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Auto Travelers' Images of Tourism and Recreation Regions in Michigan: An Exploratory Study

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Joseph D. Fridgen
Major professor

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AUTO TRAVELERS' IMAGES OF TOURISM AND RECREATION REGIONS IN MICHIGAN: AN EXPLORATORY STUDY

By

Cynthia Shirley Deale

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ABSTRACT

AUTO TRAVELERS' IMAGES OF TOURISM AND RECREATION REGIONS IN MICHIGAN: AN EXPLORATORY STUDY

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Images of destinations influence travel decisions, but little is known about travelers' images of Michigan as a tourism or recreation destination. Two studies evaluated auto travelers' images of Michigan and compared images of two coastal regions in the lower peninsula. Auto travelers were sampled at three Travel Information Centers in Michigan.

Respondents provided images through a cognitive mapping task and a questionnaire. Positive relationships existed between familiarity with, travel frequency in, and length of residence in Michigan and characteristics of tourism regions. Western coastal counties were more frequently associated with tourism than inland or eastern coastal counties.

Scenery, accommodations, selected outdoor activities, and social characteristics were evaluated more positively for a northwestern coastal county region than for a northeastern coastal county region. No differences in hunting and fishing were seen between the two regions, and the northeastern region was evaluated as significantly less crowded.

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CHAPTER I

INTRODUCTION

This thesis focuses on tourism in Michigan. It is part of a large project conducted at selected Travel Information Centers (T.I.C.s) along Michigan highways during the summer of 1982. The general project involves studying people's perceptions and images of the Great Lakes and compares these resources to other recreation resources in Michigan. This thesis specifically explores auto travelers' images of recreation and tourism regions within the state.

The research for this thesis consisted of two studies. First, in the Map Study, people's images of the entire state were investigated. This portion explored generally where respondents felt recreation and tourism regions are located in Michigan. In the Regional Study, more detailed images of two specific regions in the state were examined. Both studies contributed information on people's images of tourism and recreation in Michigan.

Tourism is an important industry in Michigan. According to the Travel Bureau (1981), travelers spent an estimated 4.8 to 5.2 billion dollars in the state in 1980

and the expenditures directly or indirectly supported more than 249,000 jobs. This is a significant contribution to the state's economy, and during the present recession, when diversifying the state's economy is necessary, tourism seems like a logical industry to promote.

Tourism is presently promoted through a variety of channels in the state. Advertisements appear on the radio and the television, in magazines and newspapers, and information about Michigan as a vacation destination is distributed at ten T.I.C.'s located along major highways. Chamber of Commerce groups, tourism associations, and the Travel Bureau all extend efforts to promote tourism at the local, regional, and state level, respectively.

Recently, the Travel Bureau initiated an extensive promotional strategy similar to New York's "I Love New York" campaign. Michigan's slogan is "Say Yes to Michigan" and it is designed to increase the tourism market by improving the state's image to potential tourists. According to Jack Wilson (1982), the director of the Travel Bureau, Michigan has suffered from an image as an industrial "wasteland" and its economic problems have been significant. The promotional campaign is intended to alter these images by conveying positive messages about the state to the public.

CHAPTER II

LITERATURE REVIEW

This research on auto travelers' images, defined as cognitive maps and evaluations of regions, of Michigan is based primarily on previous image studies which have used cognitive mapping concepts and methodologies. Researchers from various disciplines have contributed to the study of cognitive mapping. Among these are psychologists, urban planners, geographers, and tourism researchers. All have helped to develop a rich body of knowledge on this important interdisciplinary topic.

Concepts Related to the Thesis

The concepts and techniques of cognitive mapping developed out of perception and cognition which are part of information processing. Perception is a term which environmental psychologists reserve for the process that occurs when the stimulus object is present (Pocock, 1974; Downs and Stea, 1973). Cognition, on the other hand, is considered to be a more general term which includes perception as well as thinking, problem solving, and the organization of information and ideas (Downs and Stea, 1973). Environmental cognition is the most useful term

with respect to this study and it is defined as the process that occurs in the absence of the object (Downs and Stea, 1973). Research on environmental cognition involves the study of subjective information, images, impressions, and beliefs that people have of the environment, and explores how these conceptions develop from experience and influence future behavior with respect to the environment (Moore and Golledge, 1976). The environment here refers to any elemental, functional, structural, or symbolic aspects of real or imagined, physical, social, cultural, economic, and political surroundings or circumstances (Moore and Golledge, 1976).

The concepts discussed previously all relate to the term cognitive mapping, but so far it has not been defined. Cognitive mapping is the process or activity that refers to one's ability to comprehend the spatial environment, and it depends on many variables, including age, experience, social group, and personal characteristics (Downs and Stea, 1977). Cognitive maps are products of information processing and represent abstractions covering those cognitive or mental abilities that enable people to obtain, retain, and use information about their spatial environment (Downs and Stea, 1977). These maps are useful internal representations of the external environment that people interact with and that serve as a normal setting

for activities (Saarinen, 1976). Many recent studies have used cognitive maps to obtain information about a range of environments.

Downs and Stea (1977) organized information into a comprehensive text which presents important foundations behind the theory and process of cognitive mapping. They state that understanding cognitive maps is important because the world as people believe it to be serves as the basis for much of their everyday behavior. These maps incorporate three basic components of "whatness," "whereness," and "whenness," and according to Downs and Stea (1977), "tourism and cognitive maps are inseparable." These cognitive representations, called maps, or sometimes referred to as images, may have great impacts on people's travel decisions and behaviors.

Several models have been developed by researchers to explain the development and use of cognitive mapping. These models will be presented briefly in the next section.

Models Related to the Thesis

Two competing models exist in the environmental cognition literature for explaining the way in which people learn about new environments. One view is that people initially rely on paths and districts to orient themselves in a new environment. Later, when they are more familiar with the environment, they use landmarks for orientation

(Lynch, 1960; Devlin, 1976). The other position states that people initially rely on landmarks and later turn more to path structures as they become familiar with the environment (Hart and Moore, 1973; Evans et al., 1981).

Another important model developed through environmental cognition studies involves information storage. This model suggests that distortions observed in cognitive maps may be influenced by the amount of information a person has stored about a given region. Sadalla and Staplin (1980) used statements by Milgram to develop this "information storage model."

Milgram (1973) stated that "psychologically, one tends to give most prominence to those objects and events of which one has the most knowledge and awareness." He noted that when a boy was asked to draw a map of the world that he drew his native Finland much larger than other nations. Milgram interpreted this to mean that the boy gave prominence to Finland because he was most familiar with it, possessing more knowledge and awareness of Finland than other countries. In the "information storage model" this implies that regions associated with more information would be portrayed as larger than regions associated with less information (Sadalla and Staplin, 1980). Sadalla and Staplin (1980) used this model to study cognitive distance, but it may also serve as a model for interpreting distortions of map elements (Holahan, 1978; Saarinen, 1973).

Much of the cognitive mapping research has been conducted by psychologists, geographers, and urban planners, and therefore this material will be presented in the next section. Following this information, some work completed by tourism researchers will be discussed.

Psychology, Geography, and Planning Literature Related to the Thesis

In an early classical study, Lynch (1960) investigated residents' images of Boston, Jersey City, and Los Angeles. His subjects sketched maps of their city on blank sheets of paper, described several trips through the city, and listed and briefly described the parts of the city that they felt were most important.

The data gathered from the maps enabled Lynch to describe these three cities using several elements, which he called paths, edges, districts, nodes, and landmarks. Composite maps of the three cities were developed to include these elements. His results indicated that the importance of each of these elements varied with the respondents' degree of familiarity with the city. Respondents with the least knowledge tended to reveal topography, regions, generalized characteristics, and broad directional relationships on their maps (Lynch, 1960). Those who knew the city better included more paths, and those who knew the city best drew more small landmarks.

Therefore, the study alluded to an increasing attention to detail and to uniqueness of character as familiarity with a city develops.

Lynch's work has been criticized for several reasons. First, his emphasis on the "seeing" aspect of imagery led some researchers to believe that imagery was essentially a cognitive equivalent of vision, thereby confusing environmental cognition and perception by not considering that an image is based on more than visual stimuli (Downs and Stea, 1973). Second, Lynch's use of blank sheets of paper has been criticized by Wood and Beck (1976) and Downs and Stea (1977). Wood and Beck claimed that people distort their drawings by leaving too little room for late entries and Downs and Stea felt that freely drawn maps provide less information than simple place listings, and depend heavily on graphic spatial literacy. Third, researchers have been critical of the nature and size of the samples in Lynch's study (Francescato and Mebane, 1973). Only thirty subjects were obtained in Boston, and just fifteen were obtained in Jersey City and Los Angeles, and all of these samples were biased toward professional and managerial positions. Despite these criticisms, Lynch's study remains as a major contribution to the understanding of how people view their spatial environments, and several other researchers have extended his work.

Appleyard (1969), Francescato and Mebane (1973), and Orleans (1973) are among those who used Lynch's work as the basis for their own research. Appleyard (1969) interviewed 118 residents of Ciudad Guayana in Venezuela and found that people's personal backgrounds seemed to influence their images of the city. Francescato and Mebane (1973) had residents of Milan and Rome draw maps of their city, and results led the researchers to believe that the elements drawn on the maps might be a result of the frequency of experience with different aspects of the city. Orleans (1973) investigated maps of Los Angeles, drawn by residents of various areas within the city, and discovered that both physical location and social position were related to differences in the maps. All three of these studies led to the conclusion that personal background, residence, and experience influence people's cognitive maps.

Several other studies investigated the influence of experience on residents' maps of their city. Milgram (1972, 1976) used Lynch's work as the basis for his research on residents' maps of New York and Paris, and found that people tended to include areas or places on their maps that they had been exposed to directly. Karan and his colleagues (1980, 1982) studied cognitive maps drawn by residents of two other cities, Patna, India and Katmandu, Nepal, and concluded that the detail and area of representation of

parts of the city varied "directly with respondents' spatial acquaintance with the area." Devlin (1976) dealt with experience over time in her study of Idaho Falls, Idaho navy wives. She first obtained maps of Idaho Falls from respondents when they had lived in the city for just two-and-a-half weeks, and then again after they had resided there for three months. Follow-up maps contained more landmarks than the initial maps. Evans and his colleagues (1981) did not obtain the same results as Devlin in their study of university students' maps of their campuses. The subjects recalled significantly more nodes and paths after nearly a year's experience in the initially new campus setting. However, people did not recall more landmarks as a function of experience.

Pearce (1977) investigated whether or not tourists (rather than residents) who have been in a city for some time recall more environmental features than those who have only recently arrived. He found that tourists who had been in Oxford, England for six days drew more paths, more landmarks, and more districts than people who had been in the city for only two days, however, the proportion of each element remained the same.

Lee (1973) took a somewhat different methodological approach to cognitive mapping. He asked housewives in Cambridge, England to outline the area, on a predesigned

map, that they considered to be their neighborhood. Considerable variation was shown in the size of their circles. Three behaviors were found to be associated with larger circles. These included the number of friends a respondent had locally, the number of local organizations or clubs a respondent belonged to, and a respondent's tendency to use local shops. The contents of larger circles were more heterogeneous, encompassing shops, clubs, pubs, and a variety of types of housing, whereas smaller circles primarily contained houses of similar types. Apparently, those who were more familiar with a broader area believed the neighborhood was larger and contained more diverse elements than those who were less familiar with areas located outside the immediate vicinity of their homes.

Other researchers have explored cognitive maps of much larger areas than cities. These studies have investigated people's views of the world (Saarinen, 1973), and other regions (Jordan, 1978; Raitz and Ulack, 1981; Pearce, 1981; Gustke, 1982). Maps generated by the respondents in these research efforts have not generally contained the elements characteristic of maps developed in Lynch's study or others following his work.

Saarinen (1973) had high school students from the United States, Canada, Finland, and Sierra Leone draw maps of the world, labeling all the places that they considered

to be interesting or important. He found that the respondents' home countries were exaggerated in size, probably because there was more material to be represented on the sketch maps of these areas due to a respondent's familiarity with his or her home country. In addition, Saarinen's work indicated that countries with distinctive shapes, large sizes, and current events in the news tended to be included in the maps more often than other nations. Finally, he noted that the countries included on the maps depended upon a respondent's perspective or home country. For example, Canadian students included British Commonwealth nations more often than the other groups of students.

In a study of the vernacular regions in the state of Texas, Jordan (1978) used respondents' answers to define regions. Twenty-nine regions were consistently mentioned enough by the college student subjects from Texas to be considered regions for the study. Nineteen of the names given to regions were based on physical characteristics or old names, such as "Cross Timbers" or "Rio Grande Valley." About 14 percent of the regional names referred to political terms, and a larger portion of the names were promotional in nature, such as "Golden Triangle" or "Sun Country." Jordan noted, however, that the vernacular regions sometimes did not correspond well with the regions defined by the councils of governments in the state.

One recent regional study, also used respondents' answers to define the area of Appalachia. Raitz and Ulack (1981, 1982) asked people to circle the area, on a map outlining and labeling the eastern states, which they believed to be Appalachia. In the analysis of the maps, a grid, with grid squares scaled to measure approximately 37.5 miles on a side, was placed on each map. A square outside a respondent's boundary received a score of zero, while a square inside the boundary received a one. Subgroups were divided on the basis of state residence and the composite maps were analyzed. A core area for a subgroup's composite map was defined as the area within the 80 percent isoline (meaning 80 percent of the subgroup included the area in their circle). The outer boundary was defined arbitrarily as the 20 percent isoline.

Using the physiographic region for Appalachia as a guide, the researchers made comparisons between those who lived in and outside of the area. All subgroups tended to shift the regional core and the boundary toward their place of residence. In addition, people who resided in the predetermined physiographic region had a larger core area and more extended boundaries on their maps than other groups. From this study, Raitz and Ulack (1981) concluded that the answer to the question, "Where is Appalachia?" varied according to who the respondent was and where he or she lived.

In a study of a different type of geographic region, Pearce (1981) investigated the recall of travelers who were driving for pleasure in the Australian countryside. This work differed from much of the cognitive mapping research because it concentrated on a section of countryside, and its subjects were travelers.

Results indicated that more recent travelers recorded more paths and that greater accuracy in orientation was demonstrated by those who had been through the area more often. Analyses also revealed some differences by state origin. The researcher felt that these might be due to the fact that the route being studied was geographically remote from population centers in Australia. Although the area was a major tourist district, it did not appear to be part of the "mental map" of southern Australia. Finally, relatively low environmental recall scores were seen among these travelers, and therefore Pearce believed that highway rest areas could provide more precise information and details to travelers.

Tourism Literature Related to the Thesis

Researchers in tourism have also been interested in how people view their spatial environment. Representations of tourism and recreation sites are of particular interest to these people and the results may be helpful in planning

sites and programs, in promotion, and in enhancing the opportunities for enjoyment.

Hunt (1975) used mailed questionnaires to determine the images of Colorado, Montana, Utah, and Wyoming held by residents of New York, Ohio, Iowa, Arizona, and California. The study results indicated that states do possess images that are commonly held by people from other states. The western, and generally closer, respondents mentioned fewer differences between the impressiveness of the recreational activities and attractions of the four states than those who were more distant. Possible explanations might be that closer residents had less interest in the states because they had many similar recreation opportunities available in their own states, or perhaps they had much more information about the four states and may have seen them all as equal. Overall, Hunt found that while respondents held similar images of the states, many aspects differed by geographic residence of the respondents.

In a study of nine regions, Goodrich (1978) explored the relationship between perceptions of an area and preferences for an area as a vacation destination, using a Fishbein-type attitude or choice model for the first time in travel research. Results indicated that favorable impressions of a tourist area increase the probability of choice of (or preference for) that area

as a vacation destination. This finding has implications for marketers in that developing favorable images of an area through promotional efforts can help increase tourism to the area.

A regional study, of an area in the United States, known as the Sunbelt, was conducted by Gustke (1981, 1982). He explored the origin and development of the term, Sunbelt, and the mental images that attract vacationers to this area. The results revealed that Sunbelt is a term that was introduced in 1969 and usually refers to a geographic area which encompasses southern and western states below the thirty-seventh parallel. The variables of residence, travel experience, and familiarity with the Sunbelt were differentiators of students' mental images of the area, but statistical tests did not support the differences (Gustke, 1982). However, the differences were observable.

Literature on Michigan Related to the Thesis

Cognitive mapping and image studies discussed so far have explored people's views of cities, states, countries, regions, and the world. Not much research has focused on images of Michigan, but a couple of studies have contributed some significant image information about the state.

In a study of decision making patterns of midwestern travel consumers, Myers (1974) compared Michigan to

Wisconsin, Minnesota, and Ontario on a set of attributes, using a semantic differential. Michigan was rated as the least attractive place. Myers also hypothesized that there would be a positive relationship between exposure to the destination area, for Myers found that people who had visited an area tended to view it more positively than those who had not been there; however, the reverse of this statement might also be true.

A recent Chicago market study completed by the Michigan Travel Bureau (1981) explored Michigan's market and image position among Chicago travelers. Results indicated that Wisconsin rates higher than Michigan on nifty resort communities, get-away weekends, peace and quiet, boating/canoeing, camping, beautiful scenery, proximity, hunting, family fun, new and interesting people, friendly people, beaches, and for vacations. Michigan possessed a slight advantage in downhill skiing. Wisconsin was also chosen two to one as a vacation destination over Michigan.

However, despite these negative findings, the study revealed that respondents who had visited both Wisconsin and Michigan held more positive images of Michigan than the general sample. In addition, if respondents had vacationed in both Michigan and Wisconsin, they were more likely to return to Michigan. Evidently, direct experience with Michigan influences people's images of the state in a positive direction.

Research Findings Related to the Hypotheses in the Map Study

In light of the materials reviewed, it appears that people do possess images of their cities which can be represented in cognitive maps (Lynch, 1960; Milgram, 1976; Appleyard, 1969; Francescato and Mebane, 1973; Orleans, 1973; Lee, 1973; Milgram, 1972; Karan et al., 1980; Karan and Bladen, 1982; Devlin, 1976; Pearce, 1977). It is also evident that both larger environments, such as the world (Saarinen, 1973) or a region (Raitz and Ulack, 1981, 1982; Pearce, 1981), and smaller environments, such as neighborhoods (Lee, 1973) or campuses (Evans et al., 1981) can be portrayed in cognitive maps.

Many variables seem to influence people's cognitive maps, and among these are familiarity, travel experience, and the length of residence in an area. Several studies have investigated the relationships between these variables and details on people's cognitive maps. Lynch (1960) found that people who were more familiar with a city tended to include more details on their maps. Following Lynch's work, Francescato and Mebane (1973) investigated maps of Milan and Rome, drawn by residents of these cities, and concluded that the elements might be drawn as a result of the frequency of experience with different aspects of the city. Milgram (1972), in a study of people's cognitive maps of New York, concluded that people could only recognize an area if they

had been exposed to it. Similarly, Karan and his colleagues (1980), in a study of residents' maps of Patna, India, found that the details and representations varied "directly with respondents' spatial acquaintance with the area." In another study, Devlin (1976) showed that people who lived in an area for awhile recalled more details about their city than when they were new to the city, and in a study of tourists to Oxford, England, Pearce (1977) observed that tourists who had been in a city for awhile recalled more details than those who had arrived very recently.

In a study of auto travelers' images of a highway route, Pearce (1981) found that both recency and the variable of trip frequency were related to the elements drawn on maps. More recent travelers drew more paths, and those who often frequented the area showed more correct orientation on their maps.

Other studies have explored the sizes of the representations on people's maps. Lee (1973), in a study of housewives' images of their neighborhood, concluded that those who were more socially involved in the area believed their neighborhood encompassed a larger area than those who were not very involved. In a study of students' cognitive maps of the world, Saarinen (1973) found that respondents' home countries were exaggerated in size, probably because there was more material to be represented on the sketch

maps of these areas due to a respondent's familiarity with his or her home country. This view was also held by Milgram (1973), and Sadalla and Staplin (1980) used this idea to develop their information processing model.

Some studies have also investigated regions in the United States. Raitz and Ulack (1981, 1982) asked people to outline the area on a map of the eastern United States that they believed to be Appalachia. All subjects tended to shift the core of the area nearer to their residence, and those who lived in the previously defined physiographic region of Appalachia tended to believe that the area was larger than did those who resided outside the physiographic region. Gustke (1982) studied students' images of the region called the Sunbelt. The variables of residence, travel experience, and familiarity were differentiators of students' maps, but statistical tests did not support these observations.

These research findings led to the conclusion that familiarity, travel, and length of residence in an area are related to details seen on people's cognitive maps. Therefore, investigating possible relationships between these variables and auto travelers' cognitive maps of Michigan's recreation and tourism regions are the subjects of the hypotheses for this study. The general hypotheses are listed below.

Hypotheses to be Tested in the Map Study

Hypothesis 1:

People who are more familiar with an area include more details on their maps than those who are not familiar with the area.

Hypothesis 2:

People who have traveled more in an area recently include more details on their maps than those who have not traveled frequently in the area recently.

Hypothesis 3:

People who have lived longer in an area include more details on their maps than those who have not lived in the area long, if at all.

Hypothesis 4:

People who are more familiar with an area tend to draw larger circles on their maps than those who are not familiar with the area.

Hypothesis 5:

People who have taken more trips in an area recently draw larger circles on their maps than those who have not traveled frequently in the area recently.

Hypothesis 6:

People who have lived in an area longer tend to draw larger circles on their maps than those who have not lived in the area long, if at all.

Hypothesis 7:

People who have lived longer in an area are more familiar with the area than those who have not lived in the area long, if at all.

Hypothesis 8:

People who have traveled more in an area recently are more familiar with the area than those who have not traveled frequently in the area recently.

Hypothesis 9:

People who have lived longer in an area have traveled more in the area than those who have not lived long in the area, if at all.

The Hypothesis to be Tested in the Regional Study

The hypothesis for this study was developed from partial results of the Map Study, discussed in the methods section. Hand tallies of 285 maps showed that the westside counties received much more attention from respondents than the eastside counties, and this lack of attention led to the hypothesis below.

Hypothesis

The westside county region has a more positive image than the eastside county region.

