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A MODEL FOR DERIVING TIMELY AND ACCURATE ESTIMATES

OF STATEWIDE PLEASURE TRIP VOLUME

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Dae-Kwan Kim

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Park, Recreation & Tourism Resources

Donald F. Holecek
Major professor

Date 7/4/99

MICHIGAN STATE
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July 22, 1999

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Dear Dr. Kim:

Please accept my warm congratulations upon the completion of your doctoral dissertation. This letter certifies that your dissertation has been received and its form has been approved by the office of The Graduate School. Please accept my best wishes for your continued success.

Sincerely,

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A MODEL FOR DERIVING TIMELY AND ACCURATE ESTIMATES OF STATEWIDE PLEASURE TRIP VOLUME

By

Dae-Kwan Kim

A DISSERTATION

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ABSTRACT

A MODEL FOR DERIVING TIMELY AND ACCURATE ESTIMATES OF STATEWIDE PLEASURE TRIP VOLUME

By

Dae-Kwan Kim

Travel and tourism is the world's largest industry, providing jobs for 1 in 9.4 people employed worldwide and produced 10.5% of the world's economies total GDP in 1997. Pleasure trips accounted for 70% of total nationwide person-trips in the U.S. and over 85% in Michigan's prime market area. Timely and accurate estimates of statewide pleasure trip volume are essential: for monitoring changes in the economic magnitude of the tourism industry in a given state, for assessing performance of past investments, and for prioritizing future investment opportunities.

The most accessible and widely used surveys of statewide pleasure trip volume are the U.S. Bureau of Census' American Travel Survey (ATS), the U.S. Travel Data Center's (USTDC) TravelScope survey, and individual states' own regional surveys. Since 1995, Michigan State University (MSU) has conducted a regional telephone survey to generate information for travel marketing purposes. The ATS provides the most accurate estimate of statewide pleasure trip volume, but its results are not timely. TravelScope data are neither timely nor necessarily cost effective. Data required to estimate statewide pleasure trip volume from the MSU survey are available for little cost and within one month after they are collected, but, prior to this study, the accuracy of MSU survey based estimates was unknown.

A preliminary estimate of statewide pleasure person-trip volume derived from the MSU survey was 21% higher than that derived from the ATS. It was hypothesized that differences in methods used across the two surveys are largely responsible for the

observed variance across estimates, and that it would be possible to make adjustments for many of these differences in methods through a quantification and calibration process. The overall goal of this study was to develop a timely and cost effective method for accurately estimating pleasure trip volume in Michigan. The objectives were: 1) to estimate statewide Michigan pleasure person-trip volume using data from the MSU survey and the ATS; 2) to determine the likely causes of observed differences in estimates between the two surveys; 3) to determine whether the MSU survey estimates can be calibrated to reduce error of estimates; 4) to assess the accuracy of calibrated MSU survey estimates; and 5) to develop a model for deriving timely and accurate estimates of statewide Michigan pleasure person-trip volume.

Calibration processes were developed to account for the following methodological differences between the ATS and MSU surveys: 1) definition of trip, 2) age of travelers, 3) types of survey used, 4) nonresponse bias, 5) different survey years, and 6) study region covered. The percent error of differences in estimates was significantly reduced through the calibration process, and, once calibrated, the MSU survey based estimates were found to fall within a 95% confidence interval of the ATS estimate. Therefore, it was concluded that the MSU survey provides timely and accurate estimates of statewide pleasure trip volume.

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CHAPTER I

INTRODUCTION

Problem Statement

According to the World Travel and Tourism Council (WTTC), travel and tourism is the world's largest industry, providing jobs for one in nine people employed worldwide in 1997 (WTTC, 1997). In 1994, travel and tourism produced US$2.8 trillion of Gross Domestic Product (GDP) or 10.5% of the world economy's total GDP. It generated 231 million jobs, employing 10.4% of the world's workforce. The travel and tourism industry invested US$693 billion in new facilities and equipment and contributed US$600 billion in tax revenues. It accounted for 10.9% of all consumer expenditures and 6.3% of government spending (WTTC, 1997). In 1997, the WTTC estimates that tourism globally generated US$3.3 trillion of GDP, US$2.1 trillion of consumer spending, US$801 billion of capital investment, 262 million jobs, and US$550 billion of spending by international leisure travelers in foreign countries (WTTC, 1997).

When tourism is classified by purpose of trip, over 70% of total nationwide person-trips in the United States were classified as pleasure trips (U.S. Travel Data Center (USTDC), 1994). The USTDC defines "pleasure trips" as any overnight or day trips to places at least 50 miles from home for the purpose of visiting friends or relatives, entertainment, or outdoor recreation (USTDC, 1994).

According to the Travel, Tourism, and Recreation Resource Center at Michigan State University (TTRRC), in Michigan's prime market area, over 85% of total statewide

person-trips were classified as pleasure trips (TTRRC, 1997). Michigan's prime market area includes Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin, and Ontario, Canada (TTRRC, 1997). The TTRRC defines "pleasure trips" as any overnight or day trips to places at least 50 miles from home that were made for enjoyment, including vacations, weekend getaways, shopping trips, and trips to visit friends or relatives (TTRRC, 1997).

Timely and accurate estimates of statewide pleasure trip volume are needed by destination marketing organizations, governments, and individual businesses in order to make critical investment, planning, and marketing decisions related to the tourism industry. In particular, such estimates are essential for monitoring changes in the economic magnitude of the tourism industry in a given state, for assessing performance of past investments, and for prioritizing future investment opportunities (Gartner & Hunt, 1988; Harris, McLaughlin, & Hunt, 1994; Harris, Tynon, & McLaughlin, 1990; Rogers, 1991).

Several surveys estimate statewide pleasure trip volume in the U.S.: the U.S. Travel Data Center's TravelScope survey, D.K. Shifflet's Performance/Index, Longwoods International, Inc.'s mail panel survey, and the U.S. Bureau of Census' American Travel Survey (ATS) (Kim, Spotts, & Holecek, 1998). The most accessible and widely used surveys of statewide pleasure trip volume are the U.S. Travel Data Center's TravelScope survey, the U.S. Bureau of Census' ATS, and individual states' own regional surveys (Cournoyer & Kindahl, 1983; Gartner & Hunt, 1988; Harris, McLaughlin, & Hunt, 1994; Holecek, 1995, 1996; Rogers, 1991).

As will be discussed in Chapter III, the ATS almost certainly is the source of the most accurate estimates of statewide pleasure trip volume and, as such, is the standard for evaluating the relative accuracy of estimates generated from other data sources. The ATS is conducted only every five years (U.S. Department of Transportation, 1997a). However, an eighteen-year gap occurred between the 1995 ATS and the 1977 National Travel Survey (Holecek, 1995; U.S. Department of Commerce, 1979; U.S. Department of Transportation, 1997a). Due to the long interval between surveys and the rapid changes that can occur in tourism behavior and volume, the information provided by the ATS is not timely enough for many purposes. Consequently, most states use annual secondary survey data or conduct their own state or regional household surveys (Gartner & Hunt, 1988). As will be discussed in detail in Chapter III, TravelScope is a monthly mail panel survey of the travel behavior of 20,000 households (USTDC, 1997). The USTDC makes TravelScope data available annually to clients on a fee basis (Frechtling, Rogers, & Tarlow, 1998). However, clients still must wait more than ten months to receive the data. Thus, TravelScope data are neither timely nor necessarily cost effective.

Many states conduct their own regional or state surveys to generate information for travel marketing purposes. Statewide pleasure trip volume may be estimated from these surveys for little or no added cost. Since 1995, Michigan State University (MSU) has conducted a regional telephone survey to generate such information for travel marketing purposes. The MSU survey involves computer-assisted telephone interviews of an average of 430 households per month in a study region which includes Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin, and Ontario, Canada. It provides the

information needed to estimate statewide pleasure trip volume on a timely basis at a modest cost.

There are, however, important questions that need to be answered concerning the accuracy of the TravelScope and MSU surveys vis-à-vis the ATS. How comparable are the MSU survey and TravelScope estimates to those of the ATS? What are the likely sources of differences in the estimates derived? Why do the errors occur? Can calibration be used to substantially reduce observed differences in estimates? Can accurate estimates of pleasure trip volume be obtained more frequently than the semidecennial ATS estimates?

Assessment of the Results of the Three Surveys

As detailed in Tables 1 through 4, both MSU survey and TravelScope results vary significantly from the ATS results (Kim, Spotts, & Holecek, 1998). The number of pleasure trips to Michigan that originated in the states of Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin, was estimated from the MSU survey to be 27.1 million, 25% higher than the ATS results. Estimates derived from the MSU survey and the ATS were similar for Michigan and Indiana but quite different for the other states. MSU survey estimates of the number of pleasure trips originating in a given state were 12% higher for Michigan, 14% higher for Indiana, 54% higher for Ohio, 78% higher for Wisconsin, 108% higher for Illinois, and 154% higher for Minnesota.

Table 1. Estimated pleasure trip volume by state of origin, as estimated from the MSU survey (1996).

State Of Origin	Population Over 17 (1996)[1]	Took Trip in Past 12 Months	Took Pleasure Trip in Past 12 Months	Pct. that Took a Pleasure Trip to MI in Past 12 Months	Avg. No. Pleasure Trips to MI Taken in Past 12 Months	Estimated No. Pleasure Person-Trips to MI
IL	8,690,639	68.8%	92.8%	16.1%	3.37	3,010,536.53
IN	4,342,004	65.8%	93.7%	26.4%	2.63	1,858,726.02
MI	7,057,336	72.2%	92.2%	71.7%	5.44	18,324,282.08
MN	3,410,750	76.2%	96.1%	8.8%	1.92	421,999.71
OH	8,324,941	68.9%	95.7%	18.0%	1.99	1,966,246.24
WI	3,816,761	72.3%	94.6%	21.3%	2.78	1,545,783.97
Total	35,642,431					27,127,575.37

[1] Source: U.S. Department of Commerce, Bureau of the Census (1998).

Table 2. Estimated pleasure trip volume by state of origin, as estimated from the TravelScope survey (1995).

State of Origin	No. Person-Trips to Michigan	Pct. That Were Pleasure Trips	Estimated No. Pleasure Person-Trips to MI
IL	2,114,503	67.1%	1,419,420
IN	980,995	67.3%	660,529
MI	15,233,882	76.4%	11,642,386
MN	435,966	82.3%	358,735
OH	2,799,550	59.5%	1,666,548
WI	1,149,518	87.4%	1,004,774
Total	22,714,414		16,752,391

Table 3. Estimated pleasure trip volume by state of origin, as estimated from the ATS (1995).

State of Origin	No. Person-Trips to Michigan	Pct. That Were Pleasure Trips	Estimated No. Pleasure Person-Trips to MI
IL	2,041,000	71.0%	1,449,000
IN	2,049,000	79.4%	1,627,000
MI	22,000,000	74.2%	16,322,000
MN	331,000	50.2%	166,000
OH	1,958,000	65.4%	1,280,000
WI	1,277,000	68.0%	868,000
Total	29,656,000		21,712,000

Table 4. Comparison of pleasure trip volume estimates derived from the three surveys.

State Of Origin	MSU Survey (1996) A	TravelScope Survey (1995) B	American Travel Survey (1995) C	Percentage Difference, A vs. B	Percentage Difference, A vs. C	Percentage Difference, B vs. C
IL	3,010,537	1,419,420	1,449,000	112.1%	107.8%	-2.0%
IN	1,858,726	660,529	1,627,000	181.4%	14.2%	-59.4%
MI	18,324,282	11,642,386	16,322,000	57.4%	12.3%	-28.7%
MN	422,000	358,735	166,000	17.6%	154.2%	116.1%
OH	1,966,246	1,666,548	1,280,000	18.0%	53.6%	30.2%
WI	1,545,784	1,004,774	868,000	53.8%	78.1%	15.8%
Total	27,127,575	16,752,391	21,712,000	61.9%	24.9%	-22.8%

The number of pleasure trips to Michigan that originated in the states of Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin, was estimated from the TravelScope survey to be 16.8 million, 23% less than the ATS results. Estimates derived

from TravelScope and the ATS were similar for Illinois and Wisconsin, but quite different for the other states. TravelScope survey estimates of the number of pleasure trips originating in a given state compared with ATS were 2% lower for Illinois, 15% higher for Wisconsin, 29% lower for Michigan, 30% higher for Ohio, 59% lower for Indiana, and 116% higher for Minnesota.

Study Purpose and Objectives

Purpose

The MSU survey provides timely information, but the accuracy of its estimates is uncertain. Data required to estimate statewide pleasure trip volume from the MSU survey are available for little cost[1] and within one month after they are collected. TravelScope survey clients pay $21,600 per year and wait more than ten months to obtain the data required to estimate statewide pleasure trip volume. This suggests that the MSU survey is more cost and time efficient than the TravelScope survey for obtaining the data needed to estimate statewide pleasure trip volume. As discussed in Chapter III, the MSU survey is more accurate than TravelScope survey, but less accurate than the ATS.

Preliminary estimates of statewide pleasure person-trip volume derived from the MSU survey were 24.9% higher than estimates from the ATS, the standard for accuracy adopted for this study as discussed in Chapter III. There might be several factors that cause the differences in estimates between the two surveys. Therefore, it was necessary to determine whether calibrating these factors can substantially reduce observed differences in estimates between the two surveys.

[1] At the time this study was conducted, the MSU survey was funded for purposes other than for estimating inter regional pleasure travel flows and results were available free to the author as secondary data.

The study region of the MSU survey included Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin, and Ontario, Canada. Since the ATS covered households only in the U.S., responses obtained from Ontario residents were deleted from the MSU survey data set. According to the U.S. Department of Transportation (1997e), the number of pleasure person-trips from Minnesota to Michigan accounted for only 0.7% of total number of pleasure person-trips from anywhere in the U.S. to Michigan in 1995. Due to the small market share, responses obtained from Minnesota respondents were also eliminated from the MSU survey database. The five states: Illinois, Indiana, Michigan, Ohio, and Wisconsin, generated 88% of total pleasure person-trips to Michigan from anywhere in the U.S. in 1995 (U.S. Department of Transportation, 1997e).

The overall goal of this study was to develop a timely and cost effective method for accurately estimating pleasure trip volume in Michigan from the five states and from anywhere in the U.S. Based upon a preliminary assessment of the possibilities, the MSU survey was judged to contain the data needed to produce timely and cost efficient pleasure trip volume estimates. However, this preliminary assessment also revealed that the survey yields estimates which differ markedly from ATS estimates, making the survey too unreliable for many applications. It was hypothesized that differences in methods used across the two surveys are largely responsible for the observed variance across estimates, and that it would be possible to make adjustments for many of these differences in methods through a quantification and calibration process. If this could be demonstrated, progress would have been made toward the central goal of this study.

Objectives

The specific objectives of this study were:

1. to estimate statewide Michigan pleasure person-trip volume from the five states of Illinois, Indiana, Michigan, Ohio, and Wisconsin and from anywhere in the U.S. using data from the MSU survey and the ATS,
2. to determine the likely causes of observed differences in estimates derived from the MSU survey and the ATS,
3. to determine whether the MSU survey estimates can be calibrated to reduce error of estimates,
4. to assess the accuracy of calibrated MSU survey estimates, and
5. to develop a model for deriving timely and accurate estimates of statewide Michigan pleasure person-trip volume.

This paper is organized into six chapters. The next chapter, Literature Review, includes discussions of literature on definitions of tourism and trip, strengths and weaknesses of selected survey methods, estimates of trip volume, and trip volume calibration variables. In Chapter III, Review of the Three Surveys, methods employed in the three surveys are presented and assessed for their relative strengths and weaknesses, and the rationale for adopting the ATS based estimates as the standard for judging the relative accuracy of estimates from the MSU survey and TravelScope is presented. In Chapter IV, Methods, the procedures used to obtain preliminary estimates of statewide pleasure person-trip volume to Michigan derived from the MSU survey and the ATS are presented; variables to be calibrated are discussed; the procedures for calibration of the

MSU survey are illustrated; and acceptable percent error of differences in estimates between the MSU survey and the ATS is presented. In Chapter V, Findings, results of preliminary estimates from the MSU survey and the ATS are presented. Calibration results are presented. Differences in estimates between two surveys are presented. It is determined whether percent error of the differences in estimates is acceptable. And a model for deriving timely and accurate estimates of statewide Michigan pleasure person-trip volume is presented. Finally, in Chapter VI, Conclusions and Recommendations, an evaluation of the study based on the purpose and objectives previously described is presented, along with limitations of the study and recommendations for further research.

CHAPTER II

LITERATURE REVIEW

To provide a better understanding of estimates of pleasure trip volume derived from different survey methods, this chapter includes discussion of some of the factors which other researchers have found to influence the estimates and calibration of trip volume. This includes review of literature relating to: 1) definitions of tourism and trip, 2) strengths and weaknesses of selected survey methods, 3) estimates of trip volume, and 4) trip volume calibration variables.

Definitions of Tourism and Trip

The following statements are illustrations of typical descriptions of the tourism industry. Tourism is the largest industry in the world, providing jobs for one in nine people employed worldwide (WTTC, 1996, 1997). U.S. residents took 805 million person-trips in 1993 (USTDC, 1994), and 1,127.4 million person-trips in 1994 (USTDC, 1995). About 1 billion person-trips to destinations in the U.S. occurred in 1995 (U.S. Department of Transportation, 1997a). U.S. residents took over 32 million person-trips to Michigan in 1994 (Michigan Travel Bureau, 1995).

There are several critical questions related to the above sentences. How can the WTTC, the USTDC, the U.S. Department of Transportation, and the Michigan Travel Bureau (now Travel Michigan) make such statements? What is the meaning of "tourism"

and "trip"? What is a "tourist"? To answer these questions, the terms "tourism" and "trip" must be defined.

Definition of Tourism

Metelka (1989) defines tourism as:

> "Umbrella term for the variety of products and services offered and desired by people while away from home. Included are restaurants, accommodations, activities, natural and manmade attractions, travel agencies, government bureaus and transportation. . . . 1. The relationship and phenomena associated with the journeys and temporary visits of people traveling primarily for leisure and recreation. 2. A subset of recreation; that form of recreation involving geographic mobility. 3. The industries and activities that provide and market the services needed for pleasure travel."

This definition identifies two distinct elements. The activity element consists of travel for pleasure outside of one's normal routine. The structural element consists of tourist products and service providers.

McIntosh, Goeldner, and Ritchie (1995) define tourism as:

> "the sum of the phenomena and relationships arising from the interaction of tourists, business suppliers, host governments, and host communities in the process of attracting and hosting these tourists and other visitors."

This definition recognizes four important elements of tourism: tourists, businesses providing travel related services, governments (at all levels) which exert policy control over tourism, and the people who live in an area visited by tourists.

Leiper defines tourism as:

> ". . . an open system of five elements interacting with broader environments, the elements being a dynamic human element, tourists; three geographical elements: generating region, transit route and destination region; and an economic element, the tourist industry. The five are arranged in functional and spatial connection, interacting with physical, technological, social, cultural, economic and political factors. The dynamic element comprises persons undertaking travel which is to some extent leisure-based and which involves a temporary stay away from home of at least one night."

His definition of tourism includes all the elements of McIntosh et al.'s with slightly more specificity. This definition, which appears broad enough to include almost anything leading to or happening as a result of travel away from home, does place some specific limits on what tourism can be. The addition of leisure excludes business travelers, many of whom may not consider their trip to have a pleasurable component. The addition of a stay of at least one night also limits the extent of tourism.

Ryan (1991) defines tourism from an economic activity point of view as:

> ". . . a study of the demand for and supply of accommodation and supportive services for those staying away from home, and the resultant patterns of expenditures, income creation and employment."

This definition identifies two approaches to tourism research: 1) view tourism as an industry, and 2) view tourism as a scientific process to investigate the hypothetical relationships between causal and dependent variables.

Gunn (1988) defines tourism as encompassing all travel with the exception of commuting. This broad definition seems necessary from a planning perspective even though it is inconsistent with many other views.

Jafari (1977) offers one of the simplest and most inclusive definitions stating:

> "tourism is a study of man away from his usual habitat, of the industry which responds to his needs and of the impacts that both he and the industry have on the host sociocultural, economic and physical environment."

This definition is succinct yet broad enough to fully explain what tourism is all about. One can become a tourist without traveling a significant physical distance. It recognizes that tourism creates economic, sociocultural, and environmental impacts. It also recognizes that tourism providers constitute an industry group.

Fridgen (1991) indicates that tourism is a purposeful, planned, and motivated behavior influenced by internal factors (e.g., attitudes, social and family roles, values, perception, learning, personality, and motives) and external factors (e.g., social class, environmental conditions, subculture, culture, and reference group). In other words, tourism is a process of decision making influenced by different dimensions: psychological, social and cultural, economic, and environmental.

Gartner (1996) defines tourism as occurring when an individual changes physiological place and psychological pace. This definition simply identifies two elements of tourism: physical changes and psychological changes.

According to the United Nations and the World Tourism Organization (1994), "tourism comprises the activities of persons traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and

other purposes." The term "usual environment" is intended to exclude trips within the area of usual residence and frequent and regular trips between the domicile and the workplace and other community trips of a routine character.

The many and varied definitions of tourism depend upon the authors' perspective. Definitions of tourism are based on the structural system (Leiper, 1981; McIntosh et al., 1995; Metelka,1989), physical changes (Gartner, 1996; Gunn, 1988; Jafari, 1977; Metelka, 1989; United Nations and the World Tourism Organization, 1994), activity (Jafari, 1977; Metelka, 1989; Ryan, 1991), length of time spent (United Nations and World Tourism Organization, 1994), and trip purpose or behavior (Fridgen, 1991; Gartner, 1996; Leiper, 1981; Metelka, 1989).

Definition of Trip

In tourism research, a "trip" has been defined in a multitude of ways. Definitions have been based on distance traveled, duration of trip, purpose(s) of trip, or expenditures of trip, and differ from organization to organization and from survey to survey based on the organizations' or surveys' purpose(s) (Gartner, 1996; Holecek, 1995).

The National Tourism Resources Review Commission defined a trip as travel at least 50 miles away from home, including all types of travel except commuting to work (National Tourism Resources Review Commission, 1973). This definition focuses on distance traveled and purpose, and does not include duration and expenditures.

The U.S. Census Bureau defines a trip as ". . . each time a person goes to a place at least 100 miles from home and returns. The following types of trips were excluded: 1) trips taken as a member of a crew of an airplane, train or ship; 2) trips taken while

working as a bus driver or truck driver; and 3) trips taken in military vehicles by members of the military on active duty (U.S. Department of Transportation, 1997b)." This definition also focuses on distance traveled and purpose and does not include duration and expenditures.

The U.S. Travel Data Center (a non-government organization) defines a trip as any trip away from home of 50 miles or more, one-way, or any trip with an overnight stay of at least one night. Trips taken commuting to and from work/school and trips taken as a flight attendant or vehicle operator were excluded (USTDC, 1996, 1997). This definition includes distance traveled, duration, and purpose, but not expenditures.

Statistics Canada and Tourism Canada use a minimum distance of 80 km (50 miles) to define a trip (McIntosh et al., 1995; Medlik, 1996). This definition also focuses on the distance traveled.

The United Kingdom Tourism Survey uses one or more nights away from home for holidays, visits to friends and relatives, or for business, conferences, and most other purposes to define a trip (McIntosh et al., 1995; Medlik, 1996). This definition focuses on duration and purpose rather than distance traveled.

The Australian Bureau of Industry Economics defines a tourist in terms of the trip, stating, a tourist is, "a person visiting a location at least 40 km from his usual place of residence, for a period of at least 24 hours and not exceeding twelve months." This definition uses distance traveled and duration (McIntosh et al., 1995).

The Travel, Tourism, and Recreation Resource Center (TTRRC) at Michigan State University defines a trip as any overnight or day trip to a place at least 50 miles

from home, unless it was taken in commuting to work or school (TTRRC, 1997). This definition is based on duration, distance traveled, and purpose.

For the definitions above, the trip is described in measurable terms: distance traveled (Australian Bureau of Industry Economics; National Tourism Resources Review Commission; Statistics Canada; Tourism Canada; TTRRC; U.S. Census Bureau; U.S. Travel Data Center), duration (Australian Bureau of Industry Economics; TTRRC; United Kingdom Tourism Survey; U.S. Travel Data Center), and purpose(s) (TTRRC; United Kingdom Tourism Survey; United States National Tourism Resources Review Commission; U.S. Travel Data Center).

While there appears to be a degree of commonality across conceptual definitions of tourism and a tourist trip, the operational definitions employed to measure them vary significantly due to the varying research objectives of the organizations conducting travel surveys.

Strengths and Weaknesses of Selected Survey Methods

A survey is a procedure for collecting information to describe, compare, or explain knowledge, attitudes, and behavior. Surveys involve setting objectives for collecting information, designing research, preparing a reliable and valid data collection instrument, administering and scoring the instrument, analyzing data, and reporting the results (Fink, 1995a). The survey is the most frequently used mode of observation in the social sciences, and it is the best method available to the social scientist interested in collecting original data for describing a population too large to observe directly (Alreck & Settle, 1995; Babbie, 1990, 1998; Braverman, 1996; Henry, 1996; Singer & Presser,

1989). The survey is a flexible research tool in that it allows researchers to develop operational definitions from actual observations (Babbie, 1998). Moreover, the survey has an important strength in measurement through standardized questionnaires (Babbie, 1998).

The strengths and weaknesses of the methods used in the three surveys that are central to the calibration process used in this study are reviewed herein. The MSU survey uses Computer-Assisted Telephone Interviewing (CATI); the TravelScope survey uses a mail panel survey; and the ATS uses CATI and Computer-Assisted Personal Interviewing (CAPI) to obtain data needed to estimate statewide pleasure trip volume.

Computer-Assisted Telephone Interviewing

CATI was developed in response to problems with existing survey methods. Even with the rapid developments that had occurred in telephone survey research, there continued to be some concern with controlling the interview process and interviewer-respondent interactions (Shure & Meeker, 1978). In addition, surveying large populations and screening to specialized subgroups were discouraged because of cost considerations and the burden such tasks placed on all phases of survey operations (Shanks, Nichols, & Freeman, 1981). Wait times for data retrieved and reported using telephone surveys proved to be unacceptable, particularly to policy makers who need immediate feedback on a potential action (Frey, 1989). Paper-and-pencil or manual telephone surveys were proving to be inefficient with large surveys because they produced an inordinate amount of interviewer error, particularly when numerous screening or filter questions were used. Pencil-and-paper surveys were also proving to take too long for completion.

The first commercial CATI system, the Survey Processor System, was developed by Chilton in 1972 (Fink, 1983). Later, academic institutions implemented CATI systems. Early work was done at UCLA, the University of California, Berkeley, the University of Michigan, and the University of Wisconsin (Babbie, 1998; Frey, 1989). Later government agencies such as the U.S. Bureau of the Census, the National Center for Health Statistics, and the U.S. Department of Agriculture installed CATI systems (Babbie, 1998; Frey, 1989).

