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COSTS AND RETURNS OF MICHIGAN'S CHARTER
BOAT FISHING INDUSTRY

By

Charles Louis Adair

A THESIS

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

MASTER OF SCIENCE

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1979

ABSTRACT

COSTS AND RETURNS OF MICHIGAN'S CHARTER BOAT FISHING INDUSTRY

By

Charles Louis Adair

This study was conducted to identify the industry's investment costs, operating costs (fixed and variable), opportunity costs (labor, management, investment), financial ratios and returns. Survey work conducted in 1978 included a mail questionnaire (83% response), and personal interviews (37) from a geographically proportionate sample. Only 14% of the operators interviewed earned more than half of their 1977 personal income from chartering. Major motivations for entering the charter industry appear to be lifestyle rewards, supplemental income to cover costs of personal fishing, and tax advantages. Median present value investment in boat and motor(s) was \$12,000, in equipment \$4,750. Fixed costs for the industry averaged \$3,888 with variable costs \$3,655. Small, medium and large operators average 37, 71, and 110 trips per year, grossing \$4,381, \$8,954, and \$18,935 respectively. Return on investment including opportunity costs of labor and management averages (-14%), (-1%), and 14% for small, medium and large operators respectively. Ten percent (10%) of the industry gain positive returns on investment, roughly 20% break-even, and 70% lose money.

Dedicated to

My Wife Nancy

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CHAPTER I

INTRODUCTION

A. Statement of the Problem

Charter boat sport fishing in Michigan has been a significant segment of the state's recreational industry since the mid-1960's. An "overpopulation" of alewives and low quality sport fishing in Lake Michigan prior to the mid-sixties, led Michigan fishery managers to begin salmon and trout stocking experiments to control the alewives and establish a quality sport fishery. Salmon and trout have flourished on the abundant alewife population and now are the target of thousands of sport fishermen from Michigan and all over the world. Because of the high demand for this fishery, yearly stocking continues, to help maintain and expand the present fishery. From the beginning of this stocking program the extent and quality of this fishery stimulated demand for charter boats. Anglers who found it impractical to invest in the boat and equipment necessary to fish far from shore still wanted an opportunity to catch salmon and trout in the Great Lakes. In response to this demand the number of charter boat businesses increased from a scattered handful before the 1960's, to the more than 230 operators currently licensed and advertising.

Until now little information has been available about the business aspects of charter fishing operations in Michigan. Operators large and small find it difficult to compare their performance to other similar operations and to learn about new management techniques. This study was designed primarily to help current and future operators of charter boat fishing businesses better plan and manage their time and capital investments.

B. Objective of the Study

In order to assist current and future operators in running a charter fishing business in Michigan the goal of this study was to collect and disseminate useful costs and returns information from the Michigan industry. Three main financial components of the 1977 industry were examined: capital investment, ownership and operating costs, and return on investment.

The objectives of the study were to estimate:

- (1) How many charter businesses were in operation and where they were located.
- (2) The amount of capital investment in boat and equipment.
- (3) Ownership and operating costs.
- (4) Returns experienced by different size operations.
- (5) Successful management techniques and current factors that cause management problems.

It is hoped that the information in this report will be

useful not only to present and future charter operators but also to extension workers, natural resource planners, policy makers and managers in future decisions affecting charter boating in Michigan.

CHAPTER II

LITERATURE REVIEW

Until now little has been known about the financial condition of the charter fishing industry in the state of Michigan. Only one other study deals with the costs and returns of charter boat fishing in the Great Lakes. However its primary emphasis is on the macro-economic impact of the industry in Wisconsin not the economics of individual operations on the firm level.

Charter fishing is an established industry along the coastline of the United States. A number of coastal colleges, universities, and state government agencies have studied various aspects of the charter fishing business. First we will review the Wisconsin study because it relates most closely to the Michigan charter industry, then we will review two studies of charter fishing in coastal waters to compare business techniques and practices.

Strang and Ditton (1976) studied the charter fishing industry in Wisconsin to (1) describe the charter boat operators, (2) their customers, and (3) to evaluate the industry's financial status and local economic impact. In 1973 there were 98 charter operators working on Lake Michigan

from Wisconsin ports. The industry generated \$670,000 in sales in 1973. Because of low average sales and profits, there was little financial incentive for entrepreneurs. Major motivations appeared to be tax advantages and life style rewards. Individual operator's sales averaged only \$6,832. Operating expenses of \$5,305, exclusive of operator's wage, left \$1,527 to pay the operator for his time, effort, interest expense, and other identified business expenses. Because operators had a mean investment in boat and equipment of more than \$13,000, industry return on investment was small (or negative if proprietor's wages are considered). Even among those charter operators who make at least two-thirds of their income from chartering, operating profits before owners wages were typically less than \$4,000. Strang and Ditton believe the potential for profit improvement appears to be limited by the relatively high investment costs for each boat and its equipment, the limited capacity of the boats, and the short season. Three-fourths of the Wisconsin operators, when asked why they began their business, responded that they did it because they enjoyed fishing. Another 11% had commercial fishing backgrounds and started their charter business because of their similarities. The remainder of the operators entered the charter business to obtain summer employment, to take out clients of their other business, or they could not explain why. Financial opportunity seems to have played a minor role, if any, in the decisions to become charter operators in Wisconsin.

Strang and Ditton did find that some operators entered the business to reduce their taxes on their personal incomes.

Differences between northern and southern operators was noticed during the interviewing. Most northern operators charter for a living and earn extra income during the off-season at other jobs; most southern operators earned their livings at other jobs and participated in chartering for pleasure, tax savings, and some income during the season.

Most charter customers (89%) made short, one or two day trips to participate in charter trips. Two-thirds were Wisconsin residents. Less than 5% took charter trips as part of a longer family vacation. Seventy-three percent of the customers cited the sport of fishing for salmon or trout as the most important motivation for making a charter trip. However, approximately one-third of the respondents also indicated that they made the trip to relax and another 12% were motivated by the opportunity to meet with business associates.

Although Wisconsin charter customers tend to have above-average incomes, 66% of those surveyed had incomes below \$20,000 per year. Most of the charter customers (57%) came from relatively high status white-collar occupations--professionals, technical workers, managers, proprietors, officials and salesmen. Another 25% held relatively high paying blue-collar jobs, such as craftsmen, foremen and skilled or semi-skilled laborers.

Strang and Ditton found that the average Wisconsin charter customer caught 2.5 fish per half day charter. Those chartering in the north averaged 2.9 fish; those in the south, 1.8 fish.

The industry generated total sales of about \$670,000 in 1973. It was estimated from the customer survey that each charter fisherman spent \$1.42 outside the industry for every \$1.00 they spent in charter fees. This accounted for an additional \$951,000 of expenditures. Charter fishermen, therefore, injected approximately \$1.6 million into Wisconsin's Lake Michigan port communities in 1973.

Since charter operators in Wisconsin made about 88% of their operating expenditures locally, these direct expenditures in turn generate additional economic activity in communities through multiplier effects. Other businesses, such as lodging, eating and drinking places, that receive fishermen's dollars also respend part of their expense money locally. Applying a community multiplier of 2.16 (that Strang developed in an input-output model for Door county Wisconsin) to the \$1.6 million of direct expenditures yields an economic impact of \$3,456,000 on Wisconsin's Lake Michigan communities in 1973.

Brown and Holema (1975) did an economic analysis of Georgia's marine charter boat fishing industry. They found that the Georgia charter fleet was small but growing rapidly, having increased from 8 to 17 boats in four years (1970-1973). The operator with the most experience has

been in business only 19 years. Operators caught a variety of species including marlin, dolphin, sailfish, wahoo, king mackerel, black sea bass, spanish mackerel, and cobia. None of the charter operators kept any records of total pounds of fish caught.

The average net income from the average charter operation was moderate, amounting to \$5,108 annually. Only two of the seventeen rely upon their net charter income for their entire living. In 1972 the representative charter boat investment was \$28,883. Annual gross income was \$18,830 while annual costs were \$13,722. These figures were based on chartering 812 hours. Break-even costs were \$17 per hour.

The three most profitable operators chartered an average of 1,241 hours annually compared with 812 for the average operator. The additional hours lowered the break-even costs from \$17 to \$11 per hour. The average net return to management after all expenses for these three top operators was \$26,374 annually. The only significant difference between these three operators and the average operator was in number of hours chartered.

Liao (1977) describes some economic characteristics of charter boat fishing in South Carolina. Boats averaged 38 feet in length and 7 years old, with primarily diesel engines. The average charter boat captain made 73 fishing trips (mostly in summer) in 1976 and accomodated 423 anglers.

Gross annual income averaged \$17,940 in 1976. Variable

costs averaged \$8,972 per boat. They included boat repairs and maintenance (\$3,177), fuel and lubricants (\$2,667), hired labor, mostly mates (\$2,385), and tackle, bait and ice (\$743). Fixed costs averaged \$3,511. The balance of \$5,457 covered taxes, loan interest, and captain's wages.

Liao found that most South Carolina charter captains owned their own boats. As might be deduced from the level of average gross profit indicated (\$5,457 per boat), many of the captains (45%) had other means of support in addition to their charter income.

