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A STUDY OF OWNER CHARACTERISTICS, HOME DEVELOPMENT, AND LAND VALUE DETERMINANTS IN SELECTED AREAS OF MICHIGAN'S NORTHERN LOWER PENINSULA

Michigan State University

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HOME DEVELOPMENT, AND LAND VALUE DETERMINANTS IN SELECTED AREAS OF MICHIGAN'S NORTHERN LOWER PENINSULA

By

William C. Gartner

A DISSERTATION

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

DOCTOR OF PHILOSOPHY

Department of Resource Development

ABSTRACT

A STUDY OF OWNER CHARACTERISTICS, HOME DEVELOPMENT, AND LAND VALUE DETERMINANTS IN SELECTED AREAS OF MICHIGAN'S NORTHERN LOWER PENINSULA

by

William C. Gartner

The purpose of this study was to acquire and analyze data of landed property and home owners in three representative counties (Kalkaska, Otsego, Crawford) of Michigan's northern lower peninsula.

Primary data were collected via a mail survey of a stratified random sample of landowners in three selected townships of each county. Strata were chosen based on homogenity for certain natural resources (lake, river, no water resource).

Landowners, through survey responses, were segmented into three types: 1) permanent home owners, 2) seasonal home owners, and 3) property owners with no home development in the area. Attitudes and concerns, socio-economic characteristics, value and amount of acreage owned, intent to sell property, method and reasons for property acquisitions and information sources of property availability were obtained for each landowner type. Natural resources were examined to estimate what effect location relative to certain natural resources had on valuation of real property.

Study results indicate that the most important source for learning of available property was friends or relatives. Property was generally acquired for investment or retirement home potential although recreational activities ranked high as a major reason for acquisition. The future for potential property sales was found to be quite high and property owners with no home development on their land are more apt to sell than other types of property owners.

Property owners thought current property tax levels high but were generally satisfied with quantity and quality of municipal services provided and felt property values will continue to increase. Property owners would like at least the present level of land use controls maintained, and they favor at least a little more residential development.

Natural resource characteristics found to be related to a significantly higher value per acre of land were: location on lakes greater than 25 acres but less than 100 acres in size, location on lakes greater than 500 acres in size, and in one case, location close to a commercial ski area. Natural resource characteristics found to be related to a significantly lower value per acre of land were: location adjacent to public land and an increasing amount of acreage owned.

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CHAPTER 1

INTRODUCTION

Problem Statement

Land is a form of wealth. From the beginning of recorded time wars have raged over control of land. Economic science recognized land had value, thus the development of the concepts of land rent espoused in the writings of Von Thunen and Ricardo. The idea of land as wealth shows up today in the consumption theories of Ando and Modigliani (1963) and Friedman (1957). Land, however, is not owned solely for speculation or because of its productive qualities. Land is also owned for enjoyment (Vertrees, 1967). Utility is derived from walking on one's land, hunting on it or even viewing it. Thus, when an individual's marginal value product, or utility derived, from a parcel of land exceeds acquisition price, the individual will purchase the land, given adequate income levels and no other more attractive alternatives. Conversely, when an individual's marginal value product, or utility derived from an owned parcel of land is less than salvage value, the land will be offered for sale. Marginal value product, or utility, is different for each individual and is the reason two individuals with similar income constraints may differ markedly in amount of land owned. Therefore, the marginal value of land ownership is viewed differently by any two consumers and true land value may only partially be reflected in acquisition or salvage price. This aspect of consumer behavior gives rise to the theory of consumer surplus, (Marshall, 1891).

The northern lower peninsula of Michigan has experienced rapid

growth during the ten-year period 1967-1977, in residential subdivisions. Platted subdivisions in the northern lower peninsula accounted for 99,862 lots or 37.9% of the lots offered for sale in the state from 1967-1976 (Fletcher, 1979). This is a very high rate of development when relative populations of areas in the state are considered. There are no major metropolitan areas in northern Michigan and few major employers. Many of the lots are purchased for their recreational potential and not for their physical productive capabilities. Therefore, market exchange price may not totally reflect intrinsic worth to an individual purchaser of the site.

Given the amount of subdivision development taking place in northern Michigan, there exists a potential for problems to develop through unplanned settlement practices. Unplanned settlement practices can create problems for many aspects of society. The environmental, political, economic, social components of society may all be impacted. Economically the effects of past unplanned settlement practices are recently beginning to be felt in northern lower Michigan.

Permanent residents received a benefit from past settlement practices. Non-residents pay the same rate of property taxes as permanent residents, yet because non-residents are only in the area for a portion of the year, they do not demand as many services. Consequently, permanent residents, who do demand year-round services, are partially subsidized by non-resident property taxpayers. This was the case for many years; however, with completion of major freeway routes and increased mobility of modern society in the early 1970's home building began to occur.

Initially seasonal home building began to take place in many recreational sub-divisions (Fletcher, 1979). The building of seasonal homes meant that many county services (e.g. fire, ambulance service, etc.) now

had to be provided to residents who were in the area on weekends or vacations. It was not a serious problem if the seasonal homes were located close to population centers, but many seasonal homes were scattered throughout the forested and lake areas, thereby increasing costs to counties having to provide services to outlying areas.

Even greater problems can occur in rural areas through the rapid growth of permanent homes. During the early 1970's it was not uncommon for many people to move their families to northern Michigan and commute to work in major metropolitan areas. Commuting would take the form of visiting the family on weekends; or for some individuals, consisted of a four-hour round trip for work each day (conversation with Elizabeth B. Mowery, Extension Specialist, Department of Resource Development, 1977). Counties have to provide year-long services to residents located in the outlying areas (e.g. snow removel, school, bus service, etc.), causing in many cases net revenues from property taxes received to be negative (Johnson, 1973; American Society of Planning Officials, 1976).

Another economic problem impacts permanent residents. Demand for lots may sharply increase market values. Over time this increase will be reflected in higher assessments. Higher property taxes will result. In some cases commodity producing lands (e.g., farms) may be sold because of higher property taxes increasing production costs over realized return on investment.

Environmental problems may result from unplanned settlement practices. Stress on the natural resource base is severe when home development occurs. When homes are located on bodies of water, seepage from septic tanks contribute to the eutrophication process. Erosion and siltation may be problems if construction takes place on a gradient. Fire danger can be

increased if development takes place in forested areas. Solid waste disposal becomes a problem as local dumps are not able to handle the waste increase or meet new regulations. Wildlife habitat destruction may be of concern especially if wetlands have to be filled. These are just a few of the recognized environmental problems that result from unplanned settlement practices (American Society of Planning Officials, 1976). In the short term, property tax receipts may be increased by allowing unregulated development, but in the long term, resulting environmental costs may offset previous tax gains.

Social impacts increase because of unplanned settlement practices. Traffic congestion, crowding at public facilities and cultural shocks may occur. Concentrated development will cause traffic congestion on many rural roads which were never intended to be major thoroughfares. Increased development will cause crowding at public facilities (i.e. public access sites, parks) if demand begins to exceed available supply. Lifestyle and cultural changes may occur if new property owners come from urban and relocate in rural areas. Rural traditions may also be lost through resident displacement (American Society of Planning Officials, 1976).

Opportunity for creation of new problems and magnification of old problems increase with any development. Unplanned settlements only compound the problem. Problems concerning the environment, economic structure, and social changes all require immediate attention, but to be able to handle these problems adequate information must be available. Too often very little is known about citizens' development needs, preferences, or priorities when developing solutions to problems (Vlasin, Libby, Shelton, 1975). Even more basic, however, too often nothing is

known about landowner characteristics from which assumptions can be formulated to ascertain potential and extent of future problems. What region are property owners coming from? Where are they locating? Which water bodies are most likely to be impacted by development? Once the answers to these questions are known, then effective policy can be implemented to control some of the expected problems. At present, adequate information does not exist to formulate effective policy for northern Michigan landowners and unplanned settlement practices continue to create problems.

A simple problem model schematic illustrates the need for detailed information. In Figure 1 the general problem, unplanned settlement practices, is listed. The problem is then disaggregated into selected component parts (e.g. social, economic, etc.). These components are further disaggregated into their respective parts. At this stage, problems can be individually selected and studied if adequate information which relates to the selected problem situation exists. For example, a researcher studying the problem of unplanned settlement practices may initially elect to concentrate on the environmental impact components of the overall problem. Environmental impact also has several component parts and a researcher may wish to further define his study and concentrate on only one of the components, possibly solid waste disposal. If sufficient information exists, a researcher can investigate the extent of a solid waste disposal problem arising from unplanned settlement practices. Alternative solutions can be developed and a course of action recommended. However, if information is lacking, then data must be collected and analyzed before a problem can be studied in depth. Collected and analyzed data allows for expanded knowledge and solution to some of the component problems arising from the overall

problem of unplanned settlement practices. In summary, the problem solving model flow chart presented in Figure 1 identifies the major problem which is then broken down into its researchable component parts and, if required, data are collected and analyzed which feeds back into the overall problem component parts to allow for problem investigation and possible solution.

It was the intent of this study to develop information pertaining to the problem of unplanned settlement practices. Future research efforts should be able to proceed directly to the component parts of the unplanned settlement problem and develop recommended courses of action to alleviate present and future impacts.

OBJECTIVES OF THE STUDY

A. Primary Objective

The primary objective of this study was to collect and analyze socio-economic and selected other characteristics data of landed property and home owners in three representative counties of Michigan's northern lower peninsula.

B. Specific Objectives

Accomplishing the primary objective requires assimulation of numerous specific objectives into a whole. The specific objectives of this study were:

- -explore socio-economic characteristics among property owners based on type of home development and location to certain natural resources
- -examine use patterns among seasonal home owners (e.g., length of stay, seasons of high use, etc.)
- -examine factors influencing initial property purchase and future intentions to sell property







-examine acreage ownership patterns relative to type of home development and location to certain natural resources
-identify the magnitude of selected needs and concerns of studied property owners

-develop a descriptive model for value per acre of land based on location relative to township of property ownership and selected natural resources

Once these objectives have been met, certain questions will have been answered. Questions such as who are the property owners, where do they live, why did they buy property, can be answered. Policy makers will be able to make use of the information, as well as developers, consumers and researchers.

Policy makers should be able to identify groups impacted by polciy changes. This study is intended to clarify present problems and uncover potential problems. Policy makers should then be able to adjust accordingly to meet community needs.

Developers should be able to use the study to identify prospective clientele. Characteristics influencing demand should become apparent and developers should be able to select locations for new developments which will maximize benefits.

Consumers should be able to use study results to identify some of the problems they may encounter if they purchase property in the study area. Consumers should also be able to identify areas where home building is expected to be high and adjust their purchase decisions accordingly.

In addition to the above groups, there are probably additional groups which will benefit from this study. A major problem in any

decision, whether it be at the governmental level or individual level, is lack of relevant information. This study is intended to fill in many of the informational gaps in decisions involving a selected northern Michigan study area.

CHAPTER II

RESEARCH METHODS

Defining the Study Area

The study area for this research centers on three counties in Michigan's northern lower peninsula: Kalkaska, Otsego, and Crawford (See Figure 1). Care was taken to select counties which are similar in many important respects. All three counties are similar in size, resource base, amount of travel time from major metropolitan areas, and absence of any contiguous Great Lake.

Another reason for choosing these three counties is that during the last five years they have all shown rather large increases in population. According to figures compiled by the Sociology Department at Michigan State University, a new migration gains for Otsego county have been 23.9% of the 1970 population. Crawford and Kalkaska have experienced similar large gains, 22% and 46.5%, respectively (O'Hare, et al, 1976). There has been quite a bit of speculation as to the reasons for these large population increases, the two most prominent being completion of the I-75 expressway to the north and the conversion from seasonal residents to permanent residents through retirement.

No matter how much care is taken in selection of counties, there will still be a good deal of variance between counties. Detailed information concerning county characteristics follows to enable readers unfamiliar with the study area, an opportunity to become informed:

Physical characteristics of each county are quite similar. Kalkaska has 566 square miles of land area whereas Crawford and Otsego have 561 and 527 square miles respectively. Geological features are

also similar. Bedrock was formed during the Paleozoic period and consists primarily of Berea shale and sandstone with some Ellsworth shale in the lower portions of Crawford and Kalkaska Counties. In the northern two-thirds of Crawford and Kalkaska counties, Antrim shale is predominant with some intrusions of Ellsworth shale. Otsego county bedrock is predominantly Antrim shale in the southern two-thirds area with Berea shale and Sandstone in the north. Shale in Northern Michigan is oil rich, however, it is presently difficult and expensive to separate the oil from the shale.

The potential for future natural resource wealth remains high. Currently, there are some oil and gas pools being tapped in Kalkaska and Otsego counties. Kalkaska is the center of norther lower Michigan's oil activity. In terms of statewide county totals, Kalkaska ranked fourth in the barrels of oil produced and second in cubic feet of natural gas. Otsego county ranked second in the state in the barrels of oil produced and fourth in cubic feet of natural gas. Crawford county having much less readily available oil and gas pools ranks seventh in the state in number of barrels of oil produced and fifteenth in cubic feet of gas. Kalkaska county also has two natural gas plants in operation. One is owned by Amoco and the other by Shell. These plants contribute to employment opportunities within the area.

Importance of oil and gas also shows up in other sectors of the economy. In 1977 construction activity accounted for 19.89% of total wages and proprietors earnings in Kalkaska county. This percentage is the highest for any county in the state. Construction contributes 6.71% of total wages and proprietor earnings (23rd in the state) in Otsego county and 4.07% (48th in the state) in Crawford county. Location of natural gas plants in Kalkaska and subsequent construction associated

with them has contributed to this higher percentage of earnings.

Agriculture is of low priority in all three counties. In terms of total percentage of wages and proprietor earnings (1977), agriculture accounted for 1.13% in Kalkaska county (59th in the state), 1.03% in Otsego county (60th in the state), and 0% in Crawford county (82nd statewide). Relative importance of agriculture can be attributed to three factors: 1) soil, 2) climate, 3) amount of public land ownership. The soils which were formed during the geological period consist primarily of light to moderately sandy soils with loamy and swamp soils found along main watercourses. Surface gravel is present throughout much of the area and moderate to steep slopes are common. Fertility of the soil is low in many areas with extensive areas of Jack Pine present throughout. Rainfall is plentiful for crop production averaging around 32-33 inches per year, however, the growing season is short and susceptible to late or early frosts. Average temperature in July is 67° and in January only 18°.

Public ownership of land reduces the amount available for agricultural uses. In northern Michigan there exists extensive tracts of land in public ownership. Kalkaska county has 42.41% of its land tied up in state ownership. State ownership in Otsego county accounts for 27.64% of the land and in Crawford county 66.73% is in state and federal ownership. Additional land in all three counties is controlled by cities, townships, and school districts.

Given the three constraints on agricultural production it is not surprising that toal wages and proprietor earnings attributed to agriculture are so low in the study area. This is not expected to change in the future.

Tourism is of great importance to each county's economy. One

indication of the importance of tourism shows up in percentage of total wages and proprietor earnings attributed to regional trade. Kalkaska county residents receive 11.08% (36th statewide) of their total wages and proprietor earnings from retail trade whereas Otsego and Crawford county residents receive 12.07% (25th statewide) and 16.5% (6th statewide) respectively. One reason total wages and proprietor's earnings attributed to regional trade for Kalkaska county are low relative to Otsego and Crawford counties is that it is also furthest away from Interstate highway 75. When comparing statewide rankings it is somewhat surprising that the study area counties are in the top 50 percentile. The 1980 census showed that in terms of statewide population ranking, Otsego county was 64th, Crawford county 75th, and Kalkaska county 70th. Therefore, high statewide rankings in percentage of total wages and proprietor earnings indicate 1) residents of Kalkaska, Otsego and Crawford counties are big spenders at local retail outlets or 2) a great amount of sales go to out-county residents. The second reason is most likely as all three counties receive a substantial number of visitors. In addition, Crawford county receives a large number of national guard troops who stay at Camp Grayling throughout the summer.

Another tourism indicator is the number of recreational subdivisions developed within the tri-county study area. Visual inspection of plat maps and on site inspections showed a considerable number of recreational subdivisions. In Otsego county Chain of Lakes, AuSable Estates Plat, Otsego Lake Plats are some of the larger subdivisions located in Bagley township. Blue Lake township of Kalkaska county has a recreational subdivision around most every lake. In

Crawford county there are many subdivisions along the Southwestern portion of the AuSable river and around Lake Margrethe.

Ski resorts also attract tourists. Crawford county has three developed ski areas and Otsego county four. A total of 24 ropes, 7 tows, and 8 chair lifts are in operation among the developments. Glaciers which formed this area left a glacial lobe contact line, running through the area, with moderate to steep slopes and many picturesque hills well suited for skiing.

Other attractions for tourists include the excellent trout fishing, especially on the AuSable river system which is rated a blue ribbon stream, and hunting. The large amount of public land assures plentiful access to fields and streams. Also, local areas have taken strides to establish unique identities. Gaylord's business district has taken on an alpine atmosphere in what appears to be a successful attempt to attract tourists. The city of Kalkaska has an annual trout festival, coinciding with the opening of trout season, complete with parades and a trout queen.

Forestry is another important component of the tri-county economy. Kalkaska city is an important paperboard producing center. During the 1970's Otsego county participated in the expansion of forest product industries. The future for forest industries expansion, however, is tied to state or federal policies concerning utilization of public land.

The economic future and population growth potential for the tricounty study area is paradoxical. Rising costs for oil and gas insure that present refineries will continue to be important components of the economy. Future expansion and growth in energy industries can

be expected. On the other hand, rising price of gasoline may curtail tourism travel and have a dampening effect on the local economy. Energy costs for heating may also change retirement plans for many individuals. Living in southern climates where heating and living costs are low may become more attractive for people approaching retirement age.

Speculation about future growth is risky even when adequate information exists about present conditions. Speculation becomes riskier when little information about the status quo is available.

Sampling Strategy

Recall that the study's primary objective was to develop an information base. Who are the northern Michigan property owners? In accomplishing this objective, the groundwork was laid for future studies which can address such things as causal factors underlying property ownership and migration patterns. In developing the information base, key variables were identified so that future researchers and area planners can proceed with known statistical characteristics when developing research projects and policy. In essence then, the study's goal was to help fill the information void in which researchers and planners are so often forced to operate.

General and socioeconomic characteristics of real property and home owners in the study area were obtained via primary data collection - specifically a mail survey. A questionnaire was developed and sent to a sample of property owners, having land zoned residential, in three townships of each county. Respondents were selected using a stratified random sample technique. This involved dividing the population into groups and a sample was then randomly drawn for each strata.





Location of Surveyed Counties

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The township selected for the random sample were chosen because of their resource characteristics. That is, each township selected was determined to be sufficiently homogenous for one resource characteristic, hence, the townships are the strata.

In each county one of the townships selected included primarily residential properties around lake areas. A second township was primarily a river resource based area, and the third township was an area that has no major lake or river in the study area. The third township may include areas within city limits. Townships were selected through visual examination of plat books for each county. The most representative township, for each natural resource characteristic, was then chosen.

In Kalkaska county the townships surveyed were Garfield T.25N.-R.7W, selected because of the influence of the Manistee River System; Blue Lake T.28N.-R.5W because of the influence of many small lakes which have subdivisions surrounding them; and Orange T.26N.-R.7W because of the relative absence of any water resource base. In Otsego county the townships surveyed were Dover T.31N.-R.2W because of the influence of Otsego Lake and many other assorted small lakes; Bagley T.30N.-R.3W because of the influence of the AuSable River; and Chester T.29N.-R.2W because of the influence of large tracts of state land bordering the water systems and public holdings located away from most of the water resource base. In Crawford county the townships surveyed were South Branch T.25N.-R.2W because of the influence of the AuSable River System; Gravling T.26N.-R.4W because of the influence of Lake Margrethe; and Grayling T.27N.-R.2W because of the absence of any water resource base. The location of each township within it's respective county is shown in Figure 3.





Location of Surveyed Townships in Their Respective Counties

The next problem is how can a representative sample be drawn from each township? If samples of equal size are drawn from the townships, then population characteristic estimates obtained are more variable than samples which are drawn proportional to size of the township population. Samples of equal size would allow the researcher to make more precise comparisons between townships but estimates of population characteristics in the counties would be less precise. Because more importance was placed on county characteristics rather than comparisons between townships, a sample proportional to each township size was drawn. The mean of each county population was then computed as the mean of each township weighted by its size.

The next question that has to be answered concerns the optimal size (in terms of minimizing cost with respect to sampling error) of the sample in each township. One formula (Ackoff, 1962) that has been used to identify optimal sample size is:

$$nh_0 = \frac{Nh Sh}{N} \sqrt{\frac{h}{Ch}}$$

Where nh_o = Optimal sample size for township h
Nh = Population in township h
Sh = Variance in township h
N = Population total for all townships
Ch = The cost per observation in township h
h = A cost constant (arbitrarily derived)

There is one unknown in the right hand side of the equation (Sh), which had to be determined before optimal sample size could be ascertained.

The only way to determine variance, without a previous sample or a census is by the best guess method. Compounding this problem is that many variables (as will be seen later) had to be dealt with and each variable has its own unique variance. It was decided to estimate the variance on the basis of information from a pretest of the questionnaire. A sample of 25 observations were selected for a pre-test in Rapid River Township of Kalkaska county. This township has elements of all the resource characteristics which identify each strata. Answers received from Rapid River were analyzed and the variance of each variable determined. The highest variance obtained was used in the above formula to determine the minimum sample size for each township. This is still just a rough approximation of population variance because the pre-test sample was small. However, because of the lack of any previous research analogous to this study and study area from which to draw a variance estimate, the pre-test variance approach was deemed the most appropriate.

Once sample size was determined, the questionnaire was sent out to the appropriate number of randomly selected property owners in each township. An initial mailing of 3,371 questionnaires were sent out in August, 1978. The first mailing consisted of a questionnaire and a postage paid return envelope. Postage for the first mailing was bulk rate resulting in a savings of over eleven cents per piece compared to first class. The only disadvantages were that all pieces had to be sorted by zip code, which took some time, and undeliverable pieces were not returned to sender but instead were discarded. A follow-up mailing was conducted in September, 1978, and consisted of a questionnaire, a postage paid return envelope, and a reminder letter. This mailing was sent out first class so that the number of undeliverable questionnaires could be ascertained. A third mailing consisting of a post card reminder
was sent out in October, 1978. Postage on the post card was bulk rate which saved about seven cents per piece compared to first class. A fourth, and final mailing, was sent out to non-respondents in November, 1978. It consisted of a questionnaire, a postage paid return envelope, and a reminder to send the questionnaire back. Postage on the fourth mailing was bulk rated and saved over eleven cents per piece compared to first class.

A total of 2,430 (72.1%) of the initial 3,371 questionnaires sent out were returned. A total of 2,006 usable responses were received, 252 undeliverables (moved, left no forwarding address), and 172 responses in which the property owner had sold his property during the time mailing addresses were obtained and questionnaires sent out. A complete breakdown of questionnaires sent out to each area, and response rates is outlined in Table 1. Not all usable responses were complete for all questions in the survey, therefore, total sample response may vary for each variable.

In reviewing Table 1, the low return rate due to the postcard reminder brings up serious questions as to its usefullness. The amount of time and money spent printing, addressing, and sorting by zipcode does not seem justified in light of the generally poor response rate. Rather, it is recommended that, in future surveys, of this nature, that only three mailings be undertaken and the postcard reminder be eliminated. One interesting result is that the second mailing received almost as many responses as the first. The second mailing achieved this response rate even though almost 25 percent less questionnaires were sent out than the first mailing. Therefore, marginal productivity from the second mailing is much greater than that from the first mailing. This may be due to three different reasons. The second mailing was first class and, quite

•		August lst Maili	, 1978 ng (Bulk)	Septembe 2nd Ma (1st (r, 1978 iling Class)	October 3rd Ma (Bulk Po	, 1978 illing ostcard)	November 4th Ma (Bu	, 1978 iling ilk)	Sub-T	otal	Non-Del	liverable	So	1d	Tota	1
	Mailed	Returned	Percent Returned of Total	Returned	Percent Returned of Total	Returned	Percent Returned of Total	Returned	Percent Returned of Total	Returned	Percent Returned	Number	Percent Returned of Total	Number	Percent of Total	Total Questionnaires Accounted for	<pre>% of Total Mailed Questionnaires Accounted for</pre>
South Branch	209	55	26.3	49	23.4	8	3.8	27	12.9	139	66.5	21	10.0	-	-	160	76.5
Grayling T27NR2W	41	9	21.9	6	14.6	2	4.9	17	41.5	34	82.9	2	4.9	-	-	36	87.8
Grayling T26NR4W	185	56	30.3	44	23.8	4	2.2	6	3.2	110	59.5	11	5.9	-	-	121	65.4
Orange	194	50	25.8	31	16.0	8	4.1	27	13.9	116	59.8	26	13.4	-	-	142	73.2
Blue Lake	485	1 32	27.2	119	24.5	16	3.3	13	2.7	280	57.7	32	6.6	-	-	312	64.3
Garfield	150	31	20.7	37	24.7	4	2.7	11	7.3	83	55.3	6	4.0	-	-	89	59.3
Bagley	1,782	428	24.0	440	24.7	95	5.3	96	5.4	1,059	59.4	135	7.6	-	-	1,194	67.0
Chester	160	63	39.4	33	20.6	5	3.1	0	0	101	63.1	7	4.4	-	-	108	67.5
Dover	165	34	20.6	33	20.0	6	3.6	31	6.7	84	50.9	12	7.3	-	-	96	58.2
TOTAL	3,371	858	25.4	792	23.5	148	4.4	208	6.2	2,006	59.5	252	7.5	172	5.1	2,430	72.1

QUESTIONNAIRES MAILED AND ACCOUNTED FOR, BY TOWNSHIP, COUNTY

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possibly, people are more apt to read their mail if it carries a first class stamp rather than a bulk stamped imprint which to many people indicates junk mail. Also, the second mailing contained a reminder letter which may have prompted some people, who otherwise might not have answered, to take the time and complete the questionnaire. Finally, the first mailing took place in August, generally the busiest vacation month, and the second mailing took place in September after Labor Day when people were more apt to be home.

In summing the results of the survey response rate, it seems that the approach taken in questionnaire design and mailing strategy provided a high return at low cost. The only change recommended for future research employing a mail survey is to consider eliminating the postcard reminder as it does not seem to justify its cost.

The questionnaire was formulated from questions deemed pertinent to the research and includes input from advisors (William Kimball and Manfred Thullen) in the area of survey design. Structure of the questionnaire is such that it could be divided into four parts; questions that deal exclusively with people who own landed property with no home development in the study area, those who own permanent homes in the area, those who own seasonal homes in the area, and questions concerning all landed property owners in the area, regardless of type of home development. This allowed for cross examination between different landowner factions uncovering similarities of differences existing among property owners. When the questionnaires were returned, they were coded and analyzed using the Statistical Package for the Social Sciences (SPSS) set of computer programs.

Measurement and Variable Identification

The type of analysis that can be performed on the variables is limited by the level of measurement each variable lends itself to. There are four basic levels of measurement as outlined by S.S. Stevens: nominal, ordinal, interval, and ratio (Stevens, 1976). Nominal is the lowest measurement level and is basically a form of labeling. There are no assumptions made about the value being assigned to the data, hence the value serves as a label. The values are used as symbols that can be easily read by a computer.

Ordinal level of measurement is used when a variable can be rank ordered. That is, each category has a unique position relative to other categories. When a value is assigned to an ordinal level variable, we know that value is higher or lower than other values. For example, a pollution level that is ranked high, medium, or low with values 1 for high, 2 for medium, and 3 for low.

Interval level measurement has the property that the level of measurement between categories has a definite interval. That is, the units are fixed and equal. (An exception to this is the special case of a logarithmic interval scale which was not encountered in this research). However, although this allows us to study the difference between things, it does not allow us to study proportionate magnitudes. This is because an interval measurement scale does not have a true zero.

Ratio-level is the highest level of measurement in Steven's typology, and it has all the attributes of interval measurement plus a true zero point. That is proportionate magnitudes can be studies. For example, six pounds is twice as heavy as three pounds.

The reason a great deal of emphasis is placed on level of measurement is because statistics used to describe variables require specific

levels of measurement. Statistics that require a certain level, such as an interval scale, cannot be used for ordinal or nominal levels of measurements. However, if a statistic requires a nominal level of measurement, it can be used with any other measurement scale. Therefore, statistics developed for a certain level of measurement may be used with higher measurement scales but not with lower ones. However, a loss of statistical power results when statistics designed for a lower level of measurement are used to describe relationships among variables which are measured at higher levels.

It seems appropriate, at this time, to introduce all the variables contained in the questionnaire. Table 2 lists each variable name, its appropriate identifying number, measurement scale, and a brief description of the variable. (For a complete description, the reader should refer to Appendix A where the questionnaire has been reproduced).

Each variable name appears as it does on the computer program. The addition of an identifying number is for ease in locating any one of the variables from the questionnaire. Although the identifying number will not appear on a computer printout, the reader may wish to use it to refer back to the questionnaire to determine which variable is associated with each question. The upper case letter, i.e. A, refers to section A on the questionnaire. The number, i.e. 5, refers to question 5 of section A, and the small case letter, i.e. b, refers to a certain section of the specific question (in this example, question 5). Although the questionnaire does not, in many cases, explicitly include subsections of certain questions, the reader by knowing the identifying number and variable name, can pick out the portion of the question referred to. For example, variable name YR1 identifying number A5b refers to section A, question 5, and subsection "the first year in which some property was obtained or sold after b:

the initial piece of property was obtained."

Table 2

VARIABLE NAME, IDENTIFYING NUMBER, MEASUREMENT SCALE, AND VARIABLE EXPLANATION FOR ALL VARIABLES EXTRACTED FROM THE QUESTIONNAIRE

Variable	Identifying Number	Measurement Scale	Variable Description
TOWNSHIP	Aa	Nominal	Township where property is located
COUNTY	Ab	Nominal	County where property is located
ACQUIRE	Α1	Nominal	Method of initial pro- perty acquisition
REASON	A2	Nominal	Main reason for property acquisition
LEARN	A3	Nominal	Information source leading to initial property acquisition
YROBROP	A4	Interval	Year in which first piece of property was obtained
OBTSOLD	A5a	Interval	Since first property acquisition, has any adjacent property been purchased or sold?
YR1	А5ь	Interval	Year in which any addi- tional property transaction was made
OBTSOLD1	A5c	Nominal	Obtained or sold the pro- perty in question
ACRESI	A5d	Ratio	Total acres involved in above property transaction
YR2	A5e	Interval	Year in which an additional property transaction was made
OBTSOLD2	A5f	Nominal	Obtained or sold the pro- perty in question

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Variable	Identifying Number	Measurement Scale	Variable Description
ACRES2	A5g	Ratio	Total acres involved in above property transaction
YR3	A5h	Interval	Year in which an additional property transaction was made
OBTSOLD3	A5i	Nominal	Obtained or sold the pro- perty in question
ACRES3	A5j	Ratio	Total acres involved in above property transaction
YR4	A5k	Interval	Year in which an additional property transaction was made
OBTSOLD4	A51	Nominal	Obtained or sold the pro- perty in question
ACRES4	A5m	Ratio	Total acres involved in above property transaction
YR5	A5n	Interval	Year in which an additional property transaction was made
OBTSOLD5	А5о	Nomina1	Obtained or sold the pro- perty in question
ACRES5	А5р	Ratio	Total acres involved in above property transaction
TOTACRES	A6	Ratio	Total acres currently owned or leased in the study area
SELL	A7a	Ordinal	Intent to sell all or part of property in future
SELLACRE	A7b	Ratio	Number of acres wishing to . sell
YRSELL	A7c	Ordinal	Number of years before desiring to sell
TOTVALUE	A 8	Ratio	Total value of property owned (includes any dwelling)

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Table 2 (Cont'd.)

Variable	Identifying Number	Measurement Scale	Variable Description
PROPTAX	B1	Ordina1	Attitude towards current property tax levels
QUALSERV	B2	Ordina1	Attitude towards quality of municipal or county services provided
QUANSERV	B3	Ordina1	Attitude towards quantity of municipal or county services provided
ZONING	Β4	Ordinal	Awareness of building regula- tions
LANDREG	В5	Ordinal	Attitude towards present land use controls
BUILDING	B6	Ordinal	Attitude towards future residential building
PROPVALU	Β7	Ordina]	Attitude towards future of property values
SKIAREA	Cla	Nomina]	Property located close to a ski area. Yes-No
SKIMILES	С1ь	Ratio	Miles from nearest ski area
PUBPROP	C2	Nominal	Public land adjacent to respondent's property. Yes-No
ONH20	C3a	Nomina]	Property location to water
ТҮРЕН20	СЗЬ	Nomina]	Type of water property is located on
SIZEH20	C3c	Ordinal	Size of lake property is located on
CLOSEH20	C4a	Nominal	Type of water closest to property
LAKEMILE	C4b	Ratio	Miles from nearest lake
RIVMILE	C4c	Ratio	Miles from nearest river
H2OSYSTM	D1	Nominal	Type of water system in living quarters

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Variable	Identifying Number	Measurement Scale	Variable Description
SEWAGSYS	D2	Nominal	Type of sewage system in living quarters
HOUSTYPE	D3a	Nominal	Are living quarters conven- tional housing or mobile home?
MOBILMOV	DЗЬ	Nominal	Can mobile home be moved or is it anchored? Yes-No
ANNUVIS	El	Ratio	Annual visits made to the seasonal home
DAYSTAY	E2	Ratio	Average length of stay for each seasonal home visit. Days
FALL	E3a	Ratio	Number of days visiting seasonal home in fall
WINTER	E3b	Ratio	Number of days visiting seasonal home in winter
SPRING	E3c	Ratio	Number of days visiting seasonal home in spring
SUMMER	E3d	Ratio	Number of days visiting seasonal home in summer
YRHOME	F1	Interval	Year in which the permanent home, in the study area, was built
SEASHOME	F2a	Nominal	Prior usage of permanent home as a seasonal home. Yes-No
YRPERM	F2b	Interval	Year conversion from sea- sonal to permanent home took place
CTYBEFOR	F3a	Nominal	County of residence before moving to the study area
STBEFOR	F3b	Nomina1	State of residence before moving to the study area
CTYNOW	Gla	Nomina]	County of present residence

Variable	Identifying Number	Measurement Scale	Variable Description
STNOW	G1b	Nomina]	State of present residence
AGE	G2a	Ratio	Age of household head
SEX	G2b	Nomina1	Gender of household head
MARITAL	G2c	Nomina]	Marital status of house- hold head
UNDER5	G3a	Ratio	Number of people under 5 years old residing with household head
AGE5-14	G3b	Ratio	Number of people between ages 5-14 residing with household head
AGE15-25	G3c	Ratio	Number of people between ages 15-25 residing with household head
AGE26-64	G3d	Ratio	Number of people between ages 26-64 residing with household head
OVER65	G3e	Ratio	Number of people over 65 years old residing with household head
TOTAL	G3f	Ratio	Total number of people residing with household head
INCOME	G4	Ordinal	Total family income in dollars
*HOME		Ordinal	Type of home development on property
*VALUACRE		Ratio	Value per acre for each respondent (includes dwellings) in dollars

*HOME and VALUACRE are two key variables derived from other variables.

