This is to certify that the

thesis entitled

A Pilot Study of Transient Boaters in Three Michigan Ports

presented by

Susan Irish Stewart

has been accepted towards fulfillment
of the requirements for

Master of Science degree in Park and Recreation Res.

Major professor

Date 10/30/90

DATE DUE	DATE DUE	DATE DUE
MAGIC 2 FEB 0 5 1999		

A Pilot Study of Transient Boaters in Three Michigan Ports

By

Susan Irish Stewart

A THESIS

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

MASTER OF SCIENCE

Department of Park and Recreation Resources

1990

ABSTRACT

A Pilot Study of Transient Boaters in Three Michigan Ports

By

Susan Irish Stewart

A study of transient boating, or overnight travel by boat, was conducted in three Michigan ports to facilitate the planning of transient boating facilities, assist marina managers in marketing facilities, and measure the spending impacts of transient boating. The study also functions as a pretest of the survey instrument and study design.

The characteristics of transient boaters and boats, travel patterns, spending patterns, use of information sources, and preferences for marina facilities and services were investigated, and the marinas were evaluated.

Spending per party averaged $140, with half occurring in the marina, and half in the community. Variations in average per party spending among the harbors suggest that spending opportunities influence the economic impact of transient boaters on the community. Transient boaters relied heavily on informal information sources, especially regarding community facilities and services. Boaters placed primary importance on the safety and security of their boat in choosing a marina for an overnight stay.

This thesis is dedicated to my grandmothers, Edith Cooper Irish and Elizabeth Earhart Kennedy, in honor of their years of outdoor recreation leadership.

ACKNOWLEDGEMENTS

There are many people who deserve thanks for their assistance with this thesis. My advisor Daniel J. Stynes has been a tremendous help in all stages of the project, from encouraging me to pursue the topic, to directing the research design and data analysis, to carefully editing many drafts of the thesis. Perhaps most important, he has always been willing to talk and to listen throughout the process. Edward M. Mahoney was primarily responsible for making the concept of a transient boating study a reality by obtaining the cooperation of the marina operators. His penchant for directness has also been a very valuable, if not always enjoyable, contribution to the project. Ekhart Dersch has been a great help in the process, contributing patience and diplomacy, and an eye for detail. Ron Kinnunnen deserves special thanks for all of the day to day assistance in setting up the study, training the marina personnel, monitoring their work, and encouraging me in mine. My parents have been supportive in many ways, and my special thanks go to them for their help. My family, Gary, Cory, and Vaughn, have spent many evenings and weekends without me, and for their patience and support, I am genuinely gratefull.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

Boating is one of the most popular forms of water based recreation in Michigan. With more than 750,000 registered boats in 1987, Michigan has the largest fleet of registered boats in the nation. In 1986, 254,000 boats were reported to have been used on the Great Lakes (Talhelm, et al., 1988a). Boating use of the Great Lakes continues to increase, growing by 41% between 1980 and 1986, from over 5 million boat days in 1980 to more than 7 million boat days in 1986 (Ibid, 1988a).

This activity has a major impact on the economies of coastal communities. In 1986, recreational boating generated an estimated 2 billion dollars of spending in Michigan (Talhelm, et al., 1988a). Forty-three percent of this spending was attributed to Great Lakes boating activity. This estimate includes spending in Michigan on boats and boating equipment, and on trip related items (e.g., gas, lodging, restaurant meals). Because some of these expenditures are made while traveling to and from the marina, the direct benefits of Great Lakes boating affect non-coastal as well as coastal communities (Stynes, et al., 1982).

Private marinas play an important role in boating on the Great Lakes, providing access for boats too large to be trailered. At last count, there were 678 private marinas on Michigan's Great Lakes (Holecek & Brothers, 1983). These marinas focus on providing slips and services for boaters who keep their boats at the marina through the boating

season.

There are also 68 public marinas (Holecek & Brothers, 1983), which serve as seasonal dockage facilities in areas where "demand isn't being and can't be met by private enterprise" (MDNR, 1985, p.B-48). The primary mandate of public marinas, however, is to serve "transient" boaters, or boaters who are travelling by boat from one port to another. These marinas also provide boaters refuge from bad weather, making Michigan's shoreline safer. In addition to the many facilities located in natural harbors or rivers, the Michigan Department of Natural Resources (MDNR), together with the Army Corp of Engineers, has constructed 25 artificial harbors around the state as part of the Harbors of Refuge program. The goal of the MDNR is to construct these harbors in enough different locations that no boater is ever more than 15 shoreline miles from shelter (MDNR, 1987).

This thesis presents the results of a study of transient boaters at the public marinas in Gladstone, Escanaba, and Fayette State Park in the western Upper Peninsula of Michigan (Figure 1). The study will address the planning, marketing, and economic impacts of transient boating facilities in this region of the Upper Peninsula, and will function as a pretest for a possible statewide transient boating study, or for similar studies in other regions.

Problem Statement

Past studies have provided us with a wealth of information about Michigan registered boats and boat owners (e.g., Stynes & Safronoff, 1983; Talhelm et al., 1988a) but leave us with many questions about the

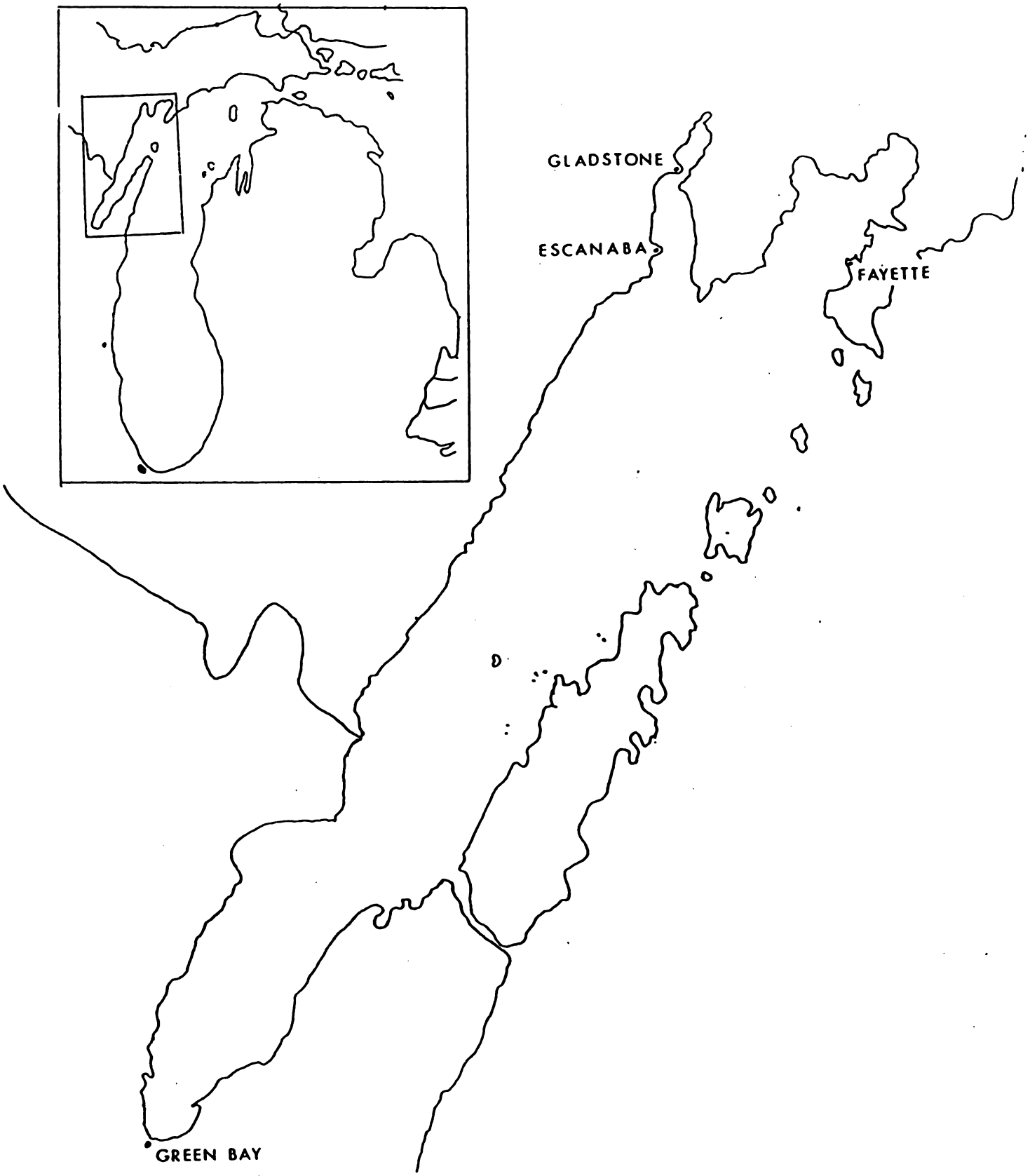

Figure 1. The Study Area

people using transient boating facilities. Studies of registered boat owners do not identify the subgroup of boaters that participate in transient boating. We do not have information about boat owners from many other Great Lakes states or provinces. We know little about those who charter boats, or those who accompany the registered boat owner on overnight trips. This latter group may represent more than half of the users of transient boating facilities, as few boaters travel alone, and many travel with more than one other person (Talhelm et al., 1988a; Dawson & Laundergan, 1985).

There is a need for more and better information about transient boaters. Such information would provide a stronger basis for planning facilities and services, a starting point for marketing those facilities, and an indication of the spending impacts of transient boaters on coastal communities.

Transient Boaters

"Transient boater" is a term used to refer to a person travelling from one harbor to another, docking or mooring the boat overnight at a location other than its usual storage location. The term "transient" is primarily used by marina managers to differentiate between those boats which are berthed at their marina for the season and those which are docked there for the night. Boaters themselves rarely speak of going "transient boating". The term "cruising" is most often used instead. The difficulty with using "cruising" here is that it is not specific enough. "Cruising" to some people is boating without a particular purpose, while to others it implies an overnight trip. So although the

term "transient boating" is artless and unwieldy, there is no good alternative to it, and it will be used throughout this thesis to refer to overnight trips taken on privately owned pleasure boats for non-business purposes.

Transient boating is a popular form of boating for many boaters who own or use large boats (20' or longer) on the Great Lakes. Over 70,000 boats of this size were registered in Michigan in 1986 (Talhelm et al., 1988a). Large boat use on the Great Lakes increased by 60% between 1974 and 1977, decreased by 1% between 1977 and 1980 (Stynes & Holecek, 1981), then increased by 67% between 1980 and 1986 (Talhelm, et al., 1988a).

Indiana, Illinois, Wisconsin, Minnesota, Ohio, New York, Pennsylvania, and the Canadian provinces of Ontario and Quebec also contribute to the Great Lakes fleet, and many Michigan ports are popular cruising destinations for out-of-state boaters. Thus, Michigan's transient boating facilities serve a fleet much larger than 70,000.

In 1987, 59,042 boats were registered for overnight stays at one of 43 public DNR harbors in Michigan, staying a total of 109,229 nights (MDNR, 1988). These figures provide a conservative estimate of the amount of transient activity in Michigan in the 1987 boating season, as they do not include boats that used the 26 municipal public marinas or 678 private marinas in the state or boats that anchored out overnight, yet they indicate that the amount of transient boating traffic using Michigan's Great Lakes harbors is considerable.

Planning

The present lack of information about transient boating makes it difficult to plan transient boating facilities to meet the needs of transient boaters. A major consideration in determining the scope of a new facility is some estimate of existing and potential demand (Gold, 1980). A simple review of the use recorded at other similar facilities will not suffice. Planners need to have an understanding of what factors affect the use of facilities, and to accomplish this, they must have more knowledge about transient boaters, the boats they use, their trip patterns, and their facility and service needs.

Currently, MDNR Waterways division uses the number of boats longer than 25' registered in the State of Michigan, and projections for the growth of this class of boats, as an indicator of future demand for transient facilities (MDNR, 1985). This is an incomplete and possibly misleading indicator, as it tracks only one of the forces driving the market for transient facilities. It does not account for use of the facilities by boats registered outside of Michigan, nor for use by boats less than 25' long. Further, it is based on the assumption that the proportion of boat owners involved in transient boating will remain constant. Clearly, a more accurate and reliable means of estimating demand is needed.

Marketing

Marketing transient facilities without understanding transient boaters is not only difficult, it is futile. Research is essential to marketing, and the lack of research on transient boating prevents both

public and private marinas from effectively marketing their transient facilities and services (Mahoney and Warnell, 1987).

An evaluation of the facilities and services currently provided, together with input from boaters regarding the relative importance of various marina attributes, can suggest ways for marina operators to serve transient boaters more profitably, while meeting the needs of those boaters more effectively. This information is important both for marina operators and for marina developers and planners.

Economic Impacts.

Transient boaters are tourists, yet their needs and their contributions to the economies of the coastal regions of Michigan have not been recognized. Like all tourists, they bring money earned outside the local area and spend it in the area on goods and services.

Transient boaters spend money both at the marina and in the community in which the marina is located. If the amount of spending generated by a marina serving transient boaters is known, the spending impact of that marina on the community can be calculated.

Purchasing goods and services in the community can, however, present boaters with difficulties not faced by other tourists. Transient boaters seldom have a means of transportation on land, and many transient marinas in Michigan are located at some distance from the central business district of town. The result is that transient boaters often rely on finding what they can by exploring on foot. Addressing the information and transportation needs of transient boaters could be profitable for marina operators and for local businesses. Knowing more

clearly what those needs are can help them to do so.

Objectives

The purposes of gathering information about transient boating in this study are threefold; (a) to better facilitate the planning of transient boating facilities, (b) to assist marina operators in marketing their facilities and services, and (c) to provide better information to local communities about the existing and potential economic impacts of transient boating facilities. To achieve these purposes, data need to be collected about the people involved in transient boating, the boats that they use, and their travel and spending patterns. Specifically, the study will:

1. Describe the transient boaters and boats using the marinas at Escanaba, Gladstone, and Fayette.
2. Measure patterns of transient boating activity in the Bay de Noc region.
3. Measure spending patterns of transient boaters in the marina and in the community.
4. Identify information sources used by transient boaters.
5. Measure preferences of transient boaters for marina and community facilities and services.
6. Evaluate the marinas' transient facilities and services.
7. Make recommendations for the planning, development, marketing, and management of transient facilities in the Bay de Noc region.
8. Evaluate the study design for use in other regions or in a statewide transient boating survey.

CHAPTER TWO

LITERATURE REVIEW

The literature relevant to this study of transient boaters comes from two subject areas; general boating research, and methods of survey research. Several boating studies conducted in Michigan and other states have findings relevant to transient boating, and these will be reviewed first.

Consideration of survey methodology literature will be limited to that which deals with Importance-Performance Analysis, a technique used in marketing research for the display and interpretation of evaluation results. Importance-Performance analysis is used in presenting and analyzing the results of the marina evaluation in this study, so a review of this literature here serves the dual purpose of introducing the specifics of the method and discussing past uses in recreation marketing.

Boating Studies

Recreational boating in Michigan has been the subject of many studies, dating back to 1964 when the first statewide recreational boating survey was conducted. These Michigan studies, as well as those conducted in other states, have focused on boating as a day-use activity, addressing participation and spending, economic impact, fuel consumption, and safety and law enforcement practices. Origin-destination patterns have been examined and documented as they pertain

to travel from home to the marina or launching facility where the boating portion of the trip begins (Stynes & Safronoff, 1981).

The boating studies of most interest here are those which have measured the same or similar variables as those to be measured in this study. Of the eight objectives of this study (see Chapter 1), there are four which have been investigated by earlier boating studies. The literature which relates to them will be discussed in this order;

(a) Objective 1, Characteristics of boats and boaters;

(b) Objective 2, Patterns of travel;

(c) Objective 5, Boater preferences for facilities and services, and

(d) Objective 3, Spending patterns.

