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IDENTIFICATION AND UNIQUE CHARACTERISTICS OF MICHIGAN'S RECREATIONAL TOURISM MARKET

By

Win-Jing Chung

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A DISSERTATION

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

DOCTOR OF PHILOSOPHY

Department of Park and Recreation Resources

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ABSTRACT

IDENTIFICATION AND UNIQUE CHARACTERISTICS OF MICHIGAN'S RECREATIONAL TOURISM MARKET

By

Win-Jing Chung

Expansion of a tourism market depends to a large extent on promotion. A common vehicle used in promotion is advertising designed to reach potential tourists. Since forecasting can help to predict who will travel in Michigan, the development of forecasting tools is essential for effective advertising to potential tourists.

This study tests five types of variables which are assumed to be related to the tourist's choice of Michigan as a trip destination. These variables are: (1) travel patterns (travel mileage, duration, etc.); (2) tourists' socioeconomic background (age, income, state origin, etc.); (3) travel information from various type of media (radio, television, billboards, etc.); (4) tourists' concerns for the trip (clear air, easy access, winter fun, etc.); and (5) tourists' images of Michigan (nice place, friendly people, good restaurants, etc.). A forecasting tool called Linear Discriminant Analysis (LDA) is applied to investigate the effectiveness of using these variables to predict the propensity of tourists' choosing Michigan as a trip destination.

More than 8,000 records of trip information, collected by the Great Lakes Travel Monitor Study during 1985, were analyzed. Profiles of Michigan tourists were constructed. The factors significant to the choice of Michigan as a trip destination were determined. The relationships between the choice of traveling in Michigan and impacting factors were constructed. Based on these relationships, realistic targets for tourism promotion in Michigan can be established and used to predict Michigan's tourist market.

Results of the study indicate various factors are more significant in Michigan tourism than in non-Michigan tourism: married tourists, recreational vehicle owners, people of higher education, weekend tourists, and group trip participants. The chances of taking a Michigan trip were enhanced by travel information obtained from television, radio, and billboards. Through LDA, all five types of variables show evidence of their usefulness in predicting Michigan trips. In some cases, the percentage of correctness in predicting Michigan trips using a single factor such as trip mileage, duration, or season, exceeded 75%. Furthermore, using these factors together in LDA, the correct prediction rates of 83.5%, 61.4%, and 72.6% for predicting Michigan, non-Michigan, and overall trips, respectively were achieved.

In conclusion, this study presents an operative approach to predicting Michigan trips. With better quality data, the effectiveness of LDA in identifying Michigan trips should be greater. Thus, using LDA and triprelated information can be considered a practical method to assist in increasing effective decisions regarding Michigan's tourism market. Copyright by Win-Jing Chung 1988

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My parents, Chung and Hou My parents in law, Iau and Jin My uncle and aunt, Dr. Chung and Dr. Hou My cousin, Shiao-Chung and Bi-Wu And my wife, Huey-Chu

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То

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CHAPTER I

INTRODUCTION

The tourism market, with its increasing importance, has become a popular subject for many research and planning offices at the international, national, and local level. Though the tourism market is dynamic and involves many factors, the study of factors affecting tourist behavior can help in predicting certain tourism markets. This research explores the unique characteristics of Michigan's tourism market and assesses the effectiveness of using existing travel information in the Great Lakes area to predict, the propensity of tourists to choose Michigan as their destination.

Though the general meanings of tourism and tourist are familiar to most people, the precise definitions are not. The World Tourism Organization defines tourist as "a temporary visitor staying at least 24 hours or overnight in the country visited, whose journey is for the purpose of: (a) leisure (holiday, recreation, sport) or (b) business (family, mission, meeting, health, study, or religion)". Tourism is defined as "a way of using leisure, and also with other activities involving travel." To narrow the scope of this research, only tourists

who traveled at least 100 miles or spent a night away from home¹, and travelled primarily for recreational purposes are considered. Tourism is more specifically defined as the component of travel composed of the tourists' expenditures, facilities and services used, recreational activities pursued, and total experiences during trips of the types previously defined.

Various methods have been used by other researchers to quantify tourism. These include measurements of financial volume (tourism expenditures), of movements (numbers of tourists), or of facilities used (nights of hotel or other lodging accommodations sold). These make it possible to measure, analyze, and predict various facets of tourism.

Predicting tourists' destinations is another way to assess the potential tourism market volume. If the factors that affect tourists' destination choices can be identified, the potential market can be predicted through an effective forecasting model. Many factors can influence tourists' trip destination choices. The most common factors include the traveler's socioeconomic background, motivation, image of a destination, the location of the destination, available transportation, travel information obtained, and the traveling season. Socioeconomic factors may include age, sex, and income; and motivation factors may include the desires for relaxation, peace and quiet, self-satisfaction,

¹ More discussion on the definition of tourism appears in Chapter II.

fun, good scenery, outdoor experiences, good food, favorite recreation activities, escape from routine, family togetherness, and social status. All these factors are likely to differ from one individual to another.

Tourists' image of a destination is one especially important factor in the selection of a trip destination. Baud-Bovy and Lawson (1976, p10) stated:

The attraction of tourist destinations arise to a large extent from the image ... The tourist image of a destination is of utmost importance in tourism development; a choice of destination is usually not made objectively but according to the image projected. Where prices are comparative, this is often the decisive factor in selection even though similar attractions and facilities may be available elsewhere.

Travel information obtained from travel agents, friends, relatives, and different media sources, such as magazines, newspapers, television, radio, and billboards, are likely to be the common sources of information that influence tourists' images of certain destinations. This is the reason why tourism market promotional strategies are designed to produce the impressive image that promotes the product.

In addition to price, the resources and facilities at the destination, and the transportation to and at the destination are also important factors influencing tourists' destination selection. Quality and availability of attractions, facilities, sightseeing, recreational opportunities, transportation to the destination, and local transportation, special events, even good restaurants often play an

important role in tourists' decisions.

Knowledge of how to identify and apply these factors to predict who will choose Michigan as their trip destination will help Michigan's tourism industries to expand their markets. Also, the ability to identify the potential market will help tourism planners to determine tourism demand. Accordingly, this research first examines the differences between Michigan and non-Michigan tourists. and evaluates the effectiveness of using secondly. existing travel information through a forecasting tool called Linear Discriminating (LDA) to predict potential Michigan tourists. Analysis Other motivations for this study are described below.

In marketing, it is suggested that a careful selection of audiences can effectively increase the success of promotion. Tourism industries often use mass media as a promotional vehicle. The advertising used in promotion can be considered invitations that the industries send to potential tourists. Since it is unlikely that every audience will be interested in or able to afford the same type of travel, the approach of sending everybody the invitations is unnecessary and impractical. With limited promotion budgets, planners obviously need to know where and to whom to send the invitations. The value of forecasting tools that differentiate highpotential tourists from low-potential tourists is evident; they help to avoid sending costly invitations to low potential tourists.

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Intuitive prediction is the forecasting tool most often used by people in many different settings. Characteristics of the average current customers are used to identify potential customers. People who fit the profile are selected as targets for promotion programs. For example, the current market for luxury sport cars and station wagons could be described respectively as "high income, sports-oriented males" and "suburban family, small delivery agency, farmers, large family and the like". Car dealers select high-income males who are sports-oriented, instead of low income people, as the target of luxury sports car promotions. Married people with families, instead of single people, are the target of advertising to promote the sale of station wagons. Intuitive prediction is also used to identify criminals. Miami police compile a criminal suspect profile from past records of cocaine criminals, which describe the potential cocaine criminal as "black, between the ages of 18 and 40, usually driving a car with an out-ofstate licence plate" (CBS Sixty-Minutes report). Using this profile as a guide to identifying criminals, highway patrols stop whomever fits this description. Despite the success claimed by the police department, the process of identification via intuitive prediction is actually unreliable in this situation because of the uncertainty of personal judgement. To improve the reliability of intuitive prediction, more strict statistical bases are required.

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Consumer psychology suggests that people who are interested in a specific product are more likely to buy the product than those who are not. By interviewing people about their interests in particular products, interested people can be identified as high potential customers and considered the primary promotion target for each product. For instance, Michigan's Upper Peninsula can offer more tourism experiences involving natural resources than can New York City. It is logical to assume that people who prefer traveling experiences involving natural resources will be more likely to travel to the Upper Peninsula than to New York City. Identifying these people and sending advertisement invitations to them should be more costeffective than sending invitations to everyone. For some products, more than one factor is required to make effective predictions. The selection process can be quite complex when the number of factors is increased. Appropriate statistical tools are required for more complex processes.

In the past, a variety of forecasting techniques have been used to predict tourism, including causal methods, time series, qualitative methods, and decision analysis. Causal methods are used to identify relationships between the variables of interest. Examples are singleequation regression models, multi-equation econometric models, simulation models, and spatial models. Time series analyses are used to analyze historical data patterns. These analyses include trend fitting, exponential smoothing, and the Box-Jenkins technique. Qualitative forecasting techniques include judgmental forecasting and the Delphi method. Decision analyses include system dynamics, market research, and probabilities forecasting². However, a review of the literature indicates that none of these techniques have been applied to the prediction of tourists' choice of trip destination.

The LDA forecasting technique is considered a useful solution to the identification of Michigan's high-potential tourists because it allows using many factors as discriminators in predicting which people belong to the specific interest group. According to Boyd (1981), LDA is the only forecasting technique that can differentiate individuals into predefined groups. In past decades, LDA has been used in many marketing areas to help identify and profile potential customers. It has been proved that LDA is a useful tool in identifying potential customers for certain products³. However, the literature review for this study revealed no applications of LDA for the purpose of identifying potential tourists⁴. To determine the effectiveness of LDA in tourism market prediction thus requires an actual investigation such as this.

² More discussions on tourism forecasting techniques can be found in B.Archer, 1980.

³ This includes market prediction such as who will be more interested in specific brands of cars, and what kind of salespersons will perform better in specific kinds of businesses. More review of this topic is given in the literature review chapter.

⁴ Indeed, no previous LDA application in tourism was found in the literature review (see Chapter II, Literature Review).

In summary, the need for tourism market information and for an effective forecasting technique to identify potential tourists motivated this study. It attempts to answer the following questions: (1) What are the significant market variables in Michigan's recreational tourism market?; (2) What are the differences between Michigan and non-Michigan tourists?; and (3) How effectively can existing travel information be used to identify potential tourists? Travel information collected in the Great Lakes Travel Monitor Study affords an opportunity to seek answers to these questions.

Objectives

Specifically, this study aimed to achieve the following objectives:

1. To study origin-destination and other traveling patterns of recreational tourists in the areas covered by the Great Lakes Travel Monitor Study.

2. To generate socioeconomic information on Michigan's recreational tourists in an effort to identify the significant characteristics of Michigan's recreational tourists.

3. To identify the differences between Michigan and non-Michigan tourists that influence selection of Michigan as a tourist destination.

4. To assess the potential of several types of factors for predicting the propensity for traveling in Michigan.

The first two objectives result in a series of descriptive statistical summaries from which a profile of recreational trips in Michigan emerges. The third objective is met by testing the significance of the differences between Michigan and non-Michigan tourists. The last objective is achieved through LDA applications.

Assumptions

This research was based on the following assumptions, which serve as the basis of the research hypotheses in this study:

1. The tourism market in the Great Lakes area can be categorized into two mutually exclusive sub-populations: Michigan and non-Michigan trips.

2. The travel patterns and socioeconomic background of Michigan and non-Michigan tourists are different.

3. Selection of Michigan as a trip destination is affected by travelers' socioeconomic backgrounds (age, income, marital status, etc.), images of Michigan (clear air, winter fun, etc.), brand loyalty (visiting Michigan again), expectations for the trip, availability of travel information, accessibility of the destination (distance and available transportation), leisure time available (trip duration), holiday (date of trip), and seasonality (warm versus cold weather).

4. Prediction of tourism in Michigan's future can be gained from an understanding of current tourism in Michigan, and a linear

function of certain attributes of the population can be constructed to differentiate between Michigan tourists and non-Michigan tourists.

Hypotheses

Based on the above assumptions, the following research hypotheses were proposed and tested.

<u>HYPOTHESIS 1</u>. There is no significant differences in travel patterns between Michigan and non-Michigan tourists.

1-a, 1-b. There is no significant difference between Michigan and non-Michigan recreational tourists in one way trip mileage and side trip mileage⁵.

1-c. There is no significant difference in trip duration⁶ between Michigan and non-Michigan recreational tourists.

1-d, 1-e, 1-f, 1-g, 1-h, 1-i. There is no significant difference between Michigan and non-Michigan recreational tourists in the number of overnight stayed in: (1) hotel, (2) motel, (3) public tent campground, (4) friend's house, (5) relative's house, and (6) other states.

⁵ Tests were conducted on one-way main trip mileage only. The return trip mileage data were not available in the data base.

⁶ The number of overnight stays away from home in each trip was tested.

1-j, 1-k, 1-l, 1-m, 1-n. There is no significant difference between Michigan and non-Michigan recreational tourists in the amount of dollars spent on: (1) transportation, (2) lodging, (3) meals, (4) entertainment, and (5) miscellaneous expenses.

1-o, 1-p, 1-q, 1-r, 1-s. There is no significant difference between Michigan and non-Michigan recreational tourists in their preference scores for the following destination attributes: (1) good restaurants, (2) good places to stay, (3) high prestige, (4) good night life, and (5) winter fun⁷.

1-t, 1-u, 1-v, 1-x, 1-y, 1-aa, 1-ab, 1-ac, 1-ad, 1-ae, 1-af. Between Michigan and non-Michigan trips, there are no significant differences in travelers' rating scores on the following images of Michigan: (1) good scenery, (2) good restaurant, (3) friendly people, (4) easy to get to, (5) reasonable prices, (6) good place to stay, (7) summer fun, (8) high prestige, (9) clean air, (10) good night life, and (5) winter fun⁸.

1-ag. There is no significant difference between Michigan and non-Michigan recreational tourists in their reported likelihood⁹ of

⁷ The terms of "good" and "high" mean the quality is higher than average. See question no.36 in survey questionnaire in Appendix E.

⁶ The terms of "good", "friendly", "easy", "high", and "clean" mean the quality is higher than average. See question no.39 in survey questionnaire in Appendix E.

⁹ The degree of likelihood is measured by a five-point rating scale (see question No. 28 in the questionnaire given in Appendix F).

revisiting the destination state.

<u>HYPOTHESIS</u> 2. Tourists' socioeconomic characteristics, travel patterns, available travel information, motivations for going to a state, and ownership of transportation do not positively affect tourists' choice of Michigan as a trip destination.

2-a. Education level does not positively affect tourists' choice of Michigan as a trip destination.

2-b. Ownership of a recreational vehicle does not positively affect tourists' choice of Michigan as a trip destination.

2-c. Marital status does not positively affect tourists' choice of Michigan as a trip destination.

2-d. Traveling on the weekend does not positively affect tourists' choice of Michigan as a trip destination.

2-e. Taking a group trip does not positively affect tourists' choice of Michigan as a trip destination.

2-f. Using a personally owned vehicle to reach a destination does not positively affect tourists' choice of Michigan as a trip destination.

2-g. Using a personally owned vehicle at the destination site does not positively affect tourists' choice of Michigan as a trip destination.

2-h, 2-i, 2-j. Receiving travel information from television, radio, and billboards does not positively affect tourists' choice of Michigan as a trip destination.

2-k. Winter fun is not a factor that positively affect tourists' choice of Michigan as a trip destination.

2-1. Michigan residency does not positively affect tourists' choice of Michigan as a trip destination.

2-m. The warm season does not positively affect tourists' choice of Michigan as a trip destination.

<u>HYPOTHESIS</u> 3. Travel information and trip concerns do not negatively affect tourists' choice of Michigan as a trip destination.

3-a. Obtaining travel information does not negatively affect tourists' choice of Michigan as a trip destination.

3-b. Obtaining travel information from a travel agent does not negatively affect tourists' choice of Michigan as a trip destination.

3-c, 3-d, 3-e, 3-f. Good restaurants, clear air, good night life, and high prestige associated with a trip do not negatively affect tourists' choice of Michigan as a trip destination.

3-g. The distance of the state of origin from Michigan does not negatively affect tourists' choice of Michigan as a trip destination. **<u>HYPOTHESIS</u>** <u>4</u>. Travelers' socioeconomic characteristics, travel behavior, available travel information, and the motivations for going to a state have no effect on the choice of Michigan as a trip destination.

4-a. Occupation has no effect on the choice of Michigan as a trip destination.

4-b. Season has no effect on tourists' choice of Michigan as a trip destination.

4-c. Travelers' expectations of a destination have no effect on tourists' choice of Michigan as a trip destination.

4-d. Knowing the toll-free number for travel information has no effect on tourists' choice of Michigan as a trip destination.

4-e. The opportunity for outdoor activity during the trip has no effect on tourists' choice of Michigan as a trip destination.

4-f. Special events connected to a trip have no effect on tourists' choice of Michigan as a trip destination.

Constraints of The Study

This study was conducted with three major limitations: time, budget, and the quality of data available.

In terms of time, the primary research investigator of this study is a foreign student from Taiwan, Republic of China who is permitted limited time to remain in the U.S. In terms of budget, currently this research is financed only by the researcher himself. The research budget is limited.

Data used in this study were not originally collected for this study, thus analyses were limited to the information available. While statistics applied in this study were appropriate for the information available, some data were of poor quality and may have limited significance of the results. Under these circumstances, the scope of this study reflects a compromise between manageable efforts and the complexity necessary to demonstrate the power of the LDA analyses in identifying factors that influence potential tourism in Michigan.

The dissertation is organized as follows. Chapter II provides a review of the literature on tourism marketing and LDA theories. Chapter III explains the methodology used in the study. Study findings are presented in Chapter IV. Discussion of study results, and implications for future research are discussed in Chapter V.

CHAPTER II

LITERATURE REVIEW

Literature related to the definition of tourism, tourism marketing, the significance of tourism in Michigan, and LDA theories is reviewed in this chapter. Tourism definitions, tourism marketing, factors influencing user attendance at recreation areas, advertising efficiency, and tourism market allocation, are first discussed. The theories, mechanisms, and applications of LDA, together with a comparison of LDA with other modeling techniques, are then presented.

Tourism Definitions

Tourism has many facets, and it is not feasible to include all of them in a simple definition. Since 1910, tourism has been described in many ways. Some of which are more amenable than others to operationalization for measurement purposes in research. One of the earliest definitions, given by economist Hermann v. Schullard in 1910, described tourism as "the sum total of operations, mainly of an economic nature, which directly relate to the entry, stay

and movement of foreigners inside and outside a certain country, city or region." This definition is the first to conceptualize tourism in economic terms. Since 1910, definitions of tourism have incorporated additional concepts, such as technology, public administration, social aspects, cultural activities, attitude, and behavior aspects.

Doorn (1982) posited four definitions of tourism: a basic definition, a mono-disciplinary definition, a statistical definition, and a system analysis definition. In the basic definition of tourism, tourists' status of "stay," "journey," and "being away from home" are the major elements. Burkart and Medlik's (1974) definition belongs to this type. They said, "Tourism denotes the temporary, short-term movement of people to destinations outside the places where they normally live and work for other than business or vocational reasons, and their activities during the stay at these destinations." This definition is representative of most of the basic concepts in tourism today.

Mono-disciplinary tourism definitions focus on people's motivation, pleasure, and tourism experiences. Cohen's (1974) definition exemplifies a mono-disciplinary definition. He defined a tourist as "a voluntary, temporary traveler, traveling in the expectation of pleasure from the novelty and change experienced on a relatively long and non-recurrent round trip." This definition is inadequate since the nature of tourism is much more complex than the simple linkage of people's motivation and their experience. Statistical definitions use statistics to define tourism. They are often used by governmental and international organizations, such as the World Tourism Organization (WTO) and the Organization for Economic Co-operation and Development (OECD). In this type of definition, tourism is defined as the sum of the number of arriving and departing, their spending, the duration of their tours, the purpose of stay, etc. Since this definition uses mainly statistical data to define tourism, it is especially useful for report writing purposes.

The last type of tourism definition gives the widest perspective by adopting the system analysis approach. Leiper's (1979) definition is an example: "The elements of the (tourism) system are tourists, generating regions, transit routes, destination regions, and a tourist industry. These five elements are arranged in spatial and functional connections." This definition includes both tourists and trip environment as tourism elements, making it more functional than other definitions. Because of the inclusion of spatial concept, this definition is often adopted in tourism planning.

None of these definitions can entirely describe the tourism phenomenon. However, each definition supplies certain quantitative and qualitative aspects of tourism that serve as the basis for research to study and measure tourism phenomena.
Michigan's Tourism Market

Michigan's tourism market is composed of a domestic segment and an inter-state and international segment. According to a <u>Better</u> <u>Homes and Gardens</u> (1977) report, "The Family Vacation Travel Market,"¹⁰ the Great Lakes States¹¹ represent Michigan's primary travel market, accounting for 82% of Michigan's total tourism market. In 1984, the Great Lakes States market still maintained about 81% of Michigan's total tourism market¹² (U.S. Travel Data Center, 1985). These figures imply that the Great Lakes States are a stable market for Michigan's tourism business.

Despite the fact that the Great Lakes States are the major market for tourism industries in the region, Michigan's market share of this market is only 14%. Wilson (1981) suggests that extensive opportunities exist for expanding Michigan's share of the market. He estimates that as much as 28% of the market share could be captured if effective tourism promotion were conducted. To expand the market, understanding and specifically identifying Michigan's current and potential tourism market is crucial.

¹⁰ This article is a tabulation report based on the 1977 National Travel Survey conducted by the Bureau of the Census. In this report, only recreational trips that were over 100 miles from home and included at least two household members were counted.

¹¹ In this report, the Great Lakes States included six states: Michigan, Ohio, Illinois, Wisconsin, Indiana, and Minnesota.

¹² This was based on seven Great Lakes States: Michigan, Illinois, Wisconsin, Indiana, Minnesota, Ohio, and Iowa.

The Significance of Tourism in Michigan

The tourism industry is also called the "hospitality" industry due to the fact that hospitality services have been used to bring in tourist dollars, creating a local economic impact. The concept of "hospitality for sale" was thought to be impractical by the executive levels in most governments until the economic value of this industry was recognized. Now, as its economic impact becomes increasingly significant, expansion of the tourism industry has become a topic of great importance in economic planning offices across this country and around the world.

Historically, the Michigan Tourist Council represents an important landmark in Michigan's tourism development. It was founded in 1945 for the purpose of promoting Michigan tourism (Wilson, 1981). Shortly after World War II, Michigan started receiving significantly increasing numbers of tourists. Since then, the economic value of tourism has been rapidly growing. Today, tourism industry is one of the most important industries in Michigan.⁷

According to Wilson (1981), an increase of one percent in Michigan's tourism market could produce an additional 125 and 95 million dollars in direct and indirect expenditures, respectively. This

⁷. The number one Michigan industry is automobile manufacturing. The cash receipts from Michigan's farm marketings is 3.045 billion in 1983. (<u>Michigan Statistical Abstract</u>) The direct travel expenditures in Michigan is 5.545 billion. (U.S. Travel Data Center, <u>Impact of Travel on State Economies</u>, 1983)

would also produce 6,100 additional jobs and 10 million dollars in new state tax revenues. The economic impact from tourism will be greater if the state can help attract more tourists to Michigan. Since unidentified potential customers always exist in market areas, an effective tool for identifying these people could be significant to the economy of Michigan.

Michigan's Tourism Challenges

Two major challenges faced by Michigan's tourism industry are vigorous competition and inadequate marketing information.

Vigorous Competition

It has been observed that competition for tourism dollars in the Great Lakes area has been stepped up in the past decade. According to the U.S. Travel Data Center, the Michigan Travel Bureau increased advertising budget percentage from 30.0% (\$2,782,383) of the total budget in 1984-1985 fiscal year to 36.4% (\$4,300,000) in the 1985-1986 fiscal year. The increase of the percentage of total budget allocated for tourism promotion purposes was 6.4%. In the same period, at least three neighboring Great Lakes States had exceeded Michigan's increase. The states that had allocated higher percentages of total budget for tourism advertising use than Michigan are Indiana (increased by 9.5%), Minnesota (increased by 18.2%), and Wisconsin

(increased by 14.8%)(U.S. Travel Data Center, 1985).

Vigorous competition also comes from distant states such as Florida, and California, and from the Canadian province, Ontario. In the 1985-1986 fiscal year, California and Florida spent 62.2% and 45.9%, respectively, of their office budget for tourism promotion. In 1984, Ontario spent \$5.7 million advertising dollars in the U.S, more than twice the \$2.5 million Michigan spent in the U.S. that year (Spotts, 1986). These advertising budget figures demonstrate the growing pressure on Michigan to increase its competitiveness in the tourism industry. An effective marketing strategy is vital if Michigan is to improve its competitive position.

Inadequate Market Information

In an environment of intensive competition, marketing information is crucial for the development of effective marketing strategies. Unfortunately, specific tourism market information, such as who, where, and when to market the products, is not always available when needed. The inadequacy of data concerning tourism in Michigan was reflected in Holecek and Wilson's words:

... data are indicative of tourism's significance in Michigan but also are one example of the shortage of information which exists concerning Michigan's second or third most important industry. (Holecek, 1981, p17)

... much more specific information is needed to determine what messages should be communicated and to target the messages to the appropriate markets. (Wilson, 1981, p31) Much raw data concerning tourists' socioeconomic background, such as age, income, and education, and travel information such as trip origin, destination, purpose, and travel mode have been collected. However, more useful information, such as who is most likely to visit Michigan, how to identify them, and the factors that determine the choice of destination have rarely been obtained or estimated through forecasting techniques.

Tourism Marketing

Gray (1981, pi) has stated:

Recreation marketing concerns itself with sending the invitation. Before we can send any invitations, we have to decide who to invite and know where their invitations are to be sent.

This statement contains two basic concerns in tourism marketing: "Who will be interested in the product?" and "Where can those interested be found?". These questions can be answered through study of tourists' travel motivations, and other factors that influence purchasing of the tourist industry's product.

Emergence of The Concept of Travel Motivations

In the past decade, two major approaches to tourism promotion have been common: product-oriented promotion and customer-oriented promotion. The former approach tries to "sell" available attractions and facilities. The latter focuses on the identification of customers and their needs. Wahab (1976) suggested discarding the product-oriented concept because it tries to convince customers that the products are what they need instead of determining what products customers actually need. He said that the product-oriented approach is to convince potential visitors that the assets and resources of a specific destination are those that the potential visitors desire. The approach he suggests is one which considers customers' motivations, attitudes, and behavior.

According to Smykay (1977), motivations come from the "relevant needs of human beings." Schmoll (1977) thought that people's motivation should be as important a factor as economic and commercial aspects in tourism plans. He said:

... psychology is concerned with the study and analysis of tourists' motivations and behavior which, in turn, have a direct bearing on promotion plans. (Schmoll, 1977, p51)

It has been shown that attention to a customer's motivations, behavior, and socio-demographic status has a greater chance of success in advertising. Korgaonkar (1984) found that a careful study of customers' needs before advertising the product can significantly contribute to a successful campaign. Tourists' motivations, behaviors, and socio-demographic characteristics are also important considerations in a tourism plan. In Schmoll's "Model of Tourism" (1977), it is suggested that a tourist service plan should be guided by tourists' attitudes, motivations, and behavior. Services that need customer motivation research include transportation, accommodations, food, sightseeing, entertainment activities, travel advice, travel arrangements, and banking and shopping facilities.

A wide variety of motivations can be involved in customer profiles. Status is often a major consideration in buying. Smykay (1977) writes: "Status involves differentiation from the herd... It therefore implies exclusivity. Ownership of a high class automobile is a way people can visually demonstrate their status to the crowd." Obviously, for successful tourism marketing, tourist motivations cannot be ignored.

Factors in Attendance at Recreation Areas

It is not difficult to identify some reasons why people choose a particular trip destination. Motivations can be identified by using an interview survey. If accurate data for all factors affecting the decision to visit Michigan were available, one would be able to reasonably predict Michigan's tourism market. However, there are many underlying factors that motivate choice of destination. It is probably impossible to identify all the factors involved. Clawson and Knetsch (1975, PP59-60) have identified three categories of factors which directly affect tourist visits to recreational areas: (1) user factors, (2) area factors, and (3) a user-area interaction factor. These are defined as follows:

1. User factors: geographic distribution, socioeconomic characteristics (age, sex, occupation, family size and composition, education, income, and race), leisure time, knowledge of recreation opportunities, and personal tastes.

2. Area factors: attractiveness, availability, substitutes, capacity, climatic and seasonal characteristics, etc.

3. User-area interaction factor: travel time required, monetary costs, comfort of travel, and the extent of stimulation by advertising.

Many other factors exist for researchers to explore, such as gasoline prices, accessibility, facility management quality, and political policy. Although all of these factors can be included as the basis to project the future tourism market, it is not practical to do so. Therefore, only the factors that contribute considerable predictive power should be selected.

Advertising Efficiency

According to Aaker (1982), advertising efficiency is measured by the ratio of advertising dollars spent to resulting sales dollars. Mahoney and Warnell (1986) suggested that the marketing strategy of "attempting to be all things to all people" is inefficient, because "strategies designed for the average customer often result in unappealing products, prices, and promotional messages." An effective strategy should "match the right product or service with the right market or audience." The right audience is one that will be interested in the products and will eventually visit tourism facilities promoted by the advertisements. An appropriate audience can be obtained through careful analysis of survey data on the needs, motivations, and characteristics of users of different tourism facilities.

The purpose of selecting the audience is to increase advertising efficiency. Aaker (1982) found that under the pressure of competition both advertising agencies and tourism industries tend to advertise more than might be optimal. In most cases, over advertising results in inefficiency and financial resource misallocation. In 1980, nearly 55 billion dollars were spent on advertising in the U.S. In 1982, the U.S. advertising expenditure increased to over 70 billion dollars, or about 2.5% of the Gross National Product. Most of this advertising expenditure was not optimal (Korgaonkar, 1984). To understand how advertising can be more efficient, the basic mechanism of advertising must be understood. Schmoll (1977, p71) described the way that advertising works:

Advertising implies indirect communication with selected target groups through paid messages transmitted through suitable media-press, electronic media, by mail, etc.

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In other words, the basic function of advertising is to reach, inform, and persuade potential tourists to purchase available products or services. Tourism advertising includes three major elements: (1) mass media - magazine, television, press, etc., (2) message - advertising program, and (3) audience - potential tourist. The first two elements function together like a bow and arrow, aiming at the target audience. Any improper selection of these elements could result in inefficiency. Of these three elements, target audience selection is considered most crucial. Kotler (1985, p35) explained how important the selection of the target audience is:

... the exposure value (of advertisement) depends on the readers' characteristics and how closely they match those of the consumer target groups. For a baby lotion advertisement, the exposure value might be 1,000,000 if the readers were all women and 0 if the readers were all men.

Since the tourist industry cannot afford advertising that reaches all audiences, it is imperative that the target audience be carefully selected.

Tourism Market Allocation

Since the tourism market is highly dynamic, market allocation is no easy task; it requires knowing both the market's location and its characteristics. Krippendorf (1972, 122) described market selection procedures as follows: ...(1) Determine the market size: establish the number of potential visitors of a destination, (2) Localize the market(s): establish the geographical location and distribution of these potential visitors. (3) Determine market characteristics: behavior and motivations of the potential visitors, the image of and attitudes towards the destination or service.

One commonly used method for selecting target markets is through the use of Areas of Dominant Influence (ADI). ADI are geographic areas currently served by dominant advertising media. Promotion planners can select different areas as potential tourism markets based on the availability of advertising media. ADI is an effective way of selecting a tourism market. The importance of marketing in each ADI can be assessed by combining information on the client, the media available within each ADI, and each ADI's share in the total tourism market. Based on this assessment, a marketing promotion technique can be developed. First, the county in which customers reside is identified. The percentage of market share in each ADI is then calculated. With this technique, market areas that are currently servicing clientele can be located.

An example of ADI application is the development of Recreation Marketing Maps by the Recreation Resources Center at the University of Wisconsin (Madison) in 1981. ADI were used to locate where and who customers were. Selection of the media for marketing promotion, guided by the share of market, was indicated. It was pointed out that the market potential of ADI can be characterized by: 1. Area of Dominant Influence.

2. Counties included in the ADI.

3. Estimate of ADI population.

4. Estimated number of households in the ADI.

5. Consumer Spendable Income Per Household for the ADI.

6. Automobiles Per Household for the ADI.

7. A map of the ADI.

The ADI approach locates potential market areas by drawing a profile of already existing customers. However, methods for further identifying other potential customers are still lacking.

LDA Applications

The original purpose of LDA and its development are outlined in the following brief historical background.

According to the theory of natural relationships, plants and animals can be classified into different categories. In biology, new bacteria hybrids are so similar that sometimes the determination of species of newly bred bacteria is difficult. LDA was originally developed to help biologists to determine the species of new hybrid bacteria. This function was then extended to profile group differences and to classify individuals into separate groups based on the nature of differences. Currently, LDA is applied in a wide variety of fields. In most applications, LDA research is used to determine characteristics of interest in order to classify groups.