Frey (1989) noted the following advantages of CATI:

1. CATI permits the assessment of order effects.
2. CATI aids interviewer and respondent recall.
3. Consistency checks over the course of an interview in order to detect response sets or discrepancies in respondent replies are readily applied.
4. CATI is capable of registering interviewer comments and associating these with certain questions.
5. CATI assists the recording and coding of responses to open-ended questions by offering standardized probes or the immediate translation of a response to an item code scheme.
6. Automatic calling list updates for the administration of sampling and respondent selection are possible. Call-backs, retries, and appointment call-backs automatically come up at designated and, if necessary, at randomized times.
7. CATI enables researchers to undertake complex surveys requiring intricate branching or extremely sophisticated sampling.

8. Immediate feedback can be obtained on sample status by monitoring completion rates, optimal times for calling, and interviewer completion rates.
9. Keypunching functions can be virtually eliminated, thereby reducing these costs.
10. Limits on sample size are not necessary, at least in a practical sense.
11. CATI provides up-to-the-minute tabulations of costs, distribution of sample characteristics, and results.
12. CATI reduces error attributed to question order by its ability to control branching or question sequence.
13. Wording of questions may be modified based on answers already received.
14. Close supervision is possible by observation, listening to interviews, and monitoring the recording of responses.
15. Sampling control, selection, call-back, etc. are improved.
16. CATI produces a clean data file almost immediately.
17. CATI facilitates experimentation on "standard" research practices.
18. CATI permits more design complexity in questionnaires.
19. Handling roster questions is easier.
20. CATI provides continuous reports on the performance of interviewers.
21. CATI transfers the initiative in taking actions from the interviewer to the survey designer or project director. Discretionary decision making by the interviewer in the administration of the questionnaire is minimized or eliminated.

22. The ability to use complex questions that require certain sequencing or filtering is enhanced.
23. CATI facilitates randomizing items or response categories within questions or sets of questions.
24. CATI provides the capacity for aided recall or "intelligent probing."
25. CATI provides recall of data obtained in an earlier interview.
26. CATI permits interfacing with programs to analyze the text of responses to open-ended questions.
27. CATI provides continuous data processing analysis while interviewing.
28. Randomizing possibilities are not controlled by the interviewer, which, along with interviewing monitoring, enhances error assessment.

Some problems can develop with the use of CATI. First, there can be hardware failures that result in computer down time and effective stoppage of the survey. Second, interviewer error is not eliminated by CATI. The interviewer may make inappropriate entries that are not instantly detectable, and that cause considerable editing and coding problems later. Third, setting up a CATI system and preparing a survey on CATI is more time consuming and costly than preparing a paper-and-pencil survey (Frey, 1989).

Nichols and Groves (1986) reviewed CATI's costs and timeliness in four areas: 1) installation and maintenance, 2) survey planning, 3) interviewing, and 4) post interview processing. Much of the costs associated with installation are one-time expenditures. Also, the initial costs of setting up the survey are offset by lower data processing costs and by the ability to routinize tasks associated with the early phases of survey design. The

time required to design complex surveys will exceed that required for a pencil-and-paper version (Nichols & Groves, 1986). However, despite the increased length, interviewers on CATI tend to be more productive than those who manually record answers (Frey, 1989). CATI is more costly than non-CATI interviewing on training, interviewing, and supervision factors. However, in terms of overall cost, CATI is less costly than non-CATI (Spaeth, 1987). Post-interview costs associated with editing, coding, and data entry are less than those of non-CATI techniques (Frey, 1989). A good CATI instrument carries full and extensive instructions, permits the inputting of open-ended text, allows for the recording of interviewer notes, and permits automatic branching (Frey, 1989).

Computer-Assisted Personal Interviewing

CAPI extends the CATI technologies developed in the late 1970s and early 1980s to face-to-face interviewing (Baker, 1993; Baker & Bradburn, 1992). CAPI questionnaires are designed and implemented in software systems that have the same basic functionality as CATI. The system is loaded onto laptop or notebook computers and interviewers take these machines with them into the field, administering the questionnaire wherever they can persuade respondents to cooperate. Later, interviewers send the completed interviews back to the central office either by mailing diskettes or transmitting files over conventional telephone lines (Baker, 1993; Baker & Bradburn, 1992).

Like CATI, CAPI combines several individual steps of a survey into a single activity performed by a single individual. Editing, coding, data entry, cleaning, and low-level sample management are performed by the interviewers in the field, rather than by a series of specialists in a variety of locations and shops.

Baker (1993) stated four of CAPI's advantages. The first is reducing the time needed to collect and process survey data. Computers not only can help to perform all of the steps needed to collect and process data faster, but the capacity to integrate these steps into a single process reduces the elapsed time between survey design and analysis. Second, automation provides the researcher with the opportunity to exert greater control over the survey process and, therefore, improve the quality of the information collected. Errors, both by interviewers and by respondents, can be detected more quickly and resolved, often with the help of the respondent. Information about the survey's progress and types of data being collected is easily available and can be used to manage the survey toward a higher quality result. Third, doing the same tasks more quickly and often with fewer people offers at least the possibility of reducing costs. Finally, the use of computers allows implementation of more complex questionnaire designs than are possible with paper and pencil. Computers can deal with much more complex skip patterns and use previously collected information much more effectively than can human beings working only with paper and pencil.

However, there are four potential concerns related to CAPI: respondent acceptance, interviewer acceptance, cost, and impact on data quality (Baker, 1993; Baker & Bradburn, 1992; Bradburn, et. al., 1993). According to Baker (1993), respondents prefer CAPI to paper and pencil interviewing. Respondents find CAPI to be more interesting, shorter, more enjoyable, and seemingly more accurate that paper and pencil interviewing. Respondents have less concern that CAPI threatens their confidentiality than paper and pencil interviewing. They say computer use has no effect on their ability to understand survey questions. Interviewers have problems with computer hardware

(Baker, 1993). They complain that computers are too heavy, and they reported that they have had computer power problems during interviews. Interviewers have had minor problems with software such as movement, pre-coded, open-ended questions, and comments. A central feature of computer-assisted interviewing is that it can prevent both the interviewer and the respondent from making mistakes. The software ensures that the interviewer always follows the correct skip pattern. Items cannot be skipped or left blank. Inconsistent answers are detected immediately so that they can be resolved immediately, often with the help of the respondent. Groves and Mathiowetz (1984) reported that CATI interviewers were able to follow complex skip logic virtually flawlessly, while paper and pencil interviewers made many mistakes, almost five times as many as with CATI. Presumably, this same finding applies to CAPI. Interviewers can record both close-ended and open-ended information as accurately with CAPI as with paper and pencil. Although interviewers make typing errors in recording open-ended responses, they are not serious enough to create problems in coding (Baker, 1993). Reducing survey costs is often cited as one of the major benefits of CAPI. CAPI eliminates the need for all of the post-interview processing required by paper and pencil interviewing, and therefore saves the costs of keying, machine-editing, and programming to set up and perform these tasks. However, the increased cost of interviewing and pre-field costs such as software design, increased training, and hardware acquisition may outweigh post-processing savings (Baker, 1993; Baker & Bradburn, 1992; Bradburn, et. al., 1993).

Panel Surveys

Panel surveys, in which similar measurements are made on the same sample at different points in time, attracted increasing attention in both the United States and Europe in the mid-1980s (Babbie, 1990, 1998; Kasprzyk, Duncan, Kalton, & Singh, 1989). The sample for such a study is called the panel (Babbie, 1990). A panel is a group of individuals or organizations that have agreed to provide information to a researcher over a period of time (Alerk & Settle, 1995; Tull & Hawkins, 1990).

The strengths of the panel survey method include: cost efficiency, collection of information on non-respondents, assessing the impact of unforeseen events, short-term forecasting, high response rate, and low recall bias (Alerk & Settle, 1995; Frechtling, 1994). Because sampling is done once and further contacts are often by mail, panel surveys are credited as more cost efficient than resurveys (LaPage, 1994). As members drop out of the panel over time, they leave behind useful information on their characteristics and pre-drop out behavior patterns (LaPage, 1994). Due to their stand-by capability and pre-existing interview agreements, panels are valuable for assessing the social impacts of unforeseen events, have been used effectively for short-term predictions, and tend to produce high response rates (Alerk & Settle, 1995; Babbie, 1990 & 1998; LaPage, 1994; Tull & Hawkins, 1990). Panels are ideally suited to minimizing the error in social surveys that result from faulty memory recall (LaPage, 1994).

Weaknesses may occur in representativeness, sensitization, maintenance, variability, and reliability. A panel may lose its representativeness because it becomes sensitized to the objectives of the surveys. For example, a panel member may assume that his or her price reaction might help to lower prices (LaPage, 1994). The efforts of

respondents to please the researcher may produce a degree of sensitization to the study objectives generating bias (LaPage, 1994). Even though incentives and compensation may help to avoid potential panel losses, they are likely to do so not because of value received but because that value convinces them that their contribution is important (Babbie, 1990 & 1998; LaPage, 1994). Another weakness of panel surveys is due to the generally upscale nature of the preselected panel (Frechtling, 1994). People interested in participating in surveys are apt to be more active in many aspects of life than those who are not, regardless of income or level of education (Lansing & Morgan, 1971). Moreover, because all households in the population do not have a known, nonzero chance of participating in the panel, techniques for estimating sampling variability cannot be applied (Frechtling, 1994). Confidence intervals at different numbers of standard deviations from the mean cannot be computed, so this guide to the reliability of the survey in reflecting actual population behavior is not available (Alrek & Settle, 1995; Dommermuth, 1975; Cochran, 1977).

Estimates of Trip Volume

Gartner and Hunt (1988) used the front-end (FE) method, which is a personal interview combined with observation, to estimate statewide travel flow for the state of Utah. They set sampling sites at access corridors and focused on vehicle travelers only. According to them, this method reduced cost and both recall and non-response biases. However, using this method to estimate statewide trip volume excludes travelers who use transportation modes other than vehicles.

Harris, Tynon, and McLaughlin (1990) used intercept interviews to estimate travel flow in Idaho. The population of their study consisted of motor vehicle and air travelers. Interviews were conducted at 36 roadside sites throughout the state. These sites could potentially be located anywhere throughout the state, thereby providing data on resident as well as nonresident travel between communities, within, or from outside the state. However, this study has limitations for estimating statewide pleasure trip volume. First, researchers did not consider whether respondents were traveling to the state or merely passing through it. Second, they missed travelers who used transportation modes other than vehicles or aircraft.

Cournoyer and Kindahl (1983) used a matrix of travelers for the Massachusetts travel research study. The matrix consisted of five categories of lodging used and five categories of trip purpose. The lodging categories included: 1) commercial lodging, 2) other rental accommodation, 3) friend's or relative's house, 4) camping, and 5) day trips. The purpose of trip categories included: 1) business, 2) personal, 3) convention, 4) visit friends or relatives, 5) and recreation, sightseeing or entertainment. This study also has weaknesses in estimating statewide pleasure trip volume because it did not consider whether travelers were residents or nonresidents of the state, and it did not consider 'shopping' as a trip purpose.

Harris, McLaughlin, and Hunt (1994) conducted a survey to estimate statewide trip volume for the state of Utah. The study population was all trips taken in or passing through the state by motor vehicles for the purpose of leisure. They sampled at 36 survey sites (i.e., 6 regions with 6 sites per region) as geographic strata and a total of 432 survey days for all regions as temporal strata. This study also has limitations for estimating

statewide leisure trip volume since it did not consider whether respondents were traveling to the state or merely passing through it, and it excluded travelers who used transportation modes other than vehicles.

Kim, Spotts, and Holecek (1998) used a regional household telephone survey (the MSU survey) to estimate statewide pleasure trip volume for the state of Michigan. They compared their results to the ATS and to TravelScope to determine the accuracy of the estimated statewide pleasure trip volume. Their estimate was 52% higher than TravelScope and 26% higher than the ATS. These differences are probably related to several different definitions and procedures used across the three studies, including different definitions of "trip" and "pleasure trip," and different study periods (1996 vs. 1995). Also Kim et. al. did not count trips taken by children under 18.

Trip Volume Calibration Variables

As noted above, different definitions were used in the ATS and MSU surveys and the latter's smaller sample size and higher non-response rate may have introduced other sources for the differences in estimates that were observed.

As previously discussed, to quantify tourism, it must be defined in measurable terms. The measurable term for tourism is "trip." Most definitions of trip are defined by distance traveled or duration of trip. The estimates of trip volume are sensitive to the definition of trip used in the study. For example, the estimated statewide trip volume was 30,502,000 person-trips in Michigan in 1977 when a trip was defined as a trip to a place at least 100 miles from home, but it was 20,900,000 person trips when a trip was defined

as trip to place at least 150 miles from home (U.S. Department of Commerce, Bureau of the Census, 1979).

Trips can be categorized by the purpose of the trip (Gartner, 1996; McIntosh, Goeldner, & Ritchie, 1995). These categories may then be used in trip volume estimates. For example, the National Travel Survey estimated the number of total statewide "business" trips as 6,436,000 person-trips, "convention" trips as 953,000 person-trips, "outdoor recreation" trips as 4,572,000 person-trips, "entertainment" trips as 2,857,000 person-trips, "sightseeing" trips as 2,802,000 person-trips, "personal or family affair or medical" trips as 5,647,000 person-trips, "shopping" trips as 264,000 person-trips, and trips to "visit friends or relatives" as 18,879,000 person-trips in Michigan in 1977 (U.S. Department of Commerce, Bureau of the Census, 1979).

The number of trips taken by children under 18 also affects total statewide trip volume estimates. For example, the National Travel Survey estimated 43,981,000 person-trips in Illinois in 1977. Among them, 9,534,000 person-trips were taken by children under 18 (U.S. Department of Commerce, Bureau of the Census, 1979).

Finally, differences in timing and sampling and nonsampling errors also affect the estimates of statewide trip volume (Cannon, 1994; Frechtling, 1994; Hurst, 1994).

CHAPTER III

REVIEW OF THE THREE SURVEYS

In this chapter, the methods employed in the regional telephone survey conducted by Michigan State University (MSU survey), the TravelScope survey conducted by the U.S. Travel Data Center, and the American Travel Survey (ATS) conducted by the U.S. Bureau of the Census are described and assessed for their relative strengths and weaknesses. The variables reviewed and assessed include: mode of survey administration and data collection instrument, cost for obtaining data needed to estimate statewide pleasure trip volume, time needed to estimate statewide pleasure trip volume after survey, population surveyed, time frame, survey interval, sampling design and size, length of interview/questionnaire, response rate, recall bias, interviewing and supervising, data weighting, and definitions of trip and pleasure trip. Finally, the rationale for adopting the ATS based estimates as the standard for judging the relative accuracy of estimates generated from the MSU survey and TravelScope is presented to conclude this chapter.

Review of the Three Surveys

Mode of Survey Administration and Data Collection Instrument

The MSU survey data were collected by means of an ongoing telephone survey funded by Travel Michigan, a state government agency charged with promoting pleasure travel to Michigan; the Agricultural Experiment Station at Michigan State University (MSU); and the MSU Office of the Provost. As detailed in Table 5, data were collected in

Table 5. Review of the three surveys.

Variables reviewed	MSU Survey	TravelScope Survey	ATS
Mode of survey administration and data collection instrument	CATI; electronic questionnaire, over 95% of households in the study region subscribed to telephone service during 1996	Mail panel survey; questionnaire card, potential representativeness, validity and/or reliability problems	CATI with CAPI; electronic questionnaire, most accurate
Cost for obtaining the data needed to estimate statewide pleasure trip volume	Little or no added cost	$21,600/year	None
Needed time to estimate statewide pleasure trip volume after survey	Within one month after survey	More than 10 months after survey	3 years after survey
Population surveyed	Age 18 or over in IL, IN, MI, MN, OH, WI, and Ontario	Heads of households nationwide	Age 18 or over nationwide
Time frame	1996 calendar year , interviewing weekday evenings and weekend afternoons	1995 calendar year, mailing each month	April 1995 to March 1996, interviewing four times/year, three-month intervals
Survey interval	One year	One year	18 years (previous survey was in 1977)
Sampling design and size	13,500 eligible random digit dial numbers/year	240,000 questionnaire cards/year	80,000 addresses/year

Table 5. Review of the three surveys (continued).

Variables reviewed	MSU Survey	TravelScope Survey	ATS
Length of questionnaire/ interview	140 questions, maximum 20 minutes, average 12 minutes	9 questions	60 questions, maximum 2 hours, average 25 minutes
Response rate	44%	72%	85%
Recall bias	Up to 12 months recall period, average recall period was 3.86 months	1 month recall period	Up to 6 months recall period, average recall period was 2.00 months
Interviewing/supervising	20 interviewers, 2 supervisors	Information not available	1,200 interviewers, supervisors
Data weighting	No. households and achieved sample by month	Projected person-/household-trip weight	Person-/household-trip weight
Definitions of trip/pleasure trip	Trip: 50 miles away from home	Trip: 50 miles away from home	Trip: 100 miles away from home
	Pleasure trip: For enjoyment, including vacations, weekend getaways, shopping trips, and trips to visit friends or relatives	Pleasure trip: For the primary purpose of visiting friends or relatives, outdoor recreation, entertainment, or business/pleasure	Pleasure trip: For the main purpose of visiting friends or relatives, rest or relaxation, sightseeing, outdoor recreation, shopping, entertainment, or business/pleasure

a CATI laboratory maintained by the MSU Travel, Tourism, and Recreation Resource Center. The CATI laboratory has one main server and six stations. The data collection instrument for the MSU survey was an electronic questionnaire programmed for each interviewing station using the StatPac software language (StatPac, 1995). Each interview was immediately transmitted electronically to the main server in the laboratory. The questionnaire that was used is shown in Appendix A. As shown in Table 6, annual average percentages of households with telephone service in the study region in 1996 were 97.0% for Wisconsin, followed by Michigan (95%), Ohio (94.5%), Indiana (93.7%), and Illinois (93%) (Federal Communication Commission, 1997). Because only households with telephone service could be contacted, the MSU survey did not cover all households in the study region. This would appear to be a substantial source of difference between MSU survey and ATS estimates since the later included interviews of households with and without phone service.

Table 6. Annual average percentage of households with telephone service by state.

State	1995 (%)	1996 (%)
Illinois	93.6	93.0
Indiana	94.4	93.7
Michigan	95.2	95.0
Ohio	94.0	94.5
Wisconsin	97.3	97.0
Total United States	93.9	93.9

Source: Federal Communication Commission, 1997.

The TravelScope survey used a mail panel survey to collect data needed to estimate statewide pleasure trip volume. As discussed in Chapter II, panel surveys often have problems with representativeness, validity, and/or reliability. The primary data collection instrument for the TravelScope survey was a post card questionnaire which asked for the number of trips of 50 miles or more away from home and/or overnight trips taken in the previous month by members of that household. The questionnaire used is provided in Appendix B. Each month a fresh sample of 20,000 households was sent a questionnaire and responses were coded and key data entered by Analytical Computer Service (USTDC, 1996).

Interviews for the ATS were conducted by Census Bureau field staff under the supervision of the Census Bureau's twelve permanent regional offices and three centralized telephone facilities. Most interviews were by telephone, either by field representatives working with laptops from their homes or by interviewers working with personal computers from centralized telephone facilities. The annual average percentage of households with telephone service in the U.S. was 93.9% in 1995 (Federal Communication Commission, 1997). This means that households without telephone service were not interviewed through CATI. For households not interviewed for any reason including no telephone service, no answer, or barriers during a particular interview period, CAPI was used to obtaining missing information for non-responding households (U.S. Department of Transportation, 1997a, 1997b). Basically, the ATS covered all households in their survey population during the survey year. Completed interviews were transmitted electronically to Census Bureau headquarters from the field representatives' homes and from the centralized telephone facilities on a daily basis. The primary data

collection instrument for the ATS was an electronic questionnaire programmed for the computer in the CASES software language. Also used in the data collection process were a series of advance letters and one explanatory phone call (U.S. Department of Transportation, 1997b, 1997c). The ATS questionnaire is reproduced in Appendix C. Validity and representativeness are strengths of the ATS, in part, due to the methods of data collection used.

Cost for Obtaining the Data Needed to Estimate Statewide Pleasure Trip Volume

The basic objectives of the MSU survey were to evaluate Travel Michigan's promotional programs and to measure the characteristics and behavior of travelers in Michigan's primary market area. This market area was defined as Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin, and Ontario, Canada. The survey was designed to measure awareness of the Michigan travel market, awareness of the Michigan promotional message, attitudes, opinions and perceptions of the Michigan travel product, and travel behavior. Estimating statewide pleasure trip volume was not included among the objectives of the MSU survey. Therefore, as detailed in Table 7, while administrating the MSU survey cost about $154,000 during fiscal year 1996, there is little or no added cost for obtaining the data needed to estimate statewide pleasure trip volume.

Table 7. Administration costs for the MSU survey during fiscal year 1996.

Items	Expenditures
Phone charge + sample	$17,700
Salaries	$96,800
Interviewers' pay	$8,000
Supplies	$5,000
20% overhead charge	$14,500
Non-expendable equipment	$10,200
Phone installation/charge	$1,500
Miscellaneous	$300
Total	$154,000

Source: Travel, Tourism, and Recreation Resource Center, 1998.

The U.S. Travel Data Center and Travel Industry Association of America provide TravelScope survey data with quarterly and annual reports at an annual cost to the client of $21,600 (Frechtling, Rogers, & Tarlow,1998). The Bureau of Transportation Statistics provides the ATS data to individuals or institutions on request at no charge. Low cost to obtain data needed to estimate statewide pleasure trip volume is one strength of the MSU survey and the ATS.

Time Needed to Estimate Statewide Pleasure Trip Volume

The MSU survey used CATI to collect data. Interview data were immediately transmitted electronically to the main server of the CATI laboratory maintained by the Travel, Tourism, and Recreation Resource Center at Michigan State University. Data were cleaned, weighted, and ready for analysis in less than one month.

The TravelScope survey has used a mail panel survey since 1994. Questionnaire cards are sent to a fresh sample of 20,000 households per month. Data are coded, cleaned, and weighted by Analytical Computer Service. The analysis process takes more than ten months before data are available to clients.

The ATS used CATI and CAPI. Data were transmitted electronically to Census Bureau headquarters from the field representatives' homes and from the centralized telephone facilities on a daily basis. Data were cleaned and weighted by the Center for Transportation Analysis at the Oak Ridge National Laboratory located in Oak Ridge, Tennessee (U.S. Department of Transportation, 1997b). The entire implementation process took three years to complete before data were made available to the public. The MSU survey has an advantage over both the TravelScope survey and the ATS in the relatively short time required to complete analysis and provide data needed to estimate pleasure trip volume.

Population Surveyed

The MSU survey population consisted of adults age 18 or older who permanently resided in Michigan's primary market area: Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin, and Ontario, Canada during the study year, calendar year 1996 (See Figure 1). The TravelScope survey population consisted of all heads of households in the United States in the study year, calendar year 1995. The ATS population consisted of adults age 18 or older who resided in households or lived in group quarters, such as dormitories, rooming houses, religious group dwellings, and family-type housing on military bases in the United States during the study period, April 1995 to March 1996. Persons living in

military barracks and in institutions, such as prisons and nursing homes, were excluded. A weakness of the MSU survey is that its study population does not represent all parts of the U.S., although the study region, based on an analysis of ATS data, generates the vast majority of Michigan's pleasure travelers (88%).

Figure 1. Study region of the MSU survey

Time Frame

Survey periods vary among the three surveys. The MSU survey was conducted in 1996. Interviewing occurred on weekdays from 6 p.m. to 10 p.m. and weekend afternoons throughout the year. The TravelScope survey was conducted during 1995, and each month a fresh sample of 20,000 households was sent a questionnaire card. The ATS was conducted from April 1995 to March 1996. Sample households were interviewed three to four times during the period, at approximately three-month intervals. The MSU survey covers a different survey period than the other two surveys.

Survey Interval

The TTRRC has been conducting the MSU survey continuously since October, 1995. The MSU survey data have been aggregated and provided on monthly and yearly bases since October, 1995. The TravelScope survey was developed in early 1994 by the U.S. Travel Data Center in cooperation with several state travel offices (USTDC, 1996). TravelScope survey data have been aggregated on monthly, quarterly, and yearly bases since 1994. While the ATS was designed to be conducted every five years, an 18-year gap occurred between the 1995 ATS and 1977 National Travel Survey, which was the previous national travel survey conducted by the Bureau of the Census (U.S. Department of Commerce, 1979; U.S. Department of Transportation, 1997a). This large survey interval is the most obvious weakness of the ATS.

Sampling Design and Size

The ultimate purpose of sampling is to select a set of elements from a population in such a way that descriptions of those elements accurately portray the parameters of the total population from which the elements are selected (Babbie, 1998). A good sample is a miniature version of the population. The best sample is representative of the population (Fink, 1995b & 1995c). Survey samples are not meaningful in themselves. Their importance lies in the accuracy with which they represent or mirror the population (Fink, 1995c). Sampling methods are usually divided into two types (Babbie, 1990 & 1998; Fink, 1995c; Kalton, 1983). The first is called probability sampling. Probability sampling provides a statistical basis for saying that a sample is representative of the study population. In probability sampling, every element of the population has a known, nonzero probability of being included in the sample (Babbie, 1990 & 1998; Fink, 1995c; Kalton, 1983). Probability sampling implies the use of random selection. The reasons for using random selection are twofold. First, this procedure serves as a check on conscious or unconscious bias on the part of the researcher. The researcher who selects cases on an intuitive basis might very well select cases that would support his or her research expectations or hypotheses. Random selection eliminates this danger. Moreover, random selection offers access to the body of probability theory, which provides the basis for estimates of population parameters and estimates of error (Babbie, 1990 & 1998; Fink, 1995c; Kalton, 1983).

The second type of sampling is nonprobability sampling. The weakness of all nonprobability sampling is its subjectivity, which precludes the development of a theoretical framework for it. With nonprobability sampling, some members of the eligible

population have a chance of being chosen, whereas others do not. By chance, the survey's findings may not be applicable or generalized to the population at all (Babbie, 1990 & 1998; Fink, 1995c; Kalton, 1983).

Telephone surveys had a rather bad reputation among professional researchers (Babbie, 1998). Telephone surveys are limited by definition to people who have telephones. Years ago this method produced a substantial social class bias by excluding poor people from the surveys. However, over time, the telephone has become a standard fixture in almost all U.S. homes (Babbie, 1998). The Federal Communication Commission (1998) estimated that 93.9 percent of all households had telephone service in 1995 and 1996, so the earlier form of social class bias has been substantially reduced.