CHAPTER III

METHODOLOGY

A two-part survey was conducted to collect the needed financial data and management information to achieve the stated objectives.

A. Phase I

The first phase was conducted from April through May of 1978. A list of 224 names and addresses of sport fishing charter operations was compiled from the Michigan Travel Bureau's "Charter Boat Directory," and membership lists of various fishing organizations in Michigan. A one page pre-tested questionnaire (Appendix A) was mailed to each of the 224 Michigan residents operating a charter sport fishing business.

With respect to their 1977 operation, each operator was requested to:

- (1) indicate how many years he has operated a charter boat business.
- (2) indicate whether his charter boat business supplied more than half of his 1977 personal income.
- (3) indicate what percentage of his fishing effort while chartering in 1977 was directed toward:

- a) salmon and trout of the Great Lakes, b) salmon and trout from inland lakes and streams, c) warm water game fish (pike, walleye, muskie, bass), d) perch, panfish, or other.
- (4) indicate the range of his 1977 gross income from chartering.
- (5) indicate the major problem(s) of the present Michigan charter boat sport fishing industry.

One hundred and eighty-five (185) or 83% of the 224 operators responded to our first questionnaire. In the first fifteen days 111 or just under 50% of the mail questionnaires were returned. Operators who had not responded within 15 days were sent a reminder and another copy of the questionnaire. This mailing yielded 53 (24%) additional responses. Operators who had not responded to either mailing were sent a second reminder which yielded 11 more responses. Sixty days after the first questionnaire was mailed 78% of the 224 operators had returned questionnaires. At this point 10 of the remaining 39 non-respondents were randomly selected and surveyed via telephone. Non-responding operators surveyed via telephone were found to be evenly distributed by location, size of operation and experience. Ten of the 185 respondents reported they had gotten out of the charter boat business in 1976.

The gross revenue information obtained through this questionnaire made it possible to stratify operators into small, medium and large operations. Operations grossing

0-\$6,000 are considered small, \$6,001-\$12,000 operations are considered medium size, and operations grossing more than \$12,000 a season are considered large. Almost three-fourths (70%) of all Michigan operators are small grossing less than \$6,000 per season. Twenty percent (20%) of the industry grosses between \$6,001 and \$12,000 and only 10% gross more than \$12,000 per year (Figure 1).

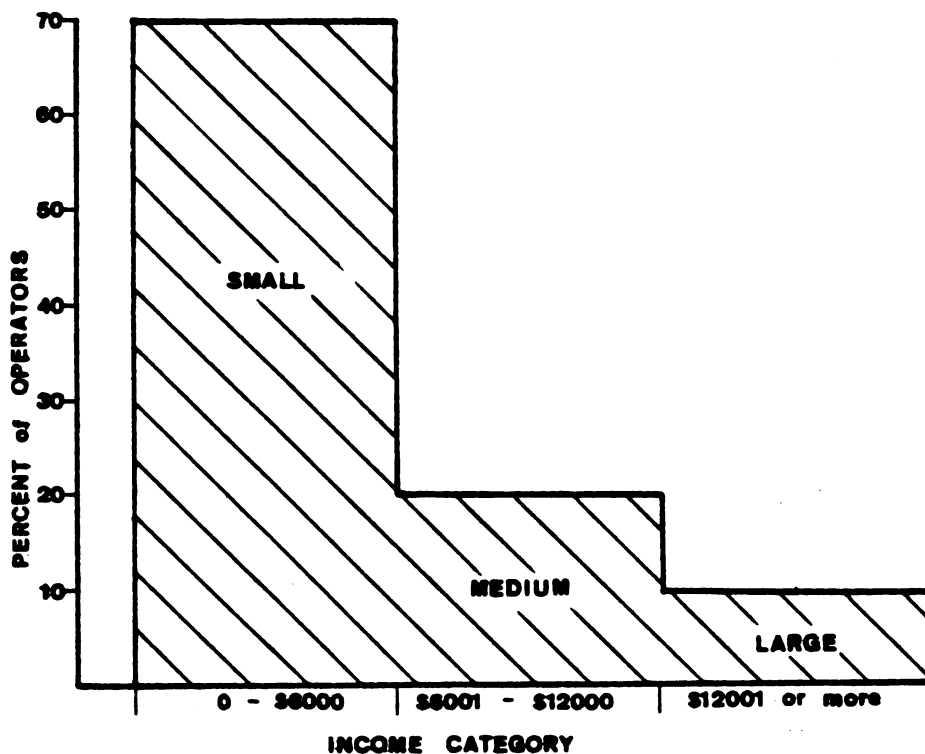


Figure 1. Percent of Michigan operators in each income category

Because Michigan has coast line of 3,200 miles touching four Great Lakes and their connecting waters, the character of Michigan charter fishing can vary by location. Differences in fishing quality, species available, and other

on-shore attributes, all contribute to the variety of charter fishing available in Michigan. Therefore, the state was divided into five areas (Figure 2). Area I, lower Lake Michigan from Ludington south, has a longer fishing season and higher population concentration than area II, the northern portion of Lake Michigan. Area III, Lake Superior, has the shortest season, low tourist pressure and sparse population. Area IV, Lake Huron, is characterized by shallow near shore waters requiring more running time to cold deep water than in Lake Michigan or Lake Superior. Compared to Lake Michigan's areas I and II, area IV also has a low fish population. Area V includes Lake St. Clair, Lake Erie, and the connecting waters of the Detroit River. Almost all the warm water charter fishing in Michigan takes place in this area.

B. Phase II

Phase II was conducted in June, July and August of 1978. A sample (non random) was drawn from each of the gross revenue categories defined in Phase I. In each of the five areas we attempted to sample a proportionate number of small, medium, and large operations. Of the 37 operators personally interviewed, 13 were in the small category, 13 were in the medium size category, and 11 were in the large category of operators.

Each of the 37 operators surveyed were asked to provide information about his 1977 operation in the following

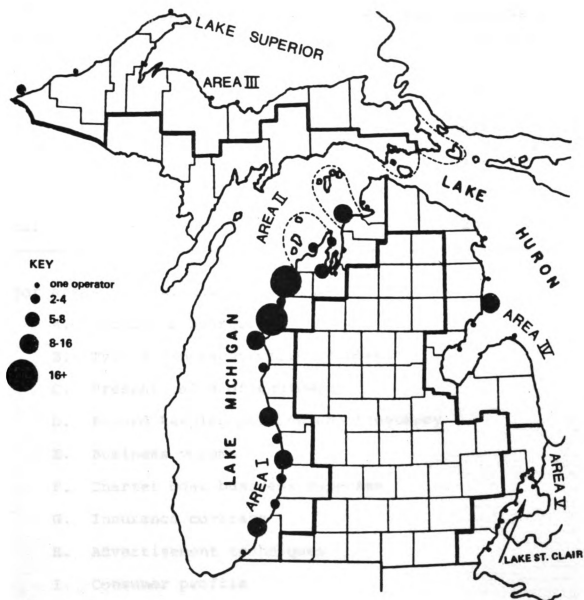


Figure 2. Description of study areas and relative concentrations of charter fishing businesses in Michigan, 1977

Table 1. Summary of mail questionnaires and personal interview responses

Area	Total mail respondents currently operating	Personal interviews	Percentage of area interviewed
I	83	8	10%
II	57	16	28%
III	10	6	60%
IV	15	4	27%
V	10	3	30%
Total	175	37	21%

major areas (questionnaire Appendix B) :

- A. Operators background
- B. Type and present value of boat
- C. Present value of equipment
- D. Record keeping methods and frequency
- E. Business volume
- F. Charter boat business expenses
- G. Insurance coverage
- H. Advertisement techniques
- I. Consumer profile
- J. Fish catch data
- K. Alternative uses of boat
- L. General information

All but three operators were interviewed in person with the interviewer asking the questions and writing the responses

on the questionnaire. This method was found to be more efficient than having the operator take time to read and understand the questions. Three operators could not keep appointments to be interviewed but did complete the questionnaire and mailed it to us.

Many of the questions pertaining to the present value of boat and equipment were estimates based on the owners knowledge of the industry and his particular equipment and business. Only 24% (9) of the operators interviewed had accurate records available on actual investment in equipment, fixed costs or variable costs. To get a second opinion on the estimates we received, informal interviews were arranged with marina operators. In these interviews marina operators indicated that the charter operator's estimates we received give an accurate approximation of the costs involved in operating a charter boat business in Michigan.

CHAPTER IV

OVERVIEW OF THE INDUSTRY

A. Operators Motives for Chartering

Only 14% (24) of the 185 licensed operators responding to our mail questionnaire reported earning more than half of their 1977 personal income from chartering. Generally, charter fishing businesses in Michigan are a part-time or second occupation. It appears that the primary motivation for running a charter business is rarely profit, but one or a combination of the following reasons: (1) for the pleasure gained from fishing on the Great Lakes and working at something enjoyable, (2) to pay the overhead costs on a primarily personal fishing boat, and (3) for attractive tax benefits on personal income taxes.¹

To be able to work at something one enjoys doing is more important to most operators than simply producing profits. Most operators fall into one of the following categories: (1) he makes a modest living from chartering, (2) he breaks even and has other sources of income, or

¹Because a charter business has income tax advantages that an individual boat owner does not have, i.e. operating costs deduction, some boat owners set up a charter business for this reason. Being able to deduct certain expenses has the effect of lowering the operators real costs.