In park and recreation, the only LDA application found in the literature reviewed is Westfall's study (1975) in which LDA was used to help make administrative policy decisions. This application was intended to identify landowners having a potential negative willingness to comply with policy decisions. Policy makers can then focus on these landowners' concerns in planning activities in those areas. From the sampled land owners, Westfall segregated farmers who have a higher willingness to allow public access to their land for three recreational activities: hiking. hunting, and snowmobiling. The characteristics of landowners used in this application include parcel size, sex, age, the size of the parcel of land, years owned, percentage of land in crops, percentage of land as woods, primary ownership objective, and residence location. This study resulted in two discriminant functions. One LDA function resulted in a 62.5% correct predicting rate (CPR)⁸ compared with a 51.0%⁹ CPR in a chance predicting process. Another function resulted in 58.8% CPR, which is considered low when compared with a 65.3% CPR in random

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⁶ In LDA, the predicting rate is the proportion of observations correctly classified, which is calculated by dividing the number of observations correctly classified by the total number of observations.

⁹ With equal group size, the predicting rate of a chance predicting process is 50% for two groups. Unequal group sizes affect the chance of observations to be assigned in each group. The random predicting rate thus requires adjustment to reflect group size differences. In Westfall's study, the CPR was adjusted to be 51%.

predicting for the membership of two groups of unequal size. This study did not result in an outstanding CPR. According to Westfall, this was due to the particular discriminating variables available and the grouping method used.

Since no other LDA applications in the park and recreation field were found, applications of LDA in other fields are reviewed and summarized below. A summary of these applications helps to clarify the purposes for which LDA was devised.

In business, social science, and other areas, LDA is a useful tool for investigating the effectiveness, risk, products, management, and customer differences between groups. In the applications reviewed, LDA was used as a tool for the estimation, identification or prediction in the following areas:

1. Advertisement: (1) Television commercial rating scales (Lastovicka, 1983); (2) Restaurant advertising: appeals and consumers' intentions (Lewis, 1981); (3) Benefit segmentation for restaurant advertising that works (Lewis, 1980); (4) Advertising message and life style (Greeno and Sommers, 1977).

2. Antrophology: (1) Fingerprint variation in Papua New Guinea for the implications of prehistory (Froehlich and Giles, 1981); (2) Quantitative serum protein data in populations of Rwanda (Jayakar and others, 1981). 3. Behavior Study: (1) Decide the voluntary union membership of women and men: differences in personal characteristics, perceptions and attitudes (Snyder, 1986); (2) Career goals, organizational reward systems and technical updating in engineers (Steiner, 1986); (3) Work patterns in the professional life-cycle (Raelin, 1985).

4. **Decision Science**: (1) A performance analysis of parametric and nonparametric discriminant approaches to business decision making (Mahmood, 1987); (2) Decision rules for increasing the rate of successfully classified respondents (Koslowsky, Locke, 1986); (3) Relationship between job attitudes and the decision to retire (Schmitt and McCune, 1981); (4) Agricultural land use (Fotheringham and Reeds, 1979).

5. Employee Selection, Evaluation: (1) The salesman selection process (Perreault, 1977); (2) Determinants of faculty rank (Hoffman, 1977); (3) Employee selection (Welker, 1974) (Higgins, 1970).

6. **Government**: (1) Classification of nations as developed and less developed by socioeconomic data (Dellaportas, 1983); (2) Evaluation of the success of the Hungarian economic reform an analysis using international-trade data (Murrell, 1981); (3) Response time and its significance in medical emergencies (Mayer, 1980); (4) Evaluation of a state-wide system for identification of educationally handicapped children (Petersen and Hart, 1978); (5) City goverment structure (Dye and Macmanus, 1976). 7. Hotel and Restaurant Administration: (1) Evaluation of the market position: mapping guests' perceptions of hotel operations (Lewis, 1986).

8. Market Segmentation, Performance: (1) The assessment of company performance using a statistical model (Taffler, 1983); (2) Marketing of legal services (Darden and others, 1981); (3) Toward a theory of segmentation by objectives in social marketing (Fine, 1980); (4) Market performance of large commercial banks and bank holding companies (Simposn and Kohers, 1979); (5) Market segmentation (Johnson, 1971)(Lease and others, 1976).

9. Consumers Characteristics, Identification, And Loyalty: (1) Reliance on life insurance agents: a demographic and psychographic analysis of consumers (Burnett and Palmer, 1983); (2) Municipal bond ratings (Stock and Robertson, 1981); (3) Bank credit card user characteristics (Martell and Fitts, 1980); (4) Perceptual mapping of consumer products and television shows (Stanton and Lowenhar, 1977); (5) Locating customers in a segmented market (Levine, 1975); (6) Industrial source loyalty (Wind, 1970); (7) The relations between consumers' attitudes, behavior and intentions (Perry, 1969); (8) Freight traffic of competing transportation modes (Miklius, 1969); (9) Potential air freight users (McKinnell, 1968).

10. Products, Service Selection: (1) Social character and the new automobile industry (Mccrohan and Finkelman, 1981); (2) Sales

forecast uncertainty in new product situations (More and Little, 1980); (3) Different magazines reading between working wives and nonworking wives (Louglas, 1977); (4) Store selection by female shoppers using Age and education as predictors (Bellenger and others, 1976-1977); (5) New product distribution and supermarket buyer decisions (Montgomery, 1975); (6) Effective new product decisions for super markets (Doyle and Weinberg, 1973).

11. Financial Risk Evaluation: (1) An investigation of the major influences of residential liquidity: a multivariate approach (Moore, 1987); (2) Logit versus discriminant analysis: a specification test and application to corporate bankruptcies (Lo, 1986); (3) The demolition of downtown low-income residential buildings: a discriminant analysis (Bell, Kelso, 1986); (4) Predicting dividend changes (Kolb, 1981); (5) Differences in risk preference between the public and private sectors (Burton, and Waldron, 1978); (6) financial failure: a re-examination (Moyer, 1977); (7) Financial early warning (Altman and Loris, 1976); (8) Early warning of changes in banks' financial condition (Korobow, 1975); (9) Bank charge-card holders by economic, demographic, and attitudinal characteristics (Awh and Waters, 1974); (10) Rating the financial condition of banks as a aid of bank supervision (Stuhr and Wicklen, 1974); (11) Small business failure using financial ratios as predictors (Edmister, 1972) (Deakin, 1972); (12) Implications for commercial loan evaluation (Altman, 1970); (13)Coorporate

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bankruptcy (Altman, 1968, 1970); (14) Altman's corporate bankruptcy model revisited: Can airline bankruptcy be predicted (Scaggs, Crawford, 1986).

12. Statistics: (1) Is statistical discrimination efficient? (Schwab, 1986) (The author adapts George Akerlof and Hayne Leland "Lemons" model to labor market); (2) Resolving certain difficulties and improving the classification power of linear programming discriminant analysis formulations (Freed, 1986); (3) Variable selection in heteroscedastic discriminant analysis (Fatti, Hawkins, 1986); (4) Discrimination with polychotomous predictor variables using orthogonal function (Butler, 1985); (5) Common principal components in k groups (Flury, 1984); (6) Linear Discriminant Analysis with misallocation in training samples (Chhikera, Mckeon, 1984); (7) Adaptive classification procedures (Rukhin, 1984).

<u>Comparison of LDA</u> <u>And Other Modeling Techniques</u>

Multivariate modeling techniques, in essence, transform raw data associated with a particular phenomenon into more abstract information. The unknown causes of a phenomenon are discovered by analyzing the relationship between the dependent and independent variables, which are utilized to describe or characterize the phenomenon. Once the relationship has been established, the newly observed data can be used to predict an evolving event. For example, once the degree of humidity has been established, it can be used to predict the possibility of rain. These techniques involve two basic methods. The first method is to separate respondents into different categories based on selected independent variables. The second method is to identify interdependencies among a number of selected independent variables. An example of the first method is the identification of new bacteria hybrids into current known species. An illustration of the second method is the categorization of new bacteria hybrids into different species without giving the definition of the category in advance. Cross-Tabulation, regression analysis, LDA, and automatic interaction detector (AID) are tools of the first method. Tools of the second type include cluster analysis, factor analysis, and conjoint analysis (Boyd, 1981). In the following sections, three popular multivariate analyses, regression analysis, factor analysis, and cluster analysis are compared with LDA.

<u>The Use of LDA, Regression Analysis, Factor Analysis, and</u> <u>Cluster Analysis</u>

According to Greenburg's report in 1977, the frequency of use of factor, cluster and LDA in marketing research is 23:18:14.¹⁰ From the low proportion of LDA applications in this comparison, it may be inferred that LDA was still a relatively new marketing research

¹⁰ The report did not provide information on the frequency of use of Regression Analysis.

technique as recently as 1977.

A study of the business periodical index published by H.W. Wilson Co. from 1958 to 1987¹¹ revealed that, among the four techniques, regression analysis and factor analysis have the longest application history in business research. Publications employing discriminant analysis and cluster analysis did not appear until 1967 and 1971, respectively. Since its appearance, however, discriminant analysis has become the most often applied technique other than regression analysis in the past decade. The frequency of application of each technique during this period is summarized by author in Table 1.

[&]quot; The index covers over three hundred business periodicals.

Period	Number of Publications			
-	Discriminant	Regression	Cluster	Factor
(Month/Year)	Analysis	Analysis	Analysis	Analysis
4/87-7/87	6	6	4	0
8/83-7/84	12	42	8	6
8/82-7/83	0	39	5	5
8/81-7/82	21	70	9	5
8/80-7/81	12	50	5	11
8/79-7/80 8/78-7/79 8/77-7/78	26 14 20	118 112 63 70	8 28 2	15 14 10
8/75-7/76 8/74-7/75 8/73-7/74	18 12 10	79 42 25 39	9 2 6 4	12 3 4 7
8/72-7/73 8/71-7/72 8/70-7/71	6 3 4	39 44 29 31	7 12 0	1 2 5
8/69-7/70	3	21	0	5
8/68-7/69	2	19		3
8/67-7/68	1	18		7
8/66-7/67	0	18	0	0
8/65-7/66	0	5	0	2
8/64-7/65	0	11	0	3
8/63-7/64	0	11	0	2
8/62-7/63	0	6	0	0
8/61-7/62	0	8	0	3
8/60-7/61	0	2	0	2
8/59-7/60	0	2	0	3
8/58-7/59	0	6	0	7
Total	175	916	86	137
Percentage	13.32%	69.71%	6.55%	10.42%

Table 1. Comparison of frequency of use of discriminant, regression, cluster, and factor analysis in business publications.

Comparison between LDA and Multiple Regression

In many ways, LDA is similar to conventional linear regression analysis. Both methods use a linear function to predict a dependent variable. However, LDA predicts the affiliations (i.e. membership of a variable in a particular group) at nominal scale, while regression analysis predicts individual values of the variable under investigation on a ratio or interval scale.¹² Churchill (1986, p737), Ghiselli, Campbell, and Zedeck (1981, p363), and Lansing and Morgan (1971, 300) explained the major difference between the two analyses as follows:

Discriminant analysis is similar to multiple-regression analysis in that it involves the investigation of a criterionvariable and predictor-variable relationship. Only now the criterion variable is a dichotomy or multichotomy, whereas with regression analysis it is interval scaled. (Churchill, 1986, p737)

Algebraically, discriminant function analysis is equivalent to regression analysis except that the criterion is dichotomous rather than continuous. Ghiselli (1981, p363)

¹² At this point, it is appropriate to explain three statistical terms: "nominal level," "interval level," and "ratio level." Any number assigned at the nominal level can only represent a class or category. The number so assigned is used to identify or represent the category but not used in calculation. We can assign "1" to represent any "Michigan vacationer" and "2" to represent any "non-Michigan vacationer." However, it is meaningless to say that "1" plus "2" equals "3," since "1" and "2" are just marks and "3" receives no meaning here. The number assigned at interval level can be compared or calculated by nonpartial units. People can be counted by the unit of one. However, 1.5 people is meaningless since people can only be counted as wholes. Numbers assigned at the ratio level can be compared or calculated as continuous or partial units. An example is the measurement of the length of a piece of wood as 10.33 inches.

In regression analysis, the independent variables are regarded as fixed, while the dependent variable is regarded as fixed in discriminant analysis. (Lansing and Morgan, 1971, p300)

The major difference between the two techniques is the criterion that guides each technique. In LDA, the criterion is group membership. The task is to predict the category. In regression analysis, there is no criterion and the task is to predict individual values on a continuous scale. In Ghiselli's words:

In discriminant function analysis, we are interested in a composite of variables that has maximum potential for distinguishing between members of groups ... the purpose is to maximize the differences among groups or to weight tests or predictors to maximally distinguish between established groups. (Ghiselli, 1981, p362)

Prediction from discriminant analysis is in terms of likelihood of group membership and is based on the between-group differences explained by the composite of variables. In contrast, multiple regression is concerned with the composite of predictors that yields the best explanation of variables in the continuous, univariate criterion.

The power of LDA over Regression Analysis lies in its capability of predicting membership (i.e. category) at a nominal level. For example, we may define people who visited Michigan before 1985 into two groups: "loyal visitors" who have revisited Michigan at least once and "non-loyal visitors" who have not returned to Michigan. This defines Michigan tourists in the terms used in relation to customer brand loyalty. In the same way that it is used to establish a customer's characteristics profile, LDA can function to distinguish one group of tourists from another. The categorization of people according to brand loyalty yields noncontinuous data. Thus, the prediction of brand loyalty membership is not possible with regression functions.

Comparison of LDA to Factor Analysis and Cluster Analysis

LDA, Factor, and Cluster Analyses all generate a grouping rule based on the data collected from the objects sampled. The difference is that LDA uses "independent variables to characterize respondents which fall into different categories defined by the dependent variable" while factor and cluster analyses "identify interdependencies among a number of variables" (Boyd, 1981). In other words, there is a categorized dependent variable used for prediction in LDA that the factor and cluster analyses don't employ.

Factor analysis can also be applied to identify differences among individuals. However, "when the concern is to identify group differences, or to classify individuals into groups, discriminant analysis is more appropriate" (Cooley, 1971). Hence, in order to classify tourists by their destinations (i.e. Michigan versus non-Michigan tourists) in this study, LDA is more appropriate.

Cluster analysis requires no prior classification of the sample, and is appropriate only when no division of the objects into categories is available. Its objective is to facilitate objective formation of a natural and useful grouping rule based on similarities inherent in the data. In Churchill's words, the key difference is to get rid of the concept of "criterion variable":

Factor analysis and cluster analysis are both methods of interdependence analysis in that no variable is singled out for special treatment as a criterion variable. (Churchill, 1986, p737)

In classifying Michigan tourists, if the grouping information or definition is given, LDA is the appropriate analysis. For example, one may want to investigate the behavior of tourists as it relates to their expenditures. If high and low spending groups are defined in advance based on existing spending information, LDA is appropriate for use in predicting which visitors fall into these two spending categories. On the other hand, if groups are simply formed on the basis of some characteristics or factors yet to be found in the visitors, then factor analysis or cluster analysis should be used since the variables used to set up categories are not known beforehand. The categories or clusters so obtained usually are given a name based on the characteristic found within each group.

In summary, LDA is not designed for seeking population groupings; it simply assumes that such groupings already exist. In cases where prior classification information is not available, factor or cluster analysis should be used as a grouping procedure. Since in this study of the Michigan tourism market, predicting Michigan and non-Michigan tourists is the central concern, LDA is the most appropriate technique for analysis.

The Mechanics of LDA

Discriminant analysis, like linear regression, is a method based on linear combinations of dependent and independent variables. Its main purpose is to distinguish the groups from one another on the basis of their score profiles. This is achieved by constructing a rule which will maximize group centroid separation (i.e. the differences between groups) and minimize within-group dispersion (i.e. the differences within the groups).

LDA assumes that new observations can be assigned to segments of the population on the basis of existing relationships between variables and other sample information. Thus, LDA can predict the membership of new subjects based on existing information.

In automobile marketing research, discriminant functions are estimated from a number of demographic or stratification variables. These variables include sex, age, ethnicity, social class, education, occupational status, and income. To estimate the buying potential of a new customer, data are analyzed using LDA and the customer is assigned to an appropriate model buyer group. For example, if income information is available from past customers of Cadillac and Vegas, the discriminant function for these two brand affiliations can be estimated from income data. To predict the brand that a new customer will choose, the income information from the new customers is fed into this function. First, LDA computes "discriminant scores." Based on these scores, new customers are assigned to one of the brand affiliation groups. This method allows an automobile company to conduct efficient promotion of certain brands by targeting highpotential customers.

Similarly, differences between Michigan and non-Michigan tourists can be identified. Suppose that the tendency of traveling in Michigan depends on the composite effects of each traveler's socioeconomic status. By applying LDA, the discriminant functions can be constructed from past data to discriminate Michigan travelers from non-Michigan travelers. Once the discrimination function has been determined, it can be used to predict the new subject's tendency of choosing Michigan as a trip destination.

In the study of tourism, variables such as occupation, education, marital status, and recreation vehicle (RV) ownership, can be used as discriminant variables. For example, if it is found that RV ownership has a positive impact on the propensity of traveling to Michigan, then LDA may be used to arrive at the conclusion that RV owners are more likely than non-RV owners to visit Michigan. Theoretically, information on current Michigan tourists allows LDA to predict future Michigan tourists.

The rules governing application of LDA are: (1) the variable to be predicted (dependent variable) must be nominally scaled, and (2) the predictors (independent variables) must be on a continuous, interval, or dichotomous scale. The LDA processes, according to Nunnally (1978), are: (1) to determine whether differences in score profiles for two or more groups are statistically significant; (2) to maximize the discrimination among groups by combining the variables in some manner; and (3) to establish rules for the placement of new individuals into one of the groups.

Given a set of independent variables, infinite linear equations can be constructed for characterizing the groups. The task for LDA is to find the best possible linear combination of variables to predict the groups or categories to which the cases under investigation belong. The combinations found then serve as a rule for indicating the appropriate categorization for cases whose group status is unknown. A linear discriminant equation can be stated as follows:

$$D = B_0 + B_1 X_1 + B_2 X_2 + ... + B_p X_p$$

Where X_i is the independent variable score (ex. trip distance, family income, gender, age, marital status, size of household, etc.); B_i is the coefficient estimated from the participant data (ex. Michigan or non-

Michigan trip data); and D is the discriminant score calculated from these coefficients and variables at the right side of the function. The equation is also called linear discriminant function (LDF).

Assuming that high performance salespeople and low performance salespeople are the two groups to consider, the best combination of X's and B's is the one that results in the greatest difference between the two groups. In other words, the task is to arrive at the most similar D scores for the salespeople in the highperformance group, and for the salespeople in the low performance group, while maximizing the difference between the D's of the two groups.

Groups are distinguishable if the discriminant scores of subjects of one group are substantially different from those of another group. Thus, the discriminating process is realized by choosing values of B such that the discrimination scores differ as much as possible between the groups. The distinction between the groups can then be measured by the ratio R.

R = <u>between-groups sum of squares</u> within-groups sum of squares

The discriminating process is most effective when R is maximum. Any other linear combination of the variables will have a smaller ratio. Once the B_i values of are determined, the D score (discriminant score) of each case to be predicted is estimated. Based on the calculated D score, the case is assigned to the group whose mean group discriminant score is closest to the one just calculated.

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CHAPTER III

METHODS

This study consists of several efforts. First, it identifies the unique characteristics of Michigan's tourism market and the factors that can be used to determine the propensity for tourists' choosing Michigan as a travel destination. Thus, a profile of Michigan's tourism market was produced. Secondly, on the basis of these results, it evaluates the effectiveness of LDA when using different travel information to identify Michigan's potential recreation tourists. The study, as a whole, is designed to provide information useful in planning tourism promotion in Michigan.

In this chapter, the procedures and methods used to conduct these efforts are delineated. Specifically, the scope and results of the data collection effort is described; variable selection and coding methods are explained; statistics used in the data analysis are presented; and problems with the LDA model are identified and resolved.

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Data Collection

This study centers on recreation-related trips of over 100 miles one-way or overnight recreation-related trips taken within the last 12 months at the time of interview (fiscal year of 1985). The travel information was gathered from families in the Areas of Dominant Influence¹³ (ADIs) of the Great Lakes region and the Census Metropolitan Areas/Census Areas (CMAs/CAs) within Ontario, Canada. States within the Great Lakes region include Illinois, Indiana, Michigan, Minnesota, Ohio, Western Pennsylvania, and Wisconsin.

The trip data used in this study were originally collected by a national market research firm, Moore & Associates Company for Ross Roy Inc. The sample households were randomly selected from the seven Great Lake States and the Canadian province of Ontario. Of the 5,000 households interviewed, 4,662 interviews were successful. The 4,662 households reported taking 9,003 trips which met the criteria established for the survey. The refusal rate was 6.76%.

The interviews were conducted via telephone. The questionnaire used in this study is shown in Appendix F. A screening process was used to filter out non-pleasure (e.g. business) tourists. Each respondent was asked to supply information on his/her most recent (last 12 months) trips over 100 miles (one way) or of overnight trips away from home. If at least one of the trips was primarily for

¹³ ADI is an area currently served by dominant advertising agencies.

pleasure, the interview was continued. If not, the interview was terminated and considered as failed (see questions 4 and 5a in Appendix E). The average length of each survey was twenty-five to thirty minutes. Since the screening process filtered out most nonpleasure trips in the data collected, they were under represented in the data base. This precludes use of the results for conclusions regarding the non-pleasure tourism market. However, it does not affect the validity of this study, since it focuses on pleasure trips and all pleasure-related trips were analyzed.

During the data coding, each county within the Great Lakes Region and Province of Ontario was assigned a code. Specific travel destinations reported by interviewees were converted into county codes. The event and activity information reported by the interviewees was also coded according to the standard categories as described in the questionnaire designed for this study (see question 13, 14, 34, and 35 in questionnaire, Appendix E).

Data Preparation

The master database contains information on 9,003 trips. The data are coded and stored in an "OSIRIS" database on the Wayne State University Computer. The database for this study was loaded on computer tape and sent to Michigan State University for the CDC750 computer to use. The database was then downloaded through a 2400 baud modem to a Columbia microcomputer system which was equipped with a 80286 microprocessor which ran at 12 MHz (Mega Hertz), two 51-MB (Mega Byte) hard disks, a 60-MB tape backup, a 8 MHz math coprocessor, and 6.64 MB random access memory. The SPSS/PC+ statistical program package was used on this microcomputer system for data analyses. This computer system provides computing speed over ten times faster than an IBM PC and adequate storage for efficient computing for over 9,000 pieces of trip information. It is slower, and smaller in terms of data processing speed and data storage capacity than the mainframe. Also, it has less precision. The advantage of using the microcomputer system was convenience and low cost of operation since the system was owned by the author.

From the master database, only recreation-related tourist information was selected for analyses. Strictly business tourists were not included. Persons traveling for the purposes of business and pleasure (i.e., combined pleasure and business trips), visiting relatives or friends, shopping, outdoor recreation, sightseeing, touring, special attraction, and others¹⁴ formed the research database.

From this database, 680 business trips were deleted, leaving 8,323 pleasure trips, or 92.45% of the total. Both continuous and

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¹⁴ The category of others did not include any business-only trips and convention-only trips.

nominal data were used for the LDA modeling. Unanswered questions were coded as system-missing data. Binary type data were coded as either 0 or 1. Binary variables included sex, marital status, recreational vehicle ownership, weekend trip, group trip, and information sources used (i.e. trip motivated by information seen or heard via television, radio, newspapers, magazines, billboards, travel agents, friends, relatives, autoclubs, and toll-free phone numbers). The details of the data transformation process are presented in Appendix D.

Research Variable Selection

The selection of the action variables is sometimes a simple reflection of the managerial alternatives at hand or the changes under consideration. It may, however, require a high level of creative imagination. Experimentation is then likely to be helpful and is often absolutely necessary. (Hough, 1970, p322)

The relationship between influential variables and tourism behavior is potentially highly diverse. Because of this, using variables that influence tourism behavior to construct a model for predicting that behavior involves imagination as well as scientific experimentation. In constructing models for this study, variables were selected for which information was likely to be available and applicable in the future. Because most variables selected in this study, such as travelers' age, income, education, trip duration, and mileage are available from census records, the approach can be easily duplicated in the future. Other variables, such as travel distance, whether traveling on a holiday, image of destination, available travel information, and travel season, could be related to the traveling activities. The travel data available for this study are categorized into five types: trip pattern variables, socioeconomic variables, travel information variables, trip attribute variables, and Michigan image variables. There are explained below.

1. Trip pattern variables: These variables are those which provide information on trip distance (one way mileage), duration (number of nights away from home), spending (by item), size (by number of persons), residency (Michigan or non-Michigan), season (warm or cold), weekend trip (travel on weekend or not), and group trip (travel in a group or not). Continuous data variables include: trip mileage, duration, spending, and party size. Nominal data variables are residency, season, group trip, and weekend trip. Assuming trip pattern is related to the choice of trip destination, these variables can be used to predict the propensity of tourists to choose Michigan as a destination.

2. Socioeconomic variables: These variables describe travelers' characteristics including: sex, age, race, marital status, household size, occupation, education level, and total family income. Age and household size are continuous variables and the rest of these

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variables are categorical (nominal) variables. Assuming socioeconomic characteristics affect tourists' destination selection, these variable may be useful for predicting the propensity of choosing Michigan as a tourist destination.

3. Travel information variables: These variables provide information on whether the traveler obtained travel information from television, radio, newspapers, magazines, billboards, state toll-free telephone numbers, travel agents, friends or relatives, or state chambers of commerce. These variables provide binary data. A "yes" answer is coded as 1, a "no" answer is coded as 0. Assuming that available travel information can affect the choice of a trip destination, these variables may be useful for predicting the propensity of choosing Michigan as a tourist destination.

4. Trip attribute variables: These variables provide information on how important the following items are to travelers when selecting a destination: scenery quality, restaurant services, environmental conditions (clear air, good place to stay), hospitality, accessibility, price, and pleasure (good night life, high-prestige vacations, summer fun, and winter fun). These items are measured on a scale ranging from 1 to 5. One means "not at all important" and five means "one of the most important." Assuming these concerns affect the trip destination choice, these variables may be useful in predicting the propensity for choosing Michigan as a tourist destination.
5. Michigan image variables: These variables are the same as attribute variables except that they pertain specifically to images of Michigan from the perspectives of tourists. The interviewees were asked how much they agreed or disagreed that Michigan is known for various specified items. The measurements ranged from 1 to 10. One means "strongly disagree" and ten "strongly agree." Assuming that images of Michigan affect tourists' choice of Michigan as a trip destination, these variables are potentially useful in predicting the propensity for traveling in Michigan.

Research Design

In order to study the unique characteristics of Michigan's tourists and to predict their choice of Michigan as a traveling destination, the tourists in the database are differentiated into Michigan and non-Michigan tourists. A variable called Michigan traveling represents these two groups. A value of 1 was assigned to Michigan travelers, and a value of 0 was assigned to non-Michigan travelers. The analytical predictive research was designed to explore: (1) the differences between Michigan travelers and non-Michigan travelers, (2) which variables are related to the choice of Michigan as a tourist destination, and (3) how effectively the various existing travel information variables can be used to predict the propensity for traveling in Michigan. The research then includes the following

procedures: (1) the profile and the comparison of Michigan and non-Michigan tourism markets, (2) significance tests of differences between the Michigan and non-Michigan markets, (3) tests of the relationships between the investigated variables and traveling in Michigan, (4) the modeling of Linear Discrimination Function (LDF), and (5) the prediction of Michigan tourists.

The statistics used in this study include descriptive statistics (frequency counts, percentages, means), crosstabulations, the Pearson Chi-square test, pooled within-group correlations, Box's M test, the Hotelling T-test, Lambda, canonical discriminant function coefficients, and the LDA model. The univariate statistics are used to analyze and test the differences between Michigan and non-Michigan tourists. The multivariate LDA modeling technique is used to distinguish Michigan tourists from non-Michigan tourists. Along with these statistics, a multi-stage research design is developed to accomplish the tasks of describing, testing, and modeling the travel data. The design and efforts in each stage are described as follows.

Profile of Regional Traveling Patterns

First the patterns of trip distribution in the study region are profiled in order to draw pictures of tourism market structures. A crosstabulation design is required to show the trip origin-destination, trip direction, and the trip volume that each state generated and received. The trip pattern and market structure studies allow the evaluation of the competition that Michigan is facing in the market areas.

<u>Profile of The Tourism Market: Unique Characteristics with</u> <u>Descriptive Statistics</u>

In the second stage of the study, an attempt is made to identify the unique characteristics of Michigan's tourism markets. This involves comparison of the profiles of Michigan, non-Michigan, and regional tourism markets. Descriptive statistics are used to summarize tourist characteristics and trip pattern profiles. The traveler characteristic profile provides travelers' socioeconomic characteristics such as age, gender, education, marital status, household size, occupation, education level, total family income, and the state of trip origin. The trip pattern profile includes trip distance (one way mileage), trip duration (number of nights away from home), trip spending (by item), number of people in the travelling party, weekend tourists, group tourists, Michigan residency, season of travel, and trip origin and destination.

Descriptive statistics used in this study are frequency count, percentage, and mean. They are used to measure the variables under investigation and permit comparison of the average market characteristics of Michigan and non-Michigan recreational tourists.

Test Variable Independence with Chi-square Design

Nominal variables such as travelers' education level, family income level, gender, etc., are thought to be related to the choice of traveling in Michigan. Pearson Chi-square is used to test the hypothesis that the choice of Michigan as a trip destination is independent of these variables. In some cases the Chi-square design permits the testing of the positive or negative impact direction of influential variables on tourists' choice of Michigan as a trip destination.

<u>Test of Differences between Michigan And Non-Michigan</u> <u>Tourism Markets with Hotelling T-test</u>

The study examines whether the differences between Michigan and non-Michigan tourists are significant. The Hotelling t-test is used to test the hypothesis that no differences exist between Michigan and non-Michigan tourists in the study variables. The t-test calculates the probability that differences in means between the two groups may occur, and reveals the unique characteristics of Michigan's tourism market.

Developing The Prediction Functions with LDA

In the LDA modeling stage, the effectiveness of using LDA with several types of existing travel information to predict Michigan tourists is investigated. This process consists of three steps: (1) selecting cases for analysis, (2) selecting variables for the discriminating model, and (3) estimating linear discriminant functions (LDFs).

The task of this stage is to develop the functions that predict Michigan tourists¹⁵. Imbalance in the group sizes, however, is a problem in the attempt to build an LDA model that effectively and correctly predicts Michigan tourists. When the size of the groups to be predicted are very different, it is easy to obtain a high overall correct prediction rate (CPR). The most likely result is a very high CPR for the larger group and a very low CPR for the smaller group. For example, the number of survivors of the disease AIDS is very small (assume the number is 10) compared to the number of AIDS patients who have died (assume the number is 10,000). Since the size difference is so great, LDA simply gives the larger group a greater weight. Thus, LDA can easily indicate a very high total CPR even though the CPR is actually very low for the survivor group. Despite the high overall CPR obtained, the discriminant function would be useless in this case due to the low effectiveness of the function in predicting AIDS survivors.

In the database, the size of the Michigan trips group and the non-Michigan trips group are 790 and 7533 respectively. To eliminate the problem of imbalanced group size, 790 non-Michigan tourists were randomly selected for analysis while all 790 Michigan tourists were included. A prior probability rate of 0.5 was given for both groups

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¹⁵ The variable used to predict Michigan tourists is MICHIGAN TRIP.

which insured an equal probability of choosing Michigan or not choosing Michigan as a tourist destination. This design may have somewhat lowered the CPR for non-Michigan tourists and overall tourists, but the chance of obtaining a useful discriminating function for correct prediction of Michigan tourists was increased.

Single variable LDA is used to select the high predictive power variables which yield at least a 75% CPR for the propensity of traveling in Michigan. These variables are then used to estimate LDFs using the multivariate LDA process. These variables and five other types of travel information variables¹⁶ are used to investigate the component CPRs in LDA. A computer program called SPSS/PC+, which contains LDA procedures developed by the Statistical Package for Social Sciences Inc., is used.

The strength of association between the variables used in LDA is also examined. To determine the optimal LDFs, the strength and nature of the dependency of the variables under investigation must be assessed. Statistically, high interdependencies among predictors can cause meaningless coefficients. For example, consider two highly correlated variables such as mileage and trip spending. The total contribution to the LDA prediction is, in fact, shared by these two

¹⁶ The five types of variable sets used are a: trip pattern variable set, socioeconomic variable set, travel information variable set, trip attribute variable set, and Michigan impression variable set. More details on this is presented in the section on research variable selection elsewhere in this chapter.

variables, and thus the coefficients estimated for these variables are meaningless. Highly correlated variables should not be used as predictors in LDF (Norusis, 1986). Therefore, it is necessary to examine correlations between variables and eliminate any that are highly correlated as copredictors in the discriminant function. To reduce the chance of obtaining meaningless LDFs, pooled withingroups correlation matrices are used: (1) to assess the contribution of individual variables to the discriminant functions; and (2) to check the interdependencies among the variables used in LDFs for predicting Michigan tourists. In LDA, the LDFs are estimated to derive a pooled within-group variance value of 1.

In this study, Box's M statistic is used to test the equality of the group covariance matrices. This test is necessary because LDA requires that the covariance matrices for the two groups (i.e. Michigan and non-Michigan trips in this study) in the analysis must be equal to obtain the optimum classification function.