CHAPTER III

PILOT WORK AND SAMPLING

Pilot Work

Two different questionnaires were used in this research. One was developed, along with several others, through pilot studies. The other was created from partial results of the first survey. In this section, the pilot studies and pretesting, which led to the development of the first survey, are described.

Pilot studies. Initial instrument development began in April and May of 1982 at four meetings with East Lansing residents and Michigan State University students. The four groups included members of the East Lansing Food Co-op, students in two Park and Recreation Resources classes at Michigan State University, and senior citizens using the Valley Court Community Center.

Several Michigan State University researchers held informal discussions with the first three groups to determine where these people felt recreation and tourism take place in Michigan and how these places might be described. Responses were recorded on large maps of the outline of Michigan which had been taped to tables to stimulate

conversation. The fourth group completed a pilot questionnaire. General impressions were stressed, and therefore little attention was given to quantifying individual responses.

Pretesting. After the four meetings with the various groups, the researchers shortened and refined questionnaire items and developed several instruments for field use. Four small folded questionnaires resulted from this initial work. These four were pretested at highway rest areas near Lansing on June 10-12 and June 17-19, 1982. Preliminary results indicated that these instruments were too confusing for travelers to complete. Therefore, the researchers made further revisions in questionnaire items to help obtain adequate response rates and more information.

During the pretest period, plans were made for the Michigan Department of Transportation to cooperate with the Michigan State University researchers. The researchers requested the use of T.I.C.s as sampling sites for survey research. Assistance was requested from T.I.C. staff members in the form of questionnaire distribution to travelers. The Department of Transportation was very cooperative throughout the course of the study.

Sampling

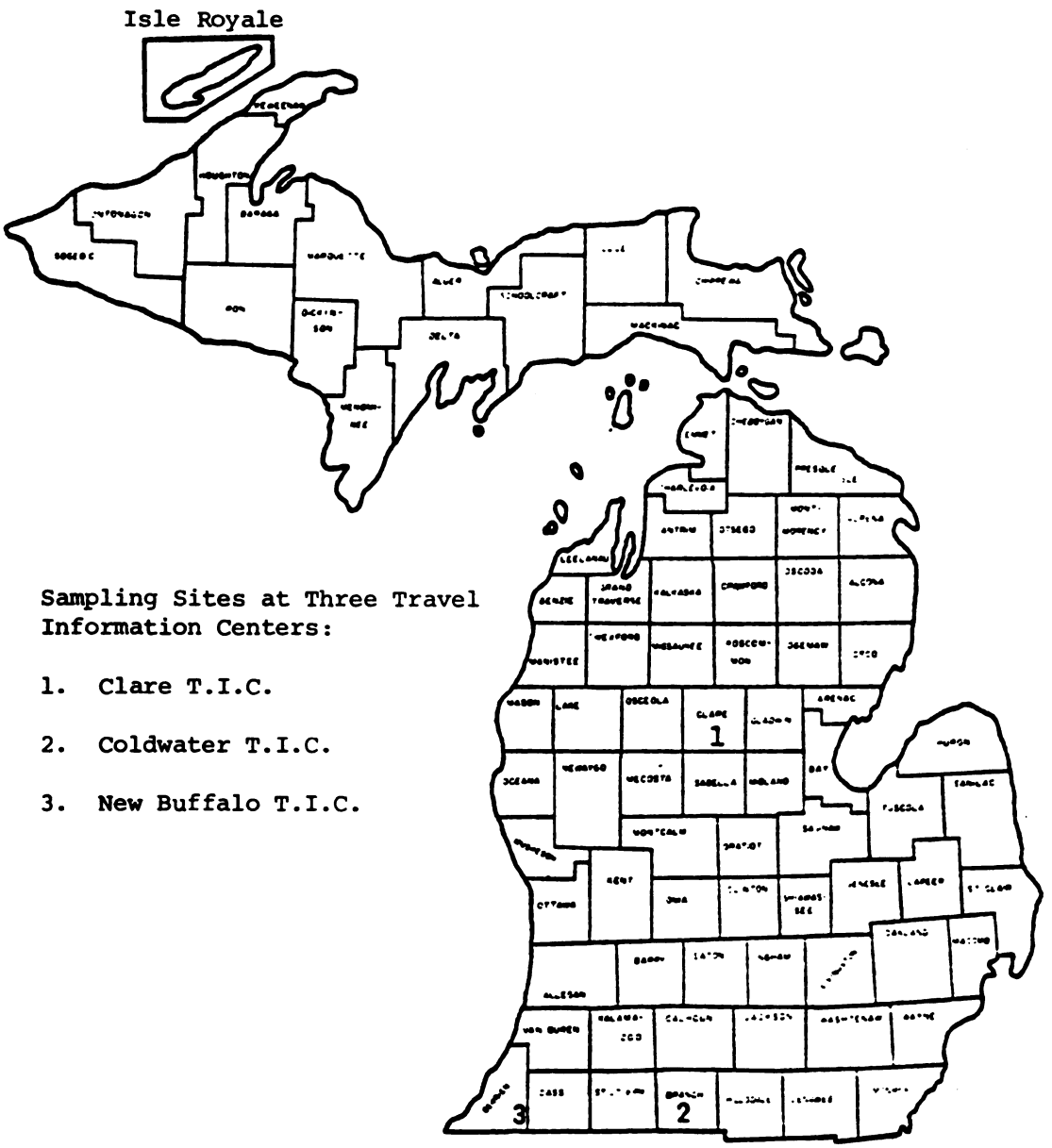
This research concerns travelers' images of Michigan, and therefore a segment of the traveling public was sampled for this study. Michigan's Department of Transportation (M.D.O.T.) presently operates ten T.I.C.s along major highways in the state and these sites provided researchers with easy access to many auto travelers. At these sites, travelers stop to stretch their legs, use the restrooms, obtain travel information, eat picnic lunches, and engage in various other activities, and are readily available to complete surveys. Due to the fact that these people are in transit, short surveys are desirable.

According to the M.D.O.T. visitor survey (1980), the T.I.C.s serve a variety of people. The 1980 survey indicated that 33 percent of the travelers who stopped at T.I.C.s were Michigan residents, 37 percent were from adjoining states, 21 percent were from other states, and 9 percent were from Canada. Therefore, due to the easy access to travelers and the diverse origins of these people, those people who stop at selected T.I.C.s in Michigan, specifically outside T.I.C. buildings, were chosen as the sample population.

Selection of sampling sites. There are ten T.I.C.s in Michigan, but due to limited financial resources and personnel, only five were selected for the general project.

Clare was chosen because of its central location in the state. Monroe and Coldwater were selected because they are an easy drive from Lansing and located near entrances to the state, allowing for a more diverse sample. New Buffalo and Menominee were chosen to sample the Illinois and Wisconsin travelers, respectively. However, due to their distance from Lansing, these T.I.C.s were only used as sampling sites for one weekend, that of August 21-22, 1982. Only small samples were taken at Menominee and Monroe. Therefore, data from these two sites were not included in the Map Study sample (see Figure 1).

The sample population for the Regional Study was the same as that of the Map Study, but only two sampling sites were used due to the limited time frame and few researchers involved in the project. Clare and Coldwater T.I.C.s were chosen because of their central locations and high response rates on the first survey.



Sampling Sites at Three Travel Information Centers:

1. Clare T.I.C.
2. Coldwater T.I.C.
3. New Buffalo T.I.C.

FIGURE 1. LOCATION OF SAMPLING SITES.

CHAPTER IV

THE MAP STUDY

In the Map Study, auto travelers identified tourism and recreation regions within Michigan. Another study, which investigated images of just coastal tourism and recreation regions in the state, was conducted at the same time. Results of both studies may assist tourism promotion in Michigan. This chapter presents the sampling procedures used, methods followed, and results obtained from the Map Study.

Sampling Procedures

Sampling at the T.I.C.s began on June 30, 1982. Four types of questionnaires were passed out to travelers, including the one used in the Map Study. Initially, every sixth person was sampled, but this resulted in very few completed surveys. Therefore, researchers sampled every person that passed them outside the T.I.C. This resulted in a random selection process since a researcher was unable to sample travelers who passed while he or she was already presenting a survey to another traveler. Also, the four instruments were arranged so that only every fourth person received the same type of instrument.

Early sampling, from June 30th to the middle of July, took place inside the Centers as well as outside the buildings. Travel Information Center staff members passed out surveys to travelers within the buildings, while the researchers worked outside. It was hoped that T.I.C. staff members would be able to systematically distribute instruments inside, but this was not possible. During the summer months, T.I.C. staff members are very busy answering questions and providing written travel information and are not able to systematically distribute surveys and provide instructions to respondents. After July 25, 1982, T.I.C. staff members were no longer asked to pass out surveys. Map Study questionnaires passed out inside T.I.C.s were not included in this research because there may have been differences in the way these surveys were distributed by staff members.

Small folded questionnaires were used during the first three weeks of sampling. However, the inside pages were often left unanswered by travelers, and therefore changes were made in the format of the questionnaire.

Beginning July 17, 1982, all surveys were issued in a larger stapled format which contained the same information as the folded surveys (see Appendix A). Four major surveys were used. These included the State Image Study, Coastal Image Study, State Recreation Areas Evaluation,

and Coastline Comparison. The two image surveys were issued primarily in July, while the other two were distributed in August. During the summer of 1982, 777 people were given a State Image Study at T.I.C.s, and 485 of these people attempted to complete the map question at the Clare, Coldwater, and New Buffalo T.I.C.s. These 485 surveys provide the data for the Map Study.

Researchers alternated passing out the surveys so that if one person received the State Image Study the next person was issued the Coastal Image Study. Travelers were approached and asked if they would be willing to participate in a study being conducted by Michigan State University to find out about people's images of Michigan's recreation and tourism. If a person agreed to participate, he or she was given a survey and a few brief instructions and was asked to complete the survey at the site and return it to the researcher.

Specifically, the researchers paraphrased the following directions: "Excuse me, I'm from Michigan State University and we're conducting research on people's images of recreation and tourism opportunities in Michigan, and I wonder if you could take a couple of minutes of your time to fill out a survey for us?" If the person agreed to participate, the researcher then issued him or her a survey and gave the following instructions: "Please circle three

to five areas on the map that you associate with recreation and tourism in Michigan and then place an X in the county that you feel is the center of tourism and recreation in each region." People were then left to complete the survey on their own, and when finished placed the instrument in a box provided by the researchers.

Samples were taken on weekdays and weekends and the sample times varied from morning to early evening hours. Sampling for the Map Study ended on August 22, 1982 and then the Regional Study was conducted. Relatively few people refused to complete the surveys. It is estimated that the overall nonresponse rate was between 10 and 20 percent.

Methods of Analysis

After sampling, a codebook was developed and the Statistical Package for the Social Sciences was used to analyze the data. Frequencies were obtained for the Map Study data and used to create composite maps.

Four different maps were generated from these frequencies. First, one map was made of all the X's placed in counties, and on Mackinac Island and Isle Royale. Second, a map was made showing the number of times each county was completely circled. Next, a map was created indicating the number of times each county was partially circled. After these were finished, composite maps including all of these items were developed.

An X was placed in a county to indicate that the county was the center of recreation and tourism in a region, but in this sample of 485 people only 65.6 percent drew X's. Therefore, X's served to help locate the centers of tourism and recreation regions, but they are misleading by themselves due to the relatively low use of X's by respondents.

Counties that were completely circled serve as indicators of the center of tourism and recreation in a region for a much larger number of respondents. In this sample, over 99 percent drew circles on their maps, and in many of these circles the central county was completely circled.

One of the major purposes of this study was to develop regions based on people's images of recreation and tourism in Michigan, and therefore a reasonable method of determining the centers of regions was necessary in order to actually define them. Both the X's placed in counties and the completely circled counties indicate the centers of regions. Therefore, the number of X's and the numbers of times a county was completely circled were summed together. This sum indicated the amount of attention a county was given as the center of tourism or recreation in a region.

However, the sum above does not have much meaning without considering the counties that were partially circled on the maps. These items may be interpreted in two ways.

In one case, a county may have been of high interest and was partially circled many times, or it may have been of relatively low interest, and received few X's or complete circles, but was often partially circled.

The relationship between the sum of the number of X's and number of times a county was completely circled and the number of times a county was partially circled is of interest in this study for the development of regions. For example, many X's, complete circles, and partial circles indicate high interest in a county and probably indicate that the county is the center of recreation and tourism. Alternatively, many partial circles, and few X's and complete circles may indicate a county of relatively low interest and one that is not the center of a region. In order to quantify the relationship between the X's, complete circles, and partial circles, a centrality coefficient for each county was found by summing the total number of X's and complete circles placed in a county, and then dividing this sum by the number of times the county was partially circled. The following formula shows how the centrality coefficient was obtained:

$$C = \frac{(x + y)}{z}$$

Where C = Centrality of the county;

x = Total number of X's in the county;

y = Total number of times a county was completely circled; and

z = Total number of times a county was partially circled.

Due to the fact that most counties were partially circled more often than they were completely circled or received X's, this ratio was very often less than one.

The centrality coefficient developed above was useful for determining the centers of tourism and recreation regions, but it did not indicate the overall attention given to each county. For example, Dickinson County received 2 X's, was completely circled 30 times, and partially circled 30 times. It would, therefore, receive a coefficient of 1.06. On the other hand, Grand Traverse County received 104 X's, was completely circled 76 times, and partially circled 208 times. Due to the large number of times that the county was partially circled it would have a coefficient of 0.86. Obviously, Grand Traverse County received much more attention from respondents than Dickinson County, but the coefficient did not reveal this attention. Therefore, an additional item was added to the formula to account for the amount of attention a county received. The total attention was found by adding the number of X's, the number of complete circles, and the number of partial circles placed in a county. This sum was then multiplied by the centrality coefficient to calculate what was called image

strength. The formula presented below shows how image strength was obtained:

$$I = C \times A$$

I = Image strength

C = Centrality coefficient

A = Attention = $(x + y + z)$

Using this equation, regions were developed that accounted for both how central a county was to an area, and how often it was included in the respondents' maps.

The preceding process was used to develop regions from people's sketch maps, but other methods were used to investigate possible relationships between the elements on the maps and several variables. Chi square and gamma statistics, in the Statistical Package for the Social Sciences Crosstabs program, were used to test possible relationships between the variables in the hypotheses for this study. The major variables are defined below.

Variables of Interest

Familiarity: The familiarity variable was actually a self-rating of familiarity with Michigan. The question read, "How familiar are you with the State of Michigan compared to the other Great Lakes states?" Possible answers were extremely familiar, very familiar, somewhat familiar, not very familiar, and not at all familiar.

Answers were coded from one to five, with extremely familiar coded as five and not at all familiar coded as one.

Travel: The number of trips to Michigan for recreation or vacation purposes during the past two years was the travel variable included in this research. The question read, "How many times in the past two years have you traveled in Michigan for vacation or recreation purposes?" Possible answers were first trip, a number of trips, or don't remember. Answers were coded by the number of trips indicated by a respondent.

Length of residence: Length of residence in Michigan was also of interest in this study. The question read, "If you are or ever have been a resident of Michigan, how many years have you lived in the state?" Possible answers were open-ended, indicating the number of years of residence in the state.

Image: Image here refers to respondents' total sketch maps. These maps were collected from individual respondents and compiled to form composite maps for analysis. The collective maps show where people believe Michigan's recreation and tourism regions are located.

The number of X's: The number of X's relates to the use of X's on maps to determine the location of the center of tourism in a region circled by a respondent.

The question read, "Please place an X in the county that you feel is the center of tourism and recreation activities in each region circled above." The X's on these maps are considered to be details that may help to further define a region.

The number of circles: This variable concerns how many circles a respondent drew on a map. Respondents were asked to do the following: "Please draw three to five circles on the map to indicate areas in Michigan that you associate with recreation and tourism." The written question read, "Please circle the counties on the map that you feel go together to form distinct tourism or recreation regions." Even though respondents were given specific verbal instructions the number of circles varied from zero to approximately twelve per map.

Average circle size: The average size of circles refers to the average size of the circles on the maps in relation to the measurement grid placed on the maps. The grid was composed of squares that measured one-half inch on a side and were approximately the size of Oakland County on the map of Michigan used in the study. The average size of the circles was found by dividing the area covered by the circles, in terms of the number of grids, by the number of circles on the map.

General Findings

The sample. The sample was composed of 485 auto travelers sampled at selected Travel Information Centers during the summer of 1982. This sample included 185 auto travelers at Clare, 182 at New Buffalo, and 118 at Coldwater. All of these people were approached in a similar manner by the researchers and completed their surveys on-site outside the T.I.C. buildings.

This group was primarily middle aged, generally well educated, reported relatively high annual family incomes, and contained more males than females. The mean education level completed was fourteen years, indicating that many received some college education, and the mean family income was between $30,000 and $34,999 annually (see Table 1). Fifty-nine percent of the sample was male and the mean age of the respondents was 40.9 years.

Over 50 percent of those sampled resided in various counties in Michigan. Wayne and Ingham Counties, both primarily urban areas, were each home for 6 percent of the respondents. Genesee, Oakland, Saginaw, and Kent Counties were also home residences for several respondents while the remaining counties were each home for a small number of respondents (less than 2 percent). Out-of-state residents were from Ohio, Indiana, Illinois, Wisconsin, and other states. Three people resided in Canada (see Table 2).

Table 1

Annual Family Income

Income Level	Percentage
Under $4,999	0.3
$5,000-$9,999	2.6
$10,000-$14,999	5.9
$15,000-$19,999	9.5
$20,000-$24,999	17.0
$25,000-$29,999	13.4
$30,000-$34,999	13.6
$35,000-$49,999	18.3
$50,000 and over	17.2
Retired	1.3

$\bar{X}$ = ($30,000-34,999)
Median = ($25,000-29,999)
Response rate = 80.2%
Total respondents (485)

Table 2

Home Residence

Residence	Percentage
Michigan	53.2
Ohio	2.9
Indiana	11.2
Illinois	19.0
Wisconsin	3.3
Canada	0.6
Other U.S. states	10.1

Response rate = 92.16%
Total respondents (485)

Approximately one-third of those sampled either never lived in Michigan or did not answer the question, while the rest had resided previously, or presently live in the state. The average length of residence in the state was 31.7 years (see Table 3).

Table 3

Years of Residence in Michigan

Years of Residence	Percentage
1-10	13.5
11-20	17.6
21-30	19.2
31-40	18.6
41-50	14.2
51-60	11.8
61-70	5.1

$\bar{X}$ = (31.7)
Median = (30.4)
Response rate = 61.0%
Total respondents (485)

Sixty-seven-and-a-half percent of the respondents indicated that they planned to participate in recreational activities on their present trip. The five most common recreational activities planned were sightseeing (18.6%), swimming (11.5%), shopping (7.1%), camping (6.8%), and boating (6.1%). However, there may have been a bias towards two of the first three activities mentioned because sightseeing and shopping were written on the survey as examples.

However, these percentages are not unreasonably high in light of the findings in the 1980 T.I.C. visitor survey (M.D.O.T., 1980).

Destinations varied among those sampled, although 27.8 percent were headed home. Other relatively common destinations included Wayne (8.1%), Berrien (5.4%) Grand Traverse (4.8%), Kent (3.8%), Allegan (3.1%), Ingham (3.1%), Mackinac (2.8%), Mason (2.3%), and Roscommon (2.3%) Counties.

The purpose of the trips the respondents were on focused on recreational travel. Over a quarter of those sampled were visiting friends or relatives and another 22.3 percent were on vacation. It was evident that for many this was not the first trip for recreation or vacation purposes in Michigan during the past two years (see Table 4). In fact, 7.8 percent of the respondents reported that they had made greater than ninety-six trips in the state, and while this probably does not reflect reality, it seems reasonable to believe that these people did a considerable amount of traveling in Michigan. Twelve-and-a-half percent reported that they did not remember the number of trips that they had taken for recreational purposes, and this may also indicate, although not clearly, that these people had taken many trips in Michigan for recreational purposes recently.

Table 4

Number of Recreation or Vacation Trips Taken in Michigan During the Past Two Years

Number of Trips	Percentage
1	14.7
2	14.2
3	11.8
4	11.0
5	10.1
6	6.1
7	1.4
8	2.3
9	0.0
10 or more	28.4

$\bar{X}$ = (16.7)
Median = (4.3)
Response rate = 71.3%
Total respondents (485)

Respondents were asked a variety of questions about recreation and tourism in the state. In one question, people were asked to rate Michigan on how well it provides for recreation and tourism opportunities compared to other Great Lakes states. Answers were scored from one to seven, with one equal to poor and seven equal to excellent. The mean rating of Michigan was 5.8 for the sample, indicating a positive view of the state's offerings. In addition, respondents were asked to rate themselves on their familiarity with Michigan compared to other Great Lakes states. Most of those sampled felt that they were at least somewhat familiar with the state (see Table 5).

Table 5

Familiarity with Michigan

Familiarity	Percentage
Not at all familiar	3.7
Not very familiar	11.7
Somewhat familiar	23.2
Very familiar	32.0
Extremely familiar	29.0
Greater than one response	0.2

$\bar{X}$ = (very familiar)
Median = (very familiar)
Response rate = 95.2%
Total respondents (485)

People were also asked to indicate their favorite Great Lake and the Michigan county that they felt was best for recreation and tourism. Sixty percent of the respondents claimed Lake Michigan was their favorite Great Lake, while 21 percent liked Lake Superior best. Many counties were selected as best for recreation and tourism (see Table 6). However, Grand Traverse and Mackinac Counties were selected most frequently.

The maps. The mapping task was the major part of the study. Respondents were asked to circle three to five areas of Michigan, on a map which outlined the state and included county boundaries, that they associated with recreation and tourism. Although people were asked to

Table 6

Ten Counties Selected Most Often as the Best County for Recreation and Tourism

County	Frequency	Percentage
Grand Traverse	71	20.3
Mackinac	37	10.6
Cheboygan	17	4.9
Charlevoix	15	4.3
Leelanau	15	4.3
Wayne	13	3.7
Ottawa	9	1.9
Marquette	8	2.3
Muskegon	8	2.3
Roscommon	8	2.3

Response rate = 64.1%
Total respondents (485)

circle between three and five areas, and many followed these directions, others drew more or less than the number requested (see Table 7). Circles not only varied in number, but also in size. The average size of the circles was calculated by dividing the number of grids covered by the circles by the number of circles drawn. Average circle size across all maps was 6.6 measurement grids (see Table 8).

