from aerial photography for 1957 and high altitude RB-57 imagery taken in 1972. Fifteen years is sufficient time to make at least tentative statements.

For the thirty pre-1957 parks, an average of 61 percent of the surrounding area had no urban development. Obviously there has been a reduction in this amount during the fifteen years. Overall, there was a median reduction of 17 percent of vacant land. The important question is, however, for what use?

The 1957 aerial photographs revealed that the greatest proportion of developed land was devoted to residential uses (excluding mobile home parks). The breakdown is as follows:

- 1) Mobile home developments, median--2 percent
- 2) Residential (single and multiple family),

median--16 percent

3) Nonresidential, median--8 percent.

The remaining proportion was lakes and reservoirs in the immediate area of seven parks and ranged to a high of 27 percent for one park and highways and railyards which ranged to a high of 22 percent.

The greatest conversion in surrounding land use was for residential purposes. During the fifteen years, the median increase was 11 percent but the range was considerable. For one park there was a 5 percent reduction and the greatest increase was 51 percent. For only four parks was there no change in surrounding residential uses.

For nine of the parks there was no increase in the amount of surrounding industrial and commercial uses. However, the figure ranged to a high of 25 percent. Much of the total increase was accounted for by two parks. One park located south of Flint in Grand Blanc Township on M-54 had an increase of 21 percent in primarily commercial uses. The other development, situated in an industrial area adjacent to a railyard, the intersection of two interstates, and immediately north of Bishop Airport, registered an increase of 25 percent. This park was also one of two that registered a decrease in surrounding residential uses.

The location of parks is sometimes criticized because of adjacent railroads and freeways. For seven of the older parks in Genesee County, freeways were constructed through the immediate area after the parks were opened.

Even though only seven parks were affected, this provided an overall median increase in land devoted to highway development of 2 percent.

Due to both expansion of existing parks and construction of new ones, there was a median increase of 1 percent in mobile home park land uses surrounding the pre-1957 parks. Eighteen recorded some increase ranging to a high of 6 percent. For eight of the parks this increase was due to construction of new parks.

When land use changes were compared on the basis of municipal type, only slight differences were noted in most categories. Increases in residential uses were rather uniform. Increases in mobile home uses also varied little from the overall median but the greatest change occurred around the parks located in Flint. This was due mainly to expansion of existing parks and the construction of two new ones in the Kersley Reservoir vicinity in the northeast part of the city.

Greater differences between municipal types, however, were recorded for commercial-industrial, highway, and decrease in vacant land. The urban townships and one small city registered the greatest changes in all categories except adjacent mobile home developments. These were also the only municipalities recording increases in highway development. Additionally, in these six jurisdictions were found the greatest increase in commercial-industrial uses and the greatest decrease in vacant land surrounding

their fourteen parks.

The changes that have occurred around pre-1957 mobile home developments have several significant implications. First, the fact that the median increase in industrial-commercial uses was only 2 percent should reduce fears that mobile home parks necessarily adversely affect adjacent land uses. Much of the increase was accounted for by parks located in nonresidential areas at the beginning of the period. This is particularly true for the sixteen developments located adjacent or near M-54. When the one park located at the intersection of M-78 (now I-69) and I-75 is added to these, the increases in commercial-industrial uses for the remaining thirteen parks are small by comparison.

Secondly, the greatest conversion of undeveloped land was for residential purposes. This accounted for approximately 61 percent of the converted land and was some 70 percent when increases in mobile home land use were included. Obviously, residential uses account for most of the land conversion in metropolitan areas. Of importance is that the figure was also high around mobile home parks.

The discussion of actual changes that have occurred around the thirty pre-1957 parks during the fifteen year period indicates that mobile home parks are not necessarily incompatible with other forms of residential development. Much depended on the type of area where the

park was initially located. The greatest increases in non-residential uses were recorded around those parks initially located in nonresidential areas.

Related to this was the measure of features detracting from the residential character of areas where developments were located. For the study area at least, surrounding negative features were not as pronounced as the literature would lead one to believe. Over 73 percent of all parks were in areas with a negative score of 2 or less. The highest negative score for newer parks was 4 compared to 7 for early developments. The greatest contributing factor for negative scores for newer parks were adjacent freeways.