Wilk's lamda (U statistic)¹⁷ is used to evaluate the effectiveness of LDFs during the estimation procedure. The coefficients of LDF are

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¹⁷ Wilk's lamda is the ratio of the within-groups sum of squares to the total sum of squares. The values of lamda range from 0 to 1. A lamda value of 1 indicates an extremely high variability within the group observed, and a lamda of 0 indicates an extremely low variability within the group observed. The lamda value indicates the total variability attributable to the differences between group means. The larger the lambda value is, the larger the tendency that the group means are equal, and the lower the lambda value is, the lower the tendency that the group means are equal. In other words, "It is the proportion of the total variance in the discriminant scores not explained by differences among groups" (Norusis, 1986).

chosen so that the ratio of the between-groups sum of squares to the within-groups sum of squares is as large as possible. To test whether a "good" discriminant function is obtained, Wilk's lamda is calculated. In LDA, Wilk's lambda is transformed to a variable with an approximate distribution of Chi-square, and the null hypothesis, which assumes the means of the two trip groups are equal, can be tested. Small lamda values are associated with functions that have much variability between groups and little variability within groups. Thus, a good discriminate function has much between-groups variability and little within-groups variability.

The estimated LDFs are used to predict Michigan tourists. The changes in travel information CPRs that result from using different types of travel information as predictor are observed. The effectiveness of using selected functions in predicting Michigan tourists is determined by the CPRs. The results are expected to aid in the selection of LDA predictors to be used in predicting Michigan's overall tourism market.

The procedure of classifying travelers is based on the discriminant scores calculated from the LDFs and group centroids (group means). If the discriminant score of a case is closer to the centroid of the Michigan trip group than it is to the centroid of the non-Michigan trip group, the traveler is classified into the Michigan traveler group.

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In the following two chapters, the major findings regarding the unique characteristics of the Michigan tourist market and the effectiveness of using different types of travel information in the LDA model to predict Michigan tourists are presented and discussed. Suggestions are given in terms of how these findings can be useful in identifying Michigan's potential tourist market. The potential LDA applications in tourism marketing and the implications for further study of tourism market allocations are given in the final chapter.

CHAPTER IV

ANALYSES RESULTS AND FINDINGS

The following are from analyses of a data base of 8,323 recreational trips taken between 1983 and 1985. Trips taken in 1983 account for only 0.7% of the total trips. The trips taken in 1984 and 1985 represent 56.9% and 42.4% of the total trips, respectively (see Table 2).

Year	No. of Trips	Percentage
1983	56	0.7
1984	731	56.9
1985	3523	42.4
Total	4310	100.0
Non-response	13	

Table 2. The yearly distribution of Trips data.

Database: The Great Lakes Travel Monitor Study (1983 - 1985), Travel Bureau, Michigan Department of Commerce.

Five types of data analyses were performed. They are market profiles for the Michigan and non-Michigan travelers, exploration of relationships between variables, significance tests on observed differences, estimation of a Linear Discriminant Analysis (LDA) models to predict Michigan tourists and effectiveness evaluations of the LDA model's performance. Results from each of the five analyses are presented below in the order just noted.

The Regional Travel Market Profile

In the following market profile, a trip origin state is defined as the market state, and a trip destination state is defined as the vendor state. It is found that the tourists interviewed in this study are from 13 market states¹⁸, and the destinations include 52 vendor states. The trip percentage distribution by destination and origin is shown in Table 3, and Table 4, respectively. The total number of trips generated from each market state is listed at the bottom of Table 3. Read down the column in this table to see how trips originating in one state are distributed across destinations. For example, among 1290 Michigan-origin trips (see bottom line in Table 3), 31.6% included Michigan as a destination, and 6.0% were destinated for Ontario (see first and second lines in Table 3). The source of each destination's travelers is shown in Table 4. Read across in this table. The total number of trips each vendor state received is listed in the last column. For example, Michigan received 790 of the total trips included in this data base (see last volume in Table 4); reading across in the first row note that 52.0% were trips originating in Michigan, and 2.9% were trips originating in Ontario.

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¹⁶ All or part of these market states were included in the sample. For example, New York, and Pennsylvania were sampled at only the areas which are the closest to Michigan.

Table	3. Tota	l and e	distribut	tion (in j	percent)	by d	estinat	ion of	trip	s gei	nerat	ed by	each r	narke	:t (o	rigin)	state
in the	Great	Lakes	Travel	Monitor	Study	arca.	Read	down	to	see	how	trips	origina	ting	in a	a stat	e are
distrib	uted a	mong d	lestinati	ons.													

DESTINATION						OF	agin						
i V	Michi -gan	Ontario -rio	lowa	Minne -sota	Mis- souri	Illi- nois	Indi- ana	Ohio	Wis- consin	Ken- tucky	W.Vir ginia	New York	Pennsy- Ivania
(by %)													
Michigan	31.6	3.5	2.0	1.8	0.6	8.3	9.8	6.1	6.8	1.4	2.5	2.5	1.6
Ontario	6.0	53.8	0.5	3.2	1.0	1.5	0.7	3.8	1.5	0.4	0.6	10.6	4.4
lowa	0.5	0.0	17.3	1.6	0.6	1.9	0.7	0.5	1.2	0.0	0.0	0.4	0.2
Minnesota	0.9	0.0	12.9	28.1	1.0	1.7	1.5	0.4	7.7	0.7	0.6	0.0	0.4
Missouri	0.7	0.3	6.9	0.7	23.1	6.2	3.7	0.6	0.6	3.6	0.6	1.7	0.4
Illinois	3.8	0.3	7.4	1.8	7.4	8.9	6.6	2.7	8.2	3.2	0.6	3.8	0.4
Indiana	2.6	0.2	1.0	1.6	1.3	4.1	15.5	3.8	1.3	4.3	0.0	0.0	1.8
Ohio	6.4	1.4	2.0	1.4	1.0	2.3	7.3	17.0	0.6	9.7	13.2	3.6	9.2
Wisconsin	1.5	0.0	10.9	11.8	0.6	11.3	3.0	0.8	33.8	0.7	0.0	0.4	0.8
Kentucky	1.8	0.0	0.5	1.2	2.2	1.3	4.5	4.0	1.5	16.6	2.5	0.4	0.6
west virginia	0.2	0.0	0.0	0.2	0.3	0.2	0.6	3.0	0.3	0.7	23.3	0.4	2.6
New York	3.3	10.3	2.5	2.1	2.9	2.3	1.5	4.1	0.9	2.2	0.8	25.8	6.2
Pennsylvania	1.5	0.9	1.0	0.7	0.6	1.5	2.0	5.3	0.6	2.2	1.9	5.5	20.2
Mississippi	0.4	0.0	1.0	0.0	1.6	1.4	0.1	0.3	0.1	0.4	0.0	0.0	0.0
Tennessee	2.5	0.5	0.5	1.2	3.5	2.9	5.2	3.3	1.2	11.9	3.1	0.4	0.8
Maryland	0.3	0.0	0.0	0.0	0.6	0.4	0.1	0.8	0.4	0.7	3.1	0.4	4.4
South Carolina	1.2	1.1	0.5	0.0	0.3	1.1	1.5	2.8	0.0	4.0	9.4	2.5	3.6
Virginia	0.9	0.2	0.0	0.2	1.3	0.6	0.7	1.6	0.1	1.8	4.4	5.5	3.8
North Dakota	0.1	0.0	0.5	1.6	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.2
South Dakota	0.0	0.0	1.5	3.9	0.0	0.3	0.1	0.3	0.7	0.0	0.0	0.0	0.0
Alaska	0.2	0.0	0.0	1.2	0.0	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Cantornia	4.2	1.4	3.0	7.0	0.4	5.6	2.4	3.1	4.3	1.8	1.3	2.1	3.4
Oregion	0.9	0.8	1.0	2.1	2.2	1.0	0.0	0.7	0.0	1.1	0.0	0.0	0.0
Washington	0.1	0.0	0.0	0.0	1.0	11	0.3	0.1	0.1	0.0	0.0	0.0	0.0
Arizona	0.5	0.3	25	3.2	1.0	20	14	0.5	16	0.4	0.0	13	0.0
Colorado	0.9	0.6	3.5	3.0	2.6	2.6	1.1	1.2	1.8	1.1	0.0	1.3	1.0
Idaho	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0
Montana	0.2	0.0	1.0	2.1	0.0	0.3	0.3	0.0	0.1	0.0	0.0	0.0	0.2
Nevada	2.0	1.7	1.0	3.0	1.6	2.8	1.3	1.6	3.1	0.7	0.0	1.7	2.4
New Mexico	0.2	0.2	0.0	0.0	0.6	0.4	0.0	0.3	0.3	0.0	0.0	0.0	0.0
Utah	0.1	0.0	0.0	0.2	0.0	0.2	0.0	0.3	0.3	0.4	0.0	0.0	0.0
Wyoming	0.2	0.0	0.5	0.7	0.6	0.5	0.1	0.3	0.3	0.0	0.0	0.0	0.6
Kansas	0.4	0.2	0.5	0.5	1.9	0.8	0.3	0.1	0.6	0.0	0.0	0.4	0.0
Nebraska	0.3	0.2	2.0	1.2	1.0	0.4	0.6	0.1	0.1	0.4	0.0	0.0	0.2
Arkansas	0.4	0.0	2.0	0.2	5.4	0.2	0.7	0.8	0.9	0.4	0.0	0.0	0.0
Louisiana	1.0	0.2	0.5	0.0	3.6	1.4	1.4	0.4	0.4	1.4	0.6	0.4	0.6
Oklahoma	0.3	0.0	0.5	0.5	1.6	1.1	0.3	0.1	0.3	0.0	0.0	0.0	0.0
Техав	3.3	0.5	2.0	2.8	4.8	3.5	2.0	2.6	2.4	1.4	1.9	4.2	3.0
Alabama	0.8	0.2	0.0	0.2	0.6	0.4	0.8	0.8	0.1	1.8	0.6	0.8	0.0
Delaware	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.6	0.0	1.0
D. OFC.	0.9	0.0	1.0	0.5	0.3	0.8	0.7	1.2	1.0	2.5	1.3	0.4	1.4
rionda	11.4	17.5	4.0	4.0	9.0	10.9	13.0	14.7	9.0	15.9	16.9	9.7	9.4
North Carolina	1.0	0.5	1.5	0.5	1.0	1.1	1.5	1.9	0.4	1.4	0.0	1.3	0.0
North Carolina North Lorgev	1 2	0.5	0.5	0.2	1.0	0.7	1.0	1.0	0.3	0.2	1.9	2.5	5.0
Connecticut	0.5	0.0	1.0	0.0	0.5	0.5	0.1	0.4	0.3	0.4	0.0	17	0.2
Maine	0.5	0.0	0.5	0.0	0.0	0.3	0.1	0.4	0.5	0.4	13	17	0.0
Massachusetts	0.0	1.7	1.0	0.9	0.0	1.1	0.6	1.0	0.7	0.0	0.0	1.7	1.4
New Hampshire	0.0	0.2	0.0	0.7	0.3	0.2	0.0	0.3	0.1	0.0	0.0	0.0	0.0
Rhode Island	0.2	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.2
Vermont	0.0	0.3	0.0	0.0	0.3	0.1	0.1	0.1	0.3	0.4	0.0	1.7	0.4
No of Trips by Origin	1290	663	202	434	312	1333	711	1290	674	277	159	236	500
Total Trips Count	ted a	8081											

Database: The Great Lakes Travel Monitor Study (1983 - 1985). Travel Bureau, Michigan Department of Commerce. Specific Analysis performed by author.

DESTINATIO)N							ORI	GIN					-
I I V	Michi -gan	Onta -rio	lowa	Minne -sota	Mis- souri	Illi- nois	Indi- ana	Ohio	Wis- consin	Ken- tucky	W.Vir- ginia	New York	Pennsy- Ivania	No. of Trips by Desti- nation
(by %)														
Michigan	52.0	2.9	0.5	1.0	0.3	14.2	8.9	11.2	5.9	0.5	0.5	0.8	3 1.0	790
Ontario	13.2	60.3	0.2	2.4	0.5	3.4	0.8	9.3	1.7	0.2	0.2	4.2	2 3.7	592
lowa	6.1	0.0	35.7	7.1	2.0	25.5	5.1	7.1	8.2	0.0	0.0	1.0) 1.0	98 (
Minnesota	0.9	0.0	10.0	46.7	1.1	8.8	4.2	2.3	19.9	0.8	0.4	0.0	0.8	261
Missouri	0.7	0.0	5.8	1.2	29.9	34.4	10.8	3.7	1.7	4.1	0.4	1.3	7 0.8	241
Illínois	13.0	0.5	4.0	2.1	6.1	31.2	12.4	10.3	14.6	2.4	0.3	2.4	0.5	378
Indiana	11.4	0.3	0.7	2.3	1.3	18.5	36.9	18.5	3.0	4.0	0.0	0.0	3.0	298
Unio Wassanda	15.2	1.7	0.7	1.1	0.6	5.7	9.6	45.3	0.7	5.0	3.9	1.7	6.5	541
Wisconsin	3.7	0.0	4.3	10.0	0.4	29.5	4.1 1	2.1	44.5	0.4	0.0	0.2	2 0.8	512
W Windinia	11.1	0.0	0.5	2.4	3.4	0.2	10.0	27.0	4.0	22.2	22.2	0.5	3 1.4	207
New York	12.7	20.1	1.5	0.5	0.9	2.1 8.8	3.0	17 4	1.0	1.0	0.3	18.0	, 01	930 970
Pennsylvani	a 7.0	2.2	0.7	1.1	0.7	7.4	5.2	28.5	1.5	2.2	1.1	4.6	3 37.4	270
Mississippi	13.2	0.0	5.3	0.0	13.2	50.0	2.6	10.5	2.6	2.6	0.0	0.0) 0.0	38
Tennessee	14.0	1.3	0.4	2.2	4.8	16.7	16.2	21.1	3.5	14.5	2.2	0.4	1.8	228
Maryland	7.0	0.0	0.0	0.0	3.5	8.8	1.8	21.1	5.3	3.5	8.8	1.8	38.6	57
S.Carolina	10.4	4.9	1.4	0.0	0.7	10.4	9.0	27.8	0.0	7.6	10.4	4.2	2 12.5	144
Virginia	11.9	1.0	0.0	1.0	4.0	7.9	5.0	22.8	1.0	5.0	6.9	12.9) 18.8	3 101
N.Dakota	6.7	0.0	6.7	46.7	0.0	6.7	0.0	6.7	6.7	0.0	0.0	0.0) 6.7	/ 15
S.Dakota	0.0	0.0	8.3	47.2	0.0	11.1	2.8	11.1	13.9	0.0	0.0	0.0) 0.0	36
Alaska	21.4	0.0	0.0	35.7	14.3	14.3	0.0	7.1	7.1	0.0	0.0	0.0	0.0) 14
California	17.0	2.8	1.9	10.4	6.3	23.7	5.4	13.9	9.1	1.6	0.6	1.6	5 5.4	317
Hawali	15.0	6.3	2.5	11.3	8.8	22.5	7.5	12.5	5.0	3.6	1.3	0.0) 3.8	80
Oregon	11.1	0.0	0.0	0.0	0.0	33.3	33.3	11.1	11.1	0.0	0.0	0.0) 0.0	9
Washington	12.0	6.0	2.0	6.0	6.0	23.0	8.0	8.0	10.0	2.0	2.0	0.0) 6.0	50
Arizona	8.9	2.0	5.0	13.9	3.0	25.7	9.9	10.9	10.9	1.0	0.0	3.0) 4.0	101
Colorado	8.7	3.2	5.6	10.3	6.3	27.0	6.3	14.3	9.5	2.4	0.0	2.4	4.0	126
Idaho	0.0	25.0	0.0	0.0	0.0	0.0	25.0	25.0	25.0	0.0	0.0	0.0	0.0	4
Montana	9.1	0.0	9.	40.9	0.0	18.2	9.1	0.0	4.5	0.0	0.0	0.0) 4.5	22
Nevada	15.8	6.7	1.2	7.9	3.0	22.4	5.5	13.9	12.7	1.2	0.0	2.9	₽ 7.3 > 0.0	100
New Mexico	10.7	5.6	0.0	0.0	11.1	27.8	0.0	27.8	11.1	0.0	0.0	0.0		10 10
Utan	10.0	0.0	0.0	0.0	0.0	25.0	0.0	33.3	10.7	0.0	0.0	0.0		12
Wyonning	12.0	0.0	4.0	12.0	171	24.0	12.U 5.7	57	114	0.0	0.0	20.0	3 12.0 0 0 0	20
Nebraeka	13.3	2.5	133	16.7	10.0	167	13.3	3.3	33	33	0.0	0.0) 33	30
Arkansas	10.0	0.0	65	16	274	19.4	8.1	17.7	97	16	0.0	0.0) 0.0) 0.0	62
Louisiana	17.8	1 4	14	0.0	16.4	24 7	137	8.2	4 1	5.5	14	14	i di	73
Oklahoma	12.5	0.0	3.1	6.3	15.6	46.9	6.3	3.1	6.3	0.0	0.0	0.0	o .c	32
Teras	18.9	1.4	1.8	5.4	6.8	20.7	6.3	16.7	7.2	1.8	1.4	4.5	6.8	222
Alabama	20.4	2.0	0.0	2.0	4.1	10.2	12.2	24.5	2.0	10.2	2.0	4.1	0.0	49
Delaware	10.0	0.0	0.0	0.0	0.0	0.0	10.0	20.0	0.0	0.0	10.0	0.0	50.0	10
D. of C.	15.1	0.0	2.7	2.7	1.4	15.1	6.8	23.3	9.6	9.6	2.7	1.4	9.6	73
Florida	14.9	11.7	0.9	2.1	3.0	14.7	9.9	21.5	6.6	4.5	3.0	2.3	4.8	988
Georgia	14.0	2.2	3.2	2.2	4.3	16.1	11.8	30.1	3.2	4.3	1.1	3.2	2 4.3	93
N.Carolina	8.5	2.5	0.8	0.8	2.5	7.6	9.3	33.1	1.7	7.6	5.1	3.4	16.1	118
New Jersey	14.6	3.9	1.0	0.0	1.0	11.7	6.8	25.2	1.9	1.0	1.9	5.8	3 25.2	103
Connecticut	20.6	0.0	5.9	0.0	0.0	20.6	2.9	17.6	5.9	2.9	0.0	11.6	3 11.8	34
Maine	18.9	5.4	2.7	2.7	5.4	5.4	5.4	24.3	8.1	0.0	5.4	10.8	3 5.4	37
Massachu.	11.0	15.1	2.7	5.5	0.0	19.2	5.5	19.2	6.8	0.0	0.0	5.5	5 9.6	73
N.Hampshir	e 0.0	8.3	0.0	25.0	8.3	16.7	0.0	33.3	8.3	0.0	0.0	0.0	0.0) 12
Risland	42.9	0.0	0.0	0.0	14.3	0.0	0.0	0.0	0.0	0.0	0.0	28.6	5 14.3	7
Vermont	0.0	12.5	0.0	0.0	6.3	6.3	6.3	12.5	12.5	6.3	0.0	25.0) 12.5	16

Table 4. Total and distribution (in percent) by origin of each vendor (destination) state's travelers. Read across to see from where each destination receives its travelers.

Database: The Great Lakes Travel Monitor Study (1983 - 1985). Travel Bureau, Michigan Department of Commerce. Specific Analysis performed by author.

As producers of trips, Illinois, Michigan, and Ohio represent the first, second, and third largest tourism markets respectively, accounting for nearly 50% of the total tourists¹⁹. Michigan has a 15.5% share of the total market. Among the tourists originating in Michigan, 31.6% remain in Michigan and 68.4% visit other states.

On the receiving side, Florida, Michigan and Ontario represent the first, second, and third largest tourism trip receiving states. These three vendor states share nearly 30% of total market in The Great Lake region, accounting for 11.9%, 9.5%, and 8% of the market respectively.

The seasons have been found to affect traveling patterns and market shares. The shift in the traveling market patterns caused by the season change is shown in Table 5 to Table 6. Table 5 shows that the market shifts between Michigan and Florida when the season changes. Michigan is the number one recreation tourism vendor state with 10.5% of market share during the warm²⁰ season and is the number two vendor state with 7.4% of market share during the cold season. Florida is the number one cold-season tourism vendor state with 20.6% of the market share and is the number three warmseason tourism vendor state with 8% of market share.

¹⁹ Note, however, that sampling was confined to the ADIs (the Areas of Dominant Influence) and the CMAs/CAs (Census Metropolitan Areas/Census Areas) within the states in the study area. Thus the sampling rate for some states is less than others.

²⁰ In this study, warm season refers to the period from May to October, and cold season includes the months from October to April.

Destination State	Warm Seaso Trip	on	Cold Sea Trips	ison	Total	
	(%)		(%)		(%)	
Florida Michigan Ontario Ohio Wisconsin Illinois New York California Indiana	8.0 10.5 8.2 7.4 7.1 4.5 4.0 3.4 3.9	(3) ³ (1) (2) (4) (5) (6) (7) (8)	20.6 7.4 5.0 4.7 4.3 4.8 4.3 4.9 3.0	(1) (2) (3) (6) (7) (5) (7) (4) (10)	12.0 9.5 7.2 6.5 6.2 4.6 4.1 3.8 3.6	(1) (2) (3) (4) (5) (6) (7) (8) (9)
Pennsylvania Minnesota Missouri Tennessee Texas Kentucky Nevada South Carolina	3.4 3.3 3.2 3.1 2.0 2.8 1.6 1.9	(9) (10)	3.1 2.8 2.2 1.9 4.1 1.9 2.8 1.3	(9) (8)	3.3 3.2 2.9 2.8 2.7 2.5 2.0 1 7	(10)
Colorado North Carolina West Virginia Iowa Virginia Arizona	1.5 1.6 1.3 1.2 1.4 0.8		1.5 1.1 1.5 0.9 0.9 2.0		1.7 1.5 1.4 1.3 1.2 1.2 1.2	
New Jersey Georgia Hawait D. of C. Louisiana Massachusetts Arkansas	1.4 1.1 0.7 0.8 0.8 1.0 0.8		0.8 1.3 1.5 1.0 1.0 0.7 0.7		1.2 1.1 1.0 0.9 0.9 0.9 0.8	
Maryland Alabama Washington Mississippi Oklahoma Connecticut	0.7 0.6 0.7 0.5 0.4 0.4		0.6 0.6 0.4 0.3 0.3 0.5		0.7 0.6 0.6 0.5 0.4 0.4	
Maine South Dakota Kansas Nebraska Montana Wyoming	0.6 0.5 0.4 0.4 0.3 0.4		0.1 0.2 0.5 0.4 0.1 0.2		0.4 0.4 0.4 0.3 0.3	
New Mexico Vermont North Dakota Alaska Utah	0.1 0.2 0.2 0.2 0.1		0.4 0.1 0.2 0.1 0.2		0.2 0.2 0.2 0.2 0.2	
Rhode Island Oregon Delaware Idaho	0.2 0.1 0.1 0.1 0.0		0.0 0.1 0.2 0.1		0.1 0.1 0.1 0.0	

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Table 5. Vendor (Destination) states' share of the cold and warm season¹ travel markets².

1. The cold and warm season were defined as follows: May 1st through October 31st is warm season, November 1st through April 30th is cold season. 2. The origin states are Illinois, Indiana, Michigan, Minnesota, Ohio, W. Pennsylvania, Wisconsin, and Ontario. 3. The number in parentheses shows the ranking of destination states in the column. 4. Database: The Great Lakes Travel Monitor Study (1983 - 1985).

Origin State		Recreational Trips Generated						
(Province)	Warm Season	Cold Season						
	(%)	(%)	(%)					
Ohio	$17.9 (1)^2$	16.4 (2)	17.4 (1)					
Illinois	15.8 (2)	16.7 (1)	16.1 (2)					
Michigan	15.5 (3)	15.9 (3)	15.6 (3)					
Indiana	8.9 (4)	7.9 (4)	8.6 (4)					
Wisconsin	7.9 (5)	8.7 (5)	8.2 (5)					
Ontario	7.7 (6)	8.7 (6)	8.0 (6)					
Pennsvlvania	6.2 (7)	5.7 (7)	6.0 (7)					
Minnesota	4.9 (8)	5.9 (8)	5.3 (8)					
Missouri	3.9 (9)	3.5 (9)	3.8 (9)					
Kentucky	3.6 (10)	2.9 (10)						
3.4(10)	· · ·							
New York	2.8	3.2	2.9					
Iowa	2.3	2.7	2.4					
West Virginia	2.0	1.8	1.9					

Table 6. Regional tourism market comparison¹ between warm and cold tourism.

1. In this table, trips to all destinations are compared. 2. Ranking in the column. (Database: The Great Lakes Travel Monitor Study (1983 - 1985), Travel Bureau, Michigan Department of Commerce).

During the warm season, the performance difference between Michigan and Florida is not as significant as that during cold season. It shows that Michigan has the disadvantage in competing for the travel market with Florida during the cold season. Across the full year, Florida captures 2.5% more of the study region's trips than does Michigan.

Table **6** shows that during the warm season, Ohio is the biggest source of trips generating 17.9% of the total tourists in the region. During the cold season, Illinois is the largest tourism market (origin) state producing 16.7% of the total tourists in the region. Michigan

produces 15.5% of the warm season market, 15.9% of the cold season market, and for the full year is the third largest trip producer in the region. Ohio, Illinois, and Michigan represent the major tourism markets (buyers) in the Great Lake region. Totally, these three states produce close to 50% of the entire tourism market generated in the study region.

In conclusion, Ontario, Ohio, and Wisconsin represent Michigan's three biggest competing neighbor states; Florida and California represent Michigan's two biggest distant tourism rival states. Totally, over 36% of the recreation tourism market is taken by the latter three competing states (see Table **5**).

The Michigan Recreational Tourism Market

This section describes the characteristics of Michigan's recreational tourism market. Descriptive information is given to compare the Michigan and non-Michigan recreation trip markets. Recall that recreation trips were defined as trips for visiting relatives, friends, outdoor recreation, sight seeing/touring, shopping, a specific attraction, and other pleasure related trips. In the following, tourists with Michigan destinations are defined as Michigan tourists.

During the study period, Michigan received 790 recreation trips and generated 1,290 recreation trips. Thus, Michigan was a net exporter of 500 recreation trips. Among 790 trips received by Michigan, about 52.0% are Michigan resident traveling parties, and 48% are out-of-state tourists (See Table 4 for details). Michigan trips by residents and out-of-state tourists account for 5.5% and 4% of the total market in the regional, respectively. Totally, Michigan's market share is 9.5% of the total regional market (See Table 4).

Besides the domestic market, two neighboring states, Illinois and Ohio, are Michigan's primary out-of-state market, contributing over 25% of the total trips to Michigan.

In the Great Lake region, Michigan is one of the major tourism vendor (descination) states, dominating the warm season tourism market and is the second largest vendor state during cold season (see Table 5). Michigan's warm and cold season shares of the study region's tourism market are 10% and 7.4%, respectively (see Table 5).

Table 7 shows that Michigan's major out-of-state tourism markets shift between Indiana and Illinois when seasons shift. Beside Michigan's domestic tourism market (Michigan residents who stayed in Michigan), Indiana is Michigan's the largest warm-season tourism market and provides Michigan 18.9% of its total warm-season tourists. During the cold season, Illinois, is the largest cold-season out-of-state tourism market and provides Michigan 17.6% of its total cold-season tourists. In conclusion, Illinois, Ohio, and Indiana represent Michigan's three major out-of-state tourism markets. Totally, over 34% (see Table 7) of Michigan trips are generated from these three states. Throughout the year, Illinois represents Michigan's biggest supplier of tourists and provides Michigan with over 14% of its total tourists.

Origin State	Michigan Re	creational Trip	Total		
(Province)	Warm Season	Cold Season			
	(%)	(%)	(%)		
Michigan	52.3 $(1)^{1}$	51.3 (1)	52.0 (1)		
Illinois	13.0 (3)	17.6 (2)	14.2 (2)		
Ohio	11.2 (4)	11.4 (3)	11.2 (3)		
Indiana	18.9 (2)	7.9 (4)	8.9 (4)		
Wisconsin	5.6 (5)	6.7 (5)	5.9 (5)		
Ontario	2.5 (6)	4.1 (6)	2.9 (6)		
Minnesota	1.4 (7)	4.1 (7)	1.0 (7)		
Pennsylvania	1.0 (8)	1.0 (8)	1.0 (8)		
New York	0.8 (9)	0.5 (9)	0.8 (9)		
Iowa	0.5 (10)	0.5(10)			
0.5(10)		· ·			
Kentucky	0.5	0.5	0.5		
West Virginia	0.5	0.5	0.5		
Missouri	0.3	0.8	0.3		

Table 7. Sources by state of Michigan's warm and cold season recreation travelers.

1. Ranking in the column. (Database: The Great Lakes Travel Monitor Study (1983 - 1985), Travel Bureau, Michigan Department of Commerce).

Table 8 compares the general characteristics between Michigan and non-Michigan travelers. Relatively speaking, Michigan recreation travelers significantly: 1. are younger;

2. travel in smaller parties;

3. travel shorter distances;

4. don't stay as long;

5. don't spend as many nights in hotels, motels

friend's or relative's houses;

6. spend a higher percentage of overnight stays in rented cabins, self-owned cabins, public and private tent campgrounds, public RV campgrounds, and spa resorts;

7. expend a bit less during their trip and at specific destination; and

8. rate their trip and specific destination somewhat lower.

Total	Non-Michigan estination Trips	Michigan ation Trips De	Characteristics Destina
40.40	40 52	39.26	
40.40	4 36	4.33	Party Size (Person)
812.82	861.40	347.71	One-Way Mileage (Mile)
7.79	8.09	5.07	Trip Duration (Day) Percentage of Night Stay in:
17.20%	19.76%	10.90%	a. Hotel
10.45%	10.47%	9.24%	b. Motel
6.30%	5.61%	10.19%	c. Rented Cabin
6.22%	5.16%	13.27%	d. Own Cabin e. Public Campground:
1.68%	1.33%	4.74%	Tent
3.37%	2.95%	4.27%	R.V.
			f. Private Campground:
1.18%	1.03%	2.37%	Tent
3.03%	2.66%	4.98%	R.V.
10.28%	10.47%	6.40%	g. Friend's House
32.20%	33.04%	27.44%	h. Relative's House
1.52%	1.33%	2.17%	i. Resort/Spa
5.57%	6.19%	4.03%	j. Other
4.11	4.12	4.06	Rating Overall Trip
4.05	4.06	4.03	Rating Destination
3.52	3.53	3.49	Trip Expectation
3.46	3.47	3.42	Destination Expectation

Table 8. Comparison of the characteristics of Michigan and non-Michigan recreational travelers, their trips and trip ratings.

(Database: The Great Lakes Travel Monitor Study (1983 - 1985), Travel Bureau, Michigan Department of Commerce). Table **9** shows that, in descending order, the primary purpose of Michigan trips is: (1) visiting relatives, (2) outdoor recreation, (3) sightseeing, (4) visiting friends, (5) special attractions, (6) business/pleasure, and (7) shopping. The biggest market segment is travelers visiting relatives, which accounts for 35.32% of the total tourism market received by Michigan. The smallest market segment is shoppers who accounted for only 1.14% on Michigan's total trips.

The Michigan tourism market includes a higher percentage of outdoor recreation tourists than does the regional market indicating an outstanding demand for Michigan's outdoor recreation products and services. The percentage of all other types of purposes for Michigan trips are relatively lower than for non-Michigan destinations, however, sightseeing stands out as being the most different. This may result from a tendency for Michigan travelers on combination recreation and sightseeing trips to report outdoor recreation as their primary purpose more frequently than do non-Michigan travelers on such dual purpose trips. Table **9** shows this comparison.

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	Trip Destination						
Purpose	Michigan	Non-Michigan	Total				
	(%)	(%)	(%)				
Visit relatives	35.32	35.70	35.62				
Outdoor recreation	28.86	18.00	19.16				
Sightseeing	13.92	19.50	18.98				
Visit friends	9.24	10.60	10.49				
Special attraction	5.44	7.30	7.20				
Other	3.80	3.60	3.63				
Business/pleasure	2.28	3.50	3.42				
Shopping	1.14	1.7	1.64				
Total	100.00	100.00	100.00				
			(

Table 9. Comparison by trip purpose for Michigan and Non-Michigantrips.

(Database: The Great Lakes Travel Monitor Study (1983 - 1985), Travel Bureau, Michigan Department of Commerce).

As in most northern states in the country, the majority of Michigan's tourism is concentrated in the summer months. Over half of Michigan destination trips take place between July and September. As can be seen in Table 10, August is the busiest tourism month in Michigan. It accounts for about 18.1% of the yearly market. On the other hand, January tourism account for only 2.5% of the yearly market.

Table **10** shows that there are different degrees of peaking in the trip percentage distribution pattern between Michigan and non-Michigan trips. The warm season peaking for Michigan trips is more pronounced than for non-Michigan trips²¹. Statistics in column two and three in Table **10** show the trip distribution peaking changes when non-Michigan trips outside the study region are excluded. The percentage shares are higher during the warm season (May, June, July, October, and November), and are lower in the rest of months when the non-Michigan trips outside study region are included.