Random digit dialing procedures were developed as a reaction to the problems of under coverage in telephone directories (Babbie, 1990 & 1998; Frey, 1989; Frey & Oishi, 1995). It was necessary to develop a technique that would overcome the problems of incomplete, inaccurate, and out-of-date directory listings. Random digit dialing designs not only provide for the inclusion of unlisted numbers, but they also have the additional advantage of eliminating the need to list or enumerate units prior to drawing a sample. In addition, not having to list sampling elements reduces the time it takes to implement a random digit dialing survey (Frey, 1989; Frey & Oishi, 1995).

The MSU survey employed random digit dial samples of household telephone numbers purchased from Survey Sampling, Inc. A total of about 13,500 eligible random digit numbers, excluding 'not in service,' 'business numbers,' and 'fax machine numbers,' were dialed, and a total of about 5,930 interviews were completed during the study year, 1996. The TravelScope survey used NFO Research Inc.'s consumer mail

panel for its sample. The panel has 450,000 households representing over one million people nationwide, or one in every 224 U.S. households. The panel was selected to match the U.S. census population on five variables: census region, market size, age of household head, income, and household size. A total of 240,000 questionnaire cards were sent during 1995. The ATS used a probability sample of households from each of the fifty states and the District of Columbia that was based on lists of addresses compiled by the U.S. Census Bureau from the decennial census of population (U.S. Department of Transportation, 1997b). About 80,000 eligible addresses were used for the ATS as its sample during the study year.

Because one of the study objectives was to estimate statewide pleasure trip volume to Michigan from Illinois, Indiana, Ohio, Wisconsin, and within Michigan, it is necessary to know the sample size from the five states for each survey. In the MSU survey, a total of about 9,800 eligible random digit numbers were dialed, and a total of about 4,320 interviews were completed from the five states during the study year, 1996. The five states, Illinois, Indiana, Michigan, Ohio, and Wisconsin, accounted for 16.4% of total households in the U.S. in 1995. Therefore, it can be assumed that about 39,360 questionnaire cards were sent to households in the five states during the study year, 1995, in the TravelScope survey, and about 13,120 eligible addresses were used for the ATS's sample in the five states.

The TravelScope survey did not use probability sampling in drawing its sample while both the MSU survey and ATS employed probability sampling. Thus, the TravelScope sample is less likely to be representative of the population and not as generalizable as the other two surveys.

Length of Interview/Questionnaire

The interview length of the MSU survey depended on whether the respondent had taken any kind of trip to any destination in the past twelve months, and/or whether he/she had taken any pleasure trip to any destination in the past twelve months, and/or whether the destination of the most recent pleasure trip taken was Michigan or other states/countries, and/or whether he/she had taken a less-recent pleasure trip to Michigan within the past twelve months (See Figure 2). The length of interviews ranged from a few seconds to twenty minutes, with an average length of twelve minutes. The questionnaire contains approximately 140 questions, although because of branching no respondents were asked all questions. The TravelScope survey card contained nine basic questions. The length of the survey depended on whether an individual respondent had taken any kind of trip to any destination during the previous month, and how many trips he/she had taken to any destination in the previous month. Information was reported for up to three trips (USTDC, 1996). The length of the ATS interview depended, in part, on the number of trips taken by household members. Interviews ranged from three minutes to just over two hours and averaged 25 minutes. The questionnaire contained about 60 questions (U.S. Department of Transportation, 1997b, 1997c). The TravelScope survey produces less information due to its abbreviated length compared with the other two surveys.

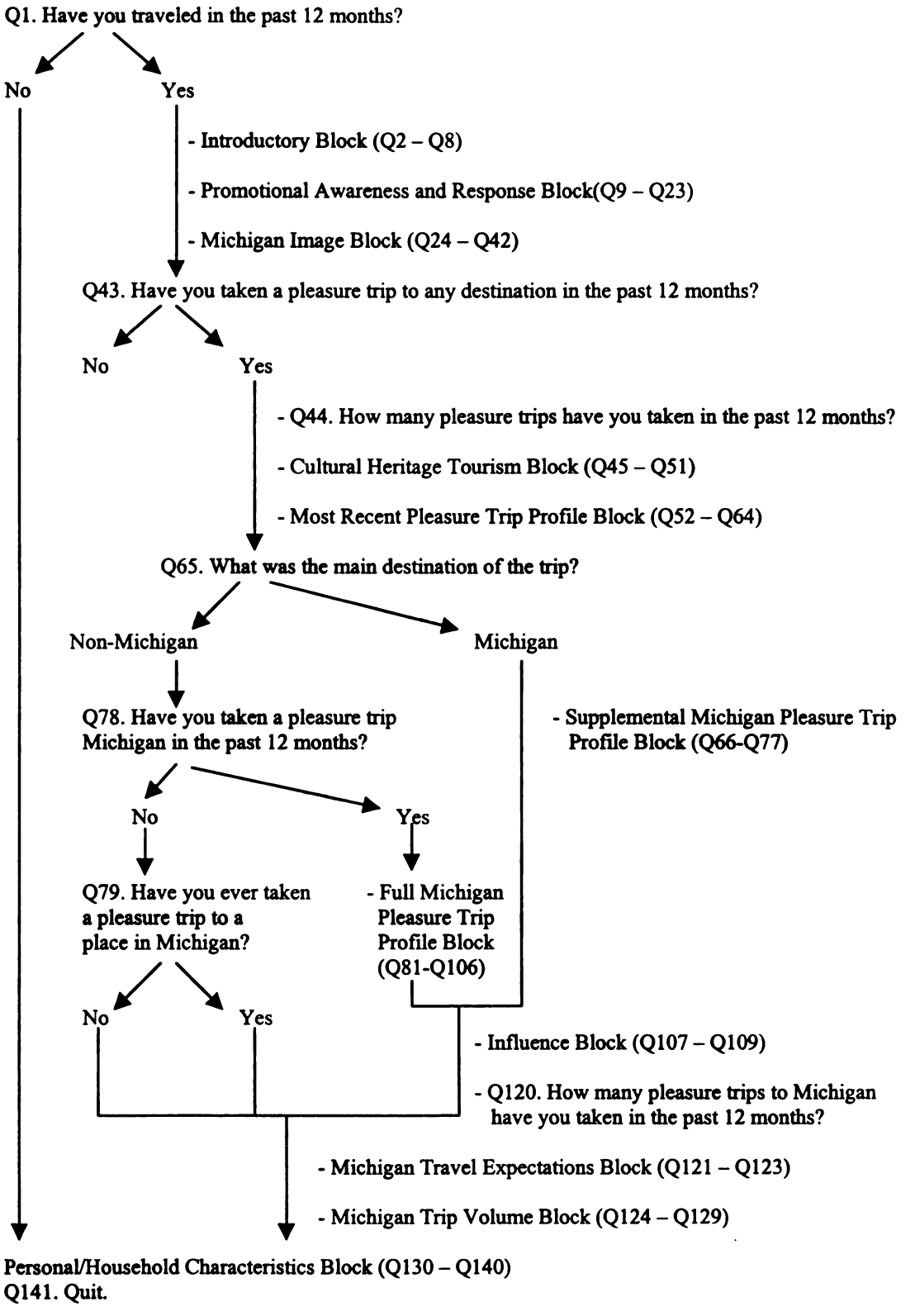


Figure 2. Flow chart of the MSU survey questionnaire.

Response Rate

One of the major problems in determining the response rate for a survey is arriving at an agreement on how this rate is to be calculated. This rate should reflect the degree to which a researcher is successful in obtaining cooperation from all potential and eligible respondents within a sample (Kviz, 1977). Response rates are calculated in various ways by different research organizations (Frey, 1989; Frey & Oishi, 1995; Groves, 1989; Lavrakas, 1993) and there is no single formula that is accepted as the standard (Frey, 1989). As illustrated in Equations 1 and 2, response rate is often calculated in one of two ways (Dillman, 1978; Frey, 1989; Frey & Oishi, 1995; Groves, 1989; Kviz, 1977; Sosdian & Sharp, 1980). The first way is based on the number of completions compared to the number of potential respondents who may or may not have been contacted for a response, but who are deemed eligible (Dillman, 1978; Frey, 1989; Frey & Oishi, 1995; Groves, 1989; Kviz, 1977; Sosdian & Sharp, 1980). Refusals, partial completions, illness or disability, language barriers, and those unable to be contacted after several tries are included. The second way compares the number of interviews completed in full to the completions plus refusals and partial completions less all uncompleted interviews, except for refusals, regardless of cause. A respondent is not counted in the calculation of a response or completion rate unless actually contacted and an interview is attempted (Babbie, 1990; Dillman, 1978; Frey, 1989; Frey & Oishi, 1995; Groves, 1989; Kviz, 1977; Sosdian & Sharp, 1980).

$$\text{Equation 1: Response Rate} = \frac{\text{Number of Completed Interviews}}{\text{Number in Sample (All eligibles)}} \times 100$$

$$\text{Equation 2 : Response Rate} = \frac{\text{Number of Completed Interviews}}{\text{Number in Sample - (Not eligible and not reachable)}} \times 100$$

The basis on which these rates are calculated is often not reported. According to Frey (1989), for telephone surveys, the best one can probably expect is a response rate of 70 to 75 percent using the second formula, and rates of 40 to 50 percent using the first formula. Comparing response rates is difficult because of the unstandardized methods of their calculation (Frey, 1989; Frey & Oishi, 1995).

Equation 1 demonstrates how well a survey has done in making contact with all possible respondents. Equation 2 can be misleading because all those but the confirmed, contacted refusals are counted as ineligible (Goyder, 1987). The use of Equation 2 is also self-serving because it produces a higher response rate, thereby making the research look better to those who evaluate it (Frey, 1989). Equation 1 was employed in the calculation of the MSU survey response rate for the reasons discussed above.

In the MSU survey, up to three call-backs were made for each household in the designated sample. Interviewers randomly selected respondents within households by asking to speak to "the adult over 17 years old who will have the next birthday." The response rate, including only fully-completed interviews, was thirty-five percent. The response rate, including partially-completed interviews, was forty-four percent. The MSU survey response rate was within the expected response rate range (40-50%) in a telephone survey (Frey, 1989). Twenty-nine percent of eligible potential respondents refused the interview. This is similar to the median refusal rate computed from reviews of telephone surveys conducted by Groves and Kahan (1979), Steeh (1981), and Wiseman and McDonald (1979). A test for possible nonresponse bias in the data revealed few

important differences in the characteristics of 173 nonrespondents (other than refusals) and a subsample of 173 randomly selected respondents on eighty-four variables, including demographic and socioeconomic characteristics. The only differences between the two groups that were statistically significant at the .05 level were: 1) nonrespondents were more likely than the respondents to have visited a state or national park on their most recent pleasure trip in Michigan (43% vs. 28%, respectively), 2) nonrespondents, on average, rated the desirability of Ontario as a pleasure trip destination on a 10-point scale more highly than did respondents (6.7 vs. 5.2, respectively), and 3) nonrespondents, on average, tended to live in households with somewhat fewer persons than did respondents (2.6 vs. 3.1, respectively). The latter would appear to be a substantial source of difference between MSU survey and ATS estimates.

Respondents to the TravelScope survey were asked to record details of up to three trips in the previous month. As detailed in Table 8, the response rate for TravelScope was 72% (USTDC, 1996). The ATS achieved an 85% response rate from the approximately 80,000 households nationwide that were eligible for the interview (U.S. Department of Transportation, 1997a, 1997b). The MSU survey response rate was lower than those of the other two surveys.

Table 8. Response rates for the TravelScope survey.

Month	Response Rate	Month	Response Rate
January	72%	July	77%
February	75%	August	72%
March	72%	September	68%
1st quarter	73%	3rd quarter	71%
April	73%	October	70%
May	71%	November	69%
June	74%	December	73%
2nd quarter	73%	4th quarter	71%
1995 Total			**72%**

Source: 1996 TravelScope Users' Manual

Recall Bias

In the MSU survey, respondents were asked to report information on their most recent pleasure trip experience during the past 12 months. As detailed in Table 9, the potential recall period of the MSU survey was up to 12 months, but the average reported recall period was only 3.86 months. In the TravelScope survey, respondents were asked to report their trip information for up to three trips during the previous month. The recall period of the TravelScope was thus one month. The recall period of the ATS was up to 6 months, but, as detailed in Table 10, the average recall period in the ATS could not be calculated because no information on number of trips produced in each month of the survey was provided.

Table 9. Recall period of the MSU survey.

Recall Period (Interviewed Month-Trip Month)	Number of Trips to Michigan	Percent
0 month	113	15%
1 month	133	18%
2 months	71	10%
3 months	54	7%
4 months	71	10%
5 months	60	8%
6 months	58	8%
7 months	56	8%
8 months	36	5%
9 months	36	5%
10 months	25	3%
11 months	19	3%
Total	730	100%
Average	3.86 months	

Table 10. Trip months, months data were collected and recall period for the ATS.

Trip Month	Data Collection Periods (Recall in Months)		
January	May (4)	June (5)	July (6)
February	May (3)	June (4)	July (5)
March	May (2)	June (3)	July (4)
April	May (1)	June (2)	July (3)
May	May (<1) & August (3)	June (1)	July (2)
June	August (2)	June (<1) & September (3)	July (1)
July	August (1)	September (2)	July (<1) & October (3)
August	August (<1) & November(3)	September (1)	October (2)
September	November(2)	September (<1) & December (3)	October (1)
October	November(1)	December (2) & January (3)	October (<1) & January (3)
November	November(<1) & January (2)	December (1)	January (2)
December	January (1) & February (2)	December (<1), January (1), February (2), & March (3)	January (1)

Source: U.S. Department of Transportation, 1997g.

Interviewing and Supervising

In September, 1995, twenty interviewers were hired and trained to work on the MSU survey. Interviewers were both undergraduate and graduate students at Michigan State University. A large majority of the interviewers were women. On average, about 430 interviews were conducted each month. All interviewers were trained and supervised by two doctoral graduate students during the study year. Trainees received detailed information about their jobs, the concepts and definitions used in the MSU survey, and specific interviewing techniques. Each interviewer conducted several practice interviews as part of their initial training. The work of each interviewer was monitored by supervisors, and feedback was provided. The supervisors checked each interviewer's performance. Interviewer turn over was relatively high over the course of the year, but

this should not have been a data quality concern since only fully trained interviewers were used and each was monitored.

In April 1995, approximately 1,200 interviewers were hired and trained to work on the ATS. A large majority of the interviewers were women. An average of 14,000 interviews per month were conducted. Interviewers typically completed most of their interviews during the first two weeks of each month of interviewing (U.S. Department of Transportation, 1997b). Training for ATS interviewers included home study, classroom training, on-the-job training and refresher training. Interviewers new to the survey received intensive training, which included four hours of self-study and four days of classroom training as well as an additional six hours on listing operations. Training sessions included lectures, audio-visual presentations, mock interviews, and classroom discussion. Trainees received detailed information about their jobs, the concepts and definitions used in the travel survey, and specific interviewing techniques. As part of the initial training, each interviewer conducted several practice interviews. Interviewers received training on new information and on special aspects of the survey, as needed, during the survey period. Interviewers found to be weak in certain aspects of the survey received supplemental training to help them meet response rate and accuracy standards (U.S. Department of Transportation, 1997b). The work of the interviewers was monitored, and feedback was provided in several ways. The work of each experienced interviewer was observed by a supervisor who checked the interviewer's performance in establishing rapport with respondents, asking questions in an appropriate manner, probing, and recording answers accurately. The results of the observations were

discussed with interviewers. Interviewers whose performance was below standard were observed more often (U.S. Department of Transportation, 1997b).

Interviewer supervision and monitoring influence survey data quality (Frey, 1989; Groves & Kahan, 1979). Question wording, instruction guidelines, probing, and questionnaire completion are all factors that can be variously distorted by interviewers (Frey, 1989). However, interviewer effects can be reduced in the telephone survey with close supervision provided in a centralized setting. Techniques used by supervisors include observing the interview, listening casually to the questions and responses, and immediately editing the completed interview for errors (Gates & Solomon, 1982). The mail panel survey method used by TravelScope, of course, makes monitoring and supervision of completion impossible. By employing the telephone survey method, the MSU survey and ATS have data quality strengths not found in the TravelScope survey.

Data Weighting

Because TravelScope and the ATS covered households only in the U.S., responses obtained from Ontario residents were deleted from the MSU survey database for the purposes of this study. As stated in Chapter I, one of the study objectives was to estimate statewide pleasure person-trip volume within Michigan and to Michigan from the four surrounding states of Illinois, Indiana, Ohio, and Wisconsin. Therefore, Minnesota was also deleted from the MSU survey database. According to the U.S. Department of Transportation (1997e), the five states constituted an estimated 88% of Michigan's pleasure travel market in 1995. The region and month in which interviews take place can affect the resulting estimated of statewide pleasure trip volume. For

example, as shown in Table 1, Michigan respondents reported that Michigan was their pleasure trip destination four times more than Ohio respondents did (78% and 18%, respectively). Therefore, if Michigan is oversampled, statewide pleasure trip volume to Michigan from the five states or from anywhere in the U.S. would be overestimated. If Ohio is oversampled, statewide pleasure trip volume from the five states or from anywhere in the U.S. would be underestimated. As detailed in Tables 11 and 12, the MSU survey data were weighted to correct for uneven participation across the state boundaries of the study region so that the resulting weighted sample conformed to the distribution of households in the five states. Data were also weighted by month to correct for minor variations in the number of completed interviews during each month of the study period.

Table 11. MSU survey weighting based on the distribution of households.

State	No. Households in 1996[1] (thousands)	% Total Households in Region	No. Achieved Sample	% of Total Sample	Weight (Column 3/ Column 5)
IL	4,352	26.6%	822	19.0%	1.3988
IN	2,209	13.5%	663	15.4%	0.8803
MI	3,576	21.9%	1,128	26.1%	0.8376
OH	4,260	26.1%	855	19.8%	1.3164
WI	1,943	11.9%	849	19.7%	0.6046
Region Total	16,340	100.0%	4,317	100.0%	

[1]Source: U.S. Department of Commerce, Bureau of the Census (1998).

Table 12. MSU survey weighting based on achieved sample by month.

Month	Average No. Interviews	Achieved Sample	Weight (Column 2/Column 3)
January	360	399	0.9006
February	360	358	1.0038
March	360	374	0.9630
April	360	360	0.9980
May	360	334	1.0758
June	360	360	1.0001
July	360	392	0.9179
August	360	357	1.0070
September	360	369	0.9743
October	360	329	1.0934
November	360	343	1.0462
December	360	339	1.0587
Total	360	4,317	

Equation 3: Weighting = (Weight by No. Households in State)

× (Weight by Achieved Sample by Month)

Respondents to the TravelScope survey were asked to record details of up to three trips taken during the previous month and the total number of trips taken by members of a household in a month. The trips detailed on the questionnaire were weighted up to the total number of trips reported on each returned card (USTDC, 1996). Detailed characteristics for any excess trips were extrapolated from the trip characteristics of the trips for which details were reported. For example, if a household took five trips and reported details on three trips, the total expenditures for the five trips would be 5/3

multiplied by the total expenditures reported for the three trips. This is called the "household trip weight" (USTDC, 1996).

The same procedure was used to estimate person-trips. Since the number of household members traveling was reported for only up to three trips, these detailed trips were extrapolated to compute the total number of household members traveling for the total number of trips reported by the household. For example, if a household took five trips and reported details on three trips, the total number of household members traveling for the five trips would be 5/3 multiplied by the total number of household members who traveled on the three trips. This called the "person trip weight" (USTDC, 1996).

There are 96,494,438 households in the United States to which the sample from TravelScope was projected. To achieve this projection, the sample results were multiplied by a "projection weight," namely 96,494,438 divided by the number of responses received from the panel. For example, if there were 14,431 responses in one month (out of a total 20,000 panel members), the "projection weight" would be 96,494,438/14,431 or 6,686.6079. If the total number of household trips in the sample was 4,428, then the projected number of household trips would be 4,428 times 6,686.6079, or 29,608,300 (USTDC, 1996).

In the ATS, the household-trip and person-trip weights were derived as a product of the inverse of the probability of selection of the sample household and several weighting factors which accounted for noninterviews, household under coverage, within-household under coverage and trip underreporting (U.S. Department of Transportation, 1997b). Weighting factors were computed and applied separately within each cycle. Most of the weighting factors were computed at the household level and applied to all

corresponding household and person-trips that were reported by a particular household. Some of the factors were computed at the person level and applied to only certain household and person trips. The remaining factors were computed at the trip level and applied to specific household and person-trips (U.S. Department of Transportation, 1997b).

Definitions of Trip and Pleasure Trip

Definitions of "trip" and "pleasure trip" were similar in the MSU survey and the TravelScope survey. A "trip" was defined in the MSU survey as "any overnight or day trip to a place at least 50 miles from home, unless it was taken in commuting to work or school." In the TravelScope survey, the questionnaire instructed respondents to report up to three "pleasure or business" trips taken in a specific month "where you and/or other members of your household traveled 50 miles or more, one-way, away from home or spent one or more overnights" (USTDC, 1995, 1996, 1997).

A trip was defined in the ATS as "each time a person goes to a place at least 100 miles away from home and returns." Respondents were asked to report trips of 75 miles or more as a means of reducing possible failure in reporting trips of 100 miles or more due to a misconception by the respondent of the actual miles traveled. Trips subsequently calculated to be less than 100 miles were excluded from the estimates. The following types of trips were excluded from the ATS:

1. trips taken as a member of a crew of an airplane, train or ship;
2. trips taken while working as a bus driver or truck driver; and

3. trips taken in military vehicles by members of the military on active duty (U.S. Department of Transportation, 1997a, 1997b).

A "pleasure trip" was defined in the MSU survey as "any overnight or day trip to a place at least 50 miles from home that was made for enjoyment, including vacations, weekend getaways, shopping trips, and trips to visit friends or relatives." In the TravelScope survey, "pleasure trips" were operationally defined by the author as trips taken for the primary purpose of visiting friends or relatives, outdoor recreation, entertainment, or combined business/pleasure. In the case of the ATS, "pleasure trips" were operationally defined as trips taken for the main purpose of visiting friends or relatives, rest or relaxation, sightseeing, outdoor recreation, entertainment, shopping, or combined business/pleasure (U.S. Department of Transportation, 1997a, 1997b).

Accuracy of the Estimates of Statewide Pleasure Trip Volume from the Three Surveys

The accuracy of estimates derived from any survey generated data depends upon the quality or accuracy of data obtained from such surveys (Fink, 1995b). The goal of any survey is to obtain complete and accurate responses from respondents (Bourque & Clark, 1992; Frey, 1989; Frey & Oishi, 1995). In any set of data collected, there will be some amount of error which determines the quality of data. Naturally, researchers want to minimize this error so that the data provide a more accurate reflection of the truth (Cannon, 1994; Litwin, 1995). There are two basic types of errors in any sample survey: sampling error and nonsampling error (Babbie, 1990 & 1998; Cannon, 1994; Fink, 1995c). Sampling error can be determined by sampling method employed, sample size,

and the proportion of the universe that has the characteristic being measured (Babbie, 1990 & 1998; Cannon, 1994; Fink, 1995c; Hurst, 1994; Kalton, 1983). Nonsampling error affects the accuracy of a survey's findings because it mars the sample's representativeness (Fink, 1995c). There are many possible sources of nonsampling error, including survey design, response rate, nonresponse bias, and recall bias (Bourque & Clark, 1992; Cannon, 1995; Fink, 1995a, 1995b, & 1995c; Frey, 1989; Frey & Oishi, 1995; Litwin, 1995).

As with any survey results, the accuracy of estimates of statewide pleasure trip volume from the three surveys depends upon the quality of the survey data. As detailed in Table 13, to evaluate the relative accuracy of each survey, several factors were assessed based on the above review of the three surveys. The score '1' represents 'weakness,' '2' represents 'neutral,' and '3' represents 'strength' on a given factor.

Both the ATS and the MSU survey employed probability sampling for sample selection, while the TravelScope survey used nonprobability sampling to draw its sample. Probability sampling provides representativeness of the study population (Babbie, 1990 & 1998; Fink 1995c; Kalton, 1983). Nonprobability sampling shortcomings and causes for concern with the accuracy of the data obtained include: subjectivity, lack of representativeness and/or generalizability to the population (Babbie, 1990 & 1998; Fink 1995c; Kalton, 1983). Therefore, scores of 3 were assigned to the MSU survey and the ATS, and 1 to the TravelScope survey for sampling method.

Table 13. Comparison of factors which affect survey data quality or accuracy across the three surveys.

Factor	MSU survey	TravelScope survey	ATS
Sampling method	3	1	3
Sampling error	2	1	3
Mode of survey administration	2	1	3
Response rate	1	2	3
Nonresponse bias	1	2	3
Recall bias	2	3	2
Total	11	10	17

Note: 1 = weakness, 2 = neutral, and 3 = strength

As previously mentioned, a total of about 9,800 eligible random digit numbers were dialed in the MSU survey, a total of 39,360 questionnaire cards were sent in the TravelScope survey, and a total of 13,120 eligible addresses were used for the ATS's sample in the five state region. Although the TravelScope survey sample size is larger than that of the other two surveys, the sampling error of the survey can not be estimated due to the nonprobability sampling method used (Babbie, 1990 & 1998; Cannon, 1995; Kalton, 1983; Litwin, 1995). The estimated sampling errors are ±0.9899% for the MSU survey and ±0.8556% for the ATS at the 95% confidence interval using Equation 4 (Babbie, 1990 & 1998; Cannon, 1994; Kalton, 1983). A strength of the ATS is its relative lack of sampling error. Therefore, scores 3 were applied to the ATS, 2 to the MSU survey, and 1 to the TravelScope survey for sampling error.

$$\text{Equation } 4: n = \frac{z^2[p(1.0-p)]}{e^2}$$

where,

n is the total number of cases in sample,

z is the standard error at the 95% confidence interval (1.96),

p is the population parameter for binomial, and

e is the sampling error.

The ATS used telephone (CATI) and personal (CAPI) interviewing to cover virtually the entire population resulting in a highly representative sample. The MSU survey used a telephone (CATI) survey for collecting data, covering about 95% of households in the study region. Because the TravelScope survey used a mail panel survey to collect data, it has potentially representativeness, validity, and/or reliability limitations. Therefore, scores of 3 were given to the ATS, 2 to the MSU survey, and 1 to the TravelScope survey for mode of survey administration.

Response rates of the three surveys were 44% for the MSU survey, 72% for the TravelScope survey, and 85% for the ATS. Although its response rate was within the range of typical response rates for telephone surveys (Frey, 1989), the MSU survey response rate was lower than those of the other two surveys. Consequently, it was necessary to test for possible nonresponse bias in the MSU survey. Statistically significant differences at the 0.05 level emerged between respondents and nonrespondents on only three of 84 variables: percentage of visiting state or national

park, average desirability of Ontario as a pleasure trip destination and average size of household. Nonresponse bias tests for the ATS and the TravelScope survey were not reported. However, it may be assumed that the nonresponse bias of the ATS and the TravelScope survey would be smaller than that of the MSU survey because of higher response rates (Fink, 1995c). Therefore, scores of 3 were applied to the ATS, 2 to the TravelScope survey, and 1 to the MSU survey for the response rate and nonresponse bias.