One area environment factor that had very little influence on park location was proximity to elementary schools. Based on past experience, this was expected. Mobile home households tend to have few school-age children. However, the lack of influence of school proximity on park location should be a matter of concern. Assuming that the cost of single family housing continues to increase at a rate higher than mobile housing and that mobile homes will increase in size and number of conveniences, it is possible that a greater proportion of families will remain in or purchase mobile homes than has been true in the past. The implication, of course, is that even if school proximity does not become an important factor for development location, developments will have a

greater impact on the school districts in which they are found. The impact will not only be due to increased enrollments but also to higher transportation costs.

Of the institutional factors measured in this research, availability of municipal sewers was of considerable importance. Approximately 77 percent of all parks were connected to public sewer systems. On the other hand, less than 50 percent of the developments within the study area were connected to municipal water systems. The order of importance of these two factors was reversed in the study area compared to one national survey of high quality parks.

Zoning, the institutional factor so often emphasized in the literature, was inconclusive as a factor of location in this research. Taken as a whole, parks were found in sites zoned residential, specifically for mobile home parks, commercial, industrial, and agricultural. But, as with other factors, there were apparent trends.

The differences between older and newer parks were not so much in surrounding residential zoning, where some 72 percent of all parks were located in areas of at least 20 percent of the immediate area was zoned residential, as with specific site and adjacent zoning. For example, more than four-fifths of recent parks were located at sites zoned residential or specifically for mobile home parks. In terms of adjacent zoning, mixed zoning was more of a deterrent to recent developments than older ones. One-half

of the newer parks had no mixed adjacent zoning compared to fewer than one-quarter of the early developments.

It is apparent from this research that zoning protection was not the important factor of location for mobile home developments as had been indicated for single family subdivisions. But it was also apparent that park location was more than a simple "either-or" proposition of obtaining zoning variance just anywhere. The trend is toward location in areas which are not only predominantly residential in terms of land use but also those which have residential zoning.

There is no question that mobile home parks are highly restricted compared to other residential development. Literature for the nation as a whole and regulations of municipalities in the study area reveal that special use permits or some form of variance is normally required regardless of the type of districts in which parks are allowed. The developer who must appear before zoning boards, municipal governing bodies, and courts to obtain zoning permits would logically consider this an important factor.

Using survey results only, however, leaves out important information pertaining to land zoning of the site and area where the development was located. It was the intention in this research to examine this institutional factor in terms of the specific site and area zoning. The important finding revealed in this study was

that mobile home parks have been located at sites and in areas predominantly residential and that this is of particular importance to newer parks.

Suggestions for Future Investigations

This research concerned the location of an increasingly important form of residential land use. The primary focus was the enumeration and examination of a set of site and area factors thought to influence the intra-metropolitan location of mobile home developments. Mobile home park location has often been examined in rather simplistic terms. The intent of the approach used in this investigation was to recognize and incorporate a certain degree of complexity by utilizing a large number of factors including those of accessibility, land availability, area environment, and institutional.

The approach also provided a method of identifying change in the way these factors influence park location in different periods of construction. While the combination of site and area factors influencing early and recent parks did not vary to the extent expected, there were nonetheless indications of change. For example, more recently constructed parks were more influenced by characteristics of the area environment as indicated by area socioeconomic levels, adjacent and area land use, and the absence of nearby negative features. Institutional factors, on the other hand, proved less conclusive. There was evidence,

however, that newer parks were more influenced by such factors as site and area residential zoning and availability of municipal services.

A major implication centers on evidence that mobile home park location is becoming less unique. There has been a convergence toward similar site and area factors influencing other forms of residential land use. Mobile home developments are evolving. By incorporating this transition into analysis, the spatial understanding of this residential form is aided.

The generalizations presented in this research are limited, for it was based primarily on sixty mobile home developments in one metropolitan county in the upper-Midwest. It is hoped that these findings will generate additional research in other areas. A considerable amount of controversy has accompanied the more widespread construction of mobile home parks. Additional research and understanding may provide less controversial decisions in the future.

Finally, it is hoped that this study has added to the spatial understanding of mobile home parks. The intent throughout was the application of geographic inquiry on a problem of present concern. In this regard, the present author shares the opinion expressed in a recent publication:

The translation of basic research into usable material for public and private development and decision making is an important responsibility of the academic community (Horton, 1973: iii).