Month	Trip Destination Michigan Non-Michigan Inside Region Inside Region							
 ,,	(%)	(%) ²	(%) ³	(%)				
January	2.5	3.5	3.2	3.4				
February	4.1	3.8	2.4	3.8				
March	3.5	6.3	3.4	6.0				
April	3.2	7.0	5.9	6.6				
May	5.7	6.8	7.6	6.8				
June	10.9	10.6	12.9	10.6				
July	18.0	15.5	16.6	15.8				
August	18.1	15.6	14.9	15.9				
September	14.7	11.0	10.5	11.3				
October	8.1	8.2	8.5	8.1				
November	6.7	6.0	9.3	6.1				
December	4.7	5.6	4.9	5.5				
Total	100.0	100.0	100.0	100.0				

Table 10. Distribution of Michigan and non-Michigan trips by month¹.

1. The origin states include Illinois, Indiana, Michigan, Minnesota, Ohio, Western Pennsylvania, and Wisconsin. 2. This column shows the percentage distribution of the non-Michigan trips including outside study region, e.g. Florida. 3. This column shows the percentage distribution of the non-Michigan trips in study region only. (Database: The Great Lakes Travel Monitor Study (1983 - 1985), Travel Bureau, Michigan Department of Commerce).

²¹ Relatively, the Michigan trip percentage distribution pattern peaks more significantly during the warm season than non-Michigan trips (in the case of either including the non-Michigan trips outside study region or not).

These distribution patterns in Table 10 indicate: (1) Michigan's tourism industry performances is marginally better than non-Michigan areas in the warm season, while its market share is lower except for February than its non-Michigan competition for the rest of the year: (2) a strong demand for the warm season in Michigan since the trip percentage shares in Michigan are higher during warm season in Michigan than non-Michigan (3) the areas; tourism market competition from the outside-study-region states have affected the trip distribution in different seasons; (4) the outside-study-region trips, Florida for example, has some obvious winter season attractions such as winter resorts which result in lower peaking in the trip distribution pattern when these trips are included (see column two and three in Table 10).

The following tables present the percentage distribution comparisons between various types (i.e. weekend trip, group trip, etc.) of Michigan trips and non-Michigan trips. The significance tests of the differences between Michigan trips and non-Michigan trips will be presented later.

The percentage distribution comparisons between various types (i.e. weekend trip, group trip, etc.) of Michigan trips and non-Michigan trips are presented in Table 11 to Table 19. Weekend travelers account for over four-fifths of Michigan's market. Compared with the

non-Michigan	tourism	market,	Michigan	has	a	higher	perce	ntage	of
weekend touri	sts, indic	ating a	strong wee	ekend	pl	easure	travel	dema	nd
in Michigan (s	ee Table	11).							

Weekend	Trip		
Trip	Michigan	Non-Michigan	Total
	(%)	(%)	(%)
Yes	81.2	76.2	76.9
No	18.8	23.8	23.1
Total	100.0	100.0	100.0

Table 11. Distribution of Weekend trips by Michigan and non-Michigan trip destinations.

(Database: The Great Lakes Travel Monitor Study (1983 - 1985), Travel Bureau, Michigan Department of Commerce).

Table 12 shows that group tourists account for only 2.9% of Michigan's total pleasure travel market. This percentage is lower than that in the non-Michigan market indicating that group tourism is less popular in Michigan.

Table 12. Distribution of group trips between Michigan and non-Michigan trip destinations.

Group Trip	Trip Destination		
·····	Michigan Trip	Non-Michigan	Total
	(%)	(%)	(%)
Yes	2.9	4.8	4.6
No	97.1	95.2	95.4
Total	100.0	100.0	100.0

(Database: The Great Lakes Travel Monitor Study (1983 - 1985), Travel Bureau, Michigan Department of Commerce). Compared with other areas in the study region, Michigan attracts a greater percentage of recreation vehicle owners (19.7% versus 14.9%) indicating that Michigan is more popular to recreational vehicle owners than other areas probably because of superior natural resource based attractions or other differences in charges and regulation (see Table 13).

Table 13. Recreation vehicle ownership among Michigan and non-Michigan pleasure travelers.

	Trip Destination		
Own R.V.	Michigan Trip	Non-Michigan	Total
	(%)	(%)	(%)
Yes	19.7	14.9	15.4
No	80.3	85.1	84.6
Total	100.0	100.0	100.0

(Database: The Great Lakes Travel Monitor Study (1983 - 1985), Travel Bureau, Michigan Department of Commerce).

The telephone survey results show that females account for over 60% of all respondents (see Table 14). Females account for a higher percent (65.2%) of Michigan trip respondents than for non-Michigan trips (63.2%). However, there is a bias in these results. Since women are more likely to be home than men, the chance for women to answer the phone is larger. Also these results can only be applied to respondents' gender distribution but not to travelers per se. If knowledge regarding travelers's gender distribution in the study region

is desired, further adjustment is required.

Trip Destination			
Michigan	Non-Michigan	Total	
(%)	(%)	(%)	
34.8	36.8	36.6	
65.2	63.2	63.4	
100.0	100.0	100.0	
	 Michigan (%) 34.8 65.2 100.0	Trip Destination Michigan Non-Michigan (%) (%) 34.8 36.8 65.2 63.2 100.0 100.0	

Table 14. Pleasure travel market comparison by gender - Michigan,non-Michigan, and total region.

(Database: The Great Lakes Travel Monitor Study (1983 - 1985), Travel Bureau, Michigan Department of Commerce).

The results from the telephone survey show that the percentage of married respondents interviewed are larger for Michigan trips than for non-Michigan trips. In Michigan, 73.1% of adult pleasure trip participants are reported married while only 68.1% of non-Michigan pleasure trip participants are married (see Table 15). Though the results indicate that family tourism in Michigan is stronger than in non-Michigan areas, it is possible that the telephone survey design and time of interviews may have favored reaching married nonemployed spouses. Thus, there is a bias in the data base toward married non-employed women.

	Trip Destination		
Marital Status	Michigan	Non-Michigan	Total
	(%)	(%)	(%)
Married	73.1	68.1	68.6
Unmarried	26.9	31.8	31.3
Total	100.0	100.0	100.0

Table 15. Adult pleasure travel market by martial status - Michigan, non-Michigan, and total region.

(Database: The Great Lakes Travel Monitor Study (1983 - 1985), Travel Bureau, Michigan Department of Commerce).

It was found that over 95% of respondents who reported Michigan pleasure trips have at least a high school education compared with only 91.8% for the respondents who reported non-Michigan trips (see Table 16). About 56% of Michigan traveling respondents have at least some college experience compared with 54.4% of non-Michigan traveling respondents. Though the telephone survey results show that Michigan's high-education market segment is larger than that of the non-Michigan destinations, there is again likely to be a bias toward female respondents because women are more likely to be home to answer the phone than men. These results may not accurately reflect the education level distributions of actual travelers.

3

	Trip Destination		
Education Level	Michigan	Non-Michigan	Total
	(%)	(%)	(%)
Less than high school	5.0	8.2	7.9
High school graduate	33.6	31.7	30.9
Trade, technical	5.4	5.8	5.8
Some college	25.2	22.6	22.8
College graduate	23.4	23.0	23.0
Post degree	7.4	8.7	8.5
Refuse	0.0	0.1	0.1
Total	100.0	100.0	100.0

Table 16. Adult pleasure travel market comparison by level of education - Michigan, non-Michigan, and total region.

(Database: The Great Lakes Travel Monitor Study (1983 - 1985), Travel Bureau, Michigan Department of Commerce).

The race distribution of Michigan pleasure travelers is not much different than that of non-Michigan travelers (see Table **17**). Michigan's tourism market is composed of 93.4% white, 5.9% black and 0.5% of Hispanic people.

Table 17. Adult pleasure travel market comparison by race - Michigan, non-Michigan, and total region.

	Trip Destination		
Race	Michigan	Non-Michigan	Total
	(%)	(%)	(%)
White	93.4	92.7	92.7
Black	5.9	6.4	6.4
Hispanic	0.5	0.5	0.5
Other	0.1	0.4	0.4
Total	100.0	100.0	100.0

(Database: The Great Lakes Travel Monitor Study (1983 - 1985), Travel Bureau, Michigan Department of Commerce). Middle income (\$20,000 to \$40,000) travelers compose 53.5% of Michigan tourism market representing the state's major market. This portion compares favorably with both the 48.1% share in the non-Michigan tourism market, and the 48.6% in regional market (see Table 18). Michigan, however, attracts relatively fewer high income travelers (69,000+) than does the rest of the study region.

	Trip Destination		
Income	Michigan	Non-Michigan	Total
	(%)	(%)	(%)
Less then 10,000	6.0	6.1	6.1
10,000 to 19,999	15.2	15.3	15.4
20,000 to 29,999	30.0	25.8	26.2
30,000 to 39,999	23.5	22.3	22.4
40,000 to 49,999	12.2	13.9	13.7
50,000 to 59,999	7.6	7.9	7.9
60,000 to 69,999	1.1	2.9	2.7
70,000 or more	4.6	5.7	5.6
Total	100.0	100.0	100.0

Table 18. Adult pleasure travel market comparison by income -Michigan, non-Michigan, and total region.

(Database: The Great Lakes Travel Monitor Study (1983 - 1985), Travel Bureau, Michigan Department of Commerce).

Hypothesis Tests

There are four general hypotheses tested in this study. These general hypotheses contain various specific hypotheses which are tested using the t-test and Chi-square statistic. The results of these tests are tabulated in Tables **19** and **20** which appear later in this Chapter. The trip pattern differences found between Michigan and non-Michigan trips are also discussed including the direction of the impacts on propensity to travel in Michigan.

Hypothesis 1

There are no significant differences in trip patterns between Michigan and non-Michigan tourists.

Hypothesis 1-a.

There is no significant difference in one way trip mileage between Michigan and non-Michigan pleasure trips.

This null hypothesis is rejected at $\alpha p < .05$ (see Table **19**). This result indicates that travel distance of Michigan pleasure trips are significantly different from those of non-Michigan trips. The average travel distance of Michigan trips is 347 mile, and the average travel distance of non-Michigan trips is 861 miles. Michigan pleasure trips are significantly shorter than non-Michigan trips.

Hype Num	othesis Variable aber Tested	Michigan Trips	Non-Michigan Trips	Test Results
			Mean	Significance
1-a .	One way	047 71	861.40	-
1.h	Total side	347.71	861.40	-
1-0.	trip miles	85.56	153.37	•
1-c.	Trip length			
	in day ²	5.07	8.09	•
1-d.	Mean nights stayed			
_	in hotels	0.46	1.33	•
1-е .	Mean nights stayed			
	in motels	0.39	0.71	•
I -I.	mean nights stayed			
	camparounds	0.20	0.09	
1-ø.	Mean nights staved	0.20	0.00	
÷ 9.	in friend houses	0.27	0.71	•
1-h.	Mean nights stayed			
	in relative houses	0.12	2.24	•
1-i .	Mean nights stayed			
	in other states	1.98	1.83	•
1-j.	Amount spent on	500 15		
1 1.	transportation(\$)	563.15	643.60	•
1-K.	Amount spent on	EEC DA	c02.99	•
11	Amount sport on	556.54	023.00	
1~1.	meals(\$)	568.05	620.84	•
l-m	Amount spent on	000.00	020.04	
	entertainment(\$)	560.01	616.51	•
l-n.	Amount spent on			
	miscellaneous(\$)	552.39	609.32	٠
1-o .	Good restaurant ⁴	4.15	4.29	•
1-p.	Good place to stay ⁴	4.33	4.40	•
1-q.	High prestige	2.51	2.63	•
l-r.	Good night life	2.97	3.17	•
1-8.	Winter fun [®]	3.07	2.82	
1-t.	Good Scenary ⁵	8.58	7.42	
1-u.	Friendly People ⁵	7.43	6.41	•
1-v.	Fasy to Get to ⁵	8.41	7 4 9	•
1-X.	Reasonable Price ⁵	7.01	6.22	•
1-aa	Good Place to Stav ⁵	7.79	6.88	•
1-ab	. Summer Fun ⁵	8.53	7.20	•
l-ac	. High Prestige ⁵	6.01	5.25	•
l-ad	l. Clean Air ⁸	7.59	6.46	•
l-ae	. Good Night Life [®]	6.68	6.02	•
l-af	Winter Fun [®]	8.42	7.51	•
I-ag	Likely to visit			
	acsunation	A E 9	A A E	•
	state again	4.00	4.40	

Table 19. T-tests of differences between Michigan and non-Michigan recreation trips for selected variables.

1. *, t-tests significant at 0.05 level of significance. 2. Number of days derived by adding one to total nights spent away from home. 3. Ratings were based on a five point scale with 5 very likely. 4. The ratings were based on a five point scale with one being not at all important to the trip and five being very important to the trip. 5. The ratings were based on a ten point scale with one strongly disagree that Michigan is know for the item stated and ten being strongly agree that Michigan is know for the item stated. (Database: The Great Lakes Travel Monitor Study (1983 - 1985), Travel Bureau, Michigan Department of Commerce).

Hypothesis 1-b.

There is no significant difference in total side trip mileage between Michigan and non-Michigan pleasure trips.

This null hypothesis is rejected at $\alpha p < .05$ (see Table 19). This result indicates that side trip traveling distance of Michigan trips are significantly different from those of non-Michigan trips. The average side trip distance of Michigan trips is 85.56 miles, and the average side trip distance of non-Michigan trips is 153.37 miles. Michigan trips's average side trip distance is significantly shorter than the non-Michigan trips's.

Hypothesis 1-c.

There is no significant difference in trip duration²² between Michigan and non-Michigan tourists.

This null hypothesis is rejected at $\alpha p < .05$ indicating that there is a significant difference in duration between Michigan and non-Michigan trips. The average trip duration is 5.07 days and 8.09 days for Michigan and non-Michigan trips, respectively. The average length of Michigan trips is significantly shorter than the average non-Michigan trips.

²² Trip duration is derived by adding one to the number of reported nights spent away from home.

Hypotheses 1-d, 1-e, 1-f, 1-g, 1-h, 1-i.

There is no significant difference in the number of overnight stays in: (1) hotel, (2) motel, (3) public tent campground, (4) friend's house, (5) relative's house, and (6) other accommodations while on Michigan and non-Michigan trips.

All these null hypotheses are rejected at $\alpha p < .05$ (see Table **19**). The rejections indicate that there are significant differences in the number of nights stayed in these accommodations while on Michigan and non-Michigan trips.

For Michigan trips, the average number of overnight spent in the following accommodations: hotel, motel, public tent campground, friend's house, relative's house, and other are 0.46, 0.39, 0.20, 0.27, 0.12, and 1.98 nights, respectively. For non-Michigan trips, the average overnight spent in these accommodations are 1.33, 0.71, 0.09, 0.71, 2.24, and 1.83 nights, respectively.

Michigan trips involve significantly more nights in public tent campgrounds than non-Michigan trips, while non-Michigan trips involve more nights in hotels, motel, relative's houses, and friend's houses.

Hypotheses 1-j, 1-k, 1-l, 1-m, 1-n.

There is no significant difference in the amount of money spent on: (1) transportation, (2) lodging, (3) meals, (4) entertainment, and (5) miscellaneous, by Michigan and non-Michigan travelers while pleasure trips.

All of these null hypotheses are rejected at $\alpha p < .05$ indicating

that there are significant differences in these expenditures between Michigan and non-Michigan pleasure trips (see Table **19**). For Michigan trips, the average spent on transportation, lodging, meals, entertainment, and miscellaneous per trip is \$563.15, \$556.34, \$568.05, \$560.01, and \$552.39, respectively. For non-Michigan trips, the average spending on transportation, lodging, meals, entertainment, and miscellaneous per trip is \$643.6, \$623.88, \$620.84, \$616.51, and \$609.32 respectively. The spending during Michigan traveling is significantly less than the spending during non-Michigan traveling. Because of the shorter duration of Michigan trips, however, average total spending per day on Michigan trips averaged \$552.26 while non-Michigan trip spending totaled only \$384.94 on average per day.

<u>Hypotheses 1-0, 1-p, 1-q, 1-r, 1-s.</u>

Between Michigan and non-Michigan trips, there are no significant differences in travelers' rating scores on the degree of importance to their trips for the following elements: (1) good restaurant, (2) good place to stay, (3) high prestige, (4) good night life, and (5) winter fun.

The importance of these concerns to the trip are rated from one to five. A score of one means not at all important, while a score of five means very important.

All these null hypotheses are rejected at $\alpha p < .05$ (see Table **19**). The rejections indicate that the rating scores for these elements are significantly different between Michigan and non-Michigan
tourists. For Michigan trips, the average ratings for the elements: "good restaurant", "good place to stay", "high prestige trip", "good night life", and "winter fun" were 4.15, 4.33, 2.51, 2.97, 3.07 respectively. For non-Michigan trips, the average scores ratings on these same five elements were 4.29, 4.40, 2.63, 3.17, and 2.82 respectively. With the exception of "winter fun", Michigan scores slightly below its competition in this region on the four other elements of travel experiences examined in this study. It should be noted, however, that only about 10% of the sample involved Michigan trips. Hence these data are dominated by respondents' images rather than by actual experiences with Michigan as a travel destination.

Hypotheses 1-t, 1-u, 1-v, 1-x, 1-y, 1-aa, 1-ab, 1-ac, 1-ad, 1ae, 1-af.

Between Michigan and non-Michigan trips, there are no significant differences in travelers' rating scores on the following Michigan image : (1) good scenery, (2) good restaurant, (3) friendly people, (4) easy to get to, (5) reasonable price, (6) good place to stay, (7) summer fun, (8) high prestige, (9) clean air, (10) good night life, and (5) winter fun.

These hypotheses were conducted to determine impressions based on what the respondents had seen or read. These items were rated from one to ten. A score of one means strongly disagree and a score of ten means strongly agree. The question (see Q39 in questionnaire) "Do you 1, strongly disagree, 10, strongly agree, or would you choose some number in between that Michigan is known for good weather?".

All these null hypotheses are rejected at $\alpha p < .05$. The rejections indicate that the rating scores for these elements are significantly higher for Michigan trips than non-Michigan trips. The average ratings for Michigan and Non-Michigan trips on these items are listed in Table 19. The higher rating scores may help explain why Michigan travelers chose Michigan as trips destination.

Hypothesis 1-ag.

There is no significant difference in the likelihood of revisiting a destination state between Michigan and non-Michigan pleasure travelers.

The probability of revisiting the destination state was rated by respondents using a five point scale where one equals not at all likely and five equals very likely.

This null hypothesis is rejected at α p < .05 indicating a significant difference existing in the rating scores on the propensity of revisiting the destination state between Michigan and non-Michigan pleasure travelers. For Michigan travelers, the average rating was 4.53. For non-Michigan travelers, the average rating was 4.45. Thus the Michigan travelers reported a slightly, but statistically significant, greater propensity to return to Michigan for a future visit than was reported by the non-Michigan travelers for non-Michigan travelers. The significantly higher scores indicating Michigan travelers have

greater brand loyalty than non-Michigan travelers. However, other behavioral explanations are possible, the expected lower costs for the vacation, for instance.

Hypothesis 2.

Travelers' socioeconomic characteristics, type of transportation used, sources of travel information used, and trip attributes sought do not positively affect tourists' choice of Michigan as a trip destination.

Hypothesis 2-a.

Education level difference²³ does not positively affect respondents' choice of Michigan as a trip destination.

This null hypothesis is rejected at $\alpha p < .05$ level indicating that education level difference has a significant, positive influence on people's choice of Michigan as a trip destination. People with higher than high school education are more likely to travel in Michigan than to non-Michigan destinations in the study region.

Hypothesis 2-b.

Recreation vehicle ownership does not positively affect respondents' choice of Michigan as a trip destination.

This null hypothesis is rejected at $\alpha p < .05$ indicating that RV

²³ The comparison was conducted on the groups of "with high school or higher education" versus "less than high school education".

Table 20. Nature of the relationship between variables found to be statistically related (at $\alpha p \leq .05$) to travel to Michigan for recreation. (If +, preference for Michigan as a travel destination increases as the variable tested increases.)

Hypotheses Number	Variable Tested Chi-Sq	uare Significance	Nature of Impact
2-a.	Education	0.03	+2
2-b.	Ownership of R.V.	0.00	+
2-c.	Married vs unmarried	0.02	+
2-d.	Weekend trip	0.02	+
2-е.	Type Of transportation		
	to destination	0.00	+
2-f.	Type of transportation		
	at destination	0.00	+
2-g.	TV seen-heard	0.00	+
2-h.	Radio seen-heard	0.00	+
2-i.	Billboard seen-heard	0.00	+
2-j.	Michigan toll free		
5	800 # seen-heard	0.00	+
2-k.	Winter fun ¹	0.01	+
2-l .	Michigan resident ¹	0.00	+
2- m.	Warm season ¹	0.00	+
2-n.	Activity on trip ¹	0.00	+
2-o .	Importance of special		
	event ¹	0.00	+
3-a.	Travel information		
	seen-heard	0.00	_3
3-b.	Travel agent information		
	seen-heard	0.01	-
З-с.	Importance of good		
	restaurant ¹	0.01	-
3-d.	Importance of clear air ¹	0.01	-
З-е.	Importance of good nigh	t	
	life ¹	0.01	-
3-f.	High prestige vacation ¹	0.00	-
3-g.	State origin by distance	0.00	-
3-h.	Group trip	0.02	-
4-a.	Occupation	0.00	NA
4-b.	Destination expectation	0.02	NA⁴

1. Scores for degree of importance ranged from one to five. A score of one means not at all important; a score of five means very important. 2. + = positive effect. 3. - = negative effect. 4. NA, not applicable.

(Database: The Great Lakes Travel Monitor Study (1983 -1985), Travel Bureau, Michigan Department of Commerce).ownership has a significant, positive influence on people's choice of Michigan as a trip destination (see Table **20**).

Hypothesis 2-c.

Martial status does not positively affect respondents' choice of Michigan as a trip destination.

This null hypothesis is rejected at $\alpha p < .05$ indicating that marital status has a significant, positive influence on the choice of Michigan as a trip destination. Significantly more married people choose Michigan than choose other states in the study region. However, this result was probably confounded by urban-rural differences.

Hypothesis 2-d.

Traveling on the weekend does not positively affect travelers' choice of Michigan as a trip destination.

This null hypothesis is rejected at $\alpha p < .05$ level indicating that weekend travel has a significant positive influence on the choice of Michigan as a trip destination (see Table **20**). Weekend travelers are more likely to choose Michigan than non-Michigan destinations.

Hypothesis 2-e.

Using a personally owned vehicle (POV) rather than a rented vehicle to travel to a pleasure trip destination does not positively affect tourists' choice of Michigan as a trip destination.

This null hypothesis was rejected at $\alpha p < .05$ indicating that driving a POV to a destination has a significant positive influence on

the choice of Michigan as a trip destination (see Table **20**). Significantly more of Michigan's pleasure travelers arrive by POV. Rented vehicles are more common at non-Michigan destinations.

Hypothesis 2-f.

Use of a POV at the destination does not positively affect tourists' choice of Michigan as a trip destination.

This null hypothesis is rejected at $\alpha p < .05$ indicating that use of a POV at the destination has a significant, positive influence on the choice of Michigan as a trip destination (see Table 20). Significantly more travelers who use their own cars at their destination choose traveling in Michigan than people who rent a car at their destination. Non-Michigan trips to, for example, Florida are more likely to involve a fly-drive (a rental car) combination of transportation.

Hypothesis 2-g, 2-h, 2-i.

Receiving travel information from (1) television, (2) radio, and (3) billboard have no positive affect on the choice of Michigan as a trip destination.

These null hypotheses are rejected at $\alpha p < .05$ indicating that travel information from television, radios, and billboards have a significant, positive influence on the choice of Michigan as a trip destination (see Table **20**). In this study, significantly more travelers who received travel information from television, radio, and billboards chose Michigan as a trip destination than those who do did receive

travel information from these media.

Hypothesis 2-j.

Knowledge of the Michigan toll free number for travel information has no positive effect on tourists' choice of Michigan as a trip destination.

This null hypothesis is rejected at α p < .05 indicating that knowing the Michigan toll free number for travel information has a significant, positive influence on people's choice of Michigan as a trip destination. A significantly higher percentage of respondents who know Michigan toll free number chose Michigan as a trip destination than those who did not know the Michigan toll free number.

Hypothesis 2-k.

The degree of importance assigned to "winter fun" by travelers does not positively affect their choice of Michigan as a trip destination.

This null hypothesis is rejected at $\alpha p < .05$ indicating that the degree of importance assigned to winter fun has a significant, positive influence on people's choice of Michigan as a trip destination (see Table **20**). Significantly more people who are highly concerned with winter fun choose Michigan as a trip destination than those not concerned with this trip attribute.

Hypothesis 2-1.

Michigan residency does not affect tourists' choice of Michigan as a trip destination.

This null hypothesis is rejected at $\alpha p < .05$ indicating that living in Michigan has a significant, positive influence on the choice of Michigan as a trip destination (see Table **20**). In this study, more Michigan respondents traveled in Michigan than non-Michigan respondents.

Hypothesis 2-m.

The season during which the trip was taken does not affect tourists' choice of Michigan as a trip destination.

This null hypothesis is rejected at $\alpha p < .05$ indicating that season (warm versus cold) has a significant, positive influence on the choice of Michigan as a trip destination (see Table **20**). Significantly more warm season travelers choose Michigan as their trip destination than cold season travelers.

Hypothesis 2-n.

The degree of importance assigned to outdoor activity during the trip has no positive effect on the choice of Michigan as a trip destination.

This null hypothesis is rejected at $\alpha p < .05$ indicating that the degree of importance assigned to outdoor activity has a significant, positive effect on peoples' choice of Michigan as a trip destination.

Significantly more respondents who feel outdoor activity is important to their trip choose Michigan as a trip destination.

Hypothesis 2-o.

The degree of importance assigned to special events available during the trip has no effect on the choice of Michigan as a trip destination.

This null hypothesis is rejected at $\alpha p < .05$ indicating that the degree of importance assigned to available special events has a significant positive effect on tourists' choice of Michigan as a trip destination. Significantly more respondents with a high degree of concern for special events choose Michigan as a trip destination.

Hypothesis 3.

Travel information provided and attributes of the trip and the destination do not negatively affect tourists' choice of Michigan as a trip destination.

Hypothesis 3-a.

Obtaining travel information about destination state does not negatively affect tourists' choice of Michigan as a trip destination.

This null hypothesis is rejected at the α p < .05 indicating that receiving travel information about destination state has a significant, negative influence on taking a Michigan trip (see Table **20**). Significantly fewer people who receive destination travel information choose Michigan as a trip destination than people who do not receive travel information. This may be because people taking out of region trips (e.g. Florida) are more likely to seek information than those traveling within the region. However, the statistics used in this study establish only correlation; to explain causality requires more exploration.

Hypothesis 3-b.

Obtaining travel information from a travel agent does not negatively affect tourists' choice of Michigan as a trip destination.

The null hypothesis is rejected at α p < .05 indicating that the travel information from a travel agent has a significant, negative influence on people's choice of Michigan as a trip destination (see Table **20**). Significantly fewer respondents who received travel information from a travel agent chose Michigan as a trip destination than those who did not receive travel information from travel agent.

Hypothesis 3-c.

The degree of importance assigned by respondents to good restaurants does not negatively affect their choice of Michigan as a trip destination.

This null hypothesis is rejected at $\alpha p < .05$ indicating that the degree of importance of a good restaurant to the trip has a significant, negative influence on the choice of Michigan as a trip

destination (see Table **20**). Significantly fewer people who consider good restaurants as a very important trip attribute chose Michigan as a trip destination than people who were less concerned about availability of good restaurants.

Hypothesis 3-d.

The degree of importance of clear air to travelers does not negatively affect their choice of Michigan as a trip destination.

This null hypothesis is rejected at $\alpha p < .05$ indicating that the degree of importance of clear air to the trip has a significant, negative influence on the choice of Michigan as a trip destination (see Table **20**). Significantly fewer people who consider clear air as very important chose Michigan as a trip destination than people who considered clear air as not that important to their trip.

Hypothesis 3-e.

The degree of importance assigned to good night life by travelers does not negatively affect their choice of Michigan as a trip destination.

This null hypothesis is rejected at $\alpha p < .05$ indicating that the degree of importance assigned to good night life has a significant, negative influence on the choice of Michigan as a trip destination (see Table **20**). Significantly fewer people who consider good night life as very important chose Michigan as a trip destination than people who did not consider good night life as important. However, the rural-

urban factor may affect the difference. To explain causality requires more exploration need to be done.

Hypothesis 3-f.

The degree of importance assigned to a high prestige vacation by travelers does not negatively affect their choice of Michigan as a trip destination.

This null hypothesis is rejected at $\alpha p < .05$ indicating that the degree of importance assigned to a high prestige vacation has a significant, negative influence on the choice of Michigan as a trip destination (see Table **20**). Significantly fewer people who consider having a high prestige vacation as very important chose Michigan as a trip destination.

Hypothesis 3-g.

The distance of a state from Michigan does not negatively affect tourists' choice of Michigan as a trip destination.

This null hypothesis is rejected at $\alpha p < .05$ indicating that location has a significant negative affect on tourists' choice of travel to Michigan (see Table 20). Significantly fewer people from distant states chose Michigan as a trip destination than people who are from closer states.

Hypothesis 3-h.

Taking a group trip does not negatively affect travelers' choice of Michigan as a trip destination.

The null hypothesis is rejected at $\alpha p < .05$ indicating that taking a group trip has a significant, negative influence on the choice of Michigan as a trip destination (see Table 20). Fewer group trips involve Michigan as a trip destination than other destinations considered in this study.

Hypothesis 4.

Travelers' socioeconomic characteristics, expectations, and activities sought have no effect on tourists' choice of Michigan as a trip destination.

Hypothesis 4-a.

Differences in destination expectations have no effect on tourists' choice of Michigan as a trip destination.

A five-point scale was used to measure respondents' expectations of their destinations. One means that the destination is a lot worse than expected and five means that the destination is a lot better than expected. This null hypothesis is rejected at α p < .05 indicating that travelers' destination expectations have a significant influence on respondents' choice of Michigan as a trip destination.

Hypothesis 4-b.

Occupation has no effect on tourists' choice of Michigan as a

trip destination.

This null hypothesis is rejected at $\alpha p < .05$ indicating that occupation differences have a significant effect on tourists' choice of Michigan as a trip destination. Respondents in different occupation categories exhibit different frequencies for choosing Michigan as a trip destination.

None of the following socioeconomic characteristics were found to be statistically significant in the choice of Michigan as a travel destination: sex, race, and family income.

<u>LDA Results: Using Individual Variable Sets in LDA</u> <u>to Predict Michigan Trips</u>

Results from the linear discriminant analysis (LDA) performed are reported in this section. Both the results of LDA modeling and the comparison of the predictive effectiveness of the modeling are covered. In order to explore the effectiveness of using different types of variables as discriminators in LDA to predict the propensity of traveling in Michigan, the variables used in this study are grouped into six categories including: (1) trip pattern variables, (2)socioeconomic variables, (3) travel information variables, (4) trip attribute variables, (5) Michigan image variables, and (6) high prediction power variables. The results of each analysis are discussed below.

<u>Using Trip Pattern Variables to Predict The Propensity of</u> <u>Traveling in Michigan</u>

In this section, trip pattern variables are used to estimate the linear discriminant function (LDF) for predicting the propensity of traveling in Michigan. A stepwise variable selection procedure was used to select significant independent variables as discriminators. The variables used in this analysis include one way travel mileage, trip duration, number of nights spent in a hotel, number of nights spent in other states, side trip mileage, weekend trip, group trip, Michigan residency, and trip season.

As the discussions in Chapter II highlighted, LDF is the best, maximal linear combination of variables for predicting the group membership of the cases under investigation. A LDF is composed of a dependent variable and a varying number of independent variables. The objective of LDA is to select good, useful, significant discriminators (independent variables) which can contribute significant discriminating power to the model and result in the best prediction of the group membership (dependent variable).

To select an optimal set of discriminating variables, the criteria used in this analysis include: (1) Wilks' Lambda, (2) minimum tolerance value, (3) $F_{to-enter}$, and (4) $F_{to-Remove}^{24}$. The basic rule is to select a variable with minimum Wilks' Lambda which also meets the other three criteria: minimum tolerance value (MTV), minimum F to enter (MFE), and maximum F to remove (MFR). In this analysis, the value for MFE and MFR is set at 1.00, and MTV is set at 0.001. During the selection procedure, each entry and removal of a variable is called a step, and the maximum number of steps allowed in this analysis is 16. The meanings and the procedure for using these criteria are explained below.

<u>Wilks' Lambda</u>: Wilks' lambda is a multivariate statistic which is used to measure the differences between groups and the homogeneity (cohesiveness) within groups. In other words, Wilks' lambda is a measurement of the degree to which cases cluster near their group centroid. For the two-group analysis, Wilks' lambda is calculated as the ratio of the within-groups sum of squares to the total sum of squares. It is the proportion of the total variance in the discrimination scores not explained by differences between groups. The maximum value of lambda is one, and the minimum value is zero. A variable with a Wilks' lambda value of zero denotes a high

²⁴ There are several other criteria for selecting the significant variables in LDA including: (1) Rao's V, (2) Mahalanobis' Distance between Closet Groups, (3) Between-Groups F, (4) Minimizing Residual Variance, and (5) Minimum Conditions for Selection (Norusis, 1986) (Klecka, 1980).

discrimination power (i.e. the variable can effectively discriminate the cases into groups with great variability between groups and little variability within groups). A variable with a Wilks' lambda value of one denotes very poor discrimination power since the groups it discriminates have identical group centroids and no group differences exist. A variable with small Wilks' lambda is desired in a LDA model, since it can be used as an effective discriminator.