NOTE: For a complete description of each variable, the reader should refer to Appendix A.

To compute variables HOME and VALUACRE, some restructuring of the data was required. The RECODE capability of SPSS was employed to transform variables ANNUVIS and YRHOME into one variable, HOME. If any response was recorded for ANNUVIS, then it means there is a seasonal home; and if any response is recorded for YRHOME, it means there is a permanent home on the property. If both variables are left blank, it was recorded as no home of any type on the property.

VALUACRE is also a recoded variable derived from variables TOTVALUE and TOTACRES. The total value of property owned per respondent is divided by the total acres owned per respondent. The result is value per acre of land expressed in 1978 dollars for each respondent. For a detailed explanation of the recoding procedures used, refer to the SPSS manual, Chapter 8 (Nie, et. al, 1975).

SPSS Subprograms Used for Data Analysis

After identifying each variable contained or constructed from the questionnaire, the next step was to analyze each variable independently and then combine variables and form sets of relationships. This was handled through the various subprograms available in SPSS. Once analyzed, through appropriate subprograms, various key variables were selected for presentation in the data analysis chapters. Those presented, however, are the ones containing the most useful information concerning northern Michigan study area property owners.

The first step in the analysis was to describe the study area in terms of gross responses. This was accomplished through SPSS subprograms FREQUENCIES and CONDESCRIPTIVE. FREQUENCIES is appropriate for variables measured at nominal or ordinal levels and CONDESCRIPTIVE requires at least an interval level of measurement.

The purpose of the FREQUENCIES program was to be able to explain in terms of simple numbers and percentages how many respondents fit into each category, i.e. number and percentage of responses from each county and township, number and percentage of permanent residents, seasonal home owners, and landed property owners with no home development. The program also allows for missing and non-applicable data to be analyzed and recorded. There are various statistics that can be computed for FREQUENCIES. Mean, standard error, median, mode, standard deviation, variance, kurtosis, skewness, ranges, minimum and maximum are all available, however, not all the statistics were employed for each variable. It would not be useful or statistically valid to compute the arithmetic mean for a nominal level and in most cases, ordinal level variables. Table 3 shows the variables that were analyzed under subprogram FREQUENCIES and CROSSTABS and the statistics used to describe the variables.

After investigation of individual variables was finished, relationships among sets of variables was explored. SPSS subprograms employed were CROSSTABS, BREAKDOWN, NONPAR CORR, and PEARSON CORR. CROSSTABS is appropriate when both variables are of either nominal or ordinal measurement. Controlling for a third variable with subprogram CROSSTABS is possible provided the third variable is also of nominal or ordinal measurement. Controlling for more than one variable is also possible with CROSSTABS but care should be taken because the numerous tables and statistics that result can easily lead to confusion.

Subprogram BREAKDOWN is used when there is one nominal or ordinal level variable and one interval level variable. Also, when controlling for more than one variable, BREAKDOWN is the appropriate procedure to use as output is displayed in an easy to read and interpret table.

Table 3

VARIABLE NAME, IDENTIFYING NUMBER, AND STATISTICS USED TO DESCRIBE THE VARIABLE UTILIZING SUBPROGRAM FREQUENCIES OR CONDESCRIPTIVE

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Subprogram	Variable	Identifying Number	Statistical Output
FREQUENCIES	TOWNSHIP	Aa	Number of Occurences
FREQUENCIES	COUNTY	Ab	Number of Occurences
FREQUENCIES	ACQUIRE	A1	Number of Occurences
FREQUENCIES	REASON	A2	Number of Occurences
FREQUENCIES	LEARN	A3	Number of Occurences
CONDESCRIPTIVE	TOTACRES	A6	Mean, Median,Mode, Kurtosis, Skewness
FREQUENCIES	SELL	A7b	Number of Occurences
FREQUENCIES	YRSELL	A7c	Number of Occurences
CONDESCRIPTIVE	TOTVALUE	A8	Mean, Median, Mode, Kurtosis, Skewness
FREQUENCIES	PROPTAX	B1	Number of Occurences
FREQUENCIES	QUALSERV	B2	Number of Occurences
FREQUENCIES	QUANSERV	B3	Number of Occurences
FREQUENCIES	ZONING	B4	Number of Occurences
FREQUENCIES	LANDREG	B5	Number of Occurences
FREQUENCIES	BUILDING	B6	Number of Occurences
FREQUENCIES	PROPVALU	B7	Number of Occurences
FREQUENCIES	PUBPROP	́ С2	Number of Occurences
FREQUENCIES	ONH20	C3a	Number of Occurences
CONDESCRIPTIVE	ANNUVIS	E1	Mean, Median, Mode, Kurtosis, Skewness

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Subprogram	Variable	Identifying Number	Statistical Output
CONDESCRIPTIVE	DAYSTAY	E2	Mean, Median, Mode, Kurtosis, Skewness
CONDESCRIPTIVE	FALL	E3a	Mean, Median, Mode, Kurtosis, Skewness
CONDESCRIPTIVE	WINTER	E3b	Mean, Median, Mode, Kurtosis, Skewness
CONDESCRIPTIVE	SPRING	E3c	Mean, Median, Mode, Kurtosis, Skewness
CONDESCRIPTIVE	SUMMER	E3d	Mean, Median, Mode, Kurtosis, Skewness
FREQUENCIES	CTYBEFOR	F3a	Number of Occurences
FREQUENCIES	CTYNOW	Gla	Number of Occurences
CONDESCRIPTIVE	AGE	G2a	Mean, Median, Mode, Kurtosis, Skewness
FREQUENCIES	SEX	G2b	Number of Occurences
FREQUENCIES	MARITAL	G2c	Number of Occurences
CONDESCRIPTIVE	TOTAL	G3f	Mean, Median, Mode, Kurtosis, Skewness
FREQUENCIES	INCOME	G4	Number of Occurences
FREQUENCIES	HOME	-	Number of Occurences
CONDESCRIPTIVE	VALUACRE	-	Number of Occurences

Subprogram NONPAR CORR is appropriate to measure the association between two variables when one or both variables are ordinal in nature. The statistics computed are Spearman_{Rs} and/or Kendall rank-order correlation coefficients which are non-parametric.

Subprogram PEARSON CORR is used when two interval level variables are analyzed. Output is in the form of a Pearson R zero-order correlation which indicates both the strength of the linear fit to a regression line and the proportion of variance explained in the dependent variable by the independent variable.

The first program utilized was subprogram CROSSTABS. Some of the theories formulated for analysis with subprogram CROSSTABS included:

- That there is a relationship between variables ONH20, INCOME, PUBPROP, PROPVALU, BUILDING, LANDREG, ZONING, QUANSERV, QUALSERV, SELL, PROPTAX, LEARN, REASON, ACQUIRE, with variable TOWNSHIP (e.g., some townships may have a substantially greater number of property owners on lakes than others.)
- 2) There is a relationship among the aforementioned variables and variable COUNTY. (e.g., there is a difference between the income levels of one county when compared to other counties.)
- 3) There is a relationship between variables ACQUIRE, REASON, LEARN, SELL, YRSELL, QUALSERV, QUANSERV, ZONING, LANDREG, BUILDING, PROPVALU, ONH2O, INCOME, CTYBEFOR, CTYNOW, SEX, MARITAL, TOWNSHIP, COUNTY, with variable HOME. (e.g., attitudes toward property tax levels differ between property owners with a permanent home and those with a seasonal home.)

The output from subprogram CROSSTABS consists of tables which can be a 2 x 2 format to an N by N. Statistics available with CROSSTABS and utilized in this study are: Chi-Square, Cramers V, Contingency Coefficient and Uncertainly Coefficient. Once again, some statistics require a certain level of measurement before they can be computed. Also, some statistics are of little value in specific cases, therefore, Table 4 shows CROSSTABS tables, that were computed, along with appropriate statistics.

It is quite obvious that subprogram CROSSTABS cannot handle all the variable relationships requiring investigation in this phase of the study. A variable such as TOTVALUE, in which the value of the property is being measured against type of home development present (variable HOME), is of little use in tabular form because of the numerous values that TOTVALUE may have. It would be more useful to know how TOTVALUE and HOME vary in respect to each other, and also what is the mean and standard variation for TOTVALUE with each different HOME type.

Subprogram BREAKDOWN is the appropriate procedure to handle this type of analysis. It allows not only for tabular analysis of continuous or discrete variables, but also analysis between two variables while controlling for up to four other variables. In addition, when the independent variable is continuous, (interval scale) and the dependent variable is discrete (nominal or ordinal scale), a t-test can be performed on the arithmetic means to test for significant differences between the categories of the discrete variable. Some of the theories and hypotheses formulated for analysis with subprogram BREAKDOWN included:

 That there is no significant difference between the county means for variables TOTACRES, TOTVALUE, AGE, TOTAL, VALUACRE.

Table 4

VARIABLE RELATIONSHIPS ANALYZED USING SUBPROGRAM CROSSTABS AND DESCRIPTIVE STATISTICS COMPUTED

	Statistics		11	<u>Construction</u>
	Chi-square	Cramers V	Coefficient	Coefficient
Bivariate Relation- ships		<u> </u>	9. Martin - Charles Ingelsen an angelsen an an an an	
COUNTY/TOWNSHIP/HOME				
by ACQUIRE	Х	Х	Х	
by REASON	Х	Х	X	
by LEARN	X	Х	X	
by PROPTAX	Х	Х	Χ.	X (Variable HOME only)
by SELL	X	Х	Х	X (Variable HOME only)
by QUALSERV	X	X	X	
by QUANSERV	X	X	X	
by ZONING	Х	X	X	X (Variable COUNT' HOME only)
by LANDREG	X	Х	Х	
by BUILDING	Х	X	X	
by PROPVALU	Х	Х	Х	
by ONH20	Х	X	× X	
by PUBPROP	Х	X	X	
by CTYBEFOR	X	Х	X	
by CTYNOW	X	X	X	
by SEX	X	X	X	
by MARITAL	Х	Х	X	
by INCOME	х	Х	х	

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	<u>Statistics</u>			
	Chi- Square	Cramers V	Uncertainty Coefficient	Contingency Coefficient
Bivariate Rela- tionships				
ONH2O by PROPTAX	X	Х	Х	
by PUBPROP	Х	X	Х	
by CTYBEFOR	Х	Х	X	
by CTYNOW	Х	X	Х	
by SEX	Х	Х	Х	۲
by MARITAL	Х	Х	X	
by INCOME	Х	Х	Х	
COUNTY by HOME	Х	Х	X	Х
HOME by INCOME	х	Х	X	

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- That there is no significant difference between the township means for variables TOTACRES, TOTVALUE, AGE, TOTAL, VALUACRE.
- That there is no significant difference between the types of home development means for variables TOTACRES, TOTVALUE, AGE, TOTAL, VALUACRE.
- 4) There is no substantial difference between county, township, or type of home development means for variables TOTACRES, TOTVALUE, AGE, TOTAL, VALUACRE, when controlling for variables ONH20, TYPEH20, SIZEH20, and PUBPROP.

Table 5 shows the variable relationship computed with subprogram BREAKDOWN along with the descriptive statistics employed.

NONPAR CORR is the procedure required to be able to handle relationships among variables where one or more of the variables is measured at the ordinal level. With NONPAR CORR, all relationships among the variables are bivariate. There is no controlling for the influence of other variables and, therefore, all correlations are zero order. Statistical output from subprogram NONPAR CORR includes the mean, standard deviation, Spearmans_{Rs} and Kendall Tau. The lists of variables used for bivariate correlation analysis with NONPAR CORR were: TOTACRES, SELL, YRSELL, TOTVALUE, PROPTAX, QUALSERV, QUANSERV, ZONING, LANDREG, BUILDING, PROPVALU, SKIAREA, SKIMILES, PUBPROP, ONH20, TYPEH20, SIZEH20, AGE, SEX, MARITAL, TOTAL, INCOME, HOME and VALUACRE.

The last subprogram to be used in this section is PEARSON CORR. This subprogram also produces zero order correlation between pairs of variables. However, it is a slightly stronger correlation procedure than NONPAR CORR as both variables in the bivariate analysis must meet interval scale requirements. Thus, variables with interval scale attributes can be

Table 5

VARIABLE RELATIONSHIPS AND STATISTICS COMPUTED WITH SUBPROGRAM BREAKDOWN

	Statistics			
	Mean	Standard Deviation	T-Value	
Bivariate Relationship	an a			
COUNTY/TOWNSHIP/HOME/				
ONH2O/PUBPROP by TOTACRES	х	x	Х	
by TOTVALUE	Х	x	х	
by AGE	Х	x	X	
by VALUACRE	X	x	Х	
TYPEH20/SIZEH20 by TOTACRES	x	X	Х	
by TOTVALUE	х	х	Х	
by VALUACRE	X	x	Х	
COUNTY/TOWNSHIP/HOME by TOTACRES				
Controlling for ONH20	x	x		
Controlling for TYPEH20	х	Х		
Controlling for PUBPROP	Х	x		
by VALUACRE				
Controlling for ONH20	Х	x		
Controlling for TYPEH20	X	X		
Controlling for PUBPROP	X	X		

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analyzed to determine strength and sign of the relationship.

Statistical output from subprogram PEARSON CORR consist of mean, standard deviation, and Pearson r. The list of variables used for bivariate correlation analysis with PEARSON CORR were: TOTACRES, TOTVALUE, SKIMILES, LAKEMILE, RIVMILE, AGE, SEX, TOTAL, VALUACRE, DAYSTAY, FALL, WINTER, SPRING, SUMMER.

The preceding analysis with the various SPSS subprograms was intended to develop an information base in order that specific questions concerning characteristics of property owners in the study area can be answered. Some of the questions that the research addressed included:

- What reasons are most important for initial property acquisition?
- 2) What sources of information are most important in learning about available property?
- 3) How do median family income levels differ between property owners in each of the studied counties and townships and types of home development?
- 4) What is the intent to sell property among property owners in different counties, townships, and types of home development?
- 5) What are the attitudes of property owners toward land use regulations, future residential building, and the future of property values?
- 6) What are the attitudes toward property tax levels and the quality and quantity of municipal services provided?
- 7) Are people aware of development regulations concerning the property they own?
- 8) What is the average parcel size owned by northern Michigan property owners?

- 9) What is the distribution between seasonal home owners, permanent home owners, and property owners with no present housing structure, among counties, townships, and natural resource characteristics?
- 10) How many visits and what is the average length of stay for seasonal home owners?
- 11) What is the current region (County group) of residence for property owners?
- 12) How do other general and socioeconomic characteristics (i.e. age, sex) differ among land owners in different counties, townships, and with different types of home development?

It is clear from a review of the various statistics and tests in subprograms CROSSTABS, BREAKDOWN, NONPAR CORR, and PEARSON CORR that certain very important variable relationships could not be tested. This is due to the nature of the various computer programs. The CROSS-TABS procedure allowed two or more variables that did not have many discrete categories to be compared. Subprogram BREAKDOWN allowed variables that were both continuous and discrete to be tested while at the same time controlling for other variables. However, when more than one variable was controlled, statistical relationships became confused and significance testing became impossible. Subprograms NONPARR CORR and PEARSON CORR allowed for bivariate analysis with statistical output limited to zero order partial correlation coefficients (no other variables controlled). The importance of all the preceeding subprograms then was:

 To describe property owners in the study area in terms of certain variables.

- To begin to look at certain relationships between variables.
- To draw conclusions and develop hypotheses based on those variable relationships.

This then led into the next phase of the research process - the development of a multiple regression model. The multiple regression model allows for relationships among variables to be explored while at the same time controlling for many other variables. The multiple regression model serves two purposes (1) description, and (2) prediction. The descriptive part of the model is concerned with measuring the parameters associated with the independent variables and the correlation between the independent and dependent variables (more will be said about this later when the form of the model is considered).

The prediction purpose of the model is important in that once the relationship between the independent and dependent variables has been described then any new value of an independent variable can be incorporated into the model. The result will be the prediction, that is the expected change in the dependent variable associated with the new independent variable.

The regression model is of the cross sectional variety. That is, data are analyzed from a sample which is assumed to be a representative cross section of the population of interest at a given time. In this case, a cross section of northern Michigan study area property owners as identified by questionnaire responses for the year 1978. The SPSS subprogram REGRESSION is used in this section.

Variables to be Tested Using Regression

The dependent variable chosen for analysis was value per acre of land. Land value was viewed as the single most important economic variable

in the survey. It is readily identified and measurable and is the unit of comparison most often used in real property transactions. In addition, value per acre of land figures can be inflated or deflated through various indexes, and therefore, can be converted over to time series analysis for future research.

The independent variables to be regressed on value per acre of land were chosen in two ways (1) to test certain hypotheses concerning the dependent variable, and (2) variables identified through zero order partial correlation which showed a high degree of association with the dependent variable. Care should be taken in variable selection, through zero order partials, so that multicollinearity does not become a problem. More will be said about this later.

Measurement of the Dependent Variable

Y1. Value per Acre of Land

Value per acre of land, in dollars, taken from questionnaire responses and measured in 1978 dollars. Survey respondents estimated total worth of their property which was then divided by amount of acres owned. The result was value per acre of land per respondent and became the dependent variable in the regression.

Measurement of the Independent Variables

X1. Type of Home Development

The variable, HOME, which contains the information concerning the type of home development a property owner has is measured at the ordinal level. Due to the nature of regression, all independent variables must be measured at least on an interval scale. Therefore, HOME is converted into new interval level

variables termed "dummy" or "binary" variables. If a property owner has no home development on the property in the study area, then a new variable, El, receives a value of one. Likewise, if a property owner has a seasonal home on the property, then a new variable, E2, receives a value of 1 and El receives a value of 0. If a property owner has a permanent home on the property, then both El and E2 receive values of zero. No E3 variable is created because serious problems of multicollinearity (singular matrix) will result. Rather, the value of an acre of land with a permanent home is reflected in the intercept term of the regression model (more will be said about this later).

X2. County

Variable COUNTY is measured at the nominal level, and therefore, must be converted to an interval level through the use of dummy variables. The procedure is the same for that used in converting variable HOME to an interval level of measurement. The newly created variables are C1 which will refer to Crawford County and C2 which refers to Kalkaska County. Otsego County is reflected in the intercept term of the model.

X3. Township

Once again a nominal level variable which must be converted to an interval scale. The township dummy variables which were created are D1 South Branch, D2 Grayling T27R2W, D3 Grayling T26NR4W, D4 Orange, D5 Blue Lake, D6 Garfield, D7 Bagley, and D8 Chester. The last township, Dover, is reflected in the intercept term.

X4. Public Property

This information concerning whether a property owner is or is not

adjacent to public land was derived from variable PUBPROP. This is also a dummy variable, Jl, which receives a value of 1 if the property in question is adjacent to public land and 0 if not.

X5. Ski Area

Another dummy variable, K1, receiving a value of 1 if a property owner is close to any commercially developed ski area, and a 0 if not.

X6. Water Resources

The type, size, and nearness of water resources are all variables that were regressed to see if they contribute significantly to value per acre. The information concerning type of water resources a property owner is located on is contained in variable TYPEH20. This is a nominal level variable which is transformed by dummy conversion into variable G1 which receives a value of 1 if a property is located on a river and 0 if not. There is no G2 variable for property owners on a lake because of multicollinearity with the next water characteristic analyzed - size of lake where the property is located. If a property owner is on a lake, then there is a certain size associated with that lake, and the information concerning lake size is located in variable SIZEH20. SIZEH20 is measured at the ordinal level and was converted through dummy manipulation into variables H1, H2, H3, H4. Each one of the new variables correspond to a lake size. H1 receives a value of 1 if property is located on a lake or pond less than 25 acres; H2 receives a value of 1 if property is located on a lake 25-100 acres in size; H3 receives a value of 1 if property is located on a lake 101-500 acres in size and H4 receives a value of 1 if property is located on a lake over 500 acres in size. The closeness to water resources

was also analyzed. The variables containing this information are LAKEMILE and RIVMILE. They are continuous variables measured at the ratio scale, and therefore, no dummy conversions are necessary for their inclusion into the multiple regression model. However, for inclusion in the model specification list, LAKEMILE becomes variable X6a and RIVMILE becomes variable X6b.

X7. Total Acres Owned

This is a continuous level ratio scale variable which was taken directly from the questionnaire and is listed as variable TOTACRES. Measurement is in acres as identified from questionnaire responses.

In summary then, the multiple linear regression model is of the form $Y1 = B_0 + B_1 X_1 + B_2 X_2 + \dots + B_7 X_7 + C$

which when converted into a workable form, required because of the use of dummy variables, become

where:

 E_1 = no home on the property in the study area when E1=1 E_2 = seasonal home on the property when E2 = 1 C_1 = Crawford County when C1=1 C_2 = Otsego County when C2=1 D_1 = South Branch T25NR2W Township when D1=1 D_2 = Grayling T27R2W Township when D2=1 D_3 = Grayling T26NR4W Township when D3=1

 D_A = Orange Township T26NR7W when D4=1 D_{5} = Blue Lake Township T28NR5W when D5=1 D_6 = Garfield Township T25NR7W when D6=1 D_7 = Bagley Township T30NR3W whdn D7=1 D_{R} = Chester Township T29NR2W when D8=1 J_1 = Property adjacent to public land when J1=1 K_1 = Property located close to a commercial ski area when K1=1 G_1 = Property located on a river when G1=1 H_1 = Property located on a lake which is less than 25 acres when Hl=l H_2 = Property located on a lake which is between 25 and 100 acres when H2=1 H_3 = Property located on a lake which is over 100 acres but less than 500 acres when H3=1 H_A = Property located on a lake which is over 500 acres when H4=1 🔺 $X6_{\Delta}$ = Distance property is from a lake, miles X6_p= Distance property is from a river, miles X_7 = Total number of acres in the property (= Error or residual not explained by independent variables in the regression

 B_0 B_{22} are parameters to be fitted.

This model can then be broken down into three separate regressions which are:

$$Y_{1} = B_{0} + B_{1}E_{1} + B_{2}E_{2} + B_{3}C_{1} + B_{4}C_{2} + B_{13}J_{1} + B_{14}K_{1} + B_{15}G_{1} + B_{16}H_{1} + B_{17}H_{2} + B_{18}H_{3} + B_{19}H_{4} + B_{20}X_{6A} + B_{21}X_{6B} + B_{22}X_{7} + (-)$$

This regression is county specific in that it uses the independent county variables as proxy variables. Any unique county characteristics

should be reflected in the coefficient value for each county in the regression.

A second regression was:

$$Y_{1} = B_{0} + B_{1}E_{1} + B_{2}E_{2} + B_{5}D_{1} + B_{6}D_{2} + B_{7}D_{3} + B_{8}D_{4} + B_{9}D_{5} + B_{10}D_{6} + B_{11}D_{7} + B_{12}D_{8} + B_{13}J_{1} + B_{14}K_{1} + B_{15}G_{1} + B_{16}H_{1} + B_{17}H_{2} + B_{18}H_{3} + B_{19}H_{4} + B_{20}X_{6A} + B_{21}X_{6B} + B_{22}X_{7} + C$$

This regression is township specific as each township's independent variable is used as a proxy for any unique characteristics in each township.

The third regression was:

$$Y_{1} = B_{0} + B_{1}E_{1} + B_{2}E_{2} + B_{13}J_{1} + B_{14}K_{1} + B_{15}G_{1} + B_{16}H_{1} + B_{17}H_{2} + B_{18}H_{3} + B_{19}H_{4} + B_{20}X_{6A} + B_{21}X_{6B} + B_{22}X_{7} + (-1)$$

This is the simplified regression and is neither township or county specific, but rather represents study area property owners without respect to area of residence. The best regression of the three depends on what use is to be made from it. For example, local planners may want to use the township specific regression whereas regional planners may opt for the county or the simplified regression. Each of the three regressions were analyzed and are presented in the data analysis section.

Adjusting the Classical Linear Regression Model

The basic form of the model is the same for all three regressions. This form of the model was chosen because it is the classical linear regression model and there was no evidence to suggest that logarithmic, polynomial, etc. model specifications would be more appropriate. Tests

performed which supported the decision to select the classical linear form included partial correlation analysis, F-test for curvilinearity, examinations of residuals and run of signs. The parameters to be fitted $(B_0 \dots B_{22})$ form the basis for the descriptive nature of the model. The parameter ${\rm B}_{\rm O}$ represents value per acre of land in dollars given certain property characteristics. For example, in the measurement of independent variables, reference was made as to how there was no need for the creation of a dummy variable representing property owners in Otsego County. Instead, the value per acre for property owners in Otsego County is reflected in the ${\rm B}_{\rm O}$ parameter. For property owners in Crawford County, the value per acre is an addition or subtraction to the value reflected in B_{Ω} . When all the parameters are fitted, through the regression, the descriptive nature of the model is complete. The parameters then describe how each independent variable is related to the dependent variable. Once the model parameters were ascertained, variable significance testing and confidence intervals were easily obtained.

Even though great pains are taken to eliminate multicollinearity problems from the regressions, they still arise. The basic linear model was modified to deal with this problem. The model was checked as the analysis proceeded, and it became necessary to develop a model with interaction terms. Any pair of variables which showed a correlation greater than .20 in the simple correlation matrix (Appendix C) were transformed into an interactive term. These new combinations were:

$$C1G1 = C1 \times G1$$

 $C2H2 = C2 \times H2$
 $C2H3 = C2 \times H3$
 $D3G1 = D3 \times G1$

D5H2 = D5 x H2 D5H3 = D5 x H3 D7J1 = D7 x J1 E2H3 = E2 x H3

In building the model, the option that was used was stepwise regression. The preferred option is usually all possible regressions, however, there are too many variables in the model and the output would be confusing at best. Stepwise regression allows the variables to enter according to their relative importance. The variable which accounts for the most variance around the mean enters first, and so on until all the variables are into the regression or do not meet the significance level requirements chosen for inclusion into the regression. The advantages of stepwise regression are that it allows the researcher to see the model developing and see the importance of some variables change as others enter into the model. A disadvantage is that one variable which may explain a good deal of variance may not meet the significance level requirements to enter into the model because its influence is being suppressed by a variable already in the model. However, a combination of stepwise and hierarchial regression can be utilized if a suppressed variable is suspected.

Some of the questions that this part of the study specifically addressed included:

- What variables tested are most useful in explaining value per acre of land?
- 2) What regression model explains the most variance and also results in the lowest residual mean square error?
- 3) Is there enough evidence to support the theory that certain natural resource characteristics play an important

role in real property valuation?

The hypotheses used in regression analysis are usually referred to as null hypotheses. That is, instead of asking what value a population parameter is likely to have, the null hypothesis says the value is zero and the alternative hypothesis then states the value is different than zero. The null hypothesis is tested, and if it cannot be disproved, is accepted. The null hypotheses tested in this study were:

- 1) There is no linear relationship between the dependent variable, Value per Acre of land, and the independent variables, Type of Home Development (E_1E_2) , County (C_1C_2) , Township $(D_1....D_8)$, Water Resources $(G_1, H_1....H_4, X_{6A}, X_{6B})$, Public Land (J_1) , Ski Area (K_1) , and Total Acres Owned (X_7) .
- Each independent variable listed above has no significant effect on value per acre of land once the effects of the other independent variables are adjusted for.
- 3) The relationship between value per acre of land and any particular independent variable is non-linear and the effect of two or more independent variables are not additive.

Significance Level

The level of significance chosen for this study is .05. This level was chosen for two reasons, (1) it was the predominant significance level encountered in the literature review for research dealing with property purchase and home development; (2) it provides a basis for external validation. If results from this research are to be compared to results from any other study, then it is important that significance levels be the same. Non-Response Error

In any survey there will always be a certain percentage of people who will not respond. This group of non-respondents may represent a different population entirely than the group which did respond. To determine if non-respondents do indeed make up a separate population, it is necessary to obtain some responses from the group of non-respondents. This was achieved through a telephone survey of a randomly selected portion of the non-respondents. A telephone survey is more intensive than the mail survey and did receive additional responses. Also, to help achieve a measureable response from the previous non-respondents, the initial questionnaire was reduced to five key questions. These questions deal with type of home development, total acreage owned, total value of the property, information leading to initial purchase and intent to sell. Responses were analyzed and compared with the survey results. No significant differences were encountered between values from initial respondents and the random sample of non-respondents, for the five key variables tested.

Statistics

There were many descriptive and inferential statistics used in this study. Each subprogram utilized has a set of statistics that it computes. Many of the statistics computed are understood by almost all researchers (e.g. mean and median), however, there may be some statistics used in this research unfamiliar to even an ardent researcher. Therefore, the following list of statistical definitions has been compiled for each descriptive statistic used in this report.

Mean or average is the sum of individual case values divided by the number of cases. Interval scale measurement is required to compute the mean.

Median is the value of the case lying on the 50th percentile. One-half of the cases have values higher than the median and one-half are lower. Ordinal level measurement is required to compute the median.

Mode is the value of the variable that occurs most often. Any level of measurement is adequate to compute the mode.

Skewness is a measure indicating the degree to which a sample distribution of cases approximates a normal curve. A positive value indicates a clustering of cases to the left of the arithmetic mean while a negative value indicates clustering to the right of the arithmetic mean. Interval level measurement is required to compute a skewness value.

Kurtosis is also a measure indicating the degree to which a sample of cases approximate a normal curve. If the kurtosis value is positive, it indicates that the curve is more peaked than a normal distribution. A negative value indicates the curve is flatter than a normal distribution. A kurtosis value of 0 indicates a normal distribution. Interval level measurement is required to compute a kurtosis value.

Variance is a measure of data dispersion about the arithmetic mean. The smaller the variance, the more homogeneity in the data. Interval level measurement is required to compute the variance.

Standard Deviation is the mathematical square root of the variance. It is another measure of dispersion about the arithmetic mean. Standard deviation has more intuitive meaning than the variance because it is based on the same units as the original variable. For example, if the variance in a sample of total acres owned per property owners is 100, then what is being referred to is 100 squared acres. The standard deviation, however, is 10 acres per property owner and is readily comprehendable.

Interval level measurement is required to compute the standard deviation.

Chi-Square is a test for statistical significance. Its main function is helping in determining whether a systematic relationship exists between two variables. The chi-square statistic reported in this text is followed by degrees of freedom and whether the statistic is significant at the .05 level. For example, if a chi-square value of 97.62 is obtained with 8 degrees of freedom, reference to a chi-square values table will indicate that there is a significant relationship. Care should be taken, however, in interpreting chi-square statistics as to the relative strength of the relationship. A large chi-square value does not necessarily mean a variable relationship is strong. Rather chi-square should be used only to infer that a relationship does or does not exist. The strength of that relationship is a matter for other statistics. Chi-square is the least powerful of statistics used to determine significance. Only nominal level measurement is required for one or both variables to compute the chi-square statistic.

Cramers V is a measure of the strength of relationship between variables. Values for Cramers V range from 0 to +1. A large value indicates that the association is strong. A low value (close to 0) indicates the relationship is weak. Only nominal level measurement is required for one or both variables to compute Cramers V.

Contingency Coefficient is another statistic which measures the degree of association between two variables. It has a minimum value of 0 indicating the absence of any relationship between the variables, but its maximum value is dependent on the size of the crosstabs table. Therefore, the Contingency Coefficient should only be used with tables having the same number of rows as columns. Only nominal level measurement is required for one or both variables to compute the Contingency Coefficient.

Uncertainty Coefficient (asymmetric) is a statistic which has direct meaning. The computed value is actually the proportion of uncertainty in the dependent variable reduced by knowledge of the independent variable. For example, two variables HOME (type of home development) the dependent variable, and TYPEH20 (water, river, no water resource) the independent variable. When statistically analyzed, yield an Uncertainty Coefficient (asymmetric) value of .4732 indicating that 47% of the uncertainty in knowing what type of home development is located on the land is eliminated when type of water resource that land is located on is known. An Uncertainty Coefficient value of 1 indicates all uncertainty is removed and each individual type of home development is associated with one specific type of water resource. Only nominal level measurement is required for one or both variables to compute the Uncertainty Coefficient (asymmetric).

T-Test is a statistic computed to measure whether or not significant differences exist between two groups. Depending on the degrees of freedom, variance in the sample and level of significance chosen, a t-test can be performed and the t-statistic computed to see whether or not two groups means are significantly different. Interval level measurement is required for both variables to compute the t-statistic and utilize a t-test.
Kendall Tau is also a non-parametric statistic and is quite similar to Spearmans_{Rs}. The major difference between the two in that Kendall's tau is somewhat more meaningful when data are ranked as opposed to continuous.

Pearsons r is a parametric correlation coefficient ranging between +1 and -1. It has the same intuitive meaning as Spearmans_{Rs} and Kendall tau, but it has slightly more power because of the assumption of interval level measurement requirements.

Certain statistics utilized in the study (i.e. Cramers V, Contingency Coefficient, Spearmans_{Rs}, Kendall Tau, Pearsons r) indicate the strength of relationship between two variables. The absolute value of these statistics range from 0 to 1 and as value increases the strength of variable relationships becomes stronger. However, there is no rule as to which range of values indicates a relationship is weak, moderate or strong. Strength of relationship is arbitrarily determined by each researcher.

In this study the range of values and corresponding strength of association for each affected variable is reported in Table 6.

Table 6

RANGE OF VALUES AND CORRESPONDING STRENGTH OF ASSOCIATION FOR EACH VARIABLE STATISTICALLY TESTED

	Cramers V	C ontingency Coefficient	Spearmans _{Rs}	Kendall Tau	Pearsons r
Weak	01	015	01	01	015
Moderate	.112	.1625	.112	.112	.1625
Strong	.21	.26	.21	.21	.26

Summary

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In this section the tools and model used in this study have been identified. The basic tools used were a questionnaire and the subprograms contained in SPSS. The model used was cross sectional multiple regression with dummy variables.

A stratified random sampling technique was employed to collect data. Three townships in each of three counties (Kalkaska, Crawford, Otsego) were surveyed. SPSS subprograms used in initial data analysis included FREQUENCIES, CONDESCRIPTIVE, CROSSTAB, BREAKDOWN, NONPAR CORR, and PEARSON CORR. The SPSS subprogram REGRESSION was utilized in developing the cross sectional multiple regression model. Variables tested in the regression model included location characteristics (political, natural resource), property characteristics (size, home development) and combination variables (inter-active term considered to be highly correlated with each other). All tests for statistical significance were performed at the .05 probability level.