Respondents were also asked to place an X in the county that they believed was the center of recreation and tourism in each region circled. The use of X's varied greatly among respondents. Many did not place X's in the counties, whereas a few people used more than five X's on

Table 7

Number of Circles per Map

Number of Circles	Percentage
0	0.4
1	15.3
2	15.9
3	35.2
4	13.3
5 and over	17.3
Uninterpretable	3.3

$\bar{X}$ = (6.5)
Median = (3.0)
Response rate = 100%
Total respondents (485)

Table 8

Average Size of Circles on Map

Average Size	Percentage
0	0.4
1	4.3
2	16.3
3	16.5
4	16.3
5	7.0
6	8.0
7	4.1
8	4.5
9	3.7
10	6.2
11 and over	12.7

$\bar{X}$ = (6.6)
Median = (4.3)
Response rate = 100%
Total respondents (485)

their maps (see Table 9). Two subjects used X's, but did not draw circles.

Table 9

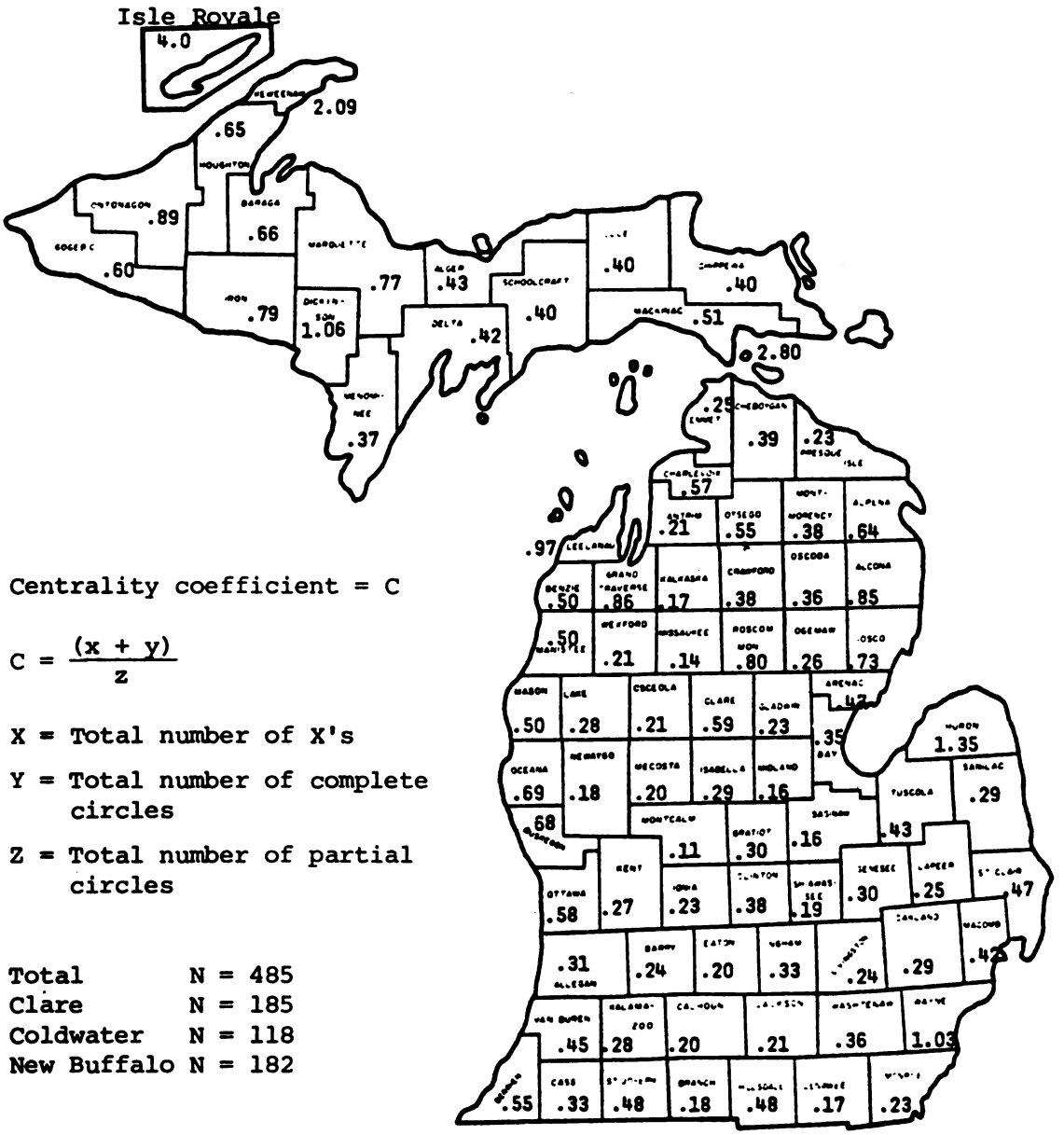
Total Number of X's per Map

Number of X's	Percentage
0	34.4
1	23.9
2	9.1
3	15.7
4	8.2
5 or more	8.7

$\bar{X}$ = (1.9)
Median (1.1)
Response rate 100%
Total respondents (485)

The most important purpose of the mapping task was to determine what regions of Michigan people associated with recreation and tourism. These regions were developed by counting the number of X's placed in the counties, the number of times counties were completely circled, and the number of times the counties were partially circled, and then using these sums in equations. The sums of these items are presented in Appendix B.

The centers of recreation and tourism were found by using the centrality coefficient equation. In Figure 2, one can easily see that Mackinac Island was viewed as the



Centrality coefficient = C

$$C = \frac{(x + y)}{z}$$

X = Total number of X's

Y = Total number of complete circles

Z = Total number of partial circles

Total	N = 485
Clare	N = 185
Coldwater	N = 118
New Buffalo	N = 182

FIGURE 2. CENTRALITY OF COUNTIES IN MICHIGAN.

center of a recreation and tourism region. Other counties that appear to be central include Keweenaw, Huron, and Leelanau Counties, and also Isle Royale. Counties along the Great Lakes received higher ratios more often than inland counties.

This centrality coefficient indicates which counties were seen as centers of regions, but by itself it is misleading because it does not take into account the relative attention given to a county. In order to show the attention given to a county, as well as its centrality, another map was generated using the image strength formula (see Figure 3). This map shows the popularity of Mackinac Island and Grand Traverse County. In general, counties bordering the Great Lakes received higher scores than inland counties. Roscommon County was an exception, perhaps due to the Higgins and Houghton Lakes resort area located in the county.

Boundaries of distinct regions were somewhat difficult to develop from these results, but were logically determined by drawing lines through the counties which received low image strength scores. Regions were defined by drawing lines through these low points and connecting the lines to outline areas. Twelve regions were defined this way (see Figure 4). Obviously, these regions did not all receive the same attention, and could therefore also be

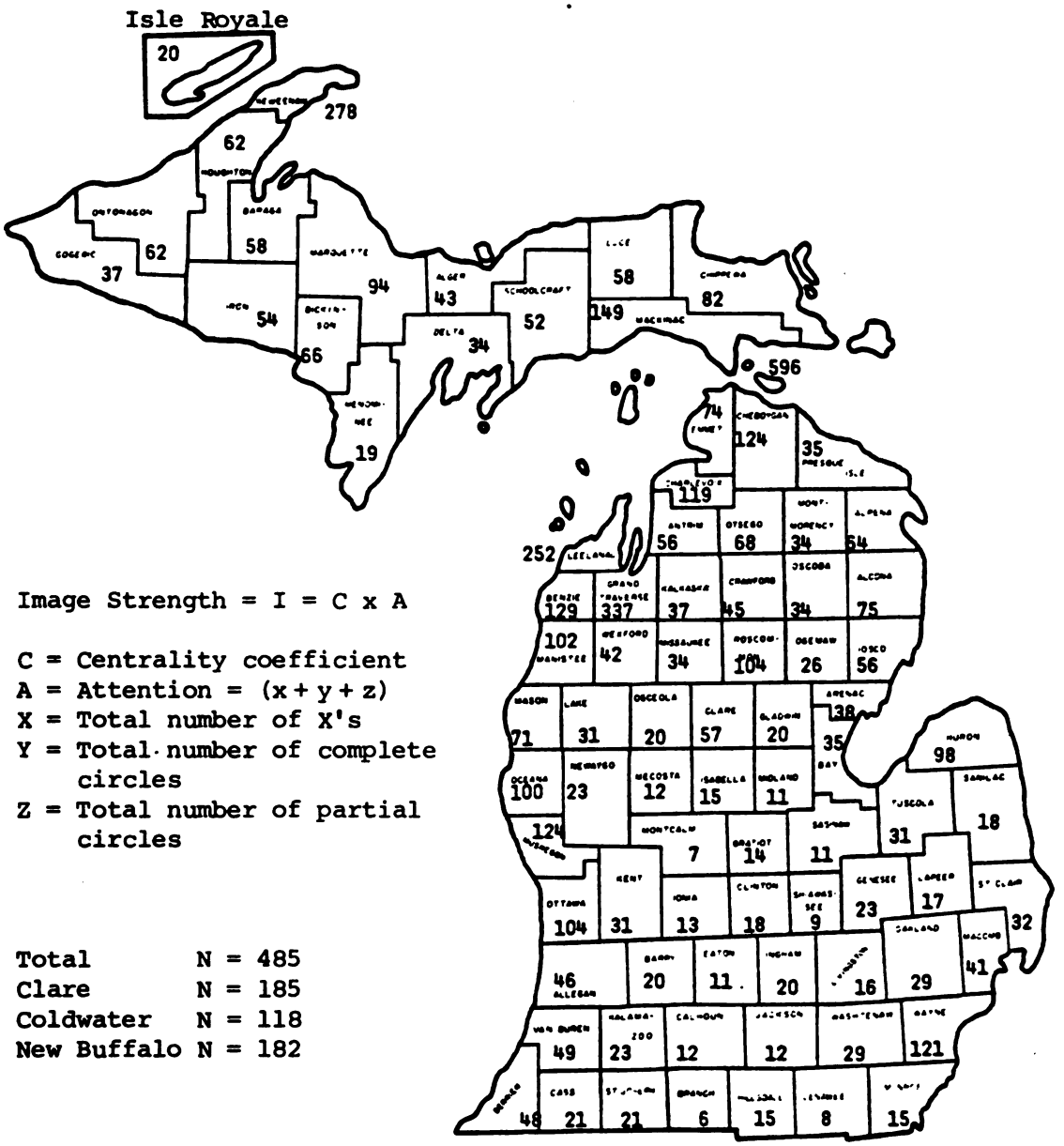


Image Strength = I = C x A

C = Centrality coefficient
A = Attention = (x + y + z)
X = Total number of X's
Y = Total number of complete circles
Z = Total number of partial circles

Total	N = 485
Clare	N = 185
Coldwater	N = 118
New Buffalo	N = 182

FIGURE 3. IMAGE STRENGTH OF THE COUNTIES

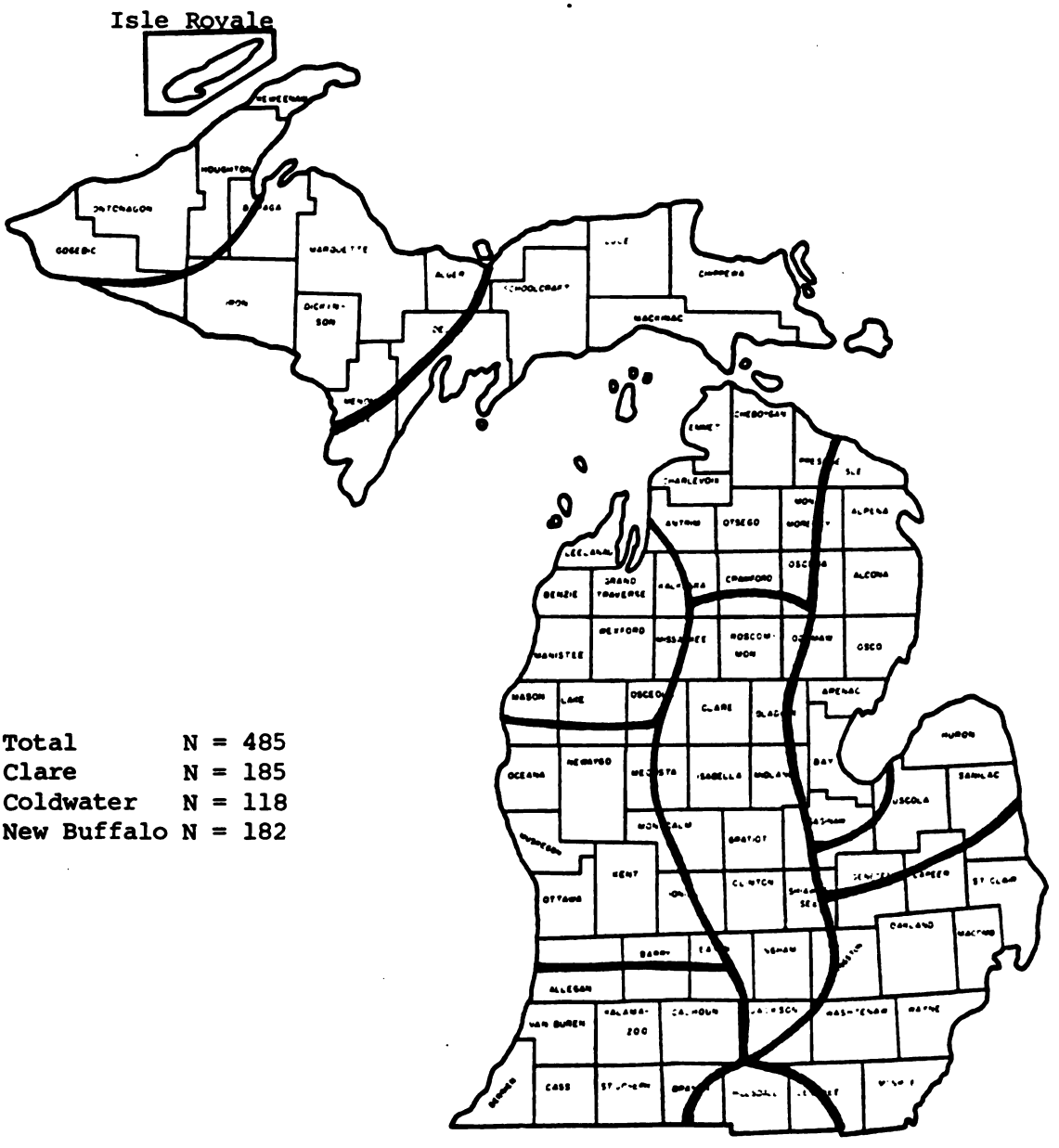


FIGURE 4. TOURISM AND RECREATION REGIONS DEVELOPED FROM MAPS DRAWN BY AUTO TRAVELERS.

called hot areas or cold areas for recreation and tourism. Using this hot and cold concept, the high scores in counties helped to determine whether or not the regions were associated frequently with recreation and tourism in Michigan.

In Figure 3, the Mackinac Island, Grand Traverse County, and Keweenaw County regions were all seen as relatively hot areas. On the other hand, the Hillsdale County and Ingham County regions were viewed as cold areas.

Once again, the counties in regions along the Great Lakes were associated much more often with recreation and tourism than inland counties, with the exception of Clare and Roscommon Counties. Also, western counties bordering Lake Michigan were associated with recreation and tourism more frequently than most of the eastside counties. Four distinct regions were defined between Berrien County and the Straits of Mackinac. On the eastside of the state, four very distinct regions were also determined. Huron and Wayne Counties were associated most frequently with recreation and tourism on this side. It is interesting to note that Wayne County received a relatively high score, meaning that respondents may not have a negative image of this county.

The upper peninsula counties received varying attention. Mackinac and Chippewa Counties received high scores and seem to be associated with the Mackinac Island

region. Marquette and Keweenaw Counties appear to be the centers of other regions.

Finally, the regions developed here help to confirm the county areas used in the Regional Study. Manistee, Benzie, Grand Traverse, and Antrim Counties clearly form part of an important tourism and recreation region along Lake Michigan. On the eastside, Alpena, Alcona, and Iosco Counties form the noticeable high interest area, although they received less attention from respondents than the westside counties (see Figure 4).

Analysis of Hypotheses

Nine hypotheses were tested in the Map Study using the chi square and gamma statistics. Three of these hypotheses were concerned with details, in this case the number of X's and the number of circles, on respondents' maps. Three others dealt with the average circle size on maps, and the last three investigated possible relationships between the familiarity, travel, and length of residence variables. A significance level of .05 was assumed for this research.

General Hypothesis 1:

People who are familiar with an area include more details on their maps than those who are not familiar with the area.

Testable Hypothesis:

Respondents who rate themselves high in familiarity draw more X's on their maps than those who rate themselves low in familiarity.

Testable Hypothesis:

Respondents who rate themselves high in familiarity draw more circles on their maps than those who rate themselves low in familiarity.

Null Hypothesis:

Familiarity is not related to the amount of detail on people's maps.

For the first test, the familiarity variable was grouped into three categories; these were not at all or not very familiar, somewhat familiar, and very or extremely familiar. The total number of X's was divided into zero X's, one or two X's, or three or more X's per map. Statistical results presented in Table 10 indicate that a significant relationship exists, and that the hypothesis can be supported at the .05 level. Therefore, those who were more familiar with Michigan drew more X's on their maps to indicate the center of tourism and recreation regions.

For the second test, familiarity was grouped the same way as for the first test and the number of circles was divided into zero to two, three, four, and five or more circles per map. Again, results showed that a strong relationship exists between the number of circles on a map and familiarity with Michigan (see Table 10). A traveler who was more familiar with Michigan drew more circles on his or her map than a person who was less familiar with the state.

Table 10

Crosstabulations of Familiarity with Michigan with Details on the Maps

A. Familiarity and the Number of X's on a Map

Familiarity	Number of X's: 0 (%)	1-2 (%)	3 or More (%)
Not at all or not very familiar	20.8	19.2	6.4
Somewhat familiar	26.6	25.2	17.9
Very or extremely familiar	52.6	55.6	75.6
	100.0 (n = 154)	100.0 (n = 151)	100.0 (n = 156)

Chi square 23.29790
Degrees of freedom 4
Significance .0001

Gamma .30317
Response rate 95.0%
Total respondents 485

B. Familiarity and the Number of Circles on a Map

Familiarity	Number of Circles: 0-2 (%)	3 (%)	4 (%)	5 or More (%)
Not at all or not very familiar	24.3	11.7	9.5	10.1
Somewhat familiar	30.0	23.9	20.6	10.1
Very or extremely familiar	45.7	64.4	69.8	79.7
	100.0 (n = 140)	100.0 (n = 163)	100.0 (n = 63)	100.0 (n = 79)

Chi square 31.42264
Degrees of freedom 6
Significance .0001

Gamma .35537
Response rate 91.7%
Total respondents 485

General Hypothesis 2:

People who have traveled frequently in an area recently include more details on their maps than those who have not traveled in the area often.

Testable Hypothesis:

Respondents who have traveled more in Michigan for vacation or recreation purposes during the past two years draw more X's on their maps than those who have not traveled frequently in the state during the past two years.

Testable Hypothesis:

Respondents who have traveled more in Michigan for vacation and recreation purposes during the past two years draw more circles on their maps than those who have not traveled frequently in the state during the past two years.

Null Hypothesis:

The frequency of travel is not related to details on the maps.

The travel variable was divided into three categories, one to two trips, three to six trips, and seven or more trips. Results were significant, but not nearly as significant as those found for the first hypothesis (see Table 11). However, those who had traveled more did draw more X's on their maps to indicate the centers of tourism and recreation regions, and to a less extent drew more circles than those who had traveled less.

General Hypothesis 3:

People who have lived longer in an area include more details on their maps than those who have not lived in the area long, if at all.

Table 11

Crosstabulations of the Number of Trips
with Details on the Maps

A. The Number of Trips and the Number of X's on a Map

	Number of X's		
Number of Trips	0 (%)	1-2 (%)	3 or More (%)
1-2	36.4	43.8	18.1
3-6	42.1	40.6	48.6
7 or more	21.5	15.6	33.3
	100.0 (n = 107)	100.0 (n = 96)	100.0 (n = 105)

Chi square 18.77848
Degrees of freedom 4
Significance .0009

Gamma .22603
Response rate 63.5%
Total respondents 485

B. The Number of Trips and the Number of Circles on a Map

	Number of Circles			
Number of Trips	0-2 (%)	3 (%)	4 (%)	5 or More (%)
1-2	43.9	30.3	26.8	18.4
3-6	41.8	43.1	48.8	46.8
7 or more	14.3	26.6	24.4	34.7
	100.0 (n = 98)	100.0 (n = 109)	100.0 (n = 41)	100.0 (n = 49)

Chi square 14.54972
Degrees of freedom 6
Significance .0241

Gamma .26950
Response rate 61.2%
Total respondents 485

Testable Hypothesis:

Respondents who have lived longer in Michigan draw more X's on their maps than those who have not lived in the state long, if at all.

Testable Hypothesis:

Respondents who have lived longer in Michigan draw more circles on their maps than those who have not lived in the state long, if at all.

The residence variable was divided into four groups. These were zero years, one to twenty-two years, twenty-three to twenty-nine years, and forty to sixty-nine years. These large categories were selected because the average length of residence in the state was 31.7 years for the sample.

Results of the chi square and gamma statistics, shown in Table 12, indicate that a relationship between length of residence and map details does exist. People who had lived longer in Michigan drew more X's on their maps. The number of circles on a person's map also tends to be higher with longer periods of residence in Michigan, but the gamma of 0.16416 seen in Table 12 does not indicate a very strong relationship.

General Hypothesis 4:

People who are more familiar with an area draw larger circles on their maps than those who are not familiar with the area.

Testable Hypothesis:

Respondents who rate themselves high in familiarity have a larger average circle size on their maps than those who rate themselves low in familiarity.