Tolerance Test: By measuring the degree of linear association between the independent variables to be entered and the other independent variables in the model, tolerance level is used to decide if a variable is a useful discriminator. It is also used to monitor potential computational inaccuracy. The calculation of tolerance is 1- R_{ν}^{2} , where R_{μ}^{2} is the squared multiple correlation coefficient between th independent variable and all other variables already entered. According to Klecka (1980), a variable with a tolerance of less than 0.001 indicates that the variable is almost a linear combination of the rest of variables in the model. Since this variable contributes very little extra discriminating power to the model, including this variable is not necessary. Another reason for excluding such a variable is because the computations involved tend to result in rounding error if the tolerance becomes smaller than 0.001. Thus, a variable is required to have a tolerance greater than 0.001 in order to be entered as a discriminator in the model.

F Values: Both $F_{-to-enter}$ and $F_{-to-remove}$ are partial multivariate F statistics. The $F_{-to-enter}$ is used to test the additional discrimination which is introduced by the entry of the variable being considered (Dixon, 1973). If _{F-to-enter} is small (less than 1.00), the variable does not contribute enough discrimination power to the model and will not be retained in the model. The _{F-to-remove} is used to test the significance of the decrease in discrimination. Because variables entered later may duplicate the contribution contributed by the variables entered earlier, a variable entered earlier may result in small _{F-to-remove} later and thus should be removed. Usually Wilks' lambdas are used to calculate F values. The process is shown mathematically below.

(1)

$$F_{-to-enter} = \frac{\left(n - g - p\right) \left((1 - l_{p+1}/l_p)\right)}{(g - 1) (l_{p+1}/l_p)}$$
(2)

$$F_{-to-remove} = \frac{\left(n - g - p\right) \left((1 - l_{p-1}/l_p)\right)}{(g - 1) (l_{p-1}/l_p)}$$

where n is the total number of cases, g is the number of groups, l is Wilks' lambda before adding the variable, p is the number of independent variables contained in the current model, l_{p+1} is Wilks' lambda calculated after entering the variable, and l_{p+1} is Wilks' lambda calculated after removing the variable (Norusis, 1988).

Stepwise Procedure: In the stepwise procedure, the variable selecting begins by testing the significance of the differences in group means for Michigan and non-Michigan travelers for each travel pattern variable. This stage is called step zero in which the Wilks' lambda values for each variable are calculated and compared. Since there are no variables in the model at step zero, the tolerance and minimum tolerance are 1.

In step one, the variable which provides the greatest univariate discrimination is entered. Since there is no variable in the model at this point, the variable with the smallest Wilks' lambda and the largest $F_{-to-enter}$ is the first to enter. If the entry results in a $F_{-to-enter}$ value higher than the MFE (set at 1.0 in this analysis), it is retained in the model. Since Michigan residency is the variable which results in the smallest Wilk's lambda of .82 and the largest $F_{-to-enter}$ of 117.62, it is retained in model.

After a variable is entered, each variable already in the model is removed to calculate its $F_{-to-remove}$ value. If its removal results $F_{-to-remove}$ value lower than the MDR (set at 1.0 in this analysis), it is excluded from the model. Because Michigan residency is the only variable in

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the model at this stage, its $F_{-to-remove}$ is equal to the value of $F_{-to-enter}$ which is greater than 1.00. The Michigan residency variable is therefore retained.

In step two, each remaining variable is entered and paired with Michigan residency (the first variable entering the model) to calculate Wilks' lambda and F values ²⁵. Among all remaining variables, trip mileage results in the smallest Wilks' lambda and the largest $F_{-to-enter}$. It is entered into the model. After the entry of a variable, each variable already in the model is removed to calculate the Wilks' lambda and associated $F_{-to-remove}$ value. The $F_{-to-remove}$ value resulting from removing trip mileage from the model is the same as its $F_{-to-enter}$ value. The $F_{-to-remove}$ value for removing Michigan residency variable is 114.72. Both have tolerance values greater than 0.001. Neither of these two variables is removed.

This procedure is repeated and a five-variables LDF model is produced. The estimated LDF from this analysis is shown as follows:

Trip Pattern Discriminant Score = - 0.92 + 2.06 (MICHIGAN RESIDENCY) + 0.34 (WEEKEND TRIP) - 0.29 (HOTEL NIGHTS) + 0.13 (TRIP DURATION) - 0.0011 (TRIP MILEAGE)

Significant variables which are selected as discriminators in this LDF are indicated by capital letters within the parentheses. Among these variables, Michigan residency and weekend trip are binary

²⁵ Wilks' lambda is calculated jointly for the variable(s) which was(were) already in the model and the variable which is newly added.

variables, and the others are continuous variables. This function shows that increasing trip mileage or hotel nights will cause a decrease in discriminant score, while increasing trip duration will increase discriminant score. Living in Michigan or traveling on the weekend also increase the discriminant score.

To predict group membership, the group centroids (average discriminant scores)²⁶ are calculated by summing up all discriminant scores estimated for each case in the same group (Michigan or non-Michigan traveler group) divided by the number of cases in the group. The resulting group centroids for Michigan and non-Michigan travelers are 0.43 and -0.64, respectively. The results indicate that the propensity will increase for a case to be classified into a positive-centroided group if each predicting variable with a positive coefficient increases and will decrease if the score of each predicting variable with negative coefficient increases. In other words, the propensity for traveling in Michigan is discouraged by travel distance and the requirement of a stay in hotels/motels. While Michigan residents, weekend travel or long term travelers have a higher propensity to travel in Michigan.

Among the trips analyzed, 80.5% involve weekend travelers, and 19.5% involve non-weekend travelers; 55.1% originated in Michigan,

²⁶ The group centroids are also called average discriminant score which is calculated by summing up all discriminant scores estimated for each case in the same group divided by the number of cases in each group.

and 44.9% originated out of Michigan. The analysis started with 790 Michigan trips and 790 non-Michigan trips. After excluding the cases with at least one missing discriminating variable, there were 343 Michigan trips and 230 non-Michigan trips processed. The estimated LDF correctly predicted 218 out of 343 Michigan trips and 376 out of

Michigan trips and 230 non-Michigan trips processed. The estimated LDF correctly predicted 218 out of 343 Michigan trips, and 376 out of 573 total trips analyzed (see Table 21). Applying the LDF resulted in correct prediction rates of 63.6%, 68.7% and 65.62% for Michigan, non-Michigan and overall trips, respectively. As will be illustrated, employing chance alone would have resulted in a 52% correct prediction rate. Therefore estimating model has resulted in a moderate improvement over chance predicting. The following table (Table 21) shows the classification matrix. This is followed by illustrations of the calculation of the chance predicting rate, group predicting rates, and error reduction rates.

a. Calculation of Chance Predicting Opportunity

From Table **21**, the prior probability for a Michigan and non-Michigan trip can be calculated.

Michigan Trips:	a = Number of Michigan Trips / Total Trips = (343 / 573) = 59.86%
Non-Michigan Trips:	b = Number of Non-Michigan Trips = (1 - a) = 40.13%

The proportional chance criterion is applied to calculate the opportunity of predicting by chance (OPC) (Churchill, 1987).

$$OPC_{pro} = a^2 + b^2 = 59.86\%^2 + 40.13\%^2 = 51.93\%$$

Table 21. Classification matrix for predicting membership in the Michigan or non-Michigan groups using trip pattern variables.

	NT 1	Predicted Group Membership		
Group of Cases		non-Michigan Trips	Michigan Trips	
non-Michig	gan	_		
Trips	230	158 ¹ (68.7%) ²	72³ (32.3%)⁴	
Michigan Trips 343	343	125 ³ (36.4%) ⁴	218 ¹ (63.6%) ²	
	Total 573	283	290	

1. Number of the cases correctly classified. 2. Percentage of cases correctly classified in row. 3. Number of the cases incorrectly classified. 4. Percentage of total cases incorrectly classified in row.

b. Calculation of Correct Predicting Rates

The calculation of the correct predicting rate for the individual groups and total trips are

(1) Non-Michigan Trips:	(158 / 230) = 68.7%
(2) Michigan Trips:	(218 / 343) = 63.6%
(3) Total Trips:	(376 / 573) = 65.62%

c. The Calculation of Predicting Error Reduction

The measurement of error reduction using LDF over chance alone can be calculated using the tau statistic:

$$\tan = \frac{\begin{pmatrix} n_{c} - \sum p_{i}n_{i} \\ i=1 \end{pmatrix}}{\begin{pmatrix} n_{i} - \sum p_{i}n_{i} \\ i=1 \end{pmatrix}}$$

where n_c is the number of cases correctly classified, g is number of groups, p_i is the prior probability of group membership, n_i is the number of cases in group *i*, and n_i is the total number of cases over all groups (Klecka, 1980). In this analysis, tau is calculated as follows.

(1) Michigan Trips:

$$tau = \frac{218 - (0.6 \times 343)}{343 - (0.6 \times 343)} = 8.89\%$$

(2) Non-Michigan Trips:

$$\tan = \frac{158 - (0.4 \times 230)}{230 - (0.4 \times 230)} = 47.83\%$$

(3) All Trips:

$$tau = \frac{376 - (0.6 \times 343 + 0.4 \times 230)}{573 - (0.6 \times 343 + 0.4 \times 230)} = 28.42\%$$

The percentage improvement over chance probability is 8.89%, 47.83% and 28.42% for Michigan, non-Michigan and overall trips, respectively. These improvements are moderate. However, the improvement indicates that these variables could be potentially useful in LDA for predicting Michigan travelers.

Since the statistics applied in the LDF are based on the assumption that the pooled within-group covariance matrices between Michigan and non-Michigan travelers are equal, (the violation of this assumption will result in non-optimized estimation of LDF), the test on the violation of this assumption is therefore important. In this analysis, Box's M test is used to test if the assumption is violated. The test produces a F value of 22.0. Given a nonsignificant level of 0.76, this result indicates that the hypothesis can not be rejected. Hence, there is inadequate evidence for saying there is a difference between two covariance matrices. Consequently, the chance of violating the LDA assumption in this analysis is small and the chance for the estimated LDF to be the best combination of predicting variables is large.

Table **22** shows that moderate correlations exist between the variables included in LDF indicating a low chance of an interdependencies effect.

Table	22.	Correla	ation	matrix	for	trip	pattern	variables	which	entered	the
Michig	an	traveler	discr	iminant	ana	lysis.					

	TRIP	TRIP	HOTEL	GROUP	MICHIGAN
	MILEAGE	LENGTH	NIGHT	TRIR	RESIDENCY
TRIP MILEAGE	1.00				
TRIP LENGTH	0.20	1.00			
HOTEL NIGHT	0.19	0.09	1.00		
GROUP TRIP	0.14	0.02	0.13	1.00	
MI RESIDENCY	0.02	-0.03	0.07	0.02	1.00

(Database: The Great Lakes Travel Monitor Study (1983 - 1985)

<u>Using Socioeconomic Variables to Predict The Propensity to</u> <u>Travel in Michigan</u>

The same variable selection criteria and procedure applied in the previous discussion was also used in this analysis. In this analysis, six socioeconomic variables including gender, age, marital status, education, race, and income were used to estimate the LDF. At the end of the stepwise variable selection procedure, variables including gender, marital status, and family income remained in model as discriminators. Among these variables, marital status and gender are binary variables, and family income is a categorical (nominal) variable. The estimated discriminant function is as follows:

Socioeconomic Discriminant Score = - 0.87 + 0.35 (FAMILY INCOME) - 1.37 (MARITAL STATUS) + 1.29 (GENDER)

This function shows that a status of being married will decrease the discriminant score, while male travelers with higher family income will produce higher discriminant score. The group centroids are calculated as -0.12 and 0.12 for Michigan and non-Michigan travelers, respectively. Since the group centroid for Michigan travelers is negative, male travelers with high family income are less likely to travel in Michigan than female travelers, while married travelers have a higher propensity of traveling in Michigan than unmarried travelers. Among all Michigan trips analyzed, 36.5% are taken by males and 63.5% by female²⁷; 73.1% are taken by married people and 26.9% by non-married people. The average family income of Michigan travelers is lower than non-Michigan travelers²⁸. The chance of traveling in Michigan favors female and married people. However, since there was a bias toward selecting female respondents during the telephone interview, the bias also exists in the estimated tendency of traveling in Michigan which is more based on females' responses than males' responses.

The estimated discriminant function correctly predicts 352 out of 566 Michigan trips. The classification matrix is shown in Table 23.

The results in Table 23 correspond to a correct prediction rate of 62.2% for Michigan trips and 55.71% for overall trips. The percentage improvement over chance probability is 22.8% for Michigan trips and 11.4% for overall trips. These improvements are better than that of using trip pattern variables to predict Michigan travelers. Thus, the improvement implies that socioeconomic variables are potentially useful discriminators for predicting Michigan travelers.

²⁷ As discussed earlier in page 75, there is a bias toward female respondents.

²⁶ No actual average family income was used in discriminant calculation. Instead, an income category number was assigned to each case according to its income level, and the category number was used in the calculation.

	Number of Cases		Predicted Group Membership		
Group			non-Michigan Trips	Michigan Trips	
non-Michigan Group		554	272 ¹ (49.1%) ²	282³ (50.9%)⁴	
Michigan Group		566	214 ³ (37.8%) ⁴	352^1 (62.2%) ²	
	Total	1120	486	634	

Table 23. Classification matrix for predicting membership in the Michigan or non-Michigan groups using socioeconomic variables.

1. Number of the cases correctly classified. 2. Percentage of cases correctly classified in row. 3. Number of the cases incorrectly classified. 4. Percentage of total cases incorrectly classified in row.

As in previous analysis, Box's M test is used to test if the assumption that there is a difference between two covariance matrices is violated. The test produces a F value of 0.59 given a nonsignificant level of 0.74, this result indicates that the hypothesis can not be rejected. Hence, there is inadequate evidence for saying there is a difference between two covariance matrices. This result indicates that the chance of violating LDA assumptions in this analysis is small and the chance of estimated model to be optimal is great.

The correlation matrix in Table 24 shows that the correlation between predicting variables is moderate indicating the interdependencies effect in the estimated function is minor. Table 24. Correlation matrix for socioeconomic variables whichentered in Michigan traveler discriminant analysis.

	SEX	MARRIAGE STATUS	FAMILY INCOME
SEX MARRIAGE STATUS FAMILY INCOME	1.00	-0.06 1.00	0.04 0.27 1.00

(Database: The Great Lakes Travel Monitor Study (1983 -1985), Travel Bureau, Michigan Department of Commerce).

<u>Using Travel Information Variables to Predict The Propensity</u> to Travel in Michigan

The same variable selection criteria and procedure applied in previous analysis was used in this analysis. Fifteen travel information variables were processed through the stepwise variable selection procedure. At the end of the analysis, eight variables entered the model including: destination information, television, radio, billboard, travel agency, auto club, toll free 800 number, and the "other information" category. All of these variables are binary in nature. The resulting discriminant function is:

Travel Information Discriminant Score = - 4.70 + 0.62 (OTHER INFORMATION) + 0.96 (800 NUMBER) - 0.59 (AUTO CLUB) - 0.84 (TRAVEL AGENT) + 3.19 (BILLBOARD) + 1.48 (RADIO) + 1.52 (TELEVISION) + 4.10 (DESTINATION INFORMATION SOURCES)

This function reveals that the availability of information from auto club and travel agent decrease the discriminant score, while the availability of information from toll-free number service, billboards, radio, television, and destination information sources increase the discriminant score. The calculated group centroids are 0.34 and -0.25 for Michigan and non-Michigan travelers, respectively. Since the group centroid calculated is positive for Michigan travelers, increasing the availability of information from local auto club and travel agent would appear to decrease the chance of traveling in Michigan. While increasing the availability of information from state's toll-free phone number, billboard, radio, television, and other destination information sources will increase the chance of traveling in Michigan. Among these variables, the information from billboard, and destination have greater effects on the propensity of traveling in Michigan than other variables in the model.

However, care must be used in interpreting these results. It is possible that non-Michigan travelers, because their trips are longer on average (861.4 miles versus 347.7 miles), are predisposed to seek travel information to assist in selecting routes, lodging, and transportation arrangements. On the other hand, Michigan trips are shorter covering geography with which travelers are more familiar thereby permitting travelers to rely on less customized information sources such a billboards along their routes. Why there is clearly a correlation between these variables and the observed travel patterns, the relationship is not necessarily cause and effect in nature. Finally, travel agents and to a lesser extent auto clubs are less likely to offer information on travel products which Michigan offers (e.g. camping, fishing, small resorts, etc.) than far away areas such as Florida with its Disney complex. Besides, the differences between urban and rural attractions may also affect tourists' choices.

In this analysis, it is found that almost every Michigan traveler reported using travel information. However, only a small portion of Michigan travelers reported using the following media as information sources: television (25%), radio (7.3%), billboard (7.5%), travel agent (5.5%), auto club (14.6%), toll-free phone number (9.2%), other information sources (15.2%).

The estimated LDF correctly predicts 57 from 169 Michigan trips (see Table 25) resulting in 33.7%, and 62.28% correct prediction rates for Michigan and overall trips, respectively. The percentage improvements over chance probability are -4.2% and 22.6% for Michigan overall travelers, respectively. and With this poor discriminating power, travel information variables show very little promise of being useful for predicting Michigan travelers. The classification matrix is shown in Table 25.

A . / . 1	No construction of the second		Predicted Group Membership		
Group	of	of Cases	non-Michigan Trips	Michigan Trips	
non-Michigan Trips		234	194 ¹ (82.9%) ²	40 ³ (17.1%) ⁴	
Michigan Trips		169	112³ (66.3%)⁴	57 ¹ (33.7%) ²	
	Total	403	306	97	

Table 25. Classification matrix for predicting membership in the Michigan or non-Michigan groups using travel information variables.

1. Number of the cases correctly classified. 2. Percentage of cases correctly classified in row. 3. Number of the cases incorrectly classified. 4. Percentage of total cases incorrectly classified in row.

Due to great number of missing data in this analysis, Box's M test can not be conducted. The potential violation of LDA assumption that assumes equal pooled within-group covariance matrices between Michigan and non-Michigan travelers is thus unknown. Table **26** shows the low correlation coefficients, indicating that the interdependencies effect is minor.

Table 26. Correlation matrix for travel information variables which entered in the Michigan traveler discriminant analysis.

	DI	TV	RA	BI	TA	AC	TF	OT
DI	1.00							
TV	-0.12	1.00						
RA	0.01	0.25	1.00					
BI	0.00	0.03	0.01	1.00				
TA	0.02	-0.08	-0.06	0.01	1.00			
AC	0.02	-0.13	-0.09	0.04	-0.06	1.00		
TF	0.01	-0.09	-0.02	-0.07	-0.05	0.00	1.00	
OT	0.02	-0.16	-0.09	-0.04	-0.04	-0.09	0.05	1.00

1.DI-Destination Information, TV-Television Information, RA-Radio Information, BI-Billboard Information, TA-Travel Agency Information, AC-Auto Club Information, TF-Toll Free 800 Number, OT-Other Information. (Database: The Great Lakes Travel Monitor Study (1983 -1985), Travel Bureau, Michigan Department of Commerce).

<u>Using Trip Attribute Variables to Predict The Propensity to</u> <u>Travel in Michigan</u>

The same variable selection criteria and procedure was also applied to trip attribute variables including: good scenery, good restaurant, friendly people, easy to get to, reasonable prices, good place to stay, summer fun, high prestige vocation, clean air, good night life, and winter fun. Initially, five trip attribute variables were subjected to the stepwise variable selection procedure. There was only one significant variable left in the discriminant function at the end of analysis. The estimated function is given by

Trip Attribute Discriminant Score = -2.18 + 0.74 (WINTER FUN)

This function suggests that greater consideration of winter fun as

an important trip attribute will raise discriminant score. The calculated group centroids are 0.08 and -0.08 for Michigan and non-Michigan trips, respectively. Since Michigan trips have a positive group centroid, people who consider winter fun as important trip attribute are more likely to travel in Michigan.

The average rating scores on winter fun are 3.06 and 2.85 for Michigan and non-Michigan travelers, respectively. The estimated LDF correctly predicts 517 of 785 Michigan trips (see Table **27**) resulting in a correct predicting rate of 65.9% and 53.47% for Michigan and overall trips, respectively. The percentage improvements over chance probability are 31.60% and 7.0% for Michigan and overall trips, respectively. These improvements imply that the rating of the importance of winter fun to travelers can be used to predict the propensity to travel in Michigan. The classification matrix is shown in Table **27**.

The F value calculated from Box's M test is 0.32 with a nonsignificant level of 0.96. Thus, the hypothesis of equal pooled within-group covariance matrices between Michigan and non-Michigan travelers cannot be rejected. It indicates that the chance for violating LDA assumptions is small and the estimated model is optimal.

	B7		Predicted Grou	p Membership
Actual Group	Nu of C	Number f Cases Trips	non-Michigan	Michigan Trips
non-Michigan				
Trips		786	323^{1}	463^{3}
Michigan			(41.1%)	(30.9%)
Trips		785	268^{3}	517 ¹
			(34.1%)*	(65.9%)²
	Total -	1571	591	980

Table 27. Classification matrix for predicting membership in theMichigan or non-Michigan groups using trip attribute variables.

1. Number of the cases correctly classified. 2. Percentage of cases correctly classified in row. 3. Number of the cases incorrectly classified. 4. Percentage of total cases incorrectly classified in row.

<u>Using Michigan Image Variables to Predict The Propensity to</u> <u>Travel in Michigan</u>

In the interviews, the respondents were asked the question (see Q39 in questionnaire) "Is Michigan known for?". Aspects including good scenery, peace and quite, family fun, etc were then selected. The rating of these variables were used as Michigan image variables in this analysis. Rating scores ranged from one to ten with one being totally disagree and ten being totally agree.

The same variable selection criteria and procedure was applied to the image variables including: good scenery, good restaurant, friendly people, easy to get to, reasonable prices, good place to stay, summer fun, high prestige vocation, clean air, good night life, and winter fun. At the end of the stepwise selection process, six variables were retained in the function including: good scenery, good restaurant, friendly people, good place to stay, summer fun, and clear air. The average Michigan image scores rated by Michigan and non-Michigan travelers are shown in Table 28.

Table 28. Average rating scores assigned to six Michigan image variables by Michigan and non-Michigan travelers.

Variables	Michigan Trip Group	Non-Michigan Trip Group
GOOD SCENERY	8.58	7.42
GOOD RESTAURANT	7.43	6.41
FRIENDLY PEOPLE	7.89	6.76
GOOD PLACE	7.79	6.88
SUMMER FUN	8.54	7.20
CLEAR AIR	7.59	6.46

1. The ratings of degree or disagree that Michigan is known for these items are from one to ten. One is strongly disagree, and ten is strongly agree. (Database: The Great Lakes Travel Monitor Study (1983 - 1985), Travel Bureau, Michigan Department of Commerce).

The discriminant function estimated is:

Travel Destination Image Discriminant Score =

- 4.31 + 0.93 (CLEAR AIR) + 0.26 (SUMMER FUN)
- 0.57 (GOOD PLACE TO STAY) + 0.82 (GOOD SCENERY)
- + 0.13 (FRIENDLY PEOPLE) 0.64 (GOOD RESTAURANT)

In this function, increasing rating score on "good place to stay" and "good restaurant" will decrease discriminant score, while increasing rating score on "clear air", "summer fun", "friendly people", and "good scenery" will increase the discriminant score. The
calculated group centroids are 0.34, and -0.36 for Michigan and non-Michigan travelers, respectively. Increasing the rating scores of the variables with positive coefficient will increase the propensity to travel in Michigan.

The estimated LDF correctly predicts 575 of 757 Michigan trips (see Table 29) resulting in correct predicting rates of 76.0% and 65.8% for Michigan and overall trips, respectively. The percentage improvements over chance probability are 50.0% and 31.51% for Michigan and overall trips, respectively. These improvements are relatively high for predicting Michigan trips. These improvements image variables imply that Michigan are potentially useful discriminators in LDA for predicting Michigan trips. However, the interdependency effects between the variables may reduce the discriminating power of the model. The classification matrix is shown in Table 29.

Box's M test rejects the hypothesis of equal pooled within-group covariance matrices between Michigan and non-Michigan trips at a significant level of 0.00 (F value is 6.01). The chance for violating LDA assumption is high. Table **30** shows that the correlation between these variables are moderately high indicating the estimated function has an expectable interdependencies affect from the variables used to estimated the function.

A . (1	Number of Cases		Predicted Group Membershij			
Actual Group			non-Michigan Trips	Michigan Trips		
non-Michigan Trips		708	389 ¹ (54.9%) ²	319³ (45.1%)⁴		
Michigan Trips		757	182³ (24.0%)⁴	575 ¹ (76%) ²		
	Total	1465	571	894		

Table 29. Classification matrix for predicting membership in the Michigan or non-Michigan group using Michigan image variables.

1. Number of the cases correctly classified. 2. Percentage of cases correctly classified in row. 3. Number of the cases incorrectly classified. 4. Percentage of total cases incorrectly classified in row.

Table **30**. Correlation matrix for Michigan image variables which entered in Michigan traveler discriminant analysis.

	GS	GR	FP	GP	SF	CA
68	1.00					
00	1.00	1.00				
GR	0.52	1.00				
FP	0.55	0.52	1.00			
GP	0.55	0.59	0.57	1.00		
SF	0.61	0.53	0.52	0.60	1.00	
CA	0.55	0.39	0.50	0.45	0.49	1.00

1. GS-Good Scenery, GR-Good Restaurants, FP-Friendly People GP-Good Place to Stay, SF-Summer Fun, CA-Clear Air 2. (Database: The Great Lakes Travel Monitor Study (1983 -1985), Travel Bureau, Michigan Department of Commerce).

<u>Using High Power Discriminator To Predict The Propensity</u> to Travel in Michigan

High power discriminators are the discriminators which result in 75% or higher correct prediction rate in a single variable LDA. Single variable LDA results are listed in Table A-1 to A-5 in the Appendix A. Totally, twelve variables achieved a 75% or higher rate for correctly predicting Michigan travelers.

The same variable selection criteria and procedure as applied in previous analysis were used again here. Twelve high power discriminating variables remained in LDF after the stepwise procedure was completed. These include: trip mileage, overnight in other states, group trip, overnight in hotel, trip length, season, good scenery, easy to get to, and summer fun. The estimated discriminant function:

Discriminant Score = - 4.19 + 0.21 (SUMMER FUN) + 0.83 (EASY TO GET TO) + 0.62 (GOOD SCENERY) + 0.35 (SEASON) - 0.30 (TRIP LENGTH) - 0.69 (NIGHT IN HOTEL) - 0.39 (GROUP TRIP) + 0.89 (NIGHT IN OTHER STATE) - 0.54 (TRIP MILEAGE)

This function shows that increasing trip length, overnight in hotel, trip mileage and travel in group will decrease the discriminant score, while increasing the rating scores on summer fun, easy to get to, good scenery, traveling in the summer, and increasing nights stayed in other states will increase the discriminant score. The group centroids are 0.51 and -0.54 for Michigan and non-Michigan travelers, respectively. Travelers who are involved in a long distance trip, involving a long stay in a hotel, and who travel in a group are less likely to travel in Michigan than those who do not fit these characteristics. In contrast, travelers concerned with summer fun, easy access to destination, good scenery, warm season as an important trip attribute, and who like to have spend nights in another state are more likely to travel in Michigan.

Among all Michigan travelers, 76.70% travel during the warm season and 2.94% take group trips. The estimated discriminant function correctly predicts 471 of 564 Michigan trips (see Table **31**) resulting in 83.5% and 72.6% of correct prediction rates for Michigan and overall travelers, respectively. The percentage improvements over chance probability are 66.20% and 46.00% for Michigan and overall travelers, respectively. These improvements are considered relatively high. These results imply that variables with over 75% discriminating power in single variable LDA could effectively improve the performance of the multivariate LDA. The classification matrix for these high power predicting variables is shown in Table **31**.

With a F value of 34.61, Box's M test results in rejecting the hypothesis of equal pooled within-group covariance matrices between Michigan and non-Michigan travelers at a significant level of 0.00. This result indicates that there is a great chance of violating LDA assumption in this analysis. Table **32** shows six of the correlation coefficients values are moderately high indicating that the interdependency effects from these variables may be critical.

Antoni	Number of Cases		Predicted Group Membership			
Group			non-Michigan Trips	Michigan Trips		
non-Michigan Trips		549	337 ¹ (61.4%) ²	212³ (38.6%)⁴		
Michigan Trips		564	93³ (16.5%)⁴	471^{1} (83.5%) ²		
	Total	1113	430	683		

Table 31. Classification matrix for predicting membership in the Michigan or non-Michigan groups using high power discriminators.

1. Number of the cases correctly classified. 2. Percentage of cases correctly classified in row. 3. Number of the cases incorrectly classified. 4. Percentage of total cases incorrectly classified in row.

 Table 32. Correlation matrix for the selected variables which entered in Michigan traveler discriminant analysis.

						~	~ ~		
	MT	OS	GT	HN	TL	SE	GS	EG	SF
TM	1.00								
OS	-0.19	1.00							
GT	0.05	-0.04	1.00						
HN	0.17	-0.03	0.11	1.00					
TL	0.26	-0.31	-0.04	0.26	1.00				
SE	-0.08	0.01	-0.04	-0.04	-0.06	1.00			
GS	-0.03	0.02	-0.01	-0.03	-0.06	-0.00	1.00		
EG	-0.01	0.02	0.02	0.02	0.02	-0.00	0.05	1.00	
SF	0.02	-0.01	-0.02	-0.01	-0.01	0.00	0.61	0.4	1.00

1. TM-Trip Mileage, OS-Overnight Spent at Other State, GT-Group Trip, HN-Overnight Spent at Hotel, TL-Trip Length, SE-Season, GS-Good Scenery, EG-Easy to Get to, SF-Summer Fun 2. Bold fonts show the critical correlation coefficient values. (Database: The Great Lakes Travel Monitor Study (1983 -1985), Travel Bureau, Michigan Department of Commerce).

<u>Comparison of Prediction Performances from Using Different</u> <u>Types of Variables to Predict The Propensity to Travel in</u> <u>Michigan</u>

This section compares the performance of each model estimated in this Chapter. Their prediction rate success are summarized in Table **33** and **34**.

The comparison of results shows that selecting the high power discriminators from each single-variable²⁹ LDA for estimating multivariate LDF is the most effective approach of all the analyses conducted. This approach achieves a 83.5% correct prediction rate and a 66.2% improvement over chance predicting. Using Michigan image variables also appears to be an effective approach for predicting Michigan trips. This approach achieves a 76% CPR and a 49.9% improvement over chance predicting (see Table **33**). The results from these analyses indicate that improvement of Michigan's image could increase Michigan's tourism travel.

Using trip attribute or socioeconomic variables results in moderate improvement over chance prediction. Using trip patterns or trip information variables result in moderate to low improvement over chance prediction. The low performance of trip information variables to predict Michigan travelers may result from too many missing cases in estimating the predicting model or the relations observed may not

²⁹ Single-variable LDA uses only one variable in analysis instead of using multi-variables.

be cause and effect in nature.

-J F			x				
		Correct Predicting Rate					
Variable		Michigan	Non-Michigan	Overall			
Set		Trip	Trip	Trips			
		(%)	(%)	(%)			
(1)	High CPR						
	Variable Set	83.5	61.4	72.6			
(2)	Michigan Image						
	Variable Set	76.0	54.9	65.8			
(3)	Trip Attribute						
	Variable Set	65.9	41.1	53.5			
(4)	Trip Pattern						
<i>(</i>)	Variable Set	63.6	68.7	65.6			
(5)	Socioeconomic	<u> </u>					
(α)	Variable Set	62.2	49.1	55.7			
(0)	Iravel information	007	80.0	<u> </u>			
	variable Set	33.7	82.9	62.3			

Table 33. LDA correct predicting rate comparisons using differenttypes of variables as discriminators to predict Michigan trips.

1. The tests are based on .52 prior probability for both Michigan trips and non-Michigan trips. 2. High predicting power variables are the variables which result in 75% or higher Michigan trip predicting rate in single variable LDA predicting power tests. (Database: The Great Lakes Travel Monitor Study (1983 -1985), Travel Bureau, Michigan Department of Commerce).

Var Set Tes	table N	Actual Jumber of Michigan Trips	Number of Correctly Predicted Trips		Improvement <u>over Chance Rate</u> Michigan Overall Trips Trips		
		(N)	(N)	(%)	(%)	(%)	
(1)	High CPR						
	Variable Set	564	471	(83.5)	66.2	46.0	
(2)	Michigan Ima	age					
	Variable Set	757	575	(76.0)	49.9	31.5	
(3)	Trip Attribute	e					
	Variable Set	785	517	(65.9)	31.6	7.0	
(4)	Socio Econor	nic					
	Variable Set	566	352	(63.6)	22.8	11.4	
(5)	Trip Pattern						
	Variable Set	343	218	(62.2)	8.9	28.4	
(6)	Travel Inform	nation	_			_	
	Variable Set	169	112	(33.7)	-4.2	22.6	

Table34.Percentage improvement over chance possibility inmultivariate LDA prediction.