(3) he considers charter revenues only a supplement to his costs for personal fishing. Because of the profit limitations inherent in the charter fishing business, the majority (90%) fall into categories 2 and 3.

For part-time operators to qualify for income tax deductions of items such as depreciation, operating costs, maintenance and insurance, 51% of a boats yearly use must be business related. However, business use of 51% or more allows you only a proportionate deduction. For instance, if a boat is used 75% for chartering and \$4,000 a year is spent on maintenance, only 75% or \$3,000 can be taken as a deduction.

Pleasure boat owners have run into trouble with the IRS lately when they have tried to treat part-time chartering as a full-time business. Basically you will have to show that you have a profit motive and an ongoing business--not just an on-again, off-again sideline (Reinhard, 1976).

B. Age and Distribution of Operators

Operators range in age from 22 to 65, with an average age of 44. About one third (29.5%) started their charter business in 1973 and 1974, (see Figure 3). Only 17 operators (9.5%) of the current operators were operating before 1965. Of these 17 eleven (11) operate in Lake Michigan.

In Area III, Lake Superior, none of the currently advertising operators have entered the business since 1974, (Figure 3). This may indicate that the demand for charter boat services on Lake Superior since 1974 has been too low to enduce new operators into the industry.

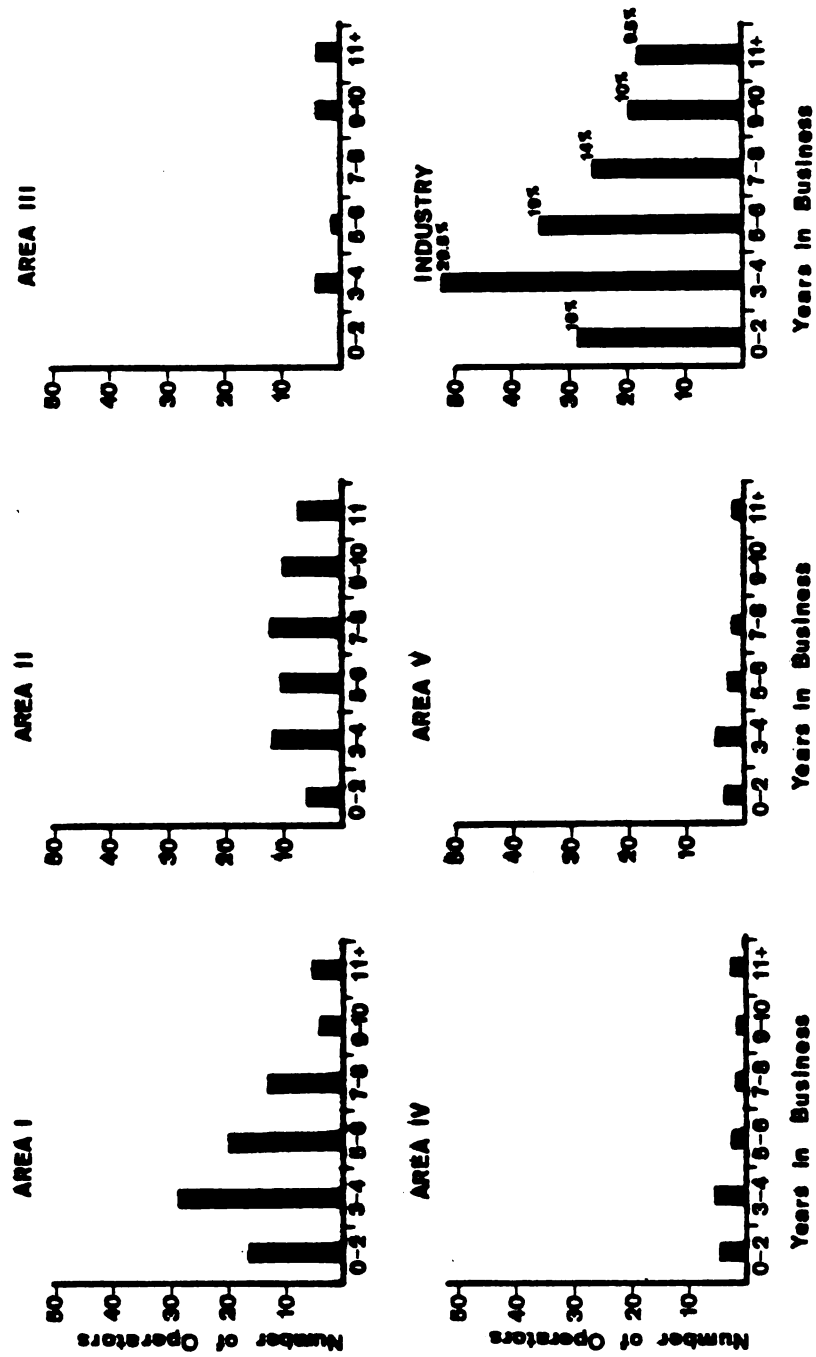


Figure 3. Operators years of experience by area and total industry

In southern Lake Michigan, area I, more than three fourths (77%) of the operators have been in operation six years or less. Less than half (48%) of the operations in northern Lake Michigan, Area II, have operated six or less years, leaving a 52% majority who have operated more than six years. Therefore, northern Lake Michigan (Area II) operators generally have more experience than southern Lake Michigan operators. Sixty percent (60%) of Area IV and Area V operators entered the charter industry in 1973 and 1974. Although there is one operator who has chartered for more than 30 years on this side of the state, most of the businesses are young. Figure 4 illustrates when the operators answering our mail questionnaire entered the Michigan charter fishing industry.

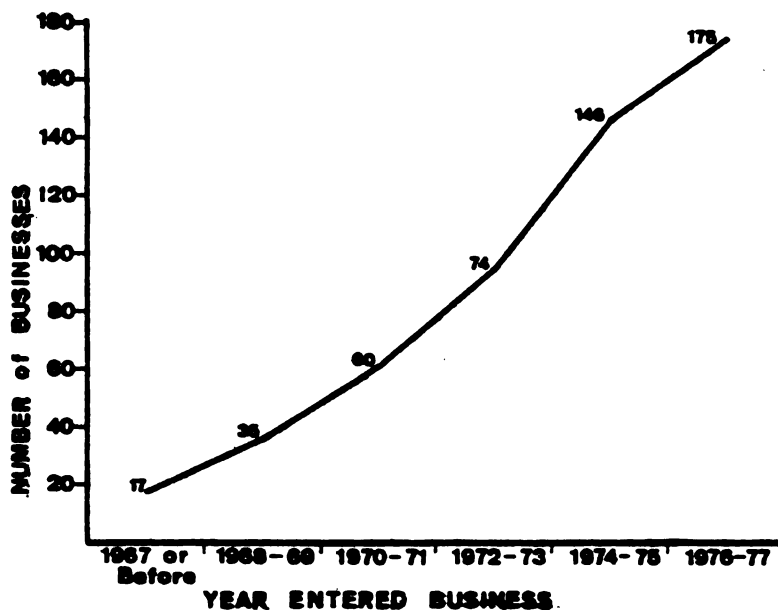


Figure 4. Number of present operators who were in business before 1977

C. Direction of Fishing Effort

Ninety-one percent (91%) of the total charter boat fishing effort is directed toward salmon and trout in the Great Lakes and connecting waters. Only 3% of the effort is directed toward salmon and trout in Inland lakes and streams. The remaining 6% is directed toward warm water game fish, i.e. walleye, muskie, bass, and perch. Almost all of this warm water chartering is done in Area V, i.e. Lake St. Clair, the Detroit River and Lake Erie.

D. Industry Volume

Responses to the mail questionnaire indicated that more than one third (38%) of all operators in the state grossed \$3,000 or less in 1977. Adding another one third (33%) who grossed between \$3,001 and \$6,000 in 1977, we have almost three fourths (71%) of all operators grossing \$6,000 or less in 1977. From information collected in personal interviews, median operating expenses (exclusive of operators labor) are \$5,200. If 10% of the value of the boat and equipment is added (as depreciation) to operating costs, the median operating expenses increase to \$6,600 a season.

In summary 38% of the operators in 1977 reporting gross revenues of \$3,000 or less did not cover their operating expenses, (labor is not included in operating expenses). Another 33% grossing \$3,001 to \$6,000 are operating around the average break-even point. But, if a 10% depreciation rate is used on the boat and equipment, approximately 71% of the

1977 operators could not cover all operating expenses, (exclusive of labor). This leaves less than one third (29%) of the Michigan operators who cover operating costs and contribute to a return on their time and capital. Figure 5 summarizes the gross revenue of each area.

E. Major Problems of the Industry

Most endeavors whether for fun or profit or both, encounter some problems. The most pressing problems for Michigan's charter fishing industry in the opinion of the operators are as follows, in order of reported importance:

- (1) Indian fishing rights
- (2) PCB and other fish contaminants
- (3) Season too short to make a profit
- (4) High insurance rates
- (5) Non-licensed operators taking business away.