Average recall periods of the three surveys were 3.86 months for the MSU survey, up to 6 months for the ATS, and up to one month for the TravelScope survey. The short recall period is a strength of the TravelScope survey. A score of 3 was assigned to the TravelScope survey, 2 to the MSU survey and the ATS on the recall bias criterion.

The MSU survey has strengths on one of six factors and a total score of 11. The TravelScope survey has strength on recall bias only, and a total score of 10. The ATS has strengths on five factors, and a total score of 17. Based on these total scores for each survey, it can be said that the ATS data are more accurate than the other two surveys. In other words, estimates of statewide pleasure trip volume derived from the ATS may be more accurate than estimates from the other two surveys. Therefore, this study adopts the ATS based estimates as standard for judging the relative accuracy of estimates derived from the MSU survey and the TravelScope survey.

CHAPTER IV

METHODS

As previously discussed, the MSU survey provides timely information. Data required to estimate statewide pleasure trip volume from the MSU survey are available for little cost and within one month. TravelScope clients pay $21,600 per year and must wait at least ten months to obtain the data required to estimate statewide pleasure trip volume. The MSU survey is more accurate than TravelScope survey, but less accurate than the ATS. In other words, the MSU survey is more cost and time efficient than the TravelScope survey for obtaining the data needed to estimate statewide pleasure trip volume, but its accuracy is still questionable.

Preliminary estimates of statewide pleasure person-trip volume to Michigan from the five states derived from the MSU survey were 9.8% higher than that of the ATS which was adopted as the standard for accuracy of estimates as noted previously. A detailed discussion of findings appears in Chapter V. As reviewed and discussed, methodological differences or content differences between the two surveys very likely cause differences in estimates derived from the two surveys. Therefore, it is necessary to determine if the MSU survey can produce estimates that are closer to those of the ATS when these methodological or content differences are accounted for via a systematic and logical calibration process. The TravelScope survey was not used as an alternative for estimating statewide pleasure trip volume because of its relatively high cost, lack of timeless, and previously noted concerns about accuracy of the survey data generated.

In this chapter, the procedures used to create preliminary estimates of statewide pleasure person-trips to Michigan derived from the MSU survey and the ATS are presented. Variables causing the differences in the estimates between two surveys are discussed. Procedures for calibration and comparison of the estimates are illustrated. And acceptable percent error of differences in estimates between the MSU survey and the ATS are presented.

Preliminary Estimates of Statewide Pleasure Trip Volume

MSU Survey

To obtain the data necessary to create preliminarily estimates of statewide pleasure trip volume to Michigan, the MSU survey interviewees were first asked if they had taken any overnight or day trips to a place at least 50 miles from home during the past 12 months. Those who had were then asked if they had taken a pleasure trip to a destination during the past 12 months. Those who had were asked the main destination of the most recent such trip. Respondents who had taken a pleasure trip to Michigan during the past 12 months were asked to report how many pleasure trips to Michigan they had taken during the past 12 months (See Figure 3).

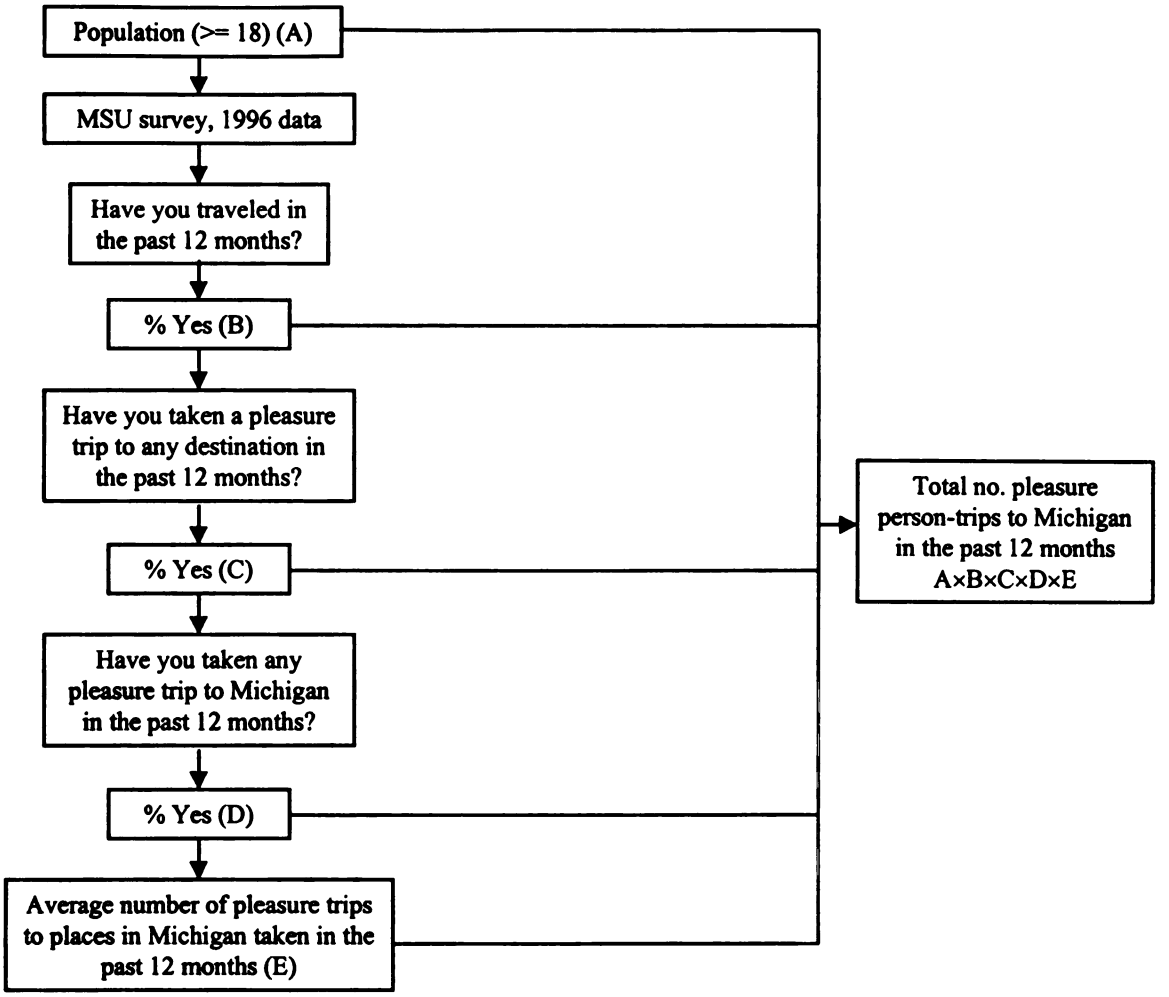


Figure 3. Procedure for deriving preliminary estimates of Michigan pleasure trip volume from the MSU survey.

American Travel Survey

To obtain the data necessary to estimate statewide pleasure trip volume to Michigan, ATS interviewees were first asked whether they and/or other members of their household had taken any kind of trip between January 1, 1995 and the date of the interview. Those who had taken such a trip were asked to report how many trips they had taken between January 1, 1995 and this date, the main destinations they visited, the dates on which they left home, the dates on which they returned home, party sizes, and number

of nights spent at their destinations (U.S. Department of Transportation, 1997b, 1997d; See Figure 4). The U.S. Department of Transportation provided two types of ATS databases: a households-trip database and a person-trip database (U.S. Department of Transportation, 1997d). Because the MSU survey used the individual person as the unit of analysis, the person trip database of the ATS was used to estimate statewide pleasure person-trips to Michigan.

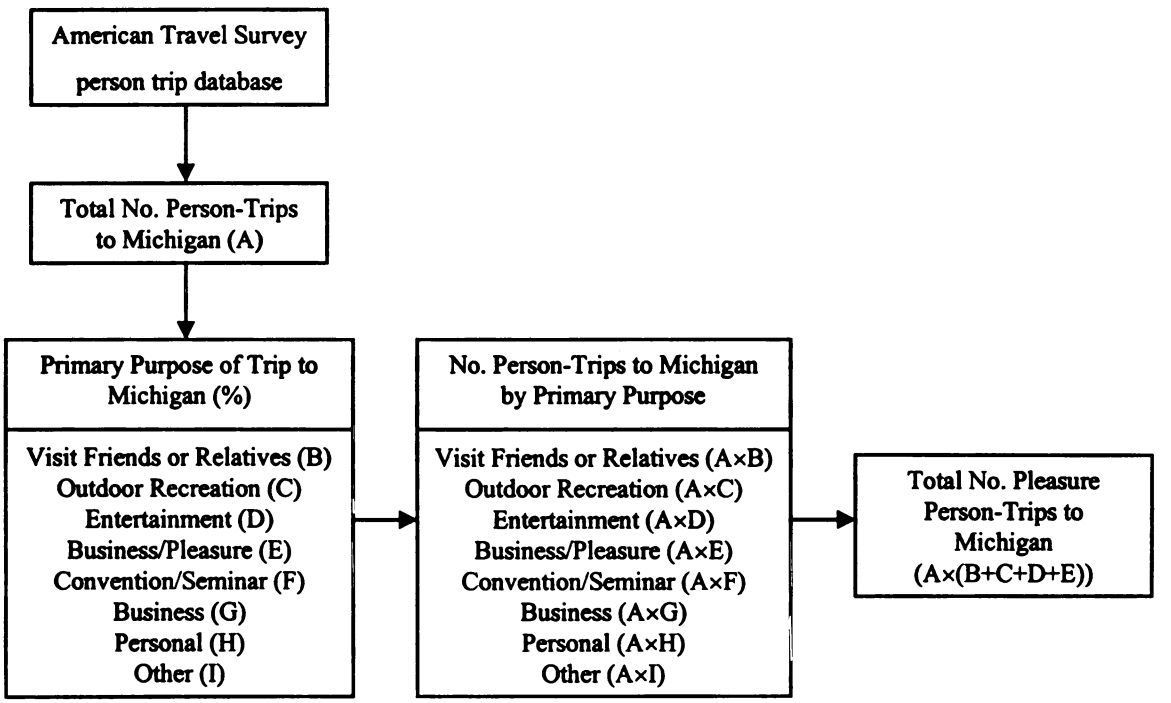


Figure 4. Procedure for deriving preliminary estimates of Michigan pleasure trip volume from the ATS.

Calibration Variables

As illustrated in Table 14, there are several methodological and content differences exist between the MSU survey and the ATS which can be reduced through

calibration procedures. These are: definition of trip, age of travelers, survey types used, nonresponse bias, survey year, and study region covered.

Table 14. Differences between the MSU survey and the ATS to be reduced via calibration processes.

Difference	MSU Survey	ATS
Definition of trip	50 miles away from home	100 miles away from home
Age of travelers	Age 18 or over	All ages
Survey used	Telephone interview, 95% of households in the study region have telephones	Telephone & personal interviews, all households in the study region included in sample frame
Nonresponse bias	Difference on household size between respondents and nonrespondents	Assumed little or zero nonresponse bias because of high response rate (85%)
Survey year	1996 calendar year	1995 calendar year
Study region covered	Five states: Illinois, Indiana, Michigan, Ohio, and Wisconsin	Nationwide

Definition of Trip

The MSU survey defines "trip" as any day or overnight trip to a place at least "50 miles away from home" unless it was taken in commuting to work or school. The ATS defines trip as any day or overnight trip to a place at least "100 miles away from home" (U.S. Department of Transportation, 1997b). Logic suggests that use of the 50 mile trip definition yields higher trip estimates than using a 100 mile trip definition. Thus, the higher MSU survey estimates are likely to be, in part, due to the use of the 50 mile trip

definition. Calibration of the MSU data set using the ATS definition of trip was performed and results compared.

Respondents to the MSU survey were asked to report their origin city (i.e., the city in which their permanent residence is located) and their pleasure trip destination. To measure the distance from the origin city to the destination in Michigan, DeLorme's "AAA Map'n'Go" computer software (DeLorme, 1998) was used to measure road miles. To cross-check the road distance measured by DeLorme's "AAA Map'n'Go," Lycos' "RoadMaps Driving Directions" (Lycos, 1999) and Mapquest's "Driving Directions" (Mapquest, 1999) were also used. To illustrate the use of this software, if Chicago, Illinois and New Buffalo, Michigan are entered as origin and destination cities in DeLorme's "AAA Map'n'Go," it calculates the distance from Chicago to New Buffalo as 68 miles (See Figure 5).

Figure 5. Results of DeLorme's "AAA Map'n'Go."

After the distances from origin to destination were measured, respondents who had taken pleasure trips of 50-99 miles from home were removed from the MSU survey data set. For example, pleasure trips from East Lansing, Michigan to Frankenmuth, Michigan (75.3 miles), from East Lansing, Michigan to Detroit, Michigan (84.3 miles), and Chicago, Illinois to New Buffalo, Michigan (68 miles) were removed from the MSU survey database because all were trips of less than 100 miles one way. Seventeen percent of total pleasure trips of more than 50 miles from the five states to Michigan were trips of 50-99 miles. This difference in the number of trips (17%) was used to adjust estimates of statewide pleasure person-trips to conform to the 100 mile definition.

Trips Taken by Children under 18

The MSU survey did not estimate the number of pleasure trips taken by children under 18, whereas the ATS did. Two alternatives existed to equalize the two studies' estimates. First, pleasure trips taken by children can be removed from ATS estimates. Second, pleasure trips taken by children can be added to MSU survey estimates. The latter method was chosen because the number of trips taken by children is an important segment of the statewide pleasure trip market, accounting for 17% of total statewide pleasure trip volume to Michigan from anywhere in the U.S. (U.S. Department of Transportation, 1997e).

Respondents to the MSU survey were asked to report the ages of a maximum of ten persons who accompanied them on their most recent pleasure trip in Michigan. To calculate the percentage of pleasure trips taken by children under 18, the ten new age variables used in the survey were redefined. If any reported age was under 18, the

response was re-coded as "children" for each new variable. If any reported age was over 17, it was re-coded as "adult." Then, percentages and frequencies of "children" and "adult" for the ten new age variables were counted. Finally, frequencies of the ten new variables were summed to get total percentages and frequencies of "children" and "adults" taking pleasure trips in Michigan. Adding children using this procedure resulted in an increase in the MSU survey based estimate of 19.3%.

Survey Year

The MSU survey estimated the number of statewide pleasure trips for 1996, but the ATS estimated the number of statewide pleasure trips for 1995. Therefore, it is necessary to calibrate the MSU survey to the ATS to account for the different years the surveys were conducted. It would be reasonable to use indicators of travel volume changes in Michigan to calibrate the MSU survey to the ATS. Data are available for selected indicators of travel volume changes in Michigan. These may include highway traffic counts and hotel/motel sales and use tax collections (Holecek, 1996).

The Michigan Department of Transportation (MDOT) counts traffic on a monthly basis at 153 permanent traffic recorder stations on highways throughout the state (MDOT, 1996, 1997 & 1998). As detailed in Table 15, over 94% of Michigan pleasure travelers from anywhere in the U.S. used vehicular transportation on their pleasure trip to Michigan (U.S. Department of Transportation, 1997e). Therefore, the traffic counts obtained from the 153 stations managed by the MDOT capture over 94% of all domestic pleasure travelers to Michigan.

Table 15. Type of transportation used in all U.S. domestic pleasure travel to a destination in Michigan from ATS.

	Types of transportation	Percent
Vehicular Transportation	Car, pickup truck, or van	90.3%
	Other truck	0.4%
	Rental car, truck, or van	0.8%
	City to city bus	0.1%
	Charter bus or tour bus	1.1%
	School bus	0.1%
	RV or motor home	1.2%
	Motorcycle, moped, or motor bicycle	0.1%
Non-vehicular Transportation	Commercial airplane	5.3%
	Corporate/personal airplane	0.1%
	Train	0.4%
	Ship or boat	0.1%
	Cruise ship	0.1%
	Other	0.1%

Source: Department of Transportation, 1997e.

The Michigan Department of Treasury reports hotel/motel sales and use tax collections every year (Michigan Department of Treasury, 1985; Spotts, 1991). There are significant limitations to the use of hotel/motel sales and use tax collections as an indicator of travel volume change in Michigan. First, hotel/motel sales and use tax collections are influenced not only by changes in use but also by changes in the number of rooms and prices. Second, only fifty-one percent of all pleasure travelers stayed in a hotel/motel/lodge, a bed and breakfast, or a rented cabin, cottage, or condominium while they were in Michigan (Spotts, Kim, Carr, & Holecek, 1998). The other 49% of pleasure travelers stayed in the home of friends or relatives, a commercial or public campground,

and/or on a boat or ship. Therefore, hotel/motel sales and use tax collections cannot capture changes in use for nearly half (49%) of all Michigan pleasure travelers.

Due to the above reasons, highway traffic data were used as indicators of change in travel volume in Michigan for calibration purposes across different survey years. The percentage change of traffic counts from 1995 to 1996 (2.75%) was used to calibrate the 1996 MSU survey estimates to the 1995 ATS estimates.

However, there are still several concerns related to using highway traffic counts as an indicator of travel volume change in Michigan. First, traffic counts are not classified by the purpose of trip. They include business trips, commuting traffic, school traffic, military traffic, commercial truck traffic, and pleasure trips. Second, pleasure travelers who used vehicular transportation can take routes not covered by recorder stations to destinations in Michigan. For example, travelers from Toledo, Ohio can take not only routes covered by recorder stations (e.g., I75 north to I275 north to I94 west), but also routes not covered by recorder station (e.g., I90 west to I127 north to I94 west) to get to Jackson, Michigan. Third, the traffic counts include not only traffic to Michigan but also traffic passing through Michigan.

Therefore, to use traffic counts as an indicator of travel volume change in Michigan, several assumptions are needed. First, even if the traffic counts are not classified by the purpose of trip, it can be assumed that there is no proportionate change of pleasure trip in total traffic counts across different years. For example, if pleasure trips accounted for 60% of total traffic to/within Michigan in 1995, it can be assumed that pleasure trips accounted for 60% in 1996. Second, although travelers can take routes not covered by recorder stations, it can be assumed that there is the same proportionate

change in the use of these routes across different years. For example, if the use of routes covered by recorder stations between Toledo, Ohio and Jackson, Michigan increased by 5% between 1995 and 1996, the use of routes not covered by recorder stations probably also increased by 5% between the two years. Third, even though the traffic counts include traffic passing through Michigan, it can be assumed that there is no proportionate change of traffic passing through Michigan in total traffic counts across different years. For example, if traffic passing through Michigan accounted for 10% of total traffic in 1995, it can be assumed that traffic passing through Michigan accounted for 10% in 1996.

Study Region Covered

One of the study objectives was to estimate statewide Michigan pleasure person-trip volume from the five states combined and from anywhere in the U.S. using the MSU survey and the ATS data. The MSU survey study region did not cover the entire U.S. while the ATS did. Therefore, it was necessary to adjust MSU survey estimates of statewide Michigan pleasure person-trip volume from the five states to the estimates of total U.S. domestic pleasure person-trips to Michigan. The five states generated 88% of total domestic Michigan pleasure person-trips in 1995 (U.S. Department of Transportation, 1997e). This proportion, 88%, was used to adjust MSU survey estimates of statewide Michigan pleasure person-trip volume from the five states to the estimates of total domestic Michigan pleasure person-trip volume.

Survey Used

The MSU survey was a telephone survey hence households without telephone service could not be estimated. Such households accounted for about 5% of total households in the study region. The ATS used telephone (CATI) and personal (CAPI) interviews which basically covered the entire population in the U.S. Therefore, it was necessary to calculate the number of Michigan pleasure person-trips generated by households without telephone service to arrive at directly comparable estimates. As detailed in Tables 16-18, 6.1% of households in the U.S. did not have telephone service in 1995. These households generated 0.75% of statewide Michigan pleasure person-trips. Households with telephone service generated the remaining 99.25% of such trips in 1995.

Table 16. Households with and without telephone service by annual average household income in 1995.

Annual Average Household Income	No. Household (%)	No. Household With Telephone Service (%[1])	No. Household Without Telephone Service (%[2])
Under $10,000	12,353,748 (12.4)	10,012,009 (10.0)	2,341,739 (2.4)
$10,000-$14,999	8,667,549 (8.7)	7,768,243 (7.8)	899,306 (0.9)
$15,000-$24,999	15,840,693 (15.9)	14,744,683 (14.8)	1,096,010 (1.1)
$25,000-$49,999	30,983,997 (31.1)	29,945,114 (30.1)	1,038,883 (1.0)
$50,000-$74,999	17,036,217 (17.1)	16,663,403 (16.7)	372,814 (0.4)
$75,000 +	14,744,796 (14.8)	14,416,301 (14.5)	328,495 (0.3)
Total	99,627,000 (100.0)	93,549,753 (93.9)	6,077,247 (6.1)

Source: Federal Communication Commission, 1997; U.S. Department of Commerce, 1996.

[1] = Column3/Total No. Household (99,627,000)

[2] = Column4/Total No. Household (99,627,000)

Table 17. Percent of Michigan pleasure person-trips taken by households with telephone service by annual average household income in 1995.

Annual Average Household Income	No. MI Pleasure Person-trips (ATS)	No. MI Pleasure Person-trips Taken by Households w/ Telephone Service (ATS)	Percent of MI Pleasure Person-trips Taken by Households with Telephone Service, Column3/(25,002,447)
Under $10,000	1,019,658	995,691	3.98%
$10,000-$14,999	452,710	448,624	1.79%
$15,000-$24,999	2,904,671	2,872,716	11.49%
$25,000-$49,999	7,811,952	7,730,491	30.92%
$50,000-$74,999	8,714,175	8,681,566	34.72%
$75,000 +	4,099,281	4,085,765	16.34%
Total	25,002,447	24,814,852	99.25%

Source: Federal Communication Commission, 1997; U.S. Department of Commerce, 1996; U.S. Department of Transportation, 1997e.

Table 18. Percent of Michigan pleasure person-trips taken by households without telephone service by annual average household income in 1995.

Annual Average Household Income	No. MI Pleasure Person-trips (ATS)	No. MI Pleasure Person-trips Taken by Households w/o Telephone Service (ATS)	Percent of MI Pleasure Person-trips Taken by Households Without Telephone Service, Column3/(25,002,447)
Under $10,000	1,019,658	23,967	0.10%
$10,000-$14,999	452,710	4,086	0.02%
$15,000-$24,999	2,904,671	31,955	0.13%
$25,000-$49,999	7,811,952	81,461	0.33%
$50,000-$74,999	8,714,175	32,609	0.13%
$75,000 +	4,099,281	13,516	0.05%
Total	25,002,447	187,575	0.75%

Source: Federal Communication Commission, 1997; U.S. Department of Commerce, 1996; U.S. Department of Transportation, 1997e.

The MSU survey estimates treated households without telephone service as if they generated 6.49% of total statewide Michigan pleasure person-trips in 1995. This suggests that the MSU survey overestimated statewide Michigan pleasure person-trips by as much as 5.35% (6.1% - 0.75%). Therefore, the MSU survey estimates must be reduced by up to 5.35%.

- Percent of households without telephone service = 6.1%
- Percent of Michigan pleasure trips generated by households without telephone service = 0.75%
- 6.1% - 0.75% = 5.35%

Nonresponse Bias

As discussed in the previous chapter, there was a significant difference in average household size between respondents and nonrespondents in the MSU survey (3.07 vs. 2.62, respectively). Therefore, it can be assumed that the trips taken by smaller households were underrepresented. Four hypotheses were made to test this assumption because the MSU survey estimate is affected by four variables. First, there is no household size difference between travelers and non-travelers during the past 12 months. Second, there is no household size difference between pleasure travelers and non-pleasure travelers during the past 12 months. Third, there is no household size difference between Michigan pleasure travelers and non-Michigan pleasure travelers during the past

12 months. Fourth, there is no relation between household size and number of pleasure trips to Michigan during the past 12 months.

As illustrated in Tables 19 and 20, there was a statistically significant difference in household size between travelers and non travelers during the past 12 months, one of the variables used to estimate statewide Michigan pleasure person trip volume. Statistically, it can be said that household size affects estimates of statewide Michigan pleasure trip volume. Therefore, a smaller proportion of nonrespondents had taken pleasure trips to Michigan due to the smaller size of households compared with that of respondents. Therefore, it was necessary to compute how many fewer nonrespondent individuals had taken pleasure trips to Michigan.

Table 19. Relationship between household size and variables used to estimate statewide Michigan pleasure person-trip volume in the MSU survey.

Variables		No. Cases	Mean Household	Test Statistics	Significance
Took trip in the past 12 months?					
	Yes	n=2,580	2.88	t=2.51	0.012
	No	n=1,200	2.75		
Took pleasure trip in the past 12 months					
	Yes	n=2,397	2.88	t=0.55	0.583
	No	n=157	2.82		
Took pleasure trip to Michigan in the past 12 months	Yes	n=728	2.86	t=-0.37	0.709
	No	n=1,665	2.89		

Table 20. Relationship between household size and number of pleasure trips to a place in Michigan during the past 12 months from the MSU survey [a].

Variables		Household size	Number of pleasure trips to Michigan in the past 12 months
Household size	Pearson Correlation	1.000	-0.034
	Significance		0.370
	Covariance	2.314	-0.296
Number of pleasure trips to Michigan in the past 12 months	Pearson Correlation	-0.034	1.000
	Significance	0.370	
	Covariance	-0.296	33.389

[a] Listwise N=710

To compute the proportional difference, a formula was built. This formula shows a relationship between number of household size and trip experiences over the past 12 months (Equation 5).

Equation 5: $P(0,1) = 0.645798154 + (0.012955578 \times H)$

where,

P(0,1) = probability of taking a trip in the past 12 months, and

H = number of household size.

Respondents (average household size was 3.07) had 0.6885572 probability of taking a trip during the past 12 months, and non-respondents (average household size was 2.62) had 0.679742 probability of taking a trip in the past 12 months. All respondents and non-respondents (average household size was 2.84) had 0.682592 probability of taking a

trip in the past 12 months. Therefore, up to 0.00285 or (0.682592-0.679742) should be subtracted from the MSU survey estimates.

Calibration and Comparison Procedures

Figure 6 summarizes the procedures used in the calibration of the MSU survey and the ATS. The number of pleasure person-trips that were 50-99 miles away from home were subtracted from the MSU survey estimates, and average number of pleasure trips to Michigan in the past 12 months was recalculated. The number of pleasure person-trips taken by children under 18 was added to the MSU survey estimates. In addition, 5.35% and 0.285% were subtracted from the MSU survey estimates for overestimating caused by the survey method used (i.e., CATI) and nonresponse bias as previously discussed. The result was then multiplied by the percent change in traffic counts from 1995 to 1996 (2.7%) to account for the different survey years, and multiplied by 1.14 or 1/0.88 to adjust for differences in study regions (i.e., estimates from five states to estimates from anywhere in the U.S. in 1995).