CHAPTER III

SOCIOECONOMIC CHARACTERISTICS OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS

What are the characteristics of northern Michigan study area property owners? Before the attitudes, concerns, and other general characteristics of northern Michigan study area property owners can be explored, it is important that socioeconomic characteristics be known. Thereafter, when describing attitudes and concerns of northern Michigan study area property owners, it will be clear what group of people is being referenced. The following analysis will be divided into three segments. The first group includes property owners in specific counties. The second group includes property owners in specific townships. The third group includes property owners with different types of home development. The reason for these groupings is so that any unique characteristics which may relate to a specific county, township, or type of home development may quickly become apparent.

Age of Houshold

In terms of age, there is little variation in the sample. A 95% Confidence Interval about the mean has a minimum of 52.119 and a maximum of 53.394, with a mode of 50.00 and a median value of 53.25. In addition, a Kurtosis value of -.561 indicates the curve is only slightly flatter than normal and a skewness value of -.954 means there is only a slight grouping of values to the right of the mean.

Due to the fact of such a small confidence interval for mean age levels, a problem in statistical analysis occurs. Each county's mean when compared to the overall mean is statistically significant. This difference may be statistically significant but is not considered

operationally significant (unless we are considering life insurance). Therefore, separate analysis by county, township, and type of home development by median age of property owners is not considered important. A complete breakdown of age by area and type of home development is shown in Table 7.

Gender of Household Head

Gender of head of household is another important characteristic of property owners that has to be considered. Few decisions to purchase or sell property are made without substantial input from the household head. In the study area, heads of household who own property are predominantly males. In fact, Table 8 shows that 88.7% of property owning households have male heads. This is not at all surprising. In Michigan, males are considered the head for 91.3% of the households. (Michigan Statistical Abstract, 1978, pg. 77). Therefore, there seems to be little differentiation between the northern Michigan study area property owners survey and results for the entire State of Michigan.

Marital Status of Household Head

Marital status is another important characteristic, especially for developers. It is generally considered that lifestyles between married and non-married individuals differ considerably. A developer designing a subdivision for unmarried individuals may not sell many parcels of land if all of his prospective clientele are married couples. As shown in Table 9, the overwhelming majority of study area property owners are married (83.7%). The second largest percentage (9.3%) are widows or widowers. The lowest recorded percentage (3.1%) are single-never married. Once again, the analysis changes very little between different counties or townships and type of home development.

	Age	<u></u>			
	Size of Sample	Mean	Standard Deviation		
County		<u> </u>			
Crawford	266	53.85	13.06		
Kalkaska	455	54.78	12.73		
Otsego	1,187	51.78	13.36		
Total	1,908	52.78	13.22		
Township	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
South Branch T25NR2W	128	53.78	12,32		
Grayling T27NR2W	31	55.84	13.74		
Grayling T26NR4W	106	53.42	13.82		
Orange T26NR7W	112	51.63	13.56		
Blue Lake T28NR5W	266	55.53	12.49		
Garfield T25NR7W	76	56.50	11.45		
Bagley T30NR3W	1,002	51.77	13.45		
Chester T29NR2W	93	52.92	12.62		
Dover T31NR2W	78	50.68	13.02		
Total	1,892	52.78	13.22		
Home					
No Home	620	51.45	12.6		
Seasonal Home	686	54.15	11.16		
Permanent Home	586	52.62	15.72		
Total	1,892	52.78	13.22		

MEAN AGE OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS, BY COUNTY, TOWNSHIP, AND TYPE OF HOME DEVELOPMENT

Table 7

NOTE: Sample size may be different for county, township, and type of home variables due to missing responses on some survey questions.

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GENDER OF HOUSEHOLD HEAD FOR NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS (Frequency and Percentage Distribution)

Sex	Frequency	Frequency Percentage
Male	1,678	88.7
Female	213	11.3
Total	1,891	100.0

Table 9

MARITAL STATUS OF HOUSEHOLD HEAD FOR NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS (Frequency and Percentage Distribution)

Marital	Frequency	Frequency Percentage
Married	1,603	83.7
Single (Never Married)	60	3.1
Divorced	74	3.9
Widow or Widower	178	9.3
Total	1,915	100.0

Family Size

Total family size for northern Michigan study area property owners was also considered. The mean family size is 3.24 with a median value of 2.795 and a mode of 2.0. The 95% Confidence Interval about the mean was from 3.161 to 3.320. This total family size mean is quite similar

to that reported for the State of Michigan in the 1970 Census which was 3.27 (Michigan Statistical Abstract 1978, p. 79)

When individual counties, townships, and type of home developments were considered, each category's mean differed very little from the overall mean. Some categories were found to be statistically significant (by only a fraction) but none were judged operationally significant. Therefore, each category's mean can be considered the same as the overall mean.

Family Income

Income, or lack of it, is a critical factor in decisions concerning major purchases such as real property. Inadequate income levels can prevent people from owning land and an abundant income can lead to an increase in more expensive purchases such as second or seasonal homes. (Nelson, 1973). Table 10 shows that, in the study area 60.5% of the property owners have family income levels over \$15,000. Somewhat surprising is the fact that 32.4% of all study area property owners have incomes exceeding \$25,000.

Table 10

FAMILY INCOME OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS (Frequency and Percentage Distribution)

	Frequency	Frequency Percentage
Income		
\$0.0 - \$ 5,999.00	172	9.4
\$ 6,000.00 - \$ 9,999.00	263	14.4
\$10,000.00 - \$14,999.00	288	15.7
\$15,000.00 - \$25,000.00	504	27.6
Over \$25,000.00	602	32.9
Total	1,829	100.0

When individual counties are considered, as presented in Table 11, it is found that property owners in Kalkaska county have generally less family income than their counterparts in Crawford or Otsego counties. Only 53.3% of the property owners in Kalkaska county have family incomes over \$15,000/year whereas in Crawford 60.3% and in Otsego 63.2% of the property owners exceed \$15,000 in median family income. The difference is quite pronounced between Otsego and Kalkaska when the over \$25,000/ year category is considered. In Otsego county 36.0% of the property owners have family incomes exceeding \$25,000/year, but only 26.6% of the property owners in Kalkaska county exceed \$25,000.00. In the lowest family income category (0 - \$5,999/year), Kalkaska also has the largest percentage of property owners (12.3%) when compared to Crawford and Otsego (10.5% and 8.0%, respectively).

Statistics, presented at the bottom of Table 11, indicate a relationship exists between property owners of certain counties and family income levels. A Chi-square value of 21.97381, significant at the .05 probability level, implies property owners of certain counties differ in terms of median family income. Families with higher median incomes are more likely to own property located in Crawford county or Otsego counties and less likely to own land in Kalkaska county. However, other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between high median family incomes and property owners of certain counties, although significant, is weak. The relationship is not strong enough to accurately predict which county a property owner would have his land located, given a certain median family income level.

When individual townships are considered as presented in Table 12, each township generally approximates the percentage distribution

FAMILY	INCOME	0F	NORTHERN	MICHIGAN	STUDY	AREA	PROPERTY	OWNERS,	Β́Υ	COUNTY	
											-

Count Row Percentage Row Cumulative Percentage	Income 0 - \$5,999.99	\$ 6,000.00- \$9,999.99	\$10,000.00- \$14,999.99	\$15,000.00- \$25,000.00	0ver \$25,000.00	Row Total % of Total
County						
Crawford	27 10.5 10.5	40 15.6 26.1	35 13.6 39.7	79 30.7 70.4	76 29.6 100.0	257 14.1
Kalkaska	54 12.3 12.3	69 15.7 28.0	82 18.7 46.7	117 26.65 73.35	117 26.65 100.0	439 24.0
Otsego	91 8.0 8.0	154 13.6 21.6	171 15.1 86.7	308 27.2 63.9	408 36.0 99.9	1,132 61.9
Column Total % of Total	172 9.4	263 14.4	288 15.7	504 27.5	601 32.9	1,828 100.0

Chi-square = 21.97381 with 8 degrees of freedom Significant at .05 probability level Cramers V = .07751Uncertainty Coefficient (asymmetirc) = .00654 with County dependent = .00395 with Income dependent

*Due to rounding, total percentages may not add up to 100.

characteristic of its respective county. Otsego county townships for example, all had large percentages of property owners with family incomes over \$15,000.00/year, led by Bagley township which had 64.3% of its property owners making over \$15,000.00/year. In Kalkaska county, all three townships generally had a much lower percentage of property owners making over \$15,000.00/year. Orange township was the lowest with only 45.5% of its property owners making over \$15,000.00/year. Crawford county townships were the exception when it came to township trends supporting county trends. South Branch township had 67.8% of its property owners making over \$15,000.00/year, but Grayling T27NR2W had only 41.9% of its property owners in the same category.

Statistics, presented at the bottom of Table 12, indicate a relationship exists between property owners of certain townships and family income levels. A Chi-square value of 71.64135, significant at the .05 probability level, implies property owners of certain townships differ in terms of median family incomes. Other qualifying statistics, (Cramers V, Uncertainty Coefficient) indicate the relationship between higher median family incomes and property owners of certain townships is weak. The relationship is not strong enough to accurately predict which township a property owner would have his land located, given a certain median family income level.

When types of home development are considered, very sharp differences are noted. As shown in Table 13, property owners with no home in the study area and seasonal home owners both show a much larger percentage in the higher family income categories than property owners with permanent homes. Property owners with seasonal homes have the highest percentage (42.7%) in the "Over \$25,000.00" category. By comparison, property owners with permanent homes have only 14.3% in the "Over \$25,000.00" category. Property

Tab	le	12
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FAMILY INCOME OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS, BY TOWNSHIP

Count Row Percentage Row Cumulative Percentage	<u>Income</u> 0- \$5,999	\$6,000- \$9,999	\$10,000- \$14,999	\$15,000- \$25,000	0ver \$25,000	Row Total % of Total
Township	*******	-* <u>+</u>	<u></u>	<u></u>	<u> </u>	
South Branch T25NR2W	15 12.4 12.4	12 9.9 22.3	12 9.9 32.2	45 37.2 69.4	37 30.6 100.0	121 6.6
Grayling T27NR2W	4 12.9 12.9	4 12.9 25.8	10 32.3 58.1	8 25.8 83.9	5 16.1 100.0	31 1.7
Grayling T26NR4W	8 7.5 7.5	24 22.6 30.1	13 12.3 42.4	26 24.5 66.9	35 33.0 99.9	106 5.8
Orange T26NR7W	14 12.7 12.7	21 19.1 31.8	25 22.7 54.5	23 20.9 75.4	27 24.5 99.9	110 6.0
Blue Lake T28R5W	30 11.8 11.8	32 12.6 24.4	44 17.3 41.7	68 26.8 68.5	80 31.5 100.0	254 13.9
Garfield T25NR7W	10 13.7 13.7	15 20.5 34.2	13 17.8 52.0	25 34.2 86.2	10 13.7 99.9	73 4.0
Bagley T30NR3W	69 7.2 7.2	135 14.0 21.2	140 14.5 35.7	269 28.0 64.7	349 36.3 100.0	962 52.6
Chester T29R2W	8 8.6 8.6	9 18.3 18.3	18 19.3 37.7	21 22.6 60.3	37 39.8 100.0	93 5.1
Dover T31NR2W]4 17.7 17.7	11 13.9 31.6	13 16.4 48.0	19 24.1 72.1	22 27.8 99.9	79 4.3
Column Total % of Total	172 9.4	263 14.4	288 15.7	504 27.5	602 32.9	1,829 100.0

*Due to rounding, percentage totals may not equal 100

owners with permanent homes also have a higher percentage (17.2%) in the lowest income category (0-\$5,999.99), than either property owners with no home in the study area (6.4%), or seasonal homes (52%).

This sharp percentage difference in median family income levels between permanent home owners and all other property owners has been noted in previous research. Permanent home owners generally have lower incomes than families in the downstate area. Many permanent home owners are collecting unemployment insurance or social security benefits (Galin, 1976; Michigan Public Opinion Survey, 1977; Marans and Wellman, 1978). This tends to keep median family incomes for permanent home owners on the low side.

Median family income for the state of Michigan in 1976 was \$15,758.00 (Michigan Statistical Abstract, 1979). Results from this survey indicate a large proportion of seasonal home owners and property owners with no home development on their land substantially exceed the statewide median family income level. However, permanent home owners in the study area generally have median family incomes below the statewide level.

Statistics, presented at the bottom of Table 13, indicate a relationship exists between property owners with dissimilar types of home development and median family income levels. A Chi-square value of 237.79638, significant at the .05 probability level, implies property owners with dissimilar types of home development differ in terms of median family incomes. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners with dissimilar types of home development and median family incomes is strong. Seasonal home owners and property owners with no home in the study area are more likely to have higher median family incomes than permanent home owners.

Count Row Percentage Row Cumulative Percentage	<u>Income</u> 0- \$5,999	\$6,000- \$9,999	\$10,000- \$14,999	\$15,000- \$25,000	0ver \$25,000	Row Total % of Total
Home						
No Home	38 6.4 6.4	60 10.1 16.5	74 12.4 28.9	185 31.1 59.9	238 40.0 100.0	595 32.7
Seasonal Home	34 5.2 5.2	61 9.4 14.6	84 12.9 27.5	193 29.7 57.2	277 42.7 99.9	649 35.7
Permanent Home	99 17.2 17.2	140 24.4 41.6	129 22.5 64.1	124 21.6 85.7	82 14.3 100.0	574 31.6
Column Total % of Total	171 9.4	261 14.4	287 15.8	502 27.6	597 32.8	1,818 100.0

FAMILY INCOME OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS, BY TYPE OF HOME DEVELOPMENT

*Due to rounding, totals may not add up to 100.0

When considering location of water resource to family income levels, little relationship was found. Empirically, there are slightly more property owners who are located on a water resource in the highest income category. Statistically, there was only a very weak relationship. Therefore, location on water resources is not viewed as a function of family income levels.

Summary

This chapter explored the socioeconomic characteristics of northern Michigan study area property owners, including county of property ownership, township of property ownership, and type of home development. The analysis shows that:

- The median age level for property owners is 52.78 years. Property owners with seasonal homes were slightly older than those with permanent homes or no home development in the study area.
- The head of household for study area property owners is overwhelmingly male.
- Property owners, in the majority of cases, are married. The marital status of the next largest group is widow or widower. Very few property owners are single or divorced.
- 4) The mean family size for study area property owners is 3.24.
- 5) Family income is directly related to type of home development. Property owners with no home in the study area or seasonal homes have many more respondents in the higher income categories than property owners with permanent homes. In addition, certain counties and townships have property owners showing higher family income when compared to other counties or townships.

CHAPTER IV

TYPES OF HOME DEVELOPMENT

Few people who live in Michigan have not, at one time, visited its northern lower peninsula. For many, the desire to become property owners was too strong to resist. The area has much to offer the vacationer as well as the permanent resident. Forests, streams, lakes, wildlife, small town living, rural settings are all advantages offered property owners in northern Michigan. The attraction of the area has led to the construction of many seasonal homes as well as a profitable market for undeveloped land.

It is the objective of this chapter to describe property owners by type of home development on their land. In addition, current place of permanent residence will be investigated for property owners with seasonal homes and no home development in the study area. Also, prior place of residence for permanent home owners will be examined.

Type of Home

Many property owners in the study area have some type of living quarters on their land. These living quarters may be of the seasonal type (i.e. cabin) or a permanent family residence. In the three study counties, taken as a whole, the overall frequency percentages are divided almost evenly between property owners with no home development (33.6%), seasonal homes (36.2%) and permanent homes (30.2%). This result, shown in Table 14, is quite interesting because it shows that municipalities now collect property taxes from all property owners but only have to provide year round services to less than one third.

It is not surprising to learn that the largest segment of property owners in the northern Michigan study area are seasonal home owners.

Home	Frequency	Frequency Percentage
No Home	668	33.6
Seasonal Home	721	36.2
Permanent Home	600	30.2
Total	1,989	100.0

TYPE OF HOME DEVELOPMENT IN NORTHERN MICHIGAN STUDY AREA (Frequency and Percentage Distribution)

Prior research has indicated that the highest concentration of seasonal homes occurs in the Great Lakes region with Michigan ranking first in the nation in terms of numbers of seasonal homes (American Society of Planning Officials, 1976).

When individual counties are considered, as presented in Table 15, Otsego County has the largest percentage of property owners with no home development in the study area (40.8%). Otsego also has the smallest number of property owners with seasonal homes (28.9%). The percentage of seasonal home owners in Crawford and Kalkaska is much higher at 40.6% and 52.4% respectively. In terms of permanent home owners, there is not a lot of difference in the three counties, although Kalkaska has the lowest percentage, 27.3%.

Statistics presented at the bottom of Table 15, indicate a relationship exists between property owners of certain counties and type of home development. A Chi-square value of 111.36622, significant at the .05 probability level, implies property owners between counties differ in terms of type of home development. Other qualifying statistics, (Cramers V, Contingency Coefficient, Uncertainty Coefficient) indicate the relationship

Count Row Percentage Row Cumulative Percentage	Home No Home	Seasonal Home	Permanent Home	Row Total % of Total
County				
Crawford	68 24.5 24.5	113 40.6 65.1	97 34.9 100.0	278 14.0
Kalkaska	97 20.3 20.3	250 52.4 72.7	130 27.3 100.0	477 24.0
Otsego	503 40.8 40.8	357 28.9 69.7	373 30.3 100.0	1,233 62.0
Column Total % of Total	668 33.6	720 36.2	600 30.2	1,988 100.0

TYPE OF HOME DEVELOPMENT, BY COUNTY

between property owners of certain counties and types of home development is moderate. Statistics support the percentage differences, displayed in Table 15, therefore knowledge of type of home development will help predict county of property location.

When individual townships are considered, as presented in Table 16, the results differ widely with very little discernable pattern. All three townships surveyed in Kalkaska county have a low percentage of property owners with no home development and all three surveyed townships in Otsego county have a high percentage of property owners with no home development. However, when seasonal homes are considered, townships seem independent and are not related to their respective county. In Chester Township of Otsego County, 47.5% of the property

IYPE OF HOME DEVELOPMENT, BY TO	TOWNSHIP
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Count Row Percentage Row Cumulative Percentage	Home No Home	Seasonal Home	Permanent Home	Row Total % of Total
Township	- <u></u>			
South Branch	44 31.9 31.9	69 50.0 81.9	25 18.1 100.0	138 6.9
Grayling T27NR2W	11 32.4 32.4	10 29.4 61.8	13 38.2 100.0	34 1.7
Grayling T26NR4W	13 12.1 12.1	35 32.7 44.8	59 55.1 99.9	107 5.4
Orange	24 20.9 20.9	49 42.6 63.5	42 36.5 100.0	115 5.8
Blue Lake	60 21.7 21.7	158 57.0 78.7	59 21.3 100.0	277 13.9
Garfield	12 14.5 14.5	43 51.8 66.3	28 33.7 100.0	83 4.2
Bagley	419 39.9 39.9	294 28.0 67.9	337 32.1 100.0	1,050 52.8
Chester	48 47.5 47.5	48 47.5 95.0	5 5.0 100.0	101 5.1
Dover	37 44.0 44.0	15 17.9 61.9	32 38.1 100.0	84 4.2
Column Total % of Total	668 33.6	721 36.2	600 30.2	1,989 100.0

Chi-square = 211.14607 with 16 degrees of freedom .05 probability level Cramers V = .18731 Significant at

Uncertainty Coefficient (asymmetric) = .04963 with Home dependent = .03510 with Township dependent

owners own seasonal homes whereas in Dover township, another Otsego county township, only 17.9% of the property owners own seasonal homes. Also in Chester township, only 5.0% of the property owners have permanent homes compared to 38.1% for Dover township. Other townships with high percentages of seasonal home owners include Blue Lake 57.0% and Garfield 51.8% (Kalkaska county), and South Branch 50.0% (Crawford county). In terms of permanent home owners, both South Branch and Blue Lake have low levels (18.1% and 21.3%), respectively.

Statistics presented at the bottom of Table 16, indicate a relationship exists between property owners of certain townships and type of home development. A Chi-square value of 211.14607, significant at the .05 probability level, implies property owners between townships differ in terms of type of home development. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners of certain townships and type of home development is moderate. Statistics support percentage differences displayed in Table 16, therefore, knowledge of type of home development will help predict county of property location.

Seasonal Home Usage

As shown previously, seasonal home owners make up almost one-third of northern Michigan study area property owners. The economic impact seasonal home owners have on northern Michigan communities is directly related to the value of their property and the amount and length of visits to their seasonal home. The market value of the seasonal home is reflected in the assessed value of property owned, and therefore, property taxes which in turn have a direct economic impact on local schools and governments. A second direct monetary impact results from

purchases made in the area where the seasonal home is located. Indirect impacts also result as purchases make their way through the economy. Input-ouput models are designed to obtain estimates of indirect impacts (Isard and Langford, 1971). As seasonal home owners spend more time at their second home, they are more likely to spend larger amounts of money in that area. Food and gasoline are just two commodities that require frequent renewal. Therefore, it is theorized that the longer a seasonal home owner stays at his second home, the greater the direct and indirect monetary impacts there are.

The average length of stay per seasonal home owner per visit in the study area is 10.7 days. However, this figure is somewhat misleading as some seasonal home owners may stay up to six months, others just a day. A Skewness value of 5.283 and a Kurtosis value of 29.84 indicates that the curve is peaked and generally to the left of the mean indicating the average stay is usually less than 10.7 days. Indeed, this is the case as a median value of 3.39 and a mode of 3.0 indicates that the usual trip to the seasonal home consists of a weekend visit.

The average number of visits a seasonal home owner makes a year is 13.89 with summer being the time of heaviest use. An average of 27.27 days are spent at the seasonal home in the summer compared to 10.58 days in the fall, 8.58 in spring, and only 7.13 days in the winter. As shown in Table 17, the greatest economic impact occurs in the summer when seasonal home owners are more apt to use their second home and stay a longer length of time.

Results from this study contrast with some previous research. Marans and Wellman reported in a 1976 study of seasonal homeowners in northern Michigan an average length of stay during the summer of 60 days

NUMBER OF DAYS SPENT AT THE SEASONAL HOME, BY SEASON

	Mean	Mode	Median	Skewness	Kurtosis
Fall	10.58	10.0	7.238	4.428	16.321
Winter	7.13	0	3.55	2.578	9.752
Spring	8.58	0	5.95	3.493	18.247
Summer	27.27	30.0	19.915	1.323	.768
Annually	53.56	80) Mar			

Region of Present Residence

Michigan consists of 83 counties which are split into 14 different economic and planning regions. These regions plan not only for their permanent residents, but also for seasonal visitors. Seasonal visitors, especially those owning property, have the potential for becoming permanent residents. Therefore, local planners should know where their seasonal visitors call home. In addition, state agencies dealing with tourism, highway planning, and recreation also benefit when the origin of seasonal visitors is known.

Prior research (Marans and Wellman, 1978; American Society of Planning Officials, 1970) has found that large percentages of seasonal home owners have their primary residence in metropolitan areas. For Michigan this translates to the southeastern Michigan area, specifically Wayne, Oakland, and Macomb counties. Therefore, for this study, Region 15 was created which consists only of Wayne, Oakland, and Macomb counties. Also, a Region 16 was created consisting of only the study area counties – Otsego, Crawford, and Kalkaska. Regions 1, 9, and 10 totals, therefore, reflect the absence of removed counties. Regions 17, 18 and 19 were also created consisting of the state of Ohio, Florida, and other states, respectively. The 14 state economic and planning regions plus the newly created regions are listed in Appendix B. As expected, the majority of seasonal home owners, 52.0%, have their permanent residence in the metropolitan Detroit area, Region 15. A large percentage of the property owners with no home development in the study area also originate in Region 15, 55.6%. Region 1 which consists of the other counties surrounding Wayne, Oakland, and Macomb counties accounts for 6.0% of the property owners with no home in the study area. Therefore, the impact on the study areas seasonal economy is directly tied to the economy of southeastern Michigan.

The high aggregate level of property ownership by residents of southeastern Michigan is not unusual when comparing regional populations within the state. Over 45% of Michigan's population live in three counties (Wayne, Oakland, Macomb, Region 15 for this study). An additional 6.4% live in other counties (Region 1), which surround Wayne, Oakland, and Macomb counties (Michigan Statistical Abstract, 1979). It still seems as though more study area property owners live in southeastern Michigan than comparison by regional populations would indicate, however, this can be further explained by examining relative family median income levels. Higher incomes are generally found within the southeastern Michigan area than any other area within the state (Michigan Statistical Abstract, 1979). Therefore, more disposable income would make property ownership easier for southeastern Michigan residents.

One interesting statistic is that 7.7% of the permanent residents in the study area (Region 16), also own at least one additional piece of property in the area with no home development on their land. In addition, 3.5% of the permanent residents in the study area also own a seasonal home in the area. Ohio residents (Region 17), also have a share in study area property as they own 1.8% of the property with no home development and 3.5% of the seasonal homes in the study area. Ohio is followed closely by Florida residents (Region 18), who own 1.4% of the property with no home development and 1.9% of the seasonal homes. Residents in other states (Region 19) account for 9.4% of the property owners with no home development and 3.1% of the seasonal homes in the study area. A complete breakdown on ownership by region can be found in Table 18.

Statistics, presented at the bottom of Table 18, indicate a relationship exists between property owners with dissimilar types of home development and region of permanent residence. A Chi-square value of 67.69007 significant at the .05 probability level, implies property owners with dissimilar types of home development differ in terms of region of permanent residence. Other qualifying statistics (Cramers V, Uncertainty Coefficient), indicate the relationship between property owners with dissimilar types of home development and region of permanent residence is strong. These statistics support percentage differences displayed in Table 18, therefore, knowledge of property owners region of permanent residence will greatly help predict type of home development on the property owners land in the study area.

PLACE OF PERMANENT RESIDENCE OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS WITH SEASONAL HOME DEVELOPMENT OR NO HOME DEVELOPMENT

Count Row Percentage	CTYNOW	_				<u></u>					
Percentage	Reg. 1	Reg. 2	Reg. 3	Reg. 4	Reg. 5	Reg. 6	Reg. 7	Reg. 8	Reg. 9	Reg. 10	
Home		· · · · · · · · · · · · · · · · · · ·								-	
No Home	37	10	6	0	13	13	32	15	5	11	
	6.0	1.6	1.0	0	2.1	2.1	5.2	2.4	.8	1.8	
	6.0	7.6	8.6	8.6	10.7	12.8	18.0	20.4	21.2	23.0	
Seasonal Home	45	11	23	3	31	46	48	21	0	9	
	6.6	1.6	3.4	.4	4.5	6.7	7.0	3.1	0	1.3	
	6.6	8.2	11.6	12.0	16.5	23.2	30.2	33.3	33.3	34.6	
Column Total	82	21	29	3	44	59	80	36	5	20	
% of Total	6.3	1.6	2.2	.2	3.4	4.5	6.1	2.8	.4	1.5	
Statewide	581,300	273,000	473,000	227,000	577,000	398,000	740,000	699,000	87,400	174,800	
Population	6.4	3.0	5.2	2.5	6.4	4.4	8.2	7.7	1.0	1.9	
(1975)	6.4	9.4	14.6	17.1	23.5	27.9	36.1	43.8	44.8	46.7	

Count Row Percentage Row Cumulative Percentage	Reg. 11	Reg. 12	Reg. 13	Reg. 14	Reg. 15	Reg. 16	Reg. 17	Reg. 18	Reg. 19	Row Total % of Total
Home								*** • • • • • • • •		· · · · · · · · · · · · · · · · · · ·
No Home	0 0 23.0	0 0 23.0	4 .6 23.6	3 .5 24.1	345 55.6 79.7	48 7.7 87.4	11 1.8 89.2	9 1.4 90.6	58 9.4 100.0	620 47.6
Seasonal Home	2 .3 34.9	2 .3 35.2	0 0 35.2	5 .7 35.9	355 52.0 87.9	24 3.5 91.4	24 3.5 94.9	13 1.9 96.8	21 3.1 99.9	683 52.4
Column Total % of Total	2 .1	2 .1	4 .3	8 .6	700 53.7	72 5.5	35 2.7	22 1.7	79 6.1	1,303 100.0
Statewide Population (1975)	54,000 .6 47.3	176,000 1.9 49.2	93,000 1.0 50.2	318,000 3.5 53.7	4,158,700 45.9 99.6	29,800 .3 99.9	N/A	N/A	N/A	9,060,000 100.0

Source (Michigan Statistical Abstract)

Chi-square = 67.69067 with 13 degrees of Freedom Significant at .05 probability level.

Cramers V = .22784

Uncertainty Coefficient (asymmetric) = .04228 with Home dependent = .01660 with Region dependent

*Due to rounding, percentage totals may not add up to 100.

Region of Prior Residence

The preceding analysis placed strong emphasis on the potential for future settlement in the study area by seasonal visitors from the metropolitan Detroit area. Further analysis shows that a great deal of that potential is being realized. Table 19 shows that almost one-third (28.5%) of the permanent residents in the study area used to live in the metropolitan Detroit area. An additional 5.5% originally lived in Region 1, implying the influence of southeastern Michigan already plays an important role in decision making in the study area. This influence may show up by a demand for more public service. Prior research indicates rural residents, who relocated from a metropolitan area, are likely to demand an increasing level of public services. This is due in most part to the level of service provided residents of metropolitan areas and the desire to maintain that level even when relocating to rural areas (American Society of Planning Official, 1976). The next chapter will explore this trend in greater detail.

Somewhat surprising is that only 36.5% of the study areas permanent residents used to live in the study area prior to building a permanent home there. Therefore, almost two-thirds of the present permanent residents have migrated into the area. One reason for this in migration can be tied to the median age level of the study area residents. The high median age level shown in Table 2 indicates study areas permanent residents are near retirement age and thus, may not be dependent on the local economy for a job.

At the present time jobs are not abundant in northern Michigan. Scattered manufacturing and some industrial development provide little in terms of an economic base. Severe competition exists for the few jobs available and many would-be permanent residents have to find employment

REGION OF PRIOR PERMANENT RESIDENCE (Frequency and Percentage Distribution)

CTYBEF	DR	Frequency	Frequency Percentage	Cumulative Frequency Percentage
Region]	30	5.5	5.5
Region	2	7	1.3	6.8
Region	3	14	2.6	9.4
Region	4	3	.5	9.9
Region	5	16	2.9	12.8
Region	6	21	3.9	16.7
Region	7	30	5.5	22.2
Region	8	9	1.7	23.9
Region	9	10	1.8	25.7
Region	10	16	2.9	28.6
Region	11	2	.4	29.0
Region	12	0	0	29.0
Region	13	2	.4	29.4
Region	14	3	.5	29.9
Region	15	155	28.5	58.4
Region	16	198	36.5	94.9
Region	17	7	1.3	96.2
Region	18	0	0	96.2
Region	19	20	3.7	99.9
Total	·	543	100.0	

*Due to rounding, percentage totals may not add up to 100.0

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downstate in the more industrial counties (Galin, 1976). This trend is not viewed as abating in the near future.

Summary

This chapter explored the types of home development owned by northern Michigan study area property owners. In addition, usage of seasonal residence, prior location of residence for permanent home owners, and present place of residence for seasonal home owners and property owners with no home in the study area was also examined.

The analysis indicated that:

- There are slightly more seasonal homes in the study area than permanent homes. Kalkaska county has the highest percentage of seasonal home owners followed by Crawford and Otsego.
- The average length of stay, per visit, for seasonal home owners is 10.7 days with summer being the high use season.
 Fall was the second most popular season of use for seasonal home owners. Total use per year averaged 53.56 days.
- 3) A large percentage of seasonal home owners and property owners with no home development in the study area, 52.0% and 55.6%, respectively, have their permanent residence in the southeastern Michigan, metropolitan Detroit area.
- 4) Only slightly over one-third of the permanent residents in the study area lived in the area prior to locating their permanent residence there. Almost one-third of the study area's permanent residents previously lived in the southeastern Michigan, metropolitan Detroit area.

CHAPTER V

INITIAL PROPERTY PURCHASE

Acquiring the right to use property is usually not an easy undertaking. In the case of acquisition in fee simple, title searches are conducted, credit references scrutinized, mineral rights decided upon and so on. Leasing is no simple matter either, as anyone who has even read through a complete rental contract knows. Obtaining the right to use property is time consuming and costly, therefore, the rewards of ownership must offset costs incurred. In this section property owners are analyzed as to why and how they settled on a particular piece of land along with future intentions on selling their property.

Method of Acquisition

Generally it is assumed that almost all property is acquired through outright purchase, however, there are some exceptions. The most recognized has to do with inheritance, many parcels of land are handed down through generations. Another method of land acquisition is through leasing. Normally a lease is not thought of as acquisition of land, but in northern Michigan there is a unique type of lease arrangement that has many aspects of acquisition in fee simple. Consumers Power Company owns many acres, primarily along rivers, which it leases out on a long-term basis (some leases may run for 99 years). Holders of the leases can build on the land and have rights similar to other property owners, including payment of property taxes on the assessed value of the property.

Table 20 shows that in the study area, 91.1% of the property owners acquire their land through outright purchase. Inheritance

accounts for 6.3% of property acquisition and leasing only 1.2%. Even though only 1.4% of property acquisition is acquired through other means, some of the other methods of acquisition given are quite colorful such as, "won it in a poker game" or "crap shoot". When individual counties and townships are considered, no substantial changes occur from that displayed in Table 20.

Reason for Acquisition

As previously mentioned, acquisition of a piece of property requires not only a monetary investment but usually a large time investment. Therefore, there should be good reasons for land acquisition. An individual can probably think of fifteen different reasons for land acquisitions within a matter of minutes. Literature review enabled our survey to concentrate on the major reasons for property acquisition in northern Michigan. In a previous study, with Kalkaska county as the sample area, it was found that "Hunting and Fishing" was the major reason for property acquisition by 33.8% of the absentee landowners (who owned over 10 acres). This was followed closely by 30.1% who purchased the land as a retirement site (Vertrees, 1967). Other research identified major reasons for property acquisition as a means to get out of the city and escape urban problems (Galin, 1976). Investment was also considered an important reason for property acquisition (American Society of Planning Officials, 1976). Based on the results from previous research, the categories used in this study to delineate major reasons for property acquisition, were formulated.