Southern Lake Michigan operators, Area I, ranked PCB and other fish contaminants their most important problem. Those along the northern shoreline, Area II, and Lake Superior, Area III, were more concerned with the indian fishing rights problem. Not enough salmon and trout in the lake is considered the number one problem by operators in Lake Huron, although it is not one of the top five problems for the entire industry. The problem of non-licensed operators taking away business from licensed operators varies from port to port. Usually the non-licensed operators are pleasure boat owners who get a couple friends together and share the costs

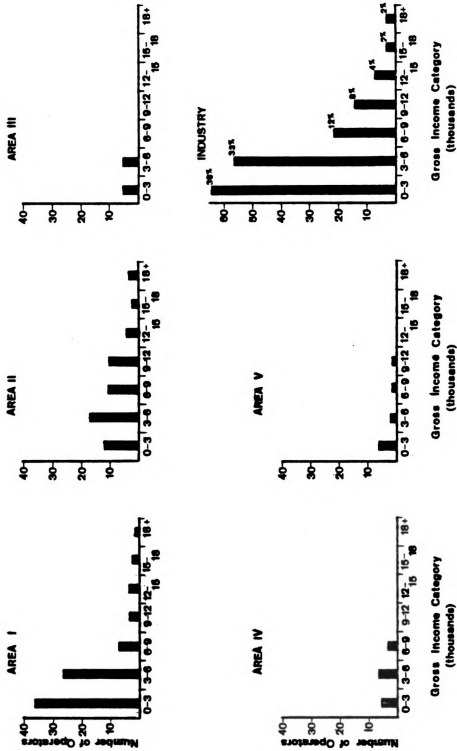


Figure 5. Number of charter boat operators in each gross income category by area

of a day's fishing. Licensed operators complain that some of these non-licensed operators solicit charters as if they were legally licensed, registered and insured. Because of the liability coverage required to be a licensed charter boat, insurance premiums for legal operators are approximately twice as much as a pleasure craft. Thus an illegal operator without adequate liability coverage has less overhead to cover, but he also assumes more risk, as do his passengers.

CHAPTER V

CAPITAL INVESTMENT

A. Overview

For most charter operators the decisions that go into selecting a boat and equipment are determined by their personal tastes, preferences, and available money. Often because the primary motive is not simply to make money, initial investment decisions are not based on solid business principles. These decisions, motivated more by pleasure than profit, make it even more difficult to recover operating costs, much less realize a profit. Judging from our personal interviews, some operators would be content to lose money in their charter business year after year, as long as there are some tax advantages that reduce their own fishing costs. However, if an operator wants to maintain his business status by Internal Revenue Service regulations he must show that his operation is for profit and not just a hobby or tax shelter. Because of these restrictions, even for the operator unconcerned with showing a profit, we will presume that operators want to show a profit often enough to at least meet IRS regulations. In that case initial capital investment decisions are critical to long run

potential profitability. Since charter fishing in Michigan is by nature capital intensive, initial investment decisions in boat and durable equipment are critical for two reasons: (1) a short season (six months maximum, May to mid November), and (2) difficulty of increasing profit margins to make up for short season. This combination of a short season and thin profit margins, if any, make the initial capital investment decisions ones that have a large bearing on when, or if, the operation shows a profit. The more expensive and bigger boats usually have correspondingly higher operating costs i.e. insurance, fuel, maintenance and loan service. Higher operating costs plus a short season and a ceiling on fees, cut drastically into profit margins. Therefore an operator serious about realizing a profit from chartering must be prudent and plan ahead before investing in a boat and equipment.

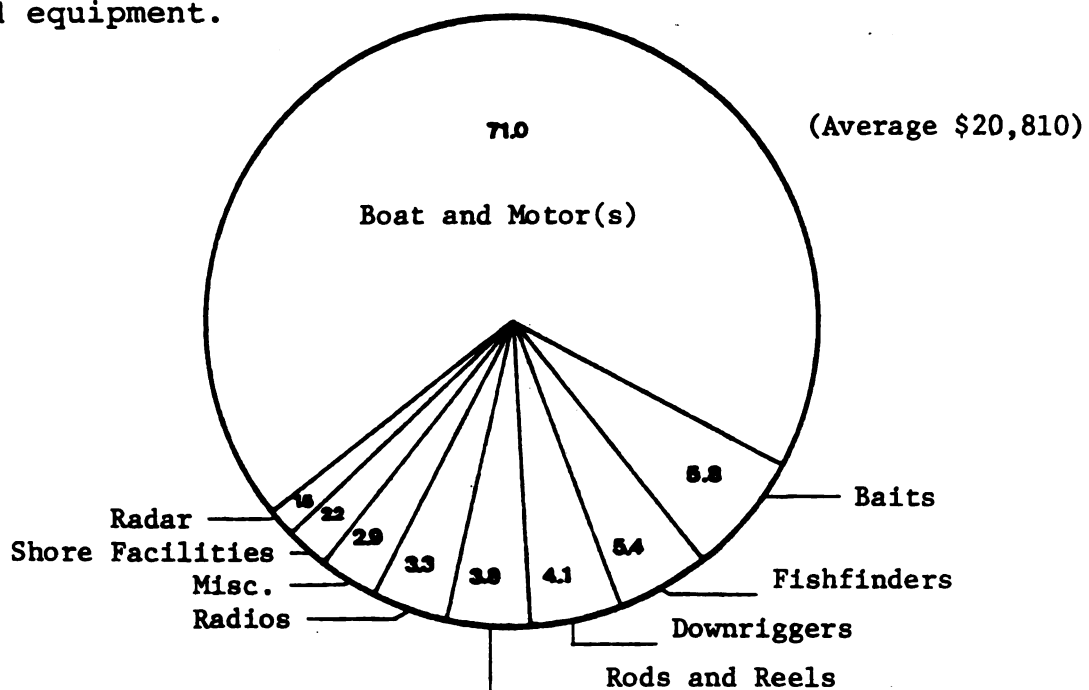


Figure 6. Percentage of total investment allocated to boat and equipment

B. Boat and Motor(s)

The average investment in boat and motor(s) is \$14,600, making up 71% of average total investment. Median investment is \$12,000. Even with this sizeable investment many charter boat owners say that they need more aft space than is usually available on standard cruise boats in the 26 to 38 foot category. Currently, because of limited aft area, many operators prefer to take only four passengers even though their boat is licensed for six. Operators interested in building clientele feel that four comfortable, satisfied customers are better in the long run than six unhappy one-time customers.

Thirty-two percent (32%) of the operators interviewed use fiberglass hulled boats;¹ primarily because of their low maintenance time and fuel efficiency. All operators interviewed who were contemplating the purchase of a new boat, considered fiberglass the only logical choice.

Because fiberglass boats last longer and are in high demand by recreationists, most popular name-brand models are depreciating very slowly. The recent increase in the price of petroleum products has caused boat manufacturers to reduce hull thicknesses on new boats to hold down prices. Boats built prior to 1974 with thicker hulls hold their value and in some cases appreciate above original prices. Inflation and high demand for boats in general, are also

¹Fifty-four percent use wood hulls, 5% use aluminum hulls, and 8% use steel hulls.

keeping the prices of new and used boats high. Ninty per-cent (90%) of charter boats have inboard or inboart-outboard gasoline engines. The other 10% have outboards or inboard diesels.

C. Equipment

Electronics (Radios, Fishfinders, Thermometers, Depthsounders, Radar)

Today in Michigan modern electronic equipment is essential for a successful charter fishing business. Radios for example are indispensable to charter captains, for they enable them to communicate with other captains and keep abreast of the current fishing conditions.¹ Sharing of information by radio helps the operators in the same area to fish more efficiently, leading to more fishing success and higher customer satisfaction.

Total investment in radios averages \$685. All but one operator interviewed have both a marine and citizens band radio on his boat. The marine radios are used almost exclusively by charter captains during normal operations because: (1) marine radios have a longer working range than citizen band, (2) marine frequencies have clearer voice transmission, and (3) the Coast Guard uses and moniters marine band frequencies. Usually operators use their citizen band radio as an inexpensive back up in case their marine

¹Sharing of information by radio seems to be common in all ports. Captains exchange information daily by radio on what species are being caught, where they are being caught, at what depth, and with what type of lures.

radio malfunctions.

Another electronic tool that operators use in conjunction with their radio communications is a sonar device for locating fish in open water. This device is commonly referred to as a "graph" or "fishfinder." Its function is to indicate the number and depth of the fish the boat passes over. This information allows operators to stay with a school of fish and to keep his lines at the correct depth. In Michigan the average present value of the investment in fishfinders is \$1,117. Approximately 70% of the operators included in this average also have roughly \$150 invested in a depth sounder. Since this device indicates only depth of water under the boat, it is used primarily as a navigational aid.

Electronic thermometers for measuring water temperature and locating the thermocline are used by only 5% to 10% of the operators on a regular basis. Thermometers are not being used regularly because: (1) the present available data describing prime temperature for specific species is not dependable ("few fish have read the temperature charts"), (2) present temperature measuring equipment on the market is fragile and not made for everyday use, and (3) the poor data and undependable equipment together make the time and energy involved in taking temperatures unprofitable.