1. High predicting power variables are the variables which result in 75% or higher Michigan trip prediction rate in single variable LDA predicting power tests. (Database: The Great Lakes Travel Monitor Study (1983 -1985), Travel Bureau, Michigan Department of Commerce).

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CHAPTER V

CONCLUSIONS

Recall that two general goals for this study were: (1) to identify the differences between Michigan and non-Michigan tourists which may affect the choice of Michigan as a trip destination; and (2) to assess the effectiveness of using existing travel information to predict the propensity to travel in Michigan. With respect to these goals, the analyses conducted in this study have achieved: (1) descriptive analyses which give basic profiles of Michigan's tourism markets; (2) significance tests of the differences between Michigan and non-Michigan tourism markets; (3) five discriminant models estimated from different types of travel information for predicting Michigan trips; and (4) one superior approach using high-power-discriminators to form a single LDF to predict Michigan travelers.

The ability to use the results from these analyses depends on the validity and reliability of the measurements and instruments used in this study. The data used in this study are from a survey that wasn't designed for this particular study. Thus, the relative validity and reliability of the measurements and instruments used derive from three concerns: (1) Was the survey carried out properly in the first place?; (2) Was the sample well chosen?; and (3) Were the questions well phrased?. Since the survey was conducted by a reputable firm, the answers to these questions are assumed to be positive. However, problems in data type and quality do affect the reliability and validity of research results to some degree. In the remainder of this chapter, the research problems encountered, and the potential application limitations of the results are discussed. The implications of the results and issues for future research are identified. Finally, a summary of the major findings concludes this study.

Research Problems

The effectiveness of the discriminant functions estimated in this study might not be optimal due to two data problems: (1) data type; and (2) data quality.

Data Type Problems

Two opinions have been expressed on the controversy of using different types of variables in LDA. One opinion suggests that the strict rules should be followed in LDA. The rules require that continuous independent variables and categorical dependent variables should be used in LDA. Failure to follow this rule will work against the assumptions³⁰ in LDA theory and will invalidate the analysis results. Hand, Goldstein, and Dillon (1981) pointed out that when all independent variables are binary or are a mixture of continuous and discrete values, the linear discriminant function is not optimal. On the other hand, another opinion suggests that LDA is fairly robust with respect to the LDA assumptions. Gillbert (1981) and Moore (1973) represent this opinion. They pointed out that the linear discriminant function often performs reasonably well when binary (Yes-no, male-female) variables are used.

The database used in this study contains only a few examples of continuous data. To be able to explore the potential use of other noncontinuous data for predicting Michigan trips with LDA, this study applied Gillbert and Moor's opinion that suggests that using binary variables will not seriously affect the performance of LDA. Three types of data are applied in LDA including continuous, nominal, and binary data. The continuous data included "trip mileage", "trip length", "night spent in hotel" etc.; the nominal data (involving more than two categories) used are "family income", "education level", etc.; and the binary data (involving only two categories) used are "gender", "group trip", etc. With the mixture of these different types of variables, the goal of the prediction performance of the LDFs in these analyses is

³⁰ The crucial assumptions include: (1) in each group the variables are from multivariate normal distributions, and (2) the covariance matrices for all groups are equal.

acceptability or improved estimation rather than optimality.

Data Quality Problems

Theoretically, LDA requires independent variables to be genuine continuous data. However, the continuous data available in this study are not good quality. For example, the trip mileage reported by the travelers is based on their memory rather than exact records. Ideally, the travel mileage should have a continuous range, but in reality, people tend to remember the mileage as a rounded figure. Thus the reported mileage figures are highly concentrated around certain numbers such as 50 or 100 miles rather than the precise figures like 57 or 101.5 miles. This is one of the problems in the database which reduces its quality. Other variables with possible recall problems include: spending, party size, duration, and the nights spent in various lodging places. The distributions of these variables are quasicontinuous with the potential of affecting the estimation of linear discriminant functions, and consequently, the prediction accuracy and actual application in the future.

Application Limitations

There are two major limitations to applying the results from this study.

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Untested Variables

Because the main purpose of this study was to explore and demonstrate the effectiveness of LDA for identifying Michigan's potential tourism market instead of being an exhaustive search for suitable LDA discriminators, the study uses only five types of variables in LDA analyses. Because of these constraints, the variables identified in this study had to be limited to those of more general nature and thus tend to be more or less static. For example, while socioeconomic background variables such as family income may be an important factor, the more dynamic variables such as global economic climate may be decisive from time to time. Some of the factors might well influence trip decisions to some degree at a different outdoor recreation area in a different time period, but they are beyond the scope of this research. Therefore, in applying the results of this study, one must keep in mind that variables not tested in this study may have unknown but significant effects.

Excluded Population

Since this study selected only the households of two areas: the Areas of Dominant Influence in the Great Lakes Region, and the Census Metropolitan Areas/Census Areas within Ontario, Canada, the results found in this study may not be applicable to the population of other areas. The exclusion of rural areas may also limit the potential influences on the trip destination decision caused by the rural-urban differences.

Despite these limitations, the variables identified in this study provide a basis for understanding market forces underlying Michigan tourism. More importantly, the flexibility and robustness of the LDA approach has been demonstrated to a considerable degree³¹. This provides a valuable structure for future applications using other variables to predict Michigan's tourism market.

Implications And Issues for Future Research

Three follow-up issues as a result of this effort have emerged for researchers interested in the application of LDA as a tool for tourism market prediction.

First, this study focused on the single trip and uses it as a observation unit. Other studies may adopt "household" as the observation unit if they would like to focus on families. The differences between these results and the effect on the prediction of LDA are unknown. In a preliminary probe of this question conducted by the author, this study has found that there is little difference between the average trip patterns and the travelers' characteristics

³¹ In this study, LDA has shown a great robustness. The use of binary and nominal data as discriminator has resulted in effective prediction rates despite the violation of the LDA assumption which assumes discriminator used are continuous.

(see Table B-1 in Appendix B). However, the "trip-oriented" approach may also result in estimation and prediction accuracy different from the "household-oriented" approach in LDAs. In certain situations, the household-oriented approach may be more appropriate. The tradeoffs between these two approaches are worth further investigation.

Second, despite the fact that LDA has been accepted as a robust method in the sense that it demonstrates a certain degree of resistance to violations of the LDA assumptions, the possible biases due to the use of various types of travel data of various quality still requires careful research. To determine the probability of violation of LDA assumptions, the Box M-tests which check the corvariance matrix for the interdependencies among variables were performed. However, there is no fixed criteria for the acceptance. Third, as in linear regression analysis, LDA will not perform well when any of the following four difficulties is encountered: (1) inadequate observations; (2) invalid independent variables; (3) high correlation between predictors used; and (4) a nonlinear true relationship. Overcoming these difficulties will greatly enhance the applicability of LDAs to other application areas.

Conclusions

Identifying potential tourist market areas is a prerequisite of a promotion campaign. The identification of a potential tourism markets,

however, involves numerous problems. First, a variety of variables influence recreational tourism, and secondly, most predictions depend on intuition and common sense to identify and select variables which may influence travelers' decisions.

Through the t-test and Chi-square test results, it has been found that the Michigan and non-Michigan tourism markets are significantly different in several aspects. RV ownership, education and income level, marital status, Michigan image, trip concerns, trip duration, media sources, seasons, recreation activities, and brand loyalty are some characteristics which may differentiate Michigan from non-Michigan trips. This study also found that the preselection of high prediction power variables from single variable LDA can effectively enhance the prediction performance of the multivariate LDA model. However, using specific types of variables to predict Michigan trips be more practical in mav certain occasions. For example, socioeconomic variables are readily available from most census data.

Significant differences between the determinants of Michigan and non-Michigan recreational trip was proven to be useful for predicting Michigan trips. In the following section, conclusions with some possible implications are given.

Market Demand:

1. Michigan's recreational tourists are more likely to be users of resorts, spas, campgrounds and cabins but less likely to use a motel or hotel or be visiting friends or relatives than the non-Michigan tourists. This finding suggests that Michigan's recreation tourism is more oriented to outdoor recreation than non-Michigan tourism and the demand for outdoor recreation tourism is greater in Michigan than in the other states.

2. The average stay of Michigan travellers in public tent campgrounds is twice as long as non-Michigan travellers (0.20 nights versus 0.09 nights), while the average stay in hotel or motel and the total length of trip are two to three times shorter. These findings suggest that Michigan's recreational tourism market demands more of Michigan's rural outdoor recreation facilities than urban indoor recreation facilities compared to non-Michigan recreational travelers.

3. Michigan's recreational tourism market is composed of a higher percentage of recreation vehicle owners than the non-Michigan market. This finding suggests that recreation vehicle tourism is more developed in Michigan than in other states, and the demand for recreation vehicle facilities is also higher in Michigan.

Market Expansion:

The average distance traveled on Michigan trips is much shorter than for non-Michigan trips. This suggests that Michigan has not reached many distant market, or that people are discouraged from taking long-distance trips to visit Michigan.

Market Economic Impact:

1. Michigan trips involve a shorter average duration, and smaller party size, and lower per trip average spending (\$2,800 versus \$3,114) than non-Michigan trips³². These findings suggest that the Michigan recreational tourism market has a lower spending power per trip than the non-Michigan market. This may also result in a smaller per-trip direct economic impact in Michigan. However, spending per day is higher for Michigan trips (\$552.30 versus \$384.94).

2. Michigan generates more trips than it receives. The deficit, in terms of the tourism volume, is about 6% of the total market in the region. This finding indicates that Michigan is losing more tourism dollars than it is capturing.

Market Attributes:

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³² However, the average per day spending is higher for Michigan trips. The average per day spending are \$552.30 and \$384.94 for Michigan and non-Michigan trips, respectively.

1. The factors "good restaurant", "high-prestige lodging" and "good night life" are considered less important attributes by Michigan's travelers than by non-Michigan travellers. On the other hand, "winter fun" is considered an important attribute to Michigan trips. This finding indicates that Michigan winter recreational activities are one of the most important features of Michigan's recreational tourism.

The trip attribute variables including "high prestige vacation", "good night life", "good place to stay", "winter fun", and "good restaurants" have significant effects on travelers' trip destination decisions. Michigan should continue improving the related facilities and promote aspects such as "clear air", "summer fun", "easy to get to", and "friendly people".

Market Brand Loyalty:

Michigan travelers are more likely to visit Michigan again when compared with non-Michigan travelers (with its rating scores of 4.53 versus non-Michigan trips' 4.45). Also, Michigan's winter travelers are more likely to return than summer visitors (with rating scores of 4.76 versus 4.47). These findings indicate that Michigan's tourism market has a higher brand loyalty than non-Michigan market, and Michigan's winter tourism market has a higher brand loyalty than the summer market. This may also indicate that Michigan faces less competition during the winter season.

Michigan Market Image:

Michigan travelers agreed more than non-Michigan travelers with the statement that Michigan is known for good scenery, good restaurants, friendliness, easy to get to, reasonable price, nice places to stay, summer fun, high prestige, good night life, clear air, and winter fun. These findings suggest that Michigan's travelers have a better image of Michigan than do non-Michigan travelers.

Market Satisfaction:

The satisfaction rating for Michigan trips was slightly lower than that for non-Michigan trips (the difference was 0.04 point out of 5.0 point). This finding indicates that Michigan's tourism products are superior to tourism products available at other Great Lake area destinations.

Potential Target Markets:

1. Travelers' education level, recreation vehicle ownership status, and martial status have effects on the propensity to travel in Michigan. Concentration of people with these characteristics should be considered as Michigan's primary tourism promotion targets.

2. Weekend travelers and group travelers show a greater tendency to choose Michigan as a trip destination. This may suggest that we didn't offer what people want from lengthier vacation trips.

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Michigan's tourism industries should consistently promote to these two types of travelers and more upscale resorts may be needed.

3. The finding that "Michigan residency" and "short distance travel" have positive effects on Michigan's tourism suggests that the in-state market is an important market to pursue and should not be ignored. On the other hand, more efforts to promote Michigan tourism products is needed in distant markets. The collective results of this study can assist in targeting promotions at the best prospects in these distant markets.

Useful Tourism Market Promotion Media:

1. Michigan travel information available from three types of media including TV, radio, and billboards have shown a positive relationship with travel in Michigan. It may suggest that people coming to Michigan are more disposed to Michigan travel promotions and Michigan's tourism industries should take full advantage of these media as effective promotion vehicles.

2. It is shown that the biggest market segment is travelers visiting relatives which accounts for 35.32% of the total tourism market received by Michigan. Since the relatives are the most popular sources of travel information, promotions should be conducted to encourage people to invite their relatives to visit Michigan year after year.

Market Forecast:

1. Using high predicting power variables as discriminators resulted in a 66.2% improvement in predicting Michigan trips. This suggests that conducting single-variable LDA for selecting high predicting power variables for inclusion later in multivariate LDA discriminators can effectively enhance the performance of the model thus estimated.

2. Trip patterns and travelers' image of Michigan are two types of information that can be used as effective discriminators in LDAs. Efforts to improve Michigan's image and to provide easy access to Michigan's recreational resources should be effective forms of promotion for Michigan tourism.

3. Marital status, education level, family income and other socioeconomic variable are useful discriminators in LDAs for the effective prediction of Michigan travelers. With extended efforts in improving data quality and sampling bias³³, Michigan's recreation tourism market volume may also be estimated.

4. Media sources are not highly powerful LDA discriminators, since the use of this information to predict Michigan trips results in only marginal improvement over chance prediction. Even though, certain types of media used for obtaining trip information do have a significant correlation to travelers' destination decisions. Thus, it

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³³ The sampling bias toward female respondents causes the statistics reported to favor the responses from females.

appears that media information can be used as a promotion vehicle, but should not be used alone as predictors in LDA to predict Michigan trips.

5. Some trip attribute variable like winter fun can discriminate Michigan travelers from non-Michigan travelers very well. However, most trip attribute variables such as "clear air", and "good restaurant" are not effective discriminators in LDF. This finding indicates that "winter fun" is an important element in Michigan tourism, and winter recreation oriented people are an important market sector for Michigan's tourism.

Despite the uncertain quality of the travel database used in these analyses, this study has provided a structure for understanding Michigan's tourism market and an operative approach for predicting Michigan travelers. These efforts have also resulted in a set of useful tools for the identification of the tourism market. Tourism strategy planners and developers might find the information and results from the tests and analyses conducted in this study to be beneficial. At the very least, it is expected to stimulate more interest among researchers to apply the LDA approach in their tourism marketing research in the future.

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APPENDICES

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APPENDIX A

Single Variable LDA Predicting Power Test Results

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Variable Tested		lichigan Trin	- Correct Predictin	g Rate
		Group	Group	Trips
_ ,		(%)	(%)	(%)
1	WEEKEND TRIP	100.0	0.0	60.3
2	GROUP TRIP	97.1	6.6	51.8
3	NIGHT IN			
	OTHER STATE	96.0	17.9	55.8
4	TRIP MILEAGE	90.7	49.2	69.7
5	NIGHT IN MOTEL	83.8	29.6	55.7
6	OVERNIGHT STAY	79.7	40.0	59.8
7	SEASON (WARM/COL	D) 75.4	34.0	54.8
8	SIDE TRIPMILEAGE	70.6	43.5	56.7
9	MICHIGAN RESIDENC	Y 52.0	85.7	68.9
10	TRANSPORTATION			
	SPENDING	46.1	60.2	53.4
11	LODGING SPENDING	45 .5	60.6	53.3
12	ENTERTAINMENT			
	SPENDING	45.0	60.7	53.1
13	MISCELLANEOUS	44.8	60.9	53.1
14	MEAL SPENDING	44.5	60.9	53.1
15	RV OWNERSHIP	19.7	84.1	52.0
16	NIGHT IN PUBLIC			
	TENT CAMPGROUND	4.5	97.5	52.7
17	NIGHT IN HOTEL	0.0	100.0	51.8
18	NIGHT WITH FRIEND	0.0	100.0	51.8
19	NIGHT WITH RELATIV	7E 0.0	100.0	51.8

Table A-1. Trip character single variable predicting power test on predicting Michigan trips and non-Michigan trips.

Database: The Great Lakes Travel Monitor Study (1983 - 1985).

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Variable Tested		Co Michigan Trip Non-M	rrect Predicting Rai Aichigan Trip	e Overall
		Group	Group	Trips
		(%)	(%)	(%)
1	RACE	93.4	6.6	50.0
2	FAMILY INCOME	74.6	30.3	52.7
3	MARRIAGE	73.1	30.9	52.0
4	SEX	65.2	40.8	53.0
5	EDUCATION	55.9	45.0	50.5
6	AGE	48.2	55.1	51.7
7	HOUSEHOLD SIZE	36.6	65.0	50.9

Table A-2. Socioeconomic single variable predictive power tests on predicting Michigan trips and non-Michigan trips.

Database: The Great Lakes Travel Monitor Study (1983 - 1985).

Table A-3. Media single variable predictive power tests on predicting Michigan trips and non-Michigan trips.

Variable Tested		Cor Ichigan Trip Non-N	e Overall		
		Group	Group	Trips	
		(%)	(%)	(%)	
1	USE 800#	89.8	10.9	50.5	
2	DESTINATION INFO.	71.3	38.3	54.3	
3	TV INFORMATION	23.8	86.8	60.6	
4	TOURIST CENTER	8.8	93.8	58.5	
5	BILLBOARD	7.6	97.9	60.4	
6	RADIO	7.0	97.5	60.1	
7	NEWSPAPER (Travel)	0.0	100.0	58.6	
8	NEWSPAPER (Other)	0.0	100.0	57.8	
9	MAGAZINE	0.0	100.0	58.4	
10	TRAVEL AGENT	0.0	100.0	58.5	
11	FRIEND RELATIVE	0.0	100.0	58.5	
12	AUTO CLUB	0.0	100.0	58.4	
13	CHAMBER OF COMME	RCE 0.0	100.0	58.4	
14	OTHER	0.0	100.0	58.4	

Database: The Great Lakes Travel Monitor Study (1983 - 1985).

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Var Tec	iable -	Cor	rect Predicting Rate	Overall
105		Group	Group	Trips
		(%)	(%)	(%)
1	WINTER FUN	65.9	41.1	53.5*
2	GOOD SCENERY	58.7	42.4	50.5
3	REASONAL PRICE	54.1	47.0	50.5
4	HIGH PRESTIGE	52.3	47.1	49.7
5	GOOD RESTAURANT	51.5	52.1	51.8
6	SUMMER FUN	48.9	54.3	51.6
7	CLEAN AIR	47.7	50.5	49.1
8	GOOD PLACE TO STAY	44.3	57.8	51.1
9	FRIENDLY PEOPLE	41.0	59.6	50.4
10	EASY TO GET TO	34.9	62.9	48.9
11	GOOD NIGHT LIFE	36.8	65.8	51.3

Table A-4. Trip attributes single variable predictive power test on predicting Michigan trips and non-Michigan trips.

Database: The Great Lakes Travel Monitor Study (1983 - 1985).

Table A-5. Michigan impression single variable predictive power tests on predicting Michigan trips and non-Michigan trips.

Variable Tested		lichigan Trip N	Correct Predicting	Rate
100		Group Grou		Trips
<u></u>	2-1999999	(%)	(%)	(%)
1	GOOD SCENERY*	79.4	43.2	61.7*
2	SUMMER FUN	76.9	48.4	63.4*
3	WINTER FUN	76.0	40.3	58.7
4	EASY TO GET TO	75.8	42.3	59.8
5	CLEAN AIR	72.5	48.8	61.0*
6	GOOD RESTAURANT	70.2	51.3	61.1*
7	FRIENDLY PEOPLE	64.5	58.0	61.4*
8	GOOD PLACE TO STA	Y 63.8	56.4	60.2*
9	GOOD NIGHT LIFE	63.5	47.3	55.7
10	REASONAL PRICE	62.6	54.3	58.6
11	HIGH PRESTIGE	53.8	63.6	58.6

Database: The Great Lakes Travel Monitor Study (1983 - 1985).

APPENDIX B

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Comparison of Using Different Research Units

Table B-1 provides the comparison of average trip characteristics between two different research units. The differences in average age, household size, and party size are found insignificant. And the percent shares in married status, race, education, income, and length of stay also remain a similar pattern. Overall, the differences are minor.

Table B-1. Comparison of average when using different research units: the unit of household versus the unit of trip (based on recreation trip only)

Va	riable	Using Trip as Research Unit	Using Household as Research Unit
a.	Age	40.40	40.39
D. C.	Party Size	4.36	2.92 4.55
A	Marriage Status		
u.	Vec	76 0%	68.0
	No	23.1%	32.0
e.	Household Race		
•••	White	92.7%	91.8%
	Black	6.4%	7.1%
	Hispanic	0.5%	0.6%
	Other	0.4%	0.5%
e.	Education		
	< High School	7.9%	9.2%
	High School Grad	31.9%	34.7%
	Trade, Technical	5.8%	5.5%
	Some College	22.8%	21.8%
	College Graduate	23.0%	21.4%
	Post Degree	8.5%	7.3%
f.	Income		
	Less Than \$10,000	6.1%	6.9%
	\$10,000-\$19,999	15.4%	16.6%
	\$20,000-\$29,999	26.2%	26.1%
	\$30,000-\$29,999	22.4%	22.5%
	\$40,000-\$49,999	13.7%	13.3%
	\$50,000-\$59,999	7.9%	7.2%
	\$60,000-\$69,999	2.7%	2.6%
	\$70,000 or More	5.6%	4.8%
g.	Length of Stay (Day)	7.79	8.38
	Base	8323	4662

Database: The Great Lakes Travel Monitor Study (1983 - 1985).

APPENDIX C

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SPSS Program

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SPSS/PC+ System Program

data list file='d:travel.dat' V1001 1-4 V1002 5-6 V1003 7-9 V1004 10-12 V1005 13 V1006 14 V1007 15-17 V1008 18-20 V1009 21-22 V1010 23 V1011 24-25 V1012 26 V1013 27 V1014 28-29 V1015 30 V1016 31 V1017 32-33 V1018 34 V1019 35 V1020 36 V1021 37 V1022 38 V1023 39 V1024 40 V1025 41 V1026 42 V1027 43-46 V1028 47-48 V1029 49-50 V1030 51-52 V1031 53-54 V1032 55-56 V1033 57-58 V1034 59-60 V1035 61-62 V1036 63-64 V1037 65-66 V1038 67-68 V1039 69-70 V1040 71-72 V1049 73-74 V1050 75-76 V1051 77-78 V1052 79-80/ V1053 1-2 V1054 3-4 V1055 5-6 V1056 7-8 V1057 9-10 V1058 11-12 V1059 13-14 V1060 15-16 V1061 17 V1062 18 V1063 19 V1064 20 V1065 21 V1066 22 V1067 23 V1068 24 V1069 25 V1070 26 V1071 27 V1072 28 V1073 29 V1074 30 V1075 31 V1076 32 V1077 33 V1078 34 V1079 35 V1080 36 V1081 37 V1082 38 V1083 39 V1084 40 V1085 41 V1086 42 V1087 43 V1088 44 V1089 45 V1090 46 V1091 47 V1092 48 V1093 49 V1094 50-51 V1095 52-53 V1096 54-56 V1097 57 V1098 58-59 V1099 60-61 V1100 62-63 V1101 64-65 V1102 66 V1103 67-69 V1104 70 V1105 71 V1106 72 V1107 73 V1108 74 V1109 75 V1110 76/ V1111 1-3 V1112 4-6 V1113 7-9 V1114 10-12 V1115 13-15 V1116 16-19 V1117 20 V1118 21 V1119 22 V1120 23 V1121 24 V1122 25 V1123 26 V1124 27 V1125 28 V1126 29 V1127 30 V1128 31 V1129 32 V1130 33 V1131 34-35 V1132 36-37 V1133 38 V1134 39-41 V1135 42-44 V1136 45-47 V1137 48-50 V1138 51-53 V1139 54-56 V1140 57 V1141 58 V1142 59 V1143 60 V1144 61 V1145 62 V1146 63-65 V1147 66-68 V1148 69-71/ V1149 1-3 V1150 3-4 V1151 5-6 V1152 7-8 V1153 9-10 V1154 11-12 V1155 13-14 V1156 15-16 V1157 17-18 V1158 19-20 V1159 21-22 V1160 23-24 V1161 25-26 V1162 27 V1163 28 V1164 29 V1165 30 V1166 31 V1167 32 V1168 33 V1169 34 V1170 35 V1171 36 V1172 37 V1173 38 V1174 39 V1175 40 V1176 41 V1177 42 V1178 43 V1179 44 V1180 45 V1181 46 V1182 47 V1183 48 V1184 49 V1185 50 V1186 51 V1187 52 V1188 53 V1189 54 V1190 55 V1191 56 V1192 57 V1193 58 V1194 59-60 V1195 61 V1196 62 V1197 63 V1198 64-65 V1199 66-67 V1200 68-69 V1201 70-71 V1202 72-73 V1203 74-75 V1204 76-77 V1205 78-79/ V1206 1-2 V1207 3-4 V1208 5-6 V1209 7-8 V1210 9-10 V1211 11-12 V1212 13-14 V1213 15-16 V1214 17-18 V1215 19-20 V1216 21-22 V1217 23-24 V1218 25-26 V1219 27-28 V1220 29-30 V1221 31-32 V1222 33-34 V1223 35-36 V1224 37-38 V1225 39-40 V1226 41-42 V1227 43-44 V1228 45-46 V1229 47-48 V1230 49-50 V1231 51-52 V1232 53-54 V1233 55-56 V1234 57-58 V1235 59-60 V1236 61-62 V1237 63-64 V1238 65-66 V1239 67-78 V1240 69-70 V1241 71-72 V1242 73-74 V1243 75-76/ V1244 1 V1245 2 V1246 3 V1247 4 V1248 5 V1249 6 V1250 7 V1251 8 V1252 9 V1253 10 V1254 11 V1255 12 V1256 13-14 V1257 15-16 V1258 17-18 V1259 19-20 V1260 21-22 V1261 23-24 V1262 25-26 V1263 27-28 V1264 29-30 V1265 31-33 V1266 34-36 V1267 37-39 V1268 40-42 V1269

43 V1270 44-45 V1271 46 V1272 47 V1273 48-49 V1274 50 V1275 51 V1276 52 V1277 53 V1278 54-59 V1279 60-62 V1280 63-64 V1281 65-67 V1282 68-70. MISSING VALUES V1001 TO V1282(-0). VAR LABELS V1001 'ID #'/ V1003 'PLEASURETRIPS'/ V1004 'BUSINESSTRIPS'/ V1005 'ANYLAST4FORPLEASURE'/ V1007 'PLACECODE'/ V1006 'DESTINATION CODE'/ V1008 'DESTINATION STATE'/ V1009 'TRIPMONTH'/ V1010 'TRIPYEAR'/ V1012 'MAINPURPOSEROTATION'/ V1011 'PURPOSE CODE'/ V1013 'ATTENDCONVENTION'/ V1014 'NIGHTSAWAYFROMHOME'/ V1015 'WEEKENDTRIP'/ V1016 'GROUPTOUR'/ V1017 'PEOPLE ON TRIP'/ V1018 'FAMILY/ V1019 'FRIENDS' V1020 'RELATIVES'/ V1021 'OTHER'/ V1022 'ANYCHILDREN'/ V1023 'LESSTHAN4YEARS'/ V1024 '4-7YEARS'/ V1025 '8-12YEARS'/ V1026 '13-17YEARS'/ V1028 'OUTDOOR REC 1'/ V1029 'OUTDOOR REC 2'/ V1030 'OUTDOOR REC 3'/ V1031 'OUTDOOR REC 4'/ V1032 'OUTDOOR REC 5'/ V1033 'OUTDOOR REC 6'/ V1034 'OUTDOOR REC 7'/ V1035 'OUTDOOR REC 8'/ V1036 'EVENTS-SIGHTS 1'/ V1037 'EVENTS-SIGHTS 2'/ V1038 'EVENTS-SIGHTS 3'/ V1039 'EVENTS-SIGHTS 4'/ V1040 'EVENTS-SIGHTS 5'/ V1049 'HOTEL'/ V1050 'MOTEL'/ V1051 'RENTEDCABIN'/ V1052 'OWNEDCABIN'/ V1053 'PUBLICCAMPTENT'/ V1054 'PUBLICCAMPRV'/ V1055 'PRIVATECAMPTENT'/ V1056 'PRIVATECAMPRV'/ V1057 'FRIENDSHOUSE'/ V1058 'RELATIVESHOUSE'/ V1059 'RESORT-SPA'/ V1060 'OTHER'/

V1061 'CHAIN-INDEPHOTEL 1'/ V1063 'CHAIN-INDEPHOTEL 2'/ V1062 'CHAIN-INDEPMOTEL 1'/ V1064 'CHAIN-INDEPMOTEL 2'/ V1065 'OVERNIGHTOTHERSTATE'/ V1066 'NIGHTSMICHIGAN 1'/ V1067 'NIGHTSMICHIGAN 2'/ V1068 'NIGHTSMICHIGAN 3'/ V1069 'NIGHTSMICHIGAN 4'/ V1070 'NIGHTSMICHIGAN 5'/ V1071 'NIGHTSMICHIGAN 6'/ V1072 'NIGHTSMICHIGAN 7'/ V1073 'NIGHTSMICHIGAN 8'/ V1074 'NIGHTSOTHERSTATE 1'/ V1075 'NIGHTSOTHERSTATE 2'/ V1076 'NIGHTSOTHERSTATE 3'/ V1077 'NIGHTSOTHERSTATE 4'/ V1078 'NIGHTSOTHERSTATE 5'/ V1079 'NIGHTSOTHERSTATE 6'/ V1080 'NIGHTSOTHERSTATE 7'/ V1081 'NIGHTSOTHERSTATE 8'/ V1082 'MICHHOTEL 1'/ V1083 'MICHMOTEL 2'/ V1084 'MICHRENTEDCABIN 3'/ V1085 'MICHOWNEDCABIN 4'/ V1086 'MICHPUBCAMPTENT 5'/ V1087 'MICHPUBCAMPRV 6'/ V1088 'MICHPRIVCAMPTENT 7'/ V1089 'MICHPRIVCAMPRV 8'/ V1090 'MICHFRIENDSHOUSE 9'/ V1091 'MICHRELATIVESHOUSE 10'/ V1092 'MICHRESORT-SPA 11'/ V1093 'MICHOTHERLODGING 12'/ V1027 'MILESTRAVELONEWAY'/ V1094 'TRANSPORTUSEDTO'/ V1095 'TRANSPORTUSEDIN'/ V1096 'MILESTOUR-SIDETRIPS'/ V1097 'BEENTODESTBEFORE'/ V1098 'TIMESPAST3YEARS 1'/ V1099 'TIMESPAST3YEARS 2'/ V1100 'WEEKSPLANNED'/ V1101 WHOCHOSEDEST/ V1102 'HAVESECONDCHOICE'/ V1103 'SECOND CHOICE'/ V1104 'REASONCHOSEDEST'/ V1105 'RATE OVERALL TRIP'/ V1106 'RATE DEST'/ V1107 'TRIP EXPECTATIONS'/ V1108 'DEST EXPECTATIONS'/ V1109 'VIST DEST STATE AGAIN'/ V1110 'REMEM AMT SPENT TRIP'/ V1111 'AMTSPENTTRANS'/ V1112 'AMTSPENTLODGING'/ V1113 'MTSPENTMEALS'/

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V1114 'AMTSPENTENT-ACT'/ V1115 'MTSPENTMISC'/ V1116 'AMTSPENTTOTAL'/ V1117 TRAVELINFOSEEN-HEARD'/ V1118 'TV SEEN-HEARD'/ V1119 'RADIO SEEN-HEARD'/ V1120 'NWSTRAV SEEN-HEARD'/ V1121 'NWSPOTH SEEN-HEARD'/ V1131 'MAGAZINE NAME'/ V1122 'MAGAZINE'/ V1123 'BILLBRD SEEN-HEARD'/ V1124 TRVAGNT SEEN-HEARD'/ V1125 'FRD-REL SEEN-HEARD'/ V1126 'AUTCLUB SEEN-HEARD'/ V1127 '800# SEEN-HEARD'/ V1128 'CHMCOMM SEEN-HEARD'/ V1129 'AT DEST SEEN-HEARD'/ V1132 WHICHOTHERSEEN-HEARD'/ V1130 'OTHER SEEN-HEARD'/ V1133 'USEANYTOURCTR-800#'/ V1134 'STATE TRCTR-800#'/ V1135 'STATE TRCTR-800#'/ V1136 'STATE TRCTR-800#'/ V1137 'STATE TRCTR-800#'/ V1138 'STATE TRCTR-800#'/ V1139 'STATE TRCTR-800#'/ V1140 'LIT REC1'/ V1141 'LIT REC2'/ V1142 'LIT REC3'/ V1143 'LIT REC4'/ V1144 'LIT REC5'/ V1145 'LIT REC6'/ V1146 'DISTTRAVONEDAY'/ V1147 'DISTTRAVWEEKEND' V1148 'DISTTRAVONEWEEK'/ V1149 'OUTDOOR ACT LIKE1'/ V1150 'OUTDOOR ACT LIKE2'/ V1151 'OUTDOOR ACT LIKE3'/ V1152 'OUTDOOR ACT LIKE4'/ V1153 'OUTDOOR ACT LIKE5'/ V1154 'OUTDOOR ACT LIKE6'/ V1155 'OUTDOOR ACT LIKE7'/ V1156 'EVENT-ENT LIKE1'/ V1157 'EVENT-ENT LIKE2'/ V1158 'EVENT-ENT LIKE3'/ V1159 'EVENT-ENT LIKE4'/ V1160 'EVENT-ENT LIKE5'/ V1161 'IMAGERYROTATION'/ V1162 'GOOD SCENERY'/ V1163 PEACE AND QUIET/ V1164 'FAMILY FUN'/ V1165 'GOOD RESTRNTS'/ V1166 'FRIENDLY PEOPLE'/

