LANDOWNER WILLINGNESS TO ALLOW PUBLIC ACCESS FOR THREE RECREATIONAL ACTIVITIES: A STUDY OF RURAL LANDOWNERS IN KENT COUNTY, MICHIGAN

By

Richard Dennis Westfall

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
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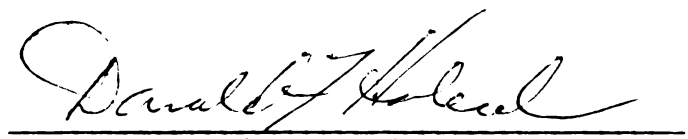
ACCEPTED



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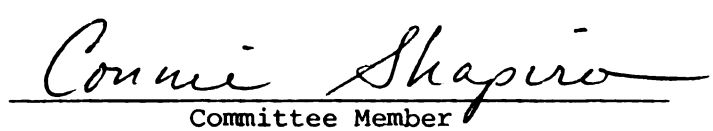

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ABSTRACT

LANDOWNER WILLINGNESS TO ALLOW PUBLIC ACCESS FOR THREE RECREATIONAL ACTIVITIES: A STUDY OF RURAL LANDOWNERS IN KENT COUNTY, MICHIGAN

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As Americans' desire for open space increases, coupled with rising land prices and tightening governmental land acquisition budgets, there has been a growing interest by various governmental agencies in opening up private land to public recreational use with less than fee simple land acquisition methods such as leasing and easements.

Before any large scale programs are initiated, information about the receptiveness of landowners to allow public access to their land is desirable. This study was designed to provide some of this information to better utilize private land for public recreation to the benefit of both the public and the private landowner. The basic objective of the study was to examine the private landowner on the urban fringe, his land and public access to his land for recreation.

The data analyzed in the study was obtained from personal interviews with 195 private landowners in Kent County, Michigan. Information collected involved characteristics of the landowners, characteristics of their land, the landowners' willingness to allow

public access to their land for three recreational activities; hiking, hunting, and snowmobiling, and the landowners' positions on several public access issues, including public access programs. Responses to questions dealing with public access concerned a specific parcel of land identified with each landowner.

It was found that the respondent sample landowners tended to be older, have an average amount of education and above average family incomes. The highest percentage of owners were employed in farming. A majority of the respondent sample landowners hiked on their land whereas only a minority hunted or snowmobiled on their land. Approximately half of the owners held their land for amenity oriented reasons such as recreation or rural environment. Over two-thirds of the respondent sample landowners lived on or adjacent to their land.

It was found that the sample parcels of land owned by the respondent sample landowners tended to be small in size. As a whole, almost half of the parcels had land covers suitable for recreational use. Over one-third of the sample parcels were posted, with "hunters" being the most often cited reason for posting.

It was found that a majority of the respondent sample landowners do allow, or would allow if requested, public access for the three recreational activities; hiking, hunting, and snowmobiling. "Damages" was the most often given reason by owners who did not allow, or would not allow if requested, public access for the three activities. It was found that landowner willingness to allow public access for a recreational activity was negatively related to the intensity of the activity. No difference was found between respondent sample landowners who allow two or all three of the recreational activities ("high"

Public Access level) and owners who allow none or only one of the three activities ("low" Public Access level) in terms of several identifying characteristics.

For owners that did allow public access for the three activities, estimates of public use were relatively light.

A majority of the respondent sample landowners indicated that damages, control, liability and number were "very important" issues. A negative relationship was found between a landowner's Public Access level and the importance placed by the landowner on damages, control, liability and number, although the relationship between Public Access level and liability was not significant.

Less than one-third of the respondent sample landowners would favor participating in public access programs for the three recreational activities. Of those owners that would favor such programs, a majority indicated they would require only reasonable payment per acre per year to open their land for public recreational use. No difference was found between respondent sample landowners who would favor participating in public access programs for one, two, or all three of the recreational activities ("high" Program Acceptance level) and owners who would not favor participating in any public access programs for the three activities ("low" Program Acceptance level) in terms of several identifying characteristics.

A series of policy and research recommendations are presented in the hope that the findings of this study will be utilized by recreational and landuse policy makers and planners.

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I wish to acknowledge the assistance of the individuals who contributed their time to this study.

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TABLE OF CONTENTS

LIST OF TABLES

Table | Page

LIST OF FIGURES

CHAPTER I

INTRODUCTION

> Encouragement and incentives should be provided for public use of private lands where it will not cause undue hardship to the property in terms of liability, vandalism, or interference with . . . uses of the land. This should include governmental arrangements with private owners of idled farmland and woodland to permit public use of such lands for outdoor recreation activities, such as hunting, hiking, fishing and picnicing.[1]

There are several factors which have contributed to such an imperative. Perhaps the most important is Americans' increasing desire for open space. As Americans' leisure time, affluence and mobility increase, the need for recreational land will increase. At the same time, however, there are serious availability problems developing.

Most of the publicly owned land suitable for recreation is located at a considerable distance from the majority of Americans living in urban areas. This is true on the national, as well as state, level. The current use of such remote recreational land is diminishing as travel costs increase. According to James Watt, former director of the Bureau of Outdoor Recreation,

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[1]Committee on Interior and Insular Affairs, U.S. Senate, The Recreation Imperative: A Draft of the Nationwide Outdoor Recreation Plan Prepared by the Department of the Interior (Washington: U.S. Government Printing Office, September 1974), p. 369.

> The energy crisis has already altered lifestyles, motives, attitudes, and operations; already it has had dramatic impacts upon recreation. Visitation to rural parks, forests, and recreation areas has dropped drastically . . . but recreation use is greater at close-to-home, energy-saving places, because people are changing their lifestyles to fit economic necessity.
>
> Of America's 204 million people, 140 million live in metropolitan areas ranging from central cities to suburbs. Clearly they must have recreation opportunities and the closer to home the better, because the energy problem could be with us for many years.[2]

Therefore, it would appear that Mr. Watt is saying that it is necessary to acquire more open space suitable for recreation near major population centers, but there are problems in acquiring urban fringe land. Land values are rising with increasing urbanization. At the same time, local, state and federal land acquisition budgets are decreasing or are seriously being reconsidered for reductions. Thus such "governmental arrangements" mentioned above are becoming more attractive. These arrangements usually consist of leasing agreements, easements or other land acquisition methods short of "fee simple" purchase.[3]

There are many recreational activities that can be accommodated on private land because they require little, if any, development or supervision. Activities such as hunting and fishing have traditionally been associated with private land. Activities with more recent popularity, such as snowmobiling and nature photography, can be pursued on private land as well as publicly owned land.

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[2]James Watt, "Public Recreation on Private Lands," Outdoor Recreation Action, No. 35 (Spring 1975), p. 1.

[3]Fee simple purchase refers to the acquisition of all property rights associated with a piece of property resulting in complete ownership.

Various programs to open up private land for public recreation are presently being tested on a trial basis in different areas of the country. Under the Cropland Adjustment Program, authorized in the Food and Agriculture Act of 1965, and administered by the Agricultural Stabilization and Conservation Service, some 4 million acres of cropland have been diverted to use for recreation and conservation. Uses include hunting, fishing, and hiking for which public access agreements are, or have been, in effect on some 800,000 acres.

The Agricultural Act of 1970 provided authority for a public access program on certain types of farmland. Under a pilot public access program, operated in 50 counties in 10 states in 1972, 1.3 million acres of farmland were opened to the public for hunting, fishing, and hiking. This program was again offered in 1973 and 1974 on a pilot basis in 50 counties.[4]

Before more permanent and larger scale programs can be implemented, basic information about the receptiveness of landowners to allow the public recreational use of their land is necessary. This information is needed because the scale of any public access program depends on the amount of land owned by persons receptive to public recreation on their land, and also because the success of any program depends, in part, on how the concerns of landowners regarding public use of their land are handled by the administrators of the program and the behavior of the public while using private land for recreation.

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[4]Bureau of Outdoor Recreation, U.S. Department of the Interior, Outdoor Recreation: A Legacy for America (Washington: U.S. Government Printing Office, 1973), p. 62.

The Study Area: Michigan

These general trends are present in many areas of the country, most notably in the states East of the Mississippi River with relatively little land in public ownership. The State of Michigan provides a useful study area because its land ownership patterns are similar to many states in this region. While most of the public land suitable for recreation is located in Michigan's Upper Peninsula and Northern Lower Peninsula, the majority of Michigan's people live in Southern Lower Michigan (identified as Region III by the Michigan Department of Natural Resources).[5] There is a significant amount (approximately 25%) of private land suitable for recreation in Region III now utilized for only a few recreational activities such as hunting.[6]

With increasing land prices, long delays in acquisition and a tightening state budget, methods short of fee simple purchase are being considered to open up this private land for public use. Michigan's Department of Natural Resources has operated since 1972 a land leasing program for snowmobiling on a pilot basis.

Objectives of the Study

The basic objective of this study was to examine the private landowner on the urban fringe, his land and public access to his land

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[5] U.S. Bureau of the Census, U.S. Census of Population: 1970 Number of Inhabitants, Final Report PC(1)-A24 Michigan (Washington: U.S. Government Printing Office, 1971).

[6] Clarance Chase, Ray Pfeiffer, and John Spencer, The Growing Timber Resource of Michigan, 1966 (Forest Service Research Bulletin NC-9, 1970), pp. 29-30.

for recreation. It is exploratory in nature, intended to provide some of the information necessary to better utilize private land for recreation to the benefit of both the public and the private landowner.

The specific objectives were to,

1. determine the extent to which landowners in the urban fringe area of Michigan are willing to allow public access to their land for three recreational activities; hiking, hunting, and snowmobiling,
2. determine the importance landowners place on damages, control, liability, and number with respect to public recreation on their land,
3. identify characteristics of the landowners and their land and determine the relationship between such characteristics and the landowners' willingness to allow public access to their land for the three activities above,
4. determine the landowners' receptiveness to governmental incentive programs designed to increase public access to private land in terms of the above three activites on their own land, and
5. identify characteristics of the landowners and their land and determine the relationship between such characteristics and the landowners' receptiveness to governmental incentive programs.

Limitations to the Study

A basic limitation on the depth to which the above five objectives could be pursued was a lack of survey funds. As a result,

the data analyzed herein was collected in conjunction with a related research effort conducted by the Department of Parks and Recreation Resources, Michigan State University which attempted to identify the ownership objectives of rural landowners. This was done due to the above mentioned lack of survey funds and because there existed a basic similarity between the two studies in terms of area requirements and time schedules. Such a consolidation had its drawbacks, however. The combined study survey instrument which was finally assembled turned out to be quite lengthy. The number of specific questions pertaining to the study reported had to be kept to an absolute minimum in order to keep the combined study survey instrument to manageable length.

A fairly large number of factors were examined, but in almost all cases this examination was only cursory and consisted of only one question on the instrument. Many factors that influence landowner decisions were not dealt with.

Due to the above limitations, this study is not a complete analysis of the public access issue. It is intended to provide information for future researchers, but it is hoped that it will also prove useful to recreational and landuse policy makers and planners.

Organization of the Thesis

The remainder of the thesis is divided into five chapters. The next chapter (Chapter II) reviews research pertinent to this study and provides background information on the general public access issue. Chapter III outlines the hypotheses postulated concerning public access and also discusses the research methodology of the study. Chapter IV presents the general findings of the study and

contains the basic information from the survey of landowners. Chapter V concerns the specific testing of the hypotheses outlined in Chapter III and the results. Chapter VI summarizes the thesis and includes specific recommendations for policy and future research.

CHAPTER II

PREVIOUS RESEARCH

In this chapter, pertinent research on small private landowners and public access to private land for recreation is reviewed. Much of the research on public access to private land concerns forest industry lands usually located at a considerable distance from the majority of public recreationists.[1] There is relatively little research on public access to smaller private ownerships which typify much of the urban fringe areas of Michigan.

Because of this inadequacy, the studies discussed below are presented in two sections. The first section deals with owners of small holdings in general. This section was included to provide some background information on this group of owners even though, in almost all cases, such information has not been related to public access in any manner. The second section deals with public access specifically.

Landowner Characteristics

In a study of 180 small private forest landowners in central Wisconsin in 1958, Sutherland and Tubbs found that most of the owners

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[1]For a useful overview of this type of research, see "Public Recreation on Private Lands," Outdoor Recreation Action, No. 35, Bureau of Outdoor Recreation, U.S. Department of the Interior (Spring 1975).

were farmers (52%), 9% were classified as business or professional, 26% were wage earners and 8% were retired.[2]

Less than half of the owners were under 50 years of age (42%), 27% were 50 to 59 and 31% were 60 or more. Eighty-four percent had held their land for five or more years, 64% for 10 or more years and 21% for 25 or more years.

Most of the holdings were small, 64% were less than 50 acres, 23% were from 50 to 99 acres and 13% were 100 acres or more. Twenty-four percent of the owners indicated they used their land for such amenity oriented uses as recreation and residence.

In a study of 198 small private forest landowners in Michigan's Upper Peninsula in 1961, Quinney found that 17% of the owners were farmers, 10% were classed as business or professional, 18% were wage earners, 10% were retired and 25% were classed as absentee.[3]

Less than half of the owners were 50 years of age or younger (33%), 25% were 51 to 60 and 42% were over 60. Twenty-seven percent of the owners indicated recreation as their main ownership objective, 19% indicated residence and 54% had economic objectives.

In a study of 207 small private forest landowners in the urban fringe area of Michigan in 1962, Schallau found that 39% of the owners

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[2]Charles Sutherland, Jr. and Carl Tubbs, Influence of Ownership on Forestry in Small Woodlands, Lakes States Forest Experiment Station Paper No. 77, Forest Service, U.S. Department of Agriculture (November 1959).