As presented in Table 21, the largest percentage of property in the study area is acquired for an investment or retirement home (45.1%). Ideally investment and retirement homes should be two categories, but

	Frequency	Frequency Percentage	Frequency Cumulative Percentage
Acquire			
Purchased	1,818	91.1	91.1
Inherited	125	6.3	97.3
Leased	24	1.2	98.5
Other	28	1.4	100.0
Total	1,995	100.0	

NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS METHODS OF PROPERTY ACQUISITION

Table 21

MAJOR REASON FOR PROPERTY ACQUISITION (Frequency and Percentage Distribution)

			Frequency
	Frequency	Frequency Percentage	Cumulative Percentage
Reason			a 1990 - 1999 - Nordel State (States and States
Investment or Retirement Home	866	45.1	45.1
Get Out of City	283	14.8	59.9
Hunt and Fish	405	21.1	81.0
Inherited	97	5.1	86.1
Other	267	13.9	100.0
Total	1,918	100.0	

due to an error in the questionnaire, they became one. There was an attempt made to separate investment and retirement homes into two categories. Some respondents would cross out investment and leave retirement home, and vice-versa, as their major reason for buying property. When separate categories were set up, by counting the number of respondents who altered the category "Investment or Retirement Home", retirement homes accounted for 4.1% of property purchases and investment was the main reason for 2.7%. If these proportions were the same for all property owners selecting category "Investment and Retirement Home", then this category could be broken down into the following two categories; "Investment" 17.9% and "Retirement Home" 27.1%.

The recreational pursuit of hunting and fishing was the major reason for property purchase by 21.1% of the study areas property owners. Also, the category "Other" contained many responses for skiing as the major reason for property acquisition. The recreational potential in the study area then is probably a strong attraction for property acquisitions. In addition, 14.8% of the study area's property owners felt the need to get out of a city and into a more rural atmosphere was the major reason for initial property acquisition.

When individual counties are considered, many substantial differences are noted. As shown in Table 22, 40.8% of the property owners in Crawford county checked investment or retirement home as their major reason for property acquisition whereas in Otsego county 47.1% indicated investment or retirement home as the major reason. Also, in Kalkaska and Crawford counties the percentage of property owners who indicated hunting and fishing as their major reason (30.1% and 27.7%, respectively), was much higher than in Otsego county (16.2%). Correspondingly in Otsego,

	Reason					<u> </u>
Count Row Percentage Row Cumulative Percentage	Investment or Retirement Home	Get Out of City	Hunt and Fish	Inherited	Other	Row Total % of Total
County						
Crawford	109 40.8 40.8	39 14.6 55.4	74 27.7 83.1	13 4.9 88.0	32 12.0 100.0	267 13.9
Kalkaska	196 42.8 42.8	61 13.3 56.1	138 30.1 86.2	20 4.4 90.6	43 9.4 100.0	458 23.9
Otsego	561 47.1 47.1	182 15.3 62.4	193 16.2 78.6	64 5.4 84.0	192 16.1 100.1	1,192 62.2
Column Total % of Total	866 45.2	282 14.7	405 21.1	97 5.1	267 13.9	1,917 100.0

MAJOR REASON FOR PROPERTY ACQUISITION, BY COUNTY

Chi-square = 74.79379 with 8 degrees of freedom Significant at .05 level Cramers V = .11401 Uncertainty Coefficient (asymmetric) = .02111 with County dependent = .01185 with Reason dependent

*Due to rounding, percentage totals may not add up to 100.

more property owners indicated some other reason was responsible for property acquisition (16.1%) than in either Kalkaska or Crawford counties (9.4% and 12.0%, respectively). This may indicate that other recreation pursuits played a larger role in property acquisition for Otsego county than for Crawford or Kalkaska counties. There are more ski areas operating in Otsego county than in Crawford or Kalkaska combined.

Statistics, presented at the bottom of Table 22, indicate a relationship exists between property owners of certain counties and specific reasons for property acquisition. A Chi-square value of 74.79379, significant at the .05 probability level, implies property owners of certain counties differ in terms of major reasons for property acquisition. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners of certain counties and major reasons for property acquisition is moderate. These statistics support the percentage difference displayed in Table 22, therefore, knowledge of major reasons for property acquisition will help predict county of property location.

When individual townships are considered, empirical evidence, reported in table 23, shows some rather interesting results. Six out of the nine townships substantially exceed the overall percentage mean for property owners whose major reason for property acquisition was to have a place to hunt and fish.

In Chester township 42.5% of the property owners major reason for property acquisition was hunt or fish. In South Branch, the number was slightly smaller at 39.4%. Even in Orange township, which ranked sixth in percentage for the category, 28.6% of the property owners indicated that was their major reason for property acquisition. The influence of Bagley township, with its large number of respondents and only 13.5% of its property owners checking the "Hunt or Fish" category, tended to deflate the overall percentage distribution when compared to the other townships percentage distributions. Therefore, recreation pursuits as a major reason for initial property acquisition may be thought of as a potent force for development in many areas of northern Michigan.

Statistics, presented at the bottom of Table 23, indicate a relationship exists between property owners of certain townships and the major reason for property acquisition. A Chi-square value of 184.25446, significant at the .05 probability level, implies property owners of

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A 1997 A 1997	Reason		<u> </u>			
Count	Investment		11. mat			
Row Cumulative Percentage	or Retirement Home	Get Out of City	and Fish	Inherited	Other	Row Total % of Total
Township						
South Branch T25NR2W	44 33.3 33.3	17 12.9 46.2	52 39.4 85.6	7 5.3 90.9	12 9.1 100.0	132 6.9
Grayling T27NR2W	9 26.5 26.5	4 11.8 38.2	13 38.2 76.4	3 8.8 85.2	5 14.7 100.0	34 1.8
Grayling T26NR4W	56 54.9 54.9	19 18.6 73.5	9 8.8 82.3	3 2.9 85.2	15 14.7 99.9	102 5.3
Orange T26NR7W	48 42.9 42.9	12 10.7 53.6	32 28.6 82.2	6 5.4 87.6	14 12.5 100.0	112 6.8
Blue Lake T28NR5W	113 42.5 42.5	39 14.7 57.2	81 30.4 87.6	11 4.1 91.7	22 8.3 100.0	266 13.9
Garfield T25NR7W	34 43.6 43.6	10 12.8 56.4	24 30.8 87.2	3 3.8 91.0	7 9.0 100.0	78 4.1
Bagley T30NR3W	503 49.4 49.4	161 15.8 65.2	137 13.5 78.7	49 4.8 83.5	168 16.5 100.0	1,018 53.1
Chester T29NR2W	33 35.1 35.1	7 7.4 42.5	40 42.5 85.0	8 8.5 93.5	6 6.4 99.9	94 4.9
Dover T31NR2W	26 31.7 31.7	14 17.1 48.8	17 20.7 69.5	7 8.5 78.0	18 21.9 99.9	82 4.3
Column Total % of Total	886 45.1	283 14.7	405 21.1	97 5.1	267 13.9	1,918 100.0

Chi-square = 184.25446 with 32 degrees of freedom Significant at .05
 probability level.
Cramers V = .12653

Uncertainty Coefficient (asymmetric) = .03157 with Township dependent = .3097 with Reason dependent

*Due to rounding, percentage totals may not equal 100.

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certain townships differ in terms of major reason for property acquisition. Other qualifying statistics (Cramers V, Uncertainty Coefficient), indicate the relationship between property owners of certain townships and the major reason for property acquisition is moderate. Statistics support the percentage difference, displayed in Table 23, therefore, knowledge of major reason for property acquisition will help predict townships of property location.

When type of home development is considered, some very discernable trends are noted. As shown in Table 24, more land without homes were purchased as an investment or retirement home site (56.3%) than either property with permanent homes (44.6%) or seasonal homes (35.3%). Property owners with seasonal homes purchase the land for hunting and fishing (38.4%) much more than property owners with no home (17.2%) or permanent homes (5.7%). Property owners with permanent homes include a much higher percentage who purchase the property to get out of the city (25.6%), than property owners with no home in the study area (6.3%) or seasonal homes (13.3%).

Statistics, presented at the bottom of Table 24, indicate a relationship exists between property owners with dissimilar types of home development and major reasons for property acquisition. A Chi-square value of 462.36731, significant at the .05 probability level, implies property owners with dissimilar types of home development differ in terms of major reasons for property acquisition. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners with dissimilar types of home development and major reasons for property acquisition is strong.
MAJOR REASON FOR PROPERTY ACQUISITION BY TYPE OF HOME DEVELOPMENT

	Reason					
Count Row Percentage Row Cumulative Percentage	Investment or Retirement Home	Get Out of City	Hunt and Fish	Inherited	Other	Row Total % of Total
Home		·				
No Home	364 56.3 56.3	41 6.3 62.6	111 17.2 79.8	48 7.4 87.2	83 12.8 100.0	647 34.0
Seasonal Home	239 35.3 35.3	90 13.3 48.6	260 38.4 87.0	32 4.7 91.7	56 8.3 100.0	677 35.6
Permanent Home	258 44.6 44.6	148 25.6 70.2	33 5.7 75.9	15 2.6 78.5	125 21.7 100.1	579 30.4
Column Total % of Total	861 45.2	279 14.7	404 21.2	95 5.0	264 13.9	1,903 100.0

*Due to rounding, percentage totals may not equal 100.

Information Sources that Lead to Acquisition

The question of how property owners first learn of an available piece of land is important. Obviously if the perfect information assumption of neoclassical economics were valid, every prospective buyer would know of every available piece of property. However, perfect information does not exist thereby necessitating a market structure which allows buyers to contact realtors or read advertisements in newspapers/magazines to find out what is available. However, only 33.6%

of property owners in the study area first learned of their property through these sources (see Table 25). More important sources of information are relatives and friends who may know of available land parcels. The relative and friend information connection accounts for 45.9% of property acquired in the study area.

It is important to clear up some confusion concerning the category 'Other' since it accounts for 20.6% of initial information sources. Question A3 (see Appendix A) lists 'Other' and has a space for explanation. It should be noticed that there is no category 'Friends' in question A3. All responses for 'Friends' came from respondents who checked 'Other' and wrote in friend. Many respondents checked 'Other' but did not identify what that meant to them. Therefore, the total percentage of property owners who first learned about their property from friends and relatives likely is higher than what is actually recorded. This results in a conservative bias towards the category 'Friends'. Another response identified often in the 'Other' category was "just driving through the area." However, these responses were not numerous enough to justify creation of a new category.

Table 25

	Absolute Frequency	Frequency Percentage	Cumulative Frequency Percentage
Learn			
Newspapers and Magazines	174	8.9	8.9
Real Estate Salespersons	484	24.7	33.6
Relatives	535	27.3	60.9
Friends	364	18.6	79.5
Other	404	20.6	100.1
Total	1,961	100.1	

SOURCES OF INFORMATION THAT LEAD TO PROPERTY PURCHASES (Frequency and Percentage Distribution)

*Due to rounding, percentage totals may not equal 100.

When individual counties are considered, interesting trends begin to develop. As shown in Table 26, in Crawford county the relative and friend connection still accounts for a high proportion of first information concerning available property (44.6%) and differs little from the overall percentage distribution. The magazine/newspaper/real estate salesperson, connection increased to 38.4% in Crawford county, mostly at the expense of the category, 'Other'.

Table 26

SOURCES OF INFORMATION THAT LEAD TO PROPERTY PURCHASES, BY COUNTY

Count Row Percentage Row Cumulative Percentage	Newspaper or Magazine	Real Estate Salesperson	Relatives	Friends	Other	% of Total
County						<u></u>
Crawford	24 8.7 8.7	82 29.7 38.4	77 27.9 66.3	46 16.7 83.0	47 17.0 100.0	276 14.1
Kalkaska	36 7.6 7.6	54 11.4 19.0	157 33.2 52.2	115 24.3 76.5	111 23.5 100.0	473 24.1
Otsego	113 9.3 9.3	348 28.7 38.0	301 24.8 62.8	203 16.8 79.6	246 20.3 99.9	1,211 61.8
Column Total	173 8.8	484 24.7	535 27.3	364 18.6	404 20.6	1,960 100.0
Column Total Chi-square = 69 level.	9.3 9.3 173 8.8 .28935 with 8	28.7 38.0 484 24.7 3 degrees of	24.8 62.8 535 27.3 freedom Si	16.8 79.6 364 18.6 ignifican	20.3 99.9 404 20.6 t at .0	61. 1,960 100. 05 probab

= .01253 with Learn dependent

*Due to rounding, percentage totals may not equal 100.

In Kalkaska county, the relative and friend connection accounts for 57.5% of first information, substantially higher than the overall percentage distribution. The newspapers/magazines, and real estate salesperson connection declined to 19% for first information sources. Obviously, the relative and friend connection is much more important in learning of available property in Kalkaska county than traditional market information sources.

Statistics presented at the bottom of Table 26, indicate a relationship exists between property owners of certain counties and information sources of property availability. A Chi-square value of 69.28935, significant at the .05 probability level, implies property owners of certain counties differ in terms of information sources of property availability. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners of certain counties and information sources of property availability is weak. Statistics support the percentage differences, displayed in Table 26, however, due to the weak nature of the statistical relationship, knowledge of how a property owner learned of property availability will only slightly help predict the county where his property is located.

When individual townships are considered, the trends that surfaced in individual counties above (more reliance on friends and relatives for information) is further supported. It seems that all Kalkaska townships studied show a large number of property owners who first learned of their property through friends or relatives and a substantially smaller number who learned of their property through traditional market sources. Obviously the friends and relatives information connection is much more important in Kalkaska county than either Crawford or Otsego counties.

The only other substantial deviation from the overall percentage distribution was noted in Grayling T27NR2W township (Crawford county) where 55.8% of property owners first learned of their property through newspapers/magazines/real estate salespeople compared to only 29.4% who use the relative and friend connection.

Statistics, presented at the bottom of Table 27, indicate a relationship exists between property owners of certain townships and information sources of property availability. A Chi-square value of 109.37203, significant at the .05 probability level, implies property owners of certain townships differ in terms of information sources of property availability. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners of certain townships and information sources of property availability is moderate. Statistics support the percentage differences displayed in Table 27, therefore, knowledge of information sources of property availability will help predict township of property location.

When type of home development is considered, in Table 28, with respect to information sources leading to property acquisition, one sharp difference is noted. Property owners with a seasonal home relied more heavily on relatives and friends to find out about their property (52.6%), than either property owners with no home in the study area (44.1%) or permanent homes, (39.8%). Property owners with no home in the study area and permanent homes both relied more heavily on the traditional market sources (37.5% and 37.3%, respectively) to first learn of their property than did property owners with seasonal homes (26.3%). Results indicate, though, that the relative and friend connection is still the most important source for learning of available property no matter what type of home development.

SOURCES OF INFORMATION THAT LEAD TO PROPERTY PURCHASES BY TOWNSHIP

Count Row Percentage Row Cumulative Percentage	Learn Newspaper or Magazine	Salesperson	Relatives	Friends	Other	Row Total % of Total
Township						
South Branch T25NR2W	11 8.1 8.1	38 28.1 36.2	45 33.3 69.5	24 17.8 87.3	17 12.6 99.9	135 6.9
Grayling T27NR2W	8 23.5 23.5	11 32.3 55.8	6 17.6 73.4	4 11.8 85.2	5 14.7 99.9	34 1.7
Grayling T26NR4W	6 5.5 5.5	33 30.5 36.0	26 24.1 60.1	18 16.7 76.8	25 23.1 99.9	108 5.5
Orange T26NR7W	9 7.9 7.9	16 14.0 21.9	48 42.1 64.0	19 16.7 80.7	22 19.3 100.0	114 5.8
Blue Lake T28NR5W	23 8.3 8.3	29 10.5 18.8	81 29.2 48.0	72 26.0 74.0	72 26.0 100.0	277 14.1
Garfield T25NR7W	4 4.9 4.9	9 11.1 16.0	28 34.6 50.6	24 29.6 80.2	16 19.7 99.9	81 4.1
Bagley T30NR3W	97 9.4 9.4	305 29.5 38.9	245 23.7 62.6	172 16.6 79.2	216 20.9 100.1	1,035 52.8
Chester T29NR2W	12 12.6 12.6	23 24.2 36.8	29 30.5 67.3	16 16.8 84.1	15 15.8 99.9	95 4.8
Dover T31NR2W	4 4.9 4.9	20 24.4 29.3	27 32.9 62.2	15 18.3 80.5	16 19.5 100.0	82 4.2
Column Total % of Total	174 8.9	484 24.7	535 27.3	364 18.6	404 20.6	1,961 100.0

Chi-square = 109.37203 with 32 degrees of freedom Significant at .05 probability level. Cramers V = .11808Uncertainty Coefficient (asymmetric) = .01800 with Township dependent = .01860 with Learn dependent

*Due to rounding, percentage totals may not equal 100.

Count	Learn	₩				
Row Percentage Row Cumulative Percentage	Newspaper or Magazine	Real Estate Salesperson	Relatives	Friends	Other	Row Total % of Total
Home				 <u></u> .	<u></u>	
No Home	76 11.7 11.7	167 25.8 37.5	190 29.4 66.9	95 14.7 81.6	119 18.4 100.0	647 33.2
Seasonal Home	57 8.0 8.0	130 18.3 26.3	212 29.9 56.2	161 22.7 78.9	150 21.1 100.0	710 36.5
Permanent Home	40 6.8 6.8	180 30.5 37.3	130 22.0 59.3	105 17.8 77.1	136 23.0 100.1	591 30.3
Column Total	173 8.9	477 24.5	532 27.3	361 18.5	402 20.6	1,948 100.0

SOURCES OF INFORMATION THAT LEAD TO PROPERTY PURCHASES BY TYPE OF HOME DEVELOPMENT

*Due to rounding, percentage totals may not equal 100.

Statistics, presented at the bottom of Table 28, indicates a relationship exists between property owners with dissimilar types of home development and information sources of property availability. A Chi-square value of 59.29720, significant at the .05 probability level, implies property owners with dissimilar home developments differ in terms of information source of property availability. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners with dissimilar types of home development and information sources of property availability is weak. Statistics support the percentage differences,

displayed in Table 28. However, because of the weak nature of the relationship, knowledge of information sources of property availability will only slightly help predict type of home development on land in the study area.

Intent to Sell Property

Many property owners buy property with the intent to sell it in the near future. This is the nature of an investment. Also property goes up for sale when people get dissatisfied with it or a need arises to liquidate assets to pay other expenses. It comes as no surprise that 21.9% of northern Michigan study area property owners intend to sell all or part of their property in the near future (Table 29). What is somewhat surprising is that 24.8% of northern Michigan study area property owners are not sure whether they intend to sell. This makes the potential for future sales quite high.

Table 29

NORTHERN MICHIGAN STUDY AREA PROPERTY OWNER'S INTENTIONS CONCERNING FUTURE PROPERTY SALES (Frequency and Percentage Distribution)

	Frequency	Frequency Percentage	Cumulative Frequency Percentage
Sell	· · · ·		
Intend to Sell	419	21.9	21.9
Not Sure	473	24.8	46.7
Do Not Intend to Sell	1,017	53.3	100.0
Total	1,909	100.0	

When individual counties and townships are considered, there is little noticeable difference between each area and the overall percentage distribution presented in Table 29. Also, statistics indicate that any relationship that exists between area of property location and desire to sell is very weak. Therefore, each area (county or township) can be considered independent and its respective percentage distribution closely approximates the overall percentage distribution.

When type of home development is considered with desire to sell in Table 30, it is found that property owners with no type of home development on the land are more apt to sell than either seasonal or permanent home owners. Almost one-third (30.9%) of the property owners with no home on their land in the study area intend to sell their property with an additional 33.8% not sure whether they wish to sell. Only 16.5% of the seasonal home owners and 19.5% of the permanent home owners wish to sell their property. Indecision is lower on the part of the seasonal and permanent home owners as only 20.5% of property owners with a seasonal home and 20.0% of the property owners with a permanent home are not sure whether they intend to sell.

The results outlined here are similar to results found in a study conducted in Emmet and Cheyboygan counties of northern Michigan, (Marans and Wellman, 1978). In that study, 20% of the permanent home owners intended to sell their property and 10% of the seasonal home owners intended to sell. Results are similar enough to conclude that there is no difference between homeowners in Crawford, Kalkaska, and Otsego counties compared to homeowners in Emmet and Cheyboygan counties concerning desire to sell their property.

Statistics, presented at the bottom of Table 30, indicate a relationship exists between property owners with dissimilar types of home development

	Sell			
Row Percentage Row Cumulative Percentage	Intend To Sell Property	Do Not Intend to Sell Property	Not Sure	Row Total % of Total
Home		<u></u>		*****
No Home	198 30.9 30.9	226 35.3 66.2	217 33.8 100.0	641 33.7
Seasonal Home	115 16.5 16.5	439 63.0 79.5	143 20.5 100.0	697 36.6
Permanent Home	110 19.5 19.5	341 60.5 80.0	113 20.0 100.0	564 29.6
Column Total % of Total	423 22.2	1,006 52.9	473 24.9	1,902 100.0

TYPE OF HOME DEVELOPMENT BY DESIRE TO SELL PROPERTY

Spearmans_{Rs} = -.1845 Kendall Tau = -.1741

and intent to sell property. A Chi-square value of 128.65296, significant at the .05 probability level, implies property owners with dissimilar types of home development differ in terms of intent to sell property. Other qualifying statistics (Cramers V, Uncertainty Coefficient, Contingency Coefficient) indicate the relationship between property owners with dissimilar types of home development and intent to sell is moderate. Statistics, displayed in Table 30, indicate a moderate relationship exists between intent to sell property and type of home development on the land in the study area. Therefore, knowledge of intent to sell will help predict type of home development on the land in the study area. Additional statistics, Spearmans_{Rs} value of -.1845 and a Kendall Tau value of -.1741, indicate that as type of home development proceeds from no home to permanent home to seasonal home, the percentage of property owners intending to sell declines.

As previously ascertained, many property owners intend to sell their property in the near future but how soon is the near future? As presented in Table 31, the near future for 50.7% of those property owners who intend to sell is within a year. An additional 33.0% intend to sell within a 1-5 year period.

Table 31

YRSELL	Frequency	Frequency Percentage	Cumulative Frequency Percentage
Within a Year	186	50.7	50.7
1-5 Years	121	33.0	83.7
6-10 Years	42	11.4	95.1
Over 10 Years	18	4.9	100.0
Total	367	100.0	

PROPERTY OWNERS PLANS TO SELL PROPERTY (Frequency and Percentage Distribution)

When individual counties and townships are considered, little change is noted from the overall distribution, however, when type of home development is considered in Table 32, slightly more property owners with no home development in the study area (54.2%) intend to sell their property within a year than property owners with seasonal

				•	
Count	YRSELL				
Row Percentage Row Cumulative Percentage	Within a Year	1-5 Years	6-10 Years	Over 10 Years	Row Total % of Total
Home		·····			
No Home	90 54.2 54.2	52 31.3 85.5	14 8.4 93.9	10 6.0 99.9	166 45.9
Seasonal Home	42 44.7 44.7	33 35.1 79.8	15 16.0 95.8	4 4.2 100.0	94 26.0
Permanent Home	50 49.0 49.0	36 35.3 84.3	13 11.8 96.1	4 3.9 100.0	102 28.2
Column Total % of Total	182 50.3	121 33.4	41 11.3	18 5.0	362 100.0

PROPERTY OWNERS PLANS TO SELL PROPERTY BY TYPE OF HOME DEVELOPMENT

homes (44.7%) or property owners with permanent homes (49.0%). Property owners with seasonal or permanent homes exhibit a desire to hold onto their property a few more years before selling.

Statistics, presented at the bottom of Table 32, indicate a relationship does not exist between property owners with dissimilar types of home development and length of time before property is offered for sale. A Chi-square value of 8.33061, not significant at the .05 probability level, implies property owners with dissimilar types of home development do not differ in terms of length of time before property is offered for sale. Therefore, knowledge of length of time before a property owner wishes to sell his property will not help predict type of home development located on the land in the study area.

Summary

This chapter explored factors that influenced the initial property purchases of northern Michigan study area property owners. In addition, desire to sell presently owned property and the time frame relative to desire to sell were explored.

- Generally, property in the study area is acquired through outright purchase although 6.2% of present property owners inherited their property.
- 2) The major reason for property acquisition is for investment or a retirement home, however, recreational activities place high as reasons for acquisition.
- Seasonal home owners place greater emphasis on recreational opportunities for property acquisition than do permanent residents or property owners with no home development in the study area.
- 4) Friends and relatives are the most important sources of information leading to property purchases. Traditional market information sources (newspaper/magazine ads, and real estate salespersons) are more important for learning of available property for permanent homes than for seasonal

homes or property owners with no home in the study area. However, relatives and friends are still the most important source of information about available property in the study area.

- 5) Over one-fifth of northern Michigan study area property owners intend to sell their property in the future. Property owners with no home development on their land are more apt to sell their property than seasonal or permanent home owners.
- 6) Of the one-fifth who desire to sell their property, half desire to sell within one year and an additional one-third within 1-5 years.

CHAPTER IV

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS ON ISSUES OF CONCERN

The acquisition price of property in northern Michigan is directly affected by county or municipal decisions. The level of taxes, building restrictions, amount of services provided, etc. all play important roles in raising or lowering not only the price but the utility for an individual property to the owner. Perceived utility for a tract of land must exceed the acquisition price or an individual would not purchase the land given adequate income and no other more desirable purchase options. On the other hand, when utility diminishes to such an extent that is is below salvage price, then an individual will sell. Property tax levels impact directly on utility. Property tax levels also directly impact the level of municipal services which can be provided. Perceived quality of municipal services have an indirect influence on utility. This section will explore many pertinent issues that can affect an individual property's utility to the owner.

Property Tax Levels

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Recent property tax revolts have indicated an ever increasing resistance to rising taxes. Even though ballot proposals to reduce property taxes were defeated in Michigan in the 1976 general election, the fact that enough signatures were solicited to place the proposals on the ballot indicates that there is a feeling of resentment toward rising property taxes. This is quite evident for northern Michigan study area property owners because, as shown in Table 33, 65.4% thought property taxes were too high. In addition, 33.7% thought property taxes were about right, and only .9% thought property taxes too low. Prior

	Absolute	Frequency	Cumulative Frequency
PROPTAX	Frequency	Percentage	Percentage
High	1,267	65.4	65.4
About Right	652	33.7	99.1
Low	18	.9	100.0
Total	1,937	100.0	

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS TOWARD CURRENT PROPERTY TAX LEVELS (Frequency and Percentage Distribution)

research (Marans, Wellman, 1978) reported that two-thirds of northern Michigan property owners felt property taxes too high relative to services they supported. Results from this survey closely parallel those from Marans and Wellman. However, earlier research studies indicated generally only 15-20% of northern Michigan property owners felt property taxes too high. (Vertrees, 1967; McEwan, 1970). Obviously, resentment toward property tax levels has greatly increased in the last few years. Rising resentment probably parallels rising property tax levels during the time span between studies.

When individual counties are considered in Table 34, more property owners in Crawford and Kalkaska counties (75.1% and 81.1%, respectively) felt property taxes were too high than in Otsego county where only 56.9% of the property owners felt property taxes were too high. Also, 41.6% of the property owners in Otsego thought property taxes were just right. The property taxes in each of the counties, although somewhat different due to different school districts, were comparable. The assessed value per \$1,000 of valuation averaged about \$40.00.

Count	PROPTAX	unan anan 8 - 84 - 94 - ay na ayun kasaa	<u></u>	
Row Percentage Row Cumulative Percentage	High	About Right	Low	Row Total % of Total
COUNTY		······		
Crawford	208 75.1 75.1	69 24.9 100.0	0 0 100.0	277 14.3
Kalkaska	381 81.1 81.1	88 18.7 99.8	1 .2 100.0	470 24.3
Otsego	677 56.9 56.9	495 41.6 98.6	17 1.4 99.9	1,189 61.4
Column Total % of Total	1,266 65.4	652 33.7	18 .9	1,937 100.0

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS TOWARD CURRENT PROPERTY TAX LEVELS, BY COUNTY

*Due to rounding, percentage totals may not equal 100.

One explanation for the high percentages of property owners in Kalkaska county who felt property taxes were too high may be because of Michigan's tax equilization program. Basically, this is a program whereby the state assesses property values, in addition to the local assessor, so that they are commensurate among counties throughout the state. The state had just finished its tax equilization work in Kalkaska county at the time this study's questionnaires were being sent out. One effect of property tax equilization was to substantially increase the number of delinquent taxpayers. (County personnel in the tax assessor's office reported that delinquent property taxes were up 300% in the span of one year accounting for over 15% of all property owned). A second effect of the tax equilization program is that the sudden increase in taxes would tend to make property owners feel that property taxes were too high. Even without the effect of the tax equilization program, there was a great deal of resentment to current property tax levels in the northern Michigan study area. Crawford and Otsego counties both had substantial percentages of property owners who felt current property tax levels high.

Statistics, presented at the bottom of Table 34, indicate a relationship exists between property owners of certain counties and attitudes toward property tax levels. A Chi-square value of 103.42485, significant at the .05 probability level, implies property owners of certain counties differ in terms of attitudes toward property tax levels. Other qualifying statistics (Cramers V, Uncertainty, Coefficient, Contingency Coefficient) indicate the relationship between property owners of certain counties and attitudes toward property tax levels is moderate. Statistics support the percentage differences, displayed in Table 34, therefore knowledge of attitudes toward property tax levels will help predict county of property location.

When individual townships are considered, in Table 35, an interesting development occurs. All townships but one, Bagley, have a higher percentage of property owners who feel property taxes are higher than the overall percentage distribution. It should be remembered that because Bagley had such a high number of respondents that it can, and in this case did, affect the overall results. The townships ranged from a high of 87.6% of property owners in Garfield township who felt property taxes were

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS TOWARD CURRENT PROPERTY TAX LEVELS, BY TOWNSHIP

Count	PROPTAX		<u></u>	
Row Percentage Row Cumulative Percentage	High	About Right	Low	Row Total % of Total
Township				
South Branch T25NR2W	102 74.4 74.4	35 25.5 100.0	0 0 99.9	137 7.1
Grayling T27NR2W	24 70.6 70.6	10 29.4 100.0	0 0 100.0	34 , 1.7
Grayling T26NR4W	83 77.6 77.6	24 22.4 100.0	0 0 100.0	107 5.5
Orange T26NR7W	92 80.7 80.7	21 18.4 99.1	1 .9 100.0	114 5.9
Blue Lake T28NR5W	217 79.5 79.5	56 20.5 100.0	0 0 100.0	273 14.1
Garfield T25NR7W	71 87.6 87.6	10 12.3 100.0	0 0 99.9	81 4.2
Bagley T30NR3W	547 54.2 54.2	447 44.3 98 <i>.</i> 5	15 1.5 100.0	1,009 52.1
Chester T29NR2W	67 67.0 67.0	31 31.0 98.0	2 2.0 100.0	100 5.2
Dover T31NR2W	64 78.0 78.0	18 22.0 100.0	0 0 100.0	82 4.2
Column Total % of Total	1,267 65.4	652 33.7	18 .9	1,937 100.0

*Due to rounding, percentage totals may not equal 100.

high to a low of 54.2% in Bagley township.

The three townships of Kalkaska county all recorded large numbers of property owners who felt property taxes were too high. In fact, in terms of ranking, from highest to lowest, Kalkaska county townships were the top three.

Statistics, presented at the bottom of Table 35, indicate a relationship exists between property owners of certain townships and their attitudes toward property tax levels. A Chi-square value of 132.5531, significant at the .05 probability level, implies property owners of certain townships differ in terms of attitudes toward property tax levels. Other qualifying statistics, (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners of certain townships and attitudes toward property tax levels is moderate. Therefore, knowledge of attitude toward property tax levels will help predict townships of property location.

When type of home development is considered with attitudes toward property tax levels, a certain trend is noted. As type of home development progresses from no home in the study area to seasonal home to permanent home, the percentage of property owners who feel property taxes are high increases. As shown in Table 36, a total of 73.1% of the property owners with permanent homes view property taxes as too high compared to 69.9% for seasonal home owners and only 53.1% for property owners with no home development in the study area.

Statistics, displayed at the bottom of Table 36, indicate a relationship exists between property owners with dissimilar types of home development and attitudes toward property tax levels. A Chi-square value of 76.75619, significant at the .05 probability level, implies

Count Row Demonstrate	PROPTAX					
Row Cumulative Percentage	High	About Right	Low	Row Total % of Total		
Home						
No Home	332 53.1 53.1	278 44.5 97.6	15 2.4 100.0	625 32.5		
Seasonal Home	492 69.9 69.9	209 29.7 99.6	3 .4 100.0	704 36.7		
Permanent Home	432 73.1 73.1	159 26.9 100.0	0 0 100.0	591 30.8		
Column Total % of Total	1,256 65.4	646 33.6	18 .9	1,920 100.0		

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS TOWARD CURRENT PROPERTY TAX LEVELS, BY TYPE OF HOME DEVELOPMENT

property owners with dissimilar types of home development differ in terms of attitudes toward property tax levels. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners with dissimilar types of home development and attitudes towards property tax levels is moderate. This relationship is further supported by a Spearmans_{Rs} value of .1745 and a Kendall Tau value of .1638. In other words, as type of home development progresses from no home in the study area to a seasonal home to a permanent home, the number of property owners who feel property taxes are high increases.

Quality of Municipal and County Services

Related to property tax levels is the quality of municipal or county services provided. If property tax levels are perceived as high but quality of services is viewed as very good, then there may well be a balancing effect on total utility. On the other hand, if quality of services is perceived as poor and property taxes high, then there may very well be quite a lot of dissatisfied property owners who wish to sell. Overall, as shown in Table 37, there does not seem to be too much unhappiness with quality of services. Although only 4.5% of the property owners thought the quality of services very good compared to 10.3% who felt quality poor; in general, property owners seemed satisfied. Between the two attitude extremes, 24.3% of the property owners thought the quality of services provided was good and an additional 30.9% thought quality of services average compared to only 7.2% who felt quality was below average. Of great interest is the 22.7% of property owners who are not sure of the quality of services provided. This may reflect many non-resident property owners who occasionally visit the area and are not aware, or do not wish to take advantage of, the services provided.

Previous research indicated, in general, property owners were content with the quality of local public services (Marans and Wellman, 1978). Results for this study support previous research results.

When individual counties are considered, in Table 38, some deviations from the overall percentage distributions are noted. Crawford county approximates the overall percentage distribution best with only a slight increase in the percentage of property owners (30.4%) viewing

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS TOWARD QUALITY OF PROVIDED MUNICIPAL OR COUNTY SERVICES (Frequency and Percentage Distribution)

PROPTAX	Frequency	Frequency Percentage	Cumulative Frequency Percentage
Very Good	86	4.5	4.5
Good	464	24.3	28.8
Average	589	30.9	59.7
Below Average	138	7.2	66.9
Poor	197	10.3	77.2
Not Sure	434	22.7	99.9
Total	1,908	100.0	

*Due to rounding, percentage totals may not equal 100.

quality of services as being either very good or good. There is also a small increase in the percentage (20.8%) who view quality as either poor or below average. In Kalkaska county, there was generally greater unhappiness toward quality of services provided. Only 21.9% of property owners responded that quality of services was either good or very good while 25.9% responded that it was below average or poor. In Otsego county, property owners were generally satisfied with quality of services as 31.2% thought quality was good or very good while only 13.4% thought quality was below average or poor. In addition, 25.1% of property owners in Otsego county were not sure of the quality of services provided.