V1167 'EASY TO GET TO'/

V1168 'EXCITEMENT'/ V1169 'REASONABLE PRICES'/ V1170 'GOOD PLCS TO STAY' V1171 'loTS THINGS TO DO'/ V1172 'SUMMER FUN'/ V1173 'HIGH PRESTG VAC'/ V1174 'CLEAN AIR'/ V1175 ' GOOD NIGHT LIFE'/ V1176 'WINTER FUN'/ V1177 'TIMESVISITEDLAST3YRSOH'/ V1178 'TIMESVISITEDLAST3YRSWI' V1179 TIMESVISITEDLAST3YRSIL' V1180 'TIMESVISITEDLAST3YRSMI'/ V1181 TIMESVISITEDLAST3YRSPA'/ V1182 'TIMESVISITEDLAST3YRSON'/ V1183 'TIMESVISITEDLAST3YRSIN'/ V1184 'TIMESVISITEDLAST3YRSMN'/ V1185 'RATESTATEROTATION'/ V1186 'RATE OH FOR VAC'/ V1187 'RATE WI FOR VAC'/ V1188 'RATE IL FOR VAC'/ V1189 'RATE MI FOR VAC'/ V1190 'RATE PA FOR VAC' V1191 'RATE ONT FOR VAC'/ V1192 'RATE IN FOR VAC'/ V1193 'RATE MN FOR VAC' V1243 'RATEVACROTATION'/ V1244 'LASTING MEMORIES'/ V1245 'BUSY ALL THE TIME'/ V1246 'ESCAPE FROM ROUTINE'/ V1247 'RETURN TO NATURE'/ V1248 'PLCS NEVER BEEN BEFORE'/ V1249 'NEW EXPERIENCES'/ V1250 'CHANCE TO REST/ V1251 'DO THNG I DID WHEN KID'/ V1252 'MEET NEW PEOPLE'/ V1253 'LIVE IN LUXURY'/ V1254 'PLCS AWAY FROM HOME'/ V1255 'OVERNIGHTVISITORSLAST3MT/ V1256 'HOWMANYTIMESOVERNIGHT'/ V1257 'NUMBEROFPEOPLE1'/ V1258 'NUMBEROFPEOPLE2'/ V1259 'NUMBEROFPEOPLE3'/ V1260 'NUMBEROFPEOPLE4'/ V1261 'NUMBEROFDAYS1'/ V1262 'NUMBEROFDAYS2'/ V1263 'NUMBEROFDAYS3'/ V1264 'NUMBEROFDAYS4'/ V1265 'STATE FROM1'/ V1266 'STATE FROM2'/ V1267 'STATE FROM3'/ V1268 'STATE FROM4'/ V1269 'SEX'/ V1270 'AGE'/

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V1271 'MARSTAT'/ V1272 'PEOPLEINHOUSEHOLD'/ V1273 'OCCUPATION'/ V1274 'OWNCAMPER-RV'/ V1275 'EDUCATION'/ V1276 'HOUSEHOLDRACE'/ V1277 'TOTALFAMILYINCOME'/ V1278 'ZIPCODE'/ V1279 'DATE OF INTERVW'/ V1280 'LENGTHOFINTERVIEW'/ V1281 'ADICODE'/ V1282 'STATECODE'/ V1194 'RATINGROTATION'/ V1195 'FRWD-BCKWRD ROT'/ V1196 'FIRST STATE'/ V1197 'SECOND STATE' V1198 'GOODSCENERYMI', V1199 'PEACEANDQUIETMI'/ V1200 'FAMILYFUNMI'/ V1201 'GOODRESTAURANTSMI'/ V1202 'FRIENDLYPEOPLEMI'/ V1203 'EASYTOGETTOMI'/ V1204 'EXCITEMENTMI'/ V1205 'REASONABLEPRICESMI'/ V1206 ' GOODPLACESTOSTAYMI'/ V1207 'LOTSOFTHINGSTODOMI'/ V1208 'SUMMERFUNMI'/ V1209 'HIGHPRESTIGEVALMI'/ V1210 'CLEANAIRMI'/ V1211 'GOODNIGHTLIFEMI'/ V1212 WINTERFUNMI'/ V1213 'GOODSCENERYSTATE1'/ V1214 'PEACEANDQUIETSTATE1'/ V1215 'FAMILYFUNSTATE1'/ V1216 'GOODRESTAURANTSSTATE1'/ V1217 'FRIENDLYPEOPLESTATE1'/ V1218 'EASYTOGETTOSTATE1'/ V1219 'EXCITEMENTSTATE1'/ V1220 'REASONABLEPRICESSTATE1'/ V1221 'GOODPLACESTOSTATESTATE1'/ V1222 'LOTSOFTHINGSTODOSTATE1'/ V1223 'SUMMERFUNSTATE1'/ V1224 'HIGHPRESTIGEVALSTATE1'/ V1225 'CLEANAIRSTATE1'/ V1226 'GOODNIGHTLIFESTATE1'/ V1227 WINTERFUNSTATE1'/ V1228 'GOODSCENERYSTATTE2'/ V1229 'PEACEANDQUIETSTATE2'/ V1230 'FAMILYFUNSTATE2'/ V1231 'GOODRESTAURANTSTATE2'/ V1232 'FRIENDLYPEOPLESTATE2'/ V1233 'EASYTOGETTOSTATE2'/ V1234 'EXCITEMENTSTATE2'/ V1235 'REASONABLEPRICESSTATE2'/

'YES' 2 'NO' 9 'DK'/ V1007 900 'OUT OF 8 STATE REGION' 99 'NOT ON CODESHEET '9 'DK' 101 'MACOMB' 102 'OAKLAND' 103 'WAYNE' 201 'BAY' 202 'CLINTON' 203 'EATON' 204 'GENESSEE' 205 'GRATOIT' 206 'HILLSDALE' 207 'HURON' 208 'INGHAM' 209 'ISABELLA' 210 'JACKSON' 211 'LAPEER' 212 'LENAWEE' 213 'LIVINGSTON' 214 'MIDLAND' 215 217 'SAGINAW' 218'SANILLAC' 219'SHIAWASSEE 'MONROE' 220 'ST.CLAIR' 221 'TUSCOLA' 222 'WASHTENAW' 301 'ALLEGAN' 302 'BARRY' 303 'BERRIEN' 304'BRANCH' 305 'CALHOUN' 306 'CASS' 309 'IONIA' 310 'KALAMAZOO' 311 'KENT' 312 'MECOSTA' 313 'MONTCALM' 314 'MUSKEGON' 315 'NEWAYGO' 316 'OCEANA' 317 'OTTAWA' 319 'VAN BUREN' 401 'ALCONA' 402 'ALPENA' 318 'ST.JOSEPH' 403 'ARENAC' 404 'CHEBOYGAN' 405 'CLARE' 406 'CRAWFORD' 407 'GLADWIN' 408 'IOSCO' 410 'MONTMORENCY' 411 'OGEMAW'412 'OTSEGO' 414 'PRESQUE ISLE'415 'ROSCOMMON' 501 'OSCODA'413 'BENZIE' 503 'CHARLEVOIX'504 'EMMET' 505 'GRAND 'ANTRIM' 502 TRAVERSE' 506 'KALKASKA' 507 'LAKE' 508 'LEELANAU' 509 510 'MASON' 511 'MISSAUKEE' 512 'OSCEOLA' 601 'ALGER' 602 'CHIPPEWA ' 603'LUCE' 604 'MACKINAC' 701 'ALGER'702 'DELTA'703 'DICKINSON' 704 'MARQUETTE '705 'MENOMINEE' 706 'SCHOOLCRAFT' 801 'BARAGA' 802 'GOGEBIC' 803 'HOUGHTON' 804 'IRON' 805 'KEWEENAW'806 / V1281 395 'ALEXANDRIA' 627 'ALPENA' 135 'BUFFALO' 257 'CHARLESTON' 051 'CHICAGO' '093 'CINCINATTI'035 'CLEVELAND'121 'COLUMBUS' 177 'DAVENPORT' 095 'DAYTON'057 'DETROIT' 381 'DULUTH'147 'ERIE' 207 'EVANSVILLE' 393 'FARGO' 063 'FLINT-SAGINAW' 091 'FT.W' AYNE '059 'GRAND RAPIDS' 315 'GREEN BAY' 083 'INDIANAPOLIS' 117 'LACROSSE' 085 'LAFAYETTE'061 'LANSING' 101 'LIMA' 209 'LOUISVILLE' 113 317 'MARQUETTE' 111 'MILWAUKEE' 'MADISON' 449 'MANKATO' 107 'MINN.ST.PAUL' 187 'PADUCAH' 175 'PEORIA' 029 'PITTSBURGH' 227 'QUINCY-HANNIBAL'165 'ROCHESTER' 11 'ROCKFORD' 389 'SIOUX FALLS' 053 'SOUTH BEND' 077 'SPRINGFIELD' 075 'ST.LOUIS 087 'TERRE HAUTE' 055 'TOLEDO' 451 'TRAVERSE CITY' 115 'WAUSAU'103 'WHEELING' 031 YOUNGSTOWN' 125 'ZANESVILLE' 735'BELLEVILLE' 750 'BRANTFORD'770 'CHATHAM' 760 'FERGUS' 755 'GUELPH' 710 'HAMILTON' 720 'KITCHENER' 775 'LEMINGTON' 745 'LINDSAY' 725 'LONDON' 795 'MIDLAND'790 'ORILLIA' 700 'OSHAWA' 785'OWEN SOUND'740 'PETERBOROUGH' 780 'SARNIA ' 715 'ST.CATH.-NIAGARA' 765 'STRATFORD' 705 'TORONTO' 730 WINDSOR' 173 'CEDAR RAPIDS'/ V1006 1 'DESTINATION' 2 'MAIN DESTINATION' 3 'PLACE FARTHEST'/ V1134 TO V1139, V1103, V1008, V1265 TO V1268, V1282 601 ALABAMA 102 'ALASKA' 203 'ARIZONA'105 CALIFORNIA' 206 'COLORADO 907 'CONNECTICUT' 708 'DELAWARE' 709 'D. OF C.' 710 'FLORIDA' 711 'GEORGIA' 112 'HAWAII' 213 'IDAHO' 514 'ILLINOIS' 515 'INDIANA' 316 'IOWA 317 'KANSAS' 618 'KENTUCKY' 419 'LOUISIANA' 920 'MAINE' 721 'MARYLAND' 922 'MASSACHUSETTS' 523 'MINNESOTA' 625 'MISSIPPI' 'MICHIGAN' 324 326 'MISSOURI' 227 'MONTANA' 328 'NEBRASKA' 229 'NEVADA' 930 'NEW HAMPSHIRE' 831

V1242 'WINTERFUNSTATE2'/ V1002 'TRIP ID'/

V1241 'GOODNIGHTLIFESTATE2'/

V1240 'CLEANAIRSTATE2'/

V1239 'HIGHPRESTIGEVACSTATE2'/

V1238 'SUMMERFUNSTATE2'/

V1237 'LOTSOFTHINGSTODOSTATE2'/

V1236 'GOODPLACESTOSTAYSTATE2'/

VALUE LABELS V1003 to V1004 998 'DK' 997 'HV' 0 'NONE'/ V1005 1

V1140 TO V11451 'LITERATURE NOT READ' 2 'BEFORE' 3 'DURING' 4 'AFTER' 5 'BEFORE AND DURING' 6 'DURING AND AFTER' 7 'BEFORE AND AFTER' 8 'BEFORE, DURING, AFTER' 9 'DK'/ V1146 TO V1148998 'DK' 997 'HV' 0 'NONE'/ V1149 TO V11551 'BICYCLING' 2 'POWERBOATING' 3

V1103 999 'DK'/ V1104 99 'DK'/ V1105,V11069 'DK' 1 'WORST' 5 'BEST'/ V1107,V1108 9 'DK' 1 'A LOT WORSE' 2 'SOMEWHAT WORSE' 3 'ABOUT THE SAME' 4 'SOMEWHAT BETTER' 5 'A LOT BETTER'/ V1109 1 'NOT AT ALL LIKELY' 2 'NOT TOO LIKELY' 3 'NEURTRAL' 4 'SOMEWHAT LIKELY' 5 'VERY LIKELY'/ V1110 1 'NOT AT ALL WELL' 2 'NOT TOO WELL' 3 'SOMEWHAT WELL' 4 'VERY WELL' 9 'DK'/ V1111 TO V1115998 'DK' 997 'HV' 0 'NONE'/ V1116 9998 'DK' 9997 'HV' 0 'NONE'/ V1117 1 'YES' 2 'NO' 9 'DK'/ V1118 TO V1129,V1130 TO V11321 'NOT SEEN 2 'BEFORE' 3 'DURING' 4 'AFTER' 5 'BEFORE AND DURING' 6 'DURING AND AFTER' 7 'BEFORE AND AFTER' 8 'BEFORE,DURING,AFTER' 9 'DK'/ V1133 1 'YES' 2 'NO' 9 'DK'/ V1134 TO V1139999 'DK'/

UNDER 18' 6 'RELATIVE 18OR OLDER' 7 'FRIEND UNDER 18' 8 'FRIEND 18 OR OLDER' 9 'BUS.ASSOC.OR OTHER'/ V1102 1 'YES' 2 'NO 9 'DK'/

'WYOMING' 052 'ONTARIO' 053 'INTERNATIONAL' 600 'SOUTH REGION' 200 MOUNT.SW. WEST 300 'CENTRAL' 800 'EAST' 100 'PACIFIC' 404 'ARKANSAS'/ V1006, V100899 'NOT ON CODESHEET 9 'DK'/ V1009 1 'JANUARY' 2 'FEBRUARY' 3 'MARCH' 4 'APRIL' 5 'MAY 6 'JUNE' 7 'JULY' 8 'AUGUST' 9 'SEPTEMBER' 10 'OCTOBER' 11 'NOVEMBER' 12 'DECEMBER'/ V1010 3 '1983' 4 '1984' 5 '1985'/ V1012 1 'VISIT RELATIVES' 2 'VISIT FRIENDS' 3 'SHOPPING' 4 'OUTDOOR RCREATION' 5 'SIGHTSEEING, TOURING' 6 'A SPECIFIC ATTRACTION' 7 'OTHER'/ V1011 1 'CONVENTION ONLY' 2 'BUSINESS ONLY' 3 'BUS.OR CONV.& PLEASURE' 4 'VISIT RELATIVES' 5 'VISIT FRIENDS' 6 'SHOPPING' 7 'OUTDO OR RECREATION' 8 'SIGHTSEEING, TOURING' 9 'A SPECIFIC ATTRACTION' 10 ' OTHER'/ V1015, V1016, V1022, V10131 'YES' 2 'NO' 9 'DK'/ V1014 98 'DK' V1018 TO V10218 'DK' 7 'HV' 0 'NONE'/ V1023 TO 97 'HV' 0 'NONE'/ V10268 'DK' 7 'HV' 0 'NONE'/ V1028 TO V10351 'BICYCLING' 2 'POWER BOATING '3 'CANOEING' 5 'RAFTING' 6 'CAMPING' 7 'CHARTER BOAT FISHING' 8 'STREAM RIVER FISHING' 9 'LAKE FISHING' 10 'ICE FISING' 'SAILING' ' TENNIS' 13 11 'GOLF 4 12 'HUNTING' 14 'HIKING BACKPACKING' 15 'HORSEBACK RIDING' 16 'DOWNHILL SKIING' 17 'CROSS COUNTRY SKIING' 18 'SNOWMOBILING' 19 ' SWIMMING' 20 'WATERSKIING' 21 'SUNBATHING' 22 'MISCELLANEOUS SPORTS' 23 'OTHER'/ V1036 TO V10401 'NATURAL ATTRACTIONS' 2 'LANDMARKS '3 'HISTORICAL SITES' 4 'MAN MADE ATTRACTIONS '5 'MUSEUMS' 6 'CULTURAL EVENTS' 7 ' PROFESSIONAL SPECTATOR SPORTS' 8 'FAIRS EXHIBITS' 9 'NIGHT CLUBS SHOWS RESTAURANTS' 10 'INDUSTRY TOURS'

 11 'FESTIVALS 12 WO VIDE 1

 0 'NONE'/ V1061 TO V1064 9 'DK'/

 V1065 9 DK 1

 V1094,V109599 'DK' 1 'RENTED

 V1094,V109599 'DK' 1 'RENTED

 11 'FESTIVALS '12 'MOVIES' 13 ' OTHER'/V1049 TO V1060 98 'DK' 97 'HV' CAR' 2 'OWNED CAR' 3 'RENTED RV' 4 'OWNED RV' 5 'PLANE' 6 'TRAIN' 7 'BUS' 8 'BOAT' 9 'OTHER'/ V1096 998 'DK' 997 'HV' 0 'NONE'/ V1098 0 'NONE' 98 'DK' 97 'HV'/ V1099 0 'NONE' 98 'DK' 97 'HV'/ V1100 V1101 1 'SELF ONLY' 2 'OPP.SEX 98 'DK' 97 'HV'/ COMPANION' 3 'CHILD UNDER 18' 4 'CHILD 18 OR OLDER' 5 'RELATIVE

'NEW JERSEY' 232'NEW MEXICO' 833 'NEW YORK' 734 'NORTH CAROLINA' 335 'NORTH DAKOTA' 536 'OHIO' 437 'OKLAHOMA' 138 'OREGON' 83 'PENNSYLVANIA' 940 'RHODE ISLAND' 741 'SOUTH CAROLINA' 342 'SOUTH DAKOTA' 643 'TENNESSEE' 444 'TEXAS' 245 'UTAH' 946 'VERMONT' 747 'VIRGINIA' 148 'WASHINGTON' 749 'WEST VIRGINIA' 550'WISCONSIN' 251

4 '30,000 TO 39,999' 5 '40,000 TO 49,999' 6 '50,000 TO 59,999' 7 '60,000 TO 69.999' 8 '70,000 OR MORE' 9 'REFUSED'/ 'DK'/ V128098 'HV' 9 'DK'/ V1195 1 'UP ' 2 'DOWN '/ V1198 TO V1242 1 'STRONGLY DISAGREE ' 10 'STRONGLY AGREE ' 99 'DK ' 98 'REFUSED '. FREQUENCIES GENERAL=ALL. FINISH.

'UNMARRIED' 9 'REFUSED'/ V1272 8 'HV' 9 'REFUSED'/ V1273 1 'OWNER, PROPRIETER' 99 'DK' 2 'MANAGER.ADMINISTRATOR' 3 'PROFESSIONAL' 4 'TECHNICAL' 5 'SALES' 6 'CLERICAL, OFFICE' 7 'SKILLED, SEMI- SKILLED, TRADE' 8 'UNSKILLED LABOR' 9 'FARMER' 10 11 'ARMED SERVICES' 12 'POLICE.POSTAL.FIRE' 'HOMEMAKER' 13 'STUDENT' 14 'RETIRED' 15 'OTHE R' 16 'REFUSED'/ V1274 1 YES ' 2 'NO' 9 'REFUSED'/ V1275 9 'DK' 1 'LESS THAN HIGH SCHOOL' 2 'HIGH SCHOOL GRADUATE' 3 'TRADE, TECHNICAL' 4 'SOME COLLEGE' 5 'COLLEGE GRAD' 6 'POST DEGREE' 7 'REFUSED'/ V1276 1 WHITE' 2 'BLACK' 3 'HISPANIC' 4 'OTHER' 5 'REFUSED' 9 'DK'/ V1277 1 'LESS THAN 10,000' 2 '10,000 TO 19,999' 3 '20,000 TO 29,999'

V1278999999

'FROM HOME'/ V1244 TO V12549 'DK 1 'STRONGLY DISAGREE' 5 'STRONGLY AGREE'/ V10131 'YES' 2 'NO' 9 'DK'/ V1014, V1049 TO V10600 'NONE' 98 'DK' 97 'HV'/ V1061 TO V10649 'DK'/ V1110 1 NOT AT ALL WELL' 2 NOT TOO WELL' 3 'SOMEWHAT WELL' 4 'VERY WELL' 9 'DK'/ V1111 998 'DK' 997 'HV'/ V1112 TO V1115998 'DK' 997 'HV' 0 'NONE'/ V1116 9998 'DK' 9997 'HV' 0 'NONE'/ V1255 1 'YES' 2 'NO' 9 'DK'/ V1256 99 'DK' 98 'HV'/ V1257 TO V126498 'DK' 97 'VARIES' 96 'HV'/ V1265 TO V1268999 'DK'/ V1269 1 'MALE 2 'FEMALE' 9 'REFUSED'/ v1270 9 'REFUSED' 99 'DK'/ V1271 1 'MARRIED' 2

FISHING' 8 'STREAM, RIVER FISHING' 9 ' LAKE FISHING ' 10 'ICE FISHING' 'GOLF' 12 'TENNIS' 13 'HUNTING' 14 'HIKING, BACKPACKING '15 11 'HORSEBACK RIDING' 16 'DOWNHILL SKIING '17 'CROSS COUNTRY SKIING' 18 'SNOWMOBILING' 19 'SWIMMING' 20 'WATER SKIING' 21 'SUNBATHING '22 'MISCELLANEOUS SPORTS' 23 'OTHER' 99 'DK'/ V1156 TO V11601 'NATURAL ATTRACTIONS' 2 'LANDMARKS' 3 'HISTORICAL SITES' 4 'MAN-MADE ATTRACTIONS' 5 'MUSEUMS ' 6 'CULTURAL EVENTS' 'FAIRS.EXHIBITS 'PROFESSIONAL SPEC. SPORTS 7 '8 '9 'NIGHT CLUBS, SHOWS, RESTAURANTS' 10 'INDUSTRY TOURS '11 'FESTIVALS' 12 'MOVIES' 13 'OTHER' 99 'DK'/ V1161, V11941 'GOOD SCENERY' 2 'PEACE AND QUIET '3 'FAMILY FUN' 4 'GOOD RSTRNT5 'FRIENDLY PEOPLE '6 'EASY TO GET TO ' 7 'EXCITEMENT' 8 'REASONABLE PRICES' 9 'GOOD PLACES TO STAY '10 'LOTS OF THINGS TO DO ' 11 'SUMMER FUN' 12 'HIGH PRESTIGE VACATIONS' 13 'CLEAN AIR' 14 'GOOD NIGHT LIFE' 15 'WINTER FUN'/ V1162 TO V11761 'NOT AT ALL IMPORTANT' 9 'DK 5 'ONE OF THE MOST IMPORTANT/ V1177 TO V11840 'NONE' 7 'HV' 8 'DK' 9 'LIVES THERE OR MISSING DATA'/ V1185, V1196, V11971 'OHIO' 2 'WISCONSIN' 3 'ILLINIOIS '4 'MICHIGAN 5 ' PENNSYLVANIA' 6 'ONTARIO' 7 'INDIANA' 8 'MINNESOTA'/ V1186 TO V11939 'DK' 1 'WORST' 5 'BEST/ V1243 1 'MAKE LASTING MEMORIES' 2 'KEEP ME BUSY' 3 'LET ME ESCAPE' 4 ' RETURN TO NATURE' 5 'PLACES I VE NEVER BEEN' 6 'BRING NEW EXPERIENCES' 7 'CHANCE TO REST' 8 'DO KID THINGS '9 'NEW PEOPLE' 10 'LIVE IN LUXURY' 11 'PLACES AWAY

'CANOEING' 4 'SAILING' 5 'RAFTING' 6 'CAMPING' 7 'CHARTER BOAT

APPENDIX D

SPSS/PC+ Variables Recoding Program

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SPSS/PC+ Variables Recording Program

get fil 'e:alltrip.sys'. set pri=on ptr=on echo=on.

rec v1011(3 thr 10=1)(1 thr 2=0). [recode trip purpose 1=recreation trip, 0=nonrecreation trip

com ssfw=v1009. rec ssfw(3 thr 5 =1)(6 thr 8 =2) (9 thr 11=3) (12 1 2=4). val lab ssfw 1 'Spring' 2 'Summer' 3 'Fall' 4 'Winter'. [create season variable four seasoncom wc=v1009.

rec wc (1 2 3 4 11 12=0) (5 6 7 8 9 10=1). val lab wc 1 'warm season 1 to 4 11 12' 0 'cold season 5 to 10'. Icreate season variable warm season versus cold season

if (v1282 eq v1008) inout=0. if (v1282 ne v1008) inout=1. [create new var inout: 0= in-state travel, 1=out-of-state travel

if (v1008 eq 523) minmit=1. if (v1008 ne 523) minmit=0. val lab minmit 1 'michigan trip' 0 'nonmichigan trip'. [create new variable minmit: 1=Michigan trip, 0=non-Michigan trip

if (v1282 eq 523) minmir=1. if (v1282 ne 523) minmir=0. val lab minmir 1 'michigan resident' 0 'nonmichigan resident'. [create new variable minmir: 1=Michigan resident, 0=non-Michigan [resident

rec v1269 (2=0). [record male=1 female=0

rec v1271 (2=0). [record married=1 unmarried=0

rec v1270 (99=sysmis). [record age dont know into system missing

rec v1274 (2=0). [record non-rv owner=0

rec v1275 (7=sysmis). [record education variable refused=sys missing

rec v1276 (5 9=sysmis). [record race dk re into sysmis

rec v1277 (9=sysmis). [last line record family income refuse into sysmis.

rec v1272 (8 9=sysmis). [last line record household size dk re into sysmis [last line record weekend trip=1 nonweekend trip=0 rec v1016 (2=0). [last line record group trip=1 nongroup trip=0 rec v1117 (2=0). last line record travel infomation heard or not rec v1118 (1 4=0) (2 3 5 6 7 8=1). flast line record TV seen or heard rec v1119 (1 4=0) (2 3 7 8=1). [last line record radio seen heard rec v1120 (1 4=0) (2 3 5 6 7 8=1). [last line record nwstrav seen-heard rec v1121 (1 4=0) (2 3 5 6 7 8=1) (9=sys). [last line record Nwspoth seen heard rec v1122 (1 4=0) (2 3 5 7 8=1) (9=sys). [last line record magazine seen heard rec v1123 (1 4=0) (2 3 5 6 7 8=1). last line record billboard seen-heard rec v1124 (1 4=0) (2 3 5 6 7 8=1). [last line record travel agent seen heard rec v1125 (1 4=0) (2 3 5 6 7 8=1). [last line record friend relative seen heard rec v1126 (1 4=0) (2 3 5 7 8=1) (9=sys). flast line record autoclub seen heard rec v1127 (1 4=0) (2 3 5 6 7 8=1). [last line record 800 number seen heard rec v1128 (1 4=0) (2 3 5 6 7 8=1). last line record chmcomm seen heard rec v1129 (1 4=0) (2 3 5 6 8=1). flast line record at dest seen heard rec v1130 (1 4=0) (2 3 5 6 7 8=1). [last line record other seen heard sel if (v1011 eq 1). sav out='e:\allrec.sys'/com. pro if (minmit eq 1). sav out='e:\mirect.sys'/com.

APPENDIX E

Survey Questionnaire

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(1-4)____

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GREAT LAKES TRAVEL MONITOR

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INTRODUCTION

Bello, my mame is ________ and I'm calling from Moore & Associates, a national market research firm. We are doing a national survey about travel and your house-hold has been selected at random to represent your community.

SCREENERS

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- 1. Do you or does anyone in your bousehold work for ... (READ)
 - Yes
 No

 a. A market research firm or advertising agency?
 () ()

 b. A magazine, newspaper, radio or television channel?
 () ()

 c. A travel agency or tourist bureau?
 () ()

 1F YES TO ANY QI ITENS, TERMINATE. OTHERWISE, CONTINUE.
- Have you or anyone in your household taken any kind of a trip since (DATE 6 MONTHS ACO)? This includes trips for pleasure, business, or business mixed with pleasure.
 - (1) Yes CONTINUE (2) No TERHINATE
- 3. Were any of these overnight or over 100 miles one way?
- (1) Yes CONTINUE (2) No TERMINATE
- 4. Generally speaking who in your household decides why, where and when you travel for pleasure?
 - (1) Self, including shared decisionmaking - CONTINUE
 (2) Other - "Nay I please speak to bim/her?" (1F HOT BONE, ARRANCE CALLBACK) IF CET DIFFERENT PERSON ON PHONE, REPEAT INTRODUCTION
- How many trips of over 100 miles one way or overnight have you taken since (DATE 12 MONTHS ACO) ... (BEAD. WRITE IN.)
 - a. Primarily for pleasure ______ IF NONE, ASK Q4b AND TERMINATE. RECORD MUMBER (6-8) OF BUSINESS TRIPS. (6-8)
 - b. Primarily for business_____ IF 4 OR MORE, ASK Q5a. OTHERWISE CO TO Q6. (9-11)
- 5a. Were any of your last 4 trips primarily for pleasure?
 - (1) Yes CONTINUE (2) No GET 3 HOST RECENT BUSINESS (12) AND ONE MOST RECENT PLEASURE.

			•		•
TR.	IF ACTIVITY	06-0120 808 1			
	PAST 12 HONTHS. APTE	R LAST TRIP GO T	TRIP SPECIFIC	8, 913.	
6.	LP LAST TRIP, GO TO T Where did you go on your (STATE BELGU.) (LP) NOST your most recent <u>pleasure</u> LP SEVERAL DOMESTIC/OR e. Was there any place of	RIP SPECIFICS, Q RECOMT TRIPS BUSI trip?") MTARIO DESTINATION n your trip that	IJ. : tript (RECORD INESS, AT FOURT RES IN ORE TRIP you considered	DESTINATION AND H TRIP, "Where di H to be your main	DESTINATION d you go on destination?
	(1) Yes - "What was (bat 2º BECORD BE	-		CONTINUE
	h Which place was farthe	art from wair how	-7 (851080 85		(13)
	. In which make Aid any	set receiption and			
	C. In which state ere por	a shore most of 1			J
	IP NECESSARY, PROBE PC	R FLACE:	s closest to w	wre you stayed?	
	TP MECECCHAY ADOPT BY				
	IF RECESSARY, PROBE PO	EN SININ/PROVINCE	Ľ		
	What state or province was	that is7			
		Nost Bocent			
	TRIP	1	2	3	4
	CODE DESTINATION				
	WRITE IN PLACE	[]			
	ENTER ONE CODE:	(14-16)	(17-19)	(20-22)	(23-2:
	 destination (Q6) main destination (Q6s) 	l: l			
	(3) place farthest (96b)	(26)	(27)	(28)	(2'
	WRITE IN STATE		AT_B		
	ENTER ONE CODE		()]-)]	(30-30)	
	(2) state spent most time	·			
	(Q6c)	(42)	(1)	(49)	L
			Nost B	scent	(46-5:
			TRIP 1	,	3 4
7.	What month did you start you	er trip to (DEST. RETER CODE: JAH	.)7 -1, 1-12		
	IP NONTH OUT OF 12 NONTH			->> (36-5/) (5	(00-01)
	PERIOD, DO NOT RECORD TRIP. IP ALL TRIPS OUT OF 12 NONTH PERIOD, TERMINATE.	YEAR: ENTER LAS	T DICIT	(62) (63)	(64) (65)
			J		
	f				7

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IF INTERNATIONAL DESTINATION (EXCEPT ONTARIO), CO TO QS FOR MEXT TRIP. IF ALL TRIPS INTERNATIONAL, TERNINATE, RECORD HUNDER OF INTERNATIONAL TRIPS.

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8. What was the main purpose of this trip? (ENTER ONE CODE BELOW FOR PURPOSE) -IF BUSINESS OR CONVENTION Was it planned for business (a convention) only, or for business (a convention) mixed with pleasure? (1) Convention only - GO TO Q6 FOR NEXT TRIP. (2) Business only - GO TO Q6 FOR WEXT TRIP. (3) Business or convention mixed with pleasurea. Did another person go with you for pleasure on this trip or not? Yes - CODE AS BUSINESS/PLEASURE AND SKIP TO Q9.
 No - CONTINUE b. Did you extend the trip at least one additional day for pleasure or not? (1) Yes - CODE AS BUSINESS/PLEASURE AND SKIP TO Q9 (2) N_0 - CODE AS BUSINESS OR CONVENTION AND GO TO Q6 FOR NEXT TRIP. IF VACATION Which of these best describes what you did? (READ 3-9, ROTATE. HARK ROTATION START.) (7) Outdoor recreation
(8) Sight seeing/touring
(9) A specific attraction
(10) Other (WRITE IN) (4) Visit relatives(5) Visit friends(6) Shopping (66) Host recent 1 2 ٦ 4 ENTER ONE CODE FOR PURPOSE (67-68) (69-70) (71-72) (73-74) 9. - IF CONVENTION NOT MENTIONED IN Q8: Did you attend a convention on this trip? (1) Yes (2) No ENTER ONE CODE___ 05 (76) (27) (78) How many nights, if any, did you stay away from home? (IF ZERO MIGHTS, SKIP TO Q11) 10. ENTER NUMBER OF NICHTS (1-4) DUP(5)2 (6-7) (8-9) (10-11) (12-13) 104. IF 1, 2 OR 3 MICHTS IN Q10: Was this a washend trip or not? (1) Yes (2) No

ENTER ONE CODE

ENTER ONE CODE

11. Was this trip part of a group tour?

(2) No

(1) Yes

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(17)

(21)

(15)

(19)

(16)

(20)

(14)

(18)

• .. .