[3]Dean Quinney, Small Private Forest Landowners in Michigan's Upper Peninsula, Lake States Forest Experiment State Paper No. 95, Forest Service, U.S. Department of Agriculture (February 1962).

were employed in farming, 16% were classed as business or professional, 19% were wage earners and 16% were retired.[4]

The average holding was 23 acres. Fifty-two percent of the owners indicated "forest products" as their main objective in holding their land, another 19% indicated other economic objectives and only 6% indicated recreation or residence.

In a study of 1927 forest owners in Berkshire County, Massachusetts in 1963, Babeu, Rhodes, and MacConnell found that 9% of the owners were farmers, 41% were in business or professions, 18% were wage earners and 14% were retired.[5]

Less than half of the owners were under 50 years of age (43%), 27% were 50 to 59 and 30% were 60 or more. The owners were well educated and had good incomes. Sixty-nine percent of the owners had graduated from high school and 28% had obtained one or more college degrees. Forty-four percent of the owners had gross family incomes of $8,000 or more in 1963 and 11% had incomes of $20,000 or more.

A majority of the holdings were 100 acres or more (70%), 13% were under 50 acres and 17% were 50 to 99 acres. Fifty percent of the owners lived on their land.

Babeu, et al. found that the majority of owners considered amenity oriented uses (personal recreation, residence, etc.) to be their most important reasons for owning woodland. Sixty-six percent

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[4]Con Schallau, Small Forest Ownership in the Urban Fringe Area of Michigan, Lake States Forest Experiment Station Paper No. 103, Forest Service, U.S. Department of Agriculture (August 1962).

[5]Richard Babeu, Arnold Rhodes, and William MacConnell, Forest Owner Characteristics and Attitudes in Berkshire County, Massachussetts, Massachusetts Agricultural Experiment Station Bulletin 549, U.S. Department of Agriculture (November 1965).

of the owners indicated they hiked or walked on their land and 65% hunted on their land.

In a study of 394 Pennsylvania woodland owners in 1968, Larsen and Gansner found that for the 224 owners in the small acreage class (1 to 99 acres which constituted 57% of the holdings), 21% of the owners were farmers, 32% were classed as white collar workers, 20% were classed as blue collar workers and 15% were retired.[6] Of the small owners, 29% were under 50 years of age, 29% were 50 to 59 and 42% were 60 and over.

Forty percent of the small owners had attended high school and 25% had attended college. Thirty percent of the small owners had gross family incomes of $10,000 or more in 1968 and 13% had incomes of $20,000 or more.

Of the small owners, 27% had owned their land 10 years or less, 20% had owned their land 11 to 20 years and 53% had owned their land more than 20 years. Eighty-six percent of the small owners indicated amenity oriented uses (recreation, residence, etc.) of their land in the preceding five years, but this figure decreased to 71% in terms of their intended uses of their land in the next five years.

In a study of 455 rural landowners in the Finger Lakes Region of New York in 1970, Wilkins and Erickson found that the average age

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[6]David Larsen and David Gansner, Pennsylvania's Private Woodland Owners: A Study of the Characteristics, Attitudes, and Actions of an Important Group of Decision Makers, Northeast Forest Experiment Station Paper 219, Forest Service, U.S. Department of Agriculture (1972).

of the owners was 53 years.[7] Fifty percent of the owners had incomes above $10,000 per year.

Public Access

Several studies conducted by the Michigan Department of Natural Resources in the 25 counties of the Northern Lower Peninsula during the period from 1929 to 1955 found that the overall percentage of "wildland" posted had increased from 5% in 1929 to 11.4% in 1948 to 15% in 1955.[8]

In a study of 261 farms in 24 counties in Southern Michigan in 1958, Zorb found that 79% of the farmers allowed pheasant hunting.[9] Twenty-two percent of the farms were posted, but 58% of these posted farms still allowed hunting. Fifty-one percent of the 105 farms that did not allow hunting the first day of pheasant season had previous trouble with hunters.

In the Babeau, et al. study mentioned earlier, it was found that 35% of the owners allowed the general public to use their land for recreation. Thirty-two percent posted their land to prevent access by hunters and 34% posted their land to prevent various other recreational activities. Posting was found to be less prompted by

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[7]Bruce Wilkins and Eugene Erickson, Rural Non-farmed Lands and Their Owners: A Study of Three Central New York Counties (Cornell University Office of Regional Resources and Development, 1971).

[8]Paul Barrett, "Number 9 Wire: Symbol of a Trend," Michigan Conservation, Vol. 24, No. 1 (1955), p. 20.

[9]Gordon Zorb, Hunting Permission Survey Pheasant Season 1958, Game Division Report No. 2128 (Michigan Department of Conservation, January 1959).

concern for the activity per se than for possible damage to person or property. As age, educational level and earning capacity increased, the percentage of posting increased for owners.

In a study of 1,772 Southern Michigan landowners in 1965, Queal found that 52% of the landowners permitted deer hunting (up from 35% in 1960).[10] The granting of permission was found to be partially related to crop damage by deer and the deer population density.

In a small study in Northwestern Indiana in 1968, Machan and Feldt found that improved regulation of hunters was needed on those farms participating in the Agricultural Stabilization and Conservation Service Cropland Adjustment Program.[11]

In a study of 1,684 residents in 28 rural towns throughout New York in 1972 and 1973, Brown and Hill found a 67% increase in posting of private land during the 10 year period from 1963 to 1973.[12] The reason for posting given by 55% of the landowners who posted was that they had encountered bad experiences with recreationists. Of this number, 56% cited hunters; 27% snowmobilers; 7% fishermen; and 11% with others. It was found that the majority of posting landowners post against trespassing of any kind, not against a specific

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[10]Leland Queal, Attitudes of Landowners Toward Deer in Southern Michigan, 1960 and 1965 (Michigan Department of Conservation Research and Development Report No. 101, February 1967).

[11]Wayne Machan and Robert Feldt, "Hunting Results on Cropland Adjustment Program Land in Northwestern Indiana," Journal of Wildlife Management 36 (January 1972):192-95.

[12]Tommy Brown and Gregory Hill, "The New York Snowmobiler and the Private Land Owner," Proceedings of the 1973 Snowmobile and Off the Road Vehicle Research Symposium (Michigan State University Recreation Research and Planning Unit Technical Report No. 9, September 1973), pp. 33-39.

recreational activity. The landowners' reasons for such restriction was unclear.

In response to the type of recreation activity landowners would not allow on their land, 42% indicated they would not allow snowmobiling, 19% would not allow hunting and 83% would not allow motorcycles.

In a study of 295 farmers in the "thumb" area of Michigan in 1974, Parker found that 93% of the farmers allowed some public hunting on their land.[13] Control of hunters was a major concern of the owners as evidenced by the finding that 58% of the owners agreed that landowners should be able to exclude discourteous hunters.

In terms of the economic return on their land for allowing hunting in a standardized program, 22% (of 45% responding) wanted up to $5/acre per year income before permitting public use. In terms of intensity of use, 44% (of 49% responding) thought they could accommodate up to 10 hunting parties per week.

Fifty-seven percent of the farmers thought liability an important consideration. Sixty-three percent were concerned with possible damage to their property. The majority of farmers listed enforcement of trespass and game laws as concerns with participating in any stanardized program.

With the exception of the Babeu, et al. study, most of the studies tended to have similar findings. Usually a majority of the

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[13]Jon Parker, "Hunting Attitude Study" (unpublished, Department of Fisheries and Wildlife, Michigan State University, 1974).

owners were over 50 years of age. Given this average age, it is not surprising that a significant percentage of the owners were retired.

The most stable occupational class seemed to be wage earners, generally around 20% of the owners. Usually the majority of owners had holdings of less than 100 acres. Generally a minority of owners indicated non-economic land uses or ownership objectives.

In general, a minority of owners posted their land although some of the studies indicated an increasing trend in posting. In terms of public access for hunting, it appears that the percentage of owners allowing hunting varies widely, but there does seem to be some indication of increasing public access for deer hunting in Michigan.

This research has been of great value in specifying many important areas of study in terms of public access to private land. It appears that owners may be amenable to economic incentives to open up their land in view of their general socioeconomic characteristics. Such factors as controlling the public, possible liability, possible damages, the type of recreational activity, etc., are concerns of owners and may have an effect on public access. The size of the ownership and the objectives of the owner for the land may have an effect on its availability for public recreation.

However, there are several limitations to this research. As indicated by the breakdown of the studies into two sections, the research has not related owner and land characteristics to public access. The research has usually focused on only one recreational activity. In many cases the research is quite dated. Much of the research deals with a sample of owners not representative of landowners

in the urban fringe areas where the lack of recreational land is most pressing.

This study was designed to take advantage of and elaborate on some of the findings of this research and also to address itself to some of the limitations.

CHAPTER III

HYPOTHESES AND RESEARCH METHODS

Hypotheses

The first half of this chapter outlines the hypotheses dealing with public access to private land that represent both those tested under differing circumstances in previous research and essentially as yet untested hypotheses of consequence in the consideration of increasing public access to private lands in the future. Each hypothesis is briefly discussed and then presented in its conceptual and operational forms. In the second half of this chapter, the research methods of the study are discussed.

The data analyzed herein were obtained from interviews with 195 private landowners in Kent County, Michigan. Information collected included characteristics of the landowners, their land, the owners' willingness to allow public access to their land for three recreational activities and the owners' positions on several public access issues. Responses to questions dealing with public access concerned a specific parcel of land identified with each owner, although many of the respondents owned more than one parcel.

Hypothesis 1: Recreational Activity

With the dramatic increase in recreational pursuits in recent years, from such extremes as nature photography to motorcycling and the wide differences in effect of such activities on landowners and their land, it was decided to investigate the relationship between the type of activity and the owners' willingness to allow public access to their land.

Without attempting to analyze owner perceptions of the many possible recreational activities, a simple "activity intensity continuim" was developed for this study. Activity intensity refers to how an owner perceives an activity and also how the activity affects the owner's environment. It involves the degree to which such factors as noise, visibility, and environmental or property damage characterize an activity. The continuim consisted of three recreational activities; hiking, hunting, and snowmobiling, selected to represent increasing intensity, from low intensity (hiking) to medium intensity (hunting) to high intensity (snowmobiling). These three activities were chosen because most landowners are familiar with them and because previous research lent some support to this particular intensity ordering.

Each owner was asked if he allowed the public (not family or friends) to use his parcel for each of the three activities, or if he had received no requests for the activities, if he would allow public use. The responses to these questions were then combined to reflect if the owner did allow public use, or in the event of no requests, if the owner would allow public use for each of the three activities.

The combined responses will be compared utilizing frequency statistics and the t-test with a significance level of .05.

Conceptual Hypothesis.--Landowner willingness to allow public access (combined responses) for a recreational activity is negatively related to the intensity of the activity.

Operational Hypothesis.--Higher proportions of owners will allow public access for hiking than for hunting and higher proportions of owners will allow public access for hunting than for snowmobiling.

Hypothesis 2: Landowner Concerns

There are many possible reasons for a landowner to refuse the public access to his land for recreation. They may be categorized as legal, economic, social, psychological, etc. At the level of this study, it was decided not to fully investigate the many possible reasons and their interactions, but rather to focus on four specific owner "concerns." These four concerns, identified as important in previous research, are: damages, control, liability, and number.

For the purposes of this study, damages refers to potential destruction to an owner's land, property or person by public recreationists. Damages involves not only destruction of physical structures such as buildings and fences, but also destruction of natural features such as trees and even animals.

For the purposes of this study, control refers to an owner's ability, or the lack of it, to regulate the public while they are using his land for recreation. Control not only involves regulation, but also involves the owner's knowledge of where and when the public uses his land for recreation.

For the purposes of this study, liability refers to the owner's potential legal liability resulting from injury to the public user while using the owner's land for recreation.

For the purposes of this study, number refers to the number of public recreationists that might use the owner's land for recreation.

The general meaning of damages, control, liability, and number was explained to the owners, and then they were asked how important they felt these issues were with respect to public use of their parcels ("very important," "somewhat important," or "not at all important").

A composite measure of the owners' willingness to allow public access was developed because it was decided that responses to the above questions might vary depending on the particular recreational activity under consideration. This composite measure, labeled Public Access, was valued "high" for owners who do allow, or would allow if requested, either two or all three of the activities on their parcels and "low" for owners who do allow, or would allow if requested, none or only one of the three activities on their parcels.

The variables will be compared utilizing the chi-square and Kendall's tau statistical techniques with a significance level of .05.

Conceptual Hypothesis.--Public Access (composite measure of the owners' willingness to allow public access) is negatively related to the importance a landowner places on damages, control, liability, and number

Operational Hypothesis.--Higher proportions of owners at the "low" Public Access level will respond that damages, control, liability,

and number are "very important" than owners at the "high" Public Access level. Higher proportions of owners at the "high" Public Access level will respond that damages, control, liability, and number are "not at all important" than owners at the "low" Public Access level.

Hypothesis 3: High Public Access Owners vs. Low Public Access Owners

Because of the small amount of information available on landowners and their land in relation to their willingness to allow public access, it was decided to examine some identifying characteristics of the owners and their land and determine if there was a difference between those owners who do allow, or would allow if requested, two or all three of the recreational activities on their parcels ("high" Public Access level) and those owners who do allow, or would allow if requested, none or only one of the three activities on their parcels ("low" Public Access level) in terms of the identifying characteristics.

The identifying characteristics included: (1) a measure of an owner's socioeconomic status (SES), (2) the owner's age, (3) the owner's primary ownership objective, (4) the owner's residence location, (5) the number of years the parcel was owned, (6) the percentage of the parcel in crops, and (7) the percentage of the parcel in woods.

SES was an index developed from the owner's occupation, education, and family income (see Appendix A). Values ranged from 0 (low SES) to 6 (high SES). Specific findings on the owners' occupational distribution, years of education distribution and family income distribution are included in Chapter IV.