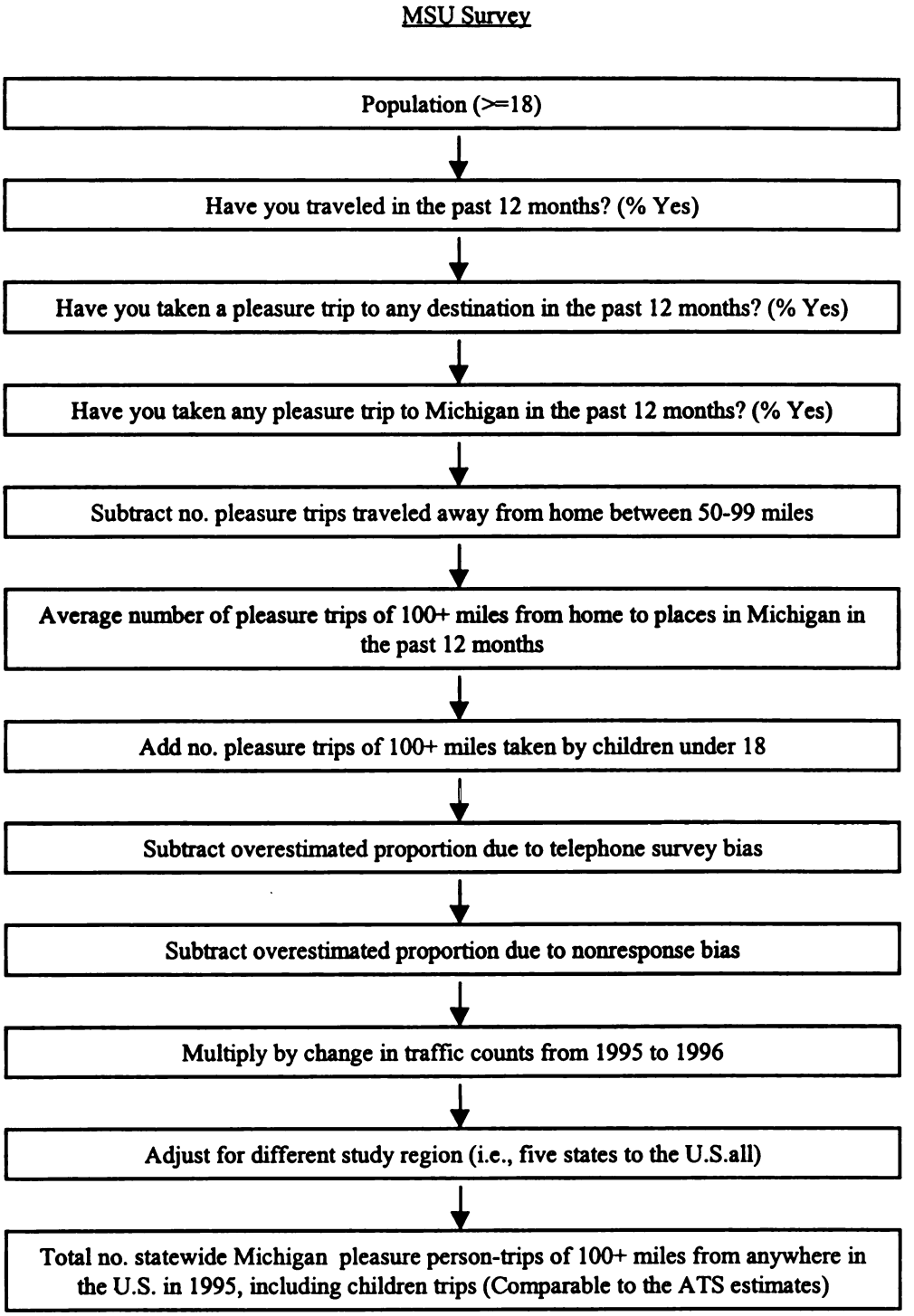
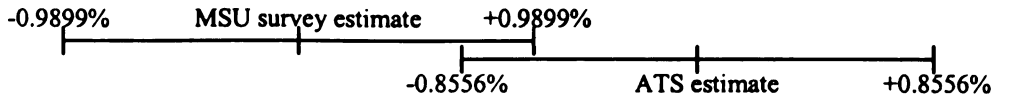


Figure 6. Procedures of calibration and comparison of the MSU survey to the ATS.

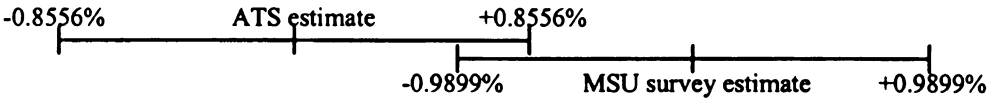
Acceptable Percent Error of Differences in Estimates

As discussed in previously, the estimated sampling errors were ±0.9899% for the MSU survey and ±0.8556% for the ATS at the 95% confidence interval. According to Aczel (1995) and Fink (1995c), three elements are needed to determine acceptable percent error of any statistics: confidence interval, standard deviation of a statistic using a data set or population proportion (p), and sample size. As detailed in Equation 4 in Chapter IV, sampling error is calculated by sample size, confidence interval, and population proportion (p). Therefore, logically, sampling error can be used as a measure of an acceptable error of a statistic. In other words, an acceptable percent error of difference in estimates between the MSU survey and the ATS is determined by their sampling errors (i.e., ±0.9899% error for the MSU survey estimates and ±0.8556% error for the ATS estimates at the 95% confidence interval).

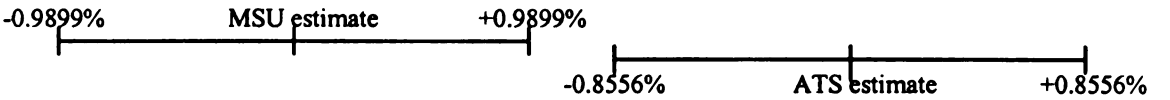
As shown in Figure 7, there are four possible relationships between the estimates of the two surveys. If the ranges of estimates between two surveys overlap, the percent error of differences in estimates between two surveys is acceptable (See 'a' and 'b' in Figure 7). If the ranges do not overlap, the percent error of differences in estimates between two survey is not acceptable (See 'c' and 'd' in Figure 7).



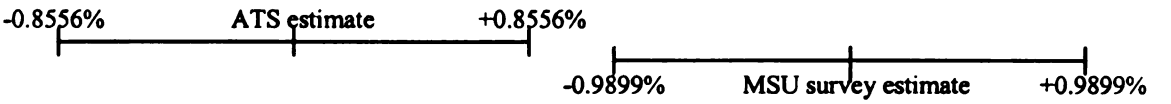
a. MSU survey estimate is lower than the ATS estimate but is acceptable



b. MSU survey estimate is higher than the ATS estimate but is acceptable



c. MSU survey estimate is lower than the ATS estimate and is not acceptable



d. MSU survey estimate is higher than the ATS estimate and is not acceptable

Figure 7. Four possible relationships illustrating the acceptability of the percent error of difference in estimates.

CHAPTER V

FINDINGS

This chapter contains four sections. In the first, preliminary estimates of statewide Michigan pleasure person-trip volume from Michigan's five state prime market area: Illinois, Indiana, Michigan, Ohio, and Wisconsin and anywhere in the U.S. derived from the MSU survey and the ATS are presented. In the second, the results of the calibrations made in the variables previously identified as linked to the differences between the MSU survey and ATS estimates are presented: i.e., definition of trip (50+ miles vs. 100+ miles), trips taken by children, survey method used (telephone interview vs. telephone & personal interviews), nonresponse bias, survey years (1996 vs. 1995), and study region (regional vs. nationwide). In the third, differences in estimates of statewide Michigan pleasure person-trip volume from the five states and from anywhere in the U.S. between the calibrated MSU survey estimates and the ATS estimates are presented. In the fourth, it is determined if percent error of the differences in estimates is acceptable as discussed in the previous chapter. Finally, a model for deriving timely and accurate estimates of statewide Michigan pleasure person-trip volume is presented to conclude this chapter.

Preliminary Estimates of Statewide Michigan Pleasure Trip Volume

MSU Survey

The population of persons over age 17 in the five states in 1996 is shown in Table 21 (U.S. Department of Commerce, 1998). The value of each of the variables used to

created preliminary estimates of statewide Michigan pleasure person-trip volume from the five states in the MSU survey are also illustrated in Table 21. The preliminary estimate of statewide Michigan pleasure person-trip volume from the five states is 26,721,010 pleasure person-trips based upon MSU survey results.

Table 21. Preliminary estimates of statewide Michigan pleasure person-trips from the five states derived from the MSU survey.

Population over age 17 in the five states (1996)[1] a	Took trip in the past 12 months b	Took pleasure trip in the past 12 months c	Pct. of Pleasure trips Destined for Michigan D	Avg. no. pleasure trips to Michigan taken in the past 12 months e	Preliminary estimates of no. pleasure person-trips to Michigan from the five states a×b×c×d×e
32,369,811	69.9%	93.8%	30.9%	4.09	26,721,010

[1] Source: U.S. Department of Commerce, Bureau of the Census (1998).

The ATS

Estimates of the number of statewide Michigan pleasure person-trips from the five states and from anywhere in the U.S. derived from the ATS are shown in Table 22. Pleasure person-trips accounted for 75% of person-trips from the five states and 72% from anywhere in the U.S. Preliminary estimates of statewide Michigan pleasure person-trips are 21,999,375 pleasure person-trips from the five states and 25,002,447 pleasure person-trips from anywhere in the U.S. Estimates of statewide Michigan pleasure person-trip volume from the five states accounted for 88% (i.e., (21,999,375/25,002,447)×100%) of the total domestic statewide Michigan pleasure person-trips.

Table 22. Estimated number of statewide Michigan person-trips/pleasure person-trips of at least 100 miles in 1995 derived from the ATS.

Origin	Estimated no. person-trips of at least 100 miles from home to Michigan in 1995	% of trips to Michigan that were for pleasure	Estimated no. pleasure person-trips to Michigan in 1995
Five states	29,325,525	75.02%	21,999,375
Nationwide	34,526,294	72.42%	25,002,447

There is a 21.5% (i.e., (26,721,010/21,999,375)-1) difference in estimates of statewide Michigan pleasure person-trips from the five states between the two survey estimates. Statewide Michigan pleasure person-trips from anywhere in the U.S. was not estimated in the MSU survey because the survey covered only five states. Therefore, it is necessary to expand the results of five states estimates to the U.S. as a whole using the proportion, 88%, mentioned above.

Calibration of the MSU Survey

Percent of Pleasure Person-trips of 50-99 Miles from Home to Michigan in 1996

As illustrated in Table 23, 17% of Michigan pleasure person-trips originating in the five states in 1996 were trips of 50-99 miles from home. The numbers of pleasure person-trips of 50-99 miles from home to Michigan in 1996 had be subtracted from the MSU survey database due to the difference in trip definitions (i.e., 50+ miles vs. 100+ miles) discussed above. Then, average number of pleasure trips of 100+ miles from home to places in Michigan in the past 12 months was calculated as 3.48 pleasure person-trips per year.

Table 23. Percent of pleasure person-trips of 50-99 miles away from home to Michigan from the five states in 1996 from the MSU survey.

Percent of pleasure person-trips of 50-99 miles away from home to Michigan in 1996	Percent of pleasure person-trips of at least 100 miles away from home to Michigan in 1996	Total
17.0%	83.0%	100.0%

Percent of Pleasure Person-trips Taken by Children under 18 in 1996

The estimate of the percentage of pleasure person-trips taken by children under 18 as derived from the MSU survey is 19.3% of pleasure person-trips taken by all age groups. The number of pleasure person-trips taken by children was added to the MSU survey estimates because the ATS estimates included all age groups' pleasure person-trips.

Overestimates Due to Use of Telephone Survey (CATI) and Nonresponse Bias

As discussed in the previous chapter, the MSU survey overestimated statewide Michigan pleasure person-trip volume by as much as 5.35% due to the difference in surveys used (i.e., telephone (CATI) interview vs. telephone (CATI) and personal (CAPI) interviews). The MSU survey also overestimated by as much as 0.285% due to nonresponse bias caused by the lower response rate of smaller households. These two overestimated proportions were subtracted from the estimates of the MSU survey.

Percentage Change of Traffic Counts to and within Michigan between 1995 and 1996

As detailed in Table 24, statewide traffic counts to and within Michigan between 1995 and 1996 increased by 2.75%. This percent change in statewide traffic counts was multiplied by the MSU survey estimates to adjust for the difference in survey years (i.e., 1996 vs. 1995).

Table 24. Percent changes in traffic counts to and within Michigan between 1995 and 1996.

Month	1995 Traffic Counts	1996 Traffic Counts	% Change (column3/column2)-1
January	453,121	457,260	0.91%
February	538,164	549,738	2.15%
March	553,547	535,664	-3.23%
April	606,571	599,880	-1.10%
May	667,142	680,447	1.99%
June	462,758	458,541	-0.91%
July	844,112	870,399	3.11%
August	884,056	960,859	8.69%
September	1,020,106	1,036,461	1.60%
October	932,979	972,901	4.28%
November	737,298	780,412	5.85%
December	707,958	736,337	4.01%
Annual Total	8,407,812	8,638,899	2.75%

Source: Michigan Department of Transportation, 1996, 1997, & 1998.

Study Region Covered

The MSU survey can not be used directly to estimate statewide Michigan pleasure person-trip volume from the entire U.S. due to its limited study region: Illinois, Indiana, Michigan, Ohio, and Wisconsin. As previously mentioned, the five states generated 88% of total statewide Michigan pleasure person-trips. Therefore, the MSU survey estimate was multiplied by 1.136 or 1/0.88 to expand the five state estimate to a nationwide estimate.

Comparison of the Differences in Estimates of Statewide Michigan Pleasure Person-Trip Volume Derived from the Calibrated MSU Survey and the ATS

As detailed in Tables 25 and 26, the calibrated estimates of the volume of statewide Michigan pleasure person-trips of at least 100 miles taken by all age groups in 1995 derived from the MSU survey were 21,497,975 pleasure person-trips from the five prime market states and 24,432,603 pleasure person-trips from the entire U.S. These estimates were 2.28% less than the ATS estimates. Calibrated estimates derived from the MSU survey are very close to the ATS estimates, the standard for accuracy adopted in Chapter III. Therefore, it can be said that the calibration can reduce differences in estimates between the MSU survey and the ATS. The absolute difference was reduced from (21.5%) to (2.3%).

Table 25. Calibrated estimates of statewide pleasure person-trips of at least 100 miles from the five prime market states to Michigan taken by all age groups in 1995 derived from the MSU survey.

Population Over age 17 in the five states (1996)[1] a	Took trip in the past 12 months b	Took pleasure trip in the past 12 months c	Pct. of pleasure trips destined for Michigan d	% of pleasure person-trips of 50-99 miles from home to Michigan e	Avg. no. pleasure trips to Michigan taken in the past 12 months f
32,369,811	69.9%	93.8%	30.9%	17.0%	3.48

% of pleasure person-trips taken by under age 18 g	Overestimated proportion due to telephone survey h	Overestimated proportion due to nonresponse bias i	Pct. change of statewide traffic count between 1995 and 1996 j	Estimates of pleasure person-trips from the five states to MI in 1995, 100+ miles, all ages k*
19.3%	5.35%	0.285%	2.75%	21,497,975

*k=a×b×c×d×(1-e)×f×{(1/(1-g)}×(1-h)×(1-i)×{1/(1+j)}

Table 26. Comparison of difference in estimates of statewide pleasure person-trips of at least 100 miles from anywhere in the U.S. taken by all age groups in 1995 between the MSU survey and the ATS.

Origin	Estimates of pleasure person-trips to MI in 1995 from 1995 ATS	Estimates of pleasure person-trips to MI in 1995 from 1996 MSU survey	Percentage difference (col.3-col.2)/col.2
Five States	21,999,375	21,497,975	-2.3%
Nationwide	25,002,447	24,432,603*	-2.3%

* = 21,497,975 × (1/0.88)

Assessing Percent Error of Estimates

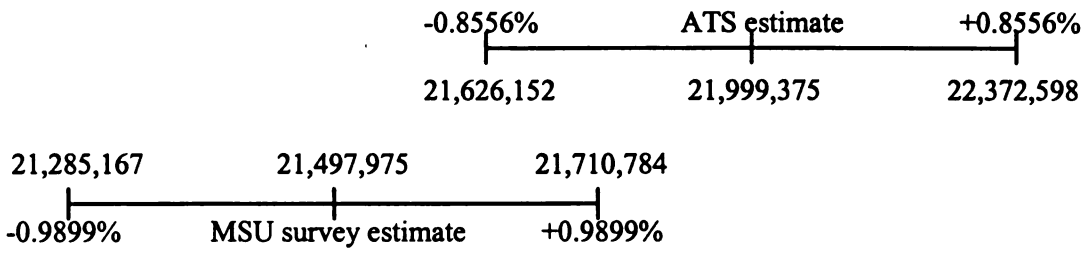
Although the calibrated estimates derived from the MSU survey are very close (2.3% less) to the ATS estimates, it is necessary to determine whether the percent error (2.3%) of differences in estimates is acceptable. The calibrated MSU survey estimated statewide Michigan pleasure person-trips is 21,497,975 trips from the five prime market states and 24,432,603 trips from the entire U.S. The ATS estimated statewide Michigan pleasure person-trips is 21,999,375 trips from the five prime market states and 25,002,447 trips from the entire U.S. As detailed in Tables 27 and 28, the ranges of calibrated estimates from the MSU survey for the 95% confidence interval are 21,285,167-21,710,784 pleasure person-trips from the five states and 24,190,744-24,674,461 trips from the entire U.S. The ranges of estimates from the ATS for the 95% confidence interval are 21,626,152-22,372,598 pleasure person-trips from the five states and 24,578,276-25,426,618 such trips from the entire U.S. As shown in Figure 8, the ranges of estimates between two surveys overlap. Therefore, it can be said that the percent error of differences in estimates between two surveys is acceptable.

Table 27. Ranges of calibrated estimates from the MSU survey with sampling error at 95% confidence interval.

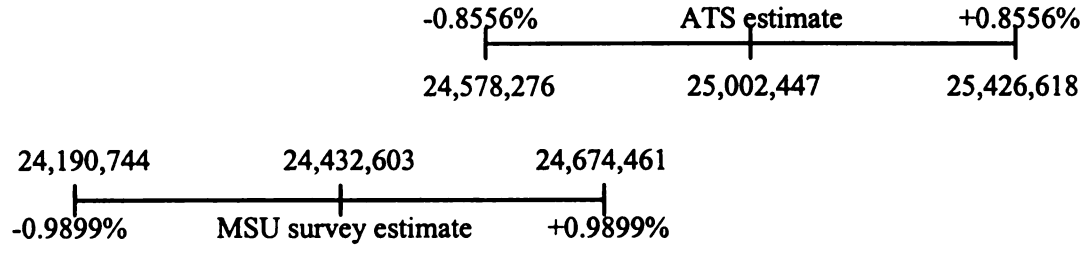
Origin	Lower boundary (-0.9899%)	Calibrated estimates of statewide MI pleasure person-trip volume from the MSU survey	Upper boundary (+0.9899%)
Five States	21,285,167	21,497,975	21,710,784
Nationwide	24,190,744	24,432,603	24,674,461

Table 28. Ranges of estimates from the ATS with sampling error at 95% confidence interval.

Origin	Lower boundary (-0.8556%)	Estimates of statewide MI pleasure person-trip volume from the ATS	Upper boundary (+0.8556%)
Five States	21,626,152	21,999,375	22,372,598
Nationwide	24,578,276	25,002,447	25,426,618



a. Ranges of estimates of statewide Michigan pleasure person trip volume from the five states



b. Ranges of estimates of statewide Michigan pleasure person trip volume from the entire U.S.

Figure 8. Ranges of estimates of statewide Michigan pleasure person-trip volume with sampling errors at 95% confidence interval.

Model for Estimating Statewide Pleasure Person-trip Volume

Based upon the above findings, it also can be concluded that the MSU survey provides timely and acceptably accurate estimates of statewide Michigan pleasure person-trip volume when the MSU survey estimates are calibrated using the following model:

$$f(Et100,yri) = Pop(a) \times P(t) \times P(pt) \times P(d) \times (1-P(t,5099)) \times Avg(pt,M) \times \{1/(1-P(c))\} \times \{1-P(os)\} \times \{1-P(on)\} \times \{1/P(five)\}$$

where,

f(Et100,yri) is the total estimated number of pleasure Michigan person-trips of at least 100 miles from the entire U.S. taken by all age groups in the year for which estimates are desired,

Pop(a) is the population of the five states over age 17, in the year for which estimates are desired,

P(t) is the percent that a took trip to any destination in the past 12 months,

P(pt) is the percent that took a pleasure trip to any destination in the past 12 months,

P(d) is the percent of pleasure trips to Michigan,

P(t,5099) is the percent of pleasure person-trips of 50-99 miles from home to Michigan,

Avg(pt,M) is the average number of pleasure trips of 100+ miles to Michigan taken in the past 12 months,

P(c) is the percent of pleasure person-trips taken by children under 18,

P(os) is the overestimated proportion due to the survey used,

P(on) is the overestimated proportion due to nonresponse bias, and

P(five) is the percent of the estimate contributed by the five states compared with the U.S. as a whole.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

In the conclusions section of this chapter, the degree to which findings meet the study's purpose and objectives are discussed. Then, implications of the study are described. And finally, limitations of the study and recommendations for further research are presented.

Conclusions

The preliminary estimates of statewide Michigan pleasure person-trip volume Michigan's prime market states of Illinois, Indiana, Michigan, Ohio, and Wisconsin derived from the MSU survey was 26,721,010 pleasure person-trips. The preliminary estimates of statewide Michigan pleasure person-trip volume derived from the ATS was 21,999,375 from these five states and 25,002,447 from the entire U.S. Since, there is a 21.5% difference in estimates between two surveys for the five state prime market region and no directly comparable estimate of trip volume was obtainable from the MSU survey, further research was undertaken to determine if calibration could be employed to reduce variance in these estimates. First, it was necessary to determine the variables or methodological differences that may have caused the observed differences in estimates between two surveys. Based upon review and assessment of the methods employed in the two surveys, several methodological and content differences that may have caused the observed differences in estimates between two surveys were identified. They are:

definition of trip (50+ miles, MSU survey vs. 100+ miles, ATS), age of travelers (18+ years old, MSU survey vs. all age groups, ATS), survey methods used (telephone, MSU survey vs. telephone and personal interview, ATS), nonresponse bias, survey year (1996, MSU survey vs. 1995, ATS), and study region covered (five states, MSU survey vs. nationwide, ATS).

Calibration techniques were developed to mitigate to methodological differences that were identified. These are discussed below. Trips of 50-99 miles were deleted from the MSU survey database, and the average number of pleasure trips to Michigan in the past 12 months was recalculated. The percent of pleasure person-trips taken by children under 18 was obtained, and added to the MSU survey estimates. Bias associated with the telephone survey used by MSU survey and nonresponse bias due to low response from smaller households surveyed by MSU were subtracted from the estimates. Statewide traffic counts were used to adjust for differences in the timeframes over which the two surveys were administered. The five states accounted for 88% of statewide Michigan pleasure person-trips. This percent (88%) was used to expand the MSU survey results to produce a comparable trip estimate from the entire U.S. These calibration procedures reduced percent error of differences in estimates between the MSU survey and the ATS (from 21.5% to 2.5%).

Although the percent error of differences in estimates was significantly reduced, it was necessary to determine if this error is acceptable in a statistical context. To determine acceptable error, the concept of sampling error was employed. Sampling errors were ±0.9899% for the MSU survey and ±0.8556% for the ATS at the 95% confidence interval. The ranges of estimates of statewide Michigan pleasure person-trips derived

from the two surveys overlap. Therefore, the calibrated estimates of statewide Michigan pleasure person-trip volume derived from the MSU survey are accurate in a statistical context. It can be concluded that the MSU survey provides timely and accurate estimates of statewide. Based upon the above findings, a model for deriving timely and accurate estimates of statewide Michigan pleasure person-trip volume was developed.

Implications of the Study

This study has implications for researchers, tourism policy makers, destination marketing organizations, and individual businesses. The possible implications for each are discussed in the following sections.

Implications for Researchers

While the MSU survey was originally designed to evaluate Travel Michigan's promotional programs and to measure the characteristics and behavior of travelers in Michigan's primary market area, the survey also provides information for estimating statewide Michigan pleasure person-trip volume with little or no extra costs. Six variables were used to estimate statewide Michigan pleasure person-trip volume in the MSU survey. Those are: 1) Have you taken any kind of trip in the past 12 months?; 2) In the past 12 months, have you taken any pleasure trips to any destination?; 3) Was a place in Michigan the main destination of any of the pleasure trips you've taken in the past 12 months?; 4) Age of each person who went on this trip; 5) Distance from origin city to a destination in Michigan; and 6) How many pleasure trips to a place in Michigan have you taken in the past 12 months?. This suggests that researchers who are involved in regional

survey research for any tourism marketing or planning purposes can estimate trip volume for their state with no or little added costs if their survey instrument includes a similar set of questions. In most cases, such surveys are likely to include most of these questions to support other research objectives, so adding developing trip volume estimates as a study objective would add little if any to data collection costs. However, developing a calibration model along the lines of that resulting from this study will require additional analyses and access to relevant supporting data. Developing such models for other states would, of course, be facilitated by the knowledge gained in developing the Michigan model.

Several factors affecting survey data quality and accuracy of estimates derived them are discussed in this report. These include: sampling error, sampling method, mode of survey administration, response rate, nonresponse bias, recall bias, interviewing/supervising, and length of interview/questionnaire. This study shows how these factors affect the quality or accuracy of survey data and subsequently accuracy of results. For example, low response rate caused nonresponse bias in the MSU survey; however, the most important lesson here is that testing for nonresponse bias in such survey is not only good research practice, but also can produce improved empirical results. Nonresponse bias caused overestimating of statewide Michigan pleasure person-trip volume derived from the MSU survey. Mode of survey administration also affects the accuracy of survey results. The MSU used a telephone survey design for collecting data. It captured only 95% of potential population in the study region. This caused overestimating of statewide Michigan pleasure person-trip volume derived from the MSU survey. This suggests that reducing or removing any potential errors (i.e., sampling and

nonsampling errors) are important in survey research to increase or improve survey data quality or accuracy of the results.

This study also has implications for researchers involved in estimating statewide trip volume in any states in the U.S. As previously mentioned, many researchers have been conducting regional surveys for estimating statewide trip volume in many states (i.e., Cournoyer & Kindahl, 1983; Gartner & Hunt, 1988; Harris, McLaughlin, & Hunt, 1994; Harris, Tynon, & McLaughlin, 1990; Kim, Soptts, & Holecek, 1998). However, the researchers did not determine whether their estimates were accurate. Based upon discussion in this study, it is suggested that the ATS can be adopted as a standard for judging the accuracy of estimates of statewide trip volume derived from regional surveys. This study also provides some guidance to test the acceptability of the percent error of differences in estimates of statewide trip volume using regional survey data and the ATS data.