Null Hypothesis:

Familiarity is not related to the average circle size on a map.

Table 12

Crosstabulations of the Length of Residence in Michigan with Details on the Maps

A. Years of Residence in Michigan and Number of X's on a Map

Years of Residence	Number of X's: 0 (%)	1-2 (%)	3 or More (%)
0	52.1	37.7	23.4
1-22	15.2	20.1	26.6
23-39	9.1	23.9	29.2
40-69	23.6	18.2	20.8
	100.0 (n = 165)	100.0 (n = 159)	100.0 (n = 154)

Chi square 40.63657
Degrees of freedom 6
Significance .0001

Gamma .20528
Response Rate 98.6%
Total respondents 485

B. Years of Residence in Michigan and Number of Circles on a Map

Years of Residence	Number of Circles: 0-2 (%)	3 (%)	4 (%)	5 or More (%)
0	49.7	37.5	30.2	21.0
1-22	16.6	19.6	22.2	29.6
23-39	13.2	18.5	25.4	33.3
40-69	20.5	24.4	22.2	16.0
	100.0 (n = 151)	100.0 (n = 168)	100.0 (n = 63)	100.0 (n = 81)

Chi square 30.69029
Degrees of freedom 9
Significance .0003

Gamma .16416
Response rate 95.5%
Total respondents 485

The average circle size variable was divided into three groups based on the number of half-inch grids included in a circle. These were zero to three, four to six, and seven or more grids per circle. Results of the chi square and gamma statistics shown in Table 13 indicate that no statistical difference exists in the average circle size between those who rated themselves high or low in familiarity, and the hypothesis cannot be supported at the .05 significance level.

Table 13

Crosstabulation of Familiarity with Average Circle Size on Maps

	Average Circle Size		
Familiarity	0-3 (%)	4-6 (%)	7 or More (%)
Not at all or not very familiar	16.5	17.4	12.5
Somewhat familiar	25.6	22.7	22.0
Very or extremely familiar	57.9	59.9	65.5
	100.0 (n = 121)	100.0 (n = 172)	100.0 (n = 168)

Chi square 2.67631
Degrees of freedom 4
Significance .6134

Gamma .09959
Response rate 95.0%
Total respondents 485

General Hypothesis 5:

People who have taken more trips in an area recently draw larger circles on their maps than those who have not traveled frequently in the area recently.

Testable Hypothesis:

Respondents who have taken more trips in Michigan for vacation and recreation purposes in the past two years have a larger average circle size on their maps than those who have not traveled frequently in the state during the past two years.

Null Hypothesis:

The number of trips is not related to the average circle size on the map.

Results shown in Table 14 indicate that no significant relationship exists between the number of trips and the average circle size on a map. This relationship could not be supported at the .05 level.

General Hypothesis 6:

People who have lived longer in an area draw larger circles on their maps than those who have not lived in the area long, if at all.

Testable Hypothesis:

Respondents who have lived longer in Michigan have a larger average circle size on their maps than those who have not lived in the state long, if at all.

Null Hypothesis:

The length of residence in Michigan is not related to the average circle size on maps.

Table 14

Crosstabulation of the Number of Trips with Average Circle Size on Maps

	Average Circle Size		
Number of Trips	0-3 (%)	4-6 (%)	7 or More (%)
1-2	43.6	29.2	28.2
3-6	42.3	42.5	46.2
7 or more	14.1	28.3	25.6
	100.0 (n = 78)	100.0 (n = 113)	100.0 (n = 117)

Chi square 8.46419
Degrees of freedom 4
Significance .0760

Gamma .17006
Response rate 63.5%
Total respondents 485

Based on results of chi square and gamma statistics shown in Table 15, the null hypothesis cannot be rejected. No significant differences are seen between the length of residence in Michigan and the average circle size on a map.

The results of the last three hypotheses indicate that the average circle size on a map is not significantly related to familiarity with, the number of trips in, or the length of residence in Michigan. These results should be interpreted within the context of the survey situation. Travelers were stopped at the T.I.C.s only briefly, and therefore the average circle size on a map may actually

have only been a result of what a person was able to quickly sketch on a map. Also, travelers' perceptions of recreation and tourism areas varied greatly in number (see Table 7). Other studies investigating the size of items on maps were conducted with people who were not traveling, and therefore the respondents in those studies may have taken more time to complete their maps and given more thought to the size of items on their maps.

Table 15

Crosstabulation of the Length of Residence in Michigan with Average Circle Size on Maps

	Average Circle Size		
Years of Residence	0-3 (%)	4-6 (%)	7 or More (%)
0	35.7	43.6	34.1
1-22	18.3	17.9	24.9
23-39	20.6	19.6	21.4
40-69	25.4	19.0	19.7
	100.0 (n = 126)	100.0 (n = 179)	100.0 (n = 173)

Chi square 6.63753
Degrees of freedom 6
Significance .3557

Gamma -.016761
Response rate 98.6%
Total respondents 485

General Hypothesis 7:

People who have lived longer in an area are more familiar with the area than those who have not lived in the area long, if at all.

Testable Hypothesis:

Respondents who have lived longer in Michigan rate themselves higher on familiarity with the state than those who have not lived in the state long, if at all.

Null Hypothesis:

The null hypothesis is that the length of residence in Michigan is not related to familiarity.

Results presented in Table 16 show that this hypothesis is indeed highly significant. Both chi square and gamma statistics indicate that a strong relationship exists between the length of residence in Michigan and a respondent's self-rating of familiarity with the state. Respondents who had lived in Michigan longer rated themselves higher in familiarity, and therefore the null hypothesis can be rejected.

General Hypothesis 8:

People who have traveled more in an area recently are more familiar with the area than those who have not traveled frequently in the area recently.

Testable Hypothesis:

Respondents who have taken more trips for recreation and vacation purposes in Michigan during the past two years rate themselves higher in familiarity with the state than those who have not traveled frequently in the state recently.

Table 16

Crosstabulation of Familiarity with Michigan with Years of Residence in Michigan

	Years of Residence			
Familiarity	0 (%)	1-22 (%)	23-39 (%)	40-69 (%)
Not at all or not very familiar	30.9	13.4	4.1	3.1
Somewhat familiar	43.8	18.6	8.2	8.2
Very or extremely familiar	25.3	68.0	87.8	88.7
	100.0 (n = 162)	100.0 (n = 97)	100.0 (n = 98)	100.0 (n = 97)

Chi square 150.55249
Degrees of freedom 6
Significance 0.0

Gamma .71174
Response rate 93.6%
Total respondents 485

Null Hypothesis:

The number of trips taken is not related to the respondents' familiarity with Michigan.

Chi square and gamma statistics shown in Table 17 indicate that the number of trips taken recently in Michigan is related to respondents' self-rating of familiarity with the state. Respondents who had taken more trips during the last two years in Michigan for recreation or vacation purposes rated themselves high in familiarity with the state. The null hypothesis can be rejected in this case, too.

Table 17

Crosstabulation of Familiarity with Michigan with the Number of Trips

Familiarity	Number of Trips 1-2 (%)	3-6 (%)	7 or More (%)
Not at all or not very familiar	42.9	11.3	1.4
Somewhat familiar	35.7	24.8	12.3
Very or extremely familiar	21.4	63.9	86.3
	100.0 (n = 98)	100.0 (n = 133)	100.0 (n = 73)

Chi square 88.95527
Degrees of freedom 4
Significance .0001

Gamma .71960
Response rate 62.7%
Total respondents 485

General Hypothesis 9:

People who have lived longer in an area have traveled more in the area than those who have not lived in the area long, if at all.

Testable Hypothesis:

Respondents who have lived longer in Michigan have taken more trips in Michigan during the past two years for recreation or vacation purposes than those who have not lived in the state long, if at all.

Null Hypothesis:

The length of residence in Michigan is not related to the number of trips taken for recreation or vacation purposes.

Based on results presented in Table 18, this null hypothesis can be rejected. Respondents who had lived longer in Michigan claimed to have taken more trips in the state for recreation or vacation purposes during the past two years than others.

Table 18

Crosstabulation of Years of Residence in Michigan with the Number of Trips

	Number of Trips		
Years of Residence	1-2 (%)	3-6 (%)	7 or More (%)
0	64.3	42.5	16.7
1-22	24.5	18.7	25.0
23-39	4.1	18.7	27.8
40-69	7.1	20.1	30.6
	100.0 (n = 98)	100.0 (n = 134)	100.0 (n = 72)

Chi square 51.12410
Degrees of freedom 6
Significance .0001

Gamma .48374
Response rate 62.7%
Total respondents 485

The general conclusion drawn from the results of the tests of the last three hypotheses is that these three variables are related to each other. A composite variable could be created that includes familiarity with, number of trips in, and length of residence in Michigan.

These three variables are also related to the details seen on respondents' maps of recreation and tourism regions in Michigan. The gamma statistics for familiarity and the number of X's and the number of circles on the maps are 0.30317 and 0.35537, which indicate stronger relationships than those seen between the map details and travel and length of residence variables. However, all three variables indicate that statistically significant relationships exist. This means that respondents who rated themselves high on familiarity with Michigan, or traveled recently in the state for recreation or vacation purposes, or lived in the state longer drew more X's and circles on their maps, and it is more than likely that these people had high scores for all three variables. Apparently, people who have had more experience in the state are more able or more willing to identify regions of Michigan that they associate with recreation and tourism.

CHAPTER V

THE REGIONAL STUDY

The Map Study concentrated on the image of the State of Michigan, specifically where people felt recreation and tourism regions are located. In contrast, the Regional Study investigated the recreation and tourism images of two specific, small regions within Michigan. Partial results of the Map Study were used to select the two regions. In addition, the Michigan Sea Grant Program funded the project, and therefore an emphasis on Great Lakes shoreline regions was desired. This chapter presents the procedures used and results obtained from this study.

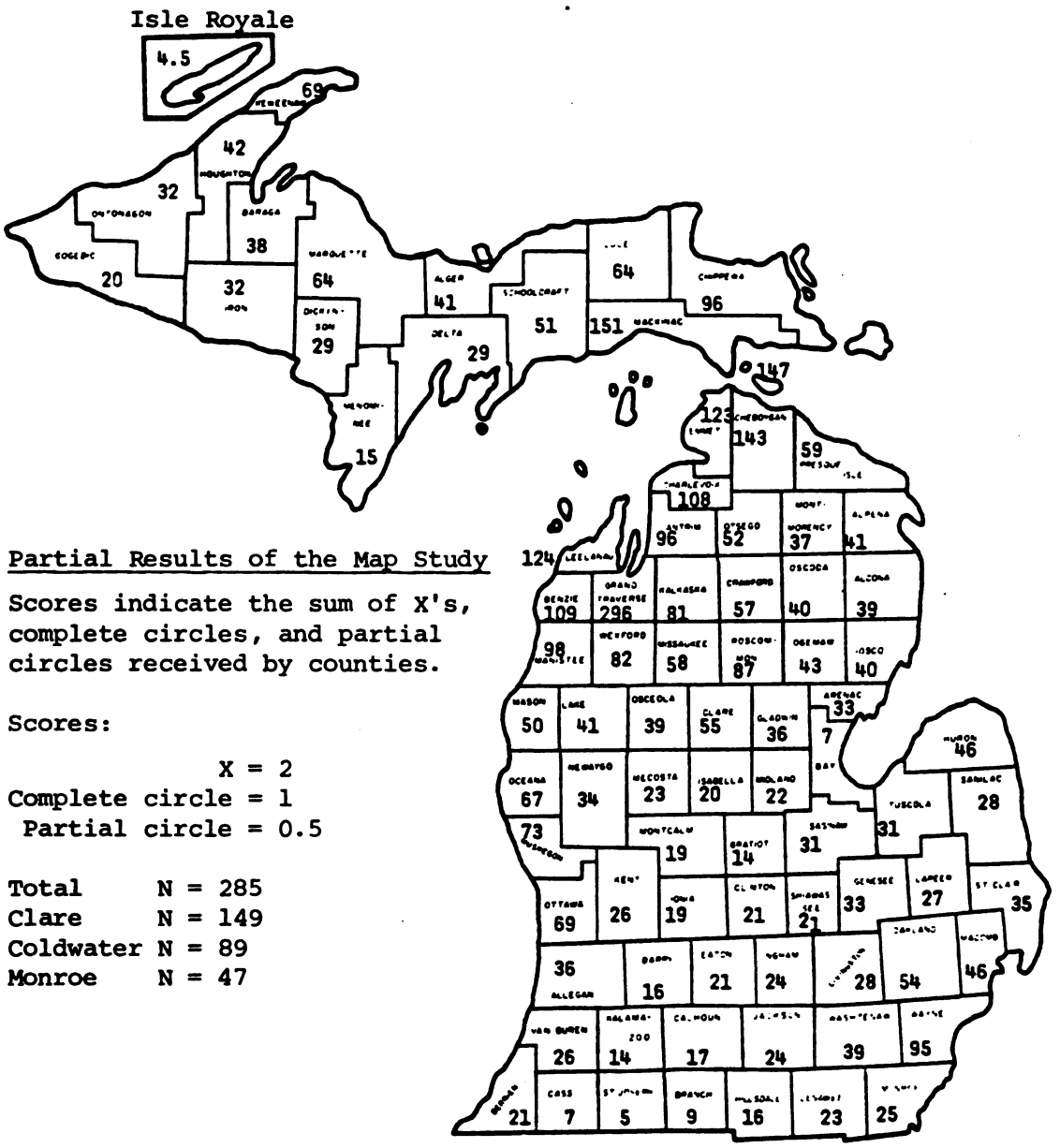
Instrument Development

Hand tallies were completed of 285 maps from the State Image Study survey to show the number and percent of the sample who placed X's in the counties, circled counties completely, and partially circled counties. Sums were calculated by giving a county with an X in it a score of 2, a completely circled county a score of 1, and a partially circled county a score of 0.5. Using this composite map, the areas were chosen. The western region was composed of Antrim, Grand Traverse, Leelanau, Benzie, and Manistee

Counties, all bordering Lake Michigan, and all receiving a considerable amount of attention as indicated in Figure 5. The eastern region included Alpena, Alcona, and Iosco Counties, all bordering Lake Huron, and receiving less attention than the westside counties. These two regions are located on opposite sides of Michigan and allow for comparisons to be made (see Figure 6).

Demographic items for the Regional Study remained the same as those in the Map Study, with the exception of the addition of a race question, but the other survey questions differed. These items were selected from the 1981 Michigan Recreation and Travel Survey conducted by National Family Opinion, Inc. for the Michigan Department of Natural Resources, Department of Transportation, and Michigan Travel Bureau. This mailed survey investigated images of large areas of Michigan and trip destinations, instructing respondents to evaluate descriptive items, activities, and facilities. It also compared Michigan's recreation and tourism activities to those of Indiana, Illinois, Ohio, Wisconsin, and Canada.

Two different instruments, the Area Image Study and Area Descriptive Study, were developed using basically the same set of descriptive items, activities, and facilities. One instrument, the Area Image Study, was evaluative in nature, while the other one was descriptive. The Area Image Study is of interest in the Regional Study because it can be



Partial Results of the Map Study

Scores indicate the sum of X's, complete circles, and partial circles received by counties.

Scores:

X = 2
Complete circle = 1
Partial circle = 0.5

Total N = 285
Clare N = 149
Coldwater N = 89
Monroe N = 47

FIGURE 5. COMPOSITE MAP OF 285 QUESTIONNAIRES USED TO DEVELOP THE SURVEY FOR THE REGIONAL STUDY.

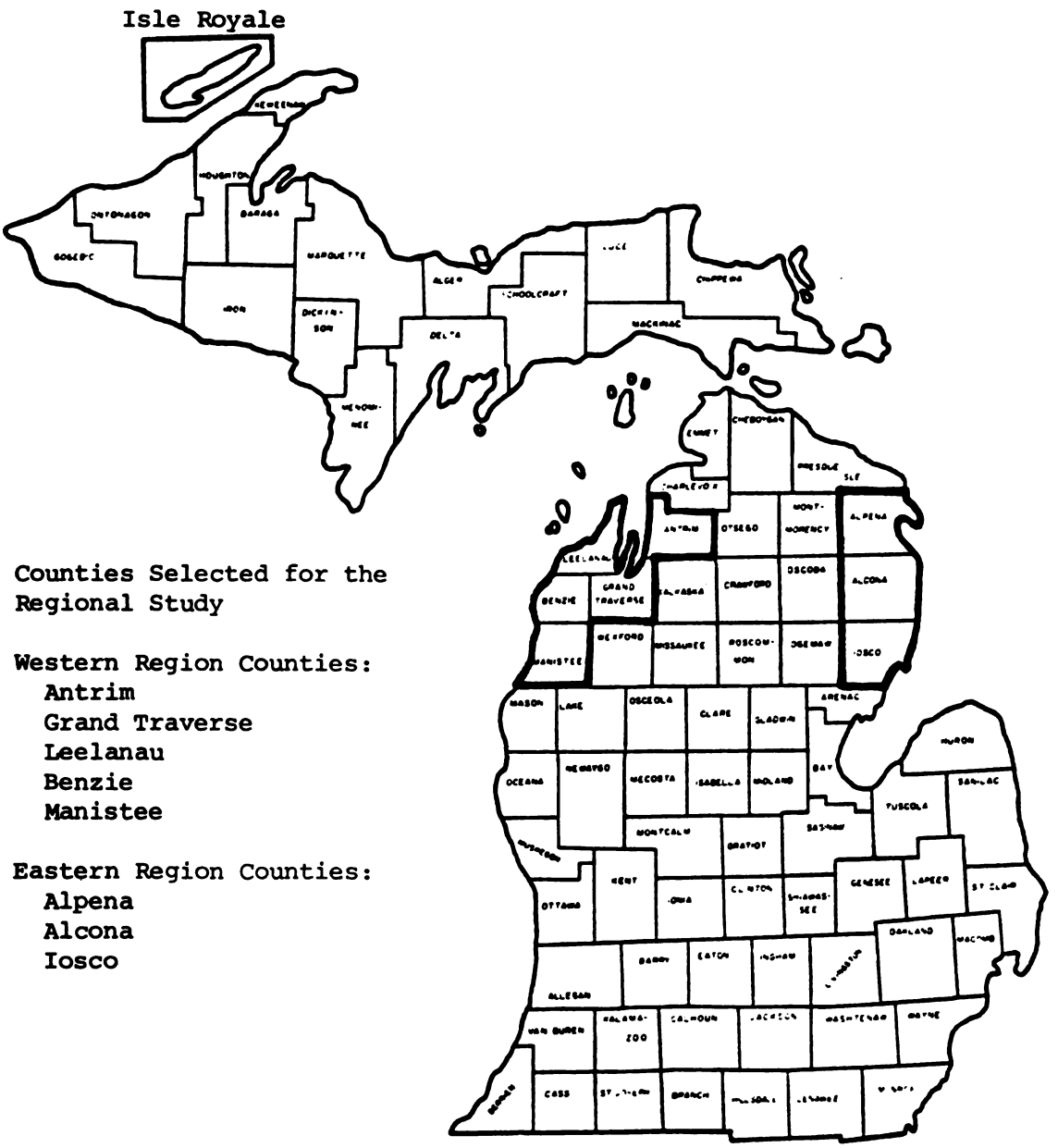


FIGURE 6. COUNTIES SELECTED FOR THE REGIONAL STUDY.

used to compare travelers' images of the quality of particular items in each of the two regions (see Appendix C).

Pretesting. Both instruments were pretested at the New Buffalo Travel Information Center on August 21 and 22, 1982. During the pretest, people who were very unfamiliar with the regions refused to answer the surveys, and therefore it was decided that only those people who felt familiar with a region would be asked to complete a survey about the region's recreation and tourism opportunities.

Sampling procedures. Sampling was conducted in a similar manner to that of the Map Study. Attempts were made to alternate instruments so that the same type of survey was not given to two consecutive people. However, not every traveler who passed a researcher completed a survey because a screening question was asked to determine a person's familiarity with each region. The researchers held up a map outlining the two regions and asked if a person was familiar with each region. If the person was familiar with a region, he or she was given a survey to complete at the site. If the person was not familiar with the regions, he or she was thanked and that was the end of contact with the researcher. As in the Map Study, those who finished surveys placed their completed questionnaires

in a box provided by the researcher. Sampling for this study was conducted at Clare T.I.C. on August 27 and 29, and September 6, 1982. Coldwater T.I.C. was used as a sampling site on August 25, 29, and 31, and September 4, 1982.

Methods of Analysis

The Statistical Package for the Social Sciences was also used to analyze the Regional Study data. Chi square and gamma statistics were selected to test for significant relationships between the major variables. Several variables were of interest in this study and are described below.

Variables of Interest

Image: In this survey, the image variable refers to the set of evaluative terms selected from a list of descriptive items, activities, and facilities. An example is as follows: good restaurants, fair restaurants, poor restaurants. Respondents were asked to circle one of the choices for each item.

Location: Location refers to whether the survey was concerned with the eastern or western region of the state. The eastern region consisted of Alpena, Alcona, and Iosco Counties. Westside counties were Manistee, Benzie, Leelanau, Grand Traverse, and Antrim.

Other variables: Several other variables were also of interest in this study because it was believed that they might influence the image variable. These included the purpose of the trip, plans to participate in recreation, home residence, length of residence in Michigan, number of trips in the state for recreation or vacation purposes during the past two years, rating of Michigan, and annual family income. All of these were defined by questions on the Area Image Study questionnaire. Finally, the sampling site was considered as a variable in the study.

General Findings

The familiarity screening question. Approximate counts were kept of auto travelers' responses to the familiarity screening question asked at the Clare and Coldwater T.I.C. sampling sites. Table 19 shows the results of these approximate counts for familiarity with the two regions, and it appears that travelers who stopped at these T.I.C.s were more familiar with the western region than the eastern region. Travelers at Clare seemed to be more familiar with both regions than those at Coldwater, probably due to the high number of Michigan residents stopping at Clare (M.D.O.T., 1980).