Characteristics of Boats and Boaters

Most boating studies have sought a description of the boaters they survey, reporting such variables as age, household income, family size and occupation. The Michigan registered boating studies conducted prior to 1980 are summarized by Stynes & Holecek (1982). They report that the characteristics of boaters vary by boat type and primary activity. Participants are predominately male, and include all ages, with an average age in 1980 of 49. By 1986, the average age of boat owners had increased slightly, as had income level and education (Talhelm et al., 1988a). The national studies of boaters conducted by the Coast Guard in 1974 and 1976 reported that income and education levels of boaters were above the national average (Marmo, 1980).

Boating experience is sometimes included as a descriptive

variable, as in the 1984 Delaware study of registered boaters (Falk, et al. 1985). The average Delaware registered boater had 17 years of boating experience, with owners of boats larger than 25' averaging 19 years of boating experience.

Michigan studies have asked how long the respondent has been a boat owner, which provides an estimate of length of involvement in boating, assuming that the boat owner uses his or her boat. In 1980, the average was 15 years (Stynes & Safronoff, 1981); by 1986, this had increased slightly to 17 years (Talhelm, et al., 1988a).

The primary source of propulsion is the most commonly used description of boat type and has been found to relate to both demographic characteristics and spending characteristics (Stynes and Holecek, 1982; Stynes et al., 1983). Broad categories of boat types are used in both of these studies (e.g., pontoon, sail, power). The Coast Guard National Boating Surveys (Marmo, 1980) report more detailed categories (e.g., twin or single propellor, fuel type) reflecting the study's focus on the safety needs of the nation's fleet.

Patterns of Travel

Previous investigations of travel patterns have focused on the portion of the "boating" trip which involves travel to the marina or launching ramp. Questions regarding actual boating activity include number of days spent boating, the primary and secondary purposes of the boating trip, and the location of the activity.

Boat use in Michigan averaged 33 days in 1980, with "cruising/pleasure boating" accounting for 35% of the activity. Cabin

cruisers received the most use, averaging 45 days of activity. Boats stored at marinas and used on the Great Lakes - a group probably well represented among users of transient boating facilities - were used an average of 47 days per season, more than boaters using any other type of storage (Stynes & Safronoff, 1981).

Large (over 20') boat use on the Great Lakes increased by 60% between 1974 and 1977, then decreased by 1% between 1977 and 1980 and increased again by 67% between 1980 and 1986 (Talhelm, et al., 1988a). These large boats constituted approximately 10% of the fleet of Michigan registered boats in 1980 (Stynes & Safronoff, 1981).

In a 1984 study of boating on western Lake Superior (Dawson & Laundergan, 1985), transient boating patterns were investigated. Lake Superior boaters were asked to report the distances they travelled on one day, weekend, and longer than weekend trips. The round trip distance travelled on a day or weekend trip was found to be less than 25 miles for the majority of the boaters. On longer trips, distances varied from less than 50 miles to over 250 miles. Over half of the boaters surveyed took overnight trips in 1984, and nearly three quarters of those who travelled reported an average overnight trip length of 2 to 3 days.

Boater Preferences

Also investigated in the Dawson and Laundergan study were the patterns of facility use. Given a list of 12 transient facilities and services, boaters were asked to report which they used on a one day trip, a two to three day trip, and a trip longer than three days.

The facilities most often used on a one day trip were dockage facilities (38%), navigational aids (32%), boating supplies (24%), and

food and refreshments (23%). For a two to three day trip, anchorage areas replace food and refreshments in the top four. On longer trips, facility use was quite different. The facilities most often used were boating supplies (42%), docking facilities (41%), food and refreshments (38%), and holding tank pump-out facilities (36%).

In a 1986 Michigan study of marina needs focusing on seasonal slipholders, boaters were asked to rate the importance of 23 marina attributes (Talhelm, et al., 1988b). The two facility attributes found to be most important were security and cleanliness.

Wisconsin marina users were asked for their comments about the marina facilities they used (Sommerson, 1976). Their complaints and suggestions focused on the need for improved facilities and services; specifically, they expressed a need for more dockage, cleaner and larger restroom facilities, repair services, boating supplies, food, and pumpout services.

Spending

Many boating studies have investigated the spending patterns of boaters, usually for the purpose of documenting the economic impact of boating on a community, group of communities (e.g., the coastal region) or on a state. Some studies have also been concerned with the impact of boating on a sector or sectors of the economy in a given region. The focus of the research determines the format used for the spending questions, as well as the type of analysis performed on the data.

In a Michigan study of spending patterns and economic impacts (Stynes et al., 1983), boaters were asked to report the amount spent on

craft related items during the previous year, and to estimate their spending on their most recent boating trip. The largest trip related spending categories were food, auto fuel, and boat fuel, in that order.

A 1985 survey of Delaware registered boaters (Falk et al., 1987) asks respondents to report the amount of money they spend in a given category (e.g., lodging, restaurant meals) for a typical day of boating. They are also asked whether these purchases are made at home, en route, or at the waterfront. Results are reported by the type of facility in which the boat is stored, and by the size of the boat. For those who owned boats larger than 20', the top three spending categories for trip related spending were boat gas, snacks, and restaurants. These were also the top spending categories for boaters who kept their boats at marinas, while for all boaters who responded, auto gas replaces restaurants in the top three categories.

In a 1976 Wisconsin study, Sommerson investigated the economic impact of Great Lakes boaters on the coastal zone of Wisconsin. For marina users in this study, restaurants were the top spending category, followed by food stores, and taverns and liquor stores. This study also attempts to ascertain where (in the community) spending took place.

Importance-Performance Analysis

Importance-Performance (I-P) Analysis is a method for analyzing and presenting evaluation research results in a format which is easily understood. The method was introduced by Martilla and James in 1977. Since its introduction, it has been applied in recreation marketing and management to evaluation of a visitor center (Mengak et al., 1986), a

running race (Guadagnolo, 1985), and a campground (Wallace et. al., 1986).

This method begins with a survey of customers, who are given a set of service or facility attributes and asked to rate the importance of each. They are also asked to evaluate the facility or service using the same list of attributes. For each attribute the importance and performance scores are averaged across customers and the averages (or medians) are plotted on a two dimensional grid, termed an "action grid" by Martilla and James (1977).

There are four steps involved in using this technique. First, the list of attributes is developed. Martilla and James (1977) stress the importance of developing a list which is appropriate for the product (facility, service) being evaluated. Several authors (Mengak, et al., 1986; Wallace, et al., 1986; Guadagnolo, 1985) reinforce this point, stressing that in the evaluation of recreational facilities and services, the attributes measured should be tailored to the site or sites being evaluated, and to the concerns of management.

Wallace et al. (1986) further suggest that the analysis should focus on determinant attributes. Determinant attributes are those which play a role in the actual purchase decision of the customer, while other important attributes may not. The authors call attention to the need for further research in recreation marketing to ascertain which attributes of a recreation facility will tend to be determinant.

The second step in the technique is the construction of questions and administration of the questionnaire. Measurement of the attributes is typically done using an itemized, noncomparative rating scale.

Martilla and James (1977) used a 5 point scale to measure both importance and performance. Guadagnolo (1985) used a 7 point scale and noted that it reduced the skewness of satisfaction responses and allowed for more differentiation of responses than a 5 point scale. However, Tull and Hawkins (1987) state that the number of categories used in a rating scale should depend on the interest level of respondents and their knowledge of the attributes, which suggests that the 7 point scale will not be appropriate for every application of I-P analysis.

Once the questions have been constructed, they are placed on the questionnaire. Martilla and James (1977) recommend that the question measuring importance be separate from that measuring performance, so that the respondent's answer to one question does not affect his answer to the second. The third step in the process is to calculate the perceived importance and performance of the attributes. The method recommended by Martilla and James (1977) is to calculate both median and mean scores. If the mean and median scores do not differ significantly, mean scores should be used since they are more easily understood.

In the final step in the technique the results are presented on an action grid (see pg. 66 for an example). Martilla and James indicate that the decision regarding the placement of the x and y axes is a subjective decision. Guadagnolo (1985) discusses the importance of positioning the axes so that they reflect management objectives, and only those responses which meet or exceed management's definition of excellence are placed in the high performance categories.

I-P analysis has been found to offer a good overall evaluation of a facility's performance, and can be used to learn more about attitudes

and opinions (O'Leary and Adams, 1981). Additionally, Guadagnolo (1985) uses I-P analysis to infer a pricing threshold, and introduces the concept of using segmentation in conjunction with I-P analysis to better aim promotions and offerings at those segments most appropriate to serve.

Mengak and colleagues (1986) caution, however, that the technique is best seen as a first step in problem solving. Its value is in the identification of areas needing more attention. They assert that once problem areas are identified, it may be necessary to undertake further research to determine possible solutions to the problems.

CHAPTER THREE

METHODS

The plan to conduct a transient boating study in the three Upper Peninsula ports grew out of a Cooperative Extension Service meeting focusing on marketing and applied marketing research. The marinas involved were interested in participating in the study because it offered them an affordable opportunity to collect the data needed to begin marketing their facilities to transient boaters.

The survey was conducted during the summer of 1988. Marina personnel were instructed to distribute self-administered questionnaires to all transient boating parties registering for an overnight stay at the marinas. The questionnaires were returned to MSU by mail. The data were then coded and analyzed, and a check was made for nonresponse bias. Reports were issued to the three marinas summarizing the descriptive analyses, and offering recommendations for the planning and marketing of the facilities.

The methods chapter will detail the procedures used to collect and analyze the data presented in this study. It is divided into six sections; (a) The Study Area, (b) Sampling, (c) Measurement, (d) Field Procedures, (e) Data Processing, and (f) Data Analysis.

The Study Area

Escanaba and Gladstone are located on Little Bay de Noc, and Fayette is on Big Bay de Noc. The Bay de Noc region, traditionally

dependent on the paper and mining industries, is attempting to strengthen its tourism industry to fill the economic gap left when these industries declined. Boaters are one tourist segment the region is looking toward to increase tourism activity. Our study was designed to help the communities evaluate the current transient boater market as a guide for future development and marketing decisions.

The City of Escanaba (population 14,000) is a regional center with a wide range of businesses. The Escanaba public marina is situated several blocks from the central business district in a municipal park, with a swimming beach and other recreational facilities close by. It has 20 seasonal slips, 5 transient slips, 25 moorings, and another 7 spaces for transients in broadside slips.

Gladstone (population 5,000) is a smaller, less industrial city, with its shops and residences located close to the waterfront. The Gladstone marina is within two blocks of town, and like Escanaba is situated in a city park with a swimming beach and other recreational facilities. The Gladstone marina contains 33 seasonal slips, 3 transient slips and 7 broadside spaces for transients.

The marina at Fayette is located within an historical state park on the site of a deserted mining town. The nearest town is Garden (population 326), 10 miles away. The natural harbor at Fayette is deep, well protected, and known for the limestone cliffs forming its north wall. Facilities for boaters at Fayette are limited to 384 feet of broadside dockage. Restrooms are about 200 yards away in the visitor's center and are available for use during business hours only. After hours, boaters can use bathroom facilities in the campground.

The proprietor of the general store in Garden makes daily rounds at Fayette State Park, selling groceries and supplies to campers and boaters. He also takes telephone orders for groceries. There is a pay phone about 1000 yards from the harbor at the park's entrance.

The marina at Fayette is managed by the State Parks Division of MDNR, while facilities at Gladstone and Escanaba are managed by Recreation Division of MDNR in cooperation with the municipal governments. Consequently, the management practices, record keeping procedures, and facilities and services offered at Fayette differ from those at the other two marinas in the study.

Transient Boating Traffic in the Study Area

The MDNR keeps records of the boating traffic at each marina it manages. These records have been used to estimate the number of transient boaters likely to visit the marinas at Escanaba and Gladstone during the 1988 boating season, and to identify the time period when most of the visits would occur.

The number of moorings at the marinas ranges from 57 at Escanaba to 43 at Gladstone, to only broadside dockage at Fayette (Table 1). Escanaba is the largest marina, not only in terms of the number of moorings, but also in terms of the size of the marina basin and entry channel, and average water depth. In addition, many transients can be docked broadside at Escanaba, and most broadside spaces have some utility services. These differences in marina size, city size, and proximity to the open lake (see Figure 1) help explain the differences in traffic volume.

Table 1. 1987 Transient Boating Visits & Number of Slips by Marina.

Harbor	Total Visits	Visits[a] During Survey Period[b]		Number of Moorings	
		Number	Percent	Transient	Seasonal
Escanaba	360	344	99%	12	45
Gladstone	125	122	99%	10	33
Fayette	298	NA	NA	384'[c]	0

a. Visits are number of boats. Length of stay varies.
b. Survey period is June 21 to September 15.
c. Dockage at Fayette is limited to broadside transient dockage.

Through discussions with the manager of Fayette State Park, it was determined that the amount of transient traffic there in 1987 was comparable to the amount recorded at Escanaba, and that the time and duration of the boating season was also essentially the same as that of the other two ports.

The sampling period of June 21 to September 15 captures the peak of the boating season at these marinas as well as one shoulder period in the first half of September (Figure 2). The sampling period does not include the shoulder period at the beginning of the season.

Sampling

The study was conducted in the Lake Michigan ports of Escanaba, Gladstone, and Fayette (see Figure 1). The population studied consists of the skippers or owners of boats registering for an overnight stay at

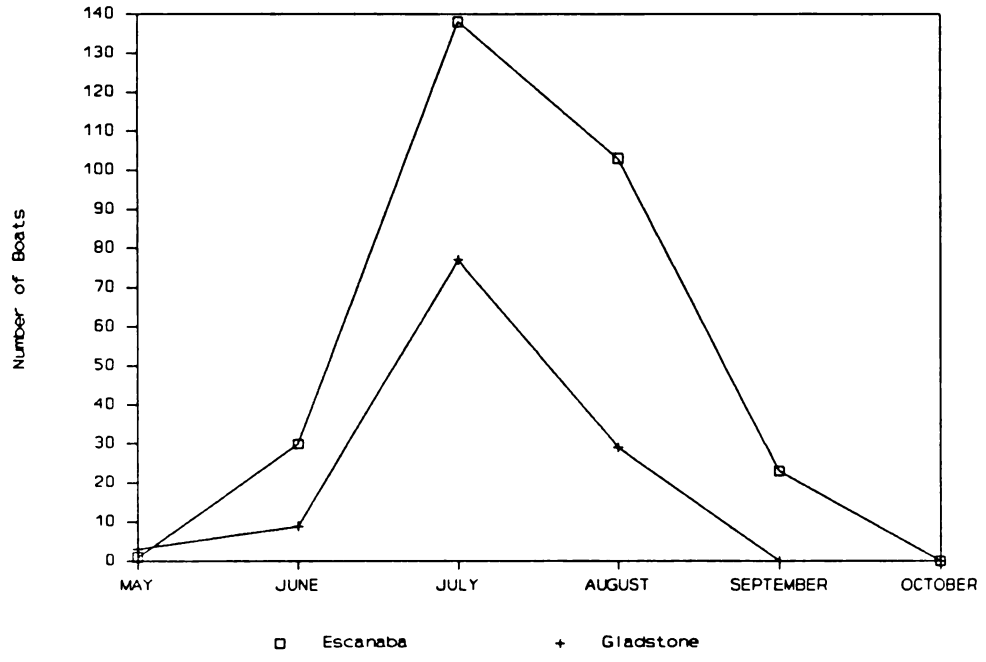

Figure 2. TRANSIENT BOATING VISITS TO ESCANABA AND GLADSTONE, 1987

transient marina facilities in Gladstone, Escanaba, or Fayette between June 21 and September 15, 1988. Although the questionnaire could be distributed to any member of the boating party, the instructions direct the owner or skipper to respond.

Excluded from this sampling frame are those boaters who spend the night at anchor, except in Fayette, where boaters who anchor out are required to register and pay at the Park office in the same manner as boaters moored at the dock. Also excluded are transient day users, ie., boaters who use the docks and related facilities during the day but do

not spend the night. Transient boaters who spend the night but do not register with the marina are also excluded.

The study population is essentially the same as would be obtained by using the marina logs for a sampling frame, which allows for the use of the marina logs to check the representativeness of the sample.