APPENDICES

APPENDIX A

United States Data

Table A1 - Mobile Home Data by State

	No. of Mobile Homes 1960	Rank 1960	No. of Mobile Homes 1970	Rank 1970	Mobile Home Quotient 1970	Rank 1970
1. Alabama	9,932	25	51,407	13	1.51	18
2. Arizona	23,243	10	52,247	12	2.94	2
3. Arkansas	4,880	43	29,666	25	1.44	20
4. California	101,601	1	197,358	1	.92	34
5. Colorado	12,979	16	31,147	22	1.37	22
6. Connecticut	6,456	37	9,605	44	.32	45
7. Delaware	3,569	45	9,001	47	1.68	13
8. Florida	65,087	2	172,100	2	2.26	5
9. Georgia	12,689	18	76,435	8	1.70	12
10. Idaho	6,763	36	15,939	36	2.18	6
11. Illinois	32,470	5	73,757	10	.39	44
12. Indiana	27,994	9	67,983	11	1.29	24
13. Iowa	11,555	20	24,285	30	.83	36
14. Kansas	11,783	19	26,690	29	1.10	28
15. Kentucky	10,076	24	43,291	19	1.33	23
16. Louisiana	9,445	28	38,305	20	1.09	29
17. Maine	6,180	39	16,250	35	1.56	17

Table A1 - Continued

	No. of Mobile Homes 1960	Rank 1960	No. of Mobile Homes 1970	Rank 1970	Mobile Home Quotient 1970	Rank 1970
18. Maryland	9,521	27	20,343	32	.54	42
19. Massachusetts	6,766	35	10,928	41	.19	48
20. Michigan	29,400	8	75,012	9	.86	35
21. Minnesota	10,782	23	29,740	24	.79	39
22. Mississippi	6,327	38	30,581	23	1.44	21
23. Missouri	16,613	13	50,878	14	.99	30
24. Montana	7,077	33	16,935	34	2.30	4
25. Nebraska	7,155	32	14,838	38	.95	33
26. Nevada	8,026	31	20,520	31	3.91	1
27. New Hampshire	2,896	46	12,621	39	1.66	15
28. New Jersey	9,156	29	15,025	37	.21	47
29. New Mexico	12,937	17	18,911	33	1.91	10
30. New York	31,306	7	77,560	7	.41	43
31. North Carolina	19,133	11	98,474	3	1.99	9
32. North Dakota	5,017	42	9,645	43	1.57	16
33. Ohio	42,892	3	85,824	6	.81	37
34. Oklahoma	8,086	30	27,600	27	.96	32
35. Oregon	14,090	15	37,801	21	1.68	14
36. Pennsylvania	31,434	6	87,571	5	.74	40
37. Rhode Island	1,513	48	2,338	48	.25	46
38. South Carolina	11,072	21	50,211	16	2.04	8

Table A1 - Continued

	No. of Mobile Homes 1960	Rank 1960	No. of Mobile Homes 1970	Rank 1970	Mobile Home Quotient 1970	Rank 1970
39. South Dakota	6,929	34	11,637	40	1.72	11
40. Tennessee	9,792	26	48,418	17	1.22	25
41. Texas	36,878	4	94,687	4	.81	38
42. Utah	4,858	44	9,189	46	.96	31
43. Vermont	2,335	47	9,364	44	2.04	7
44. Virginia	17,257	12	50,421	15	1.11	27
45. Washington	14,940	14	43,978	18	1.19	26
46. West Virginia	5,245	41	27,123	28	1.49	19
47. Wisconsin	11,064	22	28,474	26	.66	41
48. Wyoming	6,165	40	10,256	42	2.92	3

Source: U.S. Bureau of the Census, 1962b; 1972b.