Investment in radar equipment is rare for a charter fishing operation in Michigan. However, our interviews did

encounter two operators with present value investments of \$3,000 and \$8,000 in radar equipment. The two boats are in the 40 to 60 foot range and are used by their owners primarily as pleasure cruise craft, with charter fishing a minor activity set up for income tax purposes. The extremely high cost of radar usually makes it an impractical investment for the average charter operation hoping to make a profit.

Baits and Tackle

All operators interviewed who fish for salmon and trout reported using artificial baits exclusively. While some operators are known to use live bait the majority do not because: (1) operators find no apparent improvement in fishing success, (2) live bait is expensive and difficult to obtain and store, (3) extra rigging and clean-up time is required, and (4) customers prefer artificial baits over the messy live baits. However, charters in the Lake St. Clair and Detroit River areas (Area V) that concentrate on warm water species reported using live baits more frequently than artificial baits.

All operators interviewed found it difficult to estimate the present value of their investment in artificial lures. Inventories or accurate records of lure purchases are seldom kept. To estimate an average percent value of baits per boat, operators were asked to estimate the number of lures they owned. This total was then multiplied

by an estimated average cost per lure of \$1.50. Using this method the average present value in artificial lures comes to \$1,209. Investment per operation ranges from \$50 to \$4,000 per boat (Appendix C).

Lures are purchased in small quantities throughout the season due to wear and loss, but usually in the hope that a new color and design combination will have the "magic" fish catching characteristics. Operators found it "painful" to realize the true extent of their investment in lures. When questioned about the need for such an extensive inventory of lures, captains referred to their desire for consistent catches of fish and satisfied customers.

In the past bait and tackle manufactures sponsored some charter boats, supplying them with free lures and tackle. Many operators welcomed this arrangement because it was a way for them to reduce the cost of running their boat. Others reportedly were not interested in being sponsored by one manufacturer because it limited their choice of lures. Today lure manufacturers seem to be getting away from the practice of sponsoring charter boats to help test baits and tackle.

Rods and Reels

Average investment in rods and reels is \$783 with investments ranging from \$70 to \$3,000 per boat. Depending on the arrangement, size of the boat, and fishing conditions, from four to thirteen rods and reels are used at one

time. Operators usually have one or two extra rods with reels on the boat for backup. Philosophies on the quality of rods and reels to use in chartering vary. Quality ranges from medium to the highest quality available. Operators purchasing high quality equipment reported long run savings in replacement costs over lower quality rods and reels. Operators believe that status of the higher quality equipment also improves customer satisfaction.

All operators interviewed use standard open face bait casting type reels. The main attributes of the bait casting reels are, simple dependable operation, ease of maintenance, and increased line life.

Downriggers and Outriggers

Present value of the investment in downriggers and outriggers averages \$862. Investments per operation range from zero for some warm water charters in Area V who do not use downriggers or outriggers, to \$2,000 for a custom equipped high volume Lake Michigan boat. All operators interviewed who use downriggers and outriggers have at least four downriggers and two outriggers set up on their boat. Operators report that more than five downriggers in use at the same time is unmanageable in anything but calm water. The most common arrangement is four downriggers and two outriggers. Sometimes, operators attach two lines to one downrigger line at different depths thus pulling two lures behind one downrigger increasing the chances of catching fish.

Besides lost weights or occasional cable replacement, maintenance problems are minimal on downriggers and outriggers.

The level of investment in downriggers can vary with needs and goals. Depending on the projected yearly usage, an operator can gauge the level of quality to fit his particular operation. Expensive custom built electric downriggers are practical only for the high volume operations. However, not all high volume operations take this view. Two of the operators interviewed who gross over \$12,000 per year use hand operated downriggers exclusively. As with many equipment decisions, the choice of downrigger systems and quality is determined by the size of the operation, the operator's tastes, and the preferences of his clientele.

Miscellaneous Equipment

To operate a safe and efficient charter boat an owner must invest in various miscellaneous equipment. Fish coolers, food and beverage coolers, life jackets, rain gear, fire extinguishers, chairs, binoculars, marine toilets plus accessories, and assorted hardware all add up to an important investment. The average operator has roughly \$600 invested in miscellaneous equipment.

Coolers for fish, and food and beverage range in price from \$25 to \$150. Instead of using one of the large \$150 coolers, many operators prefer to use two medium size coolers. This makes lifting coolers in and out of the boat

easier and safer. Life jackets of commercial Coast Guard approved quality required for licensing cost approximately \$20 each. Raingear is an item that most operators leave up to the customer, but operators who did supply rain gear spent an average of \$15 to \$20 a set.

D. Shore Facilities

Few operators invest in shore facilities other than a small storage chest near their slip. The operators who did have an investment in shore facilities either owned their own dock or they owned a house trailer so they could live near their slip during the season. Only eight of the 37 interviewed had any investment in shore facilities. The average investment by these eight was \$466, with \$2,600 being the maximum invested.¹

¹Three operators had charter operations connected to marina businesses; none of the marina investments are included in charter business shore facilities investment calculations.

CHAPTER VI

OWNERSHIP AND OPERATING COSTS

A. Overview

Expenses that occur whether a boat goes on one charter or a hundred are fixed costs. Examples include, depreciation, insurance, advertising, slip rental, storage, licenses and inspections, telephone, and accounting fees. In Michigan fixed costs account for 56.5% of the \$7,543 average total operating costs, including depreciation (Table 2 and Table 3). Without considering boat and equipment depreciation, total 1977 operating costs average \$5,460. Figure 7 illustrates the percentage breakdown of total operating costs.

Expenses that occur only from the operation of the boat are called variable costs. Examples include fuel, maintenance, travel expenses to slip, rods, reels and baits repair, downrigger repair, first-mate, booking fees and other miscellaneous expenses. For the average operation variable costs account for 43.5% of their total operating costs (Table 2 and Table 3).

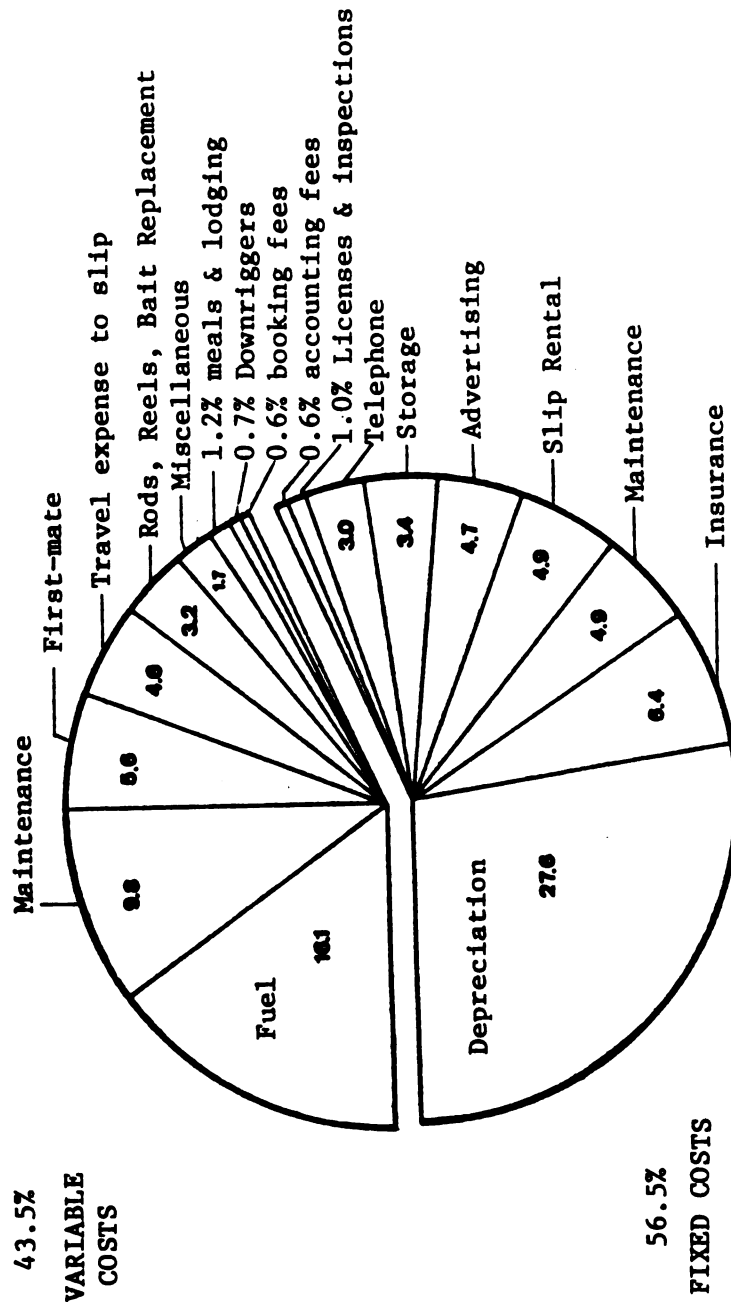


Figure 7. Total operating costs for Michigan's charter fishing industry

TABLE 2: Average cost of charter boat fishing operation by area, Michigan 1977.