In order to generate enough cases for the types of analysis planned, and to simplify distribution procedures for the marina operators, the decision was made to conduct a census of all transient boaters (as defined above) using the facilities during the study period.

Measurement

A self-administered instrument was chosen for this study because of budget constraints and to simplify field procedures. The questionnaire is four pages long and is printed in booklet form to preclude the loss of individual pages (see Appendix A).

The four steps for developing the instrument are:

(a) Identify the information needed for each objective;

(b) Propose and evaluate questions to gather this information;

(c) Assemble the information into a 4 page instrument; and

(d) Pretest and review the instrument.

Variables

The variables to be measured by the questionnaire are shown in Table 2. Variables are arranged by the objective to which they are most relevant, although some are instrumental in achieving more than one objective.

Table 2. Variables Measured, by Objective and Question Number.

Objective Number	Variable	Question Number
1	BOAT CHARACTERISTICS: Length, Draft, Type, Propulsion, Ownership, Seasonal storage.	1-6
1	DESCRIPTION OF BOATERS: Age, Gender, Boating experience, Boating skill, Party size, Overnight boating activity last year, Zip code of permanent residence.	10-12, 25
1,2	PATTERNS OF TRAVEL ON PREVIOUS TRIPS: Overnight boating activity last year, Duration and distance of overnight boating trips last year, Previous visits to this harbor, Previous visits to this marina.	7, 7A, 23, 24
2	PATTERNS OF TRAVEL ON THIS TRIP: Trip origin, First overnight stop, Previous stop, Time and date of arrival at this marina, Departure date, Next stop, Ending point, Trip duration, Trip distance, Primary destination, Participation in organized boating events on this trip.	8, 17-20
3	SPENDING PATTERNS: Spending in the marina, Spending in the community, Spending at other stops on this trip, Expected spending at planned stops on this trip.	13, 17, 18
4	INFORMATION: Sources of information about marina facilities and services, Sources of information about community facilities and services, Awareness of nearby marinas	21, 22, 9
5	BOATER PREFERENCES: Importance of marina facilities and services, Importance of other factors in decision to stop in this harbor	14, 15A
6	MARINA EVALUATION: Rating of this marina's facilities and services, Suggestion for one improvement at this marina.	15B, 16

Question Development

Because there were few previous transient boating studies to reference for the development of the questions, considerable time was spent determining the best form for collecting needed information. Other boating studies were consulted for the development of questions where applicable, such as the questions about marina and harbor attributes (questions 14 & 15). The categories for boat types were taken from the Coast Guard National Boating Study (Marmo, 1980). Some questions were inspired by camping studies, which measure similar aspects of recreational behavior, e.g., trip spending, previous visitation patterns, use of information sources, and evaluation of facilities and suggestions for change (Stynes & Mahoney, 1986).

The questions designed to measure patterns of travel use the format of a ship's log (see Appendix A, Q.17,18,& 24). This allows for the collection of many related pieces of information in a relatively small space. The rationale for this choice of format is the assumption that boaters keep a written record of their travels, which would make the completion of this question a simple matter of transferring information from their log and charts to the questionnaire.

Format

The questions are presented in five sections, entitled "Information About the Boat", "Information About Your Stay in This Harbor", "Facilities & Services", "Information About This Trip", and "Information About General Boating Activities". Presented in this order, the topics progress from the specific to the general.

Final Review

Once the instrument had been constructed, it underwent a final review by both boaters and non-boaters, which resulted in the revision of some questions. The final questionnaire was printed on colored paper, using a different color for each of the three marinas.

Field Procedures

Field procedures were complicated by the fact that the study sites are over 400 miles from the University. With no travel budget, trips to the sites were limited. Ron Kinnunen, the Sea Grant Advisory agent for the Upper Peninsula, assisted with the field procedures by writing a cover letter for the questionnaire instructing marina personnel and managers about distribution practices, and monitoring the distribution process when possible.

The cover letter written by Mr. Kinnunen requests the boater's cooperation in the study, noting that the information requested is useful in improving services for transient boaters. The letter also instructs the skipper or boat owner to complete the questionnaire just prior to departure, and to return the completed form either to the marina office, or by mailing it in the business reply envelope provided.

The management and employees at the three marinas were instructed by Mr. Kinnunen to distribute a questionnaire to each transient boating party registering for an overnight stay, and to ask them to fill it out near the end of their stay at the marina, so that more complete spending information could be obtained.

The introduction of the questionnaire reiterates that the

questionnaire can either be returned at the marina office or by mail using the business reply envelope included (see Appendix A). Marina personnel were encouraged to facilitate the return of questionnaires at the marina office so that postage costs could be minimized. The questionnaires returned to the marina offices were then collected by Mr. Kinnunen and sent to MSU.

Data Processing

The returned questionnaires were coded and the data entered directly into a computer file using the Statistical Package for the Social Sciences (SPSS) Data Entry software. The data were cleaned, and an SPSS system file was created for data analysis. The procedures for coding the questionnaires, assigning missing values, and cleaning the data are described below.

Coding

In coding closed ended questions, the standard practice of assigning a number to each possible response category is followed. The procedure for coding open ended questions differs depending on the question asked and the responses elicited. For numeric open ended questions, the numeric response is entered. Boat length and draft (Q.1), arrival and departure dates (Q.17), party size (Q.10), age of the respondent and crew (Q.11), and zip code (Q.25) are coded in this way. Other questions require minimal coding, such as arrival time (Q.8) which is coded according to a 24 hr. clock, and distances travelled (Q. 17 & 18), which are converted (if necessary) from nautical to statute

miles.

Coding non-numeric open ended questions is more difficult, as it involves fitting wide ranging responses into a few meaningful categories. The non-numeric open ended questions are the city or harbor names given in the log questions (Q.17,18) and the question of where the boat is kept (Q.3); the boaters' recommendation for one change to improve the marina (Q.16); and the questions regarding information sources (Q.24,25).

The codes for location are presented in Appendix D. A numeric code was assigned to each Great Lakes port in the Green Bay area and each major coastal Lake Michigan city, with the remaining Great Lakes ports grouped together in logical geographic units (e.g., Grand Traverse Bay area, Mackinac Straits area). The codes progress from representing geographically small units close to the study area, to representing larger units farther away from the area. This method of aggregation reflects both the volume of traffic generated by the regions, and their potential for generating additional transient boating traffic.

The recommendations made by boaters for changes in the marina were tabulated and grouped according to general topic, e.g., shower facilities, utilities, etc. The specific comments are not included here, but each marina received a list of the comments made about their facilities.

Information sources used in planning a transient boating trip were sought with few preconceived expectations about what responses would be received. The responses were consistent enough to be broken into 8 categories, with less than 15% of the responses classified as "other".

Missing Values

For each question, a missing value code is included (usually "9" or for a two column response, "99"). This code is assigned if no response is given. The only exception is on the spending question (13). For purposes of analysis, this question is divided into quadrants labeled A-D, as shown in Figure 3. If the respondent entered an amount on any of the five lines in each quadrant (e.g., dockage at the marina=$10), any empty lines in the quadrant are assigned zero spending. If none of the lines in a quadrant is filled, each line in the quadrant is assigned a missing code.

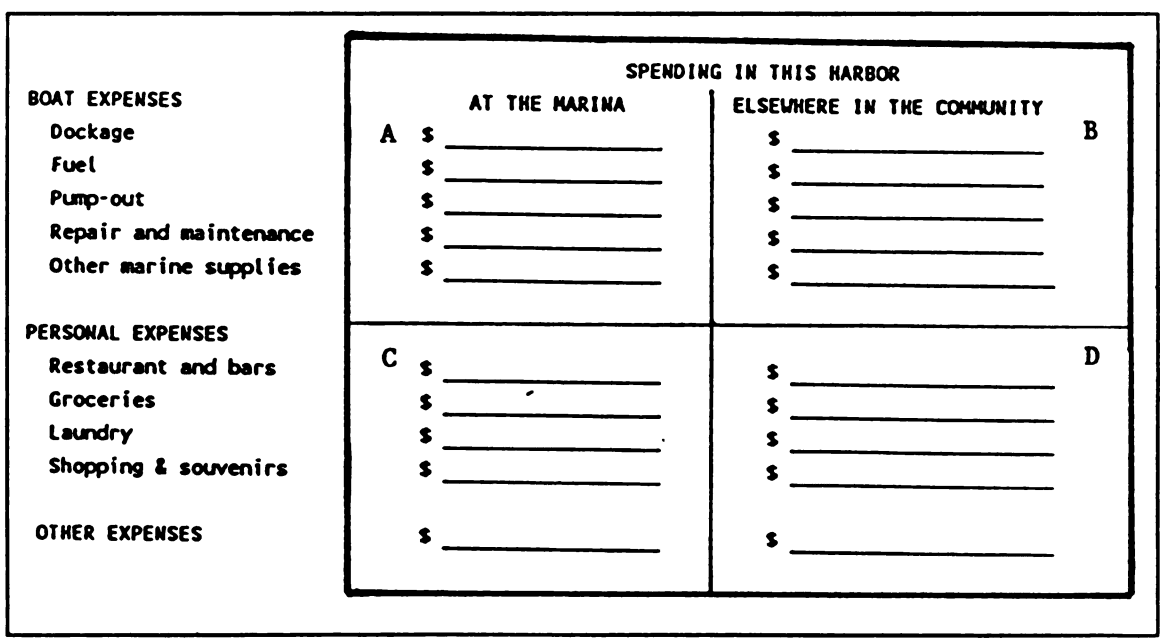

Figure 3. Coding Procedure for Question 13

Cleaning

The SPSS Data Entry package allows the specification of ranges defining valid responses for each variable in the file. Once ranges have been set, a cleaning pass can be run, resulting in a list of cases on which a given variable contains a value outside of the specified range. Based on this list, the data can be corrected, reducing the probability of bias due to data entry errors.

Data Analysis

The analysis of data begins with the generation of descriptive statistics for each marina and for the combined sample for all variables defined in Table 2. Distributions (frequencies, range, mode), medians, and means (or averages) will be calculated where appropriate and reported in tables. These descriptive statistics will partially meet Objectives 1 through 6, and will form the basis for further analysis of the variables necessary to fully achieve the objectives.

Further analysis of the data will include conducting an Importance-Performance Analysis (see Chapter 2) on the marina evaluation questions and expanding the results of spending analyses to the full population of transient boaters using facilities at the three marinas. The data analysis concludes with an evaluation of the study design (Objective 8), including an analysis of the questionnaire design and distribution practices used in this study. The remainder of the data analysis section is organized by objective, where specific methods for achieving each objective are discussed in detail.

OBJECTIVE 1: Describe transient boaters and boats using the marinas at Escanaba, Gladstone, and Fayette.

The description of transient boaters includes the distribution of age, boating experience, and boating skill of the owner or skipper, and the age and boating experience of the crew. The distribution of gender, party size, number of overnight boating trips last year, and location of permanent residence are also reported. The description of last year's overnight boating trips, reported in the section on travel patterns (Objective 2) supplements this profile of boaters.

The description of transient boats reports the average length and draft, and the distribution of boat type, ownership status, and the location of seasonal storage. Where sample size allows and meaningful differences exist, the descriptions of boaters and boats is reported by individual marina.

OBJECTIVE 2: Measure patterns of transient boating activity in the Bay de Noc region.

There are few variables relative to this objective for which medians or means are reported. In almost all cases, the distribution of responses is more appropriate. The description of travel patterns includes the origin and terminus of the trip, the boater's primary destination on this trip, the previous and next stops and the total trip distance. The departure date for the trip, the date and time of the boater's arrival at the marina, and the planned duration of the trip are also reported, by marina and for the entire sample, as are planned

participation in organized boating activities.

In describing patterns of travel on previous trips, the number and distribution of overnight trips taken during the previous season, and the distance and duration of these trips is reported and summarized using the mean. The distribution of previous visits to this harbor and to this marina is also reported, both for the whole sample and by marina.

OBJECTIVE 3: Measure spending patterns of transient boaters in the marina and the community.

To achieve this objective, average spending per party is estimated by sector and by marina. For each harbor, the average spending per boating party is multiplied by the total number of boaters registering in that harbor in 1988. This yields an estimate of the total spending attributable to transient boaters in each harbor, assuming that there is no non-response bias in the sample (see Chapter 4).

OBJECTIVE 4: Identify information sources used by transient boaters.

The sources of information used by boaters are reported by sector (community or marina) for each study site. The respondents' awareness of other nearby marinas is also reported by marina.

OBJECTIVE 5: Measure preferences of transient boaters for marina and community facilities and services.

Boaters were asked to rate the importance of various marina facilities and services. The responses are reported as ratings averaged

across respondents and the attributes are ranked from most to least important. These ratings are also used in the construction of an importance-performance action grid, which is part of the marina evaluation (see Objective 6).

OBJECTIVE 6: Evaluate the marinas' transient facilities and services.

Each marina is evaluated by utilizing an importance-performance (I-P) action grid (see Chapter 2, pp. 14-17). The first step in this process is the selection of attributes. Through consultation with marina managers and boaters, fourteen attributes were selected (See Appendix A, question 15). Respondents were asked to rate the importance of each on a three point scale (1=Very Important, 2=Somewhat Important, 3=Not Important) and using the same list, to rate the performance of the marina on a five point scale (1=Excellent, 2=Good, 3=Fair, 4=Poor, 5=Not Available).

Frequencies, means, and medians were calculated for each attribute, and examined to determine whether the mean is the appropriate measure of central tendency. As the mean and median do not differ greatly, the scales are assumed to have interval properties, and the mean scores used. These scores are plotted on a two dimensional grid, with importance on the vertical axis and performance on the horizontal.

As importance-performance analysis requires a subjective decision on where to split the distribution to form the four quadrant grid, the center of the importance scale was used to divide the responses into high importance (>2) and low importance (<2). The performance scale is also divided at 2.0, so that attributes receiving average ratings of

"good" or "excellent" comprise the high performance category.

Evaluation of the marinas also includes the tabulation of respondents' recommendations for one change which would improve the marina.

OBJECTIVE 7: Make recommendations for the planning, development, marketing, and management of transient facilities in the Bay de Noc region.

Meeting this objective requires that the analyses performed to meet the other objectives be summarized, interpreted, and presented to the marina managers. This has been done in the form of two reports written for the marinas involved in the study, and a paper presented at a national conference on marina research (Stewart, Stynes, & Mahoney, 1988) which summarize the survey results in a non-technical style.

OBJECTIVE 8: Evaluate the study design for use in other regions or in a statewide transient boating survey.

As a pilot study, the study design was evaluated for its applicability at other marinas. This evaluation considers the success of using marina personnel for the distribution of questionnaires, the construction of individual questions, and problems of nonresponse bias.

Distribution

Conducting a census simplifies distribution procedures because it does not require marina employees to heed a predetermined schedule for the distribution of questionnaires. Every boater who stays overnight is

given a questionnaire. In practice, however, it may be difficult for marina personnel to achieve 100% distribution for several reasons. First, local boaters who occasionally stay overnight at the marina may not consider themselves transient boaters, and may decline to participate in the study. Repeat visits, to the harbor or to the survey area (i.e., to other survey sites), may result in a higher refusal rate as the season progresses (see Chapter 4).

The method used to analyze this method of distribution makes use of the sequential numbers put on Escanaba questionaires, the arrival date given by the respondent, and the record of arrivals in the harbor log. For ease of understanding the results of the analysis, the specifics of this method are given in Chapter 4, Section 8.

Question Construction

To evaluate the questions used on this questionnaire, the response rates for each variable were calculated. For those questions which measure more than one variable, response rates are averaged across the variables to arrive at a response rate for the question. A low response rate for a question indicates either that it asks a question for which the respondent does not know the answer, or asks it in a way that makes it difficult to answer. Those questions with low response rates should be reviewed, and revised or omitted from future questionnaires. The questions are also assessed through qualitative means.

Of particular interest in this review is the log format used to investigate travel patterns. Since the success of this question depends on whether and how boaters record their travels, evaluation of this

question is important. Because of the difficulties involved in obtaining complete and accurate reports of spending on a self administered questionnaire, the spending question also warrants special attention in the questionnaire evaluation.