)	fost Recei	at .		
			1 <u> </u>	1 - 2	, ''''	
RED	TER	DESTINATION				
12. How many people went with you? (IF SELF OWLY, GO TO QG FOR NEXT TRIP SKIP TO Q13. IF MORE THAN SELF CONTI	OR MUE.))				
- ENTER	TOTA	L PEOPLE	(22-23)	(24-25)	(26-27)	(28-29
12a - IP HORE THAN SELF ONLY						
Bot including yourself, how many were		(READ)				
		SELP	1	1	1	_1
a. Family EN NUH	TER BER	PANILY	(30)	(34)	(38)	(42)
B. Friebds PEOL	PLE	FRIERUS	(31)	(35)	(39)	(43)
c. Relatives	R	ELATIVES	(32)	(16)	(40)	
d. Business associates/other (DO NOT READ)	1	OTHER	(33) • • • m	(37)	(41) EQUAL Q12	(45)
12b. Were there any children under 187						
(1) Yes - CONTINUE (?) No - GO TO (TRIP OR)6 POI	R HEXT P TO Q13.				
	TER C	DNE CODE	(46)	(47)	(48)	(45)
12c. How many of the children were (REA	מ)					
(1) Less than 4 years old		L.T. 4_				
(2) 4-7 EN	TER	4-7_	(50)	(54)	(58)	(62)
(3) 8-12	F	8-12_	(13)		(93)	(63)
(4) 13-17		13-17	(52)	667	(60)	(64)
		-	(53)	(57)	(61)	(65)

RETURN TO Q6 FOR NEXT TRIP. IF LAST TEIP, CONTINUE.

TRIP SPECIFICS

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COMPLETE THIS SECTION, Q13 TO Q302, FOR TWO MOST RECENT PLEASURE TRIPS. Nost Recent BEENTER DESTINATION Now we have a few questions about your trip to (DEST.). On this trip what outdoor recreation activities, if any, did you participate in in (DEST. STATE)? Anything else? (DO NOT READ. ACCEPT UP TO ? ACTIVITIES.) ACTIVITIES.)
(13) Hunting
(14) Hiking/backpacking
(15) Horseback riding
(16) Downhill skiing
(17) Cross country skiing
(18) Snownobiling
(19) Svimsing
(20) Water skiing
(21) Sunbathing
(22) Hiscellaneous sports
(23) Other (WRITE IM) (66-67) (8-9) (DO HOT READ. ACCEPT UP TO
(1) Bicycling
(2) Four boating
(3) Canoeing
(4) Sailing
(5) Rafring
(6) Camping
(7) Charter boat fishing
(8) Stream/river fishing
(9) Lake fishing
(10) Ice fishing
(11) Golf
(12) Tencie (10-11) (68-69) ENTER CODES OF (70-71) (12-13) (72-73) (14-15) ACTIVITIES (74-75) (16-17) (76-77) (18-19) (78-79) (20-21) (12) Tennis TRIP 1._ (1-4) DUP (6-7) (22-23) -----

• · · ·

Most Recent REENTER DESTINATION What events or eights did you visit or what other entertainment, if any, did you participate is? Anything else? (DO NOT READ. ACCEPT UP TO 5.) 14. (9) Hight clubs, shows, restaurants (10) Industry tours (11) Festivals ENTER (12) Movies ENTER (13) Other (WRITE IN) OF (1) Natural attractions (24-25) (34-35) (2) Landmarks Historical sights Man-made attractions (3) Historic (4) Man-made (5) Museuma (26-27) (36-37 (3) Puseumas (13) Uthe
 (6) Cultural events (1) Professional/spectator sports TRIP 1.
 (8) Fairs, exhibits OF (28-29) (38-39) ACTIVITIES (30-31) (40-41 TRIP 2. (32-23) (42-43) IF STAYED AWAY FROM HOME IN Q10, ASK Q15 AND CONTINUE. OTHERWISE, SKIP TO Q17. What kind of lodging did you use in (DEST. STATE)? How many nights? (PROBE UNTIL HAVE MUMBER OF NIGHTS FOR EACH TYPE OF LODGING USED.) (1) Hotel | -ASK Q15. (44-45) (72-73) (2) Motel (74-75) (46-47) (3) Rented cabin, cottage, vacation house ENTER NUMBER OF NIGHTS (48-49) (76-77) (4) Owned cabin, cottage, vacation house (78-79) (50-51) (5) Public campgrounds-tent FOR EACH (52-53) (6-7) (6) Public campgrounds-R.V. (54-55) (8-9) (7) Private campgrounds-tent (56-57) (10-11) (8) Private campgrounds-R.V. (58-59 (12-13) (9) Friend's house (14-15) (60-61) (10) Relative's house (62-63) (16-17) (11) Resort, spa, dude ranch (64-65) (18-19) (12) Other (WRITE IN) (66-67) (20-21) TRIP 1. TRIP 2. (68-71) (22-25) HOTEL KOTEL KOTEL HOTEL 15a. Did you atay at a ... (ASK FOR UP TO 2 HOTELS AND 2 NOTELS.) (1) A chain hotel (motel)? ENTER ONE CODE 1. (30)(32) (26)(28) FOR EACH HOTEL/ (2) An independent hotel (motel)? MOTEL 2. (27)(29) (31)(32) 16. Did you stay overnight in any other states (or provinces) while you were traveling to or from (<u>DEST. STATE</u>)? (1) Tes - CONTINUE (2) No - SKIP TO Q17 ENTER ONE CODE (39 (14)

16s. Which states and how many nights?



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	• •			Deti	Kecen 1	٤.	
		REENTER DESTIN	TION	1		1	
16.	Which states and how many	nights?	STATE	MICHICAN	Nakto	NICHIGAN	OTHER
	IF HICHICAN MENTIO ASK Q165 AND CONTI OTHERWISE, SKIP TO	ED, UE Q17.	1 ? 3 4 5	(36 (37 (38 (39 (40)(44))(45))(46))(46))(48)	(52) (53) (54) (55) (55) (56)	(60) (61) (62) (63) (64)
			 ر 8	(41 (42) (43))(49))(50))(51)	(57) (58) (59)	(65) (66) (67)
165.	What type of lodging did (PROBE UNTIL HAVE WUMBER	ou use in Michigan? How many nights? F MIGHTS WITH EACH TYPE OF LODGING USED	.)				(5)5 6-7)
		(1) Hotel ASK Q16c (2) Motel	_		(68)		(8)
		(3) Rented cabin, cottage, vacation ho	use		(69)		(9)
	- ENTER NUMBER	(4) Owned cabin, cottage, vacation hou	se	ļ	(70)		(10) (11)
	OF NICHTS FOR	(5) Public campgrounds-tent			(72)];	(12)
	EACH	(6) Public campgrounds-R.V.	_		(73)		(13)
		(7) Private campgrounds-tent	—		(74)		(14)
		(9) Friend's house			(75)		(15)
		10) Relative's house	_		(76)		(16)
		11) Resort, spa, dude ranch			(77)		(17)
	I	12) Other (WRITE IN)			(78)		(18)
		RIP 1	* T(TAL CHIG	MUST	EQUAL TAL	* *
				019 10	a. 	(20-2)	<u>1) -</u>
16c.	Did you stay at a (AS	FOR UP TO 2 HOTELS AND 2 MOTELS)		HOTE	HOTE	HOTE	MOTE
	(1) A chain hotel (motel)	ENTER ONE CODE FOR EACH HOTEL/	1	(22)	(24)	(26)	(28)
	(2) An independent hotel	(motel)7 MOTEL	z	(23)	(25)	222	(29)
17.	How many miles one way did	you travel when you went to (DEST.)?					
		ENTER NUMBER OF HIL	£5_	(10	333		

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					lost Rece	nt ,
		81	EENTER DESTIN	ATION	<u>'</u>	
18. What kind of transportation	did you use getting t	:• (D	<u>EST. STATE</u>)7			
	ENTER ONE CODE	(1) (2) (3) (4) (5) (6) (7) (8) (9) TRIP	Rented car Owned car Rented RV Owned RV Plane Train Bus Boat Other (WRITE 1	: IN)	(38-39)	(40-41)
		TRIP	2			
19. What kind of transportation	did you use in (<u>DEST.</u> ENTER ONE CODE	STA1 (1) (2) (3) (4) (5) (6) (7) (8) (9) TRIP TRIP	TE)? Bented car Owned car Bented RV Owned RV Plane Train Bus Boat Other (WRITE 1 2	IN)	(42-43)	(44-45)
20. How many miles, if any, did ;	you travel in (DEST. 5	STATE) for			
touring or side trips?	Ð	NTER	NUMBER OF MI	LES	(46-48)	(49-51)
21. Have you ever been to (DEST.)) before?					
(1) Yes - CONTINUE	(2) No - SKIP TO Q22					
			ENTER ONE CO	DDE	(52)	(53)
21a. Not including this trip, how	many times in the pas	IL) : ITER	years? NUMBER OF TH	æs_	(54-55)	(56-57)
22 IF BOTH DESTINATION STATES T IF LIVES(D) IN DESTINATION S	THE SAME, ASK FIRST THE	HE TH	ROUCH ONLY.			
Have you ever been to (DEST.	STATE) before?					
(1) Yes - CONTINUE	 (2) Bo - SKIP TO Q23 (3) Lives(d) there SKIP TO Q23 		ENTER ONE CO	DE	(58)	(59)
22s. Not including this trip, how	many times in the pas	131	eers?			
	EN	TER I	NUMBER OF TIM	ES MUS CR	(60-61) T BE EQU ATER THA	(62-63) L TO DR
Now just a few questions about pla	anning for your trip.					
 How many weeks before you wen as your final destination? 	nt to (DEST.) did you	choor	e (DEST.)			
	Đ	TER N	WHBER OF WEE	xs_	(64-65)	166-67

-

	1	2
REENTER DESTINATION		
Who besides yourself chose (<u>DEST.</u>)? (GET AGE WHERE MECESSARY: "Is that under 18 or 18 and over?")		
(1) Self only (2) Spouse/orposite sex companion (3) Child under 18 ENTER (4) Child 18 and older ONE (5) Relative under 18 CODE (6) Relative 18 and older (7) Friend under 18 (8) Friend 18 and older (9) Business associate/other	(68-69)	(70-71)
When you were considering your trip to (<u>DEST</u> .), did you have a second choice?		
(1) Yes - CONTINUE (2) No - SKIP TO Q26		
ENTER ONE CODE	(72)	(73)
In what state was your second choice? (WRITE IN.)		
TRIP 1		
TRIP 2 DO HOT CODE	(74-76)	(77-79)
What is the most important reason you chose (<u>DEST</u> .) over your second choice? (WRITE IN)	(1-4)DUP (5)6	
TRIP 1 DO NOT CODE	(6-7)	(8-9)
TRIP 2		
On a scale from 1 to 5 with 1 being the worst trip you ever had and 5 being the best you ever had, all in all, bow would you rate your overall trip? You can choose 1 which is worst, 5 which is best or any number in between.		
(1) Worst ENTER (2) ONE (3) CODE (4)		(11)
(5) Best		,
Using the same scale, how would you rate (DEST.) (or "your tour")?		
ENTER (1) Worst ENTER (2) ONT (3)		
CODE (4) (5) Best	(12)	(13)
	BEENTER DESTINATION Who besides yourself chose (DEST.)? (GET ACE WHERE MECESSARY: "Tis that under 18 on over?") (1) Salf only (2) Spous/orposite sex companion (3) Child under 18 (3) Child under 18 (4) Child 18 and older (7) Friend under 18 (6) Friend 18 and older (7) Friend under 18 (6) Friend 18 and older (7) Friend under 18 (6) Friend 18 and older (7) Friend under 18 (1) Yes - CONTINUE (2) Wo - SKIP TO Q26 ENTER ONE CODE	Nho besides yourself chose (DEST.)? (GCT ACE WHERE HEADSARY: "Is that under 18 or 18 and over!") (1) Self only (2) Spouse/orposite sex companion (3) Child under 18 (3) Belative under 18 (4) Child 18 and older (5) Belative under 18 (6) Relative under 18 (6) Relative under 18 (6) Relative under 18 (6) PTTEM (1) Boxiness esociate/other (1) Yes - CONTINUE (2) Ho - SKIP TO Q26 ENTER ONE CODE

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'			REENTE	DESTINATION		
27. All in all, was your trip better you expected?	, abo	ut the s	ine, or worse	than .		
DITTER Worse < OKZ CODE Better <		A lot somewhy About somewhy A lot l	worse than ex at worse that the same at better than o better than o	spected s expected in expected ixpected	(14)	(15
27a. All in all, was (DEST.) (or "your or worse than you expected?	r Eoui	r") betto	er, about the	. Sibe,		
ENTER ONE CODE Better S	-(1) (2) (3) -(4) (5)	A lot a Somewhy About a Somewha A lot b	orse than ex it worse than the same it better than etter than e	pected expected n expected xpected	(16)	(17)
28. How likely or unlikely are you to	visi	t (DEST.	STATE) agai	n? (READ)		
		ENTER ONE CODE	(1) Not at (2) Not to (3) Neutra (4) Somewh (5) Very 1	all likely o likely l at likely ikely	(18)	(19)
29. How well do you remember how much	you	spent on	this trip?	(READ)		
		ENTE ON COD	R (1) Not E (2) Not E (3) Some (4) Very	at all well too well what well well	(20)	(21)
29a IF Q29 IS (1) OR (2): "Well, 1	et's	try it a	nyway."			
How much did you spend on (RE	AD)					
	.	Transpo	rtation	-	(22-24)	(41-43)
ACCEPT ONLY ENTER TOTAL IF DOLLARS DOESN'T KNOW SPENT	ь. с.	Lodging Meals		_	(25-27)	(44-46)
DETAIL FOR EACH	d.	Enterta	inment and a		(28-30)	(47-49)
	•.	Other m	iscellaneous	itens	(34-36)	(50-52)
				TOTAL	(37-40)	(56-59)

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ASK FOR EACH DESTINATION STATE. IF BOTH TRIPS IN THE SAME STATE, ASK FIRST TIME THROUGH ONLY.

30. Did you see, hear, or read anything about travel to (<u>DEST. STATE</u>) before, during or after your trip to (<u>DEST.</u>)? (RECORD ON GRID BELOW.)

(1) Yes - CONTINUE

(2) No - RETURN TO TRIP SPECIFICS, Q13, FOR SECOND TRIP. IF SECOND TRIP COMPLETED, SKIP TO Q31.

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30s. Where did you see or hear it? (ACCEPT AS MANY AS OFFERED. RECORD ON GRID BELOW.)

ASK FOR EACH SOURCE:

Was it before, during, or after your trip?

Q30. SEEN/HEARD? (CHEC	K) DESTIN	ATION (es	STATE 1 (2) Bo (60)			DESTIN	ATION	STATE 2 (2) № (61)		
Q30a. WHERE? (PUT "X" 1	N APPROPRIA	TE BOX	ES.)							1
	NOT SEEN/ HEARD	BEFORE	DURING	AFTER		NOT SEEN/ HEARD	BEFORE	DURING	AFTER	
<u>a. Tv</u>					(62)			L		(9)
b. RADIO					(63)					(10)
c. Newspaper: Was that the travel section or some other eaction? (CHECK)					(64)					a1)
	(1) travel	(2)	other		(65)	(1) travel	(2)	other		(12)
d. Magazine Which one? (WRITE IN MAGAZINE NAME.)					66-67 (68) 69-7((71)	> >			(13-1 (15) 16-1 (18)
e. Billboards					(72)					(19)
f. Travel agent					(73)					Q0)
g. Friend/relative				<u> </u>	(74)					<u>(21</u>)
h. AAA or other suto club					(75)					(22)
1. State's tourist center, 800 number (RECORD HERE AND ON GE	ID ON NEXT	PACE.			(76)					(23)
j. Chamber of Com- merce or other state mource					(77)					(24)
. At destination					(78)					(25)
l. Other (WRITE IN OTHER.)			(1	-4) DU	P(5)7 (6-7)				(26	-27)
,					(8)					(28)
				L]	L			1	l	

RETURN TO TRIP SPECIFICS, Q13 FOR SECOND TRIP. IF SECOND TRIP CUMPLETED, CONTINUE.

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(1) Yes - CONTINUE (2)

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31s. Which ones! (RECORD ON GRID BELOW.)

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- 32. FOR EACH STATE MARKED ON GRID BELOW
 - a. Did you get literature from (STATE)? (RECORD ON GRID BELOW.)
 - Did you receive it before, during or after you traveled? (RECORD OH GRID BELOW.)

Q31a. STATES used tourist ctr/toll free number (WRITE IN STATE)	Recei (PUT	Q32a. 6 b. lved literatur "1" IN APPROP	e! When? RIATE BOXES)	
	Literature	L	iterature Receiv	ed
	Not received	Before	During	After
(30-32)				
(13-35)				
(39-41)				
(42-44)				
(45-47)			ll	

TRAVEL PREFERENCES

Now we have just a few questions about what you like to do when you travel for pleasure.

33. What is the farthest distance you are willing to travel one way by car for a ... (READ. WRITE IN NUMBER OF MILES.)

a .	One day trip	(54-56)
ь.	Weekend trip	(57-59)
c.	One week trip	(60-62)

34. What outdoor activities do you like to do when you travel? (DO NOT BEAD. CHECK. ACCEPT UP TO 7.)

(1)	Bicycling	(13)	Bunting	(63-64)
(2)	Power Boating	(14)	Eiking/backpacking	(65-66)
(3)	Canoging	(15)	Norseback riding	(67-6B)
(4)	Sailing	(16)	Downhill skiing	(69-70)
(5)	Refting	(17)	Cross country skiing	(71-72)
(6)	Camping	(18)	Snowmobiling	(73-74)
(7)	Charter boat fishing	(19)	Swimming	(75-76)
(8)	Stream/river fishing	(20)	Water skiing	
(9)	Loke fishing	(21)	Sunbathing/beach	
(10)	lce fishing	(22)	Miscellaneous sports	
(iii)	Golf	(23)	Other (WRITE IN)	
(12)	Tennis		-	-11-

^{31.} Did you use any (other) states' or provinces' tourist centers or toll free 800 numbers?

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(1-4)DU: (5)#

35.	What sights, events or entertainment d	lo you	11}a	to participate	in?	(DO NOT READ.	
	CHECK. ACCEPT UP TO 5.)			•			

(1)	Netural attractions	(9)	Night clubs, shows, restaurants	(6-7)
(2)	Lendmarks	(10)	Industry tours	(8-9)
(3)	Ristorical sights	(11)	Festivals	(10-11)
(4)	Man-made attractions	(12)	Novies	(12-13)
(5)	Hiseuns .	(13)	Other (WRITE IN)	(14-15)
(6)	Cultural events			
(7)	Professional/spectator sports			
(8)	Fairs, exhibits			

ATTRIBUTES/IMACERY

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36. Now 1'm going to read some words to you that describe states. I'd like you to tell me how important each one is to you when you travel to a state. The scale we'll be using is a 1 to 5 scale with 1 being "not at all important" and 5 being "one of the most important". Let's try one: good weather. Now important to you is "good weather" when you travel to a state: 1, which means not at all important, 2, 3, 4 or 5, which means one of the most important? (READ. CHECK. ROTATE. HARK EDTAIDESTART. REPEAT SCALE AS MECESSARY.)

						One of	
		Not at all				the most	
		Important				important	
		1	2	3	4	5	
۸.	Good scenery	(1)	(2)	(3)	(4)	(5)	(18)
ь.	Peace and quiet	(1)	(2)	(3)	(4)	(5)	(19)
c.	Family fun	(1)	(2)	(3)	(4)	(5)	(20)
d.	Good restaurants	(1)	(2)	(3)	(4)	(5)	(21)
e.	Friendly people	(1)	(2)	(3)	(4)	(5)	(22)
f.	Easy to get to	(1)	(2)	(3)	(4)	(5)	(23)
8.	Excitement	(1)	(2)	(3)	(4)	(5)	(24)
h.	Ressonable prices	(1)	(2)	(3)	(4)	(5)	(25)
1.	Good places to stay	(1)	(2)	(3)	(4)	(5)	(26)
1.	Lots of things to do	(1)	(2)	(J)	(4)	(5)	(27)
ž.	Summer fun	(1)	(2)	(3)	(4)	(5)	(28)
1.	High prestige vacations	(1)	(2)	(3)	(4)	(5)	(29)
	Clean air	ä	$\dot{\alpha}$	(3)	(4)	(S)	(30)
в.	Good night life	a)	(2)	(j)	(4)	(S)	(31)
٥.	Winter fun	ä	(2)	(3)	(4)	(5)	(32)

37. Today, we're concentrating on states in the Great Lakes Region of the country. How many times have you been to...in the last 3 years? (READ. WRITE IN MURBER OF TIMES. INDICATE IF LIVES(D) THERE.)

۰.	Ohio	(33)	e.	Pennsylvania	(37)
Ь.	Wisconsin	(34)	f.	Ontario	(38)
c.	Illinois	(35)	8.	Indians	(39)
đ.	Nichigan	(36)	ħ.	Ninnesota	(40)

38. We know that you may not have been to every state but based just on your impressions, on what you've seen or heard or read, overall, how would you rate these states as good or had places to take a watcation? I means a state is among the worst places to take a vacation and 5 means a state is smong the best places to take a vacation and you can choose any number in between. (READ. CHECK. NOTATE. MARK ROTATION START. REPEAT SCALE AS WECESSART.)

		Worst 1			-	Best 5		(41)
a .	Ohio	<u>a</u>	(2)	(3)	(4)	(5)	(42)	
D.	Wisconsin	<u>(1)</u>	(2)	(3)	(4)	0	(43)	
c.	Illinois -	(1)	(2)	(3)	(4)	6)	(44)	
d.	Michigan	(1)	(2)	(3)	(4)	(5)	(45)	
۰.	Pennsylvania	(1)	(2)	(3)	(4)	· (5)	(46)	
t.	Ontario	(1)	(2)	(3)	(4)	(5)	(47)	
z .	Indiana	(1)	(2)	(3)	(4)	(5)	(48)	
ĥ.	Minnesota	(1)	(2)	(3)	(4)	(5)	(49)	
	CO TO RAT	INC SH	EET	P O	RÓ	3 9.		-12-

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Q39 Rating Sheet

39. Now we'd like you to rate a few of these states on several items. Again, we'd like to know your impressions based just on what you've seen or hward or read. We want to know how such you agree or disagree that a state is known for something. The scale we'll be using this time is: 1 is strongly disagree and 10 is strongly agree, and you cas choose any number in between. For example, "good weather." Do you 1, strongly disagree, 10, strongly agree, or would you choose some number in between that California is known for good weather?

Let's start with Michigan. Is Michigan known for...?

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READ. ENTER NUMBER OF RATING. REPEAT SCALE AS NECESSARY. ROTATE. MARK BOTATION START.	(71-72)
HALF ROTATE FORWARD, HALF ROTATE BACKWARD. INDICATE FORWARD OR BACKWARD BOTATION WITH ARROW.	(73)
AFTER MICHIGAN BATINGS. BEAD BACK MICHIGAN BATING FOR FACIL TTEN IN THUS AND CH	(74)
2 OTHER STATES' BATINGS FOR THAT ITEM.	(75)
When we werd Michigan a set the W. Her above with a set of the	

"Now you rated Michigan a _____ on <u>item X</u>. Now, then, would you rate <u>state 2</u> on <u>item X</u>? And <u>state 2</u>?

(1-4) DUP (5-6)12 :

	•			
	Michigan	<u>Wisconsin</u>	<u>Minnesota</u>	
a. Good scenery	(7-8)	(17-38)	(67-68)	
b. Peace and quite	(9-10)	(39-40)	(69-70)	1
c. Family fun	(11-12)	(41-42)	(71-72)	
d. Good restaurants	(13-14)	(43-44)	(73-74)]
e. Friendly people	(15-16)	(45-46)	(75-76)]
f. Easy to get to	(17-18)	(47-48)	(77-78)	{
g. Excitement	(19-20)	(49-50)	(79-80)	
h. Reasonable prices	(21-22)	(51-52)	(7-8)	(1-4) DUP (5-6)13
1. Good places to stay	(23-24)	(53-54)	(9-10)	
1. Lots of things to do	(25-26)	(55-56)	(11-12)	
k. Summer fun	(27-2B)	(57-58)	(13-14)	
1. High prestige vacations	(29-30)	(59-60)	(15-16)	
m. Clean air	(31-32)	(61-62)	(17-18)	
a. Good night life	(33-34)	(63-64)	(19-20)	
o. Vinter fun	(35-36)	(65-66)	(21-22)	

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RETURN TO QUESTIONNATRE FOR Q40.

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40. The following few statements are concerned with your opinions about what makes a good vacation. I'd like to know how much you agree or disagree with each statement. The scale this time is 1, strongly disagree, 5, strongly agree or you can choose any number in between. Let's try one: "The best vacations are those in which the westher is good." Do you, 1, strongly disagree with that, 5 strongly agree or are you somewhere in between? (READ. CHECK. BOTATE. MARK BOTATION START. REPEAT SCALE AS MECESSARY.)

-

The best vacations are those which ...

				(50	-51)
Strongly disagree 1	-2		4	Strongly agree 5	
(1)	(2)	(3)	(4)	(5)	(52)

:

a. Make lasting memories and impressions	(1)	(2)	(3)	(4)	(5)	(52)
b. Reep me busy all the time	(1)	(2)	(3)	(4)	(5)	(53)
c. Let me encape from my daily routine	(1)	(2)	(3)	(4)	(5)	(54)
d. Let me return to nature	(1)	(2)	(3)	(4)	(5)	(55)
a Take me to places I've never been before	(1)	(2)	(3)	(4)	(5)	(56)
f. Bring new experiences	(1)	(2)	(3)	(4)	(5)	(57)
g. Give we a chance to rest	(1)	(2)	(3)	(4)	(5)	(58)
h. Let me do the things I did when I was a kid	(i)	(2)	(3)	(4)	(5)	(39)
1. Help me meet lots of new people	(1)	(2)	(3)	(4)	(5)	(60)
j. Let me live in luxury	(1)	(2)	(3)	(4)	(5)	(61)
k. Take me to places away from home	(L)	(2)	(3)	(4)	(5)	(62)

FOR BUSINESS TRIPS

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IF NO BUSINESS TRIPS, SKIP TO Q45.

		BUS	INESS TR	IPS
_		Most Recent	2	3
ASK IF CONVEN	TION NOT MENTIONED IN Q6:			
Did you attend	a convention on this trip?			
(1) Yes	(2) No ENTER ONE COL	E		
		(63)	(64)	(65)
2. On this trip, away from home	how many nights, if any, did you stay ? (IF ZERO NICHTS, SKIP TO Q44.)			
	ENTER NUMBER OF NICHT	s		
•		(66-67)	(68-69)	(70-71)
 What kind of 1 How many might NICHTS FOR EAC 	odging did you use in (<u>DEST. STATE</u>)? ** (PROBE UNTIL HAVE NUMBER OF H TYPE OF LODGING USED.)			
	(1) HotelASK 043a	(72-73)	(26-27)	(54-55)
	(2) Motel			
	(1) Pented ashin astrony warston house	(74-75)	(28-29)	(56-57)
ENTER	(3) AENteu Cabin, Cottage, Vacation House	(76-77)	(30-31)	(58-59)
MUNDER	(4) Owned cabin, cottage, vacation house			
· 0F	(1-4)	(78-79)	(32-33)	(60-61)
FOR	(5) • • • • • • • • • • • • • • • • • • •	(6-7)	(34-35)	(62-63)
EACH	(6) fublic campgrounds-R.V.	-		
	(7) Private campgrounds-tent	(8-9)	(36-37)	(04-65)
		(10-11)	(38-39)	(66-67)
	(5) Frivate campgrounds-R.V.	(12-13)	(40-41)	(68-69)
	(9) Friend's house			
	(10) Relative's bouse	(14-15)	(42-43)	(70-71)
		(16-17)	(44-45)	(72-73)
	(11) Resort, spa, dude ranch	(18-10)	144.42	(74-75)
	(12) Other (WRITE IN)	10-19/	(40-4/)	(14-15)
	-	(20-21)	(48-49)	(76-77)
	1817 1.			L-ADUP
	TRIP 2			(5-6)10
	TDID 1.	(22-25)	(50-53)	(7-10)
	IRIT J.	1	1 1	

	-	S U:	INESS TR	PS
		Nost Recent	2	3
 63a. Bid you stay at (A (1) A chain botel (mo (2) An independent bo 	SK FOR UP TO 2 HOTELS AND 2 MOTELS.) tal)? ENTER ONE 1 CODE FOR EACH tal (motal)? NOTEL/MOTEL 2	11)(1)) (11)(1)) (12)(14)	EL EL EQ (15)(17) (16)(18)	19)(21) (20)(22
i. Now well do you rememb	er how much this trip cost? (READ) ENTER (1) Not at all well (3) Mot too well CODE (3) Somewhat well (4) Very well	(23)	(24)	(25)
4a. 17 Q44 IS (1) OR (2): Bow much didcost?	"Well, let's try it anyvay."			
ACCEPT ONLY TOTAL IF DOESN'T SPENT	 a. Transportation b. Lodging c. Heals 	(26-28) (29-31)	(45-47) (48-50)	(64-66) (67-69)
KNOW DETAIL FOR EACH	 d. Entertainment and activities e. Other miscellaneous items 	(32-34) (35-37)	(51-53)	(70-72)
	TOTAL	(38-40)	(57-59)	(76-78) (7-10)

CO TO Q41 FOR NEXT BUSINESS TRIP. IF NO MORE BUSINESS TRIPS, CONTINUE.

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DEMOCRAPHICS

Finally, your answers will be even more helpful to us if you answer a few questions about yourself and your family.

IF MICHIGAN RESIDENT, ASK Q45-Q47. OTHERWISE, SKIP TO Q48.

45. Have any friends or relatives who live over 100 miles away visited you and stayed overnight in your home within the last 3 months? (CHECK.)

(1) Yes - CONTINUE (2) No - SKIP TO Q48

46. How many times have you had overnight visitors in the last 3 months? (WRITE IN MUMBER OF TIMES.)

(12-13)

(11)

- 47. ASK FOR EACH TIME HAD OVERNIGHT VISITORS.
 - Bow many people stayed overnight (the first time, second time, etc.)? (RECORD IN GRID BELOW.)
 - b. For how many days did they stay (the first time, second time, stc.)? (RECORD IN GRID BELOW.)
 - c. What state were they from (the first time, second time, etc.)? (RECORD IN GRID BELOW.)

•	Q47a.	Q47b.	Q47c.
	How many people? ENTER NUHBER OF PEOPLE	How many days? ENTER NUMBER OF DAYS	What state from? ENTER STATE NAME
VISIT	1	1	
1	(14-15)	(22-23)	(30-32)
2	(16-17)	(24-25)	(33-35)
3	(18-19)	(26-27)	(36-38)
4	(20-21)	(28-29)	(39-41)
	IF VARIES WITHIN VISIT, ENTER VARIES.	IF VARIES WITHIB PEOPLE, ENTER VARIES.	IF VARIES WITHIN PEOPLE ENTER VARIES.

48. RECORD SEX: (CHECK.)

	(1) Male	(2) Female	(42)
49.	What is your age? (WRITE	IN NUMBER OF YEARS.)	(43-44)
50.	Are you (READ. CHECK	.)	
	(1) Married	(2) Unmarried	(45)
51.	Now many people including (WRITE IN NUMBER OF PEOPL	yourself live in your household? [.]	(46)
52.	What is your occupation?	(WRITE IN.)	(47-48)
			-15-

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	poy	ou own a camper or EVI (C	HECK.)			
	(1)	Yes	(2)	lio		(49)
4.	What	was the highest grade you	complete	d in school or tra	ining? (READ. CH	ECK.)
	(1)	Less than high school	(5)	College grad		
	(2)	Nigh school graduate	(6)	Post degree		(50)
	(3)	Trade/technical	(7)	Refused (DO NOT	READ)	
	(4)	Some college				
\$5.	Is c	his a white, black or hisp	anic bou	whold? (CHECK.) AND PENAL	IF NIXED, GET RACE	OF NALE
	(1)	White	(3)	Hispanic		
	(2)	Black	(4)	Other (5) Re	fused (DO NOT READ) (51)
6.	What (REA	Was your total family inco D. CHECK.)	me is 19	83 from all mource	s before taxes?	
	(1)	Less than \$10,000	(5)	\$40,000 - \$49,999	1	
	(2)	\$10,000 - \$19,999	(6)	\$50,000 - \$59,999	•	
	(3)	\$20,000 - \$29,999	(7)	\$60,000 - \$69,999	ł	(52)
	(4)	\$30,000 - \$39,999	(8)	\$70,000 or more		
			(9)	Refused (DO NOT	READ)	
				•••••		

THANK YOU VERT MICH FOR YOUR COOPERATION

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Interviewer	
Date	(59-61)
Length of Interview	(62-63)
AD1	(64-66)
STATE	(67-69)

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(1) Great Lakes (2) Destination (3) Inquiry (70)

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