Implications for Tourism Policy Makers

This study has implications for people involved in formulating tourism policy. Specifically, the study has implications for those involved in formulating tourism promotion policy. Timely and accurate estimates of statewide pleasure trip volume are used to determine the relative economic importance of the tourism industry to the state, and to make critical decision about investment, planning, policy, and marketing in the industry. In particular, such estimates are essential for monitoring changes in the magnitude of the tourism industry in a given state, and for comparing the economic significance of tourism versus other industries in a state.

Estimated trip volume is one of five items of required information for regional tourism economic impact assessment. The other four information items required are: market segments, spending profiles, a bridge table to convert spending, and a set of multipliers which are often available from secondary sources. Hence, reliable and inexpensive trip volume estimates are most frequently the missing link which limits development of the timely tourism economic impact estimates that are so crucial to tourism policy makers.

Implications for Destination Marketing Organizations

This study has implications for destination marketing organizations. Destination marketing organizations need timely and accurate information on market share to evaluate their performance and potential in the industry (Kotler, 1982). Respondents in the MSU survey were asked to report their origin city and their pleasure trip destination. The findings of this study and the MSU survey can provide useful information on market share to the destination marketing organizations. For examples, Michigan captured 20% of total pleasure trip market generated from the states of Illinois, Indiana, Michigan, Ohio, and Wisconsin (i.e., percent of took trip in the past 12 months × percent of took pleasure trip in the past 12 months × percent of pleasure trips destined for Michigan = 69.9% × 93.8% × 30.9%). These five states alone generated 88% of Michigan pleasure person-trip market in 1995 (i.e., 21,999,375 Michigan pleasure person trips from the five states/25,002,447 Michigan pleasure person-trips). In 1996, Wayne County in Michigan capture 8.2% of total Michigan pleasure trips of at least 100 miles from the five states, thus it received 1,894,654 pleasure person-trips the county from these five states

(22,987,504 × 8.2%). Grand Traverse County in Michigan captured 7.6% of such trips, and it received 1,747,049 pleasure person-trips from these five states in 1996. Applying these market share percentages to the 25,002,447 total pleasure trip estimates to Michigan for the entire U.S. yields estimates of each county's total domestic pleasure trip volume. These examples illustrate the importance of reliable statewide trip volume estimates and hence the value of this study to destination marketing organizations throughout the State of Michigan.

Implications for Individual Businesses

This study has implications for individual businesses in the tourism related industry. They need information on changes in numbers of tourists to asses performance of past investment and to determine future investment (University of Missouri, 1991). The findings of this study and the MSU survey provide information on changes in numbers of tourists for individual businesses in tourism related industry. Michigan pleasure travelers in the MSU survey were asked to report their main type of lodging, activities participated in, and mode of transportation used to a destination in Michigan. These and the findings of this study can provide information on changes in numbers of tourists in lodging business, transportation business, restaurant business, campground business, and other tourism related businesses in the state or in a given county. For example, as shown in Table 29, 43.8% of Michigan pleasure travelers used a hotel/motel/lodge in 1996, 42.3% in 1997, and 44.2% in 1998. These percents and the study findings (i.e., model for estimating statewide pleasure person-trip volume) can

provide information on changes in numbers of tourists who used hotel/motel/lodge in Michigan across these three years.

Table 29. Main type of lodging used on most recent pleasure trip in Michigan by year.

Main Type(s) of Lodging Used	1996	1997	1998
Friend's/relative's home	26.6%	25.3%	27.9%
Hotel/motel/lodge	43.8%	42.3%	44.2%
Bed & Breakfast	2.1%	0.6%	2.6%
Rented cabin/cottage/condominium	7.8%	7.5%	6.9%
Owned cabin/cottage/condominium	7.0%	8.5%	6.9%
County/state/federal campground	2.9%	5.0%	4.5%
Commercial campground	5.0%	5.2%	3.3%
Boat/ship	0.1%	0.8%	0.4%
Other	4.6%	4.7%	3.3%

Limitations of the Study and Recommendations for Further Research

While the MSU survey derives timely and accurate estimates of statewide Michigan pleasure person-trip volume, there are limitations and weaknesses in the MSU survey calibration model such as using traffic counts as the indicator of travel volume changes, sample size, lower response rate and nonresponse bias, and the percent of pleasure person-trips taken by children under 18.

Traffic Counts

As discussed in Chapter IV, the ATS was conducted in 1995, and the 1996 MSU survey was conducted in 1996. Therefore, a need existed to calibrate the 1996 MSU

survey estimates to the ATS estimates by using an indicator of travel volume change in Michigan.

Highway traffic counts were used as an indicator of travel volume change in Michigan in this study. Although highway traffic counts capture over ninety-seven percent of Michigan pleasure travelers, several assumptions were made in using the traffic counts as an indicator of travel volume change in Michigan. Those assumptions were: 1) there is no proportionate change of pleasure trips in total traffic counts across different years; 2) the proportionate change in use of routes covered by recorder stations and those not covered by recorder stations across different years; and 3) there is no proportionate change of traffic passing through Michigan across different years. Therefore, care should be exercised when interpreting the results of the calibration of different survey years due to these assumptions. In the near future, it will be possible to obtain traffic counts from MDOT that excludes traffic by commercial trucks. Changes in such counts would yield a closer approximation of changes in pleasure travel volume in Michigan

Sample Size

As discussed in Chapter III, a total of 9,800 eligible random digit telephone numbers were dialed in the MSU survey sample, and a total of 13,120 eligible addresses were used for the ATS sample in the five states. The MSU survey's sampling error was ±0.99% and the that of the ATS was ±0.86% at the 95% confidence interval. Small sample size causes higher sampling error, and it is one of the factors which determines survey data quality or accuracy. While the sample size used in the MSU survey proved to

be adequate to estimate pleasure trip volume from the five state prime market region, it was deemed too small to yield accurate estimates for trips from individual states in the region to Michigan.

Response Rate

Although the response rate of the MSU survey was within the expected response rate, it was significantly lower than that of the ATS. The lower response rate caused a degree of nonresponse bias in the MSU survey. Lower response rate and nonresponse bias directly affect quality or accuracy of survey data. According to Wiseman and McDonald (1979), there are two major factors related to the response rate. One factor is the training of interviewers. In the MSU survey, all interviewers were trained and supervised. Therefore, this did not likely cause response rate to fall. The second factor is number of call-backs. In the MSU survey, up to three call-backs were made for each household in the sample. Increasing the number of call-backs is suggested to increase the response rate and to decrease nonresponse bias in the MSU survey (Wiseman & McDonald, 1979). Alternately, it may be less costly to implement a carefully designed study of nonrespondents and adjust estimates in accordance with the nonresponse study results.

Percent of Pleasure Trips Taken by Children under 18

As illustrated in Chapter III, the population of the MSU survey consisted of adults age 18 or over who permanently resided in Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin during the study year. Respondents to the MSU survey were asked to

report their personal trip/pleasure trip experiences, and were later asked to report the gender and age of the participants in their immediate travel party as illustrated below:

Beginning with yourself, please give me the gender and age of each person who went on this trip:

	GENDER	*AGE*		*GENDER*	*AGE*
RESPONDENT	_____	_____	*PERSON #2*	_____	_____
PERSON #3	_____	_____	*PERSON #4*	_____	_____
PERSON #5	_____	_____	*PERSON #6*	_____	_____
PERSON #7	_____	_____	*PERSON #8*	_____	_____
PERSON #9	_____	_____	*PERSON #10*	_____	_____

There are two concerns related to childrens' pleasure trips in the MSU survey. First, from the above question, estimates of pleasure person-trips taken by children under 18 can be obtained. However, respondents can report a maximum of only 10 persons. For example, a respondent can report only up to ten persons even if twenty-five persons traveled together. The other fifteen persons are excluded from the report. Second, the MSU survey did not include pleasure trips taken by children without an adult. As illustrated in Table 30, children without an adult took 370,112 pleasure person trips to Michigan from Illinois, Indiana, Michigan, Ohio, and Wisconsin in 1995. This group accounts for 1.6% of total of Michigan pleasure person-trip volume from the five states combined. This suggests that the MSU survey should ask not only for adults' trip or pleasure trip experiences, but also children's trip or pleasure trip experiences, even if the respondent (adult) had not taken a trip or pleasure trip during the past 12 months.

Table 30. Travel party type of Michigan pleasure trips from Michigan's five state prime market region.

Travel party type	Estimated no. pleasure person-trips to MI by travel party type	Percent
One adult no children under 18	4,832,626	22.0%
Two adults no children under 18	8,890,453	40.4%
Three or more adults no children under 18	683,776	3.1%
One adult, children under 18	1,352,178	6.1%
Two adults, children under 18	5,513,619	25.1%
Three or more adults, children under 18	356,611	1.6%
No adult, one child under 18	339,138	1.5%
No adult, two or more children under 18	30,974	0.1%
Total of all parties	21,999,375	100.0%

Source: ATS.

APPENDIX A

MSU SURVEY QUESTIONNAIRE

[ENTER DATE OF INTERVIEW]
Month > __ Day > __ Year >__

Hello, my name is _____. I'm calling from Michigan State University. We're conducting a study to learn how often people in the Midwest take trips. Your household was randomly selected to represent your community. We'd greatly appreciate your help in answering a few questions about trips you've made. May I speak to the adult over 17 years old who will have the next birthday? [IF THIS PERSON IS NOT AT HOME, ASK TO SPEAK TO THE ADULT AT HOME WHO WILL HAVE THE NEXT BIRTHDAY]

We're defining a "trip" as any overnight or day trip to a place at least 50 miles from your home, unless it was taken in commuting to work or school.

[RECORD GENDER OF RESPONDENT] > ___
M=Male F=Female -99=Can't determine

[DOUBLE ENTRY REQUIRED]
1. Have you taken any kind of trip in the past 12 months? > ___

1=Yes
2=No → GO TO QUESTION 130
-99=DK/NR → GO TO QUESTION 130

BEGIN INTRODUCTORY BLOCK

[READ OPTIONS 1-4; IF NECESSARY, PROBE FOR PRIMARY PURPOSE OF TRIP]
2. Was your most recent trip primarily for the purpose of... > ___

1=Visiting friends or relatives;
2=Recreation;
3=Business; or
4=Some other purpose? → ASK QUESTION 3
-99=DK/NR

3. And what would that purpose be?
> _____

We're defining a "pleasure trip" as any overnight or day trip to a place at least 50 miles from your home that was made for your enjoyment, including vacations, weekend getaways, shopping trips, and trips to visit friends or relatives.

4. Have you taken a pleasure trip to Illinois in the past 3 years?

[CONTINUE FOR EACH STATE/PROVINCE: "How about _____?]

1=Yes 2=No -99=DK/NR

Illinois	> ___	I	Ohio	> ___
Indiana	> ___	I	Wisconsin	> ___
Michigan	> ___	I	Ontario	> ___
Minnesota	> ___	I		

[DO NOT READ LIST]

5. During the next 12 months, do you expect to take more, fewer, or about the same number of pleasure trips as you did during the previous 12 months? > ___

1=More 2=Fewer 3=Same -99=DK/NR

[DO NOT READ LIST; ACCEPT UP TO 3 RESPONSES]

6. Where do you turn most often when you need information to help plan a pleasure trip? > ___ ___ ___

ORGANIZATIONS
1=Chamber of commerce
2=Convention/visitors bureau
3=State travel office/ call state 800 number
4=Travel agency

PUBLICATIONS
5=Magazine(s)
6=Travel section of newspaper
7=Mobil Travel Guide
8=AAA/CAA/auto club publications
9=Other travel guide

OTHER
10=Friends/relatives/co-workers
11=CD-ROM
12=Highway welcome centers
13=Internet/on-line service
14=Travel show
15=Other source
16=No source(s)
-99=DK/NR

[READ OPTIONS 1-4]

7. Which one of the following media has been most helpful to you in selecting the destinations you have visited on pleasure trips? > ___

1=Magazines;
2=Newspapers;
3=Television; or
4=Radio?
-99=DK/NR

8. How would you rate the desirability of Illinois as a pleasure trip destination on a scale from 1 to 10, where 1 means "not at all desirable" and 10 means "very desirable?"

[REPEAT FOR EACH REMAINING STATE/PROVINCE:
"How about _____?"]

STATE/ PROVINCE	RATING [1-10]	STATE/ PROVINCE	RATING [1-10]
Illinois	> ___	Ohio	> ___
Indiana	> ___	Wisconsin	> ___
Florida	> ___	Ontario	> ___
Michigan	> ___	Colorado	> ___
Minnesota	> ___		

-99=DK/NR

END INTRODUCTORY BLOCK

BEGIN PROMOTIONAL AWARENESS AND RESPONSE BLOCK

9. In the past 12 months, have you seen or heard any advertisements promoting travel to any destinations? > ___

1=Yes
2=No → GO TO QUESTION 16
-99=DK/NR → GO TO QUESTION 16

[ENTER UP TO 5 PLACES; PROBE FOR STATES ASSOCIATED WITH UNCOMMON PLACES; PROBE: Any other places?]

10. What places have you seen or heard ads for?

> _____
> _____
> _____
> _____
> _____

[DON'T READ]
1=Michigan or a place in Michigan mentioned
2=Only non-Michigan places mentioned → GO TO QUESTION 16
-99=DK/NR → GO TO QUESTION 16
> ___

11. On a scale from 1 to 10, where 1 means "poor" and 10 means "excellent,"how would you rate the quality of the Michigan ads you've seen or heard?

> ___ -99=DK/NR

[DO NOT READ LIST; PROBE TO FIT A CATEGORY]

12. Where did you see or hear the most recent ad promoting travel to Michigan? > ___

1=TV	9=Direct mail advertisement
2=Radio	10=Internet/on-line service
3=Newspaper	11=CD-ROM
4=Magazine	12=Chamber of commerce
5=Billboard/outdoors	13=Convention and visitors bureau
6=Travel agent	14=Highway welcome center
7=Travel show	15=At the destination
8=Travel guide	16=Other
	-99=DK/NR

13. Did this ad promote travel to a specific destination in Michigan or travel to Michigan in general? > ___

1=Travel to a specific destination in Michigan
2=Travel to Michigan in general
-99=DK/NR

14. Did the ad provide a toll-free number that people could call to request further information? > ___

1=Yes 2=No -99=DK/NR

15. Did you contact the organization that sponsored this ad to request additional travel information? > ___

1=Yes 2=No -99=DK/NR

16. Do you recall any of the slogans that are used to promote travel to any states or Canadian provinces? > ___

1=Yes 2=No -99=DK/NR

[DO NOT READ LIST; ACCEPT UP TO 3 RESPONSES]

17. Which slogans do you recall? > ___ ___ ___

1=Illinois: "Illinois, Don't Miss It!"
2=Indiana: "You Could Use A Little Indiana"
3=Indiana: "Wander Indiana"
4=Kentucky: "Kentucky...What You've Been Looking For"
5=Minnesota: "Explore Minnesota"
6=Michigan: "Say Yes to Michigan" [REMEMBER IF THIS IS MENTIONED]
7=Michigan: "Yes Michigan" [REMEMBER IF THIS IS MENTIONED]
8=New York: "I Love New York"
9=Ohio: "Ohio...The Heart of It All"
10=Ontario: "Discover Ontario"
11=Ontario: "Ontario: Yours to Discover"
12=Wisconsin: "Escape to Wisconsin"
13=Wisconsin: "You're Among Friends"
14=Other

18. Other > _____

[DON'T ASK IF MI SLOGAN(S) WAS MENTIONED IN RESPONSE TO ABOVE QUESTION]

19. Have you ever heard the slogan, "Say Yes to Michigan" or "Yes Michigan"? > ___

1=Yes 2=No -99=DK/NR

20. Have you ever heard the slogan, "Michigan: A Destination for All Seasons"? > ___

1=Yes 2=No -99=DK/NR

21. During the past 12 months, have you called any state or province's toll-free number to request travel information? > ___

1=Yes
2=No → GO TO QUESTION 23
-99=DK/NR → GO TO QUESTION 23

[ENTER ALL STATES/PROVINCES MENTIONED; PROBE: Any others?]

22. What states' or provinces' toll-free numbers have you called?

> _____

[DON'T READ]
1=Michigan mentioned → GO TO QUESTION 24
2=Michigan not mentioned
> _

23. Do you know if the State of Michigan has a toll-free number you can call to obtain information on travel in Michigan? > ___

1=Yes 2=No -99=DK/NR

END PROMOTIONAL AWARENESS AND RESPONSE BLOCK

BEGIN MICHIGAN IMAGE BLOCK

[PROBE: What others come to mind?; ACCEPT UP TO 3 RESPONSES]

24. When you think of Michigan as a pleasure trip destination, what positive impressions, if any, come to mind?

> _____
> _____
> _____

[PROBE: What others come to mind?; ACCEPT UP TO 3 RESPONSES]

25. And what negative impressions, if any, come to mind?

> _____
> _____
> _____

[ACCEPT UP TO 3 RESPONSES]

26. What, if any, recreation activities or facilities do you feel are missing in Michigan?

> _____
> _____
> _____

[ACCEPT UP TO 3 RESPONSES]

27. What types of winter recreation opportunities do you feel Michigan is known for?

> _____
> _____
> _____

We'd like to know how much you agree or disagree with some statements about Michigan. Please use a scale from 1 to 10, where 1 means you "do not agree at all" and 10 means you "agree completely."

Michigan. . . -99=DK/NR

28. Is close enough for a weekend getaway.....> ___

29. Has many interesting museums.....> ___

30. Is great for summer outdoor recreation activities.> ___

31. Is an exciting place to visit.....> ___

32. Has a lot of high quality lodging.....> ___

33. Offers much scenic appeal.....> ___

34. Is great for winter outdoor recreation activities.> ___

35. Is a good place to meet friendly people.....> ___

36. Is a place everyone should visit at least once in their lifetime.....> ___

37. Is a safe place to visit.....> ___

38. Offers exciting nightlife and entertainment.....> ___

39. Is a great place for a family vacation.....> ___

40. Is a popular destination with vacationers.....> ___

41. Has many interesting historic sites.....> ___

42. Offers an excellent vacation value for the money..> ___

END MICHIGAN IMAGE BLOCK

Now we'd like to ask you about pleasure trips that you may have taken. Again, we're defining "pleasure trips" as any overnight or day trips to places at least50 miles from your home that were made for your enjoyment, including vacations, weekend getaways, shopping trips, and trips to visit friends or relatives.

[DOUBLE ENTRY REQUIRED]

43. In the past 12 months, have you taken any pleasure trips to any destination? > ___

1=Yes
2=No → GO TO QUESTION 79
-99=DK/NR → GO TO QUESTION 79

[ACCEPT 1-999]

44. About how many pleasure trips have you taken in the past 12 months? > ___

[IF RESPONDENT IS UNABLE TO GIVE A SPECIFIC NUMBER, PROBE:]
In the past 12 months, would you say you've taken. . .
2=1 to 3 pleasure trips?
5=4 to 6 pleasure trips?
8=7 to 9 pleasure trips?
15=10 to 20 pleasure trips?
25=More than 20 pleasure trips?
-99=DK/NR
[NOTE: USE CODES ONLY IF RESPONDENT DOESN'T GIVE A SPECIFIC RESPONSE]

BEGIN CULTURAL HERITAGE TOURISM BLOCK

45. Did you visit any museums, halls of fame, or historic sites on any of the pleasure trips you took in the past 12 months? > ___

1=Yes
2=No → GO TO QUESTION 52
-99=DK/NR → GO TO QUESTION 52

46. Were any of these located in Michigan? > ___

1=Yes
2=No → GO TO QUESTION 50
-99=DK/NR → GO TO QUESTION 52

[PROBE TO FIT CATEGORIES; ACCEPT UP TO 5 RESPONSES]

47. What types of museums, halls of fame, or historic sites did you visit in Michigan? > ___ ___ ___ ___ ___

MUSEUMS/HALLS OF FAME	HISTORIC SITES		
1=Art museum	8=Battlefield	15=Home	
2=Children's museum	9=Bridge	16=Lighthouse	
3=Hall of Fame	10=Cemetery	17=Ship	
4=Historical museum	11=Church	18=Town	
5=Maritime museum	12=Farm	19=Underwater preserve	
6=Natural history museum	13=Fishery	20=Other	
7=Science museum	14=Fort		-99=DK/NR

48. Other > _____

49. On these pleasure trips, did you visit any museums, halls of fame, or historic sites in any other states or countries? > ___

1=Yes
2=No → GO TO QUESTION 52
-99=DK/NR → GO TO QUESTION 52

[ACCEPT UP TO 5 RESPONSES; PROBE TO FIT CATEGORIES]

50. What types of museums, halls of fame, or historic sites did you visit in other states or countries? > ___ ___ ___ ___ ___

MUSEUMS/HALLS OF FAME		HISTORIC SITES	
1=Art museum	8=Battlefield	15=Home	
2=Children's museum	9=Bridge	16=Lighthouse	
3=Hall of Fame	10=Cemetery	17=Ship	
4=Historical museum	11=Church	18=Town	
5=Maritime museum	12=Farm	19=Underwater preserve	
6=Natural history museum	13=Fishery	20=Other	
7=Science museum	14=Fort	-99=DK/NR	

51. Other
> _____

END CULTURAL HERITAGE TOURISM BLOCK

BEGIN BASIC PLEASURE TRIP PROFILE BOLCK

52. Now I'd like to ask you about your most recent pleasure trip.

[PROBE FOR MONTH AND DAY; ENTER NUMERICAL VALUES FOR MONTH AND DAY; IF NECESSARY, PROBE FOR BEST GUESS OF DAY]
Approximately when did this trip begin -- the month and day?

1=January	4=April	7=July	10=October
2=February	5=May	8=August	11=November
3=March	6=June	9=September	12=December

MONTH > ___ DAY > ___ -99=DK/NR

[ACCEPT UP TO 3 RESPONSES; PROBE FOR SPECIFIC PURPOSE(S), ESPECIALLY IF RESPONDENT SAYS "VACATION"]

53. What was the purpose or purposes of this trip?
> _____
> _____
> _____

[ASK IF MORE THAN 1 PURPOSE MENTIONED; PROBE FOR SPECIFIC PURPOSE, ESPECIALLY IF RESPONDENT SAYS "VACATION"]

54. What would you say was the primary purpose of this trip?
> _____

[IF RESPONDENT WAS ON A GROUP TOUR, PROBE FOR SIZE OF IMMEDIATE TRAVEL PARTY AS OPPOSED TO SIZE OF ENTIRE GROUP]

55. How many persons, including yourself, were in your immediate travel party? > ___ -99=DK/NR

[IF NECESSARY, PROBE FOR BEST GUESS OF AGE]

56. Beginning with yourself, please give me the gender and age of each person who went on this trip:

M=MALE F=FEMALE -99=DK/NR

	GENDER	AGE		GENDER	AGE
RESPONDENT	> ___	> ___	PERSON #2	> ___	> ___
PERSON #3	> ___	> ___	PERSON #4	> ___	> ___
PERSON #5	> ___	> ___	PERSON #6	> ___	> ___
PERSON #7	> ___	> ___	PERSON #8	> ___	> ___
PERSON #9	> ___	> ___	PERSON #10	> ___	> ___

57. Did your immediate travel party consist of family members only? > ___

1=Yes 2=No -99=DK/NR

58. Was this an overnight or day trip? > ___

1=Overnight
2=Day trip → GO TO QUESTION 63
-99=DK/NR → GO TO QUESTION 63

[ACCEPT 1-999]

59. How many nights were you away from home? > ___ -99=DK/NR

[ACCEPT 0-999; IF 0, SKIP NEXT QUESTION]

60. How many nights were spent in the state containing the main destination of this trip? > ___ -99=D/NR

[ACCEPT 0-999]

61. While you were in the state containing the main destination of this trip, about how much, if anything, did you spend per night on lodging in hotels, motels, Bed & Breakfasts, or rental cabins?
> $_____ -99=DK/NR

[DO NOT READ LIST UNLESS NECESSARY TO STIMULATE RESPONSES]

62. What was the main type of lodging you used? > ___

1=Friend or relative's home
2=Hotel, motel, or lodge
3=Bed & Breakfast
4=Rented cabin, cottage, or condominium
5=Owned cabin, cottage, or condominium
6=County, state, or federal campground
7=Commercial campground (e.g., KOA)
8=Boat/ship
9=Other
-99=DK/NR

[READ LIST]

63. Which, if any, of the following recreation activities did you participate in? > ___

1=Yes 2=No -99=DK/NR

Attend a festival or event? .....> ___
Shopping? .....> ___
Casino gaming? .....> ___
Nightlife? .....> ___
Visit a museum or hall of fame? .....> ___
Visit an historic site? .....> ___
Visit some other type of attraction? .....> ___
Fall color touring outside of traveling to and from your destination? .....> ___
General touring or driving for pleasure? .....> ___
Outdoor recreation? .....> ___

[ACCEPT UP TO 5 RESPONSES]
[ASK IF OUTDOOR RECREATION AFFIRMED ABOVE]

64. What outdoor recreation activities did you participate in?

> _____
> _____
> _____
> _____
> _____

END BASIC PLEASURE TRIP PROFILE BLOCK

[PROBE FOR CITY/PLACE AND STATE/PROVINCE/COUNTRY. IF NECESSARY, ASK FOR CITY/PLACE FARTHEST FROM HOME]

65. What was the main destination of this trip?

City/Place: > _____
State/Province/Country: > _____

[DON'T READ; DOUBLE ENTRY REQUIRED]
1=Michigan destination
2=Non-Michigan destination → GO TO QUESTION 78
> _

BEGIN SUPPLEMENTAL MICHIGAN PLEASURE TRIP PROFILE BLOCK

[USE NAME OF DESTINATION FROM ABOVE QUESTION IN BLANK]
[ACCEPT 50-9999]

66. About how many miles did you travel to get to _____? >

_____ miles -99=DK/NR

[USE 1ST RECREATION ACTIVITY LISTED IN RESPONSE TO QUESTION 64 IN BLANK]

67. How would you rate the quality of Michigan's _____ opportunities on a scale from 1 to 10, where 1 means "poor" and 10 means "excellent"?