Sample Representativeness

The representativeness of the sample is a function, in part, of the study design. The marinas at Escanaba and Gladstone keep records (harbor logs) of the boaters who visit their facilities. These logs are a close approximation of the study population for this survey and include some variables also measured in the survey. The log (representing the population), and the sample (consisting of the questionnaires returned) can be compared in an effort to identify nonrepresentativeness, and, if found, to correct for it.

This comparison provides a means of determining whether the sample is representative of the population, in terms of the variables compared. If the sample is found to be nonrepresentative in any systematic way, adjustments could be made in the survey design to prevent a recurrence of systematic bias in future transient boating studies.

CHAPTER 4

RESULTS

An average response rate of 33% was achieved. Response rates ranged from 47% at Gladstone to 26% at Fayette (Table 3). The 36% response rate given for Escanaba has been adjusted to reflect the actual distribution of questionnaires. These adjustments were based on an analysis of distribution which was possible only for the Escanaba marina. It does not appear that any one harbor had a disproportionately small return. However, the small sample size at Gladstone (n=30) dictates that caution be used in interpreting the results from this harbor. Details regarding distribution and response rates and tests for the representativeness of the sample are presented in Section 8.

The results are organized in eight sections, corresponding to the eight objectives of the study. Descriptive results are presented first, followed by analyses of travel and spending patterns, and a summary of the use of information sources. The preferences of boaters are summarized and analyzed, and integrated with the summary and analysis of the evaluations of transient facilities at Escanaba, Gladstone, and Fayette. The final two objectives, which make recommendations regarding the management of transient marinas and the design of future studies of transient boating conclude this chapter.

Table 3. Questionnaire Distribution And Response By Harbor

Harbor	Boats	Surveys Distributed	Surveys Returned	Response Rate (%)
Escanaba	360	281	101	36%
Gladstone	125	64	30	47%
Fayette	298	247	65	26%
Total	**783**	**592**	**196**	**33%**

Note. Number of boats is a count of all boats using the transient facilities during the summer of 1988. This includes a small number of craft (less than 10%) registering before or after the survey period.

Section 1: Transient Boaters and Boats

Transient boaters using the marinas at Escanaba, Gladstone, and Fayette range in age from less than a year to over 80 (Table 5). The average age of skippers was 48, while the average age of the crew members was 38. Figure 4 illustrates the distribution of the skippers' and crews' ages. The skippers' ages show a strong peak in the 45 to 49 year old category, while the distribution of crews' ages is bimodal, with peaks in the 5 to 9 year old, and 40 to 44 year old categories. This distribution suggests that many of the parties are families travelling with young children. The distribution of party sizes supports this. The average party size was 2.9 people, with 75% of the boating parties composed of either 2 or 4 people (Table 6).

Of the 196 skippers who responded to the survey, only one was a woman. The crews, however, were 65% female (Table 4). The combined group of skippers and crew was 58% male, 42% female.

The skippers were a fairly homogeneous group, not only in age and gender, but also in terms of their boating experience. The number of years of boating experience among skippers was over 15 years for 72% of the respondents, while crew members range from very inexperienced to very experienced (Table 5).

Fifty-four percent of all boaters sampled were travelling by power boat, but the proportion of power boats varied somewhat by harbor (Table 6). At Gladstone, 73% of the boats were power boats, while at Fayette, power boats constituted only 43% of the fleet. Boat length averaged 31 ft., and the average draft was 4 ft. Almost all boaters surveyed owned the boats they were using on this trip, and three quarters keep their boat at a marina during the boating season.

The number of propellers a boat has directly affects its maneuverability, especially in docking, where twin propellers make turning a boat in a tight space much easier. The majority of boats at these sites have one propeller. Over half of the boats use gasoline, which is sold at both Gladstone and Escanaba. For the 37% that need diesel fuel, Escanaba is the only marina in the area able to service them.

Overall, the characteristics of boats varied more by harbor than did the characteristics of boaters. Boats visiting Gladstone were smaller, more likely to be power boats, and none were borrowed or chartered.

Table 4. Boater Characteristics by Harbor

Characteristic	Harbor: Escanaba	Gladstone	Fayette	Totals
Gender (%)				
Skipper				
Male	100	100	95	99
Female	0	0	5	1
Crew				
Male	38	20	35	35
Female	62	80	65	65
Skipper Age (%)				
Years				
<30	1	3	0	1
30-39	9	30	27	18
40-49	39	30	35	37
50-59	33	17	25	28
60-69	16	17	11	14
70+	2	3	2	2
Total	100	100	100	100
Crew Age (%)				
<10	14	13	11	13
10-19	11	8	13	11
20-29	8	9	8	9
30-39	14	22	24	19
40-49	25	24	27	25
50-59	18	12	11	14
60-69	9	9	4	7
70+	1	2	1	1
Total	100	100	100	100

Table 5. Party Characteristics by Harbor

	Harbor			
	Escanaba	Gladstone	Fayette	Totals
		Party Size (%)		
1	1	0	2	1
2	49	57	43	48
3	14	23	18	17
4	30	13	29	27
5	6	3	2	4
6	0	3	5	2
7+	1	0	2	1
		Boating Experience (%)		
Skipper				
0-5 yrs	5	13	2	5
6-10	11	3	11	10
11-15	14	7	14	13
16-20	19	23	20	20
21+	51	53	53	52
Crew				
0-5 yrs	82	22	43	147
6-10	13	7	24	44
11-15	29	5	16	50
16-20	20	6	16	42
21+	47	6	23	76
		Skipper's Boating Skill[a](%)		
1	2	13	0	2
2	2	3	2	2
3	16	7	17	15
4	47	23	49	47
5	33	53	32	34
Total	100	100	100	100

a. Self-ratings where 1=Beginner, 3=Intermediate, 5=Expert

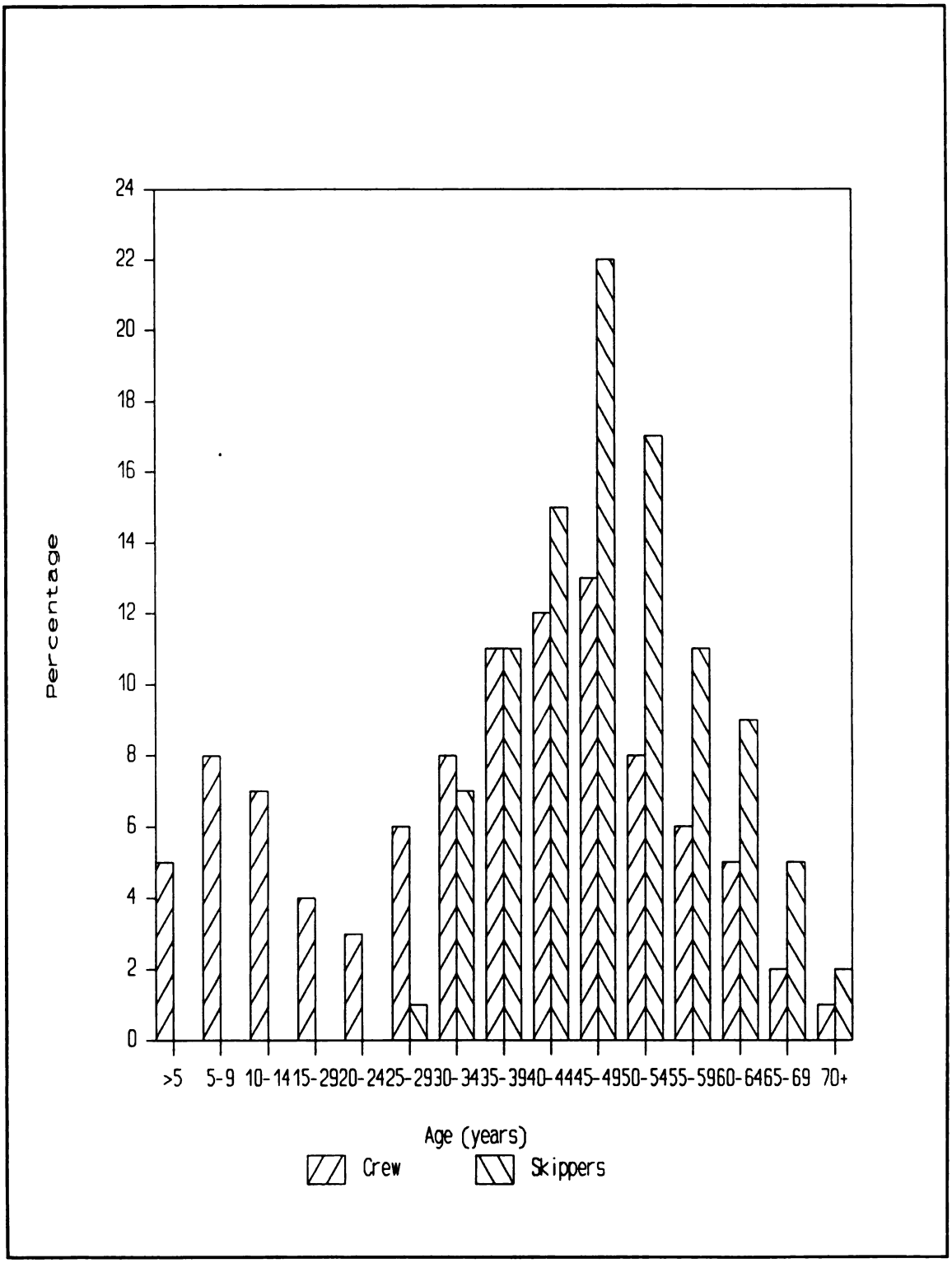

Figure 4. Age Distribution of Skippers and Crew

Table 6. Transient Boat Characteristics by Harbor

	Harbor			
	Escanaba	Gladstone	Fayette	Totals
		Boat Length (%)		
17-25 ft.	19	13	14	16
26-30	36	50	37	38
31-35	33	17	32	30
36-40	8	20	12	11
40+	5	0	5	4
Total	100	100	100	100
		Boat Draft (%)		
<3 ft.	9	7	5	7
3	36	45	20	32
4	24	21	31	26
5	18	14	26	20
6	11	14	17	13
7+	3	0	2	3
Total	100	100	100	100
		Primary Propulsion Type (%)		
Power				
Inboard	36	41	25	33
Outboard	20	33	18	20
Total Power	56	74	43	53
Sail				
Gas aux.	23	13	19	20
Diesel aux.	18	13	38	24
No aux.	3	0	0	3
Total Sail	44	26	57	47
All Boats	100	100	100	100
		Boat Ownership (%)		
Owned	91	100	88	91
Chartered	6	0	11	7
Borrowed	3	0	1	2
Total	100	100	100	100

Compared to transient boaters using public marinas statewide, visitors to Gladstone were the most typical group in terms of boat type. 1987 DNR statistics indicate that 68% of the transient boats using Michigan's public marinas were power boats. At Fayette, only 43% of the boaters surveyed were using power boats. While this difference may reflect distribution or response bias (see Section 8), it is likely that the harbor of Fayette is different from harbors statewide, and that these differences make it more attractive to sailors, less attractive to powerboaters, or both.

Section 2: Travel Patterns

Most of the boaters using these three marinas come from outside the state of Michigan, with three quarters living in the Green Bay, Milwaukee, or Chicago areas. Table 7 compares the market areas defined by the boater's permanent residence, boat storage location, and trip origin.

The Green Bay area generates much of the traffic at these three marinas. In addition to the 29% of visitors who live in the Green Bay area, half store their boats there, and 60% started their trip in the area. The region from Rowley Bay to Milwaukee, WI on the western shore of Lake Michigan also contributes to the traffic in the Bay de Noc area, with 12% of all trips originating there. Table 8 details the origin of trips by region, as well as the distribution of previous and next stops on this trip.

The majority of boaters visiting these marinas made more than one stop in the area, listing the Bay de Noc region as the location of

either their next or previous stop. Although the North end of the Door Peninsula, only 30 miles from Escanaba, is not the origin of many trips, it does share Bay de Noc's transient traffic, with nearly a third of respondents making a previous stop there, and 21% planning their next stop in that area.

Many boating trips appear to be only loosely planned. More than half of the boaters indicated that they had no primary destination, and only 7% indicated that they would be participating in an organized event such as a festival, race, or rendezvous (Table 9). While almost all reported the location of their previous stop, only 83% indicated where they would go next.

The average distance of travel from the previous stop and to the next stop were both 38 statute miles for 1988. Average daily travel distance for 1987 was 36 statute miles with total trip distance averaging 217 miles and 7.4 days spent away from home (Table 10). With a statewide average length of stay of 1.7 days, and an average length of stay at these marinas of 1.8 days, it is likely that boaters spend at least one day in port over the course of a 7 or 8 day trip. Therefore, average daily travel calculations allow for a one day layover. It should be noted that boaters were asked to report the four longest trips they took in 1987. The trip reported here may be a short one, and as such may be different from the previous year's longest trips.

At the three marinas in the Bay de Noc region, transient traffic shows a sharp peak in July (Table 11). All three marinas received over half of their traffic during the month of July. Although the sampling period does not include the entire boating season, very little

Table 7. Primary Market Areas by Harbor

Market Area	Harbor			Totals
	Escanaba	Gladstone	Fayette	
	Residence of Boat Owner/Skipper[a] (%)			
Green Bay	28	41	25	29
Milwaukee	8	10	15	11
Chicago	15	8	13	13
Other	49	41	47	47
Total	100	100	100	100
	Location of Seasonal Storage (%)			
Green Bay	50	63	52	53
Milwaukee	7	7	11	8
Chicago	4	3	0	3
Other	39	27	37	36
Total	100	100	100	100
	Trip Origin (%)			
Green Bay	63	83	66	65
Milwaukee	2	7	11	6
Chicago	3	0	0	2
Other	32	10	23	27
Total	100	100	100	100

a. Based on zip code of permanent residence.

Table 8. Trip origin, previous stop, and next stop by region

Region	Area	Distribution (%)		
		Origin[a]	Prev. Stop[b]	Next Stop[c]
1	N. shore of Lake Michigan	6	31	34
2	W. shore of Green Bay	9	6	5
3	S. end of Green Bay	8	0	0
4	S.E. shore of Green Bay	25	6	6
5	N.E. shore of Green Bay	13	20	21
6	N. end of Door Penninsula	5	29	21
7-9	W. Shore of Lake Michigan	12	2	4
10	S.W. Shore of Lake Michigan	5	0	0
11-13	S. end of Lake Michigan	6	0	0
14-16	E. shore of Lake Michigan	3	1	0
17-19	N.W. Lake Michigan	4	2	4
20	Mackinac Straits	0	0	0
21-22	Other Great Lakes ports	1	0	1
23	Inland locations	1	2	4
Total		100	100	100

a. n=192 b. n=191 c. n=161

Table 9. Travel patterns on this trip

	Harbor			
	Escanaba	Gladstone	Fayette	Totals
Previous stops	4.1	2.9	3.6	3.8
Length of stay[a]	1.8	1.9	1.7	1.8
Distance[b]				
From last stop	38	38	39	38
To next stop	38	42	35	38
Have a primary destination (%)				
Yes	46	57	48	48
No	54	43	52	52
Will participate in organized events (%)				
Yes	7	11	7	7
No	93	89	93	93

a. Nights b. Average statute miles

Table 10. Previous year (1987) travel patterns

	Harbor			
	Escanaba	Gladstone	Fayette	Totals
	Number of overnight trips on the Great Lakes (%)			
0	19	22	13	17
1-4	51	40	52	51
5-9	12	13	22	15
10-15	12	18	6	11
20+	5	8	6	6
Total	100	100	100	100
	Month of trips last year (%)			
May	8	7	5	7
June	17	15	12	15
July	38	37	35	37
August	26	26	26	26
September	10	15	22	15
Total	100	100	100	100
	Trip length[a]			
Distance (statute mi.)				217
Duration (nights)				7
Miles per day[b]				36

a. Average of distance and duration of four longest trips taken in 1987.
b. Trip distance (statute miles)/total trip duration (nights+1), assuming boaters stay in port one day.

traffic - less than 10% - is typically recorded during the portions of the season excluded (see Chapter 3). The transient boating season appears to be more sharply peaked in this region than at other facilities around the state, where only 40% of the traffic is generated during July (MDNR, 1988). Of the trips taken by respondents in 1987, 37% were taken in July.