Table A2 - Mobile Home Development and Mobile Home Household Data by State

	Rank No. of Spaces	Rank Develop- ment Quotient	Rank % Age 65 and Over	Rank % in SMSA's	Rank Md. Income	Rank % Change 1960- 1970
1. Alabama	25	40	41	25	42	4
2. Arizona	5	4	3	4	36	34
3. Arkansas	33	37	21	34	47	2
4. California	1	1	2	1	16	39
5. Colorado	19	23	28	17	20	29
6. Connecticut	35	9	11	3	2	47
7. Delaware	37	8	42	33	20	26
8. Florida	2	2	1	16	48	20
9. Georgia	15	38	45	35	34	3
10. Idaho	30	22	13	42	20	31
11. Illinois	7	18	22	12	5	32
12. Indiana	11	29	26	20	7	28
13. Iowa	17	12	16	28	13	36
14. Kansas	24	27	37	29	20	33
15. Kentucky	28	41	33	39	44	10
16. Louisiana	29	39	43	27	27	11
17. Maine	43	36	14	46	36	21
18. Maryland	27	28	39	11	11	35
19. Massachusetts	32	10	4	7	7	45
20. Michigan	3	6	15	13	3	25

Table A2 - Continued

		Rank No. of Spaces	Rank Develop- ment Quotient	Rank % Age 65 and Over	Rank % in SMSA's	Rank Md. Income	Rank % Change 1960- 1970
21.	Minnesota	13	7	24	24	7	18
22.	Mississippi	42	44	38	40	45	7
23.	Missouri	14	26	20	23	32	14
24.	Montana	40	33	35	41	14	30
25.	Nebraska	34	24	23	36	20	37
26.	Nevada	21	11	27	2	1	24
27.	New Hampshire	38	20	8	43	19	9
28.	New Jersey	23	5	7	5	7	44
29.	New Mexico	36	31	29	38	30	48
30.	New York	9	30	9	18	14	27
31.	North Carolina	20	47	46	30	39	5
32.	North Dakota	41	19	47	44	29	40
33.	Ohio	4	17	10	9	11	38
34.	Oklahoma	22	21	34	21	34	13
35.	Oregon	12	15	5	19	20	19
36.	Pennsylvania	8	32	19	10	20	17
37.	Rhode Island	46	3	25	8	32	46
38.	South Carolina	26	42	48	22	39	8
39.	South Dakota	47	45	18	45	43	42
40.	Tennessee	31	46	36	31	46	6

Table A2 - Continued

	Rank No. of Spaces	Rank Develop- ment Quotient	Rank % Age 65 and Over	Rank % in SMSA's	Rank Md. Income	Rank % Change 1960- 1970
41. Texas	6	25	32	6	16	23
42. Utah	39	14	30	15	30	41
43. Vermont	45	35	17	47	27	12
44. Virginia	18	34	44	26	39	16
45. Washington	10	13	6	14	5	15
46. West Virginia	44	48	31	37	36	1
47. Wisconsin	16	16	12	32	16	22
48. Wyoming	48	43	40	47	3	43

Source: Woodall's, 1971; U.S. Bureau of the Census, 1973b.

APPENDIX B

Michigan Data

Table B1 - Michigan Mobile Home Data by County

		Number Mobile Homes 1970	Mobile Homes as a % of Housing	Mobile Home Quotient
1.	Alcona	125	3.48	1.31
2.	Alger	124	3.61	1.37
3.	Allegan	1463	6.87	2.60
4.	Alpena	457	4.62	1.75
5.	Antrim	279	4.62	1.75
6.	Arenac	344	8.79	3.33
7.	Baraga	103	3.55	1.34
8.	Barry	779	5.94	2.25
9.	Bay	1679	4.66	1.77
10.	Benzie	198	5.55	2.10
11.	Berrien	1468	2.66	1.01
12.	Branch	684	5.40	2.05
13.	Calhoun	1378	2.96	1.12
14.	Cass	1051	6.74	2.55
15.	Charlevoix	298	4.75	1.80
16.	Cheboygan	365	6.06	2.30
17.	Chippewa	481	4.39	1.66
18.	Clare	491	4.44	1.68
19.	Clinton	1063	7.55	2.86
20.	Crawford	178	7.64	2.89
21.	Delta	386	3.13	1.19
22.	Dickinson	166	1.92	.73
23.	Eaton	902	4.36	1.65
24.	Emmet	385	5.60	2.12
25.	Genesee	4175	3.09	1.17
26.	Gladwin	450	6.31	2.39
27.	Gogebic	117	1.50	.57
28.	Grand Traverse	1037	7.97	3.02
29.	Gratiot	809	6.66	2.52
30.	Hillsdale	786	6.41	2.42