The owner's age was measured directly in years. The owner's primary ownership objective was originally categorized into one of fourteen objectives which were then regrouped into either economic or amenity oriented objectives (see Appendix A).

The owner's residence location was originally categorized into one of six classes and then regrouped into either onsite/adjacent to the parcel or not at the parcel (see Appendix A).

The number of years the parcel was owned was measured directly. Each owner was asked in what year he acquired his parcel and this figure was converted to years of ownership.

The size of the parcel was measured directly in acres and was obtained from county property records. The percentage of the parcel in crops was arrived at by dividing the number of acres in crops for each parcel by the total acreage for each parcel. The percentage of the parcel in woods was arrived at in the same manner as the variable above.

The composite measure of the owners' willingness to allow public access to their parcels ("high" Public Access level for owners who do allow, or would allow if requested, either two or all three of the activities and "low" Public Access level for owners who do allow, or would allow if requested, none or only one of the three activities) was again utilized because it was desired to examine the variables in relation to the owners' willingness to allow public access for recreation in general, as opposed to the owners' willingness to allow public access for one specific recreational activity. The two groups of owners ("high" Public Access level and "low" Public Access level) will be compared utilizing the multivariate statistical technique of

discriminant analysis using a significant level of .05. The discriminating variables will be the seven identifying characteristics described previously.

Conceptual Hypothesis.--There is a difference between those landowners at the "high" Public Access level and those landowners at the "low" Public Access level in terms of their identifying characteristics.

Operational Hypothesis.--There is a significant statistical difference between owners at the "high" Public Access level and owners at the "low" Public Access level in terms of the discriminating variables; SES, age, primary ownership objective, residence location, years of ownership, parcel size, percentage of parcel in crops and percentage of parcel in woods.

Hypothesis 4: High Program Acceptance Owners vs. Low Program Acceptance Owners

Because of the increasing interest in governmental incentive programs designed to increase public access to private land and the lack of information on landowners and their land in relation to their positions on such programs, it was decided to examine some identifying characteristics of the owners and their land and determine if there was a difference between those owners favoring such programs for at least one, two, or all three of the recreational activities under study and those owners not favoring such programs for any of the three activities in terms of the identifying characteristics.

The identifying characteristics were the same seven variables listed for the preceding hypothesis and were measured in the same manner.

A composite measure of the owners' positions on public access programs was developed because it was desired to examine the variables in relation to the owners' position on public access programs in general, as opposed to their position on public access programs for specific recreational activities. This composite measure, labeled Program Acceptance, was valued "high" for those owners who would favor a public access program on their parcel for at least one, two or all three of the recreational activities and "low" for those owners who would not favor a public access program on their parcel for any of the three activities.

The two groups of owners ("high" Program Acceptance level and "low" Program Acceptance level) will be compared utilizing discriminant analysis using a significance level at .05. The discriminating variables will again be the seven identifying characteristics described previously.

Conceptual Hypothesis.--There is a difference between those landowners at the "high" Program Acceptance level and those landowners at the "low" Program Acceptance level in terms of their identifying characteristics.

Operational Hypothesis.--There is a significant statistical difference between owners at the "high" Program Acceptance level and owners at the "low" Program Acceptance level in terms of the discriminating variables; SES, age, primary ownership objective, residence location, years of ownership, parcel size, percentage of parcel in crops and percentage of parcel in woods.

Research Methods

The research methods used in this study involved five major steps and are discussed below. In brief, the methods consisted of (1) selecting an appropriate sample area in Southern Michigan, (2) selecting an acceptable sample of landowners in that area, (3) developing a survey instrument to obtain the data, (4) administering the survey instrument to the landowners, and (5) preparing the data for analysis.

Sample Area

Because of budget constraints on the study, it was decided to survey only one county in Southern Michigan, Kent County, in order to obtain more precise results for a small area rather than less precise results for a larger area. The clustering of sample points in one nearby county allowed for more observations to be taken than would have been possible in an expanded study area because travel costs could be minimized.

As mentioned in Chapter I, Southern lower Michigan (Region III) was the area of interest for this study because of its scarcity of public land. Kent County, in the Western portion of Southern lower Michigan, was selected for study essentially by a process of elimination.

The most important consideration was a reasonably large urban population in the selected county. Even though Region III has a large urban population as a whole, many counties in this Region are predominately rural. Such rural counties do not have the recreational land availability problems that exist in more heavily urbanized counties. Therefore, these rural counties were eliminated from the selection process.

Other counties in Region III do provide the necessary urban population, but were eliminated due to their own special characteristics. Almost all urbanized counties in Eastern and Central lower Michigan have specialized industry (automobile, government, education, etc.) which diminishes their generalizability to the rest of Michigan.

Kent County was selected from the five urbanized counties in Western Southern lower Michigan (Berrien, Calhoun, Kalamazoo, Kent, and Muskegon) for several reasons. First, it was not located on Lake Michigan. Urganized counties on Lake Michigan experience different recreational usage and were eliminated because of their limited generalizability. Second, of the remaining three counties (Calhoun, Kalamazoo, and Kent), Kent County had the lowest percentage of land in agriculture (43.9% as compared to 51.5% for Kalamazoo and 63.7% for Calhoun).[2] Finally, Kent County had the highest percentage of forested land (23.5% as compared to 21.8% for both Calhoun and Kalamazoo Counties).[3] Both of these latter factors assured at least some private land suitable for recreation. Though no one county in Southern Michigan is entirely representative of the Region, it was concluded that Kent County was as good as any within a limited distance from East Lansing which was the residence of the study team.

A breakdown of the land uses in Kent County is given in Table 1.

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[2] County and Regional Facts, State Planning and Development Regions 3 and 8 (Cooperative Extension Service, Michigan State University, no date), pp. 48, 49, and 73.

[3] Ibid.

Table 1.--Land Use in Kent County, 1970.

Use	Acres	Percent
Inland Water	6,976	1.3
Land Surface	548,544	98.7
Forested	128,700	23.5
Agriculture	241,107	43.9
Transportation	31,696	5.8
Recreation	11,716	2.1
Urbanization	61,727	11.3
Other	73,604	13.4
Total	555,520	100.0

Source: County and Regional Facts, State Planning and Development Region 8 (Cooperative Extension Service, Michigan State University, no date), p. 73.

Sampling Procedure

Kent County was divided into seven "regions" for the purpose of selecting the sample population. One representative township was chosen from each region for sampling purposes. This cluster sampling technique was used for two reasons. First, the budget constraints on the study did not allow a large sample and as a result, a 10% sample from representative townships in specific regions seemed more appropriate than a much smaller sample from Kent County as a whole. Secondly, such a technique assured a more accurate representation in the sample of the different types of land and landowners in Kent County.

Kent County can be viewed as comprising seven fairly distinct regions (shown in Figure 1). These regions are not official designations but were used solely for this study. They were arrived at using

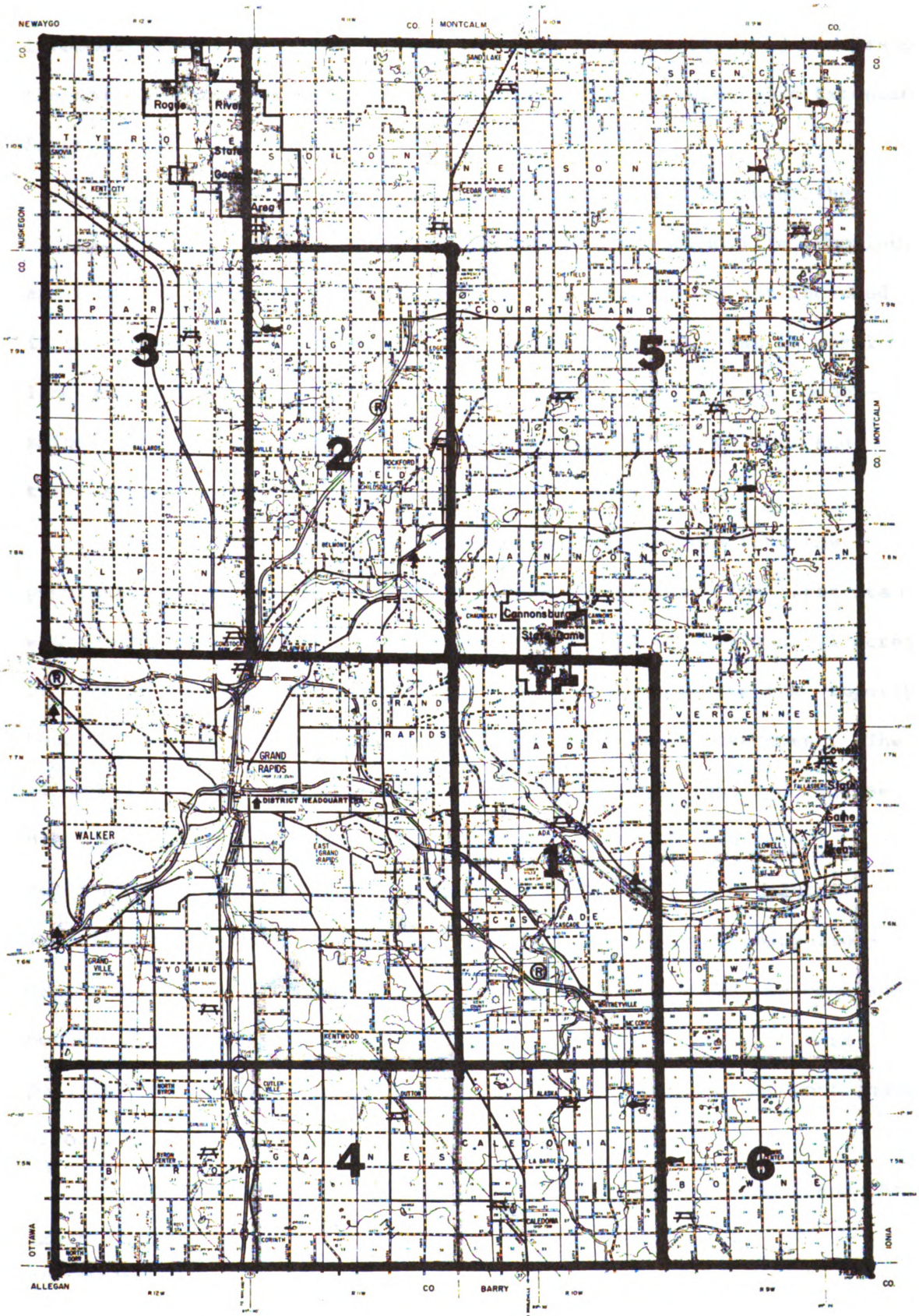

Figure 1. Kent County Regions.

information obtained from the West Michigan Regional Planning Commission, the Soil Conservation Service, and the Kent County Cooperative Extension Service.

One of the regions is predominately urban and includes the cities of Grand Rapids, East Grand Rapids, Walker, Grandville, Wyoming, and Kentwood and Grand Rapids Township. This region was not included in the selection process because the focus of the study was on rural land and this region contained a much smaller number of rural ownerships. The six remaining regions, a brief description of each and their representative townships are shown in Table 2.

Three steps were involved in selecting a sample from the population of all owners in the six sampled townships. The first step was to compile a list or sampling frame of all parcels of land 11 acres or more in the six townships using property plat maps from the Property Description and Mapping Department of the Kent County government. The 11 acre limit was used to exclude purely residential lots and because Michigan's statute on subdivision of large tracts of land into residential lots requires all parcels under 10 acres to be platted (Michigan Subdivision Control Act of 1968). As a result, many landowners subdivide their land into 10 acre parcels to avoid the cost and bother of platting. Since Kent County contained many such 10 acre parcels, the 11 acre limit was used to eliminate their disproportionate effect.

The list compiled included the permanent parcel number and the exact acreage.[4]

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[4]Permanent parcel number refers to a standardized identification system used in Kent County.

Table 2.--Regional Breakdown, Region Descriptions and Township Selected for Sampling in Kent County.

Region	Townships in Region	Description of Region	Township Sampled
1	Ada, Cascade	Moderately rural area with high value residences, close to Grand Rapids.	Ada
2	Algoma, Plainfield	Moderately rural area with rapid expansion due to new limited access highway into Grand Rapids.	Algoma
3	Alpine, Sparta, Tyrone	Rural area with specialized agriculture (fruit), and stabilized ownership patterns.	Sparta
4	Byron, Caledonia, Gaines	Rural area with medium income agriculture.	Gaines
5	Cannon, Courtland, Grattan, Lowell, Nelson, Oakfield, Solon, Spencer, Vergennes	Highly rural area with low income agriculture due to poor soils.	Oakfield
6	Bowne	Highly rural area with medium income agriculture.	Bowne

The second step was to randomly select 10% of the parcels. Ten percent was chosen because it was a reasonable compromise between budget constraints and acceptable validity in the results.

The third step was to crossreference the permanent parcel number from the property plat maps with the property tax rolls and record the owner's name and address.

A summary of the sampling procedure by township is given in Table 3.

Table 3.--Sampling Summary by Township.

Township	Sampling Frame	Original Sample	Duplicate Owners	Final Sample
Ada	407	41	1	40
Algoma	476	48	6	42
Gaines	376	38	0	38
Sparta	428	43	1	42
Oakfield	426	43	0	43
Bowne	365	36	2	34
Total	2,478	249	10	239

Once the name and address of each owner was obtained, an introductory letter was developed and sent to all owners. The letter contained a brief description of the combined study and information concerning the interview procedure. A representation of this letter is included in Appendix B.

After mailing the letters, each owner was contacted by telephone, if at all possible, to set up an interview time and place.

Instrument

The survey instrument (see Appendix C) was developed in the Spring of 1975. Because of the many open-ended questions that required either clarification or probing, the personal interview technique was utilized. Other advantages of using personal interviews are the higher response rate (compared to other methods of data collection such as mailed questionnaires or telephone interviews), the lower number of "no" responses and the possibility of interviewer observation.