Table 19

Familiarity with Regions by Sampling Sites

	Travel Information Center and Region			
	Clare		Coldwater	
Familiarity	East (%)	West (%)	East (%)	West (%)
Familiar	50.3	77.1	31.8	45.9
Not familiar	49.7	22.9	68.2	54.1
	100.0 (n = 440)	100.0 (n = 440)	100.0 (n = 287)	100.0 (n = 287)

Note: These counts are for sampling periods when both the Area Image Study and the Area Descriptive Study (not analyzed here) were distributed.

The sample. The sample consisted of 235 auto travelers who stopped at selected Travel Information Centers during late August and early September of 1982. One hundred and ten people completed the survey at Coldwater and 125 filled it out at Clare. The survey involved two versions: 111 completed the eastern region version, while 124 completed the western region version. The two versions of the surveys were approximately equally divided by site.

These respondents were also well educated and middle aged, and possessed relatively high annual family incomes. The mean education level was 13.7 years and the average annual family income was between $30,000 and $34,000

(see Table 20). The average age of respondents was 42.5 years and 52.1 percent of those sampled were male.

Table 20

Annual Family Income

Income Level	Percentage
Under $4,999	2.0
$5,000-$9,999	4.0
$10,000-$14,999	7.5
$15,000-$19,999	12.6
$20,000-$24,000	13.1
$25,000-$29,999	16.1
$30,000-$34,000	14.6
$35,000-$49,999	18.1
$50,000 or more	10.1
Retired	2.0

$\bar{X}$ = ($30,000-$34,999)
Median ($25,000-$29,999)
Response rate 84.7%
Total respondents (235)

Three-fourths of those sampled resided in Michigan and this is not surprising because only respondents who were familiar with a region completed a survey, and residents of the state were more likely to be familiar with the two regions (see Table 21). Ingham County was home for 8.7 percent of the respondents, Wayne County was home for 5.6 percent, and Saginaw County was home for 5.1 percent of those sampled. Several other counties were home for a few respondents (less than 5.0 percent per county).

Table 21

Home Residence

Residence	Percentage
Michigan	75.1
Ohio	3.7
Indiana	15.0
Illinois	0.5
Other U.S. states	5.7

Response rate 82.1%
Total respondents (235)

Only thirty-six people either had never lived in Michigan or did not answer the question, and many had lived in the state for several years. The average length of residence was 33.4 years, and while this may seem like a high figure, it is not surprising due to the screening done prior to passing out the surveys (see Table 22).

Fifty-two percent of those sampled planned to participate in recreational activities on their present trip. Common activities planned by these people were sightseeing (19%), shopping (18%), eating out (17%), hiking (14%), and camping (12%). There may have been a strong bias towards the first three activities because these three were listed on the survey as examples and a line was not printed on the survey to provide respondents with a specific place to write their answers.

Table 22

Years of Residence in Michigan

Years of Residence	Percentage
0	15.4
1-10	9.5
11-20	13.4
21-30	17.5
31-40	14.6
41-50	10.3
51-60	11.9
61-70	6.0
71-80	1.0

$\bar{X}$ (33.4)
Median (31.5)
Response rate 84.6%
Total respondents (235)

Note: Thirty-six respondents either never lived in Michigan or did not respond to the question.

At the time these people were sampled, 38.8 percent of them were headed home. Other destinations included Michigan counties, Mackinac Island, other states, and Canada. Wayne, Ingham, and Grand Traverse Counties were among the more common destinations in the state.

Nearly 30 percent of those sampled were going to visit friends or relatives on the present trip (see Table 23). Another 21.3 percent were on vacation. Almost all of the respondents were on a trip that involved a visit with friends or relatives or vacation, and most were not on

Table 23

Purpose of the Trip

Purpose of the Trip	Percentage
To visit friends or relatives	29.9
Business	7.7
Vacation	21.3
Business and pleasure	4.5
Pleasure travel	14.0
Other	14.9
To visit friends or relatives and vacation	1.8
To visit friends or relatives and business and pleasure	0.9
To visit friends or relatives and other	0.5
Vacation and pleasure travel	3.2
Vacation and other	0.5
Business and pleasure and pleasure travel	0.5

Response rate 94.0%
Total respondents (235)

their first recreational trip in Michigan during the past two years (see Table 24). Many people claimed that they had taken between two and five trips and 21.7 percent of the respondents did not remember how many trips they had taken in Michigan during the past two years for recreation or vacation purposes.

Respondents were also asked some questions about recreation and tourism in Michigan. This sample gave Michigan an average rating of 6.2 on a scale of seven when asked how well the state provides for recreation and tourism opportunities in comparison to other Great Lakes states.

Table 24

Number of Recreation or Vacation Trips Taken in Michigan During the Past Two Years

Number of Trips	Percentage
1	9.8
2	13.4
3	10.7
4	14.3
5	8.9
6	7.1
7	0.9
8	5.4
9	0.0
10 or more	29.6

$\bar{X}$ = (9.09)
Median (4.70)
Response rate 47.6%
Total respondents (235)

This positive rating is not surprising since a large majority of the respondents presently do, or did, live in Michigan. Familiarity with the state was also rated high (see Table 25). Nearly two-thirds of those sampled claimed to be extremely or very familiar with Michigan. Finally, 60 percent of the respondents selected Lake Michigan as their favorite Great Lake, 13.4 percent chose Lake Superior, 10.2 percent liked Lake Huron best. The rest of the responses were scattered between the other Great Lakes or included two or more answers.

Table 25

Familiarity with Michigan

Familiarity	Percentage
Not at all familiar	0.9
Not very familiar	3.1
Somewhat familiar	17.7
Very familiar	34.1
Extremely familiar	44.1

$\bar{X}$ = (very familiar)
Median (very familiar)
Response rate 96.1%
Total respondents (235)

Analysis of the Hypothesis

The Regional Study involved only one hypothesis. However, this hypothesis was tested in several ways to determine whether or not differences seen in the images of the two regions were statistically significant. Once this hypothesis was tested, the images of the two regions were investigated further to find out whether or not several variables were related to how respondents evaluated the regions.

General Hypothesis:

The westside county region has a more positive image than the eastside county region.

Testable Hypothesis:

Respondents who completed the westside survey of the Area Image Study circled

more positive terms on the evaluative list of descriptive items, activities, and facilities than those who completed the eastside survey.

Null Hypothesis:

No differences exist between the images of the east- and westside county regions.

The hypothesis was tested by creating an image scale and determining whether or not this scale differed significantly between the eastern and western regions. The image scale was computed by summing the values given to the fifteen items evaluated on the survey (see Figure 7). For the two regions, the average value of any particular item was substituted for the missing response for that item to avoid losing too many cases due to missing responses distributed across different variables and cases. Only those six cases which contained fifteen missing values or uninterpretable responses were deleted from the analysis. Once created, this image scale was treated as an interval level variable. Values of the scale could range from fifteen to forty-five. Although the analysis may have been somewhat inappropriate, it was still useful for understanding the data.

The average value of the image scale was 37.4 for the eastern region and 40.9 for the western region (see Table 26). A one-tailed t-test was used to test for a difference in these means. The .05 significance level was selected for this test. Results of the test produced

a. very scenic (3)	somewhat scenic (2)	not very scenic (1)
b. good restaurants (3)	fair restaurants (2)	poor restaurants (1)
c. unfriendly people (1)	somewhat friendly people (2)	friendly people (3)
d. good powerboating or waterskiing (3)	fair powerboating or waterskiing (2)	poor powerboating or waterskiing (1)
e. good hotels and motels (3)	fair hotels and motels (2)	poor hotels and motels (1)
f. good camping (3)	fair camping (2)	poor camping (1)
g. crowded (1)	somewhat crowded (2)	not crowded (3)
h. good fishing (3)	fair fishing (2)	poor fishing (1)
i. popular destination (3)	somewhat popular destination (2)	unpopular destination (1)
j. poor for family fun (1)	fair for family fun (2)	good for family fun (3)
k. good for vacationing (3)	fair for vacationing (2)	poor for vacationing (1)
l. poor sailing (1)	fair sailing (2)	good sailing (3)
m. good hunting (3)	fair hunting (2)	poor hunting (1)
n. good beaches (3)	fair beaches (2)	poor beaches (1)
o. good festivals and special events (3)	fair festivals and special events (2)	poor festivals and special events (1)

FIGURE 7. ITEMS EVALUATED IN THE AREA IMAGE STUDY SURVEY AND VALUES GIVEN TO EACH CHOICE.

Table 26

Image Scale for the Eastern and Western Regions

Image Scale	Region	
	Eastern (%)	Western (%)
26-30	2.7	0.0
31-35	24.7	3.3
36-40	60.6	40.9
41-45	12.0	55.9
$\bar{X}$	(37.4)	(40.9)
Median	(37.2)	(40.8)
Total respondents	(109)	(120)

Note: Six cases were removed due to 15 nonresponses to items or uninterpretable responses. The image scale is based on summing individual responses to items. Individual responses varied from 1 to 3, and therefore the image scale could range from 15 to 45. Mean scores for individual items were substituted for missing values.

a t value of -9.45 with 227 degrees of freedom (see Table 27). This large negative t value clearly shows that the mean value of the image scale for the eastern region is significantly lower than the mean of the western region image scale, and therefore the null hypothesis can be rejected.

This overall image scale is informative, but investigations into the values of the individual survey items provide more specific information about the components of the scale. Chi square and gamma statistics were used to test for relationships between the individual survey item

Table 27

t-Test of the Means of the Image Scale

Region	Number of Cases	Mean of the Image Scale	Standard Deviation	Standard Error
Eastern	109	37.4	3.195	.306
Western	120	40.9	2.398	.219

One-tailed probability .001
t-Value -9.45
Degrees of freedom 227

values and the region being evaluated. Results from these tests are shown in Table 28, indicating many statistically significant relationships. The tests of the items concerned with scenery, restaurants, hotels and motels, popular destinations, family fun, and vacationing, indicate that the values selected vary strongly according to the region being evaluated. Clearly, the western region was evaluated as a more scenic, more popular destination, as better for family fun and a vacation, and as possessing better restaurants, and hotels and motels, than the eastern region. The friendliness of people, powerboating or waterskiing, camping, sailing, beaches, and festivals and special events, were also evaluated more highly for the western region than for the eastern region. Differences were not observed between the evaluations of fishing and hunting for the

Table 28

Crosstabulations of Respondents' Evaluations with Region

a. How Scenic	Region: Eastern (%)	Region: Western (%)
Not very scenic	1.9	0.0
Somewhat scenic	40.0	10.0
Very scenic	58.8	90.0
	100.0 (n = 105)	100.0 (n = 120)

Chi square 30.87489 | Gamma .73420
Degrees of freedom 2 | Response rate 95.7%
Significance .0001 | Total respondents 235

b. Restaurants	Region: Eastern (%)	Region: Western (%)
Poor	5.0	0.0
Fair	67.3	33.6
Good	27.7	66.4
	100.0 (n = 101)	100.0 (n = 113)

Chi square 34.37235 | Gamma .68378
Degrees of freedom 2 | Response rate 94.0%
Significance .0001 | Total respondents 235

c. Friendliness of People	Region: Eastern (%)	Region: Western (%)
Unfriendly	0.9	3.4
Somewhat friendly	32.1	16.0
Friendly	67.0	80.7
	100.0 (n = 106)	100.0 (n = 109)

Chi square 9.06695 | Gamma .31274
Degrees of freedom 2 | Response rate 95.7%
Significance .0107 | Total respondents 235

Table 28--Continued

d. Powerboating or Waterskiing	Region: Eastern (%)	Region: Western (%)
Poor	4.2	1.2
Fair	41.7	17.3
Good	54.2	81.5
	100.0 (n = 72)	100.0 (n = 81)
Chi square 13.27757		Gamma .56514
Degrees of freedom 2		Response rate 65.1%
Significance .0013		Total respondents 235

e. Hotels and Motels	Region: Eastern (%)	Region: Western (%)
Poor	2.3	0.0
Fair	51.1	21.2
Good	46.6	78.8
	100.0 (n = 88)	100.0 (n = 100)
Chi square 22.3480		Gamma .62417
Degrees of freedom 2		Response rate 81.7%
Significance .0001		Total respondents 235

f. Camping	Region: Eastern (%)	Region: Western (%)
Poor	1.1	0.0
Fair	30.9	13.0
Good	68.1	87.0
	100.0 (n = 94)	100.0 (n = 92)
Chi square 9.80619		Gamma .51698
Degrees of freedom 2		Response rate 79.1%
Significance .0074		Total respondents 235

Table 28--Continued

g. Crowding	Region: Eastern (%)	Region: Western (%)
Crowded	11.7	18.4
Somewhat crowded	43.7	58.8
Not crowded	44.7	22.8
	100.0 (n = 103)	100.0 (n = 104)
Chi square 11.80426		Gamma -.31789
Degrees of freedom 2		Response rate 76.1%
Significance .0027		Total respondents 235

h. Fishing	Region: Eastern (%)	Region: Western (%)
Poor	3.7	6.7
Fair	23.8	23.3
Good	72.5	70.0
	100.0 (n = 80)	100.0 (n = 90)
Chi square .72087		Gamma -.07383
Degrees of freedom 2		Response rate 72.3%
Significance .6974		Total respondents 235

i. Popular Destinations	Region: Eastern (%)	Region: Western (%)
Unpopular	8.4	0.0
Somewhat popular	67.4	26.9
Popular	24.2	73.1
	100.0 (n = 85)	100.0 (n = 108)
Chi square 51.29499		Gamma .79748
Degrees of freedom 2		Response rate 86.4%
Significance .0001		Total respondents 235

Table 28--Continued

j. For Family Fun	Region: Eastern (%)	Region: Western (%)
Poor	5.9	0.9
Fair	38.2	13.8
Good	55.9	85.9
	100.0 (n = 102)	100.0 (n = 116)
Chi square 23.69595		Gamma .63734
Degrees of freedom 2		Response rate 92.8%
Significance .0001		Total respondents 235

k. For Vacationing	Region: Eastern (%)	Region: Western (%)
Poor	3.8	0.0
Fair	29.2	6.8
Good	67.0	93.2
	100.0 (n = 106)	100.0 (n = 118)
Chi square 25.39745		Gamma .74472
Degrees of freedom 2		Response rate 95.3%
Significance .0001		Total respondents 235

l. Sailing	Region: Eastern (%)	Region: Western (%)
Poor	4.8	0.0
Fair	38.1	17.7
Good	57.1	82.3
	100.0 (n = 63)	100.0 (n = 79)
Chi square 12.31180		Gamma .56193
Degrees of freedom 2		Response rate 60.4%
Significance .0021		Total respondents 235

Table 28--Continued

m. Hunting	Region: Eastern	Region: Western
Poor	0.0	2.7
Fair	32.9	28.8
Good	67.1	68.3
	100.0 (n = 76)	100.0 (n = 73)
Chi square 2.29826		Gamma .01092
Degrees of freedom 2		Response rate 63.4%
Significance .3169		Total respondents 235

n. Beaches	Region: Eastern (%)	Region: Western (%)
Poor	5.3	0.0
Fair	42.1	27.1
Good	52.6	72.9
	100.0 (n = 95)	100.0 (n = 107)
Chi square 12.20884		Gamma .43193
Degrees of freedom 2		Response rate 86.0%
Significance .0022		Total respondents 235

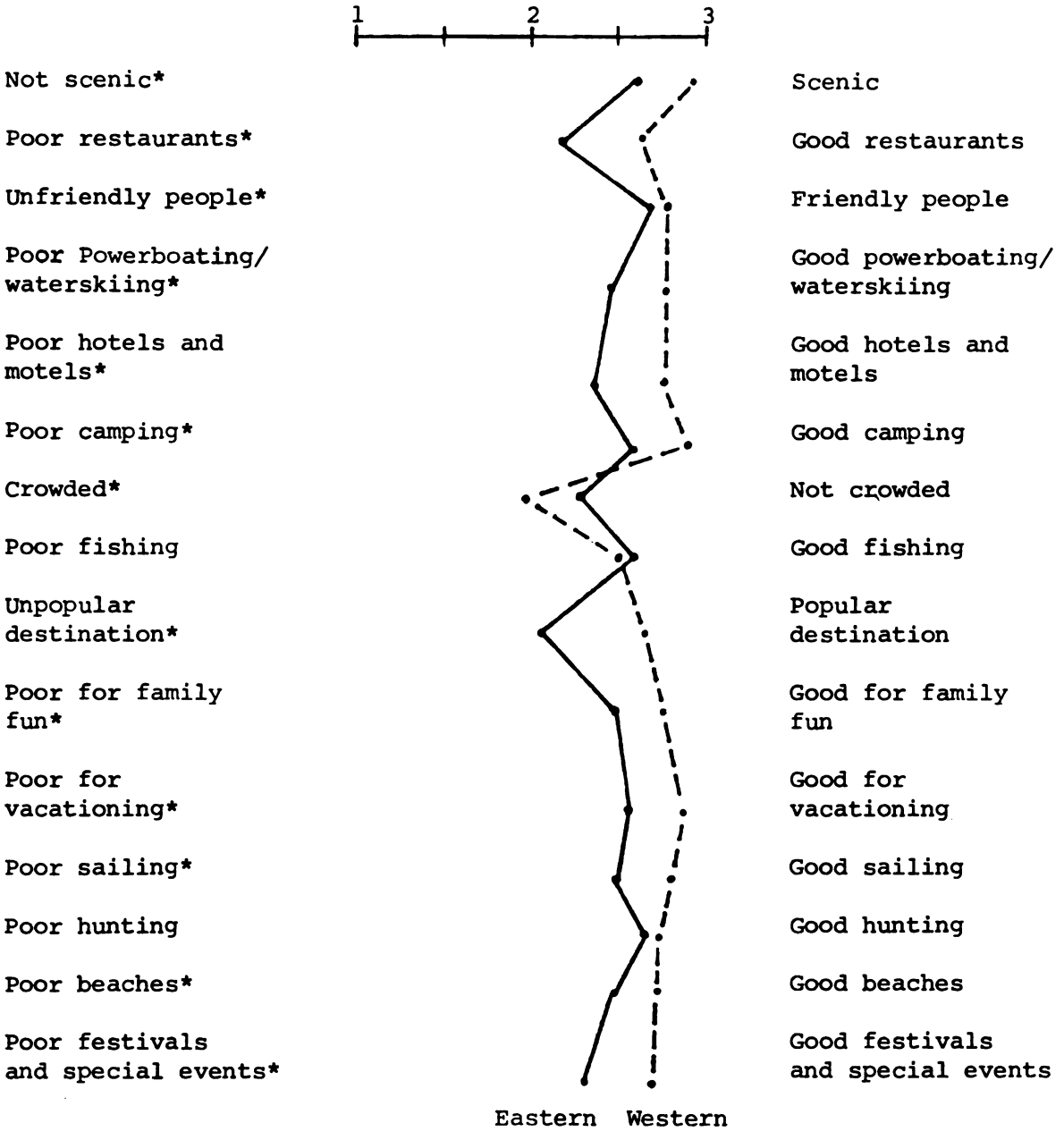
o. Festivals/Special Events	Region: Eastern (%)	Region: Western (%)
Poor	8.0	3.3
Fair	49.3	22.0
Good	42.7	74.7
	100.0 (n = 75)	100.0 (n = 91)
Chi square 17.652		Gamma .56464
Degrees of freedom 2		Response rate 70.6%
Significance .0001		Total respondents 235

two regions. Finally, the eastern region was evaluated as significantly less crowded than the western region.

Generally, the western region received more positive evaluations than the eastern region. Perhaps the clearest way to show the differences in the images of the two regions is to use the mean values of the items evaluated for the two regions (see Appendix D). Regional profiles of these means are graphically presented in Figure 8. In this figure, it is easy to see that the western region has a more positive image than the eastern region.

Figure 9 shows a graphic profile of the percentage of respondents who gave each item a high score of three. Once again, this profile indicates the more positive image of the western region.

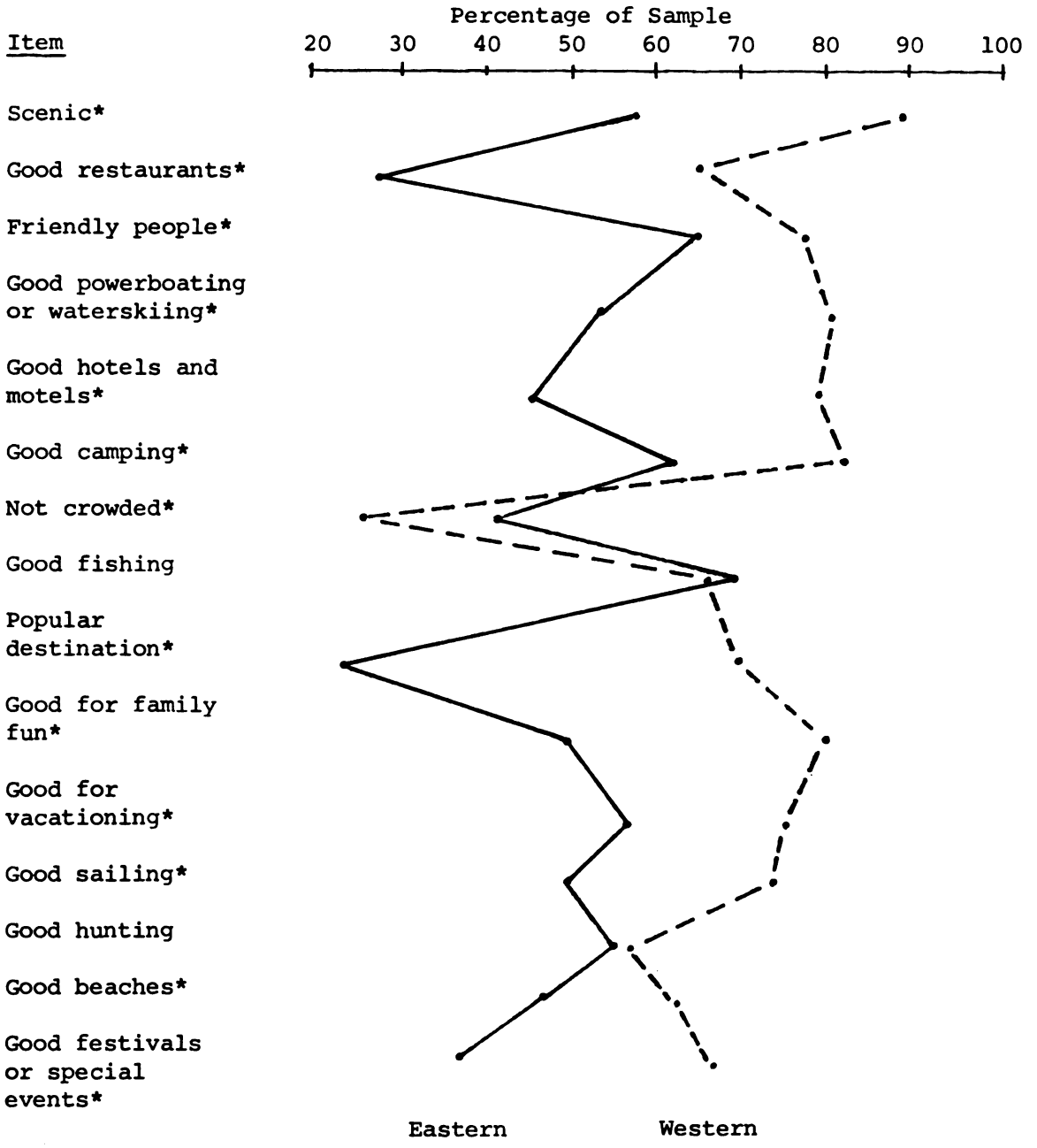
Further investigation of the image scale. Results indicate that generally the western region was evaluated more positively than the eastern region, but, for the purposes of tourism promotion, it is useful to investigate how different groups of respondents evaluated the two regions. Several variables were selected for study for various reasons. The length of residence in Michigan and the number of trips taken in Michigan for recreation or vacation purposes during the past two years were found to be related to map characteristics seen in the first study,



Note: Scores are on a scale of 1 to 3, with 1 a low rating and 3 a high rating of the item. Eastern Region n = 111; Western Region n = 124.