Statistics, presented at the bottom of Table 38, indicate a relationship exists between property owners of certain counties and their attitudes toward quality of municipal or county services provided. A

County Row Percentage Row Cumulative Percentage	QUALSE	QUALSERV							
	Very Good	Good	Average	Below Average	Poor	Sure	Row Total % of Total		
County							······································		
Crawford	12 4.4 4.4	71 26.0 30.4	89 32.6 63.0	20 7.3 70.3	37 13.5 83.8	44 16.1 99.9	273 14.3		
Kalkaska	16 3.5 3.5	85 18.4 21.9	145 31.4 53.3	51 11.0 64.3	69 14.9 79.2	96 20.8 100.0	462 24.2		
Otsego	58 4.9 4.9	308 26.3 31.2	355 30.3 61.5	67 5.7 67.2	90 7.7 74.9	294 25.1 100.0	1,172 61.5		
Column Total	86 4.5	464 24.3	589 30.9	138 7.2	196 10.3	434 22.7	1,907 100.0		

ATTITUDES OF NORTHER MICHIGAN STUDY AREA PROPERTY OWNERS TOWARD QUALITY OF MUNICIPAL OR COUNTY SERVICES PROVIDED, BY COUNTY

Chi-square = 61.65390 with 10 degrees of freedom Significant at .05
 probability level.
Cramers V = .10378

Uncertainty Coefficient (asymmetric) = .01616 with County dependent = .00930 with QUALSERV dependent

*Due to rounding, percentage totals may not equal 100.

Chi-square value of 61.6539, significant at the .05 probability level, implies property owners of certain counties differ in terms of attitudes toward quality of municipal or county services provided. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners of certain counties and attitudes toward quality of municipal or county services is weak. Statistics support the percentage differences, displayed in Table 38, however, due to the weak nature of the relationship, knowledge of attitude toward quality of municipal or county services provided will help little to predict county of property location. When considering individual townships, in Table 39, it is noted that Bagley township, once again, exerts a strong influence on the overall percentage distribution. Property owners in Bagley township recorded the lowest percentage (12.5%) of those who thought quality of service provided was below average or poor. This compares to Blue Lake township where 30.5% of the property owners felt quality of services provided was below average or poor. Bagley township also recorded the second highest percentage (31.9%) for property owners who felt quality of services provided was good or very good. South Branch township had the highest percentage (33.6%) of property owners who felt the quality of services provided was good or very good. Generally, the presence of Bagley township, and to a lesser extent, South Branch township, tended to inflate the overall percentage distribution in favor of the very good and good categories and deflate the overall percentage distribution in the below average and poor categories.

Statistics, presented at the bottom of Table 39, indicate a relationship exists between property owners of certain townships and attitudes toward quality of municipal or county services provided. South Branch, Bagley and Orange township property owners, in general, gave a higher quality rating toward municipal or county services provided than property owners in other townships. A Chi-square value of 110.5774, significant at the .05 probability level, implies property owners of certain townships differ in terms of attitudes toward quality of municipal or county services provided. Other qualifying statistics (Cramers V, Uncertainty Coefficient), indicate the relationship between property owners of certain townships and attitudes toward quality of municipal or county services provided is weak. Statistics support the percentage differences, displayed in Table 39. However, due to

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Count Row Percentage Row Cumulative	QUALS Very	ERV		Below		Not	Row Total
Percentage	Good	Good	Average	Average	Poor	Sure	% of Total
Township							
South Branch T25NR2W	8 6.0 6.0	37 27.6 33.6	41 30.6 64.2	5 3.7 67.9	15 11.2 79.1	28 20.9 100.0	134 7.0
Grayling T27NR2W	3 8.8 8.8	4 11.8 20.6	14 41.2 61.8	1 2.9 64.7	6 17.6 82.3	6 17.6 99.9	34 1.8
Grayling T26NR4W	1 .9 .9	30 28.3 29.2	34 32.1 61.3	14 13.2 74.5	17 16.0 90.5	10 9.4 99.9	106 5.6
Orange T26NR7W	6 5.3 5.3	21 18.6 23.9	44 38.9 62.8	5 4.4 67.2	13 11.5 78.7	24 21.2 99.9	113 5.9
Blue Lake T28NR5W	6 2.2 2.2	51 19.0 21.2	75 28.0 49.2	39 14.5 63.7	43 16.0 79.7	54 20.1 99.8	268 14.0
Garfield T25NR7W	4 5.1 5.1	12 15.2 20.3	26 32.9 53.2	7 8.9 62.1	12 15.2 77.3	18 22.8 100.0	79 4.1
Bagley T30NR3W	50 5.0 5.0	269 26.9 31.9	308 30.9 62.8	55 5.5 68.3	70 7.0 75.3	246 24.6 99.9	998 52.3
Chester T29NR2W	2 2.1 2.1	24 24.7 26.8	24 24.7 51.5	4 4.1 55.6	11 11.3 66.9	32 33.0 99.9	97 5.1
Dover T31NR2W	6 7.6 7.6	16 20.2 27.8	23 29.1 56.9	8 10.1 67.0	10 12.7 79.7	16 20.2 99.9	79 4.1
Column Total % of Total	86 4.5	464 24.3	589 30.9	138 7.2	197 10.3	434 22.7	1,908 100.0

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS TOWARD QUALITY OF MUNICIPAL OR COUNTY SERVICES PROVIDED, BY TOWNSHIP

Chi-square = 110.5774 with 40 degrees of freedom Significant at .05
probability level.
Cramers V = .10766
Uncentainty Coefficient (acummetric) = .01786 with Township dependent

Uncertainty Coefficient (asymmetric) = .01786 with Township dependent = .01795 with QUALSERV dependent

*Due to rounding, percentage totals may not equal 100.

the weak nature of the relationship knowledge of attitude toward quality of municipal or county service provided will help little to predict townships of property location.

When type of home development is considered in Table 40, results are quite interesting. There is a definite difference in the number of property owners satisfied with quality of services provided when each type of home development is compared. Permanent homeowners were generally satisfied with the quality of services provided as evidenced by the 36.4% who felt quality of services was good or very good. Surprisingly, permanent home owners also recorded the highest percentage (19.6%), who thought quality of services was below average or poor. At the same time, then, permanent home owners had a substantial number satisfied with quality of services provided and a substantial number dissatisfied. The reason for this interesting result probably has to do with uncertainty. Only 4.8% of the permanent home owners were not sure how they felt about quality of services provided compared to 45.4% of the property owners with no home in the study area. Obviously then, people who live in an area year round are much more aware of the services provided, and their quality, than are property owners with no home development on the land. Property owners with no home development in the study area recorded the lowest percentage (23.2%) who felt quality of services provided was good or very good, and also the lowest percentage (9.4%) who thought quality was below average or poor. Although property taxes were viewed as high by all property owners, regardless of type of home development, quality of services were generally viewed as good indicating that overall utility may be balanced.

Ignorance of a community's structure and policies is not a new phenomenon for property owners with undeveloped land or seasonal homes.

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS ' TOWARD QUALITY OF MUNICIPAL AND COUNTY SERVICES PROVIDED, BY TYPE OF HOME DEVELOPMENT

Count Row Percentage	QUALSERV							
Row Cumulative Percentage	Very Good	Good	Average	Below Average	Poor	Not Sure	Row Total % of Total	
Home		<u></u>			<u> </u>			
No Home	23 3.7 3.7	120 19.5 23.2	135 21.9 45.1	24 3.9 49.0	34 5.5 54.5	280 45.4 99.9	616 32.5	
Seasonal Home	30 4.3 4.3	160 23.1 27.4	221 31.9 59.3	59 8.5 67.8	98 14.1 81.9	125 18.0 99.9	693 36.6	
Permanent Home	33 5.6 5.6	180 30.8 36.4	228 39.0 75.4	54 9.2 84.6	61 10.4 95.0	28 4.8 99.8	584 30.8	
Column Total % of Total	86 4.5	460 24.3	584 30.8	137 7.2	193 10.2	433 22.9	1,893 100.0	

*Due to rounding, percentage totals may not equal 100.0.

Previous research revealed no opinion responses or non response were high among property owners when asked their opinion about local community services. There seems to exist a high degree of uncertainty toward county functions among property owners with undeveloped land and seasonal home owners in northern Michigan (Vertrees, 1967; McEwan, 1970). Uncertainty and confusion about community services were viewed as such a problem, a recommendation to communicate with absentee landowners through the mail was proposed (McEwan, 1970). As far as this researcher knows, the proposed recommendation was never implemented and confusion and

uncertainty levels remain high among property owners with no home development on their land and seasonal home owners in the study area.

Statistics, presented at the bottom of Table 40, indicate a relationship exists between property owners with dissimilar type of home development and attitudes toward quality of municipal or county services provided. A Chi-square value of 321.30754, significant at the .05 probability level, implies property owners with dissimilar types of home development differs in terms of attitudes toward quality of municipal or county services provided. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners with dissimilar types of home development and attitudes toward quality of municipal or county services provided is strong. Statistics support the percentage differences displayed in Table 40, therefore, knowledge of attitudes toward quality of county services provided will greatly help predict property owners type of home development.

Quantity of Municipal and County Services

Related very closely with quality of municipal and county services is the quantity of services provided. Sometimes quantity and quality can be confused, therefore, the questionnaire was designed to try and alleviate that problem. Overall, property owners seem satisfied with the current level of services provided. However, one important characteristic is noted. As shown in Table 41, a third (33.5%) of the property owners were not sure how they felt about the current level of services provided. This indecision may be caused by the lack of information about what services are available. This problem may not be as great in urban areas where the presence of police, health, fire, bus services, etc. is well recognized. However, in rural areas, even a few property

	Absolute Frequency	Frequency Percentage	Cumulative Frequency Percentage
QUANSERV		Ŭ	
Could Use a Lot More	118	6.2	6.2
Could Use Some More	302	16.0	22.2
About Right	649	34.3	56.5
Don't Need so Many	136	7.2	63.7
Would Like to see a Lot Less	53	2.8	66.5
Not Sure	634	33.5	100.0
Total	1,892	100.0	

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS TOWARD THE QUANTITY OF MUNICIPAL AND COUNTY SERVICES PROVIDED (Frequency and Percentage Distribution)

owners with permanent residency may not be aware of some services that are provided. Whatever the reason for the lack of information, it spills over into the category 'Not Sure' and flags a potential problem. Of those property owners who had a feeling towards the quantity of services provided, 22.2% felt that at least some more should be provided and 10% felt less services would be desirable. The remaining 34.3% of property owners responding felt the level of services provided was about right (Table 41).

When individual counties are considered in Table 42, results differ very little from the overall percentages distribution. The only difference among the counties is that fewer property owners in Otsego county favor more services to be provided than either Crawford or Kalkaska. Only 19.8% of property owners in Otsego would like to see some more services provided compared to 25.7% for Crawford and 26% for Kalkaska.

Count	QUANSERV				antenna in an an an an an an Air, anns an Air		<u></u> .
Row Percentage Row Cumulative Percentage	Could Use a Lot More	Could Use Some More	About Right	Don't Need So Many	Like to See a Lot Less	Not Sure	Row Total % of Total
County		· · · · · · · · · · · · · · · · · · ·		<u>,</u>	<u></u>		,
Crawford	26 9.7 9.7	43 16.0 25.7	98 36.6 62.3	21 7.8 70.1	10 3.7 73.8	70 26.1 99.9	268 14.2
Kalkaska	41 8.8 8.8	80 17.2 26.0	146 31.5 57.5	27 5.8 63.3	12 2.6 65.9	158 34.0 99.9	464 24.5
Otsego	51 4.4 4.4	179 15.4 19.8	405 34.9 54.7	88 7.6 62.3	30 2.6 64.9	406 35.0 99.9	1,159 61.3
Column Total % of Total	118 6.2	302 16.0	649 34.3	136 7.2	52 2.8	634 33.5	1,891 100.0

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS TOWARD QUANTITY OF MUNICIPAL AND COUNTY SERVICES PROVIDED, BY COUNTY

Chi-square = 61.38107 with 10 degrees of freedom Significant at .05 probability level Cramers V = .10399 Uncertainty Coefficient (asymmetric) = .00959 with County dependent = .07484 with QUANSERV dependent

*Due to rounding, percentage totals may not equal 100.

Statistics, presented at the bottom of Table 42 indicate a relationship exists between property owners of certain counties and attitudes toward quantity of municipal and county services provided. Crawford county property owners, in general, desired more county or municipal services than did Otsego or Kalkaska property owners. A Chi-square value of 61.38107, significant at the .05 probability level, implies property owners of certain counties differ in terms of attitudes toward quantity of municipal or county services provided. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicates the relationship between property owners of certain counties and attitudes toward quantity of municipal or county services provided is weak. Statistics support the percentage differences, displayed in Table 42, however, due to the weak nature of the relationship knowledge of attitude toward quantity of municipal or county services provided will help little to predict county of property location.

When individual townships are considered in Table 43, many differences are noted. In Grayling T27NR2W township only 9.4% of the property owners would like to see at least some more services provided and 21.8% would like to see less. This same feeling is prevalent in Dover township where only 14.1% of the property owners wanted more services and 20.5% wanted less. Uncertainty levels were also high in all townships except for Grayling T26NR4W where only 13.6% of the property owners were not sure how they felt about the quantity of municipal and county services provided. In contrast to Grayling T26NR4W township, the next lowest level of uncertainty was recorded in Garfield township where 31.6% of the property owners were not sure how they felt about the quantity of municipal and county services provided.

Statistics presented at the bottom of Table 43 indicate a relationship exists between property owners of certain townships and attitudes toward quantity of municipal or county services provided. Grayling T26NR4W township property owners, in particular, would like to see more municipal and county services provided. A Chi-square value of 90.33334, significant at the .05 probability level, implies property owners of certain townships differ in terms of attitude toward quantity of municipal or county service provided. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners of certain townships and attitudes toward quantity of

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS TOWARD THE QUANTITY OF MUNICIPAL AND COUNTY SERVICES PROVIDED, BY TOWNSHIP

Count	QUANSERV	<u> </u>					
Row Percentage Row Cumulative Percentage	Could Use a Lot More	Could Use Some More	About Right	Don't Need So Many	Like to see a Lot Less	Not Sure	Row Total % of Total
Township							
South Branch T25NR2W	13 9.7 9.7	15 11.2 20.9	46 34.3 55.2	11 8.2 63.4	4 3.0 66.4	45 33.6 100.0	134 7.1
Grayling T27NR2W	0 0 0	3 9.4 9.4	11 34.4 43.8	2 6.2 50.0	5 15.6 65.6	11 34.4 100.0	32 1.7
Grayling T26NR4W	13 12.6 12.6	25 24.3 36.9	41 39.8 76.7	8 7.8 84.5	2 1.9 86.4	14 13.6 100.0	103 5.4
Orange T26NR7W	5 4.4 4.4	19 16.7 21.1	42 36.8 57.9	6 5.3 63.2	1 .9 64.1	41 36.0 100.1	114 6.0
Blue Lake T28NR5W	26 9.6 9.6	49 18.0 27.6	79 29.0 56.6	16 5.9 62.5	9 3.3 65.8	93 34.2 100.0	272 14.4
Garfield T25NR7W	10 13.2 13.2	10 13.2 26.4	25 32.9 59.3	5 6.6 65.9	2 2.6 68.5	24 31.6 100.1	76 4.0
Bagley T30NR3W	41 4.2 4.2	159 16.1 20.3	349 35.4 55.7	70 7.1 62.8	23 2.3 65.1	344 34.9 100.0	986 52.1
Chester T29NR2W	7 7.2 7.2	14 14.4 21.6	30 30.9 52.5	6 6.2 58.7	3 3.1 61.8	37 38.1 99.9	97 5.1
Dover T31NR2W	3 3.8 3.8	8 10.3 14.1	26 33.3 47.4	12 15.4 62.8	4 5.1 67.9	25 32.0 99.9	78 4.1
Column Total % of Total	118 6.2	302 16.0	649 34.3	136 7.2	53 2.8	634 33.5	1,892 100.0

Chi-square = 90.33334 with 40 degrees of freedom Significant at .05 probability level. Cramers V = .09772Uncertainty Coefficient (asymmetric) = .01338 with Township dependent = .01689 with QUANSERV dependent

*Due to rounding, percentage totals may not equal 100.

municipal or county services provided is weak. Statistics support the percentage differences displayed in Table 43. However, because of the weak relationship, knowledge of attitude toward quantity of municipal or county services provided will help little to predict township of property location.

When type of home development is considered in Table 44, results indicate the longer a property owner is in the study area the more services will be requested. Permanent home owners exhibit the highest percentage of property owners desiring at least a few more services to be provided (30.0%) and property owners with no home in the study area have the lowest percentage desiring at least a few more services (12.0%). In terms of uncertainty, property owners with no home in the study area had the highest percentage (55.7%), and permanent home owners had the lowest percent (13.9%) who were not sure about the quantity of municipal and county services provided. Obviously, permanent home owners would stand to benefit most by increased services and property owners with no home in the study area would probably benefit least. In addition, property owners with no home probably are least aware of the current level of services provided.

Statistics, presented at the bottom of Table 44, indicate a relationship exists between property owners with dissimilar types of home development and attitude toward quantity of municipal or county services provided. A Chi-square value of 258.43889, significant at the .05 probability level, implies property owners with dissimilar types of home development differ in terms of attitudes toward quantity of municipal or county services provided. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners with dissimilar types of home development and attitudes toward

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS TOWARD THE QUANTITY OF MUNICIPAL AND COUNTY SERVICES PROVIDED, BY TYPE OF HOME DEVELOPMENT

Count	QUANSERV		······································	<u></u>	<u></u>		
Row Percentage Row Cumulative Percentage	Could Use a Lot More	Could Use Some More	About Right	Don't Need So Many	Like to See a Lot Less	Not Sure	Row Total % of Total
Home							
No Home	15 2.5 2.5	58 9.5 12.0	160 26.3 38.3	24 3.9 42.2	13 2.1 44.3	339 55.7 100.0	609 32.4
Seasonal Home	58 8.4 8.4	113 16.3 24.7	249 36.0 60.7	45 6.4 67.2	16 2.3 69.5	211 30.5 100.0	692 36.9
Permanent Home	45 7.8 7.8	128 22.2 30.0	234 40.5 70.5	66 11.4 81.9	24 4.2 86.1	80 13.9 100.0	577 30.7
Column Total % of Total	118 6.3	299 15.9	643 34.2	135 7.2	53 2.8	630 33.5	1,878 100.0

Chi-square = 258.43889 with 10 degrees of freedom Significant at .05
 probability level
Cramers V = .21338

Uncertainty Coefficient (asymmetric) = .06268 with Home dependent = .04763 with QUANSERV dependent

quantity of municipal or county services provided is strong. The relationships between certain types of home development and property owners attitudes toward the quantity of municipal and county services provided, as discussed above, is strongly supported by statistical tests. Statistics support the percentage differences, displayed in Table 44, therefore, knowledge of attitude toward quantity of municipal or county services provided will greatly help predict type of home development located on the land in the study area.

Because results for quantity of services provided wity type of home development were so similar to results for quality of services provided with type of home development, a test for a correlation was performed between quantity of services provided and quality of services provided. A Spearmans_{Rs} value of .3749 and a Kendall Tau value of .2873 indicate a strong positive correlation. This indicates that property owners who thought the quality of services provided was good also were generally the same ones who desired more services to be provided. Also, the same property owners who were uncertain about the quality of services provided were uncertain about the quantity provided.

Building Regulations

Regulations are of concern to almost every property owner. Zoning regulations, in particular, directly affect the value of property. It is usually assumed that someone purchasing a piece of property finds out what he can or cannot do in terms of development. However, this assumption is invalid. Not everyone enters into a land transaction with complete knowledge of zoning and other development regulations. Even if the regulations are known at the time of purchase, they may change without the property owner being aware. In the northern Michigan study area, over one third (35.4%) of the property owners either are not aware of regulations concerning development or are not sure (Table 45).

When individual counties are considered, empirical and statistical evidence indicates that there is little if any deviation from the overall percentage distribution reported in Table 45. The percentage of property owners in each county, who are aware/not aware of building regulations, is approximately the same. When individual townships are considered in Table 46, one very interesting trend is noted. In terms of the percentage distributions of property owners who are aware of development regulations, three of the top four are townships considered lake resource
NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS AWARENESS OF REGULATIONS CONCERNING LAND DEVELOPMENT (Frequency and Percentage Distribution)

	Frequency	Frequency Percentage	Cumulative Frequency Percentage
Zoning			
Aware of Building, Zoning, Development Regulations	1,273	64.5	64.5
Not Sure of Building, Zoning, Development Regulations	290	14.7	79.2
Not Aware of Building, Zoning, Development Regulations	409	20.7	99.9
Total	1,972	99.9	

*Due to rounding, percentage total does not equal 100.

based for the stratified random sample. Grayling T26NR4W (77.1%), Blue Lake (70.5%), and Bagley (65.4%). All these townships are above the overall percentage figure (64.5%) for property owners who are aware of building regulations. Grayling T27NR2W township, with 75.0% of property owners aware of building regulations was the only other township to exceed the overall percentage figure. This connection between lake resource based townships and awareness of building regulations may be only coincidental because a correlation coefficient (Kendall Tau = .0600) does not support this theory.

Statistics, presented at the bottom of Table 46, indicate a relationship exists between property owners of certain townships and awareness of regulations concerning land development. A Chi-square value of 41.07012, significant at the .05 probability level, implies

Count Row Percentage Row Cumulative Percentage	Aware of Building, Zoning, Development Regulations	Not Sure of Building, Zoning, Development Regulations	Not Aware of Building, Zoning, Development Regulations	Row Total % of Total
Township				
South Branch T25NR2W	84 60.4 60.4	19 13.7 74.1	36 25.9 100.0	139 7.0
Grayling T27NR2W	24 75.0 75.0	1 3.1 78.1	7 21.9 100.0	32 1.6
Grayling T26NR4W	84 77.1 77.1	9 8.3 85.4	16 14.7 100.1	109 5.5
Orange T26NR7W	67 58.3 58.3	19 16.5 74.8	29 25.2 100.0	115 5.8
Blue Lake T28NR5W	196 70.5 70.5	40 14.4 84.9	42 15.1 100.0	278 14.1
Garfield T25NR7W	40 50.0 50.0	16 20.0 70.0	24 30.0 100.0	80 4.1
Bagley T30NR3W	678 65.4 65.4	158 15.2 80.6	200 19.3 99.9	1,036 52.5
Chester T29NR2W	53 53.0 53.0	15 15.0 68.0	32 32.0 100.0	100 5.1
Dover T31NR2W	47 56.6 56.6	13 15.7 72.3	23 27.7 100.0	83 4.2
Column Total % of Total	1,273 64.5	290 14.7	409 20.7	1,972 100.0

NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS AWARENESS OF BUILDING REGULATIONS CONCERNING LAND DEVELOPMENT, BY TOWNSHIP

Table 46

Chi-square = 41.07012 with 16 degrees of freedom Significant at .05
probability level.
Cramers V = .10205

Uncertainty Coefficient (asymmetric) = .00664 with Township dependent = .01199 with Zoning dependent

*Due to rounding, percentage totals may not equal 100.

property owners of certain townships differ in terms of awareness of regulations concerning land development. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners of certain townships and awareness of regulations concerning land development is weak. Statistics support the percentage differences, displayed in Table 46. However, because of the weak relationship, knowledge of level of awareness about regulations concerning land development will help little to predict township of property location.

When type of home development is considered in Table 47, a strong relationship is found to exist. As expected with increasing level of home development (no home --- seasonal --- permanent) more property owners become aware of regulations concerning development. A total of 79.8% of permanent home owners are aware of land development regulations compared to only 47.5% of the property owners with no home in the study However, the percentage of property owners lacking complete area. information concerning land development regulations is disturbingly high for all types of home development. For property owners with no home in the study area, a total of 52.5% are not aware or are not sure of land development regulations. This figure falls to 33.0% for seasonal home owners and drops to 20.2% for permanent home owners. Restrictive land development regulations may not be as crucial for permanent or seasonal home owners, as they already have a structure on the land. However, for property owners with no home, restrictive land development regulations may severely deflate property value. Entering into a property transaction without knowledge of the regulations concerning future site development is risky at best.

NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS AWARENESS OF BUILDING REGULATIONS CONCERNING LAND DEVELOPMENT, BY TYPE OF HOME DEVELOPMENT

	Zoning			
Count Row Percentage Row Cumulative Percentage	Aware of Bldg., Zoning Development Regulations	Not Sure of Bldg., Zoning Development Regulations	Not Aware of Bldg., Zoning, Development Regulations	Row Total % of Total
Home				
No Home	308 47.5 47.5	122 18.8 66.3	219 33.7 100.0	649 33.2
Seasonal Home	478 67.0 67.0	109 15.3 82.3	126 17.7 100.0	713 36.4
Permanent Home	474 79.8 79.8	58 9.8 89.6	62 10.4 100.0	594 30.4
Column Total % of Total	1,260 64.4	289 14.8	407 20.8	1,956 100.0

Chi-square = 157.41261 with 4 degrees of freedom Significant at .05 probability level Cramers V = .19978 Contingency Coefficient = .27189 Uncertainty Coefficient (asymmetric) = .03541 with Home Development dependent = .04509 with Zoning dependent

Spearmans_{Rs} = .2821 Kendall Tau = .2660

Statistics presented at the bottom of Table 47, indicate a relationship exists between property owners with dissimilar types of home development and awareness of building regulations concerning land development. A Chi-square value of 157.41261, significant at the .05 probability level, implies property owners with dissimilar types of home development differ in terms of awareness of building regulations concerning land development. Other gualifying statistics (Cramers V, Contingency

Coefficient, Uncertainty Coefficient) indicate the relationship between property owners with dissimilar types of home development and awareness of building regulations concerning land development is strong. This strong relationship is further supported by a Spearmans_{Rs} value of .2821 and a Kendall Tau value of .2660 indicating as level of home development progresses from none to a seasonal home to a permanent home, knowledge of building regulations increases.

Statistics support the percentage differences displayed in Table 47, therefore, knowledge of a property owners awareness about building regulations concerning land development greatly help to predict type of home development the property owner has on the land in the study area.

One interesting relationship occurs between awareness of land development regulations and propensity to sell as evidenced by a Kendall Tau value of .1067 and a Spearmans_{Rs} value of .1172. This indicates that property owners who intend to sell their land are somewhat more aware of regulations concerning development than are property owners who have no intent to sell.

Land Use Regulations

In the past few years, the Michigan legislature has tried numerous times to pass land use legislation. Usually each attempt has met with failure. Some land use legislation opponents have taken the stance that there are already too many controls restricting individual freedom. It was surprising, therefore, that when northern Michigan study area property owners were asked how they felt about land use controls that only 16.8% said they would like to see fewer controls (See Table 48). On the other hand, 24.2% would like to see stricter controls and 33.6% feel present controls are adequate.

	Absolute Frequency	Frequency Percentage	Cumulative Frequency Percentage
LANDREG			<u>,, , , , , , , , , , , , , , , , , , ,</u>
Favor Stricter Land Use Controls	467	24.2	24.2
Present Land Use Controls are Adequate	648	33.6	57.8
Favor Lessening of Present Land Use Controls	201	10.4	68.2
Against all Land Use Controls	123	6.4	74.6
Not Sure	489	25.4	100.0
Total	1,928	100.0	

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS CONCERNING PRESENT LAND USE CONTROLS (Frequency and Percentage Distribution)

Once again, the portion of property owners lacking sufficient information to make a judgment was quite high as 25.4% were not sure how they felt about land use controls.

When considering individual counties, empirical and statistical evidence indicates that there is no noticeable deviation from the overall percentage distributions. Therefore, no evidence exists to establish a relationship between individual counties and attitudes toward land use controls.

When individual townships are considered in Table 49, some deviation from the overall percentage distribution are noted. In Dover township, only 12.3% of the property owners favored stricter land use controls and 40.7% were in favor of a few less controls. This contrasted sharply with Blue Lake township, where 29.8% of the property owners desired more land use controls and 12.3% favored at least a few less. Chester and Grayling

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS CONCERNING PRESENT LAND USE CONTROLS, BY TOWNSHIP

•	LANDREG	Drocont	Favor			Na - Li
Count Row Percentage Row Cumulative Percentage	Favor Stricter Land Use Controls	Land Use Controls are Adequate	of Present Land Use Controls	Against All Land Use Controls	Not Sure	Row Total % of Total
Township	<u> </u>					
South Branch T27NR2W	35 25.5 25.5	38 27.7 53.2	13 9.5 62.7	5 3.6 66.3	46 33.6 99.9	137 7.1
Grayling T27NR2W	6 17.6 17.6	8 23.5 41.1	6 17.6 58.7	6 17.6 76.3	8 23.5 99.8	34 1.8
Grayling T26NR4W	29 27.6 27.6	39 37.1 64.7	13 12.4 77.1	7 6.7 83.8	17 16.2 100.0	105 5.4
Orange T26NR7W	20 17.5 17.5	32 28.1 45.6	13 11.4 57.0	13 11.4 68.4	36 31.6 100.0	114 5.9
Blue Lake T28NR5W	82 29.8 29.8	97 35.3 65.1	19 6.9 72.0	15 5.4 77.4	62 22.5 99.9	275 14.3
Garfield T25NR7W	16 20.2 20.2	20 25.3 45.5	5 6.3 51.8	8 10.1 61.9	30 38.0 99.9	79 4.1
Bagley T30NR3W	240 23.9 23.9	367 36.5 60.4	106 10.5 70.9	49 4.9 75.8	243 24.2 100.0	1,005 52.1
Chester T29NR2W	29 29.6 29.6	27 27.5 57.1	8 8.2 65.3	5 5.1 70.4	29 29.6 100.0	98 5.1
Dover T31NR2W	10 12.3 12.3	20 24.7 37.0	18 22.2 59.2	15 18.5 77.7	18 22.2 99.9	81 4.2
Column Total % of Total	467 24.2	648 33.6	201 10.4	123 6.4	489 25.4	1,928 100.0

Chi-square = 96.48141 with 32 degrees of freedom Significant at .05
 probability level.
Cramers V = .11185
Uncertainty Coefficient (asymmetric) = .01380 with Township dependent

= .01520 with LANDREG dependent

*Due to rounding, percentage totals may not equal 100.

T26NR4W townships also recorded high percentages of property owners favoring more land use controls (29.6% and 27.6%, respectively).

Statistics presented at the bottom of Table 49, indicate a relationship exists between property owners of certain townships and attitudes concerning present land use regulations. In particular, Grayling T26NR4W, Blue Lake and Chester township property owners, in general, favored stricter land use controls than property owners in other townships. A Chi-square value of 96.48141, significant at the .05 probability level, implies property owners of certain townships differ in their attitudes concerning present land use regulations. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners of certain townships and their awareness of present land use regulations is moderate. Statistics support the percentage differences displayed in Table 49. It appears, therefore, that knowledge of level of awareness about present land use regulations will help predict township of property location.

When type of home development is considered, the results are quite interesting. As shown in Table 50, property owners with a seasonal home exhibit a tendency to favor stricter land use controls (28.9%), as compared to property owners with permanent homes or no homes in the study area (21.6% each). More permanent home owners favored lessening of present land use controls (24.5%) than either seasonal home owners (13.7%) or property owners with no home in the study area (13.4%). As before, property owners with no home in the study area showed the highest uncertainty levels as 33.0% were not sure how they felt about present land use controls. Property owners with seasonal and permanent homes were more certain as to how they felt about present land use controls, but their uncertainty levels were still high at 22.6% and 20.0%, respectively.

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS CONCERNING PRESENT LAND USE CONTROLS, BY TYPE OF HOME DEVELOPMENT

	LANDREG					
Count Row Percentage Row Cumulative Percentage	Favor Stricter Land Use Controls	Present Land Use Controls are Adequate	Favor Lessening of Present Land Use Controls	Against All Land Use Controls	Not Sure	Row Total % of Total
Home	• • • • • • • • • • • • • • • • • • •					<u></u>
No Home	137 21.6 21.6	202 31.9 53.5	52 8.2 61.7	33 5.2 66.9	209 33.0 99.9	633 33.1
Seasonal Home	202 28.9 28.9	244 34.9 63.8	54 7.7 71.5	42 6.0 77.5	158 22.6 100.1	700 36.6
Permanent Home	125 21.6 21.6	196 33.8 55.4	94 16.2 71.6	48 8.2 79.9	116 20.0 99.9	579 30.3
Column Total % of Total	464 24.3	642 33.6	200 10.5	123 6.4	483 25.3	1,912 100.0

Chi-square = 65.12994 with 8 degrees of freedom Significant at .05
probability level
Cramers V = .13051
Uncertainty Coefficient (asymmetric) = .01481 with Home dependent
= .01104 with LANDREG dependent

*Due to rounding, percentage totals may not equal 100.

Statistics, presented at the bottom of Table 50, indicate a relationship exists between property owners with dissimilar types of home development and their attitudes concerning present land use regulations. A Chi-square value of 65.12994, significant at the .05 probability level, implies that property owners with dissimilar types of home development differ in terms of their attitudes concerning present land use regulations. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners with dissimilar types of home development and attitudes concerning present land use regulations is moderate. Statistics support the percentage differences displayed in Table 50. Therefore, knowledge of attitudes concerning present land use regulation will help predict type of home development on the land in the study area.

When considering location to water resource with attitudes toward present land use controls, a definite relationship is found to exist as shown in Table 51. Property owners located on a body of water favored stricter land use controls than those not on a body of water. In addition, only 14.3% of the property owners located on a body of water favored lessening of present land use controls compared to 18.4% for property owners not located on a body of water. Uncertainty was also lower among property owners located on water as opposed to those not on water.

Statistics, presented at the bottom of Table 51, indicate a relationship exists between property owners located on a water resource and attitudes concerning present land use regulations. In general, statistics indicate property owners located on a water resource favor stricter land use controls. A Chi-square value of 32.21594, significant at the .05 probability level, implies property owners located on water differ in terms of attitudes concerning present land use regulations than property owners not located on water. Other qualifying statistics, Cramers V, Uncertainty Coefficient) indicate the relationship between property owners located on water and their attitude concerning present land use regulations is moderate. The moderate relationship is further supported by a Spearmans R_s value of .1147 and a Kendal Tau value of .1072 indicating that property owners located on a water resource are more likely to favor stricter land use regulations then property owners

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS CONCERNING PRESENT LAND USE CONTROLS, BY LOCATION TO WATER RESOURCES

	LANDREG	Present	Favor			
Count Row Percentage Row Cumulative Percentage	Favor Stricter Land Use Controls	Land Use Controls are Adequate	Lessening of Present Land Use Controls	Against All Land Use Controls	Not Sure	Row Total % of Total
ONH20				<u> </u>		
Property Located on Water	239 29.9 29.9	277 34.6 64.5	67 8.4 72.9	47 5.9 78.8	170 21.2 100.0	800 42.1
Property Not Located on Water	223 20.3 20.3	365 33.2 53.5	130 11.8 65.3	73 6.6 71.9	309 28.1 100.0	1,100 57.9
Column Total % of Total	462 24.3	642 33.8	197 10.4	120 6.3	479 25.2	1,900 100.0

Chi-square = 32.21594 with 3 degrees of freedom Significant at .05 probability level Cramers V = .13015 Uncertainty Coefficient (asymmetric) = .01245 with ONH20 dependent = .00575 with LANDREG dependent

Spearmans_{Rs} = .1147 Kendall Tau = .1072

not located on a water resource.