The questionnaire was pre-tested in the East Lansing, Michigan area in May of 1975. Based on the results of the pre-test and consultation with project advisors, certain sections of the questionnaire were modified to improve interview administration.

Five graduate students from the Departments of Parks and Recreation Resources, and Forestry at Michigan State University were selected as interviewers and familiarized with the questionnaire and the study during two group meetings. The actual interviewing was conducted during June of 1975.

Response Rate

The overall response rate was 81.6%. Non-response to the interview was generally the result of refusals or inability to obtain telephone numbers. Five out-of-state owners were sent a shortened form of the questionnaire, but only one was returned. Other reasons for non-response included sale of property and inability to contact owner at home.

A summary of the response and non-response to the interview is given in Table 4.

Table 4.--Response and Non-Response to the Interview by Township.

Township	No. Respondents	Response Rate
Ada	35	85.4%
Algoma	32	76.2%
Gaines	32	84.2%
Sparta	34	80.9%
Oakfield	35	83.3%
Bowne	27	79.4%
Total	195	81.6%
Non-Response		
Refusal	14	7.2%
No Phone Number	13	6.6%
Other	17	8.7%
Total	44	18.4%

Interviewing lasted from June 4, 1975 to June 20, 1975 when it was decided that further effort would not be justifiable in light of the high costs associated with contacting the remaining owners and interviewing them.

Analysis of the Data

After the interviews were completed, the data was recoded onto special coding forms. Ten percent of these forms were then spot-checked

and no significant or consistant errors were found. The data was then keypunched onto cards for computer input and verified for accuracy.

The analysis was done utilizing statistical techniques from the Statistical Package for the Social Sciences (SPSS) and was run on the CDC 6500 installation at the Michigan State University Computer Laboratory. SPSS is a system of statistical techniques and procedures which were amenable to the data. The variable transformation and recoding capabilities of SPSS were particularly useful.

CHAPTER IV

GENERAL FINDINGS

This chapter presents the general findings of the study. The information is divided into three areas; characteristics of the sample parcels of land, characteristics of the respondent sample landowners and willingness of the landowners to allow public access to their parcels for recreation.

It should be noted that some of the information involves only a portion of the 195 owners, due to the non-applicability of questions or non-response. A small number of interviews were only partially completed for various reasons such as refusal or lack of time, and since the questions dealing with public access were in a later section of the questionnaire (Section VII), these incomplete interviews constituted much of the non-response for certain questions on public access.

Characteristics of the Sample Parcels

As mentioned in Chapter III, the owners were identified in relation to a particular parcel of land in Kent County. The sample parcel acreage distribution is given in Table 5. The median parcel size was 39.6 acres, the mean size was 47.6 acres. Parcels ranged from the lower pre-set limit of 11 acres up to 195 acres. Many of the

Table 5.--Sample Parcel Acreage Distribution.

Size	Number	Cumulative Number	Percent	Cumulative Percent
11-19 acres	37	37	19.0	19.0
20-29	29	66	14.9	33.9
30-39	30	96	15.4	49.3
40-49	41	137	21.0	70.3
50-69	10	147	5.2	75.5
70-89	29	176	14.9	90.4
90 or more	19	195	9.6	100.0
Total	195		100.0	

parcels were of a size (almost half were under 40 acres) that would limit their inclusion in governmental incentive programs, at least as those programs are presently operated, because the parcels are too small to efficiently use for many recreational activities such as snowmobiling.

The sample parcels, as a whole, were classified into seven types of land cover as shown in Table 6. Almost half of the land (47.1%), as a whole, was suitable for recreation (woods, open fields, marsh and brush).

The total acreage for each respondent sample owner is given in Table 7. This acreage includes the sample parcel acreage plus any additional acreage owned in Kent County by the respondent sample parcel owners. This additional acreage was not necessarily contiguous with the sample parcel. The median total acreage was 76.3 acres, the

Table 6.--Land Cover for Sample Parcels in Total.

Cover	Percent
Crops	42.8
Woods	18.7
Open Fields (including pasture)	19.0
Marsh	4.3
Brush	5.1
Buildings and Yard	3.2
Other	6.9
Total	100.0

Table 7.--Total Acreage Held by Respondent Sample Owners in Kent County.

Size	Number	Cumulative Number	Percent	Cumulative Percent
11-19 acres	22	22	11.3	11.3
20-29	19	41	9.7	21.0
30-39	16	57	8.2	29.2
40-49	24	81	12.3	41.5
50-69	10	91	5.1	46.6
70-89	26	117	13.3	59.9
90-129	29	146	14.9	74.8
130-169	16	162	8.2	83.0
170 or more	33	195	16.9	99.9
Total	195		99.9	

mean total acreage was 112.5 acres. Total acreage ranged from 11 acres up to 1,039 acres.

The owners were asked if they posted any portion of their parcel. Their responses are shown in Table 8. The percentage of the sample parcel posted and the primary reason for posting are given in Tables 9 and 10. "Hunters" were the most often cited reason for posting, but specific objections regarding hunters were not specified by the owners.

Table 8.--Sample Parcel Posting Activity.

Posting	Number	Percent
Posted	65	36.1
Not Posted	115	63.9
Total	180	100.0
Non-Response	15	

Table 9.--For Sample Parcels Posted, Percentage of Property Posted.

Percentage	Number	Percent
100%	59	90.8
50-99%	2	3.1
Less than 50%	4	6.1
Total	65	100.0

Table 10.--For Sample Parcels Posted, Primary Reason for Posting.

Reason	Number	Percent
Hunters	33	51.6
Damages	18	28.1
Privacy	6	9.4
Other	7	10.9
Total	64	100.0
No Reason Given	1	

Characteristics of the Respondent Sample Landowners

The median age and mean age of the respondent sample owners was 53.8 years. Ages ranged from 29 to 85 years. The age distribution is given in Table 11. As found in previous research on small private landowners, a majority of the owners were 50 years of age or more (64.1%).

The distribution for years of education for the respondent sample owners is given in Table 12. The mean figure was 11.6 years.

The respondent sample owner's family income for 1974 distribution is given in Table 13. Over sixty-eight percent of the owners had family incomes of $10,000 or more in 1974. This is higher than findings from previous research, but inflation may account for much of the difference.

The occupational breakdown for the respondent sample owners is given in Table 14. As with previous research, a significant percentage of the owners were retired (12.2%) and the largest percentage of owners were farmers (28.9%).

Table 11.--Age Distribution for Respondent Sample Owners.

Age	Number	Cumulative Number	Percent	Cumulative Percent
20-29	7	7	3.9	3.9
30-39	19	26	10.7	14.6
40-49	38	64	21.3	35.9
50-59	53	117	29.8	65.7
60-69	38	155	21.3	87.0
70-79	17	172	9.6	96.6
80 or more	6	178	3.4	100.0
Total	178		100.0	
Non-Response	17			

Table 12.--Years of Education Distribution for Respondent Sample Owners.

Years	Number	Percent
0-8	36	21.2
9-12	94	55.3
13 or more	40	23.5
Total	170	100.0
Non-Response	25	

Table 13.--Total Family Income, 1974 for Respondent Sample Owners.

Income	Number	Percent
$0-9,999	50	31.6
$10,000-14,999	39	24.7
$15,000-24,999	35	22.2
$25,000 or more	34	21.5
Total	158	100.1
Non-Response	37	

Table 14.--Occupational Distribution for Respondent Sample Owners.

Occupation	Number	Percent
Professional/Technical	19	10.6
Manager/Administrative	21	11.7
Sales/Clerical	9	5.0
Craftsmen	31	17.2
Operative/Laborer	14	7.8
Farmer	52	28.9
Service	1	.5
Retired	22	12.2
Unemployed (includes housewives)	11	6.1
Total	180	100.0
Non-Response	15	

The owners were asked if they hiked, hunted, or snowmobiled on their parcel. Their responses are shown in Table 15. These results may help to explain the owners' positions concerning public access to their parcel for the three recreational activities examined in this study. One possible explanation is that owners may want to "reserve" their land for their own recreational use and so restrict public recreational use. Another possible explanation is that owner participation in a recreational activity may increase public access for that activity because the owner is familiar with the activity or for other reasons. In this study, these possibilities were not investigated.

The owners were asked, in an open-ended manner, why they acquired their parcels. Fourteen distinct ownership objectives were identified and responses were grouped into one of these objectives. These primary ownership objectives are given in Table 16. Almost half of the owners (49.2%) had amenity oriented objectives such as residence or recreation which is a noticably higher proportion than found in previous research.

The mean years of ownership was 17.6 years, ranging from 1 up to 70 years.

The sample owners were classified into "types" by the interviewers as shown in Table 17.

Public Access

The owners were asked if they allowed the public (not family or friends) to use their parcel for each of the three recreational activities; hiking, hunting, and snowmobiling. Their responses are shown in Table 18.

Table 15.--Respondent Sample Owners' Indications of Their Personal Use of Their Parcels for Hiking, Hunting, and Snowmobiling.

Response	Number	Percent
Owners Who Hike on Their Parcel		
Yes	118	66.3
No	60	33.7
Total	178	100.0
Non-Response	17	
Owners Who Hunt on Their Parcel		
Yes	77	43.0
No	102	57.0
Total	179	100.0
Non-Response	16	
Owners Who Snowmobile on Their Parcel		
Yes	57	31.8
No	122	68.2
Total	179	100.0
Non-Response	16	

Table 16.--Respondent Sample Owners' Primary Ownership Objective.

Objective	Number	Percent
Farming	61	31.3
Rural Environment	53	27.2
Investment	25	12.8
Family Reasons or Inheritance	13	6.7
Recreation	6	3.1
Other	37	18.9
Total	195	100.0

Table 17.--Type of Sample Owner.

Type	Number	Percent
Onsite	104	53.3
Adjacent to the Parcel	37	19.0
In Neighborhood	17	8.7
In Nearby City	22	11.3
Absentee	2	1.0
Institutional	13	6.7
Total	195	100.0

Table 18.--Respondent Sample Owners' Willingness to Allow Public Hiking, Hunting, and Snowmobiling on Their Parcels.

Response	Number	Percent
Owners' Willingness to Allow Public Hiking		
Yes	89	49.7
No	29	16.2
No Requests for Hiking	61	34.1
Total	179	100.0
Non-Response	16	
Owners' Willingness to Allow Public Hunting		
Yes	117	65.4
No	58	32.4
No Requests for Hunting	4	2.2
Total	179	100.0
Non-Response	16	
Owners' Willingness to Allow Public Snowmobiling		
Yes	86	49.1
No	72	41.1
No Requests for Snowmobiling	17	9.7
Total	175	99.9
Non-Response	20	

If the owners received no requests for the activities, they were asked if they would allow such activities if requested. Their responses are shown in Table 19. The majority of respondent sample owners did not allow, or would allow if requested, public access for the three recreational activities.

The owners that do not, or would not if requested, allow public access were asked their reasons. Their first and second reasons are given in Tables 20 and 21. "Damages" was by far, the most often cited reason for refusing public access.

The owners that did allow public access for the three recreational activities were asked to estimate how many public recreationists they observed on their parcel per week during the appropriate time period for the activity. Their estimates are given in Table 22. Public use is relatively light except for snowmobiling which tends to be of short duration.

The general meaning of damages, control, liability and number were explained to the owners and then they were asked how important these issues were to them in terms of public recreational use of their parcels. Their responses are shown in Tables 23, 24, 25, and 26. The high number of "very important" responses may be attributable to the leading introduction to the questions or their consecutive format, both of which may have produced like responses for the four questions.

According to these findings, damages and liability are more important issues to landowners than control and number, although the latter two issues are somewhat more difficult to convey in a questionnaire.

Table 19.--Respondent Sample Owners' Willingness to Allow Public Hiking, Hunting, and Snowmobiling, if Requested, on Their Parcels.

Response	Number	Percent
Owners' Willingness to Allow Public Hiking, if Requested		
Yes	50	83.3
No	10	16.7
Total	60	100.0
Non-Response	1	
Owners' Willingness to Allow Public Hunting, if Requested		
Yes	2	50.0
No	2	50.0
Total	4	100.0
Non-Response	. .	
Owners' Willingness to Allow Public Snowmobiling, if Requested		
Yes	6	37.5
No	10	62.5
Total	16	100.0
Non-Response	1	

Table 20.--Respondent Sample Owners' First Reason for Not Allowing, or Not Allowing if Requested, Public Hiking, Hunting, or Snowmobiling on Their Parcels.

Reason	Number	Percent
Owners' First Reason for Not Allowing Public Hiking		
Damages	20	57.1
Control	6	17.1
Safety	4	11.4
Privacy/Security	3	8.6
Other	2	5.8
Total	35	100.0
No First Reason Given	4	
Owners' First Reason for Not Allowing Public Hunting		
Damages	20	35.7
Safety	11	19.6
Control	9	16.1
Moral Considerations	8	14.3
Want to Increase Game Population	3	5.4
Other	5	9.0
Total	56	100.1
No First Reason Given	4	
Owners' First Reason for Not Allowing Public Snowmobiling		
Damages	54	69.2
Control	8	10.3
Noise	8	10.3
Privacy/Security	4	5.1
Other	4	5.1
Total	78	100.0
No First Reason Given	4	

Table 22.--Respondent Sample Owners' Estimates of the Numbers of Public Hikers, Hunters, or Snowmobilers They Observed per Week on Their Parcels During the Appropriate Activity Season.