> ___ -99=DK/NR

[ACCEPT 0-999999]

68. What would be your best estimate of how much your immediate travel party spent altogether on this trip while in Michigan?
> $_____ -99=DK/NR

69. Was this a vacation trip? > ___

1=Yes 2=No -99=DK/NR

[ENTER RESPONSE, E.G., 90 DAYS, 2 WEEKS, 3 MONTHS]

70. About how far in advance of this trip did you make a final decision about where to go? > _____

71. Were any of the travel arrangements for this trip made by a travel agent? > ___

1=Yes 2=No -99=DK/NR

72. For this trip, did you purchase a package, for which you paid one price, that included at least one night of lodging? > ___

1=Yes 2=No -99=DK/NR

[DO NOT READ LIST; ACCEPT UP TO 3 RESPONSES]

73. What types of transportation did you use? > ___ ___ ___

1=Car/truck without camping equipment
2=Car/truck with camping equipment
3=Self-contained recreation vehicle
4=Rental car
5=Airplane
6=Train
7=Ship/boat
8=Motorcycle
9=Bicycle
10=Motorcoach/Bus
11=Other
-99=DK/NR

74. Other
> _____

[ASK ONLY IF MOTORCOACH/BUS WAS MENTIONED IN RESPONSE TO QUESTION 73]

75. Was this a motorcoach tour? > ___

1=Yes 2=No -99=DK/NR

76. What did you most enjoy about this trip?
> _____

77. And what did you least enjoy about this trip?
> _____

GO TO QUESTION 107

END SUPPLEMENTAL MICHIGAN PLEASURE TRIP PROFILE BLOCK

[DOUBLE ENTRY REQUIRED]

78. Was a place in Michigan the main destination of any of the pleasure trips you've taken in the past 12 months? > ___

1=Yes → GO TO QUESTION 81
2=No
-99=DK/NR

79. Have you ever taken a pleasure trip to a place in Michigan? > ___

1=Yes 2=No → GO TO QUESTION 121

[PROBE FOR YEAR; ENTER LAST TWO DIGITS OF YEAR]

80. When was the last time you took a pleasure trip to a place in Michigan?
> 19__ -99=DK/NR

BEGIN FULL MICHIGAN PLEASURE TRIP PROFILE BLOCK

81. Now I'd like to ask you about your most recent pleasure trip in Michigan as opposed to your most recent trip in general. I'll be asking some of the same questions I asked before, but now I'd like you to answer with regard to your most recent pleasure trip in Michigan.

[PROBE FOR MONTH AND DAY; RECORD NUMERICAL VALUES FOR MONTH AND DAY; IF NECESSARY, PROBE FOR BEST GUESS OF DAY]
Approximately when did this trip begin -- the month and day?

1=January	4=April	7=July	10=October
2=February	5=May	8=August	11=November
3=March	6=June	9=September	12=December

MONTH > __ DAY > __ -99=DK/NR

[ACCEPT UP TO 3 RESPONSES; PROBE FOR SPECIFIC PURPOSE(S), ESPECIALLY IF RESPONDENT SAYS "VACATION"]

82. What was the purpose or purposes of this trip?
> _____
> _____
> _____

[ASK IF MORE THAN 1 PURPOSE MENTIONED; PROBE FOR SPECIFIC PURPOSE, ESPECIALLY IF RESPONDENT SAYS "VACATION"]

83. What would you say was the primary purpose of this trip?
> _____

[IF RESPONDENT WAS ON A GROUP TOUR, PROBE FOR SIZE OF IMMEDIATE TRAVEL PARTY AS OPPOSED TO SIZE OF ENTIRE GROUP; ACCEPT 1-99]

84. How many persons, including yourself, were in your immediate travel party? > ___

[IF NECESSARY, PROBE FOR BEST GUESS OF AGE]

85. Beginning with yourself, please give me the gender and age of each person who went on this trip:

M=MALE F=FEMALE -99=DK/NR

	GENDER	AGE		GENDER	AGE
RESPONDENT	> ___	> ___	PERSON #2	> ___	> ___
PERSON #3	> ___	> ___	PERSON #4	> ___	> ___
PERSON #5	> ___	> ___	PERSON #6	> ___	> ___
PERSON #7	> ___	> ___	PERSON #8	> ___	> ___
PERSON #9	> ___	> ___	PERSON #10	> ___	> ___

86. Did your immediate travel party consist of family members only? > ___

1=Yes 2=No -99=DK/NR

87. Was this an overnight or day trip? > ___

1=Overnight
2=Day trip → GO TO QUESTION 92
-99=DK/NR → GO TO QUESTION 92

[ACCEPT 1-999]

88. How many nights were you away from home? > ___

[ACCEPT 0-999, IF 0, SKIP NEXT QUESTION]

89. How many nights were spent in Michigan? > ___ -99=DK/NR

[ACCEPT 0-999]

90. While in Michigan, about how much, if anything, did you spend per night on lodging in hotels, motels, Bed & Breakfasts, or rental cabins? > $_____ -99=DK/NR

[DO NOT READ LIST UNLESS NECESSARY TO STIMULATE RESPONSES]

91. What was the main type of lodging you used? > ___

1=Friend's or relative's home
2=Hotel, motel, or lodge
3=Bed & Breakfast
4=Rented cabin, cottage, or condominium
5=Owned cabin, cottage, or condominium
6=County, state, or federal campground
7=Commercial campground (e.g., KOA)
8=Boat/ship
9=Other
-99=DK/NR

[READ LIST]

92. Which, if any, of the following recreation activities did you participate in while you were in Michigan?

1=Yes 2=No -99=DK/NR

Attend a festival or event? .....> ___
Shopping? .....> ___
Casino gaming? .....> ___
Nightlife? .....> ___
Visit a museum or hall of fame? .....> ___
Visit an historic site? .....> ___
Visit some other type of attraction? .....> ___
Fall color touring outside of traveling to and from your destination? .....> ___
General touring or driving for pleasure? .....> ___
Outdoor recreation? .....> ___

[ACCEPT UP TO 5 RESPONSES]

93. What outdoor recreation activities did you participate in while you were in Michigan?

> _____
> _____
> _____
> _____
> _____

[USE 1ST RECREATION ACTIVITY LISTED IN RESPONSE TO QUESTION 93 IN BLANK]

94. How would you rate the quality of Michigan's _____ opportunities on a scale from 1 to 10, where 1 means "poor" and 10 means "excellent"?

> ___ -99=DK/NR

[PROBE FOR CITY/PLACE. IF NECESSARY, ASK FOR CITY/PLACE FARTHEST FROM HOME]

95. What was the main destination of this trip?

City/Place in Michigan: > _____

[USE NAME OF DESTINATION FROM ABOVE QUESTION IN BLANK]

96. About how many miles did you travel to get to _____?

> _____ miles -99=DK/NR

[ACCEPT 0-999999]

97. What would be your best estimate of how much your immediate travel party spent altogether on this trip while in Michigan?

> $_____ -99=DK/NR

98. Was this a vacation trip? > ___

1=Yes 2=No -99=DK/NR

[ENTER RESPONSE, E.G., 90 DAYS, 2 WEEKS, 3 MONTHS]

99. About how far in advance of this trip did you make a final decision about where to go? > _____

100. Were any of the travel arrangements for this trip made by a travel agent? > ___

1=Yes 2=No -99=DK/NR

101. For this trip, did you purchase a package, for which you paid one price, that included at least one night of lodging? > ___

1=Yes 2=No -99=DK/NR

[DO NOT READ LIST; ACCEPT UP TO 3 RESPONSES]

102. What types of transportation did you use? > ___ ___ ___

1=Car/truck without camping equipment
2=Car/truck with camping equipment
3=Self-contained recreation vehicle
4=Rental car
5=Airplane
6=Train
7=Ship or boat
8=Motorcycle
9=Bicycle
10=Motorcoach/Bus
11=Other
-99=DK/NR

103. Other
> _____

[ASK ONLY IF MOTORCOACH/BUS WAS MENTIONED IN RESPONSE TO QUESTION 102]

104. Was this a motorcoach tour? > ___

1=Yes 2=No -99=DK/NR

105. What did you most enjoy about this trip?
> _____

106. And what did you least enjoy about this trip?
> _____

END FULL MICHIGAN PLEASURE TRIP PROFILE BLOCK

BEGIN INFLUENCE BLOCK

107. Before you left home for this most recent pleasure trip in Michigan, did you see or hear any advertisements about travel in Michigan? > ___

1=Yes
2=No → GO TO QUESTION 120
-99=DK/NR → GO TO QUESTION 120

108. Did you see or hear 1 ad or more than 1 ad about travel in Michigan? > ___

1=1 ad
2=More than 1 ad → [USE THE PHRASE "THESE ADS" RATHER THAN "THIS AD" IN QUESTIONS IN THIS SECTION]
-99=DK/NR

[DO NOT READ LIST; PROBE FOR ANSWERS]

109. Where did you see or hear this (these) ad(s) about travel in Michigan? > ___

1=TV
2=Radio
3=Newspaper
4=Magazine
5=Billboard/outdoors
6=Travel agent
7=Travel show
8=Direct mail advertisement
9=Internet/on-line service
10=CD-ROM
11=Chamber of commerce
12=Convention and visitors bureau
13=Highway welcome center
-99=DK/NR

110. Did this (these) ad(s) have no influence, a partial influence, or a primary influence on your decision to travel in Michigan? > ___

1=No influence
2=Partial influence
3=Primary influence
-99=DK/NR

111. Did this (these) ad(s) promote travel to a specific destination in Michigan or travel to Michigan in general? > ___

1=Travel to a specific destination in Michigan
2=Travel to Michigan in general → GO TO QUESTION 113
-99=DK/NR → GO TO QUESTION 113

112. Which destination in Michigan?
> _____

113. Did the (these) ad(s) include the Michigan travel slogan? > ___

1=Yes
2=No → GO TO QUESTION 115
-99=DK/NR → GO TO QUESTION 115

114. What do you remember the slogan to be? > ___

1="Say Yes to Michigan"
2="Yes Michigan"
3=Other
-99=DK/NR

115. Did you contact the organization that sponsored this (these) ad(s) to request additional travel information? > ___

1=Yes → GO TO QUESTION 118
2=No
-99=DK/NR

116. Did you contact any other organization to obtain travel information about Michigan? > ___

1=Yes
2=No → GO TO QUESTION 120
-99=DK/NR → GO TO QUESTION 120

117. What organization did you contact?
> _____

118. Did you receive the information you requested before you left home for your trip? > ___

1=Yes
2=No → GO TO QUESTION 120
-99=DK/NR → GO TO QUESTION 120

119. Did the information on Michigan you received have no influence, a partial influence, or a primary influence on your decision to travel in Michigan? > ___

1=No influence
2=Partial influence
3=Primary influence
-99=DK/NR

END INFLUENCE BLOCK

[ACCEPT 1-999]

120. About how many pleasure trips to places in Michigan have you taken in the past 12 months? > ___ pleasure trips

[IF RESPONDENT IS UNABLE TO GIVE A SPECIFIC NUMBER, PROBE:]
In the past 12 months, would you say that you've taken. . .
2=1 to 3 pleasure trips?
5=4 to 6 pleasure trips?
8=7 to 9 pleasure trips?
15=10 to 20 pleasure trips?
25=More than 20 pleasure trips?
-99=DK/NR
[NOTE: USE CODES ONLY IF RESPONDENT DOESN'T GIVE A SPECIFIC RESPONSE]

BEGIN MICHIGAN TRAVEL EXPECTATIONS BLOCK

121. During the next 12 months, do you plan to take any pleasure trips to places in Michigan? > ___

1=Yes
2=No → GO TO QUESTION 124
-99=DK/NR

[DO NOT READ LIST]

122. Compared to the preceding 12 months, during the next 12 months do you expect to take more, fewer, or about the same number of pleasure trips in Michigan? > ___

1=More 2=Fewer 3=Same -99=DK/NR

123. Do you plan to take any pleasure trips in Michigan. . .

1=Yes 2=No -99=DK/NR

This fall? > ___

How about this Thanksgiving? > ___

How about this Christmas or New Years? > ___

END MICHIGAN TRAVEL EXPECTATIONS BLOCK

BEGIN MICHIGAN TRIP VOLUME BLOCK

124. Now we'd like to find out how many trips you may have recently taken in Michigan. Here we'd like to get information on any kind of trips you may have taken in Michigan, including business trips.

[RESPONSE SHOULD INCLUDE ANY TRIPS RESPONDENT MAY HAVE ALREADY TOLD YOU ABOUT] [ACCEPT 0-31; IF 0 OR DK/NR. GO TO QUESTION 130] How many trips of any kind to places in Michigan have you taken that occurred wholly or partially during [MONTH PRECEDING CURRENT MONTH]?

> _____ trips -99=DK/NR

[IF MORE THAN 1 TRIP WAS TAKEN, SAY: I'd like to ask you about the most recent trip that occurred wholly or partially during [MONTH PRECEDING CURRENT MONTH]

125. Was this trip primarily for the purpose of conducting business or attending a convention, seminar, or meeting? > ___

1=Yes 2=No -99=DK/NR

126. Was this trip primarily for some purpose other than business or pleasure, such as moving a household, or going to a funeral or wedding in another city? > ___

1=Yes
2=No → GO TO QUESTION 130
-99=DK/NR → GO TO QUESTION 130

127. Was this an overnight or day trip? > ___

1=Overnight
2=Day trip → GO TO QUESTION 130
-99=DK/NR → GO TO QUESTION 130

[ACCEPT 0-999]
128. How many nights were spent in Michigan? > ___ -99=DK/NR

[DO NOT READ LIST UNLESS NECESSARY TO STIMULATE RESPONSES]
129. What was the main type of lodging you used? > ___

1=Friend or relative's home
2=Hotel, motel, or lodge
3=Bed & Breakfast
4=Rented cabin, cottage, or condominium
5=Owned cabin, cottage, or condominium
6=County, state, or federal campground
7=Commercial campground (e.g., KOA)
8=Boat/ship
9=Other
-99=DK/NR

END MICHIGAN TRIP VOLUME BLOCK

BEGIN PERSONAL/HOUSEHOLD CHARACTERISTICS BLOCK

130. To conclude, we'd like to ask just a few questions to help us classify your answers.

In what city do you live? > _____

131. And your state or province? > _____

132. And your zip or postal code? > _____

133. In what county do you live? > _____

[READ LIST]
134. Do any of the following types of persons live in your household?

1=Yes 2=No -55=Refused -99=DK/NR

Pre-school child? > ___
School-age child under age 18? > ___
Senior citizen? > ___
Handicapped person? > ___

[ACCEPT 1-99]
135. How many persons, including yourself, live in your household?
> ___

[ACCEPT 0-99]
136. How many full-time wage-earners live in your household? > ___
-55=Refused -99=DK/NR

[READ LIST; ALLOW UP TO 2 RESPONSES]

137. Are you..... > ___ ___

1=Employed full-time; 5=A homemaker;
2=Employed part-time; 6=A student; or
3=Retired; 7=In some other employment situation?
4=Not employed; -99=DK/NR

138. What racial or ethnic group do you belong to?
> _____

139. The median household income is $31,000. Would you say your total household income before taxes in 1994 was above or below the median? > ___

1=Above
2=Below → GO TO QUESTION 141
-55=Refused → GO TO QUESTION 141
-99=DK/NR → GO TO QUESTION 141

140. Was your total household income above $50,000? > ___

1=Yes 2=No -55=Refused -99=DK/NR

END PERSONAL/HOUSEHOLD CHARACTERISTICS BLOCK

141. That's all the questions I have. Would you like to know the number to call for free information on travel in Michigan? > ___

1=Yes → The number is 1-800-5432YES.
Thank you very much for your time!!!
Have a good evening! [TERMINATE]

2=No → Thank you very much for your time!!!
Have a good evening! [TERMINATE]

INTERVIEWER CODE NUMBER > _____

APPENDIX B

TravelScope QUESTIONNAIRE CARD

☐ Please complete for each **pleasure or business trip** taken in the month of **JANUARY** — where you and/or other members of your household (HH) traveled **50 miles or more, one-way, away from home** or **spent one or more overnights. DO NOT** include trips commuting to/from work or school or trips taken as a flight attendant or vehicle operator. **# OF TRIPS: ___** If you **DID NOT TRAVEL** for business or pleasure, check here ▸☐, and return card.

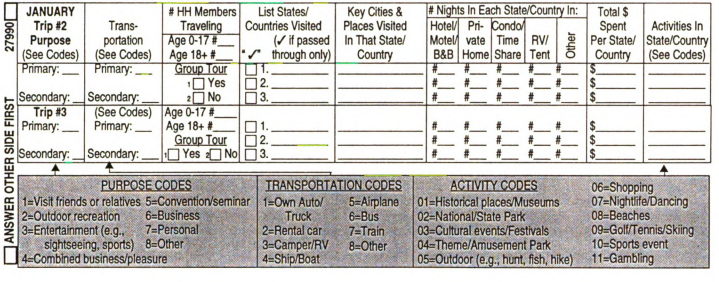
27990 (If more than 3 trips were taken, please record the information for your 3 most recent trips. Record Trips #2 and #3 on Side 2.)

JANUARY Trip #1 Purpose (See Codes)	Trans-portation (See Codes)	# HH Members Traveling Age 0-17 #___ Age 18+ #___	List States/ Countries Visited (✓ if passed through only)	Key Cities & Places Visited In That State/ Country	# Nights In Each State/Country In: Hotel/ B&B	Pri-vate Home	Condo/ Time Share	RV/ Tent	Other	Total $ Spent Per State/ Country	Activities In State/Country (See Codes)
Primary: ___	Primary: ___	Group Tour 1☐ Yes 2☐ No	1. _____	_____	#___	#___	#___	#___	#___	$_____	_____
Secondary: ___	Secondary: ___		2. _____	_____	#___	#___	#___	#___	#___	$_____	_____
			3. _____	_____	#___	#___	#___	#___	#___	$_____	_____

ANSWER THIS SIDE FIRST

PURPOSE CODES		TRANSPORTATION CODES		ACTIVITY CODES	
1=Visit friends or relatives	5=Convention/seminar	1=Own Auto/ Truck	5=Airplane	01=Historical places/Museums	06=Shopping
2=Outdoor recreation	6=Business	2=Rental car	6=Bus	02=National/State Park	07=Nightlife/Dancing
3=Entertainment (e.g., sightseeing, sports)	7=Personal	3=Camper/RV	7=Train	03=Cultural events/Festivals	08=Beaches
4=Combined business/pleasure	8=Other	4=Ship/Boat	8=Other	04=Theme/Amusement Park	09=Golf/Tennis/Skiing
				05=Outdoor (e.g., hunt, fish, hike)	10=Sports event
					11=Gambling

CONTINUE ⇨


27990
JANUARY
Trip #2
Purpose
(See Codes)
Trans-
portation
(See Codes)
HH Members
Traveling
Age 0-17 #___
Age 18+ #___
List States/
Countries Visited
(✓ if passed
through only)
Key Cities &
Places Visited
In That State/
Country
Nights In Each State/Country In:
Hotel/
Motel/
B&B
Pri-
vate
Home
Condo/
Time
Share
RV/
Tent
Other
Total $
Spent
Per State/
Country
Activities In
State/Country
(See Codes)
Primary: ___
Secondary: ___
Group Tour
1 Yes
2 No
1.
2.
3.
#___ #___ #___ #___ #___
$_____
Trip #3
Primary: ___
Secondary: ___
(See Codes)
Age 0-17 #___
Age 18+ #___
Group Tour
1 Yes 2 No
ANSWER OTHER SIDE FIRST
PURPOSE CODES
1=Visit friends or relatives
2=Outdoor recreation
3=Entertainment (e.g., sightseeing, sports)
4=Combined business/pleasure
5=Convention/seminar
6=Business
7=Personal
8=Other
TRANSPORTATION CODES
1=Own Auto/Truck
2=Rental car
3=Camper/RV
4=Ship/Boat
5=Airplane
6=Bus
7=Train
8=Other
ACTIVITY CODES
01=Historical places/Museums
02=National/State Park
03=Cultural events/Festivals
04=Theme/Amusement Park
05=Outdoor (e.g., hunt, fish, hike)
06=Shopping
07=Nightlife/Dancing
08=Beaches
09=Golf/Tennis/Skiing
10=Sports event
11=Gambling

APPENDIX C

THE AMERICAN TRAVEL SURVEY QUESTIONNAIRE

1995

AMERICAN TRAVEL SURVEY

QUESTIONNAIRE FACSIMILE

SECTION A. INTRODUCTION

A1. Hello. This is (interviewer's name) from the U.S. Census Bureau. May I please speak to (respondent's name)?

1 This is correct person
2 Correct person called to the phone
3 Person not home now or not available now [END INTERVIEW]
4 Person unknown at this number [END INTERVIEW]
5 Person no longer lives there (includes deceased) [END INTERVIEW]
6 Noninterview [END INTERVIEW]

A2. I'm calling with regard to the American Travel Survey. We are calling households to ask questions about such things as where and when people travel, the kinds of transportation they use and the purposes of their trips. Before I go any further, I would like to verify that I have reached the correct telephone number and address. Have I reached (number)?

1 Yes
2 No [END INTERVIEW]
3 Refused to verify telephone number

A3. I need to verify that the address there is still (address).

1 SAME address
2 NOT same address [END INTERVIEW]
3 Haven't moved, but address has changed [OBTAIN NEW ADDRESS]
R Refused to verify address [END INTERVIEW]

SECTION B. HOUSEHOLD ROSTER

B1. I'm ready to begin the interview with questions about who lives at this address, their ages, how they're related to each other, and other information of that sort. Then, I will ask questions about household travel. First, I will ask you about YOU. Then I will ask questions about other members of your household.

What are the names of all persons living or staying at this address? Start with the name of the person, or one of the persons, who owns or rents this home.

[LIST FIRST AND LAST NAME OF ALL HOUSEHOLD MEMBERS]

B2. (Do you/Does name) usually live at this address?

1 Yes
2 No

B3. [ASK IF NOT APPARENT] (Are you/Is name) male or female?

1 Male
2 Female

B4. What is(name)'s relationship to (first person listed)?

2 Husband/wife
3 Child of reference person (include adopted and step children)
4 Brother/sister
5 Father/mother
6 Other relative of reference person
7 Non-relative of reference person

Bureau of Transportation Statistics, U.S. Department of Transportation

B5. I have listed (name/s). I need to be certain that I have listed everyone who usually lives at this address, so just to double check, let me ask you, have I missed...

- any babies or small children?
- any lodgers, boarders or persons you employ who live at this address?
- anyone who usually lives at this address but is away now, traveling for work or business, on vacation, or at school or in a hospital?
- anyone else who usually lives at this address?

1 Yes [repeat B1-B4]
2 No

SECTION C. DEMOGRAPHIC INFORMATION

(REPEAT FOR EACH PERSON LISTED IN PREVIOUS SECTION)

C1. What is (your/name's) date of birth?

Month _____, day _____, year _____

C2. That would make (you/him/her) (age). Is that correct?

1 Yes, age is correct
2 No, age is not correct [ENTER CORRECT AGE]

C3. (Are you/is (name)) now married, widowed, divorced, separated or single/never married?

1 Married
2 Widowed
3 Divorced
4 Separated
5 Never married

C4. (Are you/is name) of Spanish or Hispanic origin?

1 Yes
2 No

C5. What is (your/(name's)) race?

1 White
2 Black
3 American Indian, Eskimo, or Aleut
4 Asian or Pacific Islander
5 Other race

C6. What is the highest level of school (you/name) completed or the highest degree (you/name) received?

11 Less than high school graduate
12 High school graduate (including equivalent, such as GED)
21 Some college, but not a college graduate
22 Associate degree in college
24 Bachelor's degree (For example BA, AB, BS)
25 Some graduate or professional school, but no degree
26 Graduate or professional school degree (for example, MA, MS. MBA, or MD, DDS, PhD, EdD, JD)

C7. What type of structure do you live in, a house, apartment, mobile home, or some other type?

1 House, townhouse, duplex, modular home
2 Apartment, flat
3 Mobile home
4 Nontransient hotel, motel, etc.
5 Permanent in transient hotel, motel, etc.
6 Rooming house
7 Other

C8. Are your living quarters ...

1 Owned or being bought by you or someone in your household?
2 Rented for cash rent?
3 Occupied without payment of cash rent?

SECTION D. TRIP SCREENING QUESTIONS

D1. I will ask you a series of questions about ALL TRIPS taken by the people in your household that ENDED between January 1, 1995 and today.

Did you or members of your household take any trips of 75 miles or more from home that ended between January 1 and today?

1 Yes
2 No
3 Don't know/not sure

D2. Did you or any member of your household regularly commute 75 miles or more one way to work or school between January 1 and today?

1 Yes [GO TO COMMUTE QUESTIONS]
2 No

D3. If you or members of your household completed the travel diary calendar that we sent you early this year or if you have kept track of your trips on some other form, please take time now to get your diary calendar or that information.

D4. How many trips of 75 miles or more from home did (you/name) take that ended between January 1, 1995 and today?

_____ [IF 0 SKIP TO E1]

D5. What was the main destination or the farthest place you reached?

City, town, or place _____
State or foreign country _____

D6. On what date did (you/name) leave home on (your/his/her) trip to (destination)?

Month _____, day _____, year _____

D7. On what date did (you/name) arrive back home from (your/his/her) trip to (destination)?

Month _____, day _____, year _____

D8. How many people went with (you/name) on the trip?

_____

D9. Were any of those people living with (you/name) at the time (you/he/she) took the trip?

1 Yes
2 No [SKIP TO D11]

D10. Which people who were living with (you/name) went with (you/name) on this trip?

First name _____
Last name _____

[LIST ALL HOUSEHOLD MEMBERS WHO WENT ON TRIP]

D11. Did (you/name) make the same trip to (destination) any other time between January 1 and today?

[IF RESPONDENT ASKS, READ: We consider two or more trips that a household member took to be the same if the lodging, mode of transportation, and main reason for the trip are the same.]

1 Yes
2 No [SKIP TO D14]

D12. Not counting the trip for which you just reported the dates, how many trips did you take to (destination)?

_____

D13. On what dates did (you/name) take (that trip/the first trip/the next trip)?

Begin date: Month _____, day _____, year _____
End date: Month _____, day _____, year _____

D14. Do you have detailed knowledge of (name) travels or do you have a completed diary listing information about (name's) travels?

1 Yes
2 No [SKIP TO NEXT PERSON]
3 Did not travel

D15. The next few questions are about (name's) travels.

NOT COUNTING the trip(s) already reported for other household members, how many trips of 75 miles or more from home did (name) take that ended between

January 1, 1995 and today?

_____

[REPEAT QUESTION D5 THROUGH D15 FOR EACH TRIP THAT THE RESPONDENT HAS KNOWLEDGE OF]

SECTION E. COMMUTING TRIPS

E1. Did (you/name) regularly commute 75 miles or more one way to work or school since January 1, 1995?

1 Yes
2 No

E2. What was the destination of (your/his/her) commuting trip?

City, town, or place _____
State or foreign country _____

E3. During which months did (you/name) take this commuting trip?

_____ January _____ February
_____ March

E4. How many days per month did (you/name) usually take this regular commuting trip...

in January? _____
in February? _____ _____ etc.

E5. What was the MAIN type of transportation that (you/name) used for the commute?