Residential Building

Residential building in northern lower Michigan is increasing at a very fast rate. As mentioned in the introduction, the period between 1970-1975 shows extremely large increases of permanent residents in northern Michigan counties. Many new residents to rural area experience what has become to be known as the "last in syndrome." That is, each prospective resident that desires to become a member of a certain community wants to be allowed to settle there but then does not want anyone else to move in. On the other hand, some property owners view residential development as economic growth providing a basic work force and supporting expanding local businesses.

In the northern Michigan study area, 56.0% of the property owners would like to see at least a little more residential development with 10.7% favoring a lot more residential development (See Table 52). Uncertainty was also high as 21.8% of the property owners were not sure how they viewed future residential development. Previous research (Marans and Wellman, 1978) reported that 40% of northern Michigan residents favored a restricted or no growth policy and only 1 in 15 favored extensive growth. Results from this survey indicates growth seems more desirable by more property owners than reported in previous research.

Table 52

	Frequency	Frequency Percentage	Cumulative Frequency Percentage
Building			
Would Like a Lot of Development	208	10.7	10.7
Would Like a Little Development	876	45.3	56.0
Oppose Future Development	430	22.2	78.2
Not Sure	421	21.8	100.0
Total	1,935	100.0	

NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS ATTITUDES TOWARD FUTURE RESIDENTIAL DEVELOPMENT (Frequency and Percentage Distribution)

When individual counties are considered in Table 53, some deviation from the overall percentage distribution is noted. Kalkaska property

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS TOWARD FUTURE RESIDENTIAL DEVELOPMENT, BY COUNTY

Count Row Percentage Row Cumulative Percentage	BUILDING Would Like a Lot More Residential Development	Would Like a Little More Residential Development	Oppose Any Future Residential Development	Not Sure	Row Total % of Total
County	······································				
Crawford	34 12.4 12.4	124 45.4 57.8	66 24.2 82.0	49 17.9 99.9	273 14.1
Kalkaska	24 5.2 5.2	198 42.6 47.8	124 26.7 74.5	119 25.6 100.1	465 24.0
Otsego	150 12.5 12.5	553 46.2 58.7	240 20.1 78.8	253 21.1 99.9	1,196 61.8
Column Total % of Total	208 10.7	875 45.2	430 22.2	421 21.8	1,934 100.0

Chi-square = 31.11519 with 6 degrees of freedom Significant at .05
probability level
Cramers V = .08967

Uncertainty Coefficient (asymmetric) = .00957 with County dependent = .00693 with Building dependent

*Due to rounding, percentage totals may not equal 100.

owners are slightly more opposed to future residential development (26.7%) than either Crawford or Otsego (24.2% and 20.1%, respectively) county property owners. Also, in Kalkaska county only 5.2% of the property owners desired a lot more development compared to 12.5% in Otsego and 12.4% in Crawford county.

Statistics, presented at the bottom of Table 53, indicate a relationship exists between property owners of certain counties and attitudes towards future residential development. A Chi-square value

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of 31.11519, significant at the .05 probability level, implies property owners of certain counties differ in terms of attitudes toward future residential development. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners of certain counties and attitudes toward future residential development is weak. Statistics support the percentage differences, displayed in Table 53. However, due to the weak nature of the relationship, knowledge of attitude toward future residential development will help little to predict county of property location.

When individual townships are considered in Table 54, there is a lot more opposition to residential development than previously noted. One third of the property owners in both Chester and Dover townships (33.3% in each) opposed any future residential development. Garfield and South Branch property owners followed close behind in their opposition to future residential development (32.5% and 30.9%, respectively). Bagley, Grayling T27NR2W and Grayling T26NR4W township property owners were, in general, more favorable to at least a little more residential development than all other townships.

Statistics, presented at the bottom of Table 54, indicate a relationship exists between property owners of certain townships and attitude toward future residential development. In particular, statistics indicate more property owners in Grayling T26NR4W township wanted more residential development than property owners in other townships. A Chi-square value of 91.24037, significant at the .05 probability level, implies property owners of certain townships differ in terms of attitudes toward future residential development. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners of certain townships and attitudes toward

	BUILDING				
Count Row Percentage Row Cumulative Percentage	Would Like a Lot More Residential Development	a Little More Residential Development	Oppose any Future Residential Development	Not Sure	Row Total % of Total
Township			4	<u> </u>	
South Branch T25NR2W	13 9.6 9.6	56 41.2 50.8	42 30.9 81.7	25 18.4 100.1	136 7.0
Grayling G27NR2W	7 21.2 21.3	12 36.4 57.6	5 15.1 72.7	9 27.3 100.0	33 1.7
Grayling T26NR4W	14 13.3 13.3	57 54.3 67.6	19 18.1 85.7	15 14.3 100.0	105 5.4
Orange T26NR7W	8 7.0 7.0	42 36.8 43.8	30 26.3 70.1	34 29.8 99.9	114 5.9
Blue Lake T28NR5W	12 4.5 4.5	130 48.3 52.8	68 25.3 78.1	59 21.9 100.0	269 13.9
Garfield T25NR7W	3 3.7 3.7	25 31.2 34.9	26 32.5 67.4	26 32.5 99.9	80 4.1
Bagley T3ONR3W	142 13.9 13.9	483 47.3 61.2	181 17.7 78.9	215 21.1 100.0	1,021 52.8
Chester T29NR2W	1 1.0 1.0	41 42.7 43.7	32 33.3 77.0	22 22.9 99.9	96 5.0
Dover T31NR2W	8 9.9 9.9	30 37.0 46.9	27 33.3 80.2	16 19.7 99.9	81 4.2
Column Total % of Total	208 10.7	876 45.3	430 22.2	421 21.8	1,935 100.0

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS TOWARD FUTURE RESIDENTIAL DEVELOPMENT, BY TOWNSHIP

Table 54

future residential development is moderate. Statistics support the percentage differences, displayed in Table 54, therefore, knowledge of attitude toward future residential development will help predict township of property location.

When type of home development is considered in Table 55, the results are quite interesting. Opposition to future residential development centers primarily with seasonal home owners. Permanent home owners also opposed future residential development but not quite so strongly as property owners with seasonal homes. As expected, more property owners with no home in the study area desired (16.6%) a lot more residential development than either property owners with permanent homes (11.5%) or property owners with seasonal homes (5.0%). Previous research (Marans and Wellman, 1978) also reported seasonal home owners as having more resistance to future growth and development than permanent home owners.

Statistics, presented at the bottom of Table 55, indicate a relationship exists between property owners with dissimilar types of home development and attitudes toward future residential development. A Chi-square value of 125.3369, significant at the .05 probability level, implies property owners with dissimilar types of home development differ in terms of attitudes toward future residential development. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners with dissimilar types of home development and attitudes toward future residential development is moderate. This moderate relationship is further supported by a Spearmans R_s value of -.1222 and a Kendall Tau value of -.1104 indicating that as level of home development proceeds from no home to permanent home, and then to seasonal home, that property owners

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS TOWARD FUTURE RESIDENTIAL DEVELOPMENT, BY TYPE OF HOME DEVELOPMENT

	BUILDING				
Count Row Percentage Row Cumulative Percentage	Would Like A Lot More Residential Development	Would Like A Little More Residential Development	Oppose Any Future Residential Development	Not Sure	Row Total % of Total
Home					
No Home	106 16.6 16.6	293 45.8 62.4	71 11.1 73.5	170 26.6 100.1	640 33.3
Seasonal Home	35 5.0 5.0	299 43.0 48.0	230 33.0 81.0	132 19.0 100.0	696 36.3
Permanent Home	67 11.5 11.5	275 47.2 58.7	126 21.6 80.3	115 19.7 100.0	583 30.4
Column Total % of Total	208 10.8	867 45.2	427 10.8	417 21.7	1,919 100.0

Chi-square = 125.3369 with 6 degrees of freedom Significant at .05 probability level Cramers V = .13051 Uncertainty Coefficient (asymmetric) = .03123 with Home dependent = .02794 with Building dependent Spearmans_{R_S} = -.1222 Kendall Tau = -.1104

*Due to rounding, percentage totals may not equal 100.

are more likely to oppose future residential development.

Future Property Values

The rising property values experienced in the last few yeare are seen as continuing at least into the middle 1980's. Expansion of values is not only a phenomenon of metropolitan areas as evidenced by high value per acre assessments given by northern Michigan study area property owners (explained in greater detail in the next section). It comes as no surprise to learn that 80.8% of the property owners in the northern Michigan study area expect property values to increase at least moderately. Only 5.9% feel property values will stay the same and even less (2.4%) feel property values will decline (See Table 56).

Table 56

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS TOWARD FUTURE PROPERTY VALUES (Frequency and Percentage Distribution)

Property Value	Frequency	Frequency Percentage	Cumulative Frequency Percentage
PROPVALUE	· · ·		
Increase Radically	364	18.7	18.7
Increase Moderately	1,211	62.1	80.8
Stay Same	115	5.9	86.7
Decrease Moderately	34	1.7	88.4
Decrease Radically	14	.7	89.1
Not Sure	212	10.9	100.0
Total	1,950	100.0	

When individual counties are considered in Table 57, there is only one noticeable difference. Crawford and Kalkaska counties have slightly smaller percentages (77.2% and 75.2%, respectively) of property owners who feel property values will increase at least moderately than in Otsego county (83.7%).

Statistics, presented at the bottom of Table 57, indicate a relationship exists between property owners of certain counties and attitudes toward future property values. A Chi-square value of 29.95991, significant at the .05 probability level, implies property owners of certain counties

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS TOWARD FUTURE PROPERTY VALUES, BY COUNTY

<u> </u>	PROPVALU						
Count Row Percentage Row Cumulative Percentage	Property Values Will Increase Radically	Property Values Will Increase Moderately	Property Values Will Stay The Same	Property Values Will Decrease Moderately	Property Values Will Decrease Radically	Not Sure	Row Total % of Total
County				<u> </u>			
Crawford	46 16.6 16.6	168 60.6 77.2	21 7.6 84.8	5 1.8 86.6	2 .7 87.3	35 12.6 99.9	277 14.2
Kalkaska	100 21.3 21.3	253 53.9 75.2	33 7.0 82.2	15 3.2 85.4	3 .6 86.0	65 13.9 99.9	469 24.0
Otsego	218 18.1 18.1	790 65.6 83.7	61 5.1 88.8	14 1.2 90.0	9 .7 90.7	112 9.3 100.0	1,204 61.7
Column Total % of Total	364 18.7	1,211 62.1	115 5.9	34 1.7	14 .7	212 10.9	1,950 100.0

Chi-square = 29.95991 with 10 degrees of freedom Significant at .05 probability level Cramers V = .07155 Uncertainty Coefficient (asymmetric) = .00815 with County dependent

= .00669 with PROPVALU dependent

*Due to rounding, percentage totals may not equal 100.

differ in terms of attitudes toward future property values. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners of certain counties and attitudes toward future property values is weak. Statistics support the percentage differences displayed in Table 57. However, because of the weak relationship, knowledge of attitude toward future property values will help little to predict county of property location.

When individua! townships are considered in Table 58, two substantial deviations from the overall percentage distribution are noted. Garfield and Grayling T27NR2W townships have many fewer property owners who feel property values will increase at least moderately than the other townships (59.2% and 54.5%, respectively). This decrease is not taken up by a corresponding increase in the number of property owners who feel property values will decline, instead the percentage of property owners who are not sure of future property values is higher. In Garfield township 24.7% of property owners are not sure of the future of property values and in Grayling T27NR2W township 21.2% are not sure. There is obviously a good deal of uncertainty operating in both Garfield and Grayling T27NR2W townships concerning future property values.

Statistics, presented at the bottom of Table 58, indicate a relationship exists between property owners of certain townships and attitudes toward future property values. A Chi-square value of 77.7444, significant at the .05 probability level, implies property owners of certain townships differ in terms of attitudes toward future property values. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners of certain townships

ATTITUDES OF NORTHERN MICHIGAN STUDY AREA PROPERTY OWNERS TOWARD FUTURE PROPERTY VALUES, BY TOWNSHIP

	PROPVALU	<u> </u>					
Count Row Percentage Row Cumulative Percentage	Property Values Will Increase Radically	Property Values Will Increase Moderately	Property Values Will Stay The Same	Property Values Will Decrease Moderately	Property Values Will Decrease Radically	Not Sure	Row Total % of Total
Township							
South Branch T25NR2W	22 16.1 16.1	79 57.7 73.8	11 8.0 81.8	2 1.5 83.3	1 .7 84.0	22 16.1 100.0	137 7.0
Grayling T27NR2W	4 12.1 12.1	18 54.5 66.6	3 9.1 75.7	0 0 75.7	1 3.0 78.7	7 21.2 99.9	33 1.7
Grayling T26NR4W	20 18.5 18.5	72 66.7 85.2	7 6.5 91.7	3 2.8 94.5	0 0 94.5	6 5.5 100.0	108 5.5
Orange T26NR7W	23 20.2 20.2	61 53.5 73.7	8 7.0 80.7	6 5.3 86.0	1 .9 86.9	15 13.2 100.1	114 5.8
Blue Lake T28NR5W	60 22.1 22.1	159 58.5 80.6	15 5.5 86.1	6 2.2 88.3	2 .7 89.0	30 11.0 100.0	272 13.9
Garfield T25NR7W	16 19.7 19.7	32 39.5 59.2	10 12.3 71.5	3 3.7 75.2	0 0 75.2	20 24.7 100.1	81 4.1
Bagley T30NR3W	189 18.4 18.4	671 65.5 83.9	55 5.3 89.2	13 1.3 90.5	8 .8 91.3	90 8.8 100.1	1,025 52.5

Table 58 - Cont'd.

Count Row Percentage Row Cumulative Percentage	PROPVALU Property Values Will Increase Radically	Property Values Will Increase Moderately	Property Values Will Stay The Same	Property Values Will Decrease Moderately	Property Values Will Decrease Radically	Not Sure	Row Total % of Total
Township				·			·····
Chester T29NR2W	15 15.3 15.3	69 70.4 85.7	5 5.1 90.8	0 0 90.8	1 1.0 91.8	8 8.2 100.0	98 5.0
Dover T31NR2W	15 18.1 18.1	51 61.4 79.5	2 2.4 81.9	1 1.2 83.1	0 0 83.1	14 16.9 100.0	83 4.2
Column Total % of Total	364 18.7	1,212 62.1	115 5.9	34 1.7	14 .7	212 10.9	1,951 100.0
Chi-square = 77	.7444 with 40	degrees of fre	edom Signi	ficant at .05	probability Le	vel.	· · · · · · · · · · · · · · · · · · ·

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Cramers V = .08927

Uncertainty Coefficient (asymmetric) = .01164 with Township dependent = .01670 with PROPVALU dependent

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*Due to rounding, percentage totals may not equal 100.

and attitudes toward future property values is weak. Statistics support the percentage difference displayed in Table 58. However, bacause of the weak relationship, knowledge of attitude toward future property values helps little to predict township of property location.

When type of home development is considered, almost no difference is noted either empirically or statistically. Attitudes toward future property values does not seem to be related to type of home development.

Summary

This chapter examined attitudes on issues of concern to northern Michigan study area property owners. Attitudes on property tax levels to awareness of land use regulations were solicited.

The analysis indicated that:

- About two-thirds of the property owners felt property tax levels were too high. In Kalkaska county over four-fifths of the property owners felt property tax levels were high.
- 2) The quality of municipal services provided was, in general, perceived as average or good. Property owners with no home development in the study area were generally uncertain about the quality of services provided.
- 3) One-third of the property owners felt the quantity of services provided was about right with an additional one-quarter desiring at least a few more services. Over half of the property owners with no home in the study area were uncertain how they felt about the quantity of services provided.

- 4) One-fifth of northern Michigan study area property owners are not aware of building, zoning, or other land use regulations concerning their property. An additional 15% are not sure of building, zoning, or other land use regulations affecting their land. Property owners with permanent and seasonal homes were much more aware of land use regulations than property owners with no home development in the study area.
- 5) One-third of the property owners felt that present land use controls are adequate, however, an additional one-fourth favor stricter land use controls. Seasonal home owners are the ones most in favor of stricter land use controls, and property owners with no home development in the study area are generally not sure how they feel about land use controls.
- 6) One-fifth of northern Michigan study area property owners oppose any future residential development. Property owners in Kalkaska county are more opposed to future residential development than those in Crawford or Otsego county. Onethird of the seasonal home owners are against future residential development as opposed to permanent homeowners, who were more likely to favor more residential development.
- 7) The overwhelming majority of property owners envision property values increasing at least moderately with almost one-fifth expecting property values to increase radically within the near future.

CHAPTER VII

INFLUENCE OF NATURAL RESOURCES ON PROPERTY LOCATION AND VALUE

Influence of Water Resources

Water resources play an important role for many people in determining where to vacation and many times where to live. State tourism agencies emphasize advantages of vacationing in the "Water Winter Wonderland" or "The Land of 10,000 Lakes". No mention is made of the mosquito or black fly population near the 10,000 lakes, rather they are portrayed as great places to visit and enjoy. Many states also boast of wild and beautiful rivers available for rafting, fishing, swimming and many other recreational pursuits. Not only are water resources viewed as a great place to visit, they are also advertised as a wonderful place to own property and live. Numerous developments occur around man-made lakes where prospective buyers are informed of all the wonderful advantages of lake living or of the appreciation value of water property. Water resources are viewed by many as a great attraction influencing property location decisions (Nelson, 1973; Tombaugh, 1967).

Opportunities for obtaining land on water resources are readily available in the study area. In fact, the type of water resources prevalent in a township was a determining factor when selecting townships for the stratified random sample (See Chapter II).

The abundance of water resources in northern Michigan is brought out by the fact that 41.8% of the property owned in the study area is located on some water resource. When individual counties are considered in Table 59, Kalkaska has the highest percentage of property owners with land on some type of water resource (56.8%). Crawford and Otsego counties have much lower pencentages of property owners with land on some type of water resource (35.8% and 37.2%, respectively).

Statistics, presented at the bottom of Table 59, indicate a relationship exists between property owners of certain counties and property location to water resources. A Chi-square value of 58.61954, significant at the .05 probability level, implies property owners of certain counties differ in terms of property location to water resources. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners of certain counties and property location to water resources is moderate. Statistics support the percentage differences displayed in Table 55. Therefore, knowledge of property location to water resources will help predict county of property location.

Table 59

	ONH20		
Count Row Percentage Row Cumulative Percentage	Property on a Water Resource	Property Not on a Water Resource	Row Total % of Total
County			<u> </u>
Crawford	100 35.8 35.8	179 64.2 100.0	279 14.0
Kalkaska	273 56.8 56.8	208 43.2 100.0	481 24.2
Otsego	456 37.2 37.2	769 62.8 100.0	1,225 61.7
Column Total % of Total	829 41.8	1,156 58.2	1,985 100.0

LOCATION OF PROPERTY TO WATER RESOURCES, BY COUNTY

When individual townships are considered in Table 60, the results differ somewhat from what was expected. Remembering that the stratified random sample was based on selecting for each county a lake township, a river township, and a township with no major waterway (See Chapter II) survey results showed that the stratification procedure was not entirely successful. The three townships selected for Crawford county show the best conformity to the stratification procedure. The percentage of property owners whose land is located on a body of water is highest in Grayling T26NR2W township where 55.0% of the property owners have land on some type of water. Grayling T26NR4W was selected as a "lake" township and of all the property owners whose land is located on a body of water only 46.7% had land on a lake whereas 50% had land on a river. South Branch township, selected as a "river" township, had 24.6% of its property owners located on a body of water and of that number, 82.9% were on a river. Therefore, the stratification procedure worked much better for South Branch township. Grayling T27NR2W, selected as a township with no major water resource, had only 21.2% of its property owners located on a body of water.

In Kalkaska county, Blue Lake township, selected as a "lake" township, has 78.2% of its property owners located on a body of water and 100% of those are located on a lake. Obviously, the stratification procedure which chose Blue Lake as a lake township gave nearly perfect results in this case. Garfield township, selected as a "river" township has only 12.0% of its property owners located on a body of water but 81.8% of those property owners are located on a river. In Orange township, the stratification procedure was not effective as 37.1% of the property owners are located on a body of water and 90.7% of those located

	ONH20		
Count Row Percentage Row Cumulative Percentage	Property Not Located on Water	Property Located on Water	Row Total % of Total
Township			. <u>1. 7 </u>
South Branch T25NR2W	104 75.4 75.4	34 24.6 100.0	138 6.9
Grayling T27NR2W	26 78.8 78.8	7 21.2 100.0	33 1.7
Grayling T26NR4W	49 44.9 44.9	60 55.0 99.9	109 5.0
Orange T26NR7W	73 62.9 62.9	43 37.1 100.0	116 5.8
Blue Lake T28NR5W	61 21.8 21.8	219 78.2 100.0	280 14.1
Garfield T25NR7W	73 87.9 87.9	10 12.0 99.9	83 4.2
Bagley T3ONR3W	665 63.7 63.7	379 36.3 100.0	1,047 52.6
Chester T29NR2W	41 41.0 41.0	59 59.0 100.0	100 5.0
Dover T31NR2W	64 77.1 77.1	19 22.9 100.0	83 4.2
Column Total % of Total	1,156 58.2	830 41.8	1,986 100.0

LOCATION OF PROPERTY TO WATER RESOURCES, BY TOWNSHIP

*Due to rounding, percentage totals may not equal 100.

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on a lake. These are high levels for a township selected for its lack of water resources.

Otsego county has probably the most devastating results of all counties when it comes to selecting water strata for random samples. Bagley, selected as a lake county has 36.3% of its property owners located on a body of water and 95.5% of those are located on a lake. The problem is Chester township which was considered lacking any major water resources. A total of 59.0% of the property owners in Chester township had property located on some type of water and 72.9% of those were located on a lake. Obviously, these are very high percentages for a township considered lacking a major water resource. Dover township has 22.9% of its property owners with land located on water and 55.5% of these are located on a river with an additional 11.1% located on both a river and a lake.

It is obvious from the preceeding discussion that stratification through the use of plat maps is hazardous. In the case of Blue Lake township, the stratification procedure worked quite well. In the case of Chester township, the procedure was woefully inadequate. The problem was interpretation of plat maps to accurately estimate individual lots. Large tracts of land are easily distinguishable but numerous small tracts, usually around lakes or rivers, are represented by small dots. Absence of detail lot representation precludes determination of the amount or size of lots in some areas by visual inspection of plat maps. In future research, where natural resource stratification is desired, plat maps should only be used as a preliminary mechanism for selection with final determination of areas to be surveyed made after visual inspection of the area. In addition, information obtained from county personnel would be helpful.

Statistics, presented at the bottom of Table 60, indicate a relationship exists between property owners of certain townships and property location relative to water resources. Statistics support the percentage differences displayed in Table 60. Therefore, knowledge of property location to water resource will greatly help predict township of property location.

There is also a relationship between the type of water a property owner is located on and individual townships. As expected, certain townships have more property located on lakes (i.e. Blue Lake), or on rivers (i.e. South Branch) than other townships (See Table 60). However, due to the fact that townships were stratified and then selected because of their water resource type, the relationship should be stronger to justify the procedure used to choose the strata for the random sample.

Statistics, presented at the bottom of Table 61, indicate a relationship exists between property owners of certain townships and property location on certain types of water resource. A Chi-square value of 395.45014, significant at the .05 probability level, implies property owners of certain townships differ in terms of property location on certain types of water resources. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners of certain townships and property location on certain types of water resources is very strong. Therefore, knowledge of property location on a certain type of water resource will greatly help predict township of property location.

Influence of Public Land

In northern Michigan there exist large tracts of land in public ownership. State and national forests make up the bulk of publicly owned land, but cities, counties, townships, and school districts own

TYPE OF WATER RESOURCE PROPERTY IS LOCATED, BY TOWNSHIP

Co	ТҮРЕН20		******	
Count Row Percentage Row Cumulative Percentage	Lake or Pond	River	Both	Row Total % of Total
Township				
South Branch T25NR2W	6 17.1 17.1	29 82.9 100.0	0 0 100.0	35 4.2
Grayling T27NR2W	4 57.1 57.1	3 42.9 100.0	0 0 100.0	7.8
Grayling T26NR4W	28 46.7 46.7	30 50.0 96.7	2 3.3 100.0	60 7.2
Orange T26NR7W	39 90.7 90.7	4 9.3 100.0	0 0 . 100.0	43 5.2
Blue Lake T28NR5W	219 100.0 100.0	0 0 100.0	0 0 100.0	219 26.3
Garfield T25NR7W	1 9.1 9.1	9 81.8 90.9	1 9.1 100.0	11 1.3
Bagley T30NR3W	362 95.5 95.5	16 4.2 99.7	1 .3 100.0	379 45.6
Chester T29NR2W	43 72.9 72.9	15 25.4 98.3	1 1.7 100.1	59 7.1
Dover T31NR3W	6 33.3 33.3	10 55.5 88.8	2 11.1 99.9	18 2.2
Column Total % of Total	708 85.2	116 14.0	7 .8	831 100.0

Chi-square = 395.45014 with 16 degrees of freedom Significant at .05
probability level.
Cramers V = .48779
Uncentrainty Coefficient (acummetric) = .12181 with Township dependent

Uncertainty Coefficient (asymmetric) = .12181 with Township dependent = .41923 with TYPEH20 dependent

*Due to rounding, percentage totals may not equal 100.

acreage scattered throughout the area. Also, some areas may have many acres in public ownership and some may have few, such as in the case of Grayling T27NR2W or Chester townships, which are almost completely publicly owned, and Bagley township which has few areas in public ownership. As presented in Table 62, 18.2% of the property owners in the study area have public property touching their property on at least one side.

When individual counties are considered in Table 63, the differences become substantial. A much larger percentage (39.6%) of property owners in Crawford county have property adjacent to public land than in either Kalkaska or Otsego counties (21.2% and 12.0%, respectively). Actually, this difference is not surprising because 66.73% of the total land in Crawford county, 42.41% in Kalkaska county, and 27.64% in Otsego county is in public ownership. (Michigan Statistical Abstract, 1978, p. 724-727).

Table 62

PUBPROP	Frequency	Frequency Percentage
Private Property Adjacent to Public Land	355	18.2
Private Property Not Adjacent to Public Land	1,598	81.8
Total	1,953	100.0

LOCATION OF PRIVATE PROPERTY TO PUBLIC LAND (Frequency and Percentage Distribution)

Statistics, presented at the bottom of Table 63, indicate a relationship exists between property owners of certain counties and location of private property to adjacent public property. This statistical

	PUBPROP		4 14 11 12 1 14 14 14 14 14 1 ₄ 1 ₄ 1 ₄ 14
Count Row Percentage Row Cumulative Percentage	Private Land Adjacent To Public Land	Private Land Not Adjacent To Public Land	Row Total % of Total
County		· · · · · · · · · · · · · · · · · · ·	
Crawford	111 39.6 39.6	169 60.4 100.0	280 14.3
Kalkaska	101 21.2 21.2	376 78.8 100.0	477 24.4
Otsego	143 12.0 12.0	1,052 88.0 100.0	1,195 61.2
Column Total	355 18.2	1,597 81.8	1,952 100.0

LOCATION OF PRIVATE PROPERTY TO PUBLIC LAND, BY COUNTY

Chi-square = 120.74314 with 2 degrees of freedom Significant at .05 probability level Cramers V = .24865 Uncertainty Coefficient = .02983 with County dependent = .05807 with PUBPROP dependent

relationship is not unusual rather it was expected based on a previous chapters discussion of each counties public land acreage. A Chi-square value of 120.7434, significant at the .05 probability level, implies property owners of certain counties differ in terms of location of private property to adjacent public property. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners of certain counties and location of private property to adjacent public property is strong. Statistics support percentage differences displayed in Table 63. Therefore, knowledge of private property location to public property will greatly help predict county of property location. When individual townships are considered in Table 64, a good deal of variation is noted. Grayling T27NR2W township has the largest percentage of property owners (61.8%) whose land is adjacent to public land. Chester township has the second largest percentage (43.0%) followed closely by South Branch and Grayling T26NR4W (38.0% and 34.5%, respectively) townships. By contrast, only 2.4% of the property owners in Dover township have land adjacent to public land. Orange (8.6%) and Bagley (9.7%) townships follow closely behind Dover.

Statistics, presented at the bottom of Table 64, indicate a relationship exists between property owners of certain townships and location of private property to public property. A Chi-square value of 120.74314, significant at the .05 probability level, implies property owners of certain townships differ in terms of location of private property to public property. Other qualifying statistics (Cramers V, Uncertainty Coefficient) indicate the relationship between property owners of certain townships and location of private property to public property is very strong. Statistics support percentage differences, displayed in Table 64. Therefore, knowledge of location of private property to public property will greatly help predict township of property location.

Acreage Owned Per Property Owner

The mean total acreage owned, per property owner, in the study area was reported at 17.516 acres. However, further analysis indicates this figure to be highly misleading. A skewness value of 22.84 indicates that many of the cases analyzed are clustered to the left (below) of the mean with most of the extreme cases to the right (above). In addition, a kurtosis value of 694.723 indicates that the curve defined

LOCATION OF PRIVATE LAND TO PUBLIC LAND, BY TOWNSHIP

	PUBPROP		
Row Percentage Row Cumulative Percentage	Private Property Adjacent to Public Land	Private Property Not Adjacent to Public Land	Row Total % of Total
Township			
South Branch T25NR2W	52 38.0 38.0	85 62.0 100.0	137 7.0
Grayling T27NR2W	21 61.8 61.8	13 38.2 100.0	34 1.7
Grayling T26NR4W	38 34.5 34.5	72 65.4 99.9	110 5.6
Orange T26NR7W	10 8.6 8.6	106 91.4 100.0	116 5.9
Blue Lake T28NR5W	75 27.0 27.0	203 73.0 100.0	278 14.2
Garfield T25NR7W	16 19.7 19.7	65 80.2 99.9	81 4.1
Bagley T3ONR3W	98 9.7 9.7	915 90.3 100.0	1,013 51.9
Chester T29NR2W	43 43.0 43.0	57 57.0 100.0	100 5.1
Dover T31NR2W	2 2.4 2.4	82 97.6 100.0	84 4.3
Column Total % of Total	355 18.2	1,598 81.8	1,953 100.0

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*Due to rounding, percentage totals may not equal 100.

by the distribution of cases is peaked. Therefore, the acreage owned by the majority of property owners is generally smaller than the mean of 17.516.

Two other statistics (mode and median) used to describe variables also indicate for the majority of property owners the amount of land owned is less than the mean. The median value is 1.004 meaning at least 50% of the property owners own one acre or less. The mode value of .50 indicating the most frequent acreage size owned is only one half acre. One other statistic is quite important and that is the 95% Confidence Interval about the mean. For study area property owners, the 95% confidence interval about the mean ranges from 13.042 acres to 21.99 acres.

When individual counties are considered in Table 65, there is little deviation from the overall sample mean. Property owners in Crawford county own an average of 20.113 acres. In Kalkaska county, the average acreage owned is 13.884 and in Otsego county, the average is 18.360. All three counties, therefore, fall within the 95% confidence interval for the overall mean acreage owned. However, there does seem to be quite a difference between the mean for Crawford county and the mean for Kalkaska county. This difference was tested and was found to be significant. Therefore, mean acreage owned in Crawford county is significantly higher than in Kalkaska county.

When individual townships are considered in Table 66, a great deal of variation is noted. Six of the nine township means for acreage owned do not fall within the 95% confidence interval limits for the overall sample mean. In Dover township, the average acre size owned is 119.477 which differs markedly from Bagley township where the average property size is only 9.1056 acres. Blue Lake township also has a low
TOTAL ACREAGE OWNED PER NORTHERN MICHIGAN STUDY AREA PROPERTY OWNER, BY COUNTY

County	Size of Sample	Mean	Standard Deviation
Crawford	267	20.113	69.395
Kalkaska	456	13.884	40.657
Otsego	1,141	18.360	118.571
Total	1,864	17.516	98.075

t value for Mean of Crawford vs. Mean of Kalkaska = 2.27*t value for Mean of Crawford vs. Mean of Otsego = 1.57t value for Mean of Kalkaska vs. Mean of Otsego =-1.29

95% C.I 13.042 acres to 21.99 acres

*Indicates significant difference at .05 probability level.

Table 66

TOTAL ACRES OWNED PER NORTHERN MICHIGAN STUDY AREA PROPERTY OWNER, BY TOWNSHIP

Township		Size of Sample	Mean	Standard Deviation
South Branch	T25NR2W	134	22.2122 *	38.8756
Grayling	T27NR2W	31	20.6006	36.2776
Grayling	T26NR4W	103	17.0439	100.9411
Orange	T26NR7W	109	23.9640 *	66.2253
Blue Lake	T28NR5W	267	8.8439 *	29.2995
Garfield	T25NR7W	79	17.0557	20.0698
Bagley	T30NR3W	968	9.1056 *	55.7617
Chester	T30NR3W	93	27.8074 *	53.0860
Dover	T31NR2W	80	119.4770 *	387.3304
Total		1,864	17.516	98.4831

*Indicates township mean falls out of the 95% Confidence Interval for the overall sample mean.

average property size at only 8.8439 acres.

When type of home development is considered, there is little deviation in total acreage owned per property owner. Mean total acreage owned for seasonal homeowners is 15.627 acres (See Table 67). This is almost identical for the mean total acres owned per property owner with no home development (15.391 acres) in the study area. Only the permanent home property owners have a slightly higher mean for total acres owned (22.437%). Therefore, empirical evidence indicates that total acres owned per property owner is not affected much by type of home development or the land. Also, statistical evidence indicates no significant differences between the means and very little correlation between total acres owned and type of home development.

In comparing the results of this study, for total acreage owned, to one conducted in Emmet and Cheyboygan counties (Marans and Wellman, 1978, p. 175), the results are quite similar. The Marans and Wellman study found that permanent home owners owned more total acres than did seasonal home owners (28 acres vs. 13 acres). The mean for permanent home owners is slightly higher in Emmet and Cheyboygan counties than in Kalkaska, Crawford, and Otsego counties, but this difference is not statistically significant. Also, the mean total acres owned for seasonal home owners in Emmet and Cheyboygan counties. The difference is not viewed as statistically significant. Therefore, statistically, seasonal and permanent home owners are similar in both study areas in terms of mean acreage owned.