The reasons for this difference may relate to the location of the marinas. Summer is shorter in the Bay de Noc region at the north end of Lake Michigan than it is in the southern Great Lakes. It is possible that if boaters plan to take several trips in a summer to different areas of the Great Lakes, they schedule their visit to the U.P. during July when it is most likely to be warm there. It may also be that in the Spring and Fall when weather in the Great Lakes is most changeable, boaters are less willing to make long trips for fear of being caught in bad weather. With the high percentage of Bay de Noc's traffic originating in locations more than one day away, boaters taking short range trips during the shoulders of the season would not be as likely to visit this area.

Another consequence of the short summer in the U.P. is that marinas are not officially open and staffed until early June, so that visits occurring in May and October would not be recorded.

Table 11. Month and Time of Arrival at This Marina

	Harbor			
	Escanaba	Gladstone	Fayette	Totals
		percent		
Month				
June	3	0	12	5
July	54	64	64	59
August	34	32	22	30
September	9	4	2	6
Total	100	100	100	100
Time				
9-10 a.m.	5	0	2	3
11-12	5	19	13	11
1-2 p.m.	30	38	16	26
3-4	31	24	27	27
5-6	14	16	24	18
7-8	7	3	5	6
9-10	5	0	4	4
10 p.m.-9 a.m.	3	0	9	5
Total	100	100	100	100

Section 3: Spending Patterns

Average spending per party was nearly $160 at Escanaba and Gladstone, while at Fayette, where the only marina service offered for a fee is dockage and there are limited opportunities to purchase goods from local merchants, average spending per party was little more than half this amount (Table 12). The primary source of this difference is in spending at restaurants and bars. Escanaba and Gladstone visitors averaged $54 and $61 respectively in this category, while at Fayette, where getting to a restaurant or bar is quite difficult without a car,

the average amount spent was only $10.

Almost all of the boat related spending and a third of personal spending took place in the marina (Table 12). Reports of personal spending in the marina are somewhat suspect; the marinas in these three harbors do not offer any type of food service, supplies, or laundry facilities, except at Fayette, where the general store owner makes daily rounds of the campground and marina. Confusion over where to record spending may be partly responsible for the higher than expected reports of spending in the marina.

The top three spending categories for boaters across the three marinas were restaurants and bars, dockage, and fuel, in that order (Table 13). At the individual marinas, the pattern was somewhat different, reflecting differences in dockage rates, average boat size (which determines the amount paid for dockage), and opportunities for spending.

Contributing to the differences in average spending in the marinas is the proportion of boaters who spent money. Boaters were more likely to spend money at Escanaba and Gladstone than they were at Fayette. Boaters at all three marinas were most likely to spend money on dockage, fuel, and restaurants and bars, and least likely to spend money on boat repairs or laundry (Table 14).

Total spending at the three harbors came to over $100,000 in 1988 (Table 15). Estimates of total direct spending were calculated by multiplying the average spending per boat by the total number of boats visiting the harbor, assuming that the amount spent by non-respondents did not differ significantly from the spending of those who did respond.

Table 12. Average Spending per Party by Harbor, Type, and Location

Harbor	Spending in Dollars			Percent of Spending		
	In Marina	In Community	Total	In Marina	In Community	Total
Boat Related Spending						
Escanaba	$55.03	$6.99	$62.02	89%	11%	100%
Gladstone	48.90	3.91	52.81	93	7	100
Fayette	40.67	8.68	49.35	82	18	100
3 Marina avg.	49.32	7.15	56.47	90	10	100
Personal Spending						
Escanaba	$26.53	$68.54	$95.07	28%	72%	100%
Gladstone	32.13	74.00	106.13	30	70	100
Fayette	15.03	24.82	39.85	38	62	100
3 Marina avg.	23.57	51.45	75.02	33	67	100
All Spending						
Escanaba	$81.56	$75.53	$157.09	52%	48%	100%
Gladstone	81.03	77.91	158.94	51	49	100
Fayette	55.70	33.50	89.20	62	38	100
3 Marina avg.	72.89	62.01	134.90	55	45	100

Table 13. Average Spending by Category, by Harbor

	Escanaba		Gladstone		Fayette		Total	
Category	Amount	Pct	Amount	Pct	Amount	Pct	Amount	Pct
Dockage	$20.34	13%	$22.89	14%	$42.38	48%	$28.03	21%
Fuel	36.06	23	28.64	18	6.33	7	25.11	19
Pump-out	1.05	1	0.82	1	0.13	0	0.71	1
Repair	2.99	2	0.00	0	0.00	0	1.56	1
Supplies	1.58	1	0.46	0	0.51	1	1.06	1
Total Marine	$62.02	40%	$52.81	33%	$49.35	55%	$56.47	42%
Restaurant	$53.70	34%	$60.50	38%	$10.36	12%	$40.07	30%
Groceries	15.38	9	23.17	15	16.13	18	16.66	12
Laundry	0.54	0	0.42	0	0.82	1	0.62	0
Shopping	18.38	12	15.58	10	6.41	7	14.00	10
Other	7.07	5	6.46	4	6.13	7	6.67	5
Total Personal	$95.07	60%	$106.13	67%	$39.85	45%	$78.02	58%
All Spending	$157.09	100%	$158.94	100%	$89.20	100%	$134.49	100%

Total boater spending was highest in Escanaba, totaling over $56,000. Fayette generated close to $27,00, and Gladstone about $20,000. Although the number of boats visiting the harbors of Escanaba and Fayette in 1988 was similar, the estimated direct spending impact generated in the two harbors differed by more than $30,000, due to differences in spending patterns and opportunities.

Table 14. Average Spending per Party by Category, Zeros Excluded

Spending Category	In Marina		In Community	
	Percent Non-Zero	Avg. Amount	Percent Non-Zero	Avg. Amount
Dockage	94	27.35	4	33.13
Fuel	43	51.49	4	51.61
Pump-out	15	4.34	1	4.50
Repair	1	14.50	3	53.40
Supplies	8	4.87	6	11.27
Restaurant	21	53.83	42	61.27
Groceries	29	21.75	39	23.58
Laundry	3	5.33	8	5.33
Shopping	13	32.69	24	36.91
Other	6	24.58	15	31.72

Note. Averages are only for those spending money in a given category. Percent non-zero shows the proportion of boaters spending money in that category, and averages show the typical amount spent.

Table 15. Transient Boater Spending for the 1988 Season by Marina

Location of Spending	Avg. Spending per Boat	Number of Boats	Total Spending (col.2 x col.3)
		Harbor of Escanaba	
Marina	$81.56	360	$29,361.60
Community	$75.53	360	$27,190.08
Total	**$157.09**	**360**	**$56,552.40**
		Harbor of Gladstone	
Marina	$81.03	125	$10,128.75
Community	$77.91	125	$9,738.75
Total	**$158.94**	**125**	**$19,867.50**
		Harbor of Fayette	
Marina	$55.70	298	$16,598.60
Community	$33.50	298	$9,983.00
Total	**$89.20**	**298**	**$26,581.60**

Section 4: Information Sources

Under the heading of "Information about General Boating Activity", respondents were asked to name the sources they used to obtain information about transient marinas, and about communities. The question did not specify sources used on this trip.

The information sources used by transient boaters can be grouped into three categories; information provided by government agencies, by private companies or groups, and through informal channels (Table 16).

The National Oceanic and Atmospheric Administration provides navigational information for boaters in the form of charts, and supplementary materials which detail the location of navigational aids and channels. In addition, the State of Michigan publishes the DNR Harbors Guide, which provides information about the location, physical layout, and available services of the state's public marinas. These sources provided marina information for 27% of the respondents, and community information for 5%.

Numerous private information sources are also available, many of which deal with a particular area, such as the North Channel. The two most frequently used by the respondents were Richardson's Chartbook, which contains detailed harbor charts and some descriptive information about the facilities and services available in various ports, and the Great Lakes Cruising Club (GLCC) publications. The GLCC is a non-profit organization which collects, compiles, and disseminates to its members detailed information about the ports of the Great Lakes, including

everything from the location of sandbars to the legends and folklore of an area. In total, private sources were used by 21% of transient boaters for marina information, and by 8% for community information.

The third channel for information was a network of informal sources, including the previous experiences of boaters, and the experience of others, as relayed by word of mouth. These sources were used by a greater percentage of respondents than any other, with 35% relying on informal sources for marina information, and 64% for community information.

The heavy reliance on informal sources for community information suggests that formal sources for such information are not readily available, or that those which are available do not provide the boater with adequate information.

The reported use of information sources varied little across the three marinas. The only exception was at Escanaba, where informal sources were used for community information by 66% of the boaters, compared to 30% at Gladstone and 52% at Fayette. If the respondents were generalizing across all harbors and all boating trips, rather than reporting on this trip only, the difference in information use may indicate that Escanaba's visitors are in some way unique. It is possible, however, that respondents tended to answer this question with their present trip and marina in mind. This would explain heavy reliance on informal sources at Escanaba, where finding community resources within walking distance of the marina presents a challenge.

Table 16. Primary Information Sources by Harbor

Information Source	Harbor			Totals
	Escanaba	Gladstone	Fayette	
	Marina Information (%)			
Government				
DNR Harbors Guide	22	27	14	20
Government Charts	4	12	10	7
Private				
Great Lakes Cruising Club	13	2	11	11
Richardson's Charts	14	0	9	10
Informal				
Word of mouth	26	40	31	29
Past experience	5	7	7	6
Other	15	12	18	16
Total	100	100	100	100
	Community Information (%)			
Government				
DNR Harbors Guide	5	0	4	4
Government charts	0	3	0	1
Private				
Great Lakes Cruising Club	3	0	9	5
Richardson's Charts	2	0	6	3
Informal				
Word of mouth	60	77	44	57
Past experience	6	7	8	7
Other	24	13	28	24
Total	100	100	100	100

Section 5: Boater Preferences

The investigation of boater preferences centered around two choices a boater makes when travelling; the choice of a harbor and the choice of a marina. The most important factor in choosing a harbor was that it provided a place to spend the night (Table 17). Also important to boaters were shelter from the weather, visiting a particular area, and refueling. These did not vary greatly by harbor, except that for boaters at Fayette, only the top three factors (place to spend the night, shelter from the weather, and visiting the area) were given average ratings higher than 2 on a three point scale, where 2=somewhat important. Consistent with the response to other questions regarding participation in special events, festivals and races ranked near the bottom of the list, along with fishing, which apparently has little influence on the choice of a harbor.

The second set of preference ratings asked the boater to indicate the importance of marina attributes in choosing a marina for an overnight stay. Those found to be most important include protection from rough weather, the depth of the water, and the cleanliness of the facilities (Table 18). Fayette again differed from the other two marinas, in that boaters did not ascribe as much importance to any of the attributes as boaters did at the other two marinas, nor were as many attributes considered, on average, to be more than "somewhat important". At Escanaba and Gladstone, only 2 attributes received average rating lower than the importance scale's midpoint of 2, while at Fayette, 7 attributes fell below 2.

Table 17. Importance of Factors in Selecting a Harbor

Factors	Harbor			Totals
	Escanaba	Gladstone	Fayette	
Place to spend night	1.1	1.3	1.3	1.2
Shelter from weather	1.5	1.5	1.4	1.5
Visit area	1.9	1.7	1.3	1.7
Fuel	1.8	1.8	2.7	2.1
Groceries	2.0	1.9	2.4	2.1
Repairs	2.6	2.5	2.8	2.6
Visit friend or relatives	2.7	2.6	2.9	2.7
Festival	2.8	2.6	3.0	2.8
Fishing	2.8	2.7	2.8	2.8
Race	3.0	3.0	3.0	3.0

Note. Average rating where 1=very important, 2=somewhat important, 3=not important.

Respondents were most concerned with the physical attributes of the marinas and harbors. Social concerns, such as noise, security, and cleanliness were also important in choosing a marina.

Section 6: Marina Evaluation

The evaluation of the marinas includes two elements. The first is an Importance-Performance Analysis (IPA) which compares the preference ratings discussed in Section 5 with the performance evaluation. The second part of the evaluation is a tabulation of the boaters' suggestions for marina improvements.

Table 18. Importance of Marina Attributes, by Harbor

Attribute	Harbor			
	Escanaba	Gladstone	Fayette	Total[a]
Protection	1.1	1.1	1.2	1.1
Water depth	1.2	1.1	1.2	1.2
Cleanliness	1.3	1.1	1.4	1.3
Dock structures	1.4	1.3	1.6	1.4
Noise	1.5	1.3	1.5	1.5
Staff hospitality	1.5	1.3	1.8	1.6
Security	1.5	1.3	1.8	1.6
Showers	1.5	1.4	2.0	1.6
Monitor marine radio	1.6	1.5	2.1	1.7
Ease of finding the marina	1.6	1.5	2.0	1.7
Dockside utilities	1.6	1.4	2.0	1.7
Proximity to town	1.8	1.8	2.2	1.9
Repairs	2.3	2.4	2.7	2.4
Haul out facilities	2.6	2.9	2.8	2.7

Note. Average rating where 1=very important, 2=somewhat important, 3=not important.
a. Weighted average of the first three columns

The results of the IPA reflect both the differences between the three facilities and between the groups of boaters using the facilities. In Gladstone, the attributes fell into two categories; the high importance - high performance category, and the low importance - low performance category, suggesting that the clientele as a group is happy with the marina at Gladstone the way it is (Figure 6). At Escanaba, three features, security, showers, and proximity to town are in the low

performance - high importance category, with utilities falling close to the dividing line between high and low performance (Figure 5). At Fayette, showers and utilities are given low performance ratings, and fall on the dividing line between high and low importance (Figure 7). Six attributes were given low performance ratings, but none had average importance ratings above "somewhat important."

Repair services and haulout facilities are in the low importance - low performance category for all three marinas, indicating that boaters do not feel that these services are needed at these three marinas.

The responses to the open ended question about recommended improvements to this marina were tabulated and shared with the individual marinas. A summary of the results is presented in Table 18. This question generated a number of useful suggestions, and gave more insight into the attribute ratings. For example, at Escanaba, where the marina is situated in a park in a relatively small community, the low rating given to security was somewhat surprising. One possible explanation was found in the comments, where several boaters suggested that police control the young adults drinking beer in the park.

The low importance ratings given to amenities at Fayette was reinforced by comments from boaters there, who wanted Fayette to remain rustic and unspoiled. Several boaters also complimented Michigan facilities in general, stating that compared to facilities in Wisconsin and Illinois, Michigan facilities were wonderful. Given the high percentage of out of state boaters using these facilities, this perception may have contributed to the high overall ratings given to the three marinas.

Table 19. Evaluation of Marina Attributes, by Harbor

Attribute	Harbor			
	Escanaba	Gladstone	Fayette	Total
1. Protection	1.4	1.1	1.2	1.3
2. Staff hospitality	1.4	1.1	1.6	1.4
3. Dock structures	1.6	1.5	1.4	1.5
4. Water depth	1.8	1.5	1.2	1.5
5. Ease of finding	1.6	1.7	1.2	1.5
6. Cleanliness	1.8	1.3	1.5	1.6
7. Noise	1.9	1.2	1.5	1.7
8. Utilities	2.0	1.4	NA	1.8
9. Monitor marine radio	1.9	1.3	NA	1.8
10. Showers	2.1	1.1	NA	1.9
11. Security	2.1	1.6	1.9	2.0
12. Proximity to town	2.3	1.7	2.9	2.3
13. Repairs	NA	NA	NA	NA
14. Haul out	NA	NA	NA	NA
Overall Rating[a]	1.9	1.5	1.8	1.8

Note. Average rating where 1=excellent, 2=good, 3=fair, 4=poor
NA = majority of cases listed this attribute as unavailable.
a. Average across all attributes.