1 Car, pickup truck, or van
2 Other truck
3 Rental car, truck, or van
4 Commercial airplane
5 Corporate/personal airplane
6 City to city bus
7 Charter bus or tour bus
8 School bus
9 Train
10 Taxi
11 Ship or boat
12 Cruise ship
13 Passenger line or ferry
14 Recreational boat, sailboat, pleasure boat or yacht
15 Recreational vehicle or motor home
16 Bicycle
17 Motorcycle, moped, or motor bicycle
18 Other type of transportation

SECTION F. TRIP DETAIL

F1. The next few questions are about the trip to (destination) that (you/name) took from (leave date) to (return date).

We have the trip to (destination) beginning on (leave date) and ending on (return date) for a total of (number) nights away from home. Is that correct?

1 Yes
2 No, change leave date
3 No, change return date

F2. How many of those nights did you stay in (destination)?

_____ nights

F3. While in (destination), in what types of lodging did (you/name) stay?

[ENTER ALL TYPES OF LODGING REPORTED]

1 Friend's or relative's home
2 Hotel, motel, bed & breakfast, resort
3 Rented cabin, condominium, or vacation home
4 Owned cabin, condominium, vacation home, or timeshare
5 Camper, trailer, recreational vehicle, etc.
6 Corporate owned housing
7 Conference center (where only participants may stay)
8 Military housing
9 Dormitory
10 Passenger in car, plane, cruise ship, train,etc.
11 Slept in parked automobile, van, station wagon, etc.
12 Health spa, health resort
13 Work or holiday camp, tent, etc.
14 Youth hostel
15 YMCA, shelter
16 Other

F4. Tell me ALL the types of transportation that (you/name) used for a distance of 75 miles or more during the entire trip to (destination) and the return trip home?

[ENTER ALL TYPES OF TRANSPORTATION REPORTED]

1 Car, pickup truck, or van
2 Other truck
3 Rental car, truck, or van
4 Commercial airplane [ASK 4A AND 4B]

4A. Did you use regularly scheduled airline service or a charter flight?

1 regularly scheduled
2 charter flight
3 both

4B. Was the airline a U.S. or a foreign carrier?

1 U.S.
2 foreign
3 both

5 Corporate/personal airplane
6 City to city bus
7 Charter bus or tour bus
8 School bus
9 Train
10 Taxi
11 Ship or boat
12 Cruise ship
13 Passenger line or ferry
14 Recreational boat, sailboat, pleasure boat or yacht
15 Recreational vehicle or motor home
16 Bicycle
17 Motorcycle, moped, or motor bicycle
18 Other type of transportation

F5. [IF MORE THAN ONE TYPE OF TRANSPORTATION REPORTED IN F4] What type of transportation did you use for most of the distance to travel from home to (destination)?
[REPEAT LIST OF TRANSPORTATION MODES]

F6. [IF AIRPLANE, TRAIN, BUS, SHIP/CRUISE SHIP]
Please tell me the name of the (airport/station/pier/terminal) that (you/name) departed from.

Airport, etc. _____
City _____
State _____

F7. [IF AIRPLANE, TRAIN, BUS, SHIP, CRUISE SHIP TRIP]
What type of transportation did (you/name) use to get to the (airport/bus station/train station/pier or ferry terminal) to begin (your/his/her) trip?

1 Own car, truck, or van—parked at the (airport/station/pier or terminal)
2 Car, truck, or van—dropped off by another person
3 Motorcycle, moped, or motorbicycle
4 Taxi
5 Limousine or shuttle bus
6 Public bus
7 Subway/elevated rail or commuter rail
8 Walked
9 Other type of transportation
10 None

F8. [IF AIRPLANE, TRAIN, BUS, SHIP/CRUISE SHIP]
Once (you/name) arrived at your destination, what was the main type of transportation (you/name) used to from the (airport/bus station/train station/pier/ferry terminal) to your lodging/work place or stopping point?

1 Picked up in privately owned car, truck, or van
2 Rented car, truck, or van
3 Taxi
4 Limousine or shuttle bus
5 Public bus
6 Subway/elevated rail or commuter rail
7 Walked
8 Other type of transportation
9 None

F9. Was this a vacation trip?

1 Yes
2 No

F10. What was the main reason that (name/you/you and other household members) took the trip TO (destination)?

1 Business
2 Combined business/pleasure
3 Convention, conference, or seminar
4 School-related activity
5 Visit relatives or friends
6 Rest or relaxation
7 Sightseeing, or to visit an historic or scenic attraction
8 Outdoor recreation (sports, hunting, fishing, boating, camping, etc.)
9 Entertainment (attend the theater, concert, sports event, gambling, etc.)
10 Shopping
11 Personal, family affairs, medical (wedding, funeral, health treatment etc.)
12 Other reason

F11. Did (you/name) go to any other places or stop to change transportation on your way TO (destination)?

1 Yes [GO TO STOP QUESTIONS]
2 No

F12. During (your/his/her) stay in (destination) did (you/name) take any overnight trips and then return to (destination)?

1 Yes [GO TO SIDE-TRIP QUESTION]
2 No

F13. On what date did (you/name) leave (main destination) to RETURN HOME?

Month _____
Day _____

F14. What type of transportation did (you/name) use for most of the distance to RETURN HOME from (destination)?

1 Car, pickup truck, or van
2 Other truck
3 Rental car, truck or van
4 Commercial airplane [ASK 4A AND 4B]

4A. Did you use regularly scheduled airline service or a charter flight?

1 regularly scheduled
2 charter flight
3 both

4B. Was the airline a U.S. or a foreign carrier?

1 U.S.
2 foreign
3 both

5 Corporate/personal airplane
6 City to city bus
7 Charter bus or tour bus
8 School bus
9 Train
10 Taxi
11 Ship or boat
12 Cruise ship
13 Passenger line or ferry
14 Recreational boat, sailboat, etc.
15 Recreational vehicle or motor home
16 Bicycle
17 Motorcycle, moped, or motor bicycle
18 Other type of transportation

F15. Did (you/name) go to any other places or stop to change transportation on (your/his/her) RETURN TRIP home from (destination)?

1 Yes [GO TO STOP QUESTIONS]
2 No

SECTION G. SIDE TRIPS AND STOPS

G1. Please tell me the name of each place where (you/name) went or stopped on (your/his/her) (way TO/ way home FROM) (destination). Please give me the places in their order of occurrence.

PROBE: Any other places or stops on (name's/your) way (to/from) (destination)?

City, town or place _____
State _____

G2. Please tell me the name of each place where (you/name) took an overnight trip during (your/his/her) stay in (destination).

PROBE: Any other overnight trips during (name's/your) stay in (destination)?

City, town or place _____
State or foreign country _____

G3. How many nights did (you/name) stay at (stop/sidetrip destination)?

_____

G4. While in (stop/sidetrip destination), in what types of lodging did (you/name) stay?

1 Friend's or relative's home
2 Hotel, motel, bed & breakfast, resort
3 Rented cabin, condominium, or vacation home
4 Owned cabin, condominium, vacation home, or timeshare
5 Camper, trailer, recreational vehicle, tent, etc.
6 Corporate owned housing

7 Conference center (where only participants may stay)
8 Military housing
9 Dormitory
11 Slept in parked automobile, van, station wagon, etc.
10 Passenger in car, plane, cruise ship, train, etc.
12 Health spa, health resort
13 Work or holiday camp, tent, etc.
14 Youth hostel
15 YMCA, shelter
16 Other

G5. How many nights did (you/he/she) spend in each type of lodging?

_____ _____ _____ _____

G6. What were (your/name's) reasons for stopping at (stop/side-trip)?

1 Business
2 Combined business/pleasure
3 Convention, conference, or seminar
4 School-related activity
5 Visit relatives or friends
6 Rest or relaxation
7 Sightseeing, or to visit an historic or scenic attraction
8 Outdoor recreation (sports, hunting, fishing, boating, camping, etc.)
9 Entertainment (attend the theater, concert, sports event, gambling, etc.)
10 Shopping
11 Personal, family affairs, medical (wedding, funeral, health treatment etc.)
12 Spend the night
13 Transfer from one plane to another, from one train to another, etc.
14 Change to a different type of transportation [ASK G7]
15 Drop off or pick up passenger
16 Other reason

G7. What type of transportation did you (change to/use for most of the distance) (at the stop/on the trip to side-trip destination)?

1 Car, pickup truck, or van
2 Other truck
3 Rental car, truck, or van
4 Commercial airplane
5 Corporate/personal airplane
6 City to city bus
7 Charter bus or tour bus
8 School bus
9 Train
10 Taxi
11 Ship or boat
12 Cruise ship
13 Passenger line or ferry
14 Recreational boat, sailboat,
15 Recreational vehicle or motor home
16 Bicycle
17 Motorcycle, moped, or motor bicycle
18 Other type of transportation

SECTION H. EMPLOYMENT, VEHICLES AND INCOME

H1. To complete the interview, I would like to ask a few more general questions about (you/name) and (your/his/her) household.

During most of the time between January 1, 1995 and today (were/was) (you/name)...

1 Working at a full-time job?
2 Working at a part-time job?
3 Looking for work?
4 In the Armed Forces?
5 A homemaker?
6 Going to school?
7 Retired?
8 Doing something else?

H2. How many vehicles of the following types were owned, or available for regular use by members of this household between January 1 and today?

___ Van (mini, cargo, passenger)
___ Utility vehicle (Bronco, Blazer, 4Runner, Jeep, etc.)
___ Pickup truck
___ Automobile
___ Other truck
___ RV (recreational vehicle)
___ Motorcycle
___ Other

H3. What was the TOTAL COMBINED (FAMILY/PERSONAL) income received from jobs, businesses,

and all other sources for 1994 for (you/reference person's name)?/((you/reference person's name) and their household members?)

1 Less than $10,000
2 $10,000–$14,999
3 $15,000–$24,999
4 $25,000–$29,999
5 $30,000–$39,999
6 $40,000–$49,999
7 $50,000–$59,999
8 $60,000–$74,999
9 $75,000–$99,999
10 $100,000–$124,999
11 $125,000–$149,999
12 $150,000 or more

H4. Thank you for your cooperation. This concludes our call. If you have any questions or later find you need another travel diary, call us on the toll free number found in the travel diary that we will send you. You've been very helpful.

LIST OF REFERENCES

Aczel, Amir D. 1995. *Statistics: Concepts and Applications*. Chicago, IL: Richard D. Irwin, Inc.

Alreck, Pamela L. and Robert B. Settle. 1995. *The Survey Research Handbook*. Second edition. Chicago, IL: IRWIN.

Babbie, Earl. 1990. *Survey Research Methods*. Second edition. Belmont, CA: Wadsworth Publishing Company.

Babbie, Earl. 1998. *The Practice of Social Research*. Eighth edition. Belmont, CA: Wadsworth Publishing Company.

Baker, Reginald P. 1993. *What We Know about CAPI: Its Advantages and Disadvantages*. National Opinion Center, University of Chicago.

Baker, Reginald P. and Norman M. Brauburn. 1992. *CAPI: Impacts on Data Quality and Survey Costs*. National Opinion Center, University of Chicago.

Bourque, Linda B. and Virginia A. Clark. 1992. *Processing Data: The Survey Example*. Newbury Park, CA: Sage Publications, Inc.

Bradburn, N. M., M. Frankel, E. Hunt, J. Ingels, A. Schoua-Glusberg, and M. Wojicik. 1993. *A comparison of Computer-Assisted Personal Interviews (CAPI) with Personal Interviews in the National Longitudinal Survey of Labor Market Behavior-Youth Cohort*. National Opinion Center, University of Chicago.

Braverman, Marc T. 1996. "Sources of Survey Error: Implications for Evaluation Studies." *In* Braverman, Marc T. and Jana Kay Slater (eds.). *Advances in Survey Research*. San Francisco, CA: Jossey-Bass Publishers.

Cannon, John C. 1994. "Issues in Sampling and Sample Design - A Managerial Perspectives." *In* Ritchie, Brent and Charles R. Goeldner. (eds.). *Travel, Tourism, and Hospitality Research.* Second edition. pp (131-143). New York: John Wiley and Sons, Inc.

Cochran, William G. 1977. *Sampling Techniques*, 3rd ed. New York: John Wiley & Sons, Inc.

Cournoyer, Norman G. and James K. Kindahl. 1983. "The Massachusetts Travel Research Study." *Journal of Travel Research*, Spring 1983: 5-11.

DeLorme. 1998. AAA Map'n'Go. 1998 ed. DeLorme.

Dillman, Don A. 1978. *Mail and Telephone Surveys: The Total Design Method.* New York, NY: John Wiley and Sons.

Dommermuth, William P. 1975. *The Use of Sampling in Marketing Research.* Chicago, IL: American Marketing Association.

Federal Communications Commission. 1997. Monitoring Report: CC Docket No. 87-339. Washington, D.C: Federal Communication Commission.

Fink, Arlene. 1995a. *The Survey Handbook.* Thousand Oaks, CA: Sage Publications, Inc.

Fink, Arlene. 1995b. *How to Design Surveys.* Thousand Oaks, CA: Sage Publications, Inc.

Fink, Arlene. 1995c. *How to Sampling in Surveys.* Thousand Oaks, CA: Sage Publications, Inc.

Fink, James C. 1983. "CATI's First Decade: The Chilton Experience." *Sociological Methods and Research*, 12: 153-168.

Frechtling, Douglas C., Judy Rogers, and Peter Tarlow. 1998. "Research 101." In *Travel Research Roundup: Branding the Travel Market.* 29th Annual Conference Proceedings. Travel and Tourism Research Association, Ft. Worth, Texas.

Frechtling, Douglas C. 1994. "Assessing the Impacts of Travel and Tourism-measuring Economic Benefits." *In* Ritchie, Brent and Charles R. Goeldner. (eds.). *Travel, Tourism, and Hospitality Research.* Second edition. pp (367-391). New York: John Wiley and Sons, Inc.

Frey, James H. 1989. *Survey Research by Telephone.* Second edition. Newbury Park, CA: Sage Publications, Inc.

Frey, James H. and Oishi Sabine Mertens. 1995. *How to Conduct Interviews by Telephone and In Person.* Thousand Oaks, CA: Sage Publications, Inc.

Fridgen, Joseph D. 1991. *Dimensions of Tourism.* East Lansing, MI: Educational Institute of the American Hotel and Motel Association.

Gartner, William. 1996. *Tourism Development: Principles, Processes, and Polices.* New York: Van Nostrand Reinhold.

Gartner, William and John D. Hunt. 1988. "A Method to Collect Detailed Tourist Flow Information." *Annals of Tourism Research*, 15(1): 159-165.

Gates, Roger and Paul J. Solomon. 1982. "Research Using the Mall Intercept: State of the Art." *Journal of Advertising Research*, 22: 43-49.

Goyder, John. 1987. *Silent Minority: Nonrespondents on Sample Surveys.* Cambridge: Polity in Association with Basil Blackwell.

Groves, Robert M. and Robert L. Kahn. 1979. *Survey by Telephone: A National Comparison with Personal Interviews*. New York: Academic Press.

Groves, Robert M, and Nancy A. Mathiowetz. 1984. "Computer-Assisted Telephone Interviewing: Effects on Interviewers and Respondents." *Public Opinion Quarterly*, 48: 356-369.

Groves, Robert M. 1989. *Survey Errors and Survey Costs*. New York, NY: John Wiley and Sons.

Gunn, Clare A. 1988. *Tourism Planning*. Second edition. New York: Taylor and Francis.

Harris, Charles C., William J. McLaughlin, and John D. Hunt. 1994. "Estimating Total Statewide Travel." *Annals of Tourism Research*, 21(4): 701-711.

Harris, Charles C., Joanne F. Tynon, and William J. McLaughlin. 1990. "A Comprehensive Method for Studying Leisure Travel." *Journal of Travel Research*, 29(2): 39-44.

Henry, Gary T. 1996. "Does the Public Have a Role in Evaluation? Surveys and Democratic Discourse." *In* Braverman, Marc T. and Jana Kay Slater (eds.). *Advances in Survey Research*. San Francisco, CA: Jossey-Bass Publishers.

Holecek, Donald F. 1996. "Travel and Tourism Industry." *In* van der Smissen, Betty and Theodore Haskell (eds.). *Recreation in Michigan: Great Professional Opportunities* (pp: 23-34). Dubuque, Iowa: Kendall/Hunt Publishing Company.

Holecek, Donald F. 1995. "Tourism." Special Report 76. East Lansing, Michigan: Michigan Agricultural Experiment Station, Michigan State University.

Hurst, Fred. 1994. "En Route Surveys." In Ritchie, Brent and Charles R. Goeldner. (eds.). *Travel, Tourism, and Hospitality Research.* Second edition. pp (453-471). New York: John Wiley and Sons, Inc.

Jafari, J. 1977. "Editor's Page." *Annals of Tourism Research*, 5 (Special): 6-11.

Kalton, Graham. 1983. *Introduction to Survey Sampling.* Newbury Park, CA: Sage Publications, Inc.

Kasprzyk, Daniel, Greg Duncan, Graham Kalton, and M. P. Singh. 1989. *Panel Survey.* New York: John Wiley and Sons.

Kim, Dae-Kwan, Daniel M. Spotts, and Donald F. Holecek. 1998. "A Comparison of Estimates of Statewide Pleasure Trip Volumes and Expenditures Derived from Three Household Surveys." In *Travel Research Roundup: Branding the Travel Market.* 29th Annual Conference Proceedings. Travel and Tourism Research Association, Ft. Worth, Texas.

Kim, Dae-Kwan, Daniel M. Spotts, Donald F. Holecek, and Semok Yoon. 1998. "Segmenting the Visiting Friends and Relatives Travel Market Based on Participation in Tourist Activities." In *The Role of Tourism: National and Regional Perspectives.* Fourth Annual Conference Proceedings. Asia Pacific Tourism Association, Tanyang, Korea.

Kotler, Philip. 1982. *Marketing for Nonprofit Organizations.* Second edition. Elglewood Cliffs, NJ: Prentice-Hall, Inc.

Kviz, F. J. 1977. "Toward a Standard Definition of Response Rate." *Public Opinion Quarterly*, 41: 265-267.

Lansing, John B. and James N. Morgan. 1971. *Economic Survey Methods.* Ann Arbor, MI: Institute for Social Research.

LaPage, Wilbur F. 1994. "Using Panels for Travel and Tourism Research." *In* Ritchie, Brent and Charles R. Goeldner. (eds.). *Travel, Tourism, and Hospitality Research.* Second edition. pp (481-486). New York: John Wiley and Sons, Inc.

Lavrakas, Paul J. 1993. *Telephone Survey Methods: Sampling, Selection, and Supervision.* Newbury Park, CA: Sage Publications, Inc.

Leiper, N. 1981. "Towards a Cohesive Curriculum in Tourism: The Case for Distinct Discipline." *Annals of Tourism Research*, 8(1): 69-84.

Litwin, Mark S. 1995. *How to Measure Survey Reliability and Validity.* Thousands Oaks, CA: Sage Publications.

Lycos. 1999. Road Maps Driving Directions. [Online] Available http://www.roadmap.lycos.com:90/cgi-bin/mqtripplus/

Mapquest. 1999. Driving Direction. [Online] Available http://www.mapquest.com/

McIntosh, Robert W., Charles R. Goeldner, and J.R. Brent Ritchie. 1995. *Tourism: Principles. Practices, Philosophies.* Seventh edition. New York: John Wiley and Sons, Inc.

Medlik, S. 1996. *Dictionary of Travel, Tourism and Hospitality.* Second edition. Jordan Hill, Oxford: Butterworth-Heinemann.

Metelka, Charles J. 1989. *The Dictionary of Hospitality, Travel, and Tourism.* Third edition. Albany, New York: Delmar Publishers, Inc.

Michigan Department of Transportation. 1996. "Automatic Traffic Recorder Report for the Months of 1995." Lansing, Michigan: Michigan Department of Transportation.

Michigan Department of Transportation. 1997. "Automatic Traffic Recorder Report for the Months of 1996." Lansing, Michigan: Michigan Department of Transportation.

Michigan Department of Transportation. 1998. "Permanent Traffic Recorder Locations." Lansing, Michigan: Michigan Department of Transportation.

Michigan Department of Treasury. 1985. "Sales and Use Tax Collections by Michigan County by Business Classification Code." Lansing, Michigan: Michigan Department of Treasury.

Michigan Travel Bureau. 1995. "1994 TravelScope Finding Highlights: Analysis of Michigan Travelers." Lansing, Michigan: Michigan Travel Bureau.

National Tourism Resources Review Commission. 1973. *Destination U.S.A.* Vol. 2. Washing, D.C.: Government Printing Office.

Nichols, William L. and Robert M. Groves. 1986. "The Status of Computer-assisted Telephone Interviewing: Part I – Introduction and Impact on Cost and Timeliness of Survey Data." *Journal of Official Statistics*, 2: 93-115.

Rogers, Judy. 1991. "A Non-technical Perspective on Data Collection Methodologies for Travel Surveys: A Discussion Paper." *Journal of Travel research*, 29(3): 43-47.

Ryan, Chris. 1991. *Recreational Tourism: A Social Science Perspective.* New York: Routledge.

Shanks, J. Merrill, William L. Nichols, and Howard E. Freeman. 1981. "The California Disability Survey: Design and Execution of a Computer-assisted Telephone Survey." *Sociological Methods and Research*, 10: 123-140.

Shure, Gerald H. and Robert J. Meeker. 1978. "A Microcomputer System for Multi-person Computer-assisted Telephone Interviewing." *Behavior research Methods and Instrumentation*, 10: 196-202.

Singer, Eleanor and Stanley Presser. 1989. *Survey Research Methods: A Reader.* Chicago, IL: The University of Chicago Press.

Sosdian, Carol P. and Laure M. Sharp. 1980. "Nonresponse to Mail Surveys: Access Failure or Respondent Resistance." *Public Opinion Quarterly*, 44: 396-402.

Spaeth, Mary A. 1987. "CATI Facilities at Survey Research Organizations." *Survey Research*, 18 (Summer-Fall): 18-22.

Spotts, Daniel M., Dae-Kwan Kim, James A. Carr, and Donald F. Holecek. 1998. "An Analysis of Michigan's Image As A Tourist Destination." In *Travel Research Roundup: Branding the Travel Market.* 29th Annual Conference Proceedings. Travel and Tourism Research Association, Ft. Worth, Texas.

Spotts, Daniel M. 1991. "Chapter 24: Sales and Use Tax Collections by Michigan County for Selected Business Categories." In Spotts, Daniel M. (ed.). *Travel and Tourism in Michigan: A Statistical Profile.* Second edition. pp (505-561). East Lansing, Michigan: Michigan State University.

StatPac Inc. 1995. *StatPac Gold IV: Overview and Operation.* Minneapolis, MN: StatPac Inc.

Steeh, C. G. 1981. "Trends in nonresponse rates: 1952-1979." *Public Opinion Quarterly*, 45: 40-57.

Stynes, Daniel J. and Dennis B. Propst. 1994. "MI-REC: Micro-Implan Recreation Economic Estimation System Users' Manual Version 2.0." East Lansing,

Michigan: Department of Park, Recreation, and Tourism Resources, Michigan State University.

Travel, Tourism and Recreation Resource Center. 1998. "Budget for Regional Household Telephone Survey." East Lansing, Michigan: Travel, Tourism and Recreation Resource Center, Michigan State University.

Travel, Tourism and Recreation Resource Center. 1997. "Highlights of the MSU Tourism Center's Travel Market Survey." East Lansing, Michigan: Travel, Tourism and Recreation Resource Center, Michigan State University.

Tull, Donald S. and Del I. Hawkins. 1990. *Marketing Research: Measurement & Method.* New York: Macmillan Publishing Company.

United Nations and World Tourism Organization. 1994. *Recommendations on Tourism Statistics*. New York: United Nations.

University of Missouri. 1991. *Tourism USA: Guidelines for Tourism Development.* Columbia, MS: The University of Missouri.

U.S. Department of Commerce, Bureau of the Census. 1979. *National Travel Survey: Travel During 1977.* Washington, D.C.: U.S. Department of Commerce.

U.S. Department of Commerce, Bureau of the Census. 1996. *Money Income in the United States: 1995.* Washington, D.C.: U.S. Department of Commerce.

U.S. Department of Commerce, Bureau of the Census. 1998. [Online] Available http://www.census.gov/

U.S. Department of Transportation, Bureau of Transportation Statistics. 1997a. *1995 American Travel Survey Profile: United States*. Washington, D.C.: U.S. Department of Transportation.

U.S. Department of Transportation, Bureau of Transportation Statistics. 1997b. *1995 American Travel Survey: An Overview of the Survey Design and Methodology.* Washington, D.C.: U.S. Department of Transportation.

U.S. Department of Transportation, Bureau of Transportation Statistics. 1997c. *1995 American Travel Survey: Questionnaire.* Washington, D.C.: U.S. Department of Transportation.

U.S. Department of Transportation, Bureau of Transportation Statistics. 1997d. *1995 American Travel Survey: Microdata File Documentation.* Washington, D.C.: Bureau of Transportation Statistics, U.S. Department of Transportation.

U.S. Department of Transportation, Bureau of Transportation Statistics. 1997e. *1995 American Travel Survey: Michigan, Summary Travel Characteristics.* Washington, D.C.: Bureau of Transportation Statistics, U.S. Department of Transportation.

U.S. Department of Transportation, Bureau of Transportation Statistics. 1997f. *1995 American Travel Survey: Technical Documentation. Appendix C. Accuracy of the Data.* Washington, D.C.: Bureau of Transportation Statistics, U.S. Department of Transportation.

U.S. Department of Transportation, Bureau of Transportation Statistics. 1997g. *1995 American Travel Survey: Technical Documentation. Appendix D. 1995 American Travel Survey Data Collection and Processing Procedures.* Washington, D.C.: Bureau of Transportation Statistics, U.S. Department of Transportation.

U.S. Travel Data Center. 1994. *1993 Travel Market Report: Full Year Results of the National Travel Survey.* Washington, D.C.: U.S. Travel Data Center.

U.S. Travel Data Center. 1995. *The Economic Review of Travel in America.* 1995 edition. Washington, D.C.: U.S. Travel Data Center.

U.S. Travel Data Center. 1996. "TravelScope Users' Manual: Prepared for Michigan Travel Bureau." Washington, D.C.: U.S. Travel Data Center.

U.S. Travel Data Center. 1997. "TravelScope Users' Manual: Prepared for Michigan Travel Bureau." Washington, D.C.: U.S. Travel Data Center.

Wiseman, Frederick and Phillip McDonald. 1979. "Noncontact and Refusal Rates in Consumer Telephone Surveys." *Journal of Marketing Research*, 16: 478-484.

World Travel and Tourism Council. 1996. *Travel and Tourism's Economic Impact.* Brussels, Belgium: World Travel and Tourism Council.

World Travel and Tourism Council. 1997. *Summit of the Eight Travel and Tourism: Creating Jobs.* Brussels, Belgium: World Travel and Tourism Council.