When considering location of water resource to amount of acres owned, there is no statistically significant difference between the means. The

HOME	Sample	Mean	Deviation
No Home	601	15.391	49.586
Seasonal Home	680	15.627	72.041
Permanent Home	567	22.437	151.827
Total	1,848	17.64	98.898

TOTAL ACRES OWNED PER NORTHERN MICHIGAN STUDY AREA PROPERTY OWNER, BY TYPE OF HOME DEVELOPMENT

t Value for mean of no home vs. mean of seasonal home = -.07t Value for mean of no home vs. mean of permanent home = -1.05t Value for mean of seasonal home vs. mean of permanent home = -.98Spearmans_{Rs} = .0125 Kendall Tau = .0098

mean acreage owned per property owner whose land is on a body of water is 19.756 acres. The mean acreage owned per property owner not located on a body of water is 16.032. Empirically, there is a slight difference for total acres owned between locating on a body of water as opposed to locating off a body of water, but statistically, there is no difference. An F Value of only .6348, not significant at the .05 probability level, supports the conclusion of no statistical difference between the means.

Total acreage owned per property owner has been shown to have little relation to whether or not property is on the water. However, there may be a relationship between total acres owned and type of water on which the property is located. This seems to be the case in the study area as the mean total acres owned for property owners with property located on a river is 78.4952 acres compared to only 10.5236 for property

ONH20	Total Acreage Size of Sample	Mean	Standard Deviation
Property Located on Water	764	19.7557	136.9784
Property Not Located on Water	1,083	16.0324	58.7417
Total	1,847	17.5725	98.8996

TOTAL ACREAGE OWNED PER NORTHERN MICHIGAN STUDY AREA PROPERTY OWNER, BY LOCATION TO WATER

F Value for difference between the mean = .6348 Spearmans_{Rs} = .1215 Kendall Tau = .1029

owners located on a lake. Obviously, the relationship between location on water and total acreage owned was being masked by the average between lake and river acreage. A t-test between the means for total acreage owned for lake property owners versus river property owners indicate that there is a significant difference between the means. Therefore, empirical and statistical evidence indicates that total acres owned per property owner is a function of the type of water on which the property is located.

When location of private property to public property is considered in Table 70, another strong relationship is uncovered. The mean acreage owned by property owners whose property is adjacent to public land is 30.03 acres. Mean acreage owned for property owners whose land is not adjacent to public land is only 14.80. In addition, an F-test between the two means yields a value of 6.4468 indicating a significant difference between property owners with land adjacent to public land and those owning

TOTAL ACRES OWNED PER NORTHERN MICHIGAN STUDY AREA PROPERTY OWNER, BY TYPE OF WATER RESOURCE OF PROPERTY LOCATION

ТҮРЕН20	Size of Sample	Mean	Standard Deviation
Lake or Pond	653	10.5286	42.3489
River	105	78.4952	351.8302
River and Lake or Pond	7	70.8857	93.4830
Total	765	20.4096	137.913

t-test for mean of Lake or Pond vs. mean of River = -1.98*

 $Spearmans_{R_{S}} = .1402$

Kendall Tau = .1161

*Indicates significantly different at .05 probability level.

Table 70

TOTAL ACRES OWNED PER NORTHERN MICHIGAN STUDY AREA PROPERTY OWNER, BY LOCATION TO PUBLIC LAND

PUBPROP	Size of Sample	Mean	Standard Deviation
Private Property Adjacent to Public Property	336	30.026	76.487
Private Property Not Adjacent to Public Property	1,487	14.798	103.736
Total	1,823	17.605	99.434

F Value for mean of private property adjacent to public property vs. private property not adjacent to public property = 6.4468*

Spearmans_{Rs} = .2258 Kendall Tau = .1914

*Indicates significant difference at .05 probability level.

land not adjacent to public land. One possible explanation for this significant difference in means may be because of subdividing. Descriptive statistics indicated that the size of acreage owned by the majority of property owners was much smaller. When subdividing large parcels of land, contact with public land may be reduced. A simple arithmetic example illustrates this point. A single parcel of 19,200 acres is completely surrounded by public land. After subdividing into thirty - two equal 640 acre parcels; only 50% (sixteen) are now adjacent to public land and 50% (sixteen) are not. Therefore, in this example, subdividing accomplishes two things: (1) reduces average size per property owner, and (2) increases the percentage of land not adjacent to public land. Therefore, mean acreage owned can be seen to be a function of private land being adjacent to public land.

Total Value of Property Per Owner

Valuation of land and development is often very subjective. Many methods exist for "objective" valuation, such as appraised values for taxation purposes. However, short of actually putting property up for sale, an accurate current market value is difficult to obtain. Property owners, in this study were asked to use their own judgement to estimate what their property was currently worth. In the study area, the average property owner reported owning 17.516 acres of land valued at \$32,361.51 or \$1,847.54 per acre. Although there are obvious weaknesses to this approach to deriving value estimates (i.e. subjective measurement errors), this was the only practical approach to use, in this instance, because of research budget limitations.

Actually, for the majority of property owners, the value of their property is slightly less than the mean of \$32,361.51. This is evidenced

by a median value of \$22,001.67 which indicates that at least 50% of the property owners have property valued at approximately \$22,000.00 or less. The most common value (mode) is also smaller than the mean at \$30,000.00. A kurtosis value of 118.868 indicates that the standard curve for property values is slightly peaked and this occurs to the left (below) of the mean (or less than \$32,361.51). This is further supported by a skewness value of 8.86. Also, for northern Michigan study area property owners, the 95% confidence interval about the mean for property valuation ranges from \$29,639.36 to \$35,083.66.

There are some very severe problems when analyzing total value per property owner that are not inherent when analyzing total acreage owned per property owner. One major problem is quite obvious, the total value of property owned is directly influenced by the type of home development on the land. Another problem is total value which is a positive function of total acres owned as evidenced by a Pearson_{Rs} value of .6826. The more acres owned, the higher total property value. Still another problem arises depending on where the property is located. There may be forces present within a certain county or township that affect property valuation (i.e. location to cities). Therefore, little analysis will be presented for total value in this section, instead most of the analysis will be presented in the next chapter on value per acre of land. There are a few characteristics concerning total value of property owned that were enlightening and will be addressed in this section.

One interesting result of the survey is that 20.86% of the property owners do not know the value of their property. This may be a conservative figure as there wasn't a category to check if value was unknown. Only property owners who specifically indicated they did not know the

value were counted. Blank responses were filled out as missing and not as "value unknown". Therefore, uncertainty over current market value of property is high among northern Michigan study area property owners.

There is some evidence to suggest that total value of property owned is related to water resources. The total value mean for property owners whose land is on a body of water is \$40,884.21 and for those property owners not on a body of water, the mean total value for their property is \$25,817.07. Neither of these means fall within the 95% confidence interval for the overall total value mean. Also, an F-test value of 29.3184 for analysis between the means indicates that they are significantly different from each other (See Table 71).

Table 71

TOTAL VALUE OF PROPERTY OWNED PER NORTHERN MICHIGAN STUDY AREA PROPERTY OWNER, BY LOCATION TO WATER RESOURCE

ONH20	Size of Sample	Mean	Standard Deviation
Property Located on Water	586	\$40,884.212 * +	67,386.75
Property Not Located on Water	807	\$25,817.077	36,149.204
Total	1,393	\$32,155.441	52,157.418

*Indicates mean value either exceeds or falls short of the 95% Confidence Interval

+Indicates significantly different from other means.

F = 29.3184 Spearmans_{Rs} = .2380 Kendall Tau = .970 Further analysis indicates that even when statistically controlling for the influence of type of home development, there is still a high correlation between total value of the property and location on a body of water. In every case, no home, seasonal home or permanent home, the property on the body of water has a higher value than property not on a body of water (See Figure 4). Therefore, location on a water resource is empirically and statistically positively related to the total value of the property.

Having public property touch on at least one side of an individual's private property is usually considered a favorable characteristic. The fact that no one may build on at least one side may increase the subjective evaluation of land owned and property value. In the study area, property owners who have land adjacent to public land have a mean total value for their property of \$35,906.56. For property owners whose land is not adjacent to public land, the mean value is \$31,840.99. An F-test indicates that there is no significant difference between the two means and Spearmans_{Rs} value of -.0328 and a Kendall Tau value of -.0271 indicates there to be only a very slight negative correlation between location to public property and total value of the property. Private property located next to public property will generally have a lower value than private property adjacent to private property. This negative correlation will be further explored in the next chapter.

The empirical difference showing a higher mean for private property located next to public property may be explained by the fact that statistically total value of acreage owned is strongly related to total acreage owned (Pearson R = .6826).



Figure 4

Mean Breakdown for Total Value of Property Owned, by Location on Water Controlling for Type of Home Development

Therefore, because property owners with land adjacent to public land own more acres than property owners not adjacent to public land, their total value of property owned is also higher. Holding acreage owned constant, total value would be less for property owners adjacent to public land than for property owners not adjacent to public land.

Summary

This chapter examined the influence of natural resources, acreage owned, and total value of property owned. The natural resource base in each county and township was identified and variable relationships were explored to see if location to certain natural resources has any effect on total acreage owned or total value of property.

The analysis shows that:

- At least one-third of the property in the study area is located on some water resource. Kalkaska county has over half of its property owners on a water resource.
- Almost one-fifth of land owned in the study area is adjacent to public land. In Crawford county, almost 40% of property owners are adjacent to public land.
- 3) The average amount of acreage owned per property owner in the study area is slightly over 17 acres. However, qualifying statistics indicate that the most common parcel size owned is only half of an acre.
- 4) Property owners located on a river have significantly higher acreage owned than property owners on a lake.
- 5) Property owners located next to public land have significantly higher acreage owned than property owners not adjacent to public land.

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- 6) One-fifth of the present property owners in the study area have no idea what the value of their property is.
- 7) Property located on water has a significantly higher average value than property not located on water. This trend holds even when accounting for type of home development.

CHAPTER VIII

VALUE PER ACRE

Value Per Acre of Land Model

Value per acre of land is probably the most important variable in this study. All land is not homogenous. Location of land relative to markets, fertility, natural resources, type of soil, extent of ground cover, etc. all play important roles in determining the value of land. Owing to the fact that not all parcels of land are the same size, a basic unit of measurement is needed for comparison purposes. This basic unit is value per acre of land which reflects most of the external influences of land price. Value per acre of land, in this study, is a subjective measure of property value estimated by each surveyed property owner for their individual property. Total predicted property exchange value was divided by actual acreage owned with the result being value per acre of land.

In this section, value per acre of land is analyzed as a dependent variable with some important independent variables. Zero-order partial correlation coefficient are computed to assess the strength of bivariate relationships. The analysis then proceeds to multiple regression in which selected variables are analyzed to see how much variance in value per acre of land they account for when controlling for other independent variables. (See Chapter II for a detailed explanation of this procedure). In other words, an individual will be able to make some general statements concerning land value when certain property characteristics are known.

Probably the greatest variance in value per acre of land is related to the type of home development on the property. What is really being

measured is both the value of a dwelling and the land. Therefore, the only accurate measure for value per acre of land results when no type of home development is located on the land.

As expected when considering value per acre of land by type of home development, as presented in Table 72, property with permanent homes show an extremely high value of \$41,322.51. Properties with seasonal homes also show a high value per acre of land figure (\$31,827.09). What is very surprising, though, is that even when there is no home on the land, the value per acre of land is still quite high at \$7,596.18. The most plausible reason for this high value was touched upon earlier - subdividing. When large parcels are broken down into smaller parcels, the combined selling price of all the small parcels is usually greater than the initial price for the large parcel. Remembering that the mode and median value for total acres owned per study area property owner was much smaller than the mean, value per acre of land was tested against total acres. The result was a negative correlation with a Pearson's R value of -.0916. When statistically controlling for type of home development, the correlation was -.1072. This is a moderate relationship indicating that as total acres owned per property owner increase, the value per acre of land decreases.

When location to water resource is considered, a strong relationship is found to exist. The value per acre of land for property located on water was \$35,244.26 and \$22,216.01 for property not located on water. An F-test between the means indicates that property located on water has a significantly higher value per acre of land than for property not located on water. Even when statistically controlling for the effect of type of home development, value per acre of land for water property is significantly higher than for property not on water (See Figure 5).

	Size of Sample	Mean	Standard Deviation
Home			······································
No Home	404	\$ 7,596.18	10,373.034
Seasonal Home	508	\$31,827.03	39,314.453
Permanent Home	436	\$41,322.51	48,727.07
Total	1,348	\$27,636.21	39,603.3271

VALUE PER ACRE IN NORTHERN MICHIGAN STUDY AREA BY TYPE OF HOME DEVELOPMENT

 $Spearmans_{R_s} = .4926$

Kendall Tau = .3329

When type of water resource associated with a property is considered, evidence indicates that lake and pond property has a much higher value per acre of land than river property as presented in Figure 6. Property located on a lake or pond has a mean value per acre of land of \$38,236.66 compared to only \$18,115.24 for property located on a river. Even when statistically controlling for the effects of type of home development, lake or pond property still maintains a substantially higher per acre of land value than river property. In fact, one surprising result is that land located on a river has a lower per acre of land value than land not located on any water. This is once again probably due to the effect of subdividing. It was reported earlier in Table 69 that average acreage owned per property onwer located on a river was 78.4952 compared to 16.0324 (Table 68) for property not on any water resource. Having previously ascertained that value per acre of land is negatively related, although weakly, to total acres owned it is easy to see how property located on a river can have a lower per acre of land value than property not located on any water resource.

Mean	\$27,597.15
Standard Deviation	39,611.66
Size of Sample	1339

Property Located on Water		Property Not Located on Water		
Mean	\$35,244.26	Mean	\$22,216.01	
Standard Deviation	44,043.98	Standard Deviation	35,045.14	
Size of Sample	563	Size of Sample	776	
No Home		No Home		
Mean	\$ 9,391.86	Mean	\$ 6,835.55	
Standard Deviation	11,901.90	Standard Deviation	9,585.78	
Size of Sample	122	Size of Sample	280	

Seasonal Home

Permanent Home

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Mean	\$40,761.62
Standard Deviation	40,860.65
Size of Sample	306

Permanent Home

Mean

Seasonal Home

Standard Deviation Size of Sample

,

\$18,368.53

32,614.50

201

Mean	\$46,266.42	Mean	\$38,921.10
Standard Deviation	48,372.76	Standard Deviation	43,719.23
Size of Sample	306	Size of Sample	295

Figure 5

Value per Acre of Land by Location to Water Resource Controlling for Type of Home Development

N	Mean	\$35,283.89	
S	Standard Deviation	44,043.98	
S	Size of Sample	563	
Lake or Po	ond	River	
Mean	\$38,236.66	Mean	\$18,115.24
Standard Deviation	46,233.64	Standard Deviation	22,597.83
Size of Sample	477	Size of Sample	86
No Home		No Home	
Mean	\$10,013.05	Mean	\$ 8,064.30
Standard Deviation	12,063.455	Standard Deviation	13,990.833
Size of Sample	102	Size of Sample	21
<u>Seasonal Home</u>		Seasonal Home	
Mean	\$43,209.72	Mean	\$21,448.40
Standard Deviation	41,955.07	Standard Deviation	25,346.27
Size of Sample	269	Size of Sample	36
Permanent Home		Permanent Home	
Mean	\$52,774.91	Mean	\$22,249.25
Standard Deviation	63,300.26	Standard Deviation	22,359.76

Figure 6

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Size of Sample

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Size of Sample

Value per Acre for Property Located on Water Resource Controlling for Type of Home Development

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Value per acre of land is significantly affected by location of private property being adjacent to public land. The value per acre of land for those property owners whose land is adjacent to public land is \$13,992.14. The mean value per acre of land not adjacent to public land is \$30,912.76. Both mean values occur outside of the 95% Confidence Interval boundaries for the overall mean for value per acre of land. In addition, an F-test indicates that the means for property owners whose land is adjacent to public land and the mean for property owners whose land is not adjacent to public land are significantly different.

The results are somewhat surprising when the influence of other variables are not considered. Initially, it seems because mean acreage size is much larger for private property owners with land adjacent to public property value per acre of land and total acreage owned would be strongly related in the negative direction. However, results from the section on initial property purchase, acreage and valuation show a weak negative relationship exists. One explanation is possibly the overall relationship between value per acre of land and total acreage owned is being suppressed by another variable. The next section will explore this possibility but at this point, empirical evidence indicates having public land adjacent to private land results in a lower value per acre of land.

Land value per acre was also found to be highly correlated with size of lake or pond on which the land is located. A Spearmans_{Rs} value of .4137 and a Kendall Tau value of .3226 indicate the larger the size of lake or pond, the greater the value per acre of land.

The next step in the analysis is to control for effects of other variables and uncover suppressed relationships and try to eliminate spurious relationships. This is accomplished by using a multiple

regression technique which controls for the effect of all independent variables entered into the regression model. As mentioned in Chapter II, three multiple regressions were performed on survey data. The simple correlation matrix relating to variables in the equations are listed in Appendix C and the means and standard deviations in Appendix D.

One of the null hypotheses of this study was that natural resource characteristics do not exert a significant influence on value per acre of land. Interpretation of regression results indicate this particular null hypothesis must be rejected but only under certain conditions. That is, some natural resource characteristics exert a significant influence on value per acre of land and others have no significant effect.

As expected, in all three regression equations the independent variable exerting the most influence on value per acre of land was type of home development. In addition, total acres owned was found to contribute significantly in the negative direction for value per acre of land. There were three natural resource characteristics found to be significant in all three equations. They were H4 (size of lake greater than 500 acres) which contributed significantly in a positive direction, H2 (size of lake 25-100 acres) which contributed significantly in a positive direction, and J1 (adjacent to public property) which contributed significantly in a negative direction.

When considering only the simplified regression equation, which was neither county or township specific, the independent variable Kl (close to ski area) was found to contribute significantly in the positive direction. A complete list of all independent variables, their coefficient, t value, and 95% confidence intervals for each regression equation, along with each regression's R^2 and residual mean square values can be found in Table 73. Observations. from Table 73 reveal the regression equation

INFORMATION FROM THE THREE REGRESSION EQUATIONS FOR THE DEPENDENT VARIABLE "VALUE PER ACRE OF LAND"

	Simplif	ession	County Specific Regression			Township Specific Regression			
	Coefficient Value	t-Value	95% Confidence Interval	Coefficient Value	t-Value	95% Confidence Interval	Coefficient Value	t-Value	95% Confidence Interval
Constant	38991.398	16.7335	34420.32	46190.47	18.1917	41209.45	26281.1	5.892	17530.83
		~	43562.48		*	51171.49	,	*	- 35031.36
C1	-		-	-15402.47	- 4.7156	-21810.00	_		
					*	- 8994.96			
C2				-15889.676	- 5.2734	-21800.69		-	
					~	- 9978.66			
D1	<u> </u>		-	_	-	_	3867.97	.77298	- 6627.36
									_ 14363.30
D2			_	-	-		+	+	+
D3							11363.37	1.8264	- 841.95
							,		- 23568.68
D4		-				_	347.76	.06169	4 -10710.50
									- 11406.04

Table 73 - Continued

	Simplif	Simplified Regression		County Sp	County Specific Regression			Township Regression		
	Coefficient Value	t-Value	95% Confidence Interval	Coefficient Value	t-Value	95% Confidence Interval	Coefficient Value	t-Value	95% Confidence Interval	
D5	-		-	-	_	-	17146.43	3.215	6684.12 	
D6	-	-	-	-	-	-	- 6445.89	-1.0480	-18511.69 5619.917	
D7	-		-	-	_	-	22777.05	5.4138 *	14523.56	
D8	-	-	-	_	-		9123.59	1.5608	- 2343.51 20590.70	
E1	-31772.67	-13.1014	-36530.11	-33463.39	-13.8680	-38197.05 -28729.73	-33594.64	-14.0169	-38296.40	
E2	-15690.74	- 6.2398 *	-20623.76 -10757.72	-14357.71	- 5.7916 *	-19220.92 - 9494.50	-14043.93	- 5.6162 *	-18949.48 - 9138.38	
G1	- 3434.70	8361	-11493.57 4624.16	- 3778.60	6586	-15034.36	6891.41	1.4584	- 2378.15 16160.98	

Table 73 - Continued

	Simpli	Simplified Regression		County S	County Specific Regression			Township Regression		
	Coefficient Value	t-Value	95% Confidence Interval	Coefficient Value	t-Value	95% Confidence Interval	Coefficient Value	t-Value	95% Confidence Interval	
H]	- 954.36	28529	- 7516.67	- 1648.19	4968	- 8156.22	- 3521.84	-1.0744	- 9952.06	
			- 5607.94			4859.82			2908.38	
H2	8330.43	2.4798	1740.39	9774.49	2.1312	777.13	11776.13	2.7145	3265.85	
		^	- 14920.46		^	- 18771.85		~	20287.41	
H3	3332.29	.53549	- 8875.27	+	+	+	1552.74	.2461	-10824.65	
			- 15539.86						13930.13	
H4	33070.74	8.6689	25587.03	30398.27	8.0327	22974.48	27085.95	7.1504	19654.84	
		~	40554.44		~	37822.07		^	34517.07	
J1	-11035.62	-4.3294	-16036.05	- 7705.25	-2.9883	-12763.44	- 9101.45	-2.8964	-15265.72	
		×	- 6035.19		×	- 2647.02		^	- 2937.18	
К1	4733.42	2.3586	796.52	1324.98	.6439	- 2711.49	603.68	.2938	- 3426.77	
		*	- 8670.33			- 5361.46			4634.13	
LKMILE	95.12	1.1609	- 65.61	38.29	.4717	- 120.95	+	+	+	
ADd			255.86			197.52				

Table 73 - Continued

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	Simplified Regression			County Sp	County Specific Regression			Township Regression		
	Coefficient Value	t-Value	95% Confidence Interval	Coefficient Value	t-Value	95% Confidence Interval	Coefficient Value	t-Value	95% Confidence Interval	
RIVMILE X6b	- 110.37	-1.2548	- 282.91 - 62.18	- 62.98	7239	- 233.64 - 107.68	+	+	+	
TOTACRES X7	- 31.699	-3.2174 *	- 51.03 - 12.37	- 33.32	-3.4106 *	- 52.487 - 14.155	- 24.26	-2.4935 *	- 43.3410 - 5.1732	
C1G1	-	_	-	7708.66	.9311	- 8532.34 23949.66	-	-		
C2H2	-	- .	-	1629.13	.2465	-11336.78 14595.05	-	-	-	
C2H3	-	_	-	15315.96	2.3462	2509.58 28122.34	-		-	
D3G1	_	_	-	· _	_	-	-15711.76	-1.5825	-35188.43 	
D5H2		-	-	-	-	-	-13119.64	-1.8860	-26765.86 - 526.58	

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Table 73 - Continued

	Simplified Regression			County Sp	County Specific Regression			Township Regression		
	Coefficient Value	t-Value	95% Confidence Interval	Coefficient Value	t-Value	95% Confidence Interval	Coefficient Value	t-Value	95% Confidence Interval	
D5H3		-		_	_		+	+	+	
D7J1	-	-	-	 			2787.79	.5156	- 7819.68	
									- 13395.26	
E2G3	23535.53	2.9947	8115.25	20868.43	3.2356	8216.25	22645.17	2.9648	7661.47	
		×	- 38937.82		*	- 33520.61		~	- 37628.86	
R ²		.21389			.23993			.26480		
Residual Mean Square	1242120711.57672			1204562948.09946			1168622125.78786			

* Variable is significant at .05 probability level.

+ Variable does not meet tolerance level requirement and does not enter into the regression.

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with the highest R^2 value and lowest residual mean square value is the one which is township specific. However, the gain in R^2 is small and is due mostly to the addition of more independent variables in the regression equation. Therefore, to choose one of the three regression equations over another as the most appropriate for use in value per acre assessments in northern Michigan, without additional information, is hazardous. For example, if an area in Roscommon county is chosen for analysis, it would be wise to start with the simplified regression equation. If there is prior knowledge which indicates that Roscommon county is quite similar to any of the three counties in this study, then it may be appropriate to use the county specific regression equation. Additional analysis may show that the area chosen in Roscommon county mirrors a township used in this study, it would then seem advisable to use the township specific model. Care must be exercised in which model is chosen for further analysis in areas other than the study area used in this project. Care must also be exercised in using any of the regressions over time without additional work to estimate change that may have occurred.

A surprising result of all three regression equations was variable J1 (adjacent to public property) which contributed significantly to value per acre of land in a negative direction. Initially it was thought variable J1 would contribute significantly in a positive direction. This assumption was based on the open spaces theory. Having undeveloped land next to developed land generally gives a feeling of owning more land than in actuality. However, literature review revealed open spaces actually may impart a negative influence on value per acre of land due to tresspassing problems. A majority (54%) of landowners in northern Michigan post and fence their land against tresspassers with many more (11%) intending to post and fence in the near future (McEwan, 1970).

Another depressant for value per acre of land for private land adjacent to public land may be the fact that for most landowners seclusion is not a desirable trait, rather, close contact with neighbors was more desirable (McEwan, 1970). Examination of Table 70 reveals property owners with land adjacent to public land own significantly more land than property owners not adjacent to public land. The high mean (30.026) acres owned by property owners adjacent to public land increases the chances for seclusion. Because seclusion is not a desirable trait value per acre of land for private property next to public land will be depressed. Also, this study revealed that value per acre of land decreases as amount of land owned increases. All these factors will interact to reduce value per acre of land for private property adjacent to public land.

Further observation of Table 73 reveals many of the independent variables to be statistically significant and enter into the regression, however, they only account for around one-quarter of the variance in the dependent variable. In addition, the large confidence intervals shown for each independent variable lead to a poor predictive capability for the model. Obviously, there are many more unknown variables in the study area which contribute significantly to value per acre of land than those identified here. This is the greatest problem in attempting to choose any of the three regressions for use in a specific area. The amount of variance controlled for by the independent variable is not large enough to justify practical use.

The three regression equations can now be summarized into the following form. The county specific model becomes:

Y1 =
$$46190.47-33463.39$$
 (E1) *
-14357.71 (E2)* - 15402.47 (C1)* - 15889.68 (C2)*
-7705.25 (J1)* + 1324.98 (K1) - 3778.60 (G1) -
1648.19 (H1) + 9774.49 (H2) + 0.0 (H3) + 30398.27 (H4)*
+ 38.29 (Y6a) = 62.98 (Y6b) - 33.32 (Y7)* + 7708.66
(1G1) + 1629.13 (C2H2) + 15315.96 (C2H3)* + 20868.43
(E2G3)* + $\frac{1}{6}$

*Indicates variable significant at .05 probability level R^2 = .23993

The township specific model becomes:

Y1 = 26281.10 - 33594.64 (E1)* - 14043.93 (E2)* + 3867.97 (D1) + 0.0 (D2) + 11363.37 (D3) + 347.76(D4) + 17146.43 (D5)* - 6445.89 (D6) + 22777.05 (D7)* + 923.59 (D8) - 9101.45 (J1)* + 603.68 (K1) + 6891.41(G1) - 3521.84 (H1) + 11776.13 (H2) + 1552.74 (H3) + 27085.95 (H4)* + 0.0 (Y6a) + 0.0 (Y6b) - 24.26 (Y7)* - 15771.76 (D3G1) - 13119.64 (D5H2) + 0.0 (D5H3) + 2787.79 (D7J1) + 22645.17 (E2G3)* + (

*Indicates variable significant at .05 probability level R²=.26480

and the simplified model becomes:

Y1 = 38991.398 - 31772.67 (E1)* - 15690.74 (E2)* - 11035.62 (J1)* + 4733.42 (K1)* - 3434.70 (G1) - 954.36 (H1) + 8330.43 (H2)* + 3332.29 (H3) + 33070.74 (H4)* + 95.12 (Y6a) - 110.37 (Y6b) -31.699 (Y7)* + 23525.53 (E2G3)* + (-

*Indicates variable significant at .05 probability level R^2 =.21389

where:

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E1 = 1 when there is no home development on the property
E2 = 1 when there is a seasonal home on the property
Cl = 1 when the property is located in Crawford county
C2 = 1 when the property is located in Otsego county
D1 = 1 when the property is located in South Branch T25NR2W township
D2 = 1 when the property is located in Grayling T27NR2W township
D3 = 1 when the property is located in Grayling T26NR4W township
D4 = 1 when the property is located in Orange T26NR7W township
D5 = 1 when the property is located in Blue Lake T28NR5W township
D6 = 1 when the property is located in Garfield T25NR7W township
D7 = 1 when the property is located in Bagley T30NR3W township
D8 = 1 when the property is located in Chester T29NR2W township
<pre>Jl = 1 when the property is located adjacent to public land</pre>
K1 = 1 when the property is located close to a commercial ski area
G1 = 1 when the property is located on a river
H1 = 1 when the property is located on a lake less than 25 acres in size
H2 = 1 when the property is located on a lake greater than 25 acres but less than 100 acres in size
H3 = 1 when the property is located on a lake greater than 100 acres but less than 500 acres in size
H4 = 1 when the property is located on a lake greater than 500 acres in size
Y6a = actual miles property is located away from a lake
Y6b = actual miles property is located away from a river
Y7 = actual size of property in acres
ClGl = 1 when the property is located in Crawford county and on a river
C2G2 = 1 when the property is located in Otsego county and on a lake greater than 25 acres but less than 100 acres in size

- C2H3 = 1 when the property is located in Otsego county and on a lake greater than 100 acres but less than 500 acres in size
- D3G1 = 1 when the property is located in Grayling T26NR4W township and on a river
- D5H2 = 1 when the property is located in Blue Lake T28NR5W township and on a lake greater than 25 acres but less than 100 acres in size
- D5H3 = 1 when the property is located in Blue Lake T28NR5W township and on a lake greater than 100 acres but less than 500 acres in size
- D7J1 = 1 when the property is located in Bagley T3ONR3W township and is adjacent to public land
- E2H3 = 1 when the property has a seasonal home on it and is located on a lake greater than 100 acres bue less than 500 acres in size

Internal Validation

One hypothesis is that there is no linear relationship between the dependent and the set of independent variables. To test this hypothesis, it is necessary to see if any of the assumptions of the classical linear regression model were violated. As mentioned before, great care was taken to ensure that multicollinearity did not become a problem. Initial model specification was such that multicollinearity was severely controlled. To further guard against any multicollinearity problems, combination variables were created when zero order partial correlations showed any appreciable relationship amongst a set of independent variables. Creation of dummy variables was necessary to ensure that the assumption of interval level measurement in all variables was met. The level of analysis inherent in regression requires interval measurement.

Homoscedasticity was also evaluated through visual inspection of a plot of residuals and various statistics output by SPSS subprogram REGRESSION. Visual inspection shows that (1) there was no pattern which

indicated the need to introduce more multiplicitive terms or polynomial terms into the equation, (2) no visual pattern existed among the plot of residuals indicating any problems with homoscedasticity. Statistics output also indicated no homoscedasticity problems. An expected run of signs was calculated to be 648 and actual run of signs was 629. This indicates a normal distribution of the error term around values of x and that the expected value of the error term is equal to zero. Therefore, all the assumptions of a general linear model have been met and the null hypothesis which states there is no linear relationship between the dependent variable and a set of independent variables must be rejected as must the null hypothesis which states that any relationship between the dependent variable and any independent variable is not linear and the effect between two or more independent variables is non-additive. The relationship between the dependent and a set of independent variables is linear, and the classical linear regression model, modified with a few combination variables, appeared to be the appropriate model for the study.

External Validity

The test of any model is how well does it work. In this study the predictive power of the multiple regression model was checked by randomly selecting cases, which went into building the model, and testing them. Normally a model is tested with data which did not go into building the model but that entails another survey. To save time and effort, the model is tested to see if it predicts well with biased data and if so, then it would be necessary to conduct a survey to see how well the model works with unbiased data. It is biased data because the model is being tested under the most advantageous manner, as it is being tested against information from which it was derived.

As expected, the model does not predict well. The amount of variance explained by any of the regression equations is too small and the confidence intervals for the independent variables are too large to allow for repeated good predictions. Future work should be directed toward identification of other variables which should enter into a regression equation of this type, and, if successful, the predictive power of the model should improve.

Summary

In this chapter relationships between value per acre of land and selected independent variables have been explored including type of home development, political boundary of location, and location next to, or close to, selected natural resources.

The analysis shows that:

- Location on large lakes (greater than 500 acres) and medium lakes (25-100 acres) is significantly and positively correlated with value per acre of land.
- Location to public land contributes significantly in the negative direction for value per acre of land.
- 3) There is no evidence to suggest that location on lakes (100-500 acres or less than 25 acres), location on rivers, distance from lakes or rivers has any effect on value per acre of land.
- 4) There is some evidence that suggests closeness to ski areas may contribute in the positive direction to value per acre of land. The independent variable Kl (close to a ski area), was significant in only one of the regression equations.

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CHAPTER IX

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

The major objective of this study was to develop an information base concerning socioeconomic and general characteristics of landed property and home owners in three representative counties of Michigan's northern lower peninsula. The information base has been established; however, it is by no means complete. With what has been ascertained, though, it is possible to formulate some general conclusions and recommendations that impact on future policy. The major conclusions from this study are outlined below.

- 1) The typical property owner in the northern Michigan study area was male, married and approximately fifty=three years old. Overall family income levels of property owners in the study area were higher among seasonal home owners and property owners with no home in the area than for permanent home owners. In addition, property owners in Kalkaska and Crawford counties generally had lower family income levels than property owners in Otsego county.
- 2) There were slightly more property owners with seasonal homes in the study area than either property owners with permanent homes or no type of home development. The Kalkaska townships had more seasonal home owners than those in Crawford or Otsego counties. A large percentage of property owners with a seasonal home or no home development on their property in the study area lived in the southeastern Michigan region. In addition, almost one-third of the study areas' permanent

residents used to live in the southeastern Michigan area prior to relocating in the study area.

- 3) The major reason for property acquisition in the study area was for investment or a retirement home, although the influence of recreation ranks high as a major reason for property acquisition. The influence of recreation was probably underestimated as a major reason for property acquisition.
- 4) Most information about available property came from friends and relatives. The traditional market information sources (i.e. real estate salespersons, newspapers/magazine ads) accounted for less than one-fourth of first information sources leading to property acquisition in the northern Michigan study area.
- 5) Over one-fifth of the current property owners in the study area intended to sell their property in the future. Eighty percent who desired to sell visualized selling within a five year period. More property owners with no home development on their land in the study area desired to sell than either property owners with a permanent home or seasonal home. This is not surprising as a larger percentage of property owners with no home development on their land in the study area purchased their property for its investment potential than either property owners with permanent homes or seasonal homes.
- 6) There is a definite feeling that levels of property taxes in the study area were too high. Kalkaska townships had a higher percentage of property owners who felt property

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tax levels too high than the Crawford or Otsego townships. A higher percentage of property owners with a permanent home in the study area had felt property tax levels too high than did property owners with a seasonal home or no home development in the study area.