*Indicates a statistically significant relationship.

FIGURE 8. PROFILE PRESENTATION OF MEAN SCORE OF ITEMS FOR THE TWO REGIONS.



Note: Scores are on a scale of 1 to 3, with 1 a low rating and 3 a high rating of the item. Eastern Region n = 111; Western Region n = 124.

*Indicates a statistically significant relationship.

FIGURE 9. PROFILE PRESENTATION OF PERCENTAGE OF RESPONDENTS GIVING ITEMS A HIGH SCORE.

and therefore these might also be related to the images of the two regions. The purpose of the trip, whether or not a person was planning to participate in recreation on the trip, home residence, income, and the rating of Michigan were selected for study because these variables were similar to socioeconomic and individual characteristics found to influence people's cognitive maps drawn in studies discussed in the literature review. Personal background, residence, and experience all influenced people's cognitive maps (Appleyard, 1969; Francescato and Mebane, 1973; Orleans, 1973; Milgram, 1972, 1976; Karan, 1980, 1982).

The purpose of the trip, whether or not a respondent was planning to participate in recreation on the trip, the length of residence in Michigan, and the number of trips taken in Michigan for recreation or vacation purposes during the past two years were not significantly related to the value of the image scale for either region. Home residence (Michigan or out-of-state) has a significant relationship with the image scale value for the eastern region, but not for the western region. Similarly, the annual family income is related to the value of the eastern region image scale, but not to that of the western region. Finally, the rating of Michigan is related to the western region image scale value, but not to its value for the eastern region.

The eastern region was evaluated more positively by out-of-state residents than Michigan residents (see Table 29). Figure 10 clearly shows how these two groups evaluated the eastern region.

Table 29

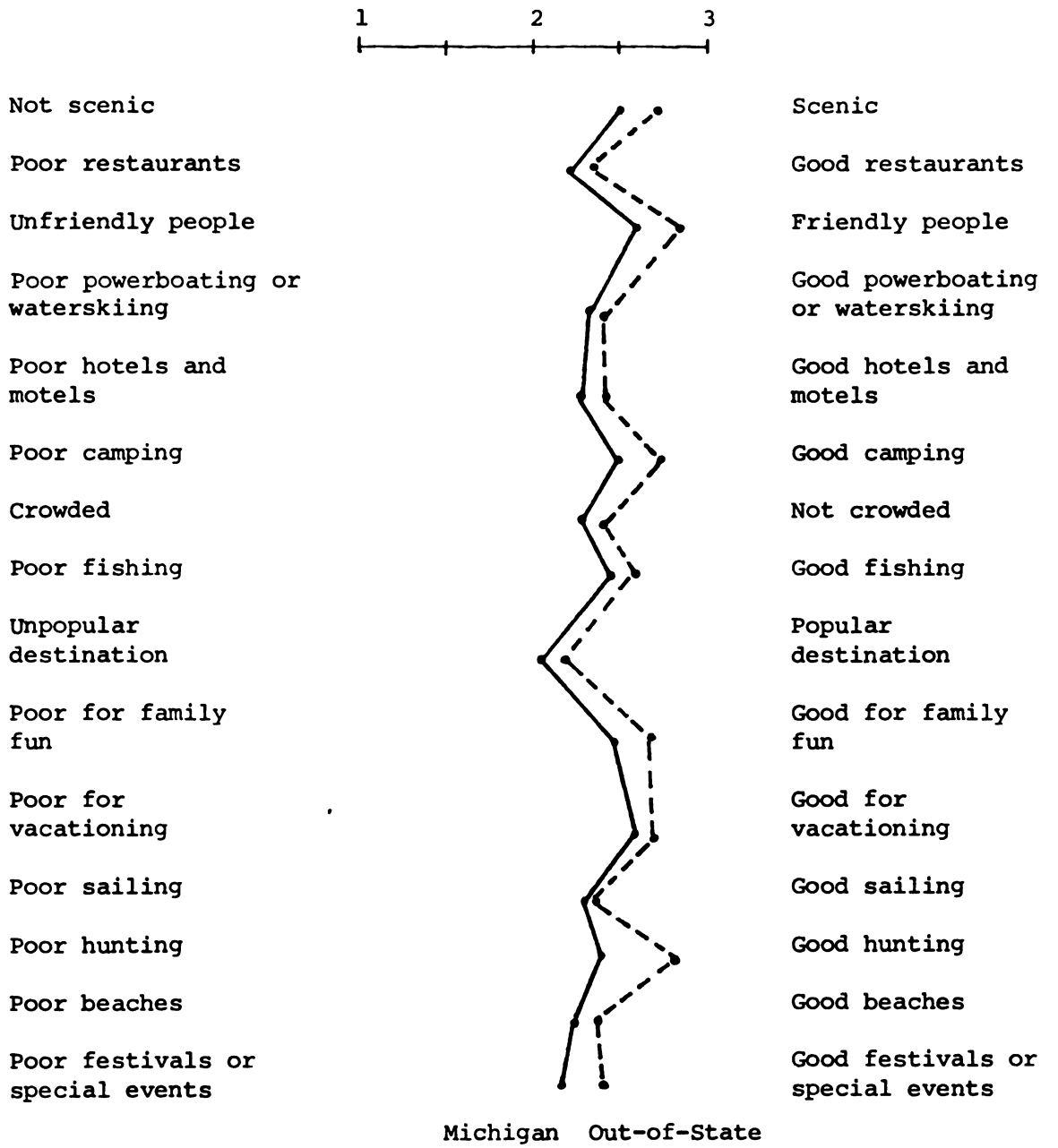
Crosstabulation of the Eastern Region Image Scale with Home Residence

Eastern Region Image Scale	Home Residence: Michigan (%)	Home Residence: Out-of-State (%)
26-30	25.8	0.0
31-35	47.0	66.7
36-40	19.7	9.5
41-45	7.6	23.8
	100.0 (n = 66)	100.0 (n = 21)

Chi square 11.21291
Degrees of freedom 3
Significance .0106

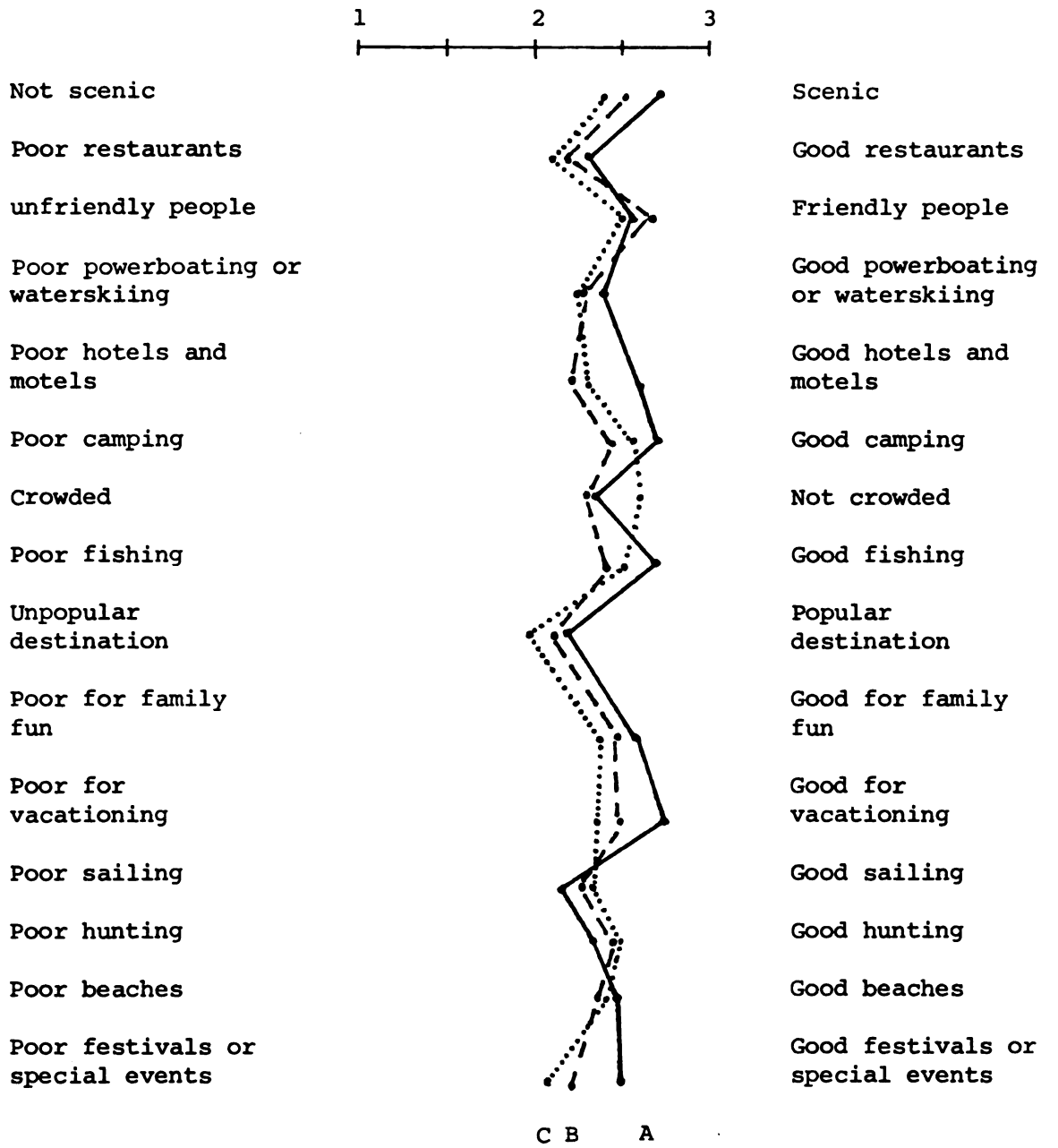
Gamma .41842
Response rate 79.8%
Total respondents 109

Respondents with lower incomes evaluated the eastern region more positively than those in higher income categories (see Table 30). In this analysis, the annual family income variable was divided into three groups. These include a low group of incomes from $4,999 to $24,000, a middle group of incomes from $25,000 to $34,000, and a high group of incomes of $35,000 or more. Figure 11 shows



Note: Scores are on a scale of 1 to 3, with 1 a low rating and 3 a high rating of the item. Michigan n = 66; Out-of-State n = 21.

FIGURE 10. PROFILE PRESENTATION OF EASTERN REGION MEAN SCORES FOR MICHIGAN AND OUT-OF-STATE RESIDENTS.



Note: Scores are on a scale of 1 to 3, with 1 a low rating and 3 a high rating of the item.

A = Low to $24,000 income	N = 30
B = $25,000 to $34,000 income	N = 32
C = Income of $35,000 or more	N = 27

FIGURE 11. PROFILE PRESENTATION OF EASTERN REGION MEAN SCORES FOR THREE INCOME GROUPS.

graphically how these three income groups evaluated the eastern region.

Table 30

Crosstabulation of the Eastern Region Image Scale with Income

Eastern Region Image Scale	Income: Low to $24,000 (%)	Income: $25,00 to $34,000 (%)	Income: $35,000 or More (%)
26-35	6.7	18.8	29.6
36-39	46.7	56.3	59.3
40-41	26.7	21.9	7.4
42-45	20.0	3.1	3.7
	100.0 (n = 30)	100.0 (n = 32)	100.0 (n = 27)

Chi square 13.72270
Degrees of freedom 6
Significance .0329

Gamma -.48673
Response rate 81.6%
Total respondents 109

Those who rated Michigan as a seven, or excellent, on how well it provides for recreation and tourism opportunities compared to other Great Lakes states, also rated the western region higher than those who gave the state a lower rating (see Table 31). These two groups' evaluations can be seen in Figure 12.

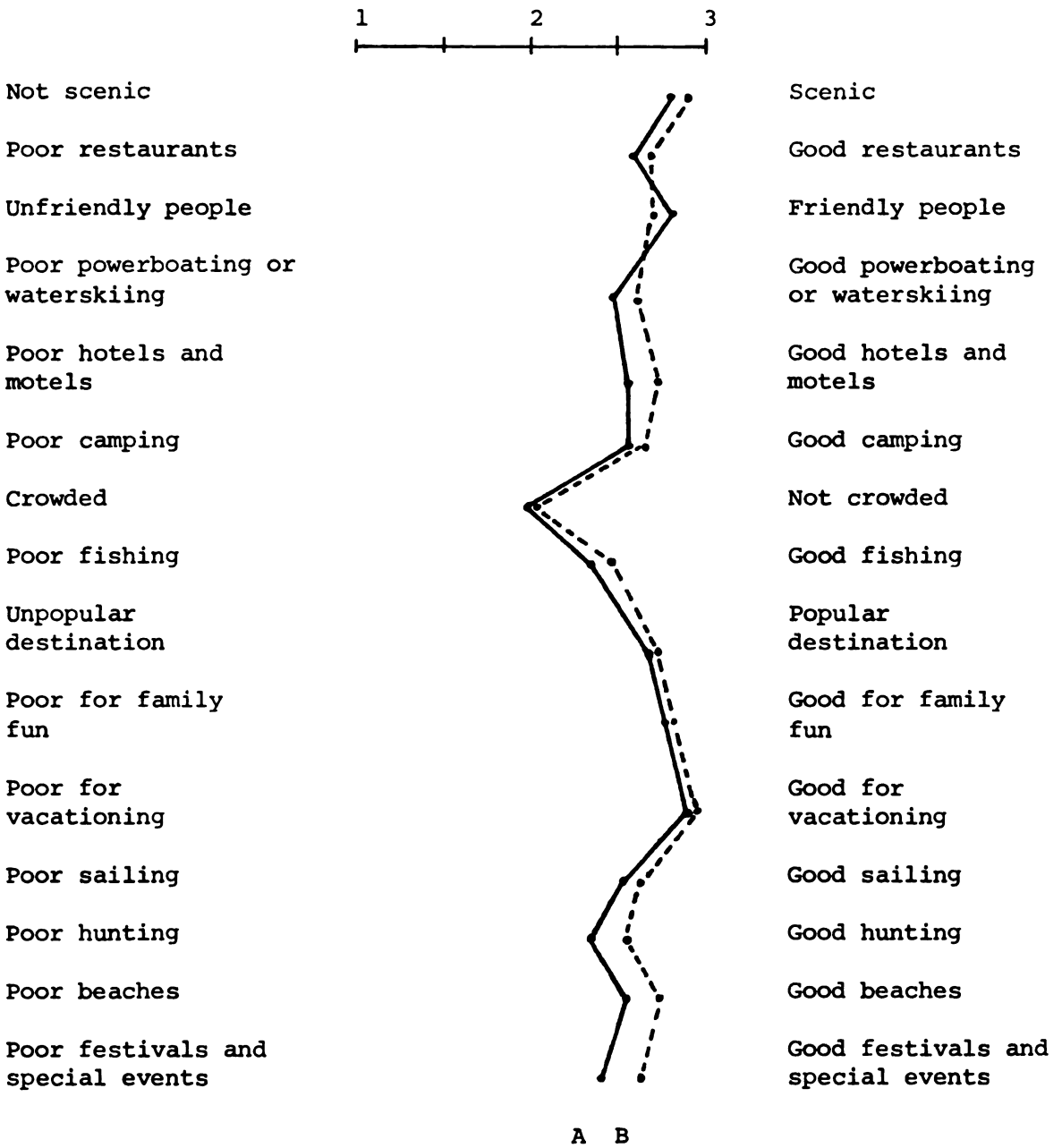
Table 31

Crosstabulation of the Western Region Image Scale with the Rating of Michigan

Western Region Image Scale	Rating of Michigan 1-6 (%)	7 (%)
26-35	5.5	0.0
36-39	27.3	14.3
40-41	32.7	22.4
42-45	34.5	63.3
	100.0 (n = 55)	100.0 (n = 49)

Chi square 10.16643 Gamma .48087
Degrees of freedom 3 Response rate 86.6%
Significance .0172 Total respondents 120

In addition to investigating possible relationships between survey items and the image of a region, the influence of the sampling site was also explored. Table 32 shows that no significant relationship exists between the western region image scale and the sampling site. However, a weak relationship can be seen between the eastern region image scale and the sampling site. It appears that travelers who filled out the eastside version of the Area Image Study at the Coldwater T.I.C. rated the region more positively than those who completed the survey at the Clare T.I.C. However, this relationship is not supported at the .05 level of significance, and differences are not reflected in the mean scores for individual items.



Note: Scores are on a scale of 1 to 3, with 1 a low rating and 3 a high rating of an item.

A = Rating of 1 to 6 N = 55
B = Rating of 7 N = 49

FIGURE 12. PROFILE PRESENTATION OF WESTERN REGION MEAN SCORES FOR THOSE WHO RATED MICHIGAN AS EXCELLENT AND THOSE WHO RATED MICHIGAN AS LESS THAN EXCELLENT.

Table 32

Crosstabulations of the Regional Image Scale with the Sampling Site

Eastern Region Image Scale	Sampling Site: Clare T.I.C. (%)	Sampling Site: Coldwater T.I.C. (%)
26-30	26.3	11.5
31-35	45.6	57.7
36-40	22.8	17.3
41-45	5.3	13.5
	100.0 (n = 57)	100.0 (n = 52)

Chi square 6.25393
Degrees of freedom 3
Significance .0999

Gamma .22393
Total Respondents 109

Western Region Image Scale	Sampling Site: Clare T.I.C. (%)	Sampling Site: Coldwater T.I.C. (%)
26-30	1.6	3.6
31-35	28.1	19.6
36-40	21.9	28.6
41-45	48.4	48.2
	100.0 (n = 64)	100.0 (n = 56)

Chi square 1.90733
Degrees of freedom 3
Significance .5919

Gamma .03831
Total respondents 120

CHAPTER VI

SUMMARY AND CONCLUSIONS

Summary of Findings

General findings indicate that the samples for both studies were relatively well educated, middle aged, and possessed relatively high annual family incomes. Over half of the respondents planned to participate in recreation on the trip they were on at the time they completed the surveys, and many people were on the trip for recreation-related purposes. Most of both samples also rated Michigan very high, on a scale of one to seven, when comparing it to other Great Lakes states on how well it provides for recreation and tourism.

The cognitive mapping exercise, in the Map Study, produced a map containing twelve recreation and tourism regions. A centrality coefficient was used to find the center of these regions. Mackinac Island, Isle Royale, and Keweenaw, Huron, and Leelanau Counties were seen as the centers of regions. Counties bordering the Great Lakes were identified more often as the centers of recreation and tourism regions than inland counties.

The centrality coefficient did not account for the attention given to a county, and therefore image strength was calculated. Again, Mackinac Island received a high score. Grand Traverse County was also seen as a hot spot for recreation and tourism. Overall, counties bordering the Great Lakes received much more attention than inland counties, indicating that respondents associated these shoreline regions much more often with recreation and tourism.

The twelve regions developed from respondents' answers to the map-related task helped to confirm the use of the county regions investigated in the Regional Study. Antrim, Grand Traverse, Leelanau, Benzie, and Manistee Counties were all part of a hot area on the western side of the lower peninsula, whereas Alpena, Alcona, and Iosco Counties form the heart of a warm area on the eastern side.

Several hypotheses were developed from the cognitive mapping literature about possible relationships between elements on the maps and respondents' familiarity with, number of trips in, and length of residence in Michigan. Results of testing these hypotheses show that significant relationships exist.

Hypotheses concerned with details on respondents' maps indicated that respondents who were more familiar with Michigan, or at least rated themselves high in familiarity,

drew more X's and more circles on their maps. In addition, those who had traveled more in Michigan for recreation and tourism purposes during the past two years drew more X's and circles on their maps. The length of residence in Michigan was also related to details on the maps, such that those who had lived longer in the state drew more X's and circles on their maps.

Three other hypotheses dealt with the relationship between respondents' familiarity with, number of trips in, and length of residence in Michigan and the average size of circles on their maps. No statistically significant results were found. Therefore, a respondent's familiarity with, number of trips in, and length of residence in Michigan do not appear to influence the size of circles drawn to outline recreation and tourism regions.

Finally, chi square and gamma statistics were used to find out whether respondents' self-rating of familiarity was related to the length of residence in Michigan and to the number of trips taken in the state during the past two years for recreation or vacation purposes, and to determine whether or not the length of residence was related to the number of trips. Self-rating of familiarity with the state was found to be strongly related to the length of residence in Michigan, and to the number of trips taken. The length of residence was also positively related to the number of

trips taken in Michigan during the past two years for recreation and tourism purposes.