Number of samples Area	8 I	16 II	6 III	4 IV	3 V	37 Industry
<u>Variable Costs</u>	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Fuel	1001	1408	786	1559	969	1211
Maintenance	865	1606	573	394	997	1112
Travel expense to slip	1113	500	211	445	280	660*
Meals & lodging	300	947	105	75	201	326
Rods, reels & baits replace.	238	173	453	188	547	259
Downriggers	74	60	3	85	50	66
First-mate	458	953	690	750	-	803
Booking fees	233	435	15	100	-	242
Miscellaneous	237	204	96	115	346	217
Total Variable Costs	3662	4316	2224	3210	3103	3655
<u>Fixed Costs</u>						
Telephone	189	301	47	196	275	246
Slip	461	479	85	424	320	426
Insurance	471	627	245	393	397	483
Advertising	451	556	104	147	405	408
Storage	489	425	150	175	144	382
Licenses & inspec.	80	85	48	61	79	76
Accounting	82	96	23	80	65	79
Depreciation	1547	2625	1385	2278	1067	2081
Total Fixed Costs	3627	4942	1923	3507	2331	3888
<u>Total Costs</u>	7289	9258	4147	6717	5434	7543

*Median 340.

TABLE 3: Average percentage breakdown of costs by area, for charter boat fishing operations, Michigan 1977.

	AREA					
<u>Variable Costs</u>	I	II	III	IV	V	Industry
	\$	\$	\$	\$	\$	\$
Fuel	13.7	14.9	19.0	23.2	17.8	16.1
Maintenance	7.9	11.3	9.2	3.9	12.2	9.8
Travel Expense to Slip	13.4	1.7	3.1	5.0	1.7	4.6
Meals & Lodging	1.0	1.3	1.0	0.6	2.5	1.2
Rods, Reels & Bait Replace.	3.3	1.7	10.9	1.4	10.1	3.2
Downriggers	1.0	0.6	0.1	1.3	0.3	0.7
First-mate	3.1	6.9	3.3	8.4	-	5.6
Booking Fees	1.2	0.6	0.1	0.4	-	0.6
Miscellaneous	1.6	1.1	2.3	1.7	6.4	1.7
Total Variable Costs	46.2	40.9	49.0	45.8	51.0	43.5
<u>Fixed Costs</u>						
Telephone	2.6	3.2	0.9	2.9	5.1	3.0
Maintenance	4.0	5.7	4.6	2.0	6.1	4.9
Slip	6.3	5.1	2.0	3.2	3.9	4.9
Insurance	6.5	6.6	5.9	5.9	4.9	6.4
Advertising	6.2	4.8	2.0	2.2	5.0	4.7
Storage	5.0	3.4	0.7	2.6	1.8	3.4
Licenses & Inspec.	1.1	0.9	1.2	0.9	1.5	1.0
Accounting Fees	0.8	0.6	0.2	0.7	1.2	0.6
Depreciation	21.3	28.0	33.4	33.9	19.7	27.6
Total Fixed Costs	53.8	59.1	51.0	54.2	49.0	56.5
Total Costs	100%	100%	100%	100%	100%	100%

B. Fixed Costs

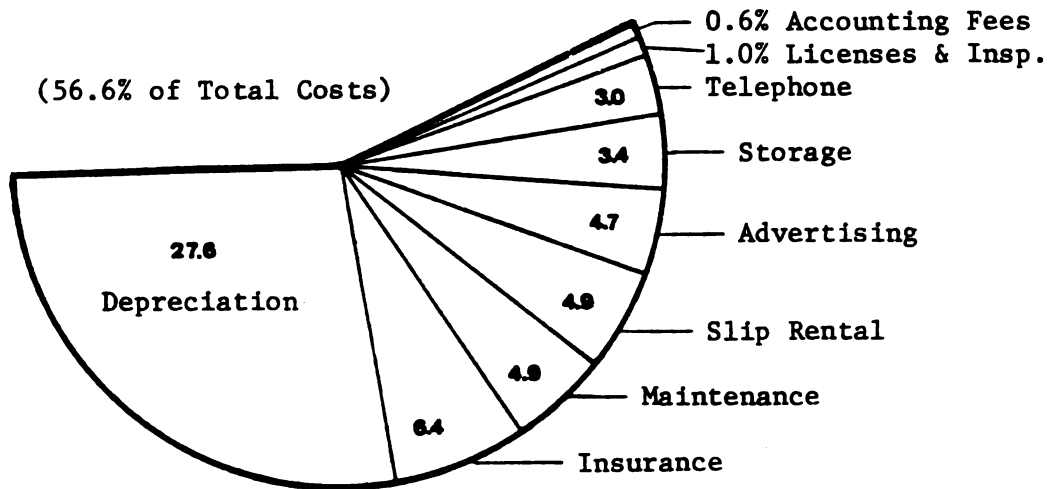


Figure 8. Percentage of total operating cost made up of fixed costs

Depreciation

Average depreciation on boats and equipment is difficult to determine because each operator's financial situation determines which depreciation method he will use.

In today's boat market, standard depreciation methods are useful only for bookkeeping and tax purposes. When a boat owner is ready to sell his boat he is interested in the price he can sell it for not its depreciated value.

Regarding resale value in today's market, Reinhard says

one can figure that new power boats depreciate in value roughly 20% in the first year, 10% in each of the next three years and 5% a year thereafter. On this basis a power boat in good condition will be down in value about 50% at the end of its fourth season. Taking account a general price inflation for boats of 8% to 10% a year, a four-year-old boat would sell for about 10% less than its original new boat price. A boat that sold for \$10,000 new four years ago, with real value down 50% would

sell today for \$9,000. A comparable new boat would cost about \$14,000.

General depreciation percentages for electronic equipment are difficult to estimate because the resale market is spoty. However it is safe to say that graphs and radios lose at least 20% to 40% after one season of use, depending on the quality and acceptance by the industry. Charter operators normally do not buy used fishing equipment (i.e. rods, reels, baits) although used radios and graphs are frequently sold or traded. Again, priority is placed on the captain's and the customer's satisfaction.

In this report all depreciation figures are calculated using the "straight-line" method. For each operation depreciation is calculated by taking 10% of the present value of the boat and equipment (Table 2 and Table 3).

Insurance

Insurance accounts for 6.4% of the total operating expenses, and is the second largest fixed cost. Operators average \$483 per year in premiums. Named as one of the major problems in the industry, insurance rates jumped 20% from 1976 to 1978. More expensive liability coverage is the primary reason for the increase. Although the industry's safety record in Michigan is superb, insurance company representatives claim one serious liability settlement would wipe-out all the premium contributions of the relatively few charter businesses.

Some operators have cut premium costs by taking a higher

deductable. A group of operators in the Great Lakes Charter Boat Association is exploring the possibilities of setting up their own insurance program.

Advertising

Advertising is essential for developing a full-time or part-time charter fishing business in Michigan. Operators agree unanimously that word of mouth is the most effective advertisement they know of. As in any business a satisfied customer is the most productive form of advertisement. After word of mouth, operators reported that direct mail of personal letters and brochures in the off season worked best, giving the highest return per advertising dollar. Established operators use direct mail techniques in an attempt to maintain and build their already established clientele. Newer operators find it important to use direct mail after their first season to hopefully persuade customers to return the following season. For operators in ports with tourist trade, newspapers and yellow pages reportedly attracted a small number of charters each year. One operator reported success with a group of neighborhood newspapers in a large south-western Michigan city. Ads in the sports sections of large metropolitan papers reportedly give a poor return per advertising dollar.

Business cards are used by 80% of the operators. Their main purpose is to give established clientele telephone numbers and other pertinent information, and possibly assist

word of mouth advertising. Business cards are considered a worthwhile investment.

Other advertising techniques used that operators felt gave very limited or no return per advertising dollar include highway billboards, sports show displays, television ads, magazine ads, and radio ads. Operators believe very few charters are the result of any of these techniques. Some believe that a combination of word of mouth, reputation and one or more of the other advertising methods could produce a new customer. However, the cost of the advertisement (highway billboards, sports show displays, television ads, magazine ads, and radio ads) and the trouble involved in placing the ads in most cases is thought to be more than the net returns to the operator. Ten percent (10%) of the operators interviewed spent no money for advertisement of any kind. These licensed operators have established a large enough clientele from reputation and by advertising in previous years to do as much chartering as they want without advertising.

Slip Rental

Many operators consider slip location to be an important ingredient for a successful charter business. If one wishes to cater to walk on customers,¹ a highly visible, easily accessible slip is necessary. These types of

¹Walk on customers are customers who make no prior arrangements or reservations. They just walk up to operators and arrange a charter on the spot.

operations are found mainly in the ports that have many tourists. Local charter boat associations also find advantages in concentrating the charter boat slips in one highly visible central location. An association in Frankfort, Michigan has found that a central location for all local operators increases public awareness of the industry, and results in more charters for all operators at that location. They also feel there will be long term benefits as more tourists are exposed to the charter industry. These prime slip locations with high visibility range in price from \$150 per season (including electricity and drinking water) in some central Lake Michigan ports, to \$1,400 per season (not including electricity, drinking water or garbage pick-up) for a prime downtown slip in a northern Lake Michigan port.