- 7) Twenty-five percent of the property owners in the study area desired at least a few more county or municipal services to be provided. Permanent home owners in the study area generally desired more services to be provided than property owners with a seasonal home or no home in the area. Kalkaska and Crawford counties had higher percentages of property owners desiring more services than property owners in Otsego county. The quality of the county or municipal services provided was generally viewed as average or good.
- 8) Only one-fifth of the northern Michigan study area property owners opposed any future residential development. Kalkaska county property owners were more opposed to future residential growth than property owners in Otsego or Crawford county. Seasonal home owners were more opposed to residential growth than property owners with a permanent home or no home development in the study area. There is also a higher proportion of seasonal home owners who favored stricter land use controls rather than either property owners with a permanent home or no home development in the study area.
- 9) Uncertainty over present land development regulations was high among all northern Michigan study area property owners. However, property owners with seasonal homes or no home development

in the study area were much less informed of land development restrictions than property owners with a permanent home in the study area. Uncertainty was also a major problem for seasonal home owners and especially property owners with no home development in the study area when their attitudes were solicited on the quantity and quality of services provided, present land development regulations and future residential growth. This indicated that property owners not living in the study area were generally unaware of what services were available, what regulations and restrictions there were for developing their land, and trends concerning residential growth in the study area.

- 10) The average length of stay in the study area per seasonal home owner was approximately 11 days, however, the most common length of stay was a weekend and summer was the time of heaviest use.
- 11) The mean acreage owned per northern Michigan study area property owner was approximately 17 acres. However, this figure is somewhat misleading as the most common size parcel owned was determined to be only one-half acre.
- 12) One-third of the property owned in the study area was on some type of water resource. Location of property on large lakes (greater than 500 acres) and medium size lakes (25-100 acres) was determined to raise value per acre of land. There was no evidence to suggest that location on lakes 100-500 acres or less than 25 acres in size or location on rivers had any effect on value per acre of land.
13) Almost one-fifth of land owned in the study area was adjacent to public land. In addition, property owners located next to public land owned significantly larger acreage than property owners not so located. Analysis showed that location next to public land significantly lowered land value per acre even when controlling for total acres owned per property owner.

Recommendations

 Counties in the northern Michigan study area should seriously consider viable alternatives to present methods of administering local and municipal services.

There are quite a few trends which surfaced in the survey results leading to this suggestion. It is quite evident that the influence of southeastern Michigan will continue to be felt in the study area. More services will be demanded as residents of southeastern Michigan, who are in general used to services provided by a metropolitan area, continue to influence policy. Growth in outlying areas will also stress present levels of public service. A severe problem arises when more services are demanded but there is an unwillingness to pay or even an inability to pay for these services. This is what is happening in the northern Michigan study area at the present time.

The analysis indicated that property owners with permanent homes in the study area desired more services, were more upset about current property tax levels and had lower family income than property owners with a seasonal home or no home development in the area. Meeting the increased demand for services without raising property taxes, requires a county to consider alternatives.

One feasible alternative may be forming regional cooperatives to take advantage of economies of scale. Regional health services are one example of cooperative arrangements already working in northern Michigan to hold down costs and improve quality of services provided. Another alternative that may be worthwhile is to contract with private companies for services now provided at the public level. A third alternative would prioritize service presently provided publicly and shift tax revenues to increase quality of high priority service and leave low priority services for individuals to handle on their own. There are many other alternatives which professional managers recognize and may be better suited for the region. Results of this study indicate a potential supply and demand problem for municipal and county services is present. Therefore, alternative arrangements to handle the future disposition of public services should be considered.

 Local and regional tourism agencies may wish to consider alternatives aimed at attracting seasonal residents to the area in the off season.

There are two reasons for this suggestion. It is obvious that the more money seasonal residents spend in an area, the greater the economic impact on that area. It is also obvious from survey results that seasonal home owners have the highest levels of family income of any group of property owners. Consequently, seasonal home owners will have more disposable income. Seasonal home owners already have a substantial capital investment in the study area and any activity that attracts them to the area during the off season may economically benefit the community. However, it is also possible that expected costs of services required to attract seasonal home owners to the area during the off season may exceed expected community benefits.

The survey also indicated that recreational considerations were a major reason for initial property acquisition. Policies that would lengthen the tourist season (establishment of an extensive snowmobile trail) or exploit any comparative advantage that exist, or could be created, should be considered as methods to create additional tourist activity. The spring Kalkaska trout festival and unique Alpine atmosphere of Gaylord are just two examples of methods utilized to economically strengthen the host community.

It is entirely possible that after careful consultation, it may be determined that economic and social costs of attracting more tourists will offset expected benefits. In this case the correct decision may be to maintain the status quo. However, study results indicate a potential for economic benefit and counties would be best advised to consider all possibilities.

3) Initiate a program to reduce uncertainty and confusion over issues that could affect the valuation of property.

Rules and regulations are in constant flux when it comes to land use. Local, regional, state, and federal policies can affect one's use and subsequent valuation of real property. The major responsibility for controlling location and quality of land development rests with the local government (American Society of Planning Officials, 1976). The major responsibility for informing property owners of any changes that could affect perceived quality, as reflected in expected market exchange values, of their land should also rest with local government. It is clear from survey results that many property owners are unaware of current land development regulations in the study area. In addition, many property owners are unaware of

the level and type of public services provided. Uncertainty and confusion is very high among property owners with seasonal homes or no type of home development. This is due in large part to the present practice of announcing zoning and development changes through local newspapers. Most property owners not permanently located in the study area do not receive the area's local newspaper. It should be the responsibility of the local governing agency to initiate a program to make property owners not permanently located in the area aware of any proposed or enacted changes concerning land development. One approach that could be considered is to attach a newsletter, along with the property tax bill, identifying key proposed or enacted changes for the community. Costs would be nominal and uncertainty could be substantially reduced.

 Formulate effective policy to control unplanned settlement practices especially around environmentally sensitive areas.

It is clear from survey results that potential for future residential growth is high in the northern Michigan study area. Present property owners expect growth to continue and many desire it. At the present time adequate regulations to control unplanned settlement have been missing in Michigan (Nelson, 1973). A major problem develops when unplanned settlement takes place in environmentally sensitive areas. Survey results indicate increased demand for lots on certain size lakes exist, as evidenced by higher value per acre of land values for lots located on those lakes. The survey did not specifically address reasons behind increased demand. However, prior research indicated that developers' preference may be more important than consumers' preferences for location decisions concerning new development

(Kaiser, 1968). The producer does not merely reflect consumer preferences, but considers other inputs such as site characteristics, acting as constraints and parameters, and decision agent characteristics - those which affect the profit and production functions. Consumer preferences play a part in the final location decision, but only in an indirect and partial manner. When dealing with residential development, it may be more appropriate to concentrate on controlling developers rather than consumers.

One recent trend in Michigan has been towards the planned development type of recreation communities as opposed to the individual lot type (Nelson, 1973; Fletcher, 1978). If this trend continues, social, environmental, and economic impacts can be reduced through this cluster-The major burden of land use control in the state rests with local ing. government which generally does not have resources to do an adequate job (Nelson, 1973; American Society of Planning Officials, 1976). The trend of controlled growth in subdivisions can be very beneficial in slowing down unplanned settlement practices. However, effort must be expended by local governments to prevent damage from unplanned settlement practices. Not all property owners will follow the trend and not all recreational subdivisions will be compatable with the area, yet local governments will still be charged with protecting an areas' resources. Therefore, policy should be considered to provide resources local governments need to control unplanned settlement practices.

One other trend surfacing in recent years is creation of Undivided Interests (UDI) (Dickinson, and Hansen, 1975). This trend toward UDI's has grown out of problems experiences with traditional

recreational developments. Members in a UDI own shares of land within the club but any individually owned permanent structures are concentrated in an area where environmental harm is minimized. Land that is not developed is used for recreational activity (hiking, hunting, etc.) of which only members of the club may participate. The advantages of the UDI are less environmental damage and larger property tax returns for the county in the long run. Initially, property taxes are less because most of the land is not assessed for home site use in the UDI's. However, in the long run, because no permanent structures will be scattered over the area, net property taxes will be larger than for traditional development, because county services will not have to be provided to remote clients.

These are just a few approaches to control unplanned settlement practices. Further consideration should be given to analyzing alternatives and deciding on a course of action. Survey results indicate unplanned settlement practices will continue to be a problem in northern Michigan, therefore, effective policy is needed to control problems expected to arise.

5. Continue development of land value models.

The primary purpose of the value per acre of land model in this study was to determine what effect, if any, certain natural resources had on the estimated market value of land. Results showed that certain natural resource characteristics did contribute significantly to land values. However, the amount of variation explained by the model was low indicating there are likely more independent variables which contribute significantly to land valuation. Addition of more location variables (i.e. accessibility), inclusion of a wider array of site

attributes (i.e. shape, soils), services provided (i.e. utilities, roads), use potential (i.e. recreation, investment), ownership patterns (i.e. zoning, building codes) will probably lead to a better prediction model for value per acre of land (Real Estate Research Corporation, 1974). Quite possibly aggregated value per acre of land regression models (i.e. county or regional) would be more accurate for prediction purposes than the individual property owner's model examined in this study. Research should proceed in this area as a good chance exists to develop useful predictive aggregated models.

APPENDICES



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Please See the Folder in the Back Cover of this Manuscript for a Copy of the Questionnaire

APPENDIX B

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Planning Regions

REGION 1	REGION 2	REGION 3	REGION 4	REGION 5	REGION 6
Livingston	Hillsdale	Barry	Berrien	Genesee	Clinton
Monroe	Jackson	Branch	Cass	Lapeer	Eaton
St. Clair	Lenawee	Calhoun	Van Buren	Shiawasee	Ingham
Washtenaw		Kalamazoo			
		St. Joseph			
DECTON 7	DECTON O	DECTON O		DECION 11	DECION 10
REGION 7	REGION 8	REGION 9	REGION TO	REGION	REGION 12
Arenac	Allegan	Alcona	Antrim	Chippewa	Alger
Bay	Ionia	Alpena	Benzie	Luce	Delta
Clare	Kent	Cheboygan	Charlevoix	Mackinac	Dickinson
Gladwin	Lake	Montmorency	Emmet		Marquette
Gratiot	Mason	Oscoda	Grand Trave	rse	Menominee
Huron	Mecosta	Presue Isle	Leelanaw		Schoolcraft
Iosco	Montcalm		Manistee		
Isabella	Newaygo		Missaukee		
Midland	Osceola		Wexford		
Ogemaw					
Roscommon					
Saginaw					
Sanilac					
Tuscola					
REGION 13	REGION 14	REGION 15	REGION 16	REGION 17	REGION 18
<u></u>	<u>NEGION 11</u>	<u></u>	<u>ALGION TO</u>		
Baraga	Oceana	Wayne	Otsego	Ohio	Florida
Gogebic	Muskegon	0ak1and	Crawford		
Houghton	Ottawa	Macomb	Kalkaska		
Iron					REGION 19
Keweenaw					Other States
Ontonagon					

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APPENDIX C

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Multiple Regression Simple Correlation Matrices

CORRELATION COEFFICIENTS.

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A VALUE OF 99.00000 IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED.

Appendix C - Continued

Multiple Regression Simple Correlation Matrices

LMILE RMILE	04581 06116	03418 .01343	07198 04156	.00252 .05197	.00646 .01950	05925 04903
	VALUACRE	C1	C2	Dl	D2	D3
G1 H1 H2 H3 H4 J1 C1G1 C2H2 C2H3 D3G1 D5H2 D5H3 D5H3 D7J1 E2H3 TOTACRES K1 LMILE RMILE	.01945 00402 .15854 .16279 .14417 .04506 .01680 .14256 .14508 06300 .12792 .12526 05057 .29049 01447 04014 11276 09924	00562 08570 07080 05677 .12833 .71021 06021 05834 .49808 05645 05282 03907 05613 .15436 03153 07624 05805	10879 08988 09226 .03993 04000 07643 07368 02805 07168 06705 .03629 07125 00188 02409 08154 01317	09220 09464 02899 06087 .70254 07558 04269 .65867 06878 06055 07309 03463 01009 09147 17589	07819 00577 05029 06478 .81974 03527 06073 .74594 02658 .79273 02001 01410 07557 06269	05690 04176 06849 06410 02897 06284 05833 02984 06198 02484 .06395 07757 16435
	E2	G1	HI	H2	Н3	H4
D7J1 E2H3 TOTACRES K1 LMILE RMILE	04683 .60014 02476 00218 05637 04677	03865 .00323 04249 03647 03559	03209 02368 05930 04970	.01509 .00584 .01410	07715 08967	.82070
	D5H3	D7J1	L2H3	TOTACRES	к1	LMILE

APPENDIX D

Mean and Standard Deviations for the Multiple Regression Variables

<u>Variable</u>	Mean	Standard Deviation
VALUACRE	27721.8301	39559.7260
C1	.1416	.3487
C2	.2400	.4272
D1	.0698	.2248
D2	.0171	.1296
D3	.0552	.2285
D4	.0577	.2333
D5	.1406	.3477
D6	.0407	. 1976
D7	.5261	.4994
D8	.0507	.2194
El	.3283	.4697
E2	.3619	.4807
G1	.0617	.2408
H1	.0959	.2945
H2	.1004	.3006
Н3	.0708	.2565
H4	.0743	.2623
J1	.1782	.3828
C1G1	.0321	.1764
C2H2	.0522	.2225
C2H3	.0487	.2153
D3G1	.0161	.1258
D5H2	.0462	.2099
D5H3	.0407	.1976
D7J1	.0492	.2163
E2H3	.0457	.2088
TOTACRES	17.5069	98.4575
К1	.6345	. 4817
LMILE	5.6376	20.5957
RMILE	4.3273	19.0551

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LIST OF REFERENCES

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- Ackoff, Russell L. <u>Scientific Method</u>. New York: John Wiley and Sons, Inc., 1962.
- American Society of Planning Officials. <u>Subidividing Rural America</u>: <u>Impacts of Recreational Lot and Second Home Development</u>. Prepared for the Council on Environmental Quality, and the Department of Housing and Urban Development. Washington D.C.: Government Printing Office, 1976.
- Anderson, William Dyer. "Ways to Regulate the Aesthetics of our Rural Environment." <u>Yearbook of Agriculture</u>, 1970. Washington D.C.: Government Printing Office, 1970.
- Ando, Albert and Modigliani, Franco. "The Life Cycle Hypothesis of Saving: Aggregate Implications and Tests." <u>American Economic</u> Review. (March 1963): 55-84.
- Bailey, Warren R. "Rural and Urban: The InterFaces." <u>Yearbook of</u> <u>Agriculture, 1970</u>. Washington D.C.: Government Printing Office, 1970.
- Barlowe, Raleigh. Land Resource Economics: The Economics of Real <u>Property</u>. 2nd ed. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1972.
- Barlowe, Raleigh and Alter, Theodore R. <u>Use-Value Assessment of Farm</u> <u>and Open Space Lands</u>. Development and Public Affairs Bulletin 308. East Lansing: Michigan State University, Agricultural Experiment Station, 1976.
- Beale, C. L. "People on the Land Rural Population." <u>Rural U.S.A.</u> <u>Persistence and Change</u>. ed. T. R. Ford, 1978. pp 19-34, 229-232.
- Beale, C. L. <u>The Revival of Population Growth in Non-Metropolitan</u> <u>America</u>. United States Department of Agriculture Report No. 605. Washington D.C.: Government Printing Office, 1975.
- Bird, R. and Kampe, R. <u>25 Years of Housing Progress in Rural America</u>. United States Department of Agriculture Report No. 373. Washington D.C.: Government Printing Office, 1977.
- Boxley, R. F. <u>Land Ownership Issues in Rural America</u>. United States Department of Agriculture Report No. 655. Washington D.C.: Government Printing Office, 1971.

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- Brown, C. J. D. "Michigan Streams Their Length Distribution and Drainage Areas." Michigan Conservation XIII Vol. 5, 1944, 9.
- Buse, Reuben C. and Bromley, Daniel W. <u>Applied Economics Resource</u> <u>Allocation in Rural America</u>. Ames: Iowa State University Press, 1975.
- Carliner, Geoffrey. "Determinants of Home Ownership." Land Economics 50 (May 1978): 109-119.
- Cliff, Andrew D.; Frey, Allan; and Haggett, Peter. Location Methods New York: John Wiley and Sons, Inc., 1977.
- Coughenour, C. M. and Busch, L. "Alternative Futures for Rural America: The Cloudy Crystal Ball," <u>Rural U.S.A. Persistence and Change</u>. ed. T. R. Ford, 1978. pp. 211-228, 242-245.
- Crapo, Douglas. "Recreation Activity Choice and Weather: The Significance of Various Weather Preceptions." Ph.D. dissertation, Michigan State University, 1970.
- Dickinson, Thomas E. and Hansen, David E. "Undivided Interests: Implications of a New Approach to Recreational Land Development," Land Economics 51 LI, 2 (May 1975) 124-132.
- Erdos, Paul L. <u>Professional Mail Surveys</u>. New York: McGraw Hill Book Company, 1970.
- Fletcher, James. "A Systematic Approach to the Analysis of Land Sales Regulatory Programs: A Case Study of the Michigan Land Sales Act of 1972." Ph.D. dissertation, Michigan State University, 1978.
- Ford, T. R., ed. "Contemporary Rural America: Persistence and Change." Rural U.S.A. Persistence and Change. 1978. pp 3-16, 229.
- Fremon, Suzanne and Wilson, Morrow., ed. <u>Rural America</u>. New York: H. W. Wilson, 1976.
- Friedman, Milton. <u>A Theory of the Consumption Function</u>. National Bureau of Economic Research. Princeton: Princeton University Press, 1957.
- Galin, J. <u>Summaries of Interviews Concerning the Impact of Rapid Popula-</u> <u>tion Growth Upon Selected Areas in Northern Michigan</u>. Ann Arbor: The University of Michigan, Institute of Social Research, 1976.
- Gambel, Hay B. et al. <u>Environmental Quality Effects Associated with</u> <u>Seasonal Home Communities</u>. Agricultural Experiment Station Bulletin 801. University Park: The Pennsylvania State University, 1975.
- Glahe, Fred R. <u>Macroeconomic Theory and Policy</u>. New York: Harcourt Brace Tovanavich, Inc., 1973.

- Gregory, S. <u>Statistical Methods and the Geographer</u>. 4th ed. New York: Zongman, 1978.
- Humphreys, C. R. and Green, R. F. <u>Michigan Lakes and Ponds</u>. Lake Inventory Bulletins 18 and 21. East Lansing: Michigan State University, 1962.
- Isard, Walter and Langford, Thomas W. <u>Regional Input-Output Study:</u> <u>Recollections, Reflections and Diverse Notes on the Philadelphia</u> Experience. Cambridge: The M.I.T. Press, 1971.
- Kaiser, Edward J. "Location Decision Factors in a Producer Model of Residential Development," Land Economics 44 (August 1968) 351-362.
- Marans, Robert W., et al. <u>Waterfront Living: A Report on Permanent and</u> <u>Seasonal Residents in Northern Michigan</u>. Ann Arbor: The University of Michigan, Institute of Social Research, 1976.
- Marans, Robert W. and Wellman, John D. <u>The Quality of Non-metropolitan</u> <u>Living: Evaluations, Behaviors, and Expectations of Northern</u> <u>Michigan Residents</u>. Ann Arbor: The University of Michigan, Institute of Social Research, 1978.
- Marshall, Alfred. <u>Principles of Economics</u>. Vol. 1., 2nd ed. New York: The MacMillan Company, 1891.
- McEwan, Douglas. "A Survey of Non-resident Landowners in Clare and Gladwin Counties." M. S. theses, Michigan State University, 1970.
- Michigan Public Opinion Survey. Prepared by the Department of Resource Development, Cooperative Extension Service and the Agricultural Experiment Station. East Lansing: Michigan State University, 1977.
- Morley, Frederick. <u>Michigan and its Resources</u>. Lansing: W. S. George and Company, 1881.
- Nelson, Burton D. <u>Second Home Development in Michigan</u>. Prepared for Northern Michigan Tourist and Development Association, 1973.
- Nie, Norman H., et al. <u>Statistical Package for the Social Sciences (SPSS</u>). New York: McGràw-Hill Book Company, 1975.
- O'Hare, William; Beegle, Allan J.; and Leonard, Jim. <u>Recent Changes</u> <u>in Population Growth and Distribution in Michigan</u>. Forthcoming, Agricultural Experiment Station Report.
- Payne, Brian R.; Gannon, Richard C.; Irland, Lloyd C. <u>The Second-Home</u> <u>Recreation Market in the Northeast</u>. Prepared for the Bureau of Outdoor Recreation, U.S. Department of the Interior by the Forest Service, U.S. Department of Agriculture. Washington D.C.: Government Printing Office, 1974.
- Peterson, Roger G. <u>Exercises in Statistical Inference</u>. Corvallis: 0.S.U. Book Store, Inc., 1972.

- Ragatz, Richard L. <u>Vacation Homes: An Analysis of the Market for</u> <u>Seasonal - Recreational Housing</u>. Ithaca: Cornell University, 1969.
- Real Estate Research Corporation. <u>The Costs of Sprawl: Environmental</u> <u>and Economic Costs of Alternative Residential Development Patterns</u> <u>at the Urban Fringe</u>. Prepared for the Council on Environmental Quality, the Office of Policy Development and Research in the Department of Housing and Urban Development, and the Office of Planning and Management in the Environmental Protection Agency. Washington D.C.: U.S. Government Printing Office, 1974.
- Santer, Richard A. <u>Michigan: Heart of the Great Lakes</u>. Dubuque: Kendall/Hunt Publishing Company, 1977.
- Schertz, L. P. <u>Rural America and Environmental Quality: Issues and</u> <u>Potential Impacts Situation Studies</u>. National Agricultural Outlook Conference Proceedings, 1976, 88-99.
- Stevens, S. S. "On the Theory of Scales and Measurement." <u>Science</u> 103, 1946, 677-680.
- Thomas, Edwin. "Maps of Residuals from Regression." <u>Spatial Analysis:</u> <u>A Reader in Statistical Geography</u>. ed. Brian Perry and Duane Marble, Englewood Cliffs, N.J.: Prentice Hall, 1968.
- Tombaugh, Larry W. "Factors Affecting Home Location." <u>Journal of</u> Leisure Research. Vol. 2. No. 1 (Winter 1970) 54.
- U.S. Department of Agriculture, Forest Service. <u>Questionnaires for</u> <u>Research: An Annotated Bibliography on Design, Construction and</u> <u>Use</u>. USDA Forest Service Research Paper PNW-140. Portland, Oregon, 1972.
- U.S. Department of Commerce. <u>Second Homes in the United States Current</u> <u>Housing Reports</u>. Series H-121, No. 16. Washington D.C.: Government Printing Office, 1969.
- U.S. Department of Commerce. Weather Bureau. <u>Climate of Michigan by</u> <u>Stations</u> No. 20. Washington D.C.: Government Printing Office, 1963.
- U.S. Department of Interior, Bureau of Outdoor Recreation. <u>Northern</u> <u>New England Vacation Home Study</u>. Washington D.C.: Government Printing Office, 1966.
- U.S. Rural Development Service. <u>Rural Development: Sixth Annual Report</u> of the President to the Congress on Government Service to Rural <u>America Programs</u>. Washington D.C.: Government Printing Office, 1976.
- Veatch, J. O. <u>Soils and Land of Michigan</u>. East Lansing: The Michigan State College Press, 1953.

- Vertrees, Robert. "A Survey of Non-Resident Landowners of Ten or More Acres in Antrim and Kalkaska Counties, Michigan." M.S. theses, Michigan State University, 1967.
- Verway, David I., ed. <u>Michigan Statistical Abstract</u>. East Lansing: Michigan State University, 14th edition, 1979.
- Vlasin, R. D.; Libby, L. W.; and Shelton, R. L. "Economic and Social Information for Rural America: Priorities for Immediate Improvement of Information Systems." <u>American Journal of Agricultural</u> Economics. 59 (5), (December 1975), 900-909.
- Wallis, Kenneth F. <u>Introductory Econometrics</u>. Chicago: Aldine Publishing Company, 1972.
- Ward, David J. "Serving Man's Needs: Our Rural Environment." <u>Yearbook</u> of Agriculture, 1970. Washington D.C.: Government Printing Office, 1970.
- White, Terrence H. "The Relative Importance of Education and Income as Predictors in Outdoor Recreation Participation." Journal of Leisure Research. Vol. 7, No. 3. (1975), 191.
- Wilkening, E. A. and Klessig, L. "The Rural Environment: Quality and Conflicts in Land Use." <u>Rural U.S.A. Persistence and Change</u>, ed. T. R. Ford (1978) pp 19-34, 229-232.
- Wolfe, R. I. "Communication." Journal of Leisure Research. Vol. 2, No. 1 (Winter, 1970), 54.

Dear Property Owner:

We need your help! I'm sure you're probably aware of many of the problems associated with an increasing level of development (i.e. property tax increases because more local services are required). The Department of Resource Development at Michigan State University is conducting a study of property owners in nine townships in Michigan.

When you answer the questions that follow it will help us get an idea of what causes property ownership and home development to occur. This will also benefit you because the results of our study will be made available to you through your county agent. This information can be used to get an idea of what to expect in your area, in terms of property ownership, and home development patterns, for the future.

The questionnaire should take no more than ten minutes to fill out. Your privacy is assured as we have no way of knowing the name of the person who completes the questionnaire.

Please put the completed questionnaire in the enclosed self addressed stamped envelope and slip it into the mailbox at your earliest convenience.

Thank you.

Sincerely,

Bill Mars

Bill Gartner Research Assistant

BG:lb

A. Our first section deals with prop	erty you
own or lease in Bagley Township T:	SON-R3W
in Otsego County.	

1.	How (iid you	acquire	your	tirst	piece	ofpro	operty?	
	ATTER DEPARTMENT AND A M	inherit	ed		boud	iht	-	. lease	d

Other (please explain)

2.	What was your main reason for obtaining (buying
	or leasing) your property? (Please check only the
	most important reason.)

investment	for a	retirement	home	location
------------	-------	------------	------	----------

to get out of the city

to have a place to hunt/fish

Inherited the propertyother	inherited the	property	other	
-----------------------------	---------------	----------	-------	--

3. Where did you first learn of your property?

local newspaper and magazine ad

40070 X 14 14 14 14 14 14 14 14 14 14 14 14 14	relatives		estate	salespersor
--	-----------	--	--------	-------------

other

 In what year did you obtain (or obtain right to use) your first piece of property?

5. Since you first obtained your land have you ob-

tained or sold any adjacent land?

yes no

____year

If yes, please give the amount of acreage obtained or sold and the year the transaction took place.

sold obtained	 acres	Debar vermanense gehannlikaan.	year
sold	 acres	€\$\$6.\$1.\$0.\$0.\$0.\$0.00	year
sold	 acres	general and an and an and	year

vear

		1.17		
 sold		18	i, à	
 	acr	ee		
 obtained		<u>/</u>		

sold obtained		acres	year
sold obtained	1977 Matalan Jawada Maide	acres	year

- 6. What is the current total acreage size of the property you own or lease?
- Do you intend to sell any of your property in the future; if yes how many acres and within how many years?

yes ______number of acres _______within a year _______, 7-5 years ________, 7-5 years ________, 6-10 years _______over 10 years _______over 10 years ________not sure

 Please indicate what you think you could get for your property if you put it all up for sale (include any dwelling).

dollars

acres

 B. In this section we would like to get your attitudes on various issues that are of concern to property owners in Bagley Township T30N-R3W in Otsego County.

1. How do you feel about property tax levels?

high	p Paris Anton - Constitution	about right	-	low

2. How do you feel about the quality of municipal or county services?

very good and good average

below average poor not sure

- 3. How do you feel about the quantity of municipal or county services?
 - _____ could use a lot more
 - _____ could use some more
 - _____ about right
 - we don't need so many
 - would like to see quite a lot less

__ not sure

4. Are you aware of the zoi codes or percolation te ment on your land? _____yes 5. How do you feel about tions? _I favor stricter land ____ present land use c I favor lessening a trols I'm against all lanc ____not sure 6. How do you feel about fu l oppose any futur I would like to see I'm not sure 7. How do you feel about values? it will increase radi _____ will increase mode will stay the same will decrease mod _____ will decrease radic not sure C. This section deals with property in Bagley To Otsego County and its natural resources.

 Is your property located or publicly developed ski miles is it from your properties.

	no	

___ yes

2. Does any state or federa one side, your property?

yes

	,		
4.	Are you aware of the zoning regulations, building codes or percolation tests concerning develop- ment on your land?	 a. Is your property located on any body of wate no 	17
	ves no not sure	b. If yes, what type body of water?	
5.	How do you feel about present land use regula- tions?	lake or pondriverbot c. If the answer to b was "lake or pond," the what size is the lake or pond your property located on?	:h in is
	present land use controls are adequate		
	trols	less than 25 acres25-100 acre	es
	I'm against all land use controls	100-500 acres over 500 acre	es
6.	How do you feel about future residential building?	4. a. If the answer to 3a was "no" then what typ of body of water is your property closest to?	96
	I oppose any future development	lake river bo	th
	I would like to see a little development I would like to see a lot more development	b. How may miles by road is your property fro that body of water?	m
	I'm not sure	miles	(e
7.	How do you feel about the future of property values?	miles rive	er
	 it will increase radically will increase moderately will stay the same will decrease moderately will decrease radically not sure 	D. Many people who own property in Bagle Township T30N-R3W in Otsego County als have some type of living quarters (either seasonal or permanent) on the land. If yo happen to have some type of living quarter on the land we would like you to answer th following questions.	iy o iv is
		1. What kind of water system do you use in your liv	V-
С	This section deals with the location of your property in Bagley Township T30N-R3W in Otsego County and its closeness to certain	ed)?	S
	natural resources.	, weil with electric or gas pump	
1.	Is your property located close to any commercial or publicly developed ski area? If yes, how many miles is it from your property?	hand pump	
	γesmiles	2. What kind of sewage system does your livin quarters have (check the one most common	g ly
2.	Does any state or federal land touch, on at least one side, your property?	useu/r individual septic tank	
	yesno	hook up to a municipal sewage system	
	经过度收益 化二氯 医结核 建立的 法公司 化合物 化合物 法法法 化乙酰胺 化乙酰胺 化丁酰胺 化丁酰胺 化乙酰胺 化乙酰胺 化乙酰胺	计计算机 化丁基苯基 化二氯化化 网络拉马拉拉马拉马拉马拉马拉马拉马拉马拉马拉马拉马拉马拉马拉马拉马拉马拉马拉马拉	

___ year

year

size of the prop-

property in the and within how

number of acres

____1-5 years

over 10 years

ou could get for for sale (include

to get your atare of concern pley Township

tax levels?

ht __ low

y of municipal or

average

____not sure br

ntity of municipal

1.

lot less

3	. a. A	۹ ۲ø	your	living	qua	riers (of th	e co	nver	ntio	nal
	h	ious	ing ty	pe (fr	ame,	ceme	ontblo	ock, i	etc.)	or t	he
	n	nobi	le hor	me typ	pe?						

_____ conventional housing

outhouse or dry well

_____ mobile home

other

b. If you checked "mobile home" in a, is the mobile home able to be moved easily or is it anchored in place?

_____ can be moved easily

_____ anchored in place

- E. In this section we would like responses from those people who have located a seasonal home in Bagley Township T30N-R3W in Otsego County.
- 1. About how many annual visits do you, your friends, or relatives make to your seasonal home?
 - _____ visits
- 2. In general what is the average length of stay for each visit?
 - _____ days
- 3. Please indicate about how many days do you visit your seasonal home during each season of the year?
 - _____ number of days in Fall

_____ number of days in Winter

_____ number of days in Spring

_____number of days in Summer

F. We now would like responses from those people who have located their permanent home in Bagley Township T30N-R3W in Otsego County.

1. Approximately in what year was your home built?

_____γear

- not sure
- a. Before it became your permanent home was your home used on a seasonal basis by you or someone else?

yes

_____no

b. If yes, in what year did you or someone else make the seasonal home a permanent home?

not sure

___ year

3. Before moving into your permanent home in what county and state did you reside?

state

county

. state

- G. Finally, we have a few background questions we would like to ask. It is important to keep in mind that these questions are asked for statistical purposes only and your privacy will be insured. There is no way of knowing the identity of the person filling out the questionnaire.
- 1. What county and state do you presently reside in?

_____county ____

2. a. What is the age of the head of household?

_ years

c. What is the marit household?

b. What is the sex of the

male

___ married

_____single (never

_____divorced

widowed

 Please indicate the nur propriate age brackets you.

5-14 15-25	
15-25	
Provide State of State	
26-64	

65 and over

What is the approxin before taxes, for your h

0-\$5,999

\$6,000-\$9,999

\$10,000-\$14,999

\$15,000-\$25,000

____ over \$25,000

Please review the qui have answered all the q ters of the conventional cementblock, etc.) or the

nousing

bile home" in a, is the be moved easily or is it

easily

ace

uld like responses from ave located a seasonal wnship T30N-R3W in

nual visits do you, your e to your seasonal home?

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verage length of stay for

/5

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ays in Winter

ays in Spring

ays in Summer

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- 1. Approximately in what year was your home built?

_____ year

- _____ not sure
- 2. a. Before it became your permanent home was your home used on a seasonal basis by you or someone else?

11.3	¹	ve	s ·	
		17	٦.,	
	11	3-4		
843		i.	211	1.2
		116	· · · ·	

_____not sure

b. If yes, in what year did you or someone else make the seasonal home a permanent home?

_____ year

_____ not sure

Before moving into your permanent home in what county and state did you reside?

_____ county

. state

_____ state

- G. Finally, we have a few background questions we would like to ask. It is important to keep in mind that these questions are asked for statistical purposes only and your privacy will be insured. There is no way of knowing the identity of the person filling out the questionnaire.
- What county and state do you presently reside in?

____county

vears

2. a. What is the age of the head of household?

b. What is the sex of the head of household?

,male

c. What is the marital status of the head of household?

female

_____ married

______single (never married)

divorced

widowed

3. Please indicate the number of people in the appropriate age brackets who currently reside with you.

under 5	() in a total	no. of people
5-14	•	no. of people
15-25		no. of people
26-64		no of neonle

65 and over _____ no. of people

What is the approximate total family income before taxes, for your household in 1977?

____0-\$5,999

- \$6,000-\$9,999
- \$10,000-\$14,999
- _____\$15.000-\$25,000

_____ over \$25,000

Please review the questionnaire to see if you have answered all the questions that apply. Thank you.