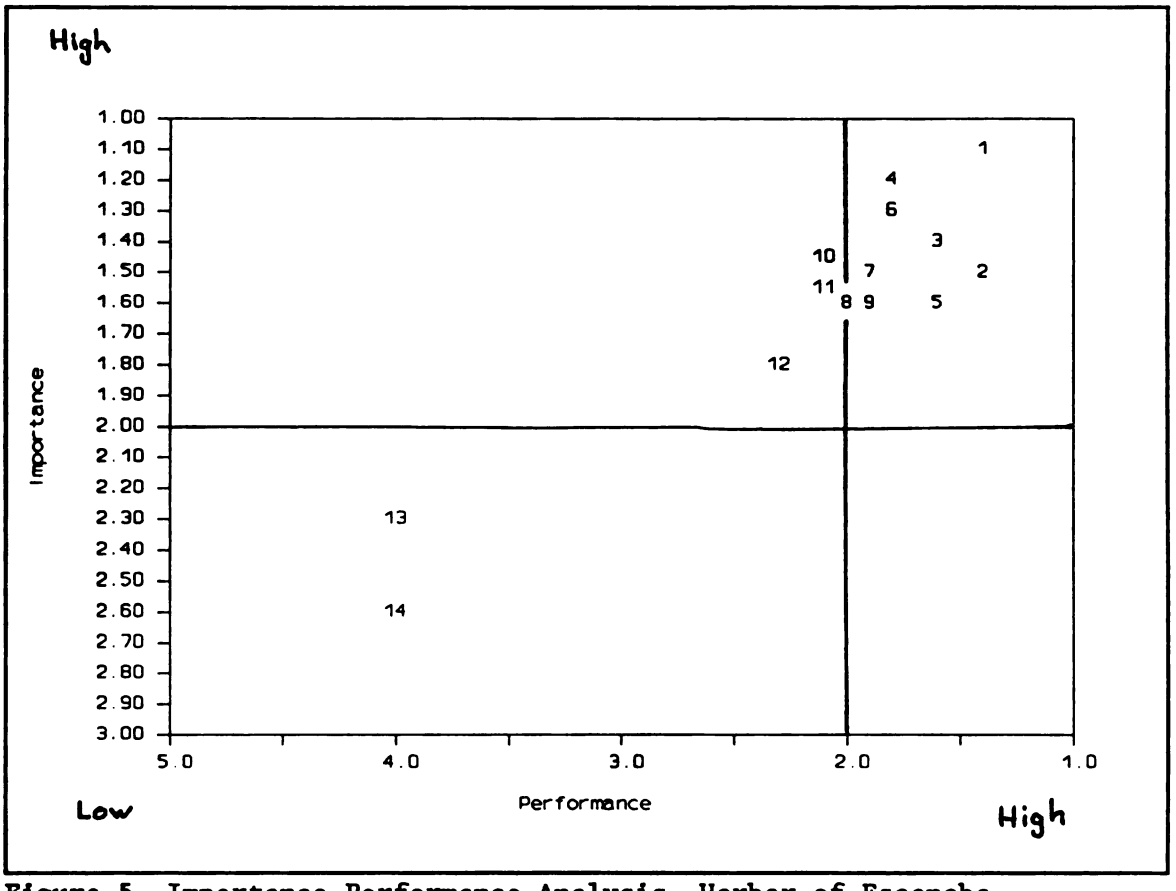

Figure 5. Importance-Performance Analysis, Harbor of Escanaba

Key to Attributes

1. Protection
2. Staff Hospitality
3. Dock Structures
4. Water Depth
5. Ease of Finding
6. Cleanliness
7. Noise
8. Utilities
9. Monitor Marine Radio
10. Showers
11. Security
12. Proximity to Town
13. Repairs
14. Haul out

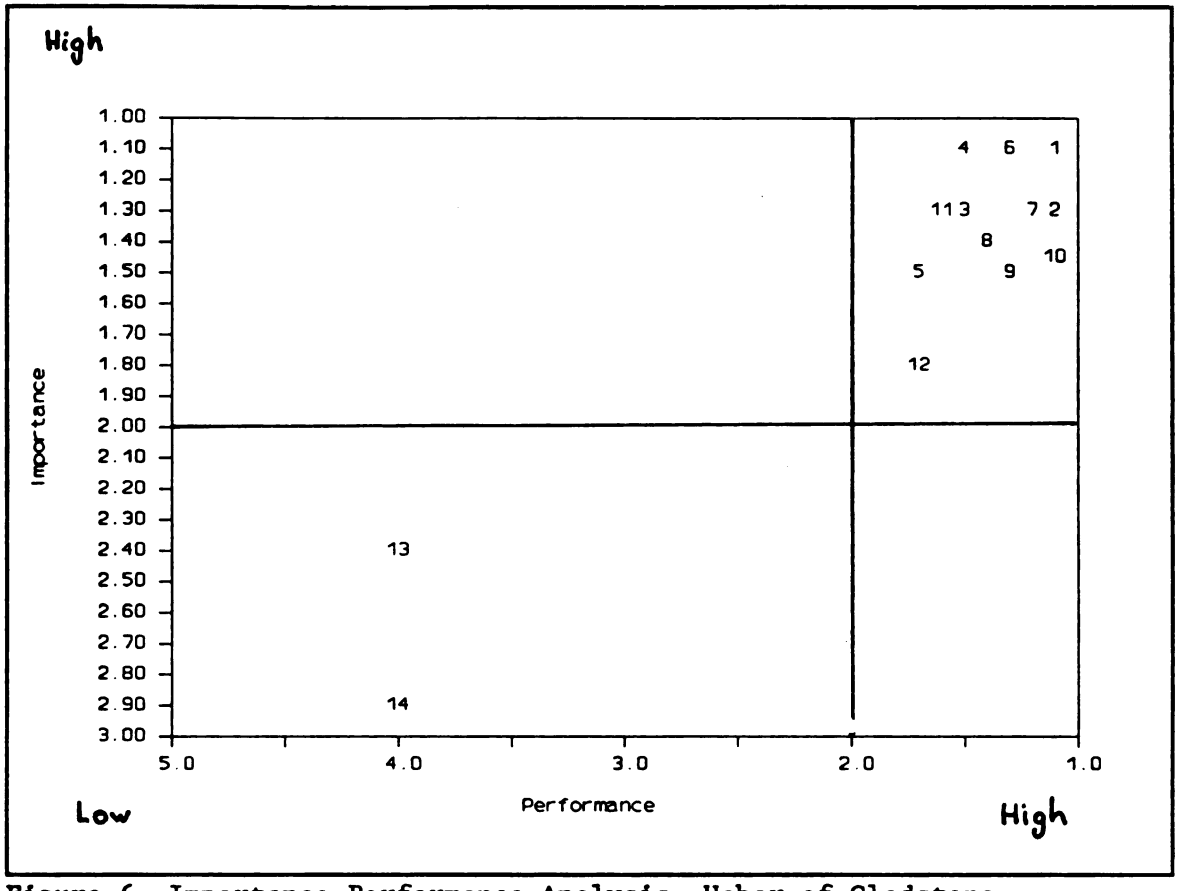

Figure 6. Importance-Performance Analysis, Habor of Gladstone.

Key to Attributes

1. Protection
2. Staff Hospitality
3. Dock Structures
4. Water Depth
5. Ease of Finding
6. Cleanliness
7. Noise
8. Utilities
9. Monitor Marine Radio
10. Showers
11. Security
12. Proximity to Town
13. Repairs
14. Haul out

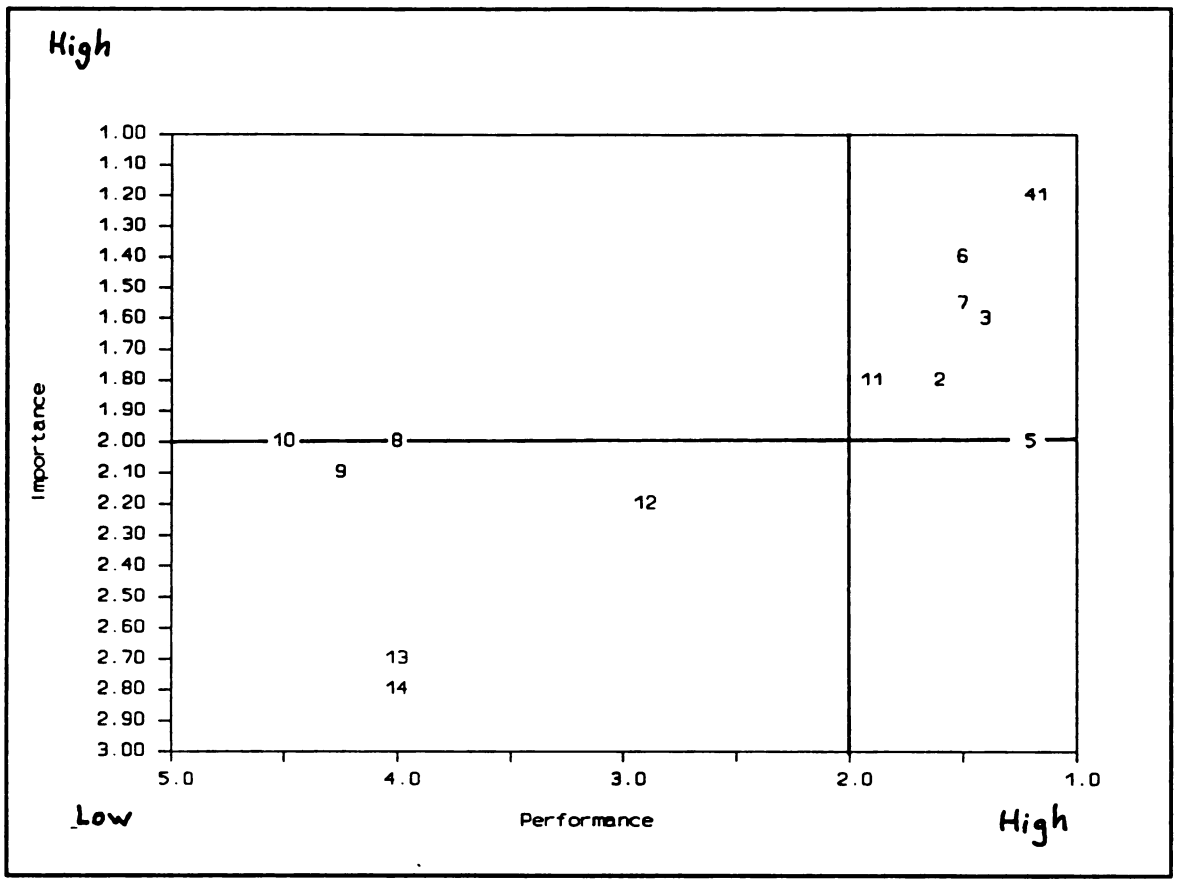

Figure 7. Importance-Performance Analysis, Harbor of Fayette.

Key to Attributes

1. Protection
2. Staff Hospitality
3. Dock Structures
4. Water Depth
5. Ease of Finding
6. Cleanliness
7. Noise
8. Utilities
9. Monitor Marine Radio
10. Showers
11. Security
12. Proximity to Town
13. Repairs
14. Haul out

Table 20. Suggestions for Improvement by Harbor (Distribution)

Topic of Suggestion	Harbor			
	Escanaba	Gladstone	Fayette	Total
Bathrooms & Showers	25	0	32	24
Dockside Utilities	14	0	19	15
Dockage	6	50	24	20
Navigation	12	25	0	9
Security	6	0	0	3
Other Services	28	4	9	17
General Positive	4	21	7	8
General Negative	4	0	4	3

Section 7: Recommendations

Recommendations were made to marina managers which were intended help them apply the survey results. Suggestions for developing and placing promotional materials, selecting and focusing on service for a particular market segment, and prioritizing facility improvements were made for each marina. For example, it was recommended that at the marina in Fayette, any facility improvements should be accomplished without changing the rustic nature of the harbor, since many boaters reported that this was its most attractive feature (see Stewart, Stynes & Mahoney, 1988).

The key recommendations made to each marina's management were

based largely on the results of the I-P analysis and the findings relating to the use of information sources. An attempt was made to recommend changes that were possible within a limited budget, as well as changes that could be made if the marina underwent a major renovation.

At Gladstone, the primary recommendation was to promote the location and services of the marina in Escanaba and other nearby ports. Additional recommendations addressed the issue of limited dockage, suggesting that any improvments made in the dockage situation should be well publicized to boaters, and improved navigational markers for the marina entrance were recommended.

Recommendations were made to Escanaba regarding the availability of dockside utilities, and again publicity of the changes was recommended. Providing transportation to town for boaters was also suggested, as were efforts to change the perception of security at the facility.

Changes in employee job responsibility were made to the park manager at Fayette in order to improve the hospitality rating there. It was also recommended that an effort be made to have Fayette included in more informational guides to reduce the necessity of relying on informal sources.

The marinas were encouraged to develop cooperative marketing arrangements among themselves and with their communities. Such arrangements could benefit all parties involved by bringing more visitors to the area and enticing them to to stay longer. Marinas were also encouraged to emphasize the role of transient boaters as tourists, and to inform their communities about the importance of these visitors.

Section 8: Pretest of the Study Design

The pretest consists of five parts, (a) an evaluation of the distribution methods used, (b) an evaluation of the spending question, (c) an evaluation of the log format for the travel pattern questions, (d) a review of questions which obtained a low item response rate, and (e) an analysis of sample representativeness.

Distribution

The evaluation of distribution focuses only on the consistency over time of questionnaire distribution. No attempt is made to determine whether distribution was affected by the weather, the work load of employees, some characteristic of the boaters or boats, or any other factors.

The technique used to evaluate the distribution system was made possible by the fact that the management at Escanaba numbered their questionnaires and asked employees to distribute them sequentially. This was done in an attempt to keep track of their employees' distribution practices.

The sequential numbers on the questionnaires, together with the date of arrival given on the questionnaire, make possible an estimate of the number of questionnaires distributed during a given time period. Based on these estimates, the consistency of distribution practices over the survey period was measured.

Because the use of the arrival date given by the respondent provides only a rough estimate of the actual distribution date, the distribution and response rates were calculated for only two periods,

the first and second halves of the survey period. These rates were compared to determine whether there was a change in distribution practices as the survey period progressed.

The average distribution rate at Escanaba was 82% (Table 21). The rate decreased from 88% in the first half of the survey period to 74% in the second half. Two possible explanations are that (1) the employees lost interest in distributing the surveys as the season progressed, and/or (2) many of the boaters visiting in late summer had been given a questionnaire, either at that harbor or at another survey site, earlier in the summer, and refused a second questionnaire.

Because the management practices, both in general and with regard to this survey, differ among the three marinas, the results of the distribution analysis are not generalizable to the other two marinas.

Item Response Rate

Item response averaged 91% across all questions on this form (Table 22). For the spending question as a whole, the response rate averaged only 62%. Divided into the four blocks used to code this question (see Figure 3, Chapter 3), the response rate is 98% for reporting boat related spending in the marina. The rate for each of the other three blocks is much lower. Many respondents filled out only the left half of the question, as evidenced by the 71% response rate for personal expenditures in the marina, this despite the fact that the marinas offer few opportunities for personal spending. It was not uncommon to find answers entered in the marina column, crossed off, and re-entered in the community column, suggesting confusion over the separation between community and marina.

Table 21. Escanaba Distribution & Response Rates by Survey Period

		Distribution		Response	
Period	Boats	Number	Rate[a]	Number	Rate[b]
6/21-8/1	199	176	88%	62	35%
8/1-9/15	142	105	74%	39	37%
6/21-9/15	341	281	82%	101	36%

a. Distribution rate=Surveys Distributed/Registered Boats
b. Response rate=Surveys Returned/Surveys Distributed

The response pattern seems to indicate that the respondents did not read the question carefully enough to separate their spending reports into all the categories given, but rather reported it in the first column and moved on. Consequently, the spending patterns detailed in Table 16 may be biased by misreporting, with spending in the marina overestimated, and spending in the community underestimated.