Regional Study findings indicate that the western region, consisting of Antrim, Grand Traverse, Leelanau, Benzie, and Manistee Counties, has a more positive image than the eastern region of Alpena, Alcona, and Iosco Counties. The mean overall image scale value for the western region was statistically higher than that of the eastern region. The western region was evaluated as a more scenic, more popular destination, as better for family fun and a vacation, and as possessing better restaurants, and hotels and motels than the eastern region. It was also believed to have friendlier people, better powerboating or waterskiing, and better camping, sailing, beaches, and festivals or special events than the eastern region. Evaluations of fishing and hunting did not differ between the two regions and the eastern region was seen as significantly less crowded than the western region.

Several variables influence the image scale values for the two regions. Out-of-state residents and respondents with annual family incomes under $24,000 rated the eastern region higher than Michigan residents and respondents with higher incomes. No significant relationships were seen between income and home residence and the value of the western region image scale. However, values for the western

region image scale were influenced by how a respondent rated Michigan. Those who gave Michigan an excellent rating of seven gave the western region a higher evaluation than respondents who rated the state from one to six compared to other Great Lakes states.

Finally, the relationship between the sampling site and the value of the image scale for the two regions was investigated. Significant differences were not found for values of the image scale between the Clare and Coldwater sampling sites, but values for the eastern region image scale appeared to be lower for the Clare sample.

Limitations

The data for these two studies were limited in several ways. These limitations are presented here in order to view the results in their proper perspective.

Sampling sites were limited to three in the Map Study and to only two in the Regional Study. Therefore, results of these studies may have a bias towards particular viewpoints or characteristics that are unique to travelers at these T.I.C.s. Results of both studies might have differed considerably had samples been collected at different T.I.C.s, rest areas, and various other businesses along Michigan highways.

Attempts were made to give the State Image Study, used in the Map Study, to every other person who passed a

researcher, and only one survey per group. However, since many people were traveling in groups some group bias may be present in the data even though respondents were instructed to complete the survey alone.

The New Buffalo sample from the Map Study presents another problem. This site was only used during one weekend, whereas the samples at Clare and Coldwater were obtained over several weekends and weekdays. New Buffalo respondents may not really be representative of the population that uses the T.I.C. since the sampling period consisted of just two consecutive days in late August.

The Regional Study county areas were chosen from partial results of the Map Study, and while these were helpful, the actual survey procedure for the Regional Study could have been greatly improved. In the study, a person only completed a survey about one region. Therefore, some people evaluated the eastern region and others evaluated the western region. This was done to obtain a reasonable number of surveys in the short time period available to conduct this survey at the end of the summer. Other data could have been removed from the surveys to make room for the added questions, but these demographic items were desired for a general study of T.I.C. users. Nevertheless, intrasubject comparisons of the two regions would have been

much more desirable than the intersubject comparisons obtained in the study.

Finally, surveys were conducted during the summer months, so that fall, winter, and spring travelers to Michigan were not included in this research. These travelers may engage in different activities than summer travelers, such as fishing, hunting, snow skiing, or snowmobiling, and may have different demographic profiles and different images of recreation and tourism in the state.

Conclusions and Recommendations

Conclusions about the sample. The auto travelers stopped at T.I.C.s were already in the State of Michigan and were a logical population from which to sample because they already possessed an awareness of the state and might develop interests in exploring Michigan more carefully. Many of those sampled were on pleasure trips or visiting friends or relatives in Michigan, and perhaps could be convinced through promotional efforts to spend more time, and therefore more money, in other areas of the state.

Auto travelers in the two samples included in this thesis were similar to travelers who completed the 1980 T.I.C. visitor survey conducted by the Michigan Department of Transportation. In the 1980 T.I.C. survey (Beckon and Schmidt, 1981) and this research, respondents were generally middle aged, had attended at least some college, and

possessed relatively high annual family incomes. Fifty-two percent of the respondents in the 1980 T.I.C. survey reported combined incomes of over $25,000, and the median income for travelers sampled for this thesis was between $25,000 and $29,999.

Sightseeing was frequently mentioned as a planned activity by respondents in this study, and over half of those sampled were on recreation-related trips. In fact, more than three-fourths of the respondents in both studies planned to participate in recreational activities while traveling. These results are also similar to those found in the 1980 T.I.C. survey.

In the Map Study, 27.8 percent of the travelers listed home as their destination, and 38.8 percent of the Regional Study respondents were headed home. This homeward bound segment of the traveling public would be a prime target for some special attention at T.I.C.s. Perhaps these people could be persuaded to take home travel information to give to friends and relatives or to use in planning future trips in Michigan.

Promotional campaigns could also be aimed directly at Michigan residents to persuade them to invite a friend or relative to visit. These visitors and their hosts might then be encouraged to travel throughout Michigan on vacations and weekend trips, thereby increasing tourism in the state.

Both the Map Study and the Regional Study have shown that Travel Information Centers are viable sampling sites. At these sites, it is possible to obtain cognitive maps and evaluative information about regions within the state from auto travelers, even though these people are stopped only briefly during a trip on Michigan's highways.

The significance of the Map Study. Michigan residents comprised 53.2 percent of the sample, and therefore T.I.C.s may do well to promote the state to both residents and out-of-state visitors. Some travel literature and exhibits addressed to Michigan residents might mention exploring one's own home before vacationing elsewhere. These promotional efforts could stress the low costs of trips, the wide variety of recreational opportunities available, and the close proximity of vacation areas in the state. Campaigns aimed at residents of nearby states and provinces might also emphasize the close proximity, low costs, and numerous recreational opportunities, but in addition focus on the state's unique natural resources, picturesque towns, interesting cities, and entertaining festivals to draw these travelers back to Michigan.

Respondents gave Michigan a high rating on how well it provides for recreation and tourism compared to other Great Lakes states, and this question received a high response rate (81.6%). However, when asked to list the

county that they felt was best for recreation and tourism only 64.1 percent responded. Grand Traverse and Mackinac Counties received 20.3 and 10.6 percent of the responses, respectively. The other counties were each mentioned by less than 5 percent of the sample.

These findings are interesting for several reasons. First, travelers who mentioned counties tended to list northern, coastal counties. Second, many counties received at least one vote as the best county for recreation and tourism, so that even though Grand Traverse and Mackinac Counties were popular choices, a majority of those sampled did not mention either one. Many other travelers did not respond to the question, although response rates on other questions were high. Perhaps numerous auto travelers lack specific images of recreation and tourism regions in Michigan, and therefore would benefit from more detailed information about opportunities available in individual counties and the state in general.

Results of the mapping task indicate that responses to a cognitive mapping question can be used to develop tourism and recreation regions in Michigan. The regions created in this study show how auto travelers divided the state in their minds, and the tests of the hypotheses revealed that several variables are related to the details present on respondents' maps.

Regions defined by travelers could be helpful to the Travel Bureau and tourism associations in Michigan. Presently, the Travel Bureau divides the state into four regions, but results of the Map Study show that these large regions can possibly be subdivided (see Figure 13). Regional tourism associations might use the smaller regions, identified by auto travelers in this research, to promote smaller areas within their large association boundaries. These subdivided regions would perhaps be particularly useful to those promoting tourism in western Michigan and the upper peninsula because the Travel Bureau regions for these two areas are extremely large.

Even though the twelve regions defined in this research may be unique to auto travelers sampled at three T.I.C.s, one can speculate that these regions were identified for particular reasons. In Figure 14, the regions are numbered and each one of these regions will be discussed according to its number.

The upper peninsula has been divided into three regions. Region 1 centers around Keeweenaw County. This county may have been relatively popular because it possesses a very distinctive shape. Keeneenaw and the other counties in the region have great natural beauty and offer outdoor recreation opportunities that could probably be heavily promoted to Wisconsin residents. Marquette County appears

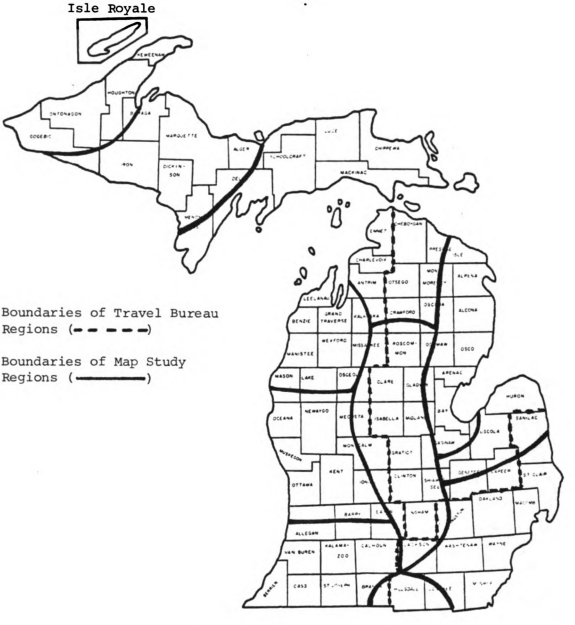


FIGURE 13. POSSIBLE DIVISIONS OF THE TRAVEL BUREAU TOURISM REGIONS.

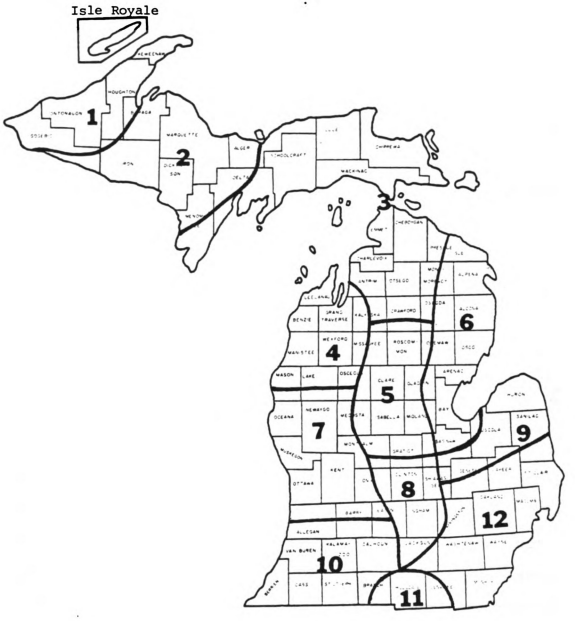


FIGURE 14. TOURISM AND RECREATION REGIONS IDENTIFIED BY NUMBER.

to be most popular in Region 2. Perhaps this region is associated with Pictured Rocks Natural Lakeshore in Alger County and the City of Marquette, in Marquette County, might be a pleasant place to stay while visiting this scenic, natural area. Region 3 extends into the lower peninsula and is centered around Mackinac Island. This very popular region could be important for bringing promotional efforts of counties in the upper and lower peninsulas together to focus on the Straits of Mackinac and other beautiful areas in the northern part of the state.

The northern lower peninsula contains all of three regions and part of one. As mentioned previously, Region 3 includes sections of both the upper and lower peninsulas. Region 4 centers around Grand Traverse County. The shoreline of this region is very unique and can probably be easily identified by travelers. This region appears to be a very popular vacation destination with many facilities and recreation opportunities available to the public. Roscommon County is the center of Region 5, probably due to the Higgins and Houghton Lakes resort areas located in the county. Region 6 centers around Alcona County. This region was not as popular as those on the westside, but could be promoted for its location along the Great Lakes and its close proximity to many Michigan and out-of-state residents.

The southern lower peninsula consists of six regions. The center of Region 7 is Muskegon County. This region might be promoted as a pleasant, close, vacation area for Michigan, Illinois, and Indiana residents, and as a nice weekend destination for residents of the central and western portions of the state. Region 8 focuses on Ingham County and is of relatively low interest. Perhaps more attention needs to be given to promoting the capital area as a nice day trip destination for Michigan residents and as an interesting stop for out-of-state visitors. Huron County is the center of Region 9 and this county may have received some of its attention because of its distinctive shape. Promotional efforts for this region might focus on this intriguing shape and its convenient location near urban areas. The center of Region 10 is Van Buren County. This region has great potential as a vacation destination for Indiana and Illinois residents. The researcher noted that several travelers at the New Buffalo T.I.C., located in Berrien County, were in the area to pick fruit and perhaps this activity could be the focus of some tourism promotion for the region. Region 11 is a small region that did not receive much attention. Perhaps a few travelers knew of some specific attractions in these counties. Wayne County is the center of Region 12. Probably, urban recreation and tourism opportunities are of interest in this region.

Tourism promoters in Michigan counties could use the results of this research to help improve tourism within their own areas. The average circle size on respondents' maps was 6.6 measurement grids, representing an area of approximately three to six counties, and this finding suggests that multiple county cooperation may be most beneficial. Perhaps through cooperative efforts with other counties in the same region, promoters may be able to conduct effective campaigns on a regional basis.

Regions which were frequently associated with recreation and tourism can probably be easily promoted, but for less popular regions this task may be much more difficult. Those in regions that were not often associated with recreation and tourism might try to develop excellent facilities, promote unique resources, and create carefully researched advertising campaigns to attract visitors. If, however, tourism promotion does not appeal to people in these regions, they could concentrate on maintaining their present industries and encourage new industries to locate in their areas. For example, large sections of the state are very agricultural and may wish to continue to emphasize their agricultural products. Forestry is another industry that probably has great potential in many counties and industries that involve high technology may be of interest to urban areas.

The westside of the lower peninsula was associated with recreation and tourism more frequently than the east-side, and this general finding has implications for tourism promotion. For example, Grand Traverse County was seen as a hot spot in the northwest lower peninsula, but no similar hot spot was found in the northeast, and therefore tourism in the northeastern area does not appear to have a central focus. Perhaps identifying a northeastern center of tourism through media promotions would help people to form more specific images of this region. Developing this tourism center might help coordinate promotional efforts and focus travelers' attention on a northeastern vacation destination. Businesses and recreation resources located in this tourism center and in surrounding counties could benefit from greater visitor traffic, and therefore tourism might be increased throughout the northeastern part of Michigan.

Results of testing the hypotheses in the Map Study show that respondents' familiarity with, travel in, and length of residence in Michigan are interrelated, and each of these variables is related to the details on the maps. Respondents who rated themselves high in familiarity with Michigan, had traveled more frequently for recreation or vacation purposes during the past two years, and who had lived longer in Michigan were willing to circle more tourism and recreation regions on their maps than other respondents.

They were also more likely to indicate the centers of those regions.

These results are not surprising because one would expect people who had lived longer in the state, traveled more frequently in the state recently, and claimed to be familiar with the state, to be knowledgeable about recreation and tourism opportunities in Michigan. Therefore, it is logical that these people were more likely to identify general regions (circles) or specific centers (X's) of recreation and tourism than other respondents, and these findings add validity to this study.

These findings also have implications for those promoting tourism in Michigan. Perhaps more material needs to address nonresidents and those who have not traveled frequently for recreation or vacation purposes recently. The "Say Yes to Michigan" campaign directs media messages toward potential tourists, but more visual material could possibly be displayed outside Travel Information Centers and at rest areas, as was suggested by Pearce (1981) in his study of highway travelers' cognitive maps. More visual material about the state's recreation and tourism offerings might help auto travelers form clearer images of where and what opportunities exist in Michigan. In addition, more specific media promotions, outlining particularly attractive natural, cultural, and social

resources, superior facilities, and interesting activities available in the state, could be placed on the television and radio, and in magazines and newspapers. These promotional efforts might educate the traveling public in various market areas about Michigan's excellent recreation and tourism opportunities and assist people in making informed decisions about their next trip for recreation or vacation purposes.

The implications of the Regional Study. The results of the Regional Study may be used to assist tourism promotion in the two Great Lakes shoreline regions investigated. The western region was more well known and generally received more positive evaluations, but each region could develop campaigns based on items that seem to have potential in that particular region.

Results of the familiarity screening question clearly indicate that travelers contacted at both T.I.C.s felt that they were more familiar with the western region. At the Clare T.I.C., only 50.3 percent were familiar with the eastern region, whereas 77.1 percent claimed to be familiar with the western region. Travelers contacted at the Coldwater T.I.C. were less familiar with both of the regions, but, once again, people felt more familiar with the western region (45.9%) than the eastern region (31.8%). These findings augment the results of the Map Study which

showed that western counties were generally associated with recreation and tourism more often than eastern counties. In addition, these results indicate that many people do not have an image of the eastern region, and point out that fewer travelers at Coldwater have images of either of these regions than travelers at Clare. Travelers who lack images of either region would benefit from more detailed information about recreation and tourism opportunities available in these regions of Michigan. Promoters, particularly in the eastern region, might develop special displays and printed materials for use at T.I.C.s to help these uninformed travelers form positive images of the region.

Three-fourths of the auto travelers who completed a questionnaire were Michigan residents, and over 90 percent of the sample had traveled more than once in the state during the past two years for recreation or vacation purposes. The high numbers of Michigan residents suggest that people who lived in other states did not feel familiar enough with these regions to evaluate them. Also, it appears that those who have traveled frequently in the state recently are more willing to evaluate the regions. These results provide evidence that out-of-state visitors, even from neighboring states, often do not have images of specific regions within Michigan. Promoting these regions

to out-of-state travelers may increase their curiosity about various opportunities available and encourage them to experience different recreation and tourism regions within Michigan.

The western region was evaluated very positively on many survey items, and any one of these items, or a combination of several items could be used to develop promotional campaigns for the region. For example, promoters might capitalize on respondents' images of fine restaurants, motels and hotels, scenery, powerboating or waterskiing, sailing, and beaches. Then, in another promotion, they might focus on respondents' high ratings of the region for family fun, for vacationing, and as a popular destination. Many different themes could be used by western region promoters because the region received significantly more positive evaluations than the eastern region for twelve of the fifteen items listed on the survey, and all respondents appear to have responded in a similar manner.

Promotional efforts for the eastern region need to be much more specific. Generally, this region was not evaluated as positively as the western region; however, there are some survey items that may be used to help promote tourism in this region. Also, various groups of respondents evaluated the eastern region more positively than others.

Therefore, promotions could be targeted towards these groups to increase tourism.

The eastern region was seen as significantly less crowded than the western region, and this information might be used to convey messages showing spacious beaches, tranquil rivers, and other open spaces to the public. No significant differences were found between images of hunting and fishing in the two regions, and therefore eastern region promoters might try to create differences in the minds of travelers by developing campaigns to show that excellent hunting and fishing opportunities are available. In fact, promoters might want to combine these findings in their campaigns. Sportsmen desire peaceful places for their activities, and promoters could perhaps persuade these people to visit the eastern region because it offers excellent hunting and fishing opportunities in uncongested surroundings.

Respondents from out-of-state gave the eastern region a significantly better evaluation than Michigan residents. In addition, auto travelers at Coldwater appeared to evaluate the eastern region slightly more positively than those at Clare, suggesting that these people might be more easily persuaded to visit the area. These findings indicate that the eastern region may have potential as a travel destination for people who do not

live in Michigan. These people could perhaps be attracted to the area by promotional efforts aimed at surrounding states and by information made available at T.I.C.s and rest areas that serve large numbers of out-of-state travelers.

Respondents with annual family incomes below or equal to $24,000 also evaluated the eastern region more positively than those with higher incomes, and promotions could be aimed at this market segment. The eastern region is relatively close to several Michigan cities, including Flint, Saginaw, and Detroit, and promotional campaigns could be directed towards these cities to attract more families with moderately low incomes to the region for vacations and weekend trips. Ads might also be aimed at neighboring states, such as Indiana and Ohio, to convince out-of-state residents that the eastern region is located close to home and offers excellent vacation opportunities at low costs.

Future Research

This research investigated auto travelers' images of the state's recreation and tourism opportunities, but more research is needed. Sampling at other sites and the use of more specific questions could help to develop these images further.

Obtaining samples at other sites in Michigan would help to determine how other auto travelers define recreation and tourism regions in the state and evaluate the two specific regions. Sampling at different T.I.C.s, such as Dundee and Port Huron, would provide data from other segments of the traveling public, such as the Canadian market. Also, it is not known if T.I.C. users are representative of the traveling public in Michigan, and therefore sampling at highway rest areas and businesses, such as restaurants and gas stations, would be useful. Sampling at additional sites could help to determine whether or not the regions and area images developed in this thesis are unique to these respondents or common to many diverse auto travelers in Michigan. There may actually be differences between the images held by users at various T.I.C.s, and between T.I.C. users' and other travelers' images of Michigan. These differences could influence the types of tourism promotion that are most effective in particular regions of the state.

Also, more detailed analyses of the data could determine whether or not the boundaries of the regions differ according to travelers' origins. It is possible that travelers from Wisconsin, Illinois, Indiana, Ohio, and other places have different images of the tourism and recreation regions in Michigan.

Boundaries and locations of regions might also shift according to the types of activities that travelers participate in during their trips to Michigan. Perhaps fishermen and hunters would identify different regions than sightseers and shoppers, and therefore further consideration might be given to activities in future research.

Images identified might also vary according to the time of year a sample was taken. In this thesis, only summer samples were used, and it would be useful to sample travelers throughout the year to determine whether or not seasonal differences in images occur. Should distinct seasonal images exist, they could be the result of seasonal differences in the activities and individual characteristics of the traveling population in Michigan.

Once the regions are clearly defined and the two coastal areas are carefully evaluated, the use of on-site surveys could help determine what specific images people have of each region and what makes a region distinct from others. It is very possible that images differ between visitors at the sites and auto travelers in transit. In fact, it would be helpful to know if there are differences in people's images of a region before, during, and after their visit to the region. Once again, findings from this research might have implications for the kinds of tourism promotion used to attract various types of tourists.

In addition, some very important research is needed to determine what sources of information people use to form their images of these regions. Interpersonal and media sources may both play significant roles in providing the information used to form tourism and recreation images of Michigan, but these roles are not fully understood. Results from this research could also greatly influence promotional campaigns developed to attract tourists to various regions in the state.

Future research at different T.I.C.s, highway rest areas, highway businesses, and at the sites themselves, and the use of more specific research questions may lead to a more complete picture of how people view recreation and tourism opportunities in the state. This thesis has provided some initial insights into travelers' impressions of recreation and tourism in Michigan, and will hopefully serve as a catalyst for further research concerned with these varied, complex images.