Charter boat owners who occupy prime slip locations close to a port's central business district tend to be high volume operators. Part-time operators, usually find relatively less expensive slip space further from the main concentration of full-time operators.

Slip space is becoming more and more scarce for commercial charter operations and rental rates are increasing every year. Besides the overall slip shortage some marinas do not want charter operations. A few marina operators fear early morning departures will disturb their established customers who sleep on their boats, and/or that the fish cleaning operation could create aesthetic problems in the

marina. State regulations forbid commercial fishing charters from operating out of a harbor of refuge and most cities or towns do not permit them in their public docks. Some cities, though, allow charter operators to bid for a limited number of city slips.

Average slip costs for the charter fishing industry in Michigan in 1977 were \$426. Short supply and inflation are pushing this fixed cost higher every year. For boats over 25 feet, slip rental is an unavoidable overhead cost. Even operators with smaller boats that can be easily trailered must rent slip space, or contend with the inconvenience of launching and haul-out for each charter.

Storage

Storage costs for the industry average \$382. Included in that average are haul-out costs associated with storing large untrailerable boats. Operators of trailerable boats often use their own yard or secure inexpensive storage inland.

For boats over 25' storage costs are normally another unavoidable overhead cost. Operators of boats less than 25' have the alternative to shop around for storage space at the best price or use their own back yard at no cost. This action can save from \$50 to \$200.

Licenses and Inspections

To legally operate a charter for hire one must possess:

- (1) a Coast Guard motorboat license for six or less

passengers¹ (four hour written exam, no charge), (2) a sport trolling license from the Michigan Department of Natural Resources (\$16.00), (3) a state registration stamp (\$15.00), (4) a boat inspection which ranges from \$15.00 for a vessel less than 16 feet to \$50.00 for a vessel 45 feet in length or greater, and (5) an inland passenger's license for charters operating on inland waters (\$5.00). Average expenditures in 1977 for licenses and inspections was \$73.00.²

Telephone

In chartering as with most businesses the telephone is an indispensable tool. Telephone expenses for charter operators interviewed average \$246 in 1977. Close communication with out-of-town customers on weather and fishing conditions account for most telephone expenses.

Accounting Fees

Forty percent (40%) of the operators interviewed do their own bookkeeping and accounting, and report no expense for this fixed cost. Operators who pay for accounting services spend an average \$79 per year. Most charter businesses are one-man operations using the sole proprietorship legal

¹Almost all Michigan charter fishing boat captains have only the Coast Guard motorboat operators license for six or less passengers. A license for more than six is available, but because of the limited capacity of sport trolling boats more than six anglers on one boat is not feasible.

²For more information on licenses and inspection regulations write to the Department of Natural Resources, Law Enforcement Division, Box 30028 Lansing, Michigan 48890.

structure. Only 5% to 10% of the charter businesses are legal corporations.

C. Variable Costs

(\$3,655 or 43.5% of Total Costs)

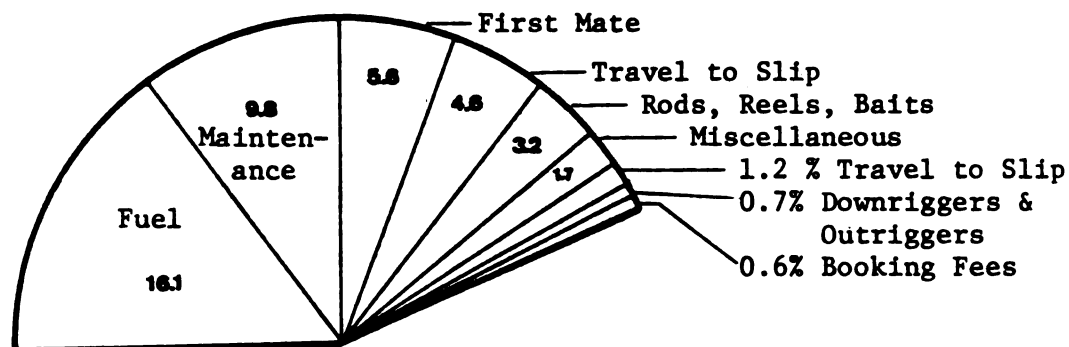


Figure 9. Percentage of total operating cost made-up of variable costs

Fuel

Fuel accounts for 16.1% of the total operating costs, and is the largest single expense item other than depreciation (Table 2 and 3). To determine the average cost per trip for fuel, we divided the total gallons burned by the number of trips taken. Multiplying the gallons per trip by an assumed price of gasoline in 1977 of \$0.65 per gallon, the industry average cost per trip is \$17.50. Area III and IV burn considerably more fuel than the industry average at \$20 and \$27 respectively. Longer travel time to deep waters in Area IV and low fish populations in both Areas III and IV necessitate longer running time per trip

to locate the scattered fish. Area I and II (Lake Michigan) operators average \$16 per trip. In Area V (Lake St. Clair, Detroit River) operators spend the least for fuel, averaging \$13 a trip. This area requires little running time from slips to fishing areas. Also, fishing for warm water species does not require constant trolling.

First Mate

Of the operators interviewed 51% employ the services of a first mate. Wages for first mates range from \$8 per half day trip for one captain's thirteen year old son, to \$20 per half day for a mate on a high volume Lake Michigan boat. The average first mate payment is between \$14 and \$18 a half day trip, although other arrangements having to do with percentage of the trip's gross are common. Some mates depend on tips from customers for their income. Yearly costs for first mates range from \$130 to \$1,800.

At the dock a mate's duties usually include cleaning and wrapping the customers fish, cleaning up the boat, and other minor maintenance duties. On a charter a first mate helps set up and rig fishing lines while the captain locates the area he wants to troll. After the lines are set and the trolling begins a first mate's duties usually center around steering the boat. This permits the captain to take care of his customers by keeping lines set, communicating with other boats about which fish are hitting which lure, and generally entertaining his customers while they are

waiting to catch their fish. On boats that average five customers per trip, a good first mate is considered indispensable.

Travel Expense to Slip

Travel time and money involved in getting to and from one's boat is a substantial sum for some operators. In Area I many operators live in inland cities, travel costs account for 13.4% of the season's total operating expenses. In the other four areas the percentage is lower, ranging from 1.7% to 5.0%. Allowing 15 cents a mile, the average travel expense is \$660. The median travel expense is \$340.

Booking Fees

Booking fees are charges a charter operator pays to someone else for the service of arranging a charter. Usually operators who have other people booking for them incorporate the services of a nearby business that serves potential charter customers, e.g. marinas, restaurants, or bait and tackle shops. The state-wide accepted fee is 10% of the charter's gross revenue. For instance, a marina owner who books four customers with an operator who charges \$35 each or \$140 gross, would receive \$14 as a booking fee. A few marinas operate on a system of 20% for a charter booked by the marina, and 10% for every charter booked by the captain on his own. This extra 10% charged by the marina in addition to normal slip rental, is reportedly for extra wear and tear on the marina facilities, i.e. rest

rooms, garbage, parking, and fish cleaning.

Often a full-time operator will get requests for charters he can not handle because he is already booked. When this happens he usually will contact another local charter captain and ask if he would handle the charter. If he agrees the captain who had the charter originally will be entitled to 10% of the gross receipt from the other boat. This happens through out the season and most operators wait until the end of the season to reimburse each other. By working together throughout the season taking trips for each other, operators keep their customers satisfied and increase their total trips.

Rods, Reels and Baits Replacement

As soon as a charter boat gets to fishable waters, lines are set and fishing begins. Rods are left set continuously throughout the charter unless some travel to a new location is required. This continuous use of rods, reels and baits takes its toll throughout the season. For the entire industry, including operators who reported no expenses for these items, the average expenditure is \$259 (Table 2). Because some operators from each category reported no variable cost for rods, reels or baits in 1977, the averages in Table 4 are only for those operators who did incur this variable cost. Average variable cost in 1977 for rods, reels and baits was \$378, \$308 and

\$280¹ for small, medium and large operations respectively. Interestingly, large operators average less than medium or small operators. This may be attributable to better equipment that lasts longer, better care and maintenance, or use of the right kind of equipment in the right circumstance.

Downriggers and Outriggers

Variable costs associated with downriggers and outriggers during the 1977 season amount to less than one percent (1%) of total operating costs. The industry averages \$66 with small, medium, and large operations averaging \$64, \$80, and \$57 respectively. Primary expense comes from replacing worn downrigger wires and lost weights. Miscellaneous repairs on pullys and electric motors accounts for occasional expenses only.

¹In collecting data for this variable expense we asked operators who have rods, reels, or baits supplied by manufacturers to estimate what they would have to pay if they purchased them themselves. These estimates were used in calculating Tables 2, 3 and 4.