The format used for questions regarding travel patterns on this trip apparently also created difficulties for the respondents. Although they reported their trip origin and previous stop almost all the time, and their next planned stop 82% of the time, questions about the distances they travelled, and even the dates on which they travelled, were less frequently answered.

In observing one respondent while he was answering these

questions, it became apparent that (1) he did not know what the date was (and being on vacation didn't care), and had to count backwards to the origin of his trip to figure out which day of the week it was, so that he could use a calendar to figure out the date, and (2) he did not know how many miles it was from his trip origin to the port he was in. He used his charts as visual aids for a familiar trip, not to plot and measure a course. He knew how long the trip took, and worked backwards from there, guessing at his average speed to determine travel distance.

If this respondent was typical, the log format used for these questions was probably ill advised. As noted earlier, its success depends on respondents keeping careful track of their travels. This is apparently not the case for many boaters, and relying on recall to fill in the blanks seems to be problematic because the questions asked are not about matters of great importance to a boater on vacation.

Aside from these two groups of questions, the form was essentially successful. The only other questions receiving low response rates were the request for suggestions to improve the marina, and the questions about the use of information sources (Table 22). Both of these questions were open ended, requiring more effort on the part of the respondent.

Sample Representativeness

The final element of the pretest involved checking for non-response bias by means of a comparison between the sample and the harbor log. Three variables were found to differ substantially; type of boat, arrival time, and the proportion of boaters who had visited the marina previously in the season. (Table 23). Sail boats were slightly over

represented in the Escanaba portion of the sample, and under represented in the Gladstone portion.

At Gladstone, boaters arriving after business hours were not as likely to be given a questionnaire as were those who arrived during business hours, as evidenced by the the higher proportion of late arrivals in the harbor logs. Because this bias does not show up at Escanaba, it is unlikely that some characteristic of boaters who arrive after business hours is responsible for the bias. If it were, the same bias would be expected at Escanaba. Instead, it is probably a function of management practices at Gladstone.

The most consistent difference between sample and population is the number of boaters who were previous visitors. While 42% of the boats listed in the harbor logs had previously visited one of the three survey sites, only 28% of those responding to the questionnaire had. The magnitude of these differences indicates that boaters either refused to fill out a second questionnaire, or were not given a second questionnaire, resulting in an under representation of repeat visitors.

Table 22. Item Response Rate by Question Number and Topic

Question	Topic	Response Rate (%)
Information about the Boat		99
1	Length of boat	100
1	Draft of Boat	100
2	Type of boat	100
3	Ownership Status	100
4	Storage location during boating season	96
5	Stored at a marina or yacht club	100
6	Stored in the water	100
Information About Your Stay in This Harbor		99
7	Previous overnight visit to this harbor	100
7a	Previous overnight visit to this marina	100
8	Time of arrival at this marina	92
9	Aware of other transient marinas within 1 hr.	99
10	Number of persons travelling on this boat	100
11	Skipper's age	100
11	Skipper's gender	100
11	Skipper's boating experience	99
11	Skipper's boating skill	99
11	Crew's age	100
11	Crew's gender	96
11	Crew's boating experience	95
Spending on This Trip at This Stop		62
13	Boat expenses at the marina	98
13	Boat expenses elsewhere in the community	13
13	Personal expenses at the marina	71
13	Personal expenses elsewhere in the community	67
Facilities and Services		91
14	Importance of factors in visiting this harbor	96
15a	Importance of attributes in selecting a marina	99
15b	Rating of this marina's attributes	92
16	Boater's suggestion for improving marina	78

Table 22. (cont'd.)

Question	Topic	Response Rate (%)
Information About This Trip		87
17	Trip origin	98
17	Location of previous stop, if any	97
17	Month of arrival at this marina	89
17	Day of arrival at this marina	87
17	Distance from previous stop	75
18	Location of next planned stop	82
18	Distance to next planned stop	63
19	Primary destination (yes or no)	98
20	Involvement in organized events on this trip	96
Information About General Boating Activities		93
21	Information sources about marinas	86
22	Information sources about communities	82
23	Number of overnight boating trips last year	95
24	Month of trips taken last year, if any	100
24	Duration of trips last year, if any	100
24	Mileage of trips last year, if any	94
25	Zip code of permanent residence	96

Table 23. Comparison of Sample and Population (Log)

Variable	Escanaba		Gladstone		Escanaba & Gladstone	
	S	P	S	P	S	P
Boat Length in Ft.(avg.)	31'	30'	30'	29'	30'	30'
Type of Boat (% Sail)	45%	42%	26%	30%	41%	38%
Nights Stay (avg.)	1.8	1.3	1.9	1.9	1.8	1.5
Repeat Visit[a] (% yes)	27%	36%	30%	48%	28%	42%
Arriv.Time (avg.)	3PM	3PM	2PM	2PM	2PM	3PM
Business hrs. Arrivals (%)	82%	84%	93%	84%	85%	84%

Note. S= Sample, P= Population
a. Includes previous stops at all survey sites (Escanaba, Gladstone, & Fayette).

CHAPTER FIVE

CONCLUSIONS & RECOMMENDATIONS

This study sought to describe transient boaters and the boats they use, to investigate travel patterns, and spending patterns, and to evaluate transient facilities in the Lake Michigan ports of Gladstone, Escanaba, and Fayette. It also served as a pretest for the study design, in that the survey instrument and the method of distribution were previously untried. The findings relating to these purposes are summarized here, limitations of the study are specified, and recommendations for further research are made.

Conclusions

Transient boaters are mostly middle aged men and women with considerable boating experience, many of whom are travelling with children. The man is almost always designated as the skipper of the boat, and men slightly outnumber women in the combined group of skippers and crew.

Unlike the transient boating fleet using public transient facilities statewide which is heavily dominated by powerboats, the fleet in Bay de Noc is almost evenly split between sail and power boats, with powerboats in the majority in Gladstone, and sailboats dominating in Fayette.

Most boaters visiting the marinas in Bay de Noc were from the Green Bay area, with secondary market areas in Milwaukee and Chicago.

Many visits to the region were at a distance more than one day's travel from the area. Other nearby scenic areas, such as the north end of the Door Penninsula, help attract transient boaters to the region, and keep them there for multiple nights.

The shorter summer associated with the bay's northern location seems to affect visitation patterns, resulting in a sharply peaked boating season in Bay de Noc. The average distances travelled to and from the marina were not consistent with last year's average daily travel distance, but it is not clear which of many possible causes, related to measurement, sampling, or the geography of this area, contributed to the difference.

Although more than half of the boaters surveyed did not have a primary destination on this trip, it cannot be determined based on this study whether this is because they do not choose a destination in advance, or because they do not consider any one port to be a destination. Also related to decisionmaking is the question of when the 17% who did not yet know where their next stop would be would decide, and what factors would affect that decision.

The economic impact of transient boaters varied between harbors, due to differences in traffic volume and spending patterns. The latter reflects the influence of spending opportunities, which are fairly good at Gladstone and Escanaba and quite limited at Fayette. Spending was divided almost evenly between the marina and the community, with the community capturing most personal spending, and the marina almost all boat related spending.

Boaters reported that the necessity of stopping for the night was

the strongest influence on their choice of a harbor on an overnight boating trip. In choosing a marina, they were concerned first with the protection and security of their boat, and second with their own comfort, which suggests that marinas in the Bay de Noc area should continue their efforts to provide dockage and weather protection (ie., breakwater) facilities. Information about marinas and communities came mostly from informal sources.

All three marinas in the study earned high marks on meeting the basic needs of transient boaters, with most shortcomings related to facility maintenance and cleanliness, and access to town. The recommendations made to marina managers suggest ways to improve performance, emphasizing service to the segment of boaters which the marina is best able to serve.

The design and execution of the study was reasonably successful given budgetary constraints. Distribution methods apparently resulted in an underepresentation of boaters making repeat visits to the marinas, and two questions on the questionnaire posed some difficulty for respondents. The specific limitations from which the study suffers are:

1. The sample obtained was a non-probability sample, which precludes the use of probability statistics and prevents the generalization of the results to any other time, place, or population.

2. Distribution was carried out by marina employees untrained in survey methodology and busy with job related duties, which resulted in some inconsistencies, both within and across marinas, in distribution

practices.

3. As a pilot study, the length, format, and content of the survey instrument was substantially untested, with the result that two questions measuring several variables each were difficult for subjects to understand and may have obtained unreliable results.

4. Boaters were instructed to have the skipper of the boat fill out the questionnaire, and the skipper's responses may not be representative of the attitudes and preferences of the crew members.

5. Some questions, while asked generally, may have been answered in the context of the marina and trip, which raises questions about the external validity of the results, e.g., do the boaters at Fayette always seek rustic sites, or do they sometimes desire more amenities? Are these different segments or different situations?

6. The ports at which the study was conducted are not necessarily typical Great Lakes ports. Evidence from this study suggests that the fleet these marinas serve is somewhat atypical, and that the boating season is shorter and therefore more sharply peaked. This makes the study's external validity somewhat weak and creates further difficulty in generalizing the study results.

7. The 65% of transient boaters who were sampled but did not respond may differ from those who did respond.

Recommendations for Further Research

The recommendations for further research are based on the need to both improve and extend the work begun with this study.

1. The study should be repeated in other Great Lakes ports, so that the effects attributable to one port's characteristics can be separated from the more general characteristics of transient boating. While there will be regional effects associated with boating in any given port, repeating the study should allow those effects to be identified. This is especially important in furthering our understanding of transient boater travel and spending patterns.

2. The survey instrument used in this study should be revised in the following manner: a) the log question should be disaggregated into its components (single variables), each of these variables evaluated for its contribution to understanding travel patterns, and specific questions constructed to measure the variables. b) The spending question should be reviewed. The difficulties associated with it seem to stem from the fact that the question makes reference to spending opportunities which did not exist in these ports but may exist in others. More explicit instructions for responding to the question may improve its reliability and validity.

3. Further primary data collection on transient boating should be accompanied by analysis of the secondary data collected on an annual

basis, as required by MDNR, in public marinas across the state. These harbor logs include many varibles of use in studying transient travel patterns (e.g., trip origin, boat characteristics). These data could be used to supplement and verify primary data.

4. Further research is needed to clarify the choice processes of transient boaters, especially for the purposes of determining which travel decisions are made before the trip begins and which are made en route.

LIST OF REFERENCES

LIST OF REFERENCES

Dawson, C.P. & Laundergan, J.C. (1985). Recreational boating on Western Lake Superior during 1984. (Sea Grant # MINNU-G-85-002). Duluth, MN: University of Minnesota.

Duray, N. (1984). Importance-Perfomance analysis: A tool for converting research results into practical marketing strategies. In: Proceedings of the Research Symposium, National Recreation and Parks Association, Orlando, FL.

Falk, J.M., Graefe, A.R., and Swartz, D.G. (1987). The 1985 Delaware recreational boating survey: An analysis of Delaware-registered boaters. (Sea Grant # DEL-SG-06-87). Newark, DE.: University of Delaware.

Gold, S. (1980). Recreation planning and design. New York: McGraw-Hill.

Guadagnolo, F. (1985). The importance-performance analysis: An evaluation and marketing tool. Journal of Park and Recreation Administration, 3(2): 13-22.

Holecek, D.F., & Brothers, G. (1983). Documentation and analysis of temporal and spatial changes in marinas serving Michigan's Great Lakes. Report to Waterways Division, Michigan Department of Natural Resources. East Lansing: Dept. of Park and Recreation Resources, Michigan State University.

Mahoney, E.M., and Warnell, G. (Authors). (1987). Marketing for parks and recreation: The need for a new approach. [Videotape]. East Lansing: Michigan State University.

Marmo, A.J. (1980). National boating trends. In:Proceedings of the 1980 National Outdoor Recreation Trends Conference. General Technical Report NE-57, USDA Department of Agriculture, Northeast Forest Experiment Station, Broomall, PA.

Martilla, J.A. & J.C. James. (1977). Importance-performance analysis. Journal Of Marketing. 41(1):77-79.

Mengak, K.K., F.D. Dottavio, & J.T. O'Leary. (1983). Use of importance performance analysis to evaluate a visitor center. In: Proceedings of the Southeast Recreation Research Symposium.

Michigan Department of Natural Resources. (1987). Michigan harbors guide, 1987. Lansing, MI: Author.

_____(1985). Building Michigan's recreation future. (Appendix B). Lansing, MI: Author.

National Marine Manufacturing Association. (1988). Marine dealers fact sheet. Chicago: Author.

O'Leary, J. & Adams, M.B. (1981). Importance-performance analysis: A tool for assessing citizen views toward urban river recreation development. In: Proceedings of the Research Symposium. National Parks and Recreation Association. Minneapolis. MN.

Stynes, D.J., Brothers, G.L., Holecek, D.F., & Verbyla, D. (1983). Spending patterns and economic impacts of Michigan registered boat owners. (Sea Grant # MICHU-SG-83-210) Ann Arbor, MI.: Michigan Sea Grant Publications.

Stynes, D.J. & Holecek, D.F. (1982). Michigan Great Lakes recreational boating: A synthesis of current information. (Sea Grant # MICHU-SG-82-203). Ann Arbor, MI: Michigan Sea Grant Publications.

Stynes, D.J. & Mahoney, E.M. (1986). 1984 Michigan commercial campground marketing study. East Lansing : Michigan State University, Dept. of Park and Recreation Resources.

Stynes, D.J., & Safronoff, D. (1983). 1980 Michigan recreational boating survey. (Sea Grant # MICHU-SG-82-202). Ann Arbor, MI: Michigan Sea Grant Publications.

Sommerson, A. (1976). Economic impact and needs of Wisconsin's Great Lakes boaters. Madison: U. of Wisconsin Recreation Resources Center.

Talhelm, D., Jordan, S., & Holecek, D.F. (1988). 1986 Michigan recreational boating survey. East Lansing: Michigan Travel, Tourism, and Recreation Resource Center, & Lansing: Michigan Department of Natural Resources.

_____. (1989). Michigan's 1986 Great Lakes marina user segments, marina products, and marina product needs. East Lansing: Michigan Travel, Tourism, and Recreation Resource Center, & Lansing: Michigan Department of Natural Resources.

Wallace, S.J., J. O'Leary, F.D. Dottavio, J. Peine. (1985). Evaluation of management performance in campgrounds. In: Proceedings of the Southeast Recreation Research Symposium.

Westbrook, R.A. (1980). "A rating scale for measuring product service satisfaction". Journal of marketing 44:(Fall, :68-72.)

APPENDICES

Appendix A. Questionnaire

TRANSIENT BOATING SURVEY

Dear Boat Owner or Skipper; Michigan State University in cooperation with this marina is conducting a survey of boaters using transient facilities in order to better serve your needs. Your participation in this survey is voluntary and your answers are strictly anonymous. Please take a few minutes BEFORE YOU DEPART to complete this questionnaire. Place it in the postage-paid envelope provided and drop it in the box at the marina office, or mail it from any U.S. postal box.

INFORMATION ABOUT THE BOAT

1. Boat LENGTH in feet. _____ft. How many feet of water does the boat DRAW? _____ft.

2. TYPE of boat (Check one):

INBOARD	SAILBOAT	INBOARD/OUTBOARD	☐ OUTBOARD
☐ Gas, single engine	☐ Gas auxiliary	☐ Single engine	
☐ Gas, twin engine	☐ Diesel auxiliary	☐ Twin engine	☐ OTHER (please specify)
☐ Diesel, single engine	☐ No auxiliary		
☐ Diesel, twin engine			_____

3. Is the boat you are using on this trip; (check one): ☐ Owned by you? ☐ Borrowed? ☐ Chartered?

4. Where is this boat kept during the boating season? CITY _____ STATE/PROVINCE _____

5. Is this boat kept at a marina or yacht club during the boating season? ☐ Yes ☐ No

6. Is this boat kept in the water during the boating season? ☐ Yes ☐ No

INFORMATION ABOUT YOUR STAY IN THIS HARBOR

7. Have you stayed overnight in this HARBOR on a previous trip? ☐ Yes ☐ No (Go to Q.8)

7a. Have you stayed overnight in this MARINA on a previous trip? ☐ Yes ☐ No

8. On this trip, what TIME of day did you arrive at this marina? _____ a.m. or p.m. (Circle One)

9. Are you aware of any other marinas with transient facilities within an hour of here? ☐ Yes ☐ No

10. How many persons, <u>including yourself</u>, are travelling with on this boat? _____ NUMBER OF PERSONS

11. Please indicate the age and gender (M=male, F=female) for yourself and each member of your party. Indicate how many years of boating experience each person has by checking the appropriate box.