Table B1 - Continued

		Number Mobile Homes 1970	Mobile Homes as a % of Housing	Mobile Home Quotient
31.	Houghton	369	2.92	1.11
32.	Huron	471	3.93	1.49
33.	Ingham	1980	2.44	.92
34.	Ionia	755	5.45	2.06
35.	Iosco	346	3.22	1.22
36.	Iron	171	2.81	1.06
37.	Isabella	906	7.46	2.83
38.	Jackson	2270	5.15	1.95
39.	Kalamazoo	1429	2.30	.87
40.	Kalkaska	147	5.61	2.13
41.	Kent	3562	2.73	1.03
42.	Keweenaw	17	1.74	.66
43.	Lake	186	4.51	1.71
44.	Lapeer	1061	7.00	2.65
45.	Leelanau	169	3.34	1.27
46.	Lenawee	1038	4.03	1.53
47.	Livingston	1327	7.15	2.71
48.	Luce	133	6.62	2.51
49.	Mackinac	159	3.80	1.44
50.	Macomb	4122	2.34	.89
51.	Manistee	205	2.62	.99
52.	Marquette	925	4.61	1.75
53.	Mason	305	3.26	1.23
54.	Mecosta	793	8.86	3.36
55.	Menominee	264	2.96	1.12
56.	Midland	1355	6.94	2.63
57.	Messauke	127	4.52	1.71
58.	Monroe	1011	2.96	1.12
59.	Montcalm	1022	7.32	2.77
60.	Montmorency	116	3.33	1.26
61.	Muskegon	1029	2.09	.79
62.	Newaygo	809	7.50	2.84
63.	Oakland	5295	1.93	.73
64.	Oceana	399	6.22	2.36
65.	Ogemaw	308	3.97	1.50

Table B1 - Continued

		Number Mobile Homes 1970	Mobile Homes as a % of Housing	Mobile Home Quotient
66.	Ontonagon	208	5.33	2.02
67.	Osceola	319	5.69	2.16
68.	Oscoda	51	1.64	.62
69.	Otsego	359	8.21	3.11
70.	Ottawa	644	1.73	.66
71.	Presque Isle	272	6.11	2.31
72.	Roscommon	221	2.93	1.11
73.	Saginaw	1553	2.37	.90
74.	St. Clair	1449	3.56	1.35
75.	St. Joseph	895	5.45	2.06
76.	Sanilac	715	5.73	2.17
77.	Schoolcraft	70	2.17	.82
78.	Shiawassee	1094	5.65	2.14
79.	Tuscola	1096	7.21	2.73
80.	Van Buren	1708	8.60	3.26
81.	Washtenaw	1341	1.88	.71
82.	Wayne	5804	.64	.24
83.	Wexford	411	5.60	2.12
	State	75,012	2.64	--

Source: U.S. Bureau of the Census, 1972c.

Table B2 - Michigan Mobile Home Development Data by County

	No. Spaces 1960	No. Spaces 1970	No. Spaces 1975	Average Size of Parks	Development Quotient 1970
1. Alcona	15	15	15	15	.16
2. Alger	0	23	32	16	.25
3. Allegan	85	1038	1432	42	.95
4. Alpena	82	192	212	38	.56
5. Antrim	0	14	30	30	.06
6. Arenac	0	82	125	31	.32
7. Baraga	5	44	54	27	.57
8. Barry	100	357	543	54	.61
9. Bay	198	1481	2121	88	1.17
10. Benzie	9	66	73	24	.44
11. Berrien	604	1313	2454	85	1.19
12. Branch	95	264	588	42	.52
13. Calhoun	230	932	1304	69	.91
14. Cass	23	451	619	48	.57
15. Charlevoix	19	220	220	44	.99
16. Cheboygan	21	117	164	33	.43
17. Chippewa	24	189	279	35	.52
18. Clare	26	133	172	34	.36
19. Clinton	159	949	1107	101	1.19
20. Crawford	0	0	71	36	0