CHAPTER VII

RETURNS

A. Overview

After making allowances for opportunity costs of labor, management, and capital investment, we find that operators grossing less than \$12,000 a year, i.e. small and medium size operators, are losing money or breaking even at best. From a strictly monetary profit stand point only the operators in the large category comprising only 10% of Michigan's industry, realize a positive return to investment (Table 3,4). Medium size operations, representing 20% of Michigan's charter industry, tend to be breaking even with an average minus one percent (-1%) return on investment (Table 4). Small operators, who make up a 70% majority of the industry, lose an average 14% on their investment. These findings indicate that 90% of Michigan's charter fishing business either broke even or lost money in 1977. Nearly three quarters of the industry lost money in 1977. The following sections summarize how we arrived at these findings.

TABLE 4: Average costs and average percentages of total costs for small, medium, and large charter boat fishing operations, Michigan 1977.

	Volume of Operation					
	Small 13		Medium 13		Large 11	
Number of Samples						
1 Average gross revenue	\$4381		\$8954		\$18,935	
<u>Variable costs</u>	Dollars	%	Dollars	%	Dollars	%
Fuel	813	14.3	975	15.7	1940	18.9
Maintenance	462	8.1	527	8.5	955	9.3
Travel expense to slip	358	2.6	782	8.8	741	3.6
Meals & lodging	60	.3	171	.9	798	2.3
Rods, reels & bait replace.	378	5.0	308	4.2	280	2.2
Downriggers	64	.8	80	.9	57	.6
First-mate	697	6.1	634	5.5	1106	6.5
Booking fees	115	.4	234	.7	50	.5
Miscellaneous	155	1.6	240	1.2	224	1.6
2 Total variable costs	2233	39.1	2878	46.5	4468	45.5
<u>Fixed Costs</u>						
Insurance	446	7.8	419	6.8	591	5.8
Maintenance	238	4.2	217	4.4	492	4.8
Slip	266	3.9	382	5.2	581	5.3
Storage	341	4.0	327	4.2	331	2.9
Advertising	249	2.6	288	2.8	703	2.7
Telephone	80	1.4	169	2.7	493	4.4
Licenses & inspec.	65	1.1	61	1.0	95	.9
Accounting fees	60	1.0	65	.7	90	.5
Depreciation	1985	34.8	1518	24.5	2801	27.3
3 Total fixed costs	3471	60.9	3245	52.4	5597	54.5
Total Costs	5704	100.0	6192	100.0	10,265	100.0
<u>Opportunity Costs</u>						
4 Operator's labor (\$4.50/hr.)	1026		2011		3141	
5 Operator's management (10% of gross)	438		895		1893	
6 Total investment (8.5% interest)	1687		1290		2158	
Summary						
Return to lab. manag. & invest. (gross profit) (1 less 2 & 3)	(-1323)		2762		8670	
Return to labor & management (1 less 2, 3, & 6)	(-3010)	(-5.80/hr.)	1472	3.30/hr.	6512	9.30/hr.
Return to investment	(-2787)	(-14%)	(-144)	(-1%)	3636	14%
(1 less 2, 3, & 5)						

B. Gross Revenue and Volume

Annual gross revenue ranges from \$2,050 to approximately \$25,000. The average operator in the small category grosses \$4,381, medium category \$8,954, and large \$18,935 (Table 4). To reach these gross revenues the average small operation takes 37 trips, medium size operations take 71 trips, and large operations average 110 trips per season. Regardless of the total trips taken, the percentage of lost trips do to bad weather is roughly the same for all operations. Most operations lose roughly 20% of their charters to bad weather, with medium size operations losing only 14.5% (Table 5). Total customers per trip for small, medium and large operations average 141, 283, and 493, respectfully. The total hours spent with customers on board fishing averages 228 for small volume operators, 447 for medium, and 698 for large volume operators (Table 5).

C. Summary of Fixed and Variable Costs

Fixed Costs

Total fixed costs for the industry averages \$3,888, about 56% of annual total costs (Table 2). Depreciation is by far the single largest fixed cost averaging 27% of total operating costs for all operations. The second largest fixed cost is insurance (6.5% of total costs), then slip rental (4.9%), and the maintenance portion of fixed costs¹

¹Data collected from personal interviews provided one total figure for maintenance costs. Because maintenance costs increase as use is increased, we chose to divide maintenance costs between fixed and variable costs. One third

Table 5: Average Volume and Revenue Data, Small, Medium, and Large Charter Boat Fishing Operations, Michigan 1977.

	Small	Medium	Large
Gross Income Category	0-\$6000	\$6001-\$12000	\$12001 +
Average Gross Revenue	\$4381	\$8954	\$14935
Average Fixed Costs	\$3471	\$3245	\$5597
Half day trips	31	49	87
Full day trips	5	20	23
Total trips	37	71	110
Lost trips	9 = 19.6%	12 = 14.5%	29 = 20.9%
Total customers	141	283	493
Total hours fishing	228	447	698

equalling 4.9% of total costs. Because of low volume relative to the amount of investment, small operations on the average have almost 61% of their total costs allocated to fixed costs, while medium and large volume operators have slightly less going toward fixed costs at 52.4% and 54.5% respectively (Table 4).

Variable Costs

Total variable costs average \$3,655, about 44% of the total annual costs for all operators (Table 2). Fuel is the largest single variable expense averaging 16.1% of total costs (Table 3). Maintenance costs are the second largest variable expense, averaging 9.8% of the total costs for all operators. For a percentage breakdown of costs by area see Table 3. For a percentage breakdown of costs by size of operation see Table 4.

D. Opportunity Costs

Operator's Labor

If an operator were not spending his time working on his boat, he could potentially be making money by working for someone else. In this study we use \$4.50/hour as a conservative wage rate for calculating operator's opportunity costs. For a small, medium and large operation the number of labor hours per season averages 228, 447, and

of the total maintenance cost is allocated to fixed costs, and two thirds to variable costs.

698 hours respectively.¹ Multiplying these average labor hours by our assumed wage rate of \$4.50 per hour, opportunity costs are estimated at \$1,026, \$2,011, and \$3,141 per year for small, medium, and large operations (Table 4).

Operator's Management Costs

It takes time and skill to manage a charter fishing business. If the operator did not want to carry out management responsibilities he would have to pay someone else to do it for him. Judging from management arrangements in other small businesses, a fee of 10% of the annual gross returns would be a reasonable guideline. Using 10% of the gross as our guide the average opportunity costs of operator's management for small, medium, and large operations are \$438, \$895, and \$1,893 respectively (Table 4).

Total Investment

Since an operator has capital invested in his boat and equipment he is incurring an opportunity cost on his money. For example the average small operator has invested \$19,845 in his boat and equipment (Appendix E). If he invested that same amount at 8.5% interest it would yield \$1,687 per year. Assuming the 8.5% interest rate, \$1,687 is the investment opportunity cost for the small operator. Using the

¹Labor hours include only hours actually on the lake fishing. Hours not directly connected with a charter, i.e. maintenance et cetera, are not included. It should be noted that maintenance labor can amount to considerable time and effort depending on the owner's tastes and equipment.

same 8.5% interest rate the opportunity costs for medium and large operators are \$1,290 and \$2,158 respectively (Table 4).

E. Summary of Returns

Average returns for small volume operations were not sufficient to cover fixed and variable costs (Table 4). Medium and large volume operations covered their fixed and variable costs and also had positive returns to labor, management, and investment. Based on the total number of hours fished by operators in each size category (Table 5), small volume operators received (-\$5.80) per work hour, medium \$3.30 per work hour, and large volume operators \$9.30 per work hour for their labor and management (Table 4). In other words the average small volume operator is paying \$5.30 per hour for the privilege of working on, and managing his charter boat. The average operator in the medium and large volume categories receives \$3.30 per hour and \$9.30 per hour respectively for their labor and management skills. Returns to investment for both the small and medium size firms were (-14%) and (-1%) respectively (Table 4). This means that after covering total costs, operator's labor, and operator's management there was insufficient profit left for any return to investment. Large volume firms however attain a return to investment of 14% (Table 4). Relative to other small businesses this is a respectful return. The primary reason the average large volume firm has a higher

return to investment is simply greater volume. The data indicate that the average small and large volume firms (90% of the entire Michigan charter industry) are accepting very low or negative returns to investment. The reader is reminded that some firms are more profitable than others. Not all firms in the small and medium categories had negative returns to investment.

F. Financial Ratios

Business managers use ratios as indicators of business financial health and operating efficiency. Ratios allow an operator to compare his present performance with that of previous years and with the performances of other charter businesses. Depending on an operator's goals and objectives he can use the information he gains from his ratios to more efficiently and profitably manage his business.

In Michigan most charter boats are licensed for six or less passengers. For reasons of comfort and customer satisfaction, few operators take six passengers very frequently. The average customer per trip for a small operation is 3.8, for a medium size operation 4.0 customers per trip, and for large operations 4.5 customers per trip. This extra half a customer per trip for large operations adds \$15 to \$20 more to each trip for the large operator (Table 6). An operator averaging 4.5 customers per trip will gross approximately \$1,100 to \$1,400 more per year than the medium size operator averaging just 4.0 customers per trip, assuming

both operators take 71 trips (the average for medium size operators). Large operators also average more full day charters. These longer trips are more profitable because of higher fees and proportionately lower variable costs than the common half day trips.

By analyzing both the customer per trip ratio and the gross revenue per trip ratio an operator can determine:

(1) if