Week	Number of Owners	Percent
Number of Public Hikers Seen per Week		
1-5	36	67.9
6-10	13	24.5
11 or more	4	7.6
Total	53	100.0
No Estimate Given	36	
Number of Public Hunters Seen per Week		
1-5	51	54.2
6-10	26	27.7
11 or more	17	18.1
Total	94	100.0
No Estimate Given	23	
Number of Public Snowmobilers Seen per week		
1-5	28	40.3
6-10	21	29.2
11 or more	22	30.5
Total	71	100.0
No Estimate Given	15	

Table 23.--Respondent Sample Owners' Indications of the Importance of Damages to Them in Relation to Public Recreational Use of Their Parcels.

Importance	Number	Percent
Very Important	107	61.1
Somewhat Important	44	25.1
Not at all Important	24	13.7
Total	175	99.9
Non-Response	20	

Table 24.--Respondent Sample Owners' Indications of the Importance of Control to Them in Relation to Public Recreational Use of Their Parcels.

Importance	Number	Percent
Very Important	95	54.9
Somewhat Important	50	28.9
Not at all Important	28	16.2
Total	173	100.0
Non-Response	22	

Table 25.--Respondent Sample Owners' Indications of the Importance of Liability to Them in Relation to Public Recreational Use of Their Parcels.

Importance	Number	Percent
Very Important	111	64.2
Somewhat Important	36	20.8
Not at all Important	25	15.0
Total	173	100.0
Non-Response	22	

Table 26.--Respondent Sample Owners' Indications of the Importance of Number of Them in Relation to Public Recreational Use of Their Parcels.

Importance	Number	Percent
Very Important	89	51.7
Somewhat Important	56	32.6
Not at all Important	27	15.7
Total	172	100.0
Non-Response	23	

The idea of public access programs, i.e., agreements between governmental agencies and private landowners whereby payments are made to private landowners who open their land to public recreational use, was explained to the owners and then they were asked if they would favor participating in similar agreements for the three recreational activities under study with their parcels. Their responses are shown in Table 27. A majority of the respondent sample owners do not favor such programs even though most owners do allow, or would allow if requested, public access to their parcels for the three activities.

Those owners that do favor participating in such programs with their parcels, were asked how much payment per acre per year they would require to enter the programs. Their responses are given in Table 28. Most of the respondent sample owners require only reasonable payment to open up their parcels to public recreational use for the three activities.

The type of payment preferred by those respondent sample owners who favor participating in public access programs with their parcels is given in Table 29. It appears that those owners are most comfortable with short-term agreements.

The owners were asked to respond to a series of statements presented in such a way so that responses for the three recreational activities under study could be compared.[1] The sample owners' responses are shown in Tables 30, 31, and 32. It appears that the effect of the

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[1]For an explanation and example of this technique, see G. David Hughes, "Upgrading the Semantic Differential," Journal of the Marketing Research Society 17 (January 1975):41-44.

Table 27.--Respondent Sample Owners' Positions on Participating in Public Access Programs for Hiking, Hunting, or Snowmobiling with Their Parcels.

Response	Number	Percent
Owners Favoring Program for Public Hiking		
Yes	48	27.9
No	123	71.5
Don't Know	1	.6
Total	172	100.0
Non-Response	23	
Owners Favoring Program for Public Hunting		
Yes	47	26.9
No	127	72.6
Don't Know	1	.5
Total	175	100.0
Non-Response	20	
Owners Favoring Program for Public Snowmobiling		
Yes	35	26.2
No	137	79.2
Don't Know	1	.6
Total	173	100.0
Non-Response	22	

Table 28.--Respondent Sample Owners' Indications of the Payment They Would Require to Participate in Public Access Programs for Hiking, Hunting, or Snowmobiling with Their Parcels.

Payment	Number of Owners	Percent
Payment Required for Public Hiking		
$0-2.00/acre/year	19	50.0
$2.01-4.00	14	36.8
$4.01-6.00	3	7.9
Over $6.00	2	5.3
Total	38	100.0
No Payment Given	10	
Payment Required for Public Hunting		
$0-2.00/acre/year	15	36.6
$2.01-4.00	19	46.3
$4.01-6.00	6	14.6
Over $6.00	1	2.4
Total	41	99.9
No Payment Given	6	
Payment Required for Public Snowmobiling		
$0-2.00/acre/year	7	26.9
$2.01-4.00	12	46.2
$4.01-6.00	5	19.2
Over $6.00	2	7.7
Total	26	100.0
No Payment Given	9	

Table 29.--For Respondent Sample Owners who Favor Participating in Public Access Programs for Hiking, Hunting, or Snowmobiling with Their Parcels, the Type of Payment They Would Prefer.

Type of Payment	Number of Owners	Percent
Year-to-Year	54	93.1
Five Year Contract	4	6.9
Total	58	100.0

activity is relatively small for these particular statements, although this may be accounted for by the format of the statements which may have produced similar responses by the owners for the three recreational activities.

The sample owners' responses to the statement dealing with governmental payment of all damages over $25 caused by the public while using private land for recreation are interesting in view of the owners' responses to the importance of damages (61.1% indicated "very important"), the reasons given for not allowing, or not allowing if requested, public access for the three activities (damages was the most often cited reason) and the reason given by owners for posting their property (27.3% specifically mentioned damages). Apparently damages is a key issue with owners, but they do not want the government to reimburse them for damages caused by the public while using their land for recreation. Since the owners were not asked why they were not receptive to a governmental program to reimburse them for damages, it can only be speculated as to what the reason or reasons might be. However, among the reasons likely are their fear of too much governmental involvement and a view that such reimbursement will

Table 30.--Respondent Sample Owners' Indications of Their Positions on the Issue of Public Asking Permission Before Using Private Land for Hiking, Hunting, and Snowmobiling.

Response	Number	Percent
Public Hikers Should Ask Permission		
Strongly Agree	91	53.2
Agree	51	34.5
Neutral	10	5.8
Disagree	8	4.7
Strongly Disagree	3	1.8
Total	171	100.0
Non-Response	24	
Public Hunters Should Ask Permission		
Strongly Agree	108	63.2
Agree	55	32.2
Neutral	3	1.8
Disagree	3	1.8
Strongly Disagree	2	1.1
Total	171	100.1
Non-Response	24	
Public Snowmobilers Should Ask Permission		
Strongly Agree	104	60.8
Agree	51	29.8
Neutral	8	2.7
Disagree	5	2.9
Strongly Disagree	3	1.8
Total	171	100.0
Non-Response	24	

Table 31.--Respondent Sample Owners' Indications of Their Positions on the Hypothetical Issue of Governmental Payment of All Damages Over $25 Caused by the Public While Hiking, Hunting, and Snowmobiling on Private Land.

Response	Number	Percent
The Government Should Pay for all Damages over $25 Caused by Public Hikers		
Strongly Agree	20	11.8
Agree	28	16.6
Neutral	18	10.7
Disagree	70	41.4
Strongly Disagree	33	19.5
Total	169	100.0
Non-Response	26	
The Government Should Pay for all Damages over $25 Caused by Public Hunters		
Strongly Agree	21	12.4
Agree	30	17.6
Neutral	19	11.2
Disagree	66	38.8
Strongly Disagree	34	20.0
Total	170	100.0
Non-Response	25	
The Government Should Pay for all Damages over $25 Caused by Public Snowmobilers		
Strongly Agree	26	15.3
Agree	28	16.5
Neutral	16	9.4
Disagree	68	40.0
Strongly Disagree	32	18.8
Total	170	100.0
Non-Response	25	

Table 32.--Respondent Owners' Indications of Their Positions on the Issue of the Environmental Effect on Private Land of Large Groups of Public Hikers, Hunters, and Snowmobiliers versus Small Groups.

Response	Number	Percent
Environmental Effect of Large Group of Public Hikers Same as for Small Group		
Strongly Agree	8	4.7
Agree	19	11.1
Neutral	13	7.6
Disagree	88	51.5
Strongly Disagree	43	25.1
Total	171	100.0
Non-Response	24	
Environmental Effect of Large Group of Public Hunters Same as for Small Group		
Strongly Agree	7	4.1
Agree	19	11.1
Neutral	6	3.5
Disagree	92	53.8
Strongly Disagree	47	27.5
Total	171	100.0
Non-Response	24	
Environmental Effect of Large Group of Public Snowmobilers Same as for Small Group		
Strongly Agree	9	5.3
Agree	18	10.5
Neutral	7	4.1
Disagree	86	56.3
Strongly Disagree	51	29.8
Total	171	100.0
Non-Response	24	

result in "double taxation" (owners paying taxes and those taxes, in turn, paying the owners back for damages).

The responses to these three series of statements are similar to the sample owners' responses concerning the importance of damages, control and number. Most of the owners are concerned about these issues, but not to the point of refusing access for the three recreational activities under study.

CHAPTER V

TESTING THE HYPOTHESES

In this chapter, the results of the testing of the hypotheses outlined in Chapter III are discussed. For the reader's convenience, the hypothesis, in both conceptual and operational form, and pertinent definitions are included at the beginning of the discussion of each hypothesis.

Where appropriate, specific statistical techniques and procedures are explained in general terms. The level of significance used in this analysis was .05 which, simply stated, means the data will support a false hypothesis 5% of the times it is tested.

Hypothesis 1: Recreational Activity

Conceptual Hypothesis.--Landowner willingness to allow public access (combined responses) for a recreational activity is negatively related to the intensity of the activity.

Operational Hypothesis.--Higher proportions of owners will allow public access for hiking than for hunting and higher proportions of owners will allow public access for hunting than for snowmobiling.

Combined Responses.--A measure that reflects if the owners do allow public use, or in the event of no requests for such use, if the owners would allow public use.

As indicated in Table 33, 78.1% of the owners do allow, or would allow if requested, public access for hiking compared to 66.5% for hunting and only 52.9% for snowmobiling. The type of recreational activity is clearly related to the owner's willingness to allow public access.

To determine the significance of the difference between the numbers of owners, the combined responses were compared using the t-test. The t-test is a statistical technique that can be used when comparing the difference between two sample means to determine if the difference is significantly large (the "paired comparison" technique). For this particular comparison, the procedure consisted of assigning a numerical value of 1 for a "yes" response and 2 for a "no" response.

The resulting mean responses; 1.229 for hiking, 1.335 for hunting, and 1.480 for snowmobiling were then compared. The results are presented in Table 34.

While it is inappropriate, in a strict statistical sense, to assign interval (numerical) values to nominal (categorical) variables, the large sample size and approximately normal distribution for the mean responses make such a procedure valuable in indicating the significance of the difference between the mean responses.

Hypothesis 1 Results.--Supported at the .05 significance level.

Table 33.--Respondent Sample Owners' Willingness to Allow, or Allow if Requested, Public Hiking, Hunting, and Snowmobiling on Their Parcels.

Response	Number	Percent
Owners who Allow, or would Allow if Requested, Public Hiking		
Yes	139	78.1
No	39	21.9
Total	178	100.0
Non-Response	17	
Owners who Allow, or would Allow if Requested, Public Hunting		
Yes	119	66.5
No	60	33.5
Total	179	100.0
Non-Response	16	
Owners who Allow, or would Allow if Requested, Public Snowmobiling		
Yes	92	52.9
No	82	47.1
Total	174	100.0
Non-Response	21	

Table 34.--Mean Responses Comparison Results.

Paired Comparison	Mean Difference	T Value	Degrees of Freedom	Sig.
Hiking with Hunting	.106	2.60	178	.010
Hiking with Snowmobiling	.251	6.04	174	.000
Hunting with Snowmobiling	.145	3.55	174	.001

Hypothesis 2: Landowner Concerns

Conceptual Hypothesis.--Public Access (composite measure of the owners' willingness to allow public access) is negatively related to the importance a landowner places on damages, control, liability, and number.

Operational Hypothesis.--Higher proportions of owners at the "low" Public Access level will respond that damages, control, liability, and number are "very important" than owners at the "high" Public Access level. Higher proportions of owners at the "high" Public Access level will respond that damages, control, liability, and number are "not at all important" than owners at the "low" Public Access level.

Composite Measure.--A measure valued "high" for owners who do allow, or would allow if requested, either two or all three of the activities on their parcels and "low" for owners who do allow, or would allow if requested, none or only one of the three activities on their parcels.

Cross-tabulations of the variables (see Tables 35, 36, 37, and 38) indicate a significant negative relationship between Public Access level and damages, control, and number.

Table 35.--Cross-tabulation of Public Access Level with Damages.

Public Access Level		Damages Importance			
		"Very"	"Somewhat"	"Not at all"	Total
"low"	No.	43	7	2	52
	percent	82.7	13.5	3.8	30.4
"high"		63	35	21	119
		52.9	29.4	17.6	69.6
Total		106	42	23	171
		62.0	24.6	13.5	100.0

Chi-square 14.040 Kendall's tau .262
Degrees Freedom 2
Significance .001 Non-Response 24

The variables were compared using contingency tables and the chi-square statistical technique. The chi-square statistic only measures the significance of a relationship, not the strength, which was measured by the Kendall's tau statistic. Kendall's tau is a statistical measure used to indicate the strength of an association between two ordinally scaled variables. It ranges from -1 (perfect negative relationship) to 1 (perfect positive relationship).[1] For the variables analyzed, Kendall's tau was reasonably large in light of the complexity of the issues involved and their "rough" measurement.

[1]Kendall's tau is positive for these relationships only because of the Tables' format.

Table 36.--Cross tabulation of Public Access Level with Control.

Public Access Level		Control Importance			
		"Very"	"Somewhat"	"Not at All"	Total
"low"	no.	37	11	4	52
	percent	71.2	21.2	7.7	30.8
"high"		56	37	24	117
		47.9	31.6	20.5	69.2
Total		93	48	28	169
		55.0	28.4	16.6	100.0

Chi-square 8.510 Kendall's tau .216
Degrees Freedom 2
Significance .014 Non-Response 26

Table 37.--Cross-tabulation of Public Access Level with Liability.