Table B2 - Continued

		No. Spaces 1960	No. Spaces 1970	No. Spaces 1975	Average Size of Parks	Development Quotient 1970
21.	Delta	3	43	165	33	.15
22.	Dickinson	15	15	173	43	.12
23.	Eaton	95	767	953	106	1.13
24.	Emmet	0	66	182	36	.23
25.	Genesee	2630	5723	8965	145	1.83
26.	Gladwin	60	199	293	49	.59
27.	Gogebic	0	14	72	14	.16
28.	Grand Traverse	212	587	863	86	.76
29.	Gratiot	0	180	304	43	.29
30.	Hillsdale	39	230	302	34	.39
31.	Houghton	96	109	131	22	.40
32.	Huron	57	153	213	21	.43
33.	Ingham	736	1775	2465	107	1.20
34.	Ionia	108	316	444	32	.56
35.	Iosco	164	195	265	44	.75
36.	Iron	0	0	12	12	0
37.	Isabella	116	514	789	72	.76
38.	Jackson	588	942	2039	89	.55
39.	Kalamazoo	550	1735	2839	123	1.61
40.	Kalkaska	0	25	100	50	.23

Table B2 - Continued

	No. Spaces 1960	No. Spaces 1970	No. Spaces 1975	Average Size of Parks	Development Quotient 1970
41. Kent	1388	3462	5894	120	1.29
42. Keweenaw	0	0	0	0	0
43. Lake	0	33	33	33	.24
44. Lapeer	38	192	677	113	.24
45. Leelanau	0	0	58	29	0
46. Lenawee	210	734	938	61	.95
47. Livingston	373	696	1356	75	.69
48. Luce	0	13	13	13	.13
49. Mackinac	15	33	40	20	.28
50. Macomb	2062	4621	6270	179	1.49
51. Manistee	60	60	60	60	.39
52. Marquette	331	409	624	39	.59
53. Mason	70	144	318	53	.63
54. Mecosta	75	242	505	56	.41
55. Menominee	0	65	101	50	.33
56. Midland	145	443	763	76	.44
57. Messaukee	0	0	0	0	0
58. Monroe	501	1630	2381	132	2.15
59. Montcalm	102	198	297	33	.25
60. Montmorency	0	0	0	0	0

Table B2 - Continued

		No. Spaces 1960	No. Spaces 1970	No. Spaces 1975	Average Size of Parks	Development Quotient 1970
61.	Muskegon	547	926	1462	104	1.20
62.	Newaygo	0	249	383	43	.41
63.	Oakland	2569	6435	10454	183	1.63
64.	Oceana	25	96	194	49	.32
65.	Ogemaw	15	28	105	35	.12
66.	Ontonagon	0	45	59	59	.29
67.	Osceola	0	42	42	14	.16
68.	Oscoda	9	9	9	9	.24
69.	Otsego	27	49	111	22	.19
70.	Ottawa	224	672	1655	92	1.39
71.	Presque Isle	56	94	104	35	.47
72.	Roscommon	138	255	288	29	1.53
73.	Saginaw	183	1014	2357	139	.87
74.	St. Clair	371	1222	2084	91	1.12
75.	St. Joseph	116	400	676	42	.60
76.	Sanilac	105	515	630	63	.96
77.	Schoolcraft	28	28	39	20	.53
78.	Shiawassee	233	672	894	75	.81
79.	Tuscola	62	273	636	58	.33
80.	Van Buren	62	626	966	54	.49

Table B2 - Continued

	No. Spaces 1960	No. Spaces 1970	No. Spaces 1975	Average Size of Parks	Development Quotient 1970
81. Washtenaw	815	1146	1616	95	1.13
82. Wayne	3737	6622	8640	157	1.52
83. Wexford	21	210	300	100	.68
State	21,877	56,071	87,259	91	

Source: Michigan Department of Health, 1975.

APPENDIX C

Zoning Ordinances and Maps Consulted

Burton Township - 1965

Burton (City) - 1974

Clayton Township - 1967

Davison (City) - 1971

Davison Township - 1952 and 1972

Fenton Township - 1953 (Revised 1962) and 1971

Flint (City) - 1927 and 1968

Flint Township - 1950 and 1971

Flushing Township - 1966

Genesee Township - 1955 and 1975

Grand Blanc Township - 1954 and 1964

Montrose Township - 1955

Mt. Morris Township - 1955 and 1972

Thetford Township - 1954

Vienna Township - 1955

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