			SEX		YEARS OF BOATING EXPERIENCE				
		Age	M	F	0-5	6-10	11-15	16-20	20+
(YOU) OWNER OR SKIPPER		_____	☐	☐	☐	☐	☐	☐	☐
PASSENGERS OR CREW	1.	_____	☐	☐	☐	☐	☐	☐	☐
	2.	_____	☐	☐	☐	☐	☐	☐	☐
	3.	_____	☐	☐	☐	☐	☐	☐	☐
	4.	_____	☐	☐	☐	☐	☐	☐	☐
	5.	_____	☐	☐	☐	☐	☐	☐	☐

12. Rate YOUR OWN level of skill in handling this boat in a variety of Great Lakes weather and sea conditions. Circle one number from 1 (beginner) to 5 (expert).

BEGINNER INTERMEDIATE EXPERT

1 2 3 4 5

13. Please report below how much YOU and YOUR ENTIRE PARTY WILL SPEND IN THIS HARBOR ON THIS TRIP. Include money spent since you arrived here and estimate other expenses you expect to incur before leaving THIS HARBOR. Separate money spent in this marina from money spent elsewhere in this community. To the best of your ability estimate expenses for your entire party. If you did not spend any money in a given category, enter zero ("0").

	SPENDING IN THIS HARBOR	
BOAT EXPENSES	AT THE MARINA	ELSEWHERE IN THE COMMUNITY
Dockage	$ _____	$ _____
Fuel	$ _____	$ _____
Pump-out	$ _____	$ _____
Repair and maintenance	$ _____	$ _____
Other marine supplies	$ _____	$ _____
PERSONAL EXPENSES		
Restaurant and bars	$ _____	$ _____
Groceries	$ _____	$ _____
Laundry	$ _____	$ _____
Shopping & souvenirs	$ _____	$ _____
OTHER EXPENSES	$ _____	$ _____

FACILITIES & SERVICES

14. Rate the importance of each of the following factors in your decision to stop in this harbor on this trip. (Check one box on each line)

	VERY IMPORTANT	SOMEWHAT IMPORTANT	NOT IMPORTANT
A. Place to spend the night	☐	☐	☐
B. Fuel	☐	☐	☐
C. Shelter from bad weather	☐	☐	☐
D. Groceries (food,beverages)	☐	☐	☐
E. Repairs	☐	☐	☐
F. Visit this city or area	☐	☐	☐
G. Visit friends or relative	☐	☐	☐
H. Participate in a race	☐	☐	☐
I. Festival or special event	☐	☐	☐
J. Fishing	☐	☐	☐

15. Listed below are 14 marina attributes or services. In section A, indicate the importance of each factor to YOU when choosing a marina on an overnight trip (check one box for each item in column A). Then, in section B, rate THIS MARINA on each of these attributes (check one box for each item in section B).

	A. Importance (Imp.) in Selecting a Marina			B. Rating of THIS MARINA				
	Very Imp.	Somewhat Imp.	Not Imp.	Excellent	Good	Fair	Poor	Not Available
Dock structures (slip size, dock height,)	☐	☐	☐	☐	☐	☐	☐	☐
Water depth	☐	☐	☐	☐	☐	☐	☐	☐
Ease of finding the marina	☐	☐	☐	☐	☐	☐	☐	☐
Protection from rough weather	☐	☐	☐	☐	☐	☐	☐	☐
Proximity to stores & restaurants	☐	☐	☐	☐	☐	☐	☐	☐
Haul-out service	☐	☐	☐	☐	☐	☐	☐	☐
Repair services	☐	☐	☐	☐	☐	☐	☐	☐
Dock-side utilities	☐	☐	☐	☐	☐	☐	☐	☐
Shower facilities	☐	☐	☐	☐	☐	☐	☐	☐
Hospitality of staff	☐	☐	☐	☐	☐	☐	☐	☐
Cleanliness	☐	☐	☐	☐	☐	☐	☐	☐
Monitor marine radio	☐	☐	☐	☐	☐	☐	☐	☐
Security	☐	☐	☐	☐	☐	☐	☐	☐
Noise level	☐	☐	☐	☐	☐	☐	☐	☐

16. What ONE additional service or change would you recommend to improve this marina?

_____

INFORMATION ABOUT THIS TRIP

Now we'd like information about your boating trip. By "trip" we mean from the time the boat left its home port or was launched until the time it is returned to its home port or is taken out of the water.

17. Please complete the following log for your trip beginning with where the trip started and ENDING WITH THIS MARINA. If this is your first overnight stop, fill in the first and last rows of the table. If you have already spent one or more nights in other harbors, complete additional rows for each stop. For each stop indicate the total spending of you and your party in that port. CHECK WHETHER DISTANCES ENTERED ARE NAUTICAL (N) OR STATUTE (S) MILES.

	City or Harbor	Arrival Date Month/Day	Departure Date Month/Day	Distance from last overnight stop	Name of Marina (if any)	$$$ Spent by Party
Starting Point						$
First Overnight Stop				☐N ☐S		$
				☐N ☐S		$
				☐N ☐S		$
				☐N ☐S		$
				☐N ☐S		$
This Stop				☐N ☐S		$

18. To the best of your ability, please extend the log to indicate your plans for completing this trip. Again, please check whether distances are entered in nautical (N) or statute (S) miles.

	City or Harbor	Expected Arrival Date Month/Day	Expected Departure Date Month/Day	Distance from last overnight Stop	Name of Marina (if any)	Expected Spending by Party
Next overnight stop				☐N ☐S		$
				☐N ☐S		$
				☐N ☐S		$
				☐N ☐S		$
				☐N ☐S		$
END OF TRIP				☐N ☐S		

(CONTINUE ON NEXT PAGE)

19. Do you have a primary destination on this boating trip?

☐ Yes → What is your primary destination on this boating trip? _____

☐ No

20. Will you be involved in any organized events on this boating trip?

☐ Yes → BOAT RACE
FESTIVAL
OTHER (Please specify) _____

☐ No

INFORMATION ABOUT GENERAL BOATING ACTIVITIES

21. What sources of information about marina facilities and services for transient boaters do you rely on when on an overnight boat trip?

_____

22. What sources of information about the local community (restaurants, sightseeing, etc.) do you rely on when on an overnight boat trip?

_____

23. How many overnight boating trips did you take in the GREAT LAKES last year (1987)? (If none, enter zero and go to Question 25) _____ TRIPS

24. For each trip on the GREAT LAKES last year , please indicate the month you started the trip, round trip mileage, number of nights away from your home port, and number of nights in a marina. If you took more than four trips, report the four longest. CHECK WHETHER MILEAGE IS GIVEN IN NAUTICAL (N) OR STATUTE (S) MILES.

MONTH	NIGHTS AWAY	NIGHTS AT MARINA	MILEAGE
TRIP #1			☐N ☐S
TRIP #2			☐N ☐S
TRIP #3			☐N ☐S
TRIP #4			☐N ☐S

25. What is the zip code of your permanent residence? _____

THANK YOU for your cooperation. Please put the questionnaire in the postage-paid envelope provided and drop it in the box at the marina office, or mail it from any U.S. postal box.

Appendix B. Codebook

Table 24. Coding Procedure by Question Number

Q#	Name	Description	Missing	Type
1	Length	Boat length in feet	99	Open
1	Draft	Boat draft in feet	9	Open
2	Type	Propulsion type 1=Gas, single engine 2=Gas, twin engine 3=Diesel, single engine 4=Diesel, twin engine 5=Gas auxiliary (Sail) 6=Diesel auxiliary (Sail) 7=No auxiliary (Sail) 8=Single engine (I/O) 9=Twin engine (I/O) 10=Outboard 11=Other	99	Categories
3	Own	Ownership status of boat 1=Owned by respondent 2=Borrowed 3=Chartered	9	Categories
4	Kept	Storage during boating season	99	Open, LC[a]
5	Marina	Kept at a marina? 1=Yes 2=No	9	Dichotomous
6	Water	Kept in the water? 1=Yes 2=No	9	Dichotomous
7	Prev	Previous overnight in harbor 1=Yes, go to 7a 2=No, go to 8	9	Dichotomous
7a	Rmarina	Previous overnight in marina? 1=Yes 2=No	9	Dichotomous
8	Time	Time of arrival	99	Open, 24 hr. clock
9	Aware	Aware of other marinas 1=Yes 2=No	9	Dichotomous
10	People	Number of people on boat	99	Open
11	Skipage	Skipper's age	99	Open
11	Skipsex	Skipper's gender 1=Male 2=Female	9	Dichotomous
11	Skipexp	Skipper's boating experience 1=0-5 yrs 2=6-10 3=11-15 4=16-20 5=20+	9	Categorical

a. This variable coded according to location codes given in Appendix C.

Table 24. Con't.

Q#	Name	Description	Missing	Type
11	Crewage	Crew's age	99	Open
11	Crewsex	Crew's gender 1-Male 2-Female	9	Dichotomous
11	Crewexp	Crew's boating experience Same as Skipexp, see above	9	Categories
11	Skipskill	Skipper's boating skill 1- Beginner 2- 3- Intermediate 4- 5- Expert	9	Scale
13	Dockm	Spending, dockage in marina	999	Open
13	Fuelm	Spending, fuel in marina	999	Open
13	Pumpm	Spending, pumpout in marina	999	Open
13	Repm	Spending, repair in marina	999	Open
13	Suppm	Spending, supplies in marina	999	Open
13	Restm	Spending, restaurants in marina	999	Open
13	Grocm	Spending, groceries in marina	999	Open
13	Laundm	Spending, laundry in marina	999	Open
13	Shopm	Spending, shopping in marina	999	Open
13	Dockc	Spending, dockage in community	999	Open
13	Fuelc	Spending, fuel in community	999	Open
13	Pumpc	Spending, pumpout in community	999	Open
13	Repc	Spending, repair in community	999	Open
13	Suppc	Spending, supplies in community	999	Open
13	Restc	Spending, rest.in community	999	Open
13	Grocc	Spending, groc. in community	999	Open
13	Laundc	Spending, laundry in community	999	Open
13	Shopc	Spending, shopping in community	999	Open
14	A	Place to spend night 1-Very important 2-Somewhat important 3-Not important * Same scale is used for all Q14 variables	9	Scale
14	B	Fuel	9	Scale*
14	C	Shelter from bad weather	9	Scale*
14	D	Groceries	9	Scale*
14	E	Repairs	9	Scale*
14	F	Visit this city or area	9	Scale*
14	G	Visit friends or relatives	9	Scale*
14	H	Participate in race	9	Scale*
14	I	Festival or special event	9	Scale*
14	J	Fishing	9	Scale*

Table 24. Con't.

Q#	Name	Description	Missing	Type
15A		Marina Attributes, Importance 1=Very Important 2=Somewhat Important 3=Not Important	9	Scale
15B		Marina Attributes, Performance 1=Excellent 2=Good 3=Fair 4=Poor 5=Not Available	9	Scale
	Dock	Dock structures		
	Water	Water Depth		
	Find	Ease of Finding the Marina		
	Prot	Protection from Rough Weather		
	Prox	Proximity to stores, restaraunts		
	Haul	Haul-out service		
	Repair	Repair Services		
	Util	Dockside Utilities		
	Show	Shower Facilities		
	Hosp	Hospitality		
	Clean	Cleanliness		
	Radio	Monitor Marine Radio		
	Sec	Security		
	Noise	Noise Level		
16	Improv	One Improvement	9	Open
17	Start	Starting Point of Trip	99	LC[a]
17	Prev	Previous Stop	99	LC[a]
17	Distpr	Distance from Previous Stop	99	Open
17	Stnaut	Statute or nautical miles 1=Statute 2=Nautical	9	Dichotomous
17	Dated	Arrival Day	99	Open
17	Datem	Arrival Month	1	Open
17	Stops	Number of Previous Stops	9	Open
18	Next	Next Stop	9	Open
18	Distnx	Distance to Next Stop	99	Open
19	Prdest	Primary Destination 1=Yes 2=No	9	Dichotomous

a. This variable coded according to location codes given in Appendix C.

Table 24. Con't.

Q#	Name	Description	Missing	Type
20	Orgev	Attend Organized Event 1=Yes 2=No	9	Dichotomous
21	Infmar	Information sources, Marina	99	Open
22	Infcom	Information sources, Community	99	Open
23	Trip87	Number of trips, '87	99	Open
24	Tp1mn	Month of Trip One	1	Open
24	Tp2mn	" Two	"	"
24	Tp3mn	" Three	"	"
24	Tp4mn	" Four	"	"
24	Nite1	Nights Away From Home Port,	99	Open
24	Nite2	Trips 1-4		
24	Nite3			
24	Nite4			
25	ZIP	ZIP Code of Permanent Residence	99999	Open

Appendix C. Location Codes

Table 25. Location Codes by State, Area, and Ports

Region	State	Area	Ports
1	MI	North shore of Lake Michigan	St.Ignace, Manistique Fairport, Sac Bay, Fayette, Garden, South River Bay, Nahma, Gladstone, Escanaba
2	MI, WI	West shore of Green Bay	Cedar River, Menominee Marinette, Oconto, Pensaukee, Suamico
3	WI	South end of Green Bay	Green Bay, Appleton, De Pere
4	WI	East shore of Green Bay	Little Sturgeon Bay, Quarry Bay, Sturgeon Bay
5	WI	East shore of Green Bay	Egg Harbor, Fish Creek, (Door Penninsula) Chamber Island, Shanty (Nicolet) Bay, Eagle Harbor, Ephriam, Horseshoe Island, Sister Bay
6	WI	North end of Door Penninsula	Ellison Bay, Hedgehog Harbor, Gills Rock, Detroit Harbor, Jackson Harbor, Peterson Bay, Rock Island
7	WI	West shore of Lake Michigan	Rowley Bay, Bailey's Harbor, Algoma, Kewaunee
8	WI	West shore of Lake Michigan	Manitowoc, Two Rivers, Sheboygan, Port Washington
9	WI	West shore of Lake Michigan	Milwaukee
10	WI	Southwest shore of Lake Michigan	Racine, Kenosha
11	IL	South end of Lake Michigan	Waukeegan, Great Lakes Naval Center

Table 25. Con't

Region	State	Area	Ports
12	IL	South end of Lake Michigan	Chicago
13	IN, MI	South end of Lake Michigan	Gary, Michigan City, New Buffalo, Benton Harbor, St. Joseph, South Haven, Saugatuck, Holland
14	MI	East shore of Lake Michigan	Grand Haven, Muskegon, Whitehall/White Lake
15	MI	East Shore of Lake Michigan	Pentwater, Ludington, Manistee
16	MI	East shore of Lake Michigan	Frankfort, Leland, Manitou Islands
17	MI	Grand Traverse Bay	Northport, Suttons Bay, Omena, Traverse City, Bowers Harbor, Elk Rapids
18	MI	Lake Charlevoix	Charlevoix, East Jordan, Boyne City
19	MI	Little Traverse Bay	Petoskey, Harbor Springs, St.James/Beaver Island, Beaver Group
20	MI	Mackinac Straits	Mackinaw City, Mackinac Island
21	MI,ONT	Northeast Lake Huron	De Tour, North Channel
22	MI,OH, NY,PA, MN,ONT	Lakes Superior, Huron, Erie, & Other Great Lakes Ports, St. Clair, and St. Clair and Detroit Rivers, excluding Lake Ontario	
23		Inland Locations, Lake Ontario Non-Great Lakes Ports	
24		MISSING	