Public Access Level		Liability Importance			
		"Very"	"Somewhat"	"Not at All"	Total
"low"	no.	34	13	5	52
	percent	65.4	25.0	9.6	30.8
"high"		76	20	21	117
		65.0	17.1	17.9	69.2
Total		110	33	26	169
		65.1	19.5	15.4	100.0

Chi-square 2.778 Kendall's tau .028
Degrees Freedom 2
Significance .249 Non-Response 26

Table 38.--Cross-tabulation of Public Access Level with Number.

Public Access Level		Number Importance			
		"Very"	"Somewhat"	"Not at All"	Total
"low"	no.	35	12	5	52
	percent	67.3	23.1	9.6	31.0
"high"		52	42	22	116
		44.8	36.2	19.0	69.0
Total		87	54	27	168
		51.8	32.1	16.1	100.0

Chi-square 7.383 Kendall's tau .200
Degrees Freedom 2
Significance .025 Non-Response 27

Almost 83% of the "low" Public Access level owners indicated that damages were "very important" whereas only 52.9% of the "high" Public Access level owners felt so. Only 3.8% of the "low" Public Access owners responded that damages were "not at all important" compared to 17.6% of the "high" Public Access level owners.

For control, 71.2% of the "low" Public Access level owners responded "very important" compared to 47.9% of the "high" Public Access level owners. Less than 8% of the "low" Public Access level owners indicated that control was "not at all important" whereas 20.5% of the "high" Public Access level owners felt so.

In terms of number, 67.3% of the "low" Public Access level owners said that it was "very important" compared to 44.8% of the "high" Public Access level owners. Only 9.6% of the "low" Public Access level owners felt that number was "not at all important" whereas 19.0% of the "high" Public Access level owners said so.

There was a negative relationship between Public Access level and liability, but the relationship was not significant at the .05 level.

While these results show a negative relationship between Public Access level and landowner concerns, it should be noted that for each concern, a sizable proportion of the "high" Public Access level owners responded "very important." Thus, it appears that owners are concerned about these issues, but not to the extent of refusing public access for hiking, hunting, and snowmobiling.

Hypothesis 2 Results: Supported for Damages, Control, and Number at the .05 significance level.

Hypothesis 3: High Public Access Owners vs. Low Public Access Owners

Conceptual Hypothesis: There is a difference between those landowners at the "high" Public Access level and those landowners at the "low" Public Access level in terms of their identifying characteristics.

Operational Hypothesis: There is a significant statistical difference between owners at the "high" Public Access level and owners at the "low" Public Access level in terms of the discriminating variables; SES, age, primary ownership objective, residence location, years of ownership, parcel size, percentage of parcel in crops, and percentage of parcel in woods.

The two groups of owners ("high" Public Access level and "low" Public Access level) were compared using discriminant analysis. This statistical technique is briefly explained in the section below.

Discriminant Analysis

Discriminant analysis is a statistical technique that aims to statistically distinguish between two or more groups of cases. To distinghish between the groups, discriminating variables are selected that measure characteristics on which the two groups are expected to differ. Mathematically, the objective of disriminant analysis is to, "weight and linearly combine the discriminating variables in some fashion so that groups are forced to be as statistically distinct as possible."[2]

A two-group discriminant function is a linear combination of the discriminating variables and is of the form,

$$D = d_1Z_1 + d_2Z_2 + \ldots d_pZ_p.$$

where D is the score on the discriminant function, the d's are weighting coefficients and the Z's are the standardized values of the p discriminating variables used in the analysis. Hopefully the discriminating scores (D's) for cases within a group will be fairly similar. At any rate, the function is formed in such a way as to maximize the separation of the two groups.

In terms of this study, the purpose in using discriminant analysis was to determine if the two groups of owners ("high" Public Access level and "low" Public Access level) are different. Some of the measures used to indicate the success with which the discriminating variables actually discriminate when combined into a discriminant

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[2]Norman Nie, C. Hadlai Hull, Jean Jenkins, Karin Steinbrenner, and Dale Bent, Statistical Package for the Social Sciences (New York: McGraw-Hill, 1975), p. 435.

function are discussed below. In total, the two groups of owners were not statistically different, but the measures do provide some interesting information about the two groups and the discriminating variables.

The "group means" are the respective discriminating variable means for each group of owners (see Table 39). The group means show that, "high" Public Access level owners, compared to "low" Public Access level owners, tend to have larger parcels, have owned their parcels longer, have a higher percentage of their parcels in crops and a lower percentage of their parcels in woods. With the remaining variables there is little difference for the two groups of owners by discriminating variable means.

Table 39.--High and Low Public Access Level Owner Discriminant Analysis Group Means by Discriminating Variables.

Discriminating Variable	Public Access Level		Total
	"Low"	"High"	
Parcel Size	41.44 acres	50.525	47.687
SES	3.622	3.576	3.590
Age	52.822 yrs.	51.707	52.055
Years Owned	15.867 yrs.	17.657	17.097
Percentage in Crops	31.556%	42.323	38.959
Percentage in Woods	27.916%	17.023	20.427
Primary Ownership Obj.	1.556	1.444	1.479
Residence Location	1.289	1.202	1.229
Group Counts	45	99	144

A statistic that measures the overall success of the analysis is Wilk's lambda. Wilk's lambda is an, "inverse measure of the discriminating power in the original variables which has not yet been removed by the discriminating function, the larger lambda is, the less information remaining. Lambda can be transformed into a chi-square statistic for (a) test of statistical significance."[3]

The final Wilk's lambda, .923, for the analysis of the two groups of owners, indicates that the "information" in the original variables has not been used by the discriminating function and the final lambda is not significant (see Table 40).

Table 40.--Summary of Discriminant Analysis for High and Low Public Access Level Owners.

Final Wilk's Lambda	Chi-Square Value	Sig.
.923	11.063	.198

The standardized discriminant function coefficients are given in Table 41. Ignoring signs, these coefficients are an indication of the relative contribution of the discriminating variables to the discriminant function.[4] The most influential variables for this analysis are age, followed by percentage of the parcel in woods.

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[3] SPSS, op. cit., p. 442.

[4] These coefficients, which are similar to beta coefficients in multiple regression analysis, are "weights" that have to be applied (multipled) to the standardized values of the discriminating variables in order to arrive at the scores (D's) discussed earlier.

Table 41.--Standardized Discriminant Function Coefficients for High and Low Public Access Level Owners Discriminant Analysis.

Discriminating Variable	Coefficient
Parcel Size	.275
SES	.243
Age	-.632
Years Owned	.497
Percentage in Crops	.123
Percentage in Woods	-.614
Primary Ownership Obj.	-.268
Residence Location	-.337

A procedure that allows for a check on the adequacy of the discriminant function and is useful in predicting group membership for cases with unknown membership, is "classification." By classifying the cases used to derive the function in the first place and comparing predicted group membership with actual group membership, the success in discrimination can be measured by observing the proportion of correct classifications.[5]

The actual classification process involves separate classification functions for each group and will not be explained here because it is beyond the scope of this discussion.

A classification table for actual group membership and predicted group membership for the two groups of owners is given in

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[5]SPSS, op. cit., p. 445.

Table 42. Using the seven identifying characteristics as discriminating variables, only 62.5% (90 out of 144) of the owners were correctly classified according to group membership (Public Access level). While this result is significant, it is of little predictive value since it would be expected to correctly classify 50% of the owners by a random process of assigning the owners to the two categories.

Table 42.--Classification Results for High and Low Public Access Level Owners Discriminant Analysis.

Actual Group Membership (Public Access Level)	Predicted Group Membership (Public Access Level)		
	"Low"	"High"	Total
"Low"	27*	18	45
"High"	36	63*	99
Total	63	81	144

Chi-square 9.000
Degrees Freedom 2
Significance .003

51 owners not used in analysis

*Signifys correct classification.

There are several possible reasons for the poor results of the discriminant analysis. One possibility might be the rather arbitrary grouping of owners into "high" and "low" Public Access levels. Perhaps different groupings would produce more separation. For example, owners not allowing any of the three recreational activities under study (group 1) and owners allowing one, two, or all three of the activities (group 2).

Another possible reason for the poor results might be the particular discriminating variables (identifying characteristics) studied. Perhaps different characteristics would produce greater separation.

Hypothesis 3 Results: Not Supported at the .05 significance level.

Hypothesis 4: High Program Acceptance Owners vs. Low Program Acceptance Owners

Conceptual Hypothesis.--There is a difference between those landowners at the "high" Program Acceptance level (composite measure of owners' positions on public access programs) and "low" Program Acceptance level landowners in terms of their identifying characteristics.

Operational Hypothesis.--There is a significant statistical difference between owners at the "high" Program Acceptance level and owners at the "low" Program Acceptance level in terms of the discriminating variables; SES, age, primary ownership objective, residence location, years of ownership, percentage of parcel in crops and percentage of parcel in woods.

Composite Measure.--A measure valued "high" for owners who would favor a public access program on their parcel for at least one, two or all three of the recreational activities and "low" for owners who would not favor a public access program on their parcels for any of the three activities.

The two groups of owners ("high" Program Acceptance level and "low" Program Acceptance level) were compared using discriminant

analysis. The reader should refer to the general discussion of this statistical technique in the section on Hypothesis 3. The purpose in using discriminant analysis to compare these two groups of owners was the same as with the preceding hypothesis, i.e., to determine if the two groups of owners were different.

Discriminant analysis itself will not be discussed again. Only the measures, discussed previously, that indicate the success with which the discriminating variables actually discriminate when combined into a discriminant function will be reviewed.

In total, the two groups of owners were not statistically different, but the success measures do provide some interesting information about the two groups of owners and the discriminating variables.

The discriminating variable group means are given in Table 43. The group means show that, "high" Program Acceptance level owners, compared to "low" Program Acceptance level owners, tend to have larger parcels, are younger, have a higher percentage of their parcels in crops, have a higher percentage of their parcels in woods and are less likely to live on their parcels. The remaining variable means show little difference for the two groups of owners.

The final Wilk's lambda, .957, for the analysis of the two groups of owners, indicates that the discriminating function has not used the "information" in the discriminating variables and is not significant (see Table 44).

The standardized discriminant function coefficients are given in Table 45. Ignoring the signs, residence location is the most influential variable, followed by age.

Table 43.--High and Low Program Acceptance Owners Discriminant Analysis Group Means by Discriminating Variables.

Discriminating Variable	Program Acceptance Level "Low"	"High"	Total
Parcel Size	45.348 acres	48.463	46.524
SES	3.506	3.704	3.580
Age	52.977 yrs.	50.870	52.182
Years Owned	17.685 yrs.	16.667	17.301
Percentage in Crops	37.461%	40.367	38.559
Percentage in Woods	19.593%	21.665	20.376
Primary Ownership Obj.	1.506	1.426	1.475
Residence Location	1.168	1.315	1.224
Group Counts	89	54	143

Table 44.--Summary of Discriminant Analysis for High and Low Program Acceptance Owners.

Final Wilk's Lambda	Chi-Square Value	Sig.
.957	6.040	.643

Table 45.--Standardized Discriminant Function Coefficients for High and Low Program Acceptance Level Owners Discriminant Analysis.

Discriminating Variable	Coefficient
Parcel Size	.250
SES	.091
Age	-.495
Years Owned	.185
Percentage in Crops	.318
Percentage in Woods	.283
Primary Ownership Obj.	-.119
Residence Location	.775

A classification table for actual and predicted group membership for the two groups of owners is given in Table 46. Using these variables as discriminators, only 58.8% (83 out of 143) of the owners were correctly classified by group membership (Program Acceptance level). While this result is significant at the .054 level, it is of little predictive value because 50% of the owners would be correctly classified by an assignment procedure using random classification.

The possible reasons for the poor results of the discriminant analysis are similar to those given for the preceding hypothesis. Arbitrarily grouping owners into "high" and "low" Program Acceptance levels may account for the results. If different groups had been used, perhaps more separation would have been produced. For example, if only owners favoring public access programs on their parcels for all three recreational activities (group 1) were compared to owners

Table 46.--Classification Results for High and Low Program Acceptance Level Owners Discriminant Analysis.

Actual Group Membership (Program Acceptance Level)	Predicted Group Membership (Program Acceptance Level) "Low"	"High"	Total
"Low"	59*	30	89
"High"	30	24*	54
Total	89	54	143

Chi-square 3.669
Degrees Freedom 2
Significance .054

52 owners not used in analysis

*Signifys correct classification.

not favoring public access programs on their parcels for any of the three activities (group 2).

Another possibility might be the particular discriminating variables used. Perhaps different variables would produce greater separation.

Hypothesis 4 Results: Not Supported at the .05 significance level.

CHAPTER VI

SUMMARY AND RECOMMENDATIONS

This chapter includes a short summary of the study and its findings. Also included are policy and research recommendations. The section in the first chapter on Limitations to the Study, should be remembered in conjunction with the recommendations, since the recommendations are given with the understanding that the data are an accurate representation of the sample respondent landowners and their parcels.

Summary

Due to the increasing interest in utilizing private land for public recreation, the basic objective of this study was to examine the private landowner on the urban fringe area of Southern lower Michigan, his land and his willingness to allow public access to his land for recreation.

Specific hypotheses postulated and tested included the relationship between owner willingness to allow public access for a recreational activity and the intensity of the activity, the relationship between four landowner concerns and the owner's willingness to allow public access, the differences between "high" and "low"

Public Access level owners in terms of their identifying characteristics and the differences between "high" and "low" Program Acceptance level owners in terms of their identifying characteristics.

Kent County, in the Western portion of Southern lower Michigan, was selected as representative of the urban fringe areas of Michigan. Ten percent of all persons owning 11 acres or more (239 total) in six representative townships in the county were randomly selected and contacted for interviews. In June of 1975, 195 personal interviews were administered to the sample landowners.

Information obtained included characteristics of the specific sample parcels of land identified with each owner, characteristics of the respondent sample landowners and willingness of the owners to allow public access for recreation.