APPENDICES

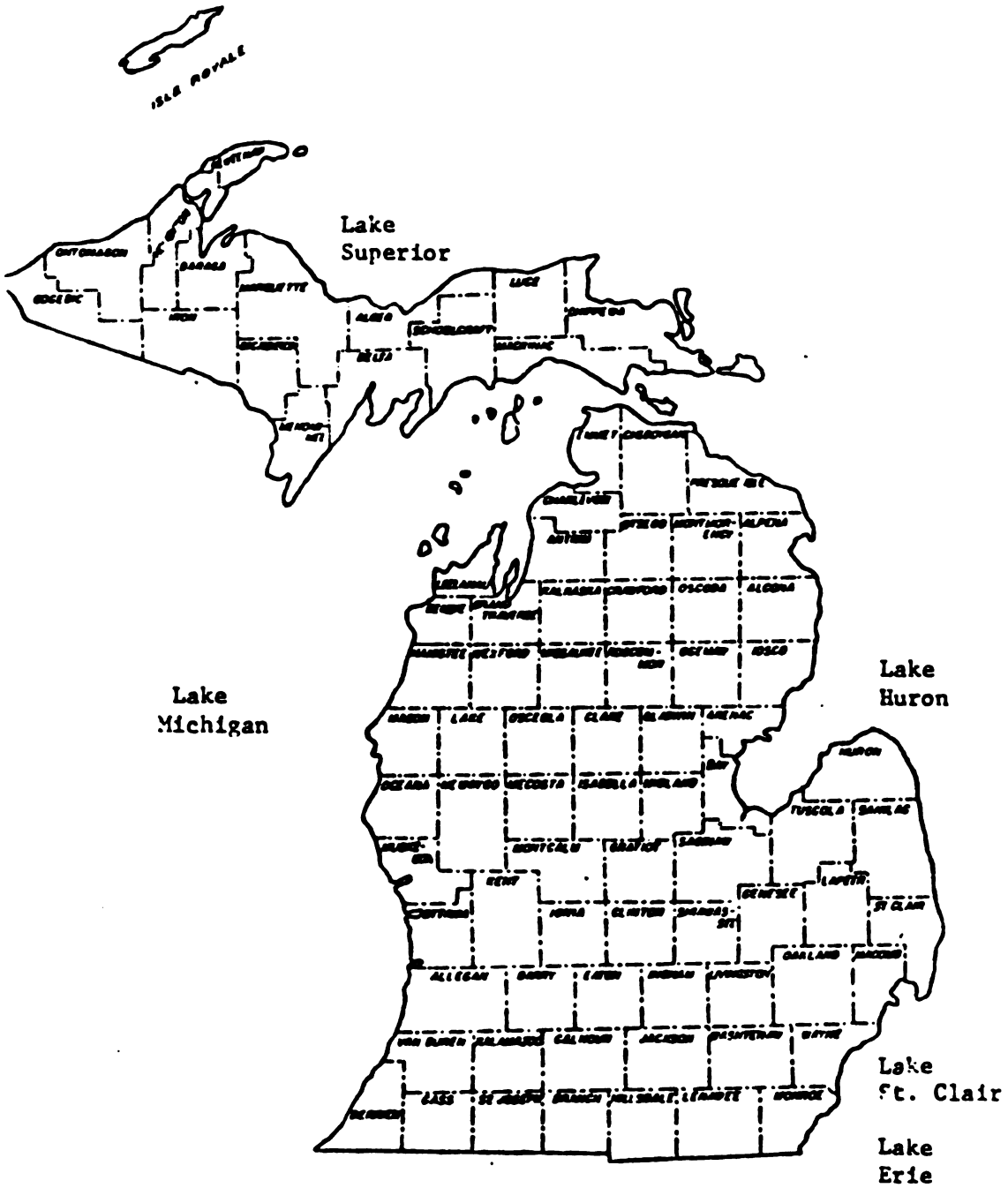
APPENDIX A

STAPLED VERSION OF THE STATE IMAGE STUDY QUESTIONNAIRE

MICHIGAN RECREATION AND TOURISM IMAGE SURVEY
Park and Recreation Resources - Michigan State University
Michigan Department of Transportation

State Image Study

We are interested in what you think about Michigan. It is not important that you have been to all or any of the regions in the state to answer the questions. Your answers will be held confidential. Thank you for your help.



Please use the map above to complete the following:

1. Please circle the counties on the map that you feel go together to form distinct tourism or recreation regions.

2. Please place a letter X in the county that you feel is the center of tourism and recreation activities in each region circled above.

Please complete the following items.

3. a. Please choose one county in Michigan that you feel offers the best recreation and travel opportunities.

   County name_____

   b. Write down one or two words or phrases that you feel describe this county.

   1. _____

   2. _____

4. Time _____ AM _____ PM _____

5. What is your destination for this trip? _____

6. What is the purpose of this trip? (Please check only one)

   _____to visit friends or relatives _____business and pleasure

   _____business _____pleasure travel

   _____vacation

   _____other, please specify_____

7. On this trip, do you plan to participate in any recreation?

   _____ yes _____ no

   If yes, please list two types of recreation you are planning on for this trip (Examples: shopping, sightseeing, eating out, hiking)

   1._____ 2._____

8. Would you please write down your home city, state, and zip code?

   _____

9. If you are or have ever been a resident of Michigan, how many years have you lived in the state?

   _____years

10. How familiar are you with the state of Michigan compared to the other Great Lakes states? (Please circle one)

extremely familiar	very familiar	somewhat familiar	not very familiar	not at all familiar

11. How many times in the past 2 years have you traveled in Michigan for vacation or recreation purposes?

   ☐ first trip ☐____ number of trips ☐ don't remember

12. Which Great Lake do you like best? (Please check one)

_____Lake Huron _____Lake Superior _____Lake Michigan

_____Lake Erie _____Lake St. Clair _____Lake Ontario

13. Please rate the state of Michigan, compared to other Great Lakes states, on how well it provides for recreation and/or tourism opportunities. (Please circle one)

Poor Excellent

1 2 3 4 5 6 7

14. Sex: _____Male _____Female

15. Age: _____years

16. Education: Please circle the number that represents the highest level completed.

1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7+
Grade School High School College

17. Annual Family Income (before taxes)

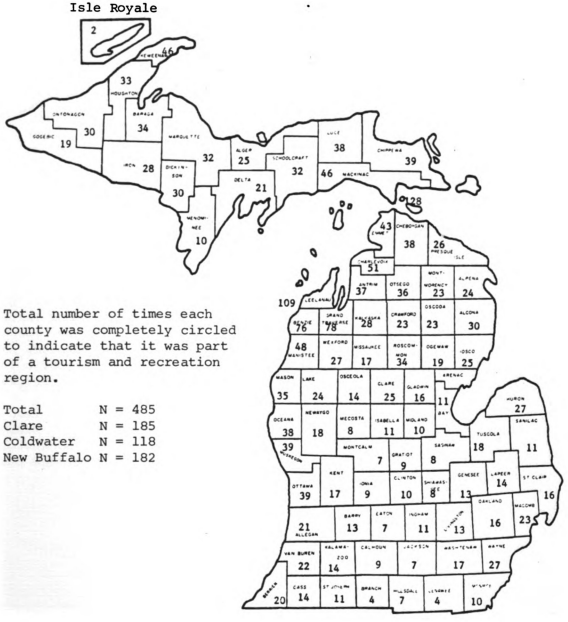
_____under $4,999 _____$15,000-$19,999 _____$30,000-$34,999

_____$5,000-$9,999 _____$20,000-$24,999 _____$35,000-$49,999

_____$10,000-$14,999 _____$25,000-$29,999 _____$50,000 and over

APPENDIX B

STATE IMAGE STUDY MAPS



Total number of times each county was completely circled to indicate that it was part of a tourism and recreation region.

Total	N = 485
Clare	N = 185
Coldwater	N = 118
New Buffalo	N = 182

FIGURE B2. TOTAL NUMBER OF COMPLETE CIRCLES RECEIVED BY COUNTIES.

APPENDIX C

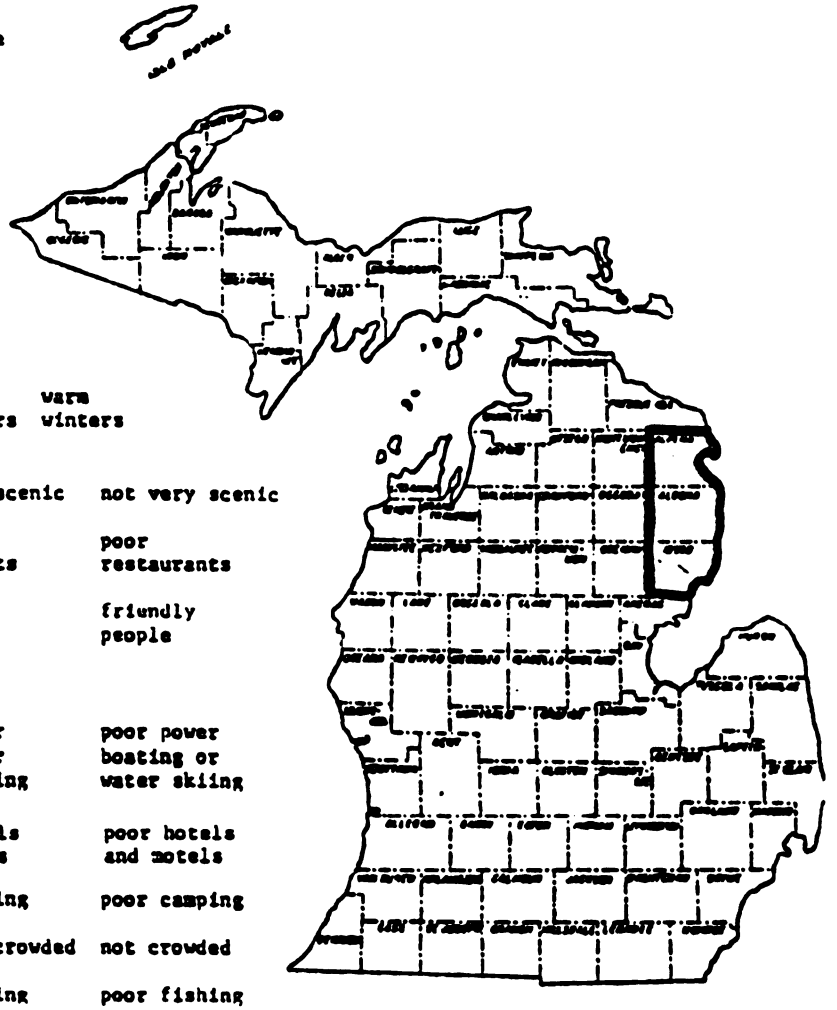
EASTERN AND WESTERN VERSIONS

OF THE AREA IMAGE STUDY

MICHIGAN RECREATION AND TOURISM SURVEY
Park and Recreation Resources - Michigan State University
Michigan Department of Transportation

Area Image Study

Please use the map at the right to complete the following items.



1. Please circle one term in each of the groups of terms below that best describes the area of Michigan outlined on the map at the right.

See the example below.

Example: (cold winters) cool winters warm winters

a.	very scenic	somewhat scenic	not very scenic
b.	good restaurants	fair restaurants	poor restaurants
c.	unfriendly people	somewhat friendly people	friendly people
d.	good power boating or water skiing	fair power boating or water skiing	poor power boating or water skiing
e.	good hotels and motels	fair hotels and motels	poor hotels and motels
f.	good camping	fair camping	poor camping
g.	crowded	somewhat crowded	not crowded
h.	good fishing	fair fishing	poor fishing
i.	popular destinations	somewhat popular destinations	unpopular destinations
j.	poor for family fun	fair for family fun	good for family fun
k.	good for vacationing	fair for vacationing	poor for vacationing
l.	poor sailing	fair sailing	good sailing
m.	good hunting	fair hunting	poor hunting
n.	good beaches	fair beaches	poor beaches
o.	good festivals and special events	fair festivals and special events	poor festivals and special events

(continued ⟶)

If you feel that you cannot fill out the question above, please check why below.

___have not been there ___not familiar enough with the area ___other, please specify

Please complete the following items.

2. Time_____AM___PM___

3. What is destination for this trip? _____

4. What is the purpose of this trip? (Please check only one.)

____to visit friends or relatives ___business and pleasure

___business ___pleasure travel

____vacation

___other, please specify_____

5. On this trip, do you plan to participate in any recreation?

___yes ___no

If yes, please list two types of recreation you are planning for this trip. (Examples: shopping, hiking, sightseeing, eating out)

6. Would you please write down your home city, state, and zip code?

_____

7. If you are or ever have been a resident of Michigan, how many years have you lived in the state?

____years

8. How familiar are you with the state of Michigan compared to the other Great Lakes states? (Please circle one.)

extremely familiar	very familiar	somewhat familiar	not very familiar	not at all familiar

9. How many times in the past 2 years have you traveled in Michigan for vacation or recreation purposes?

____ first trip ____ ____number of trips ____ do not remember

10. Which Great Lake do you like best?

___Lake Huron ____Lake Superior ____Lake Michigan

___Lake Erie ___Lake St. Clair ____Lake Ontario

11. Please rate the state of Michigan, compared to other Great Lakes states, on how well it provides for recreation and/or tourism opportunities.

Poor						Excellent
1	2	3	4	5	6	7

12. Sex: ____Male ____Female

13. Age: ____years

14. Race: ___Black ____White ____Hispanic ____Asian ____Native American

15. Education: Please circle the number that represents the highest level completed.

1 2 3 4 5 6 7 8	9 10 11 12	1 2 3 4 5 6 7+
Grade School	High School	College

16. Annual Family Income (before taxes)

___under $4,999 ____$15,000-$19,999 ____$30,000-$34,000

____$5,000-$9,999 ____$20,000-$24,000 ____$35,000-$49,999

____$10,000-$14,999 ___$25,000-$29,999 ____$50,000 and over

Thank you very much for your help!!!

APPENDIX D

MEAN SCORES OF EACH ITEM EVALUATED IN THE EASTERN AND WESTERN VERSIONS OF THE AREA IMAGE STUDY

APPENDIX D

MEAN SCORES OF EACH ITEM EVALUATED IN THE EASTERN AND WESTERN VERSIONS OF THE AREA IMAGE STUDY

Item Evaluated	Mean Scores for the Areas	
	Eastern Version	Western Version
Scenery	2.6	2.9
Restaurants	2.2	2.7
Friendliness of people	2.7	2.8
Powerboating/waterskiing	2.5	2.8
Hotels and motels	2.4	2.8
Camping	2.7	2.9
Crowding	2.3	2.0
Fishing	2.7	2.6
Popularity of destination	2.1	2.7
For family fun	2.5	2.8
For vacationing	2.6	2.9
Sailing	2.5	2.8
Hunting	2.7	2.7
Beaches	2.5	2.7
Festivals/special events	2.3	2.7

Note: Scores are on a scale of 1 to 3, with 1 a low rating and 3 a high rating of the item.

REFERENCES

REFERENCES

Appleyard, Donald. 1969. City Designers and the Pluralistic City. In Planning, Urban Growth, and Regional Development: The Experience of the Guayana Program in Venezuela, edited by L. Rodwin. Cambridge, Mass.: M.I.T. Press.

Beck, Robert and Denis Wood. 1976. Comparative Developmental Analysis of Individual and Aggregated Cognitive Maps of London. In Environmental Knowing: Theories, Research, and Methods, edited by G. T. Moore and R. Golledge. Stroudsburg, Pa.: Dowden, Hutchinson, and Ross, Inc.

Beckon, Larry and Margo Schmidt. 1982. Highway Travel Information Centers and Michigan Tourism: 1980 Visitor Survey. In Michigan Tourism: How Can Research Help? edited by Joseph D. Fridgen and David J. Allen. Symposium Proceedings. Special Report No. 6. Agricultural Experiment Station, Michigan State University.

Devlin, Anne. 1976. The Small Town Cognitive Map: Adjusting to a New Environment. In Environmental Knowing: Theories, Research, and Methods, edited by G. T. Moore and R. Golledge. Stroudsburg, Pa.: Dowden, Hutchinson, and Ross, Inc.

Downs, Roger M. and David Stea. 1973. Cognitive Maps and Spatial Behavior: Process and Products. In Image and Environment, edited by R. M. Downs and D. Stea. Chicago: Aldine Publishing Company.

Downs, Roger M. and David Stea. 1977. Maps in Minds: Reflections on Cognitive Mapping. New York: Harper and Row, Publishers.

Evans, Gary W., David G. Marrero, and Patricia A. Butler. 1981. Environmental Learning and Cognitive Mapping. Environment and Behavior 13(1): 83-104.

Francescato, Donata and William Mebane. 1973. How Citizens View Two Great Cities. In Image and Environment, edited by R. M. Downs and D. Stea. Chicago: Aldine Publishing Company.

Goodrich, Jonathan. 1978. A New Approach to Image Analysis Through Multidimensional Scaling. Journal of Travel Research 16(3): 3-5.

Gustke, Larry. 1981. Mental Images of the Sunbelt as a Travel Region. Unpublished research proposal. Texas A & M University.

Gustke, Larry. 1982. Mental Images of the Sunbelt as a Travel Region. Dissertation Abstract. Dissertation Abstracts International 43(3): 924-A.

Hart, Rober A. and Gary T. Moore. 1973. The Development of Spatial Cognition: A Review. In Image and Environment, edited by R. M. Downs and D. Steas. Chicago: Aldine Publishing Company.

Holahan, Charles J. 1978. Environment and Behavior: A Dynamic Perspective. New York: Plenum Press.

Horowitz, Irwin A. and Kaye S. Russell. 1975. Perception and Advertising. Journal of Advertising Research 15(3): 15-21.

Hunt, John D. 1975. Image as a Factor in Tourism Development. Journal of Travel Research 13(3): 1-7.

Jordan, Terry G. 1978. Perceptual Regions in Texas. Geographical Review 68(3): 293-307.

Karan, P. P., W. A. Bladen, and G. Singh. 1980. Slum Dwellers' and Squatters' Images of the City. Environment and Behavior 12(1): 81-100.

Karan, P. P., and W. A. Bladen. 1982. Perception of the Urban Environment in a Third-World Country. Geographical Review 72(2): 228-232.

Lee, Terence R. 1973. Psychology and Living Space. In Image and Environment, edited by R. M. Downs and D. Stea. Chicago: Aldine Publishing Company.

Lynch, Kevin. 1960. The Image of the City. Cambridge, Mass.: M.I.T. Press.

Michigan Department of Transportation. 1980. Highway Travel Information Centers and Michigan Tourism, 1980 Visitor Survey.

Michigan Travel Bureau. 1981. The Chicago Vacation Market. Report from the Michigan Department of Commerce Travel Bureau.

Michigan Travel Bureau. 1981. The Michigan Travel and Tourism Industry. Report from the Michigan Department of Commerce Travel Bureau.

Michigan Travel Bureau. 1982. Initial Findings and Results of the Base Line Survey for the "Say Yes to Michigan" Campaign. Report from the Michigan Department of Commerce Travel Bureau, Business Development Division.

Michigan Travel Bureau, Michigan Department of Natural Resources, and Michigan Department of Transportation. 1981. 1981 Michigan Recreation and Travel Survey, conducted by National Family Opinion, Inc.

Milgram, Stanley. 1973. Introduction. In Environment and Cognition, edited by W. Ittelson. New York: Seminar Press.

Milgram, Stanley in collaboration with Denise Jodelet. 1976. Psychological Maps of Paris. In Environmental Psychology: People and Their Physical Settings, edited by H. Poshansky, W. Ittelson and L. Rivlin. New York: Holt, Rinehart, and Winston Publishers.

Milgram, Stanley, Judith Greenwald, Suzanne Kessler, Wendy McKenna, and Judith Waters. 1972. A Psychological Map of Paris. American Scientist 60(2): 194-200.

Moore, Gary T. and Reginald G. Golledge. 1976. Editors of Environmental Knowing: Theories, Research, and Methods. Stroudsburg, Pa.: Dowden, Hutchinson, and Ross, Inc.

Myers, Paul B. 1974. Decision Making and Travel Behavior, Ph.D. dissertation, Department of Resource Development, Michigan State University.

Nie, Norman H., C. Hadlai Hull, Jean G. Jenkins, Karin Steinbrenner, and Dale H. Bent. 1975. Statistical Package for the Social Sciences, 2nd edition. New York: McGraw-Hill Book Company.

Orleans, Peter. 1973. Differential Cognition of Urban Residents: Effects of Social Scale of Mapping. In Image and Environment, edited by R. M. Downs and D. Stea. Chicago: Aldine Publishing Company.

Pearce, Philip L. 1977. Mental Souvenirs: A Study of Tourists and Their City Maps. Australian Journal of Psychology 29(3): 203-210.

Pearce, Philip L. 1981. Route Maps: A Study of Travelers' Perceptions of a Section of Countryside. Journal of Environmental Psychology 1: 141-155.

Pocock, D. C. D. 1974. The Nature of Environmental Perception. Occasional Publications (New Series). Department of Geography. No. 4. University of Durham, England.

Raitz, Karl B., and Richard Ulack. 1981. Cognitive Maps of Appalachia. Geographical Review 2(71): 201-213.

Saarinen, Thomas F. 1973. Student Views of the World. In Image and Environment, edited by R. M. Downs and D. Stea. Chicago: Aldine Publishing Company.

Saarinen, Thomas F. 1976. Environmental Planning: Perception and Behavior. Boston: Houghton Mifflin Company.

Sadalla, E. K., and L. J. Staplin. 1980. An Information Storage Model for Distance Cognition. Environment and Behavior 12(2): 183-193.

Ulack, Richard and Karl Raitz. 1982. Perceptions of Appalachia. Environment and Behavior 14(6): 725-752.

Webster's New World Dictionary. 1980. Second College Edition. Editor in Chief, David B. Guralnik. The World Publishing Company.

Wilson, Jack. 1982. The Travel Market for Michigan. In Michigan Tourism: How Can Research Help? edited by Joseph D. Fridgen and David J. Allen. Symposium Proceedings. Special Report No. 6. Agricultural Experiment Station, Michigan State University.