It was found that the sample parcels of land averaged almost 48 acres in size. As a total, almost half of the parcels had land covers suitable for recreational use (woods, open fields, marsh and brush). Approximately one-third (36.1%) of the sample parcels were posted, with "hunters" being the most often cited reason for posting given by those owners who posted.

It was found that a majority of the respondent sample landowners were 50 or more years of age. The owners averaged almost 12 years of education. Over two-thirds (68.4%) of the respondent sample owners had family incomes of $10,000 or more in 1974. The highest proportion (28.9%) of owners were engaged in farming.

Two-thirds of the owners hiked on their parcels whereas less than half of the owners hunted or snowmobiled on their parcels. Amenity oriented ownership objectives were given by half (49.2%) of

the respondent sample owners. Over two-thirds of the owners (72.3%) lived on or adjacent to their parcels.

It was found that the majority of the respondent sample owners do allow, or would allow if requested, public access for the three recreational activities; hiking (78.1%), hunting (66.5%), and snowmobiling (52.9%). "Damages" was the most often mentioned reason for owners that did not allow, or would not allow if requested, public access for the three activities. For owners that did allow the three activities, estimates of public use were generally small (five or less public users per week).

Over half of the respondent sample owners felt that damages, control, liability, and number were "very important" issues to them in terms of public recreation on their parcels.

Less than one-third of the owners would favor participating in public access programs with their parcels for each of the three recreational activities. Of those owners that would favor such programs, most would require only $4 or less per acre per year to open their land.

In terms of the specific hypotheses, it was found that landowner willingness to allow public access for a recreational activity was negatively related to the intensity of the activity. A negative relationship was found between the importance owners place on damages, control, liability, and number, and the owners' Public Access level, although the relationship between liability and Public Access level was not statistically significant. No statistical difference was found between "high" and "low" Public Access level owners in terms of their identifying characteristics; SES, age, primary ownership

objective, residence location, years of ownership, parcel size, parcentage of the parcel in crops and percentage of the parcel in woods. No statistical difference was found between "high" and "low" Program Acceptance level owners in terms of their identifying characteristics.

Policy Recommendations

Based on the findings of this study, several policy recommendations are presented below. In some instances, the recommendations are based, not only on the formal results of the study, but also on information that the author obtained from the sample landowners informally during the interviewing process.

All of the recommendations deal with the issue of governmental incentive programs designed to increase public use of private land for recreation, hereafter termed public access programs.

It is recommended that this particular group of landowners (small private landowners on the urban fringe) be given a lower priority as a target group for public access programs. This recommendation is given because of two conclusions drawn from this study.

First, it was found that the median sample parcel size was under 40 acres. This size parcel would tend to be inefficient for public access program implementation. Unless all landowners in a given area were receptive to the program, which is unlikely, the resulting patchwork of small private parcels of land open to public recreational use would create administrative problems along with conflicts and confusion for the public users and the private landowners.

Second, this study also found that a sizable proportion of the sample landowners do allow, or would allow if requested, public access for the three recreational activities studied. There is no guarantee that a public access program would open up any more private land for public recreational use. It is quite possible that such a program would only be considered by landowners already allowing public access.

It is recommended that public access programs incorporate different incentives (other than economic incentives) on a trial basis. These other incentives could take the form of liability protection agreements with owners allowing public access for recreation, publicly subsidized damage insurance for owners allowing public access for recreation, etc. This recommendation is given because of two findings of this study.

First, it was found that public access programs using economic incentives, at least for the three activities studied, had a limited appeal to the sample landowners. Furthermore, of the minority of owners favoring such programs, most of these owners would require little economic recimbursement ($4 or less per acre per year).

Second, it was found that a majority of the sample landowners were concerned with damages, control, liability, and number.

It is recommended that public access programs focus on less intensive recreational activities such as hiking, cross-country skiing, photography, etc. This recommendation is given because the first hypothesis investigated showed a negative relationship between landowner willingness to allow public access for a recreational activity and the intensity of the activity.

Finally, it is recommended that instead of direct public access programs, indirect methods such as educational and information programs and campaigns be used with this particular group of landowners. These programs could aim at educating public recreationists concerning the proper means of gaining access to private land and the proper behavior while using private land for recreation. This recommendation is given because it was felt that, in general, formalized, legalistic, contractual "programs" did not appeal to the sample landowners.

Research Recommendations

As mentioned in Chapter II, there is relatively little research on public access to smaller private ownerships that typify urban fringe areas. Therefore, instead of outlining the many research needs for this specific area, or the even broader area of public recreational use of private land in general, this discussion will focus on issues examined, and issues not examined, in this study and several areas of research needs related to them.

First, it would be useful to determine if the public access/activity intensity relationship examined in this study is valid for a wider range of recreational activities, by investigating more and different recreational activities in relation to public access. Along with this larger number of activities, a more in-depth analysis of the specific conditions, circumstances, etc., that landowners require or desire before allowing public access could be included in the research.

Second, it would be useful to investigate the landowner concerns examined in this study; damages, control, liability, and number, and determine if these concerns are related to particular recreational activities, particular types of public recreationists, particular times of year, etc.

Third, it would be useful to investigate landowners' positions and attitudes toward specific kinds of public access programs. Perhaps several different hypothetical or existing public access programs could be presented to landowners and then their reactions analyzed.

Finally, it would be useful to examine those landowners beyond the urban fringe, not examined in this study, to determine if there are significant or consistant differences between those landowners and the urban fringe landowners examined in this study.

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APPENDICES

APPENDIX A

VARIABLE TRANSFORMATIONS

APPENDIX A

VARIABLE TRANSFORMATIONS

Socioeconomic Status

Socioeconomic status (SES) was created by recoding and then combining the variables, Occupation, Education, and Family Income.

Occupation

Respondents classed as Sales, Clerical, Operative, Laborers, and Unemployed were assigned a value of 1. Respondents classed as Craftsmen, Farmers, Service and Retired were assigned a value of 2. Respondents Classed as Professional/technical and Manager/administrative were assigned a value of 3.

Education

Respondents having 1 to 11 years of education were assigned a value of 1. Respondents having 12 to 15 years were assigned a value of 2. Respondents having 16 or more years were assigned a value of 3.

Family Income

Respondents having family incomes, in 1974, of less than $10,000 were assigned a value of 1. Respondents having incomes of $10,000 to $14,999 were assigned a value of 2. Respondents having incomes of $15,000 or more were assigned a value of 3.

Each respondent's "score" for the three variables was added together to arrive at SES,

Occupation + Education + Family Income = SES.

SES had values ranging from a low of 3 up to 9. These values were then recoded to 0 - 6.

Primary Ownership Objective

Primary ownership objective was transformed by classifying the fourteen separate objectives into either economic or amenity oriented objective categories. Farming, Inexpensive residence, Investment, Mining/extraction, and Business/commercial were classified as economic and assigned a value of 1. Rural environment, Enjoy nature, Privacy, Recreation, Retirement, Location, Family/inheritance, Pride of ownership, and Education were classified as amenity oriented and assigned a value of 2.

Residence Location

Residence location was created by recoding the variable, Type of owner. Onsite and Adjacent owners were assigned a value of 1. Neighborhood, Nearby city, Absentee, and Institutional were termed Not at the Parcel and assigned a value of 2.

APPENDIX B

INTRODUCTORY LETTER

APPENDIX B

INTRODUCTORY LETTER

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF RESOURCE DEVELOPMENT
NATURAL RESOURCES BUILDING

EAST LANSING • MICHIGAN • 48824

As you may know Michigan State University, through its Cooperative Extension Service and Agricultural Experiment Station, has a long history of research activity which is designed to help meet the needs of the State's citizens. This work covers a wide variety of topics including agriculture, home economics, management of recreational enterprises, and so on. Right now we are engaged in a study of rural land use and the focus of our study is Kent County.

The reason we are writing to you is to ask your cooperation in this project. All that is required is a short interview session with one of the members of our staff. The interview usually takes about 30-45 minutes to complete, and the questions are concerned primarily with how you use your property. Most people seem to enjoy the session.

We should add that your name was selected at random as an owner of more than ten acres of land in certain designated areas of Kent County. We have purposely selected a very small number of landowners to interview in an effort to keep down the costs of the project. For this reason it is especially important that we have your help if at all possible.

One of our interviewers will be calling you within the next few days to arrange an appointment with you at your convenience. The interview may be conducted in your home or any other place that you wish. All interviewers are graduate students at Michigan State University.

If you have any questions about the study or your role in it, please feel free to call us collect at (517) 353-0823. In addition, you will be provided with a sample of reports from recently completed research projects showing the types of information which result from studies such as this and which may be of interest to you. You may also request a copy of the final results of this study if you wish.

We thank you for your help.

Sincerely yours,

Robert E. Manning
Project Coordinator

Lewis W. Moncrief
Project Director

REM:jg

APPENDIX C

SURVEY INSTRUMENT

APPENDIX C

SURVEY INSTRUMENT

MICHIGAN RURAL LAND USE STUDY INTERVIEW SCHEDULE

INSTRUCTIONS TO THE INTERVIEWERS:

The following information should be recorded prior to administering the questionnaire.

1. Interview number _____
2. Interviewer number _____
3. Township _____
4. Number of acres (official) _____
5. Assessed value (official) _____
6. Land use code _____

Please read the following three paragraphs before beginning the interview.

As we explained in our letter, this interview deals primarily with questions about your property. There aren't any "right" or "wrong" answers to any of the questions; we're simply interested in some facts about your particular piece of property and how you feel about certain issues which may involve your land. In order for the interview to be useful, you will have to be as candid as possible. All of your answers will be held strictly confidential and neither your name nor your property will be associated with your answers.

At the outset I should say that these questions refer specifically to your _____ acre tract of land which is located in Section _____ of _____ Township. If you have any questions at any time during the interview, feel free to stop me and ask them.

The interview consists of eight parts, the first of which deals directly with this parcel of land--such as how much you own, how you use it and so on. Do you have any questions before we begin?

O.K., the first question is...

I. GENERAL

1. Do you live on this property?
   yes _____ (Go to question 4.) no _____

2. Is there a house or cabin on the property?
   yes _____ no _____ (Go to question 4.)

3. How often do you stay at this property?
   _____ all summer and some weekends
   _____ weekends or overnight only
   _____ very seldom
   _____ never
   _____ Other (Specify) _____

4. Now I'd like to know what percentage of your property (or how many acres) is in various types of uses. For example, how many acres are in ... (Make sure total equals 100%)
   a) crops (including hay) _____
   b) woods _____
      1) natural _____
      2) plantation _____
   c) open fields (including pasture) _____
   d) marsh _____
   e) brush _____
   f) buildings and yard _____
   g) other types of land that I have not mentioned _____
      (Specify) _____ _____
      _____ _____

5. In what year did you acquire the property? _____

6. Could you tell me how you acquired the property?
   purchase _____
   inheritance _____
   gift _____
   Other (Specify)
   _____ _____

7. Do you rent or lease any of this land (survey parcel only) to other persons?
   yes _____ no _____ (Go to question 9.)

8. How much land do you rent to other persons and for what purpose?

Number of acres	Purpose
_____	_____
_____	_____
_____	_____

9. Do you rent or lease any property from neighboring landowners?
   yes _____ no _____ (Go to question 11.)

10. How much land do you rent and for what purpose?

Number of acres	Purpose
_____	_____
_____	_____

11. Do you own any other parcels of land in Kent County?
   yes _____ no _____ (Go to question 13.)

12. How much land do you own in Kent County and in which townships? (Record each parcel separately.)

Number of acres	Township
_____	_____
_____	_____
_____	_____

13. Can you tell me the current assessed value of your property? _____

II. OWNERSHIP OBJECTIVES AND INTENTIONS

O.K., that completes the first section. Now I'd like to ask you a few questions about the reasons you own your land and what you intend to do with it in the future.

14. I think that it's probably safe to say that people own land for many different reasons. Some of the most common reasons include farming or simply as an affordable place to live. Other people own land in order to live in a certain location or a certain kind of surroundings; and some people own land for recreational purposes or because it brings them pleasure or enjoyment or perhaps they own land primarily as an investment. If you had to choose the single most important reason for owning <u>your</u> land, what would you say that reason is? (PROBE) (Record in Column 1.)

	Column 1	Column 2
farming	_____	_____
rural environment	_____	_____
enjoy nature	_____	_____
privacy	_____	_____
recreation	_____	_____
inexpensive residence	_____	_____
investment	_____	_____
other (Specify)		
_____	_____	_____
_____		

15. Are there any other important reasons why you own this property? (PROBE) (Record in Column 2.)

16. [Hand respondent Sheet number 1 and a pencil.]
This sheet contains ten pairs of adjectives of opposite meaning. Please read each set of adjectives and consider how you think they apply in describing your property. Then check the blank which best describes your feelings.

Let's take the first set of adjectives as an example. If you feel that your property is very big, then you would check blank number 1. If you feel it is very small, you would check blank number 7. Blanks number 2 through 6 represent choices between these two extremes. Blank number 4 means that you are neutral or have no opinion regarding that particular pair of adjectives.

Be sure you consider these adjectives in regard to your own personal feelings about your property.

(Make sure the respondent understands the instructions. Record the responses below at the completion of the interview.)

1.	_____	6.	_____
2.	_____	7.	_____
3.	_____	8.	_____
4.	_____	9.	_____
5.	_____	10.	_____

17. Is your land currently for sale?
yes _____ no _____

18. Do you think that you will sell your land within the next ten years?
yes _____ no _____

19. If you were to sell your property this year, what do you think would be a fair price? _____

20. Have you sold or purchased any land (other than the survey parcel) in the past five years?
yes _____ no _____ (Go to question 22.)

21. Approximately how many transactions has this involved?
_____

22. Do you think that land is a good investment?
yes _____ no _____

23. Why do you think that land is (is not) a good investment?

_____

_____

III. LAND USE

O.K., now I'd like to ask you about some of the things you do with your property.

24. Have you or your family done any of the following things on this property?
    a) planted a vegetable garden _____
    b) built any fences _____
    c) built any roads _____
    d) constructed any walking or hiking trails _____
    e) maintained a bird feeder _____
    f) put up bird houses or next boxes _____
    g) attempted to attract or retain wildlife by providing a good habitat (e.g. planted special crops or shrubs) _____

25. Do you have any books in your household for identifying trees, wildflowers, birds, or other types of wildlife?
    yes _____ no _____

26. Do you post any portion of your land?
    yes _____ no _____ (Go to question 28.)

27. How much of your land do you post and why?

Number of acres	Reason
_____	_____
_____	_____

28. Can you tell me anything that you have done, or that you would like to do in the future, to improve your property?

Done	Plans
a) _____	a) _____
b) _____	b) _____
c) _____	c) _____

29. Do you hunt on your land?
    yes _____ no _____

30. Do you hike (walk for pleasure) on your land?
    yes _____ no _____

31. Do you snowmobile on your land?
    yes _____ no _____

32. Do you have a pond on your property?
    yes _____ no _____ (Go to question 38.)

33. Approximately how big is it? _____

34. What is its greatest depth? _____

35. Does the pond have any fish in it?
    yes _____ no _____

36. Was the pond built while you owned the land?
    yes _____ no _____ (Go to question 38.)

37. What was the main reason for building it?
    _____

38. Have you planted any trees on your property?
    yes _____ no _____ (Go to question 41.)

39. Were these primarily ornamental trees for landscaping purposes or were you interested in promoting the growth of forests or woodlots?
    ornamental ____ (Go to question 41.) woodlot _____

40. Do you intend to cut portions of this woodlot for sale of commercial timber products?
    yes _____ no _____

41. Do you intend to plant any (more) trees in the future?
    yes _____ no _____ (Go to question 44.)

42. Will these be primarily ornamental trees for landscaping purposes or are you interested in promoting the growth of forests or woodlots?
    ornamental ____ (Go to question 44.) woodlot _____

43. Do you intend to cut portions of this woodlot for sale of commercial timber products?
    yes _____ no _____

44. Have you ever sold any commercial timber products from this property?
    yes _____ no _____ (Go to question 46.)

45. In what year did you make your last sale? _____

IV. COMMUNITY

O.K., now I'd like to get back to some more general topics. Let's talk about your community for a minute.

46. What would you like to see happen to the population of your community over the next five years--increase, decrease, or stay about the same?
    increase _____ decrease _____ stay about the same _____

47. Do you think government should take any definite action to encourage or discourage population growth in your community?
    yes _____ no _____

48. What is the property tax rate in this area? _____

49. All things considered, would you say that the property tax rate is too high, too low, or probably about right?
    too high _____ too low _____ about right _____

50. Do you know if _____ Township has a township planning commission?
    yes _____ no _____ don't know _____

51. Does Kent County have a planning commission?
    yes no _____ don't know _____

V. ENVIRONMENT

O.K., we've finished four sections of the interview and we have four to go...

52. Do you belong to any outdoor sports organizations such as Michigan United Conservation Clubs, National Rifle Association, etc.?
    MUCC _____
    NRA _____
    others (Specify) _____
    _____
    None _____

53. Do you belong to any conservation organizations such as the Sierra Club, the West Michigan Environmental Action Council, etc.?
    Sierra Club _____
    WMEAC _____
    others (Specify) _____
    _____
    None _____

54. Do you belong to any farming organizations such as the Farm Bureau, National Farmers Organization, Soil Conservation Society, etc.?
    Farm Bureau _____
    NFO _____
    SCS _____
    others (Specify) _____
    _____
    None _____

55. Do you ever have any contact with any of the public agencies which provide assistance to private landowners such as your County Cooperative Extension Agent, the Soil Conservation Service, the Agricultural Stabilization and Conservation Service, etc.?

Extension Service _____
SCS _____
ASCS _____
others (Specify) _____
_____
None _____

56. [Hand Respondent Sheet 2 and a pencil.]
Here is a list of seven statements. Please take a moment to read and consider each of them. After reading each one, please circle how you feel about it--whether you strongly agree, agree, are neutral, disagree, or strongly disagree. (Make sure the respondent understands the instructions. Record the responses below at the completion of the interview.)

statement no. 1	SA	A	N	D	SD
statement no. 2	SA	A	N	D	SD
statement no. 3	SA	A	N	D	SD
statement no. 4	SA	A	N	D	SD
statement no. 5	SA	A	N	D	SD
statement no. 6	SA	A	N	D	SD
statement no. 7	SA	A	N	D	SD

57. Did you buy a hunting license last year?
yes _____ no _____

58. Did you buy a fishing license last year?
yes _____ no _____

VI. LAND USE POLICY

O.K., now I'm going to ask you a few hypothetical questions about your property.

59. As you probably know, many people today are concerned about cities expanding too fast into rural areas. Because of this, it has been suggested that some rural landowners, such as yourself, be granted a lower property tax rate to help you continue to afford to own your land. In return for this reduced tax rate, you would not be allowed to sell or develop your land for the next ten years. Do you think you would favor placing your property under this type of agreement?
yes _____ (Go to question 61.) no _____ don't know _____

60. Why would you not favor this type of program?
_____

61. It has also been proposed that in some cases the government should pay certain landowners for not developing their land. This would be similar to the type of program I just described, except that your land could never be developed more than it now is. In return for this restriction you would be given an agreed upon payment by the government and you would probably be given a property tax reduction. Under this type of agreement you could sell your land any time you wished, but it would have to remain in its present level of development. Do you think you would favor placing your property under this type of agreement?

yes _____ (Go to question 63.) no _____ don't know _____

62. Why would you not favor this type of program?

_____

VII. RECREATION

The next few questions deal with how you feel about the public using your land for recreation. Three separate types of recreational activities the public participates in will be discussed. These activities are:

1) hunting (pheasant, deer, etc.)
2) hiking (recreational walking for such reasons as photography, bird watching, etc.)
3) snowmobiling

63. Do you allow the public, excluding family or friends, to hunt on your land?

yes _____ (Go to question 66.)
no _____ (Go to question 65.)
no requests/never occurred_____ (Go to question 64.)

64. Would you allow the public to hunt on your land?

yes _____ (Go to question 67.)
no _____ (Go to question 65.)

65. Why don't you allow hunting?

control _____
damages _____
liability _____
number of users _____
safety _____
moral reasons _____
other (Specify) _____
_____

(Go to question 67.)

66. About how many hunters do you allow on your land for an average week during hunting season?

_____ (Specify)

67. Do you allow the public to hike on your land?
yes _____ (Go to question 70.)
no _____ (Go to question 69.)
no requests/never occurred _____ (Go to question 68.)

68. Would you allow the public to hike on your land?
yes _____ (Go to question 71.)
no _____ (Go to question 69.)

69. Why don't you allow hiking?
control _____
damages _____
liability _____
number of users _____
safety _____
moral reasons _____
other (Specify) _____
_____
(Go to question 71.)

70. About how many hikers do you allow on your land for an average week in the summer?
_____ (Specify)

71. Do you allow the public to snowmobile on your land?
yes _____ (Go to question 74.)
no _____ (Go to question 73.)
no requests/never occurred _____ (Go to question 72.)

72. Would you allow the public to snowmobile on your land?
yes _____ (Go to question 75.)
no _____ (Go to question 73.)

73. Why don't you allow snowmobiling?
control _____
damages _____
liability _____
number of users _____
noise _____
other (Specify) _____
_____
(Go to question 75.)

74. About how many snowmobilers do you allow on your land for an average week during the winter?
_____ (Specify)

75. Some landowners have indicated several reasons why they are hesitant to allow the public to use their land for recreation. One of these reasons is the possibility of damage to property, including littering. How important is the possibility of damages to you?
very important ___ somewhat important ___ not at all important ___

76. Another reason is the problem of controlling the public. How important is controlling the public to you?
very important ___ somewhat important ___ not at all important ___

77. Another reason is the possibility of being sued for an injury occurring on private land. How important is this to you?
very important ___ somewhat important ___ not at all important ___

78. A last reason is the possible large number of people that would use private land for recreation. How important is this to you?
very important ___ somewhat important ___ not at all important ___

79. Presently the government is offering several programs to private landowners whereby the landowner receives a financial payment for allowing the public to use their land for certain recreational activities. Do you think you would favor placing your land under this type of program for hunting?
yes _____ (Go to question 80.)
no _____ (Go to question 81.)

80. About how much payment per acre would you require?

up to 2.00	_____	4.00 to 6.00	_____
2.00 to 4.00	_____	over 6.00	_____

81. Do you think you would favor such a program for public hiking on your land?
yes _____ (Go to question 82.)
no _____ (Go to question 83.)

82. About how much payment per acre would you require?

up to 2.00	_____	4.00 to 6.00	_____
2.00 to 4.00	_____	over 6.00	_____

83. Do you think you would favor placing your land under this type of program for snowmobiling?
yes _____ (Go to question 84.)
no _____ (Go to question 85.)

84. About how much payment per acre would you require?

up to 2.00	_____	4.00 to 6.00	_____
2.00 to 4.00	_____	over 6.00	_____

[If respondent has answered "Yes" to question 79 or 81 or 83, then ask question 85.]

85. Of the following two methods of payment, which would you prefer?
payment on a year-to-year basis _____
a five year contract with full payment immediately _____

86.-88. [Hand respondent Sheet 3 and a pencil.]
Here is a list of 3 statements concerning public recreation on your land. Please take a moment to read each of the statements and then circle the response that describes how you feel about the statement in relation to the three recreational activities of hunting, hiking and snowmobiling. (Make sure the respondent understands the question.)

VIII. PERSONAL

O.K., this is the last section. Here I'd like to get some more personal information about you such as your occupation, how far you travel to work, and so on.

89. What is your occupation? _____

90. How far do you travel to work? (round trip) _____

91. Where were you born?
in Kent County _____
outside Kent County but in Michigan _____
outside Michigan _____

92. How long have you lived at your present address? _____

93. Where did you live immediately prior to your present residence?
in Kent County _____
outside Kent County but in Michigan _____
outside Michigan _____

94.-95. [Hand respondent Sheet 4 and a pencil.]
Would you please circle the number of years of school you have completed and the figure which comes closest to your total family income during 1974. _____School
_____Income

96. How old are you? _____

97. Do you own your land free and clear?
yes _____ no _____

98. Approximately what percentage of the purchase price of the land is currently outstanding? _____

THANK YOU FOR YOUR COOPERATION.

The following questions should be filled out by the interviewer:

99. **What is the location of the interviewee's residence?**
    a) on the survey parcel _____
    b) adjacent to the survey parcel _____
    c) in the neighborhood _____
    d) in a nearby city _____
    e) other (Specify) _____

100. **What sex is the respondent?**
    male _____ female _____

101. **What race is the respondent?**
    Caucasian _____ Negro _____ Chicano _____
    Oriental _____ Other (Specify) _____

102. **How honest do you feel the respondent was in answering the questions?**
    as honest as possible _____
    mostly honest _____
    honesty was somewhat doubtful _____
    dishonest _____

SHEET I

		1	2	3	4	5	6	7	
1)	Big	____	____	____	____	____	____	____	Little
2)	Dull	____	____	____	____	____	____	____	Exciting
3)	Wild	____	____	____	____	____	____	____	Civilized
4)	Work	____	____	____	____	____	____	____	Leisure
5)	Productive	____	____	____	____	____	____	____	Unproductive
6)	Wooded	____	____	____	____	____	____	____	Open
7)	Valuable	____	____	____	____	____	____	____	Worthless
8)	Attractive	____	____	____	____	____	____	____	Unattractive
9)	Flat	____	____	____	____	____	____	____	Hilly
10)	Secure	____	____	____	____	____	____	____	Insecure

SHEET 2

1. Protection of the environment is one of our country's most important problems.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
2. The needs and wants of future generations should always be taken into account when making decisions about how land is to be used.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
3. Environmental quality standards are fine as long as they do not slow down economic growth.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
4. It is often desirable for government to adopt policies which are designed to help direct the way in which land is used.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5. Private landowners have a responsibility to the members of their community to maintain their property in an attractive manner	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
6. The primary emphasis of our country's natural resources policy should be the promotion of economic growth as opposed to protection of environmental quality.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
7. It is important that the government execcise greater control over the ways individuals and companies use our natural resoures.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

SHEET 3

1. The public should ask permission before using your land for recreation.

HUNTING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
HIKING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
SNOWMOBILING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

2. When a recreational user damages your property the government should pay for all damages over $25.

HUNTING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
HIKING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
SNOWMOBILING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

3. A large number of recreational users has the same environmental effect on your land as a small group of users.

HUNTING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
HIKING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
SNOWMOBILING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

SHEET 3

1. The public should ask permission before using your land for recreation.

HUNTING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
HIKING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
SNOWMOBILING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

2. When a recreational user damages your property the government should pay for all damages over $25.

HUNTING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
HIKING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
SNOWMOBILING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

3. A large number of recreational users has the same environmental effect on your land as a small group of users.

HUNTING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
HIKING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
SNOWMOBILING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

SHEET 3

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HIKING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
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HIKING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
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3. A large number of recreational users has the same environmental effect on your land as a small group of users.

HUNTING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
HIKING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
SNOWMOBILING:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

SHEET 4

1. Number of years of school completed:

	Elementary school								High school				College				
none	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	more than 16

2. Total family income during 1974:

less than $1,000

$1,000 - $1,999

$2,000 - $2,999

$3,000 - $3,999

$4,000 - $4,999

$5,000 - $5,999

$6,000 - $6,999

$7,000 - $7,999

$8,000 - $9,999

$10,000 - $14,999

$15,000 - $24,999

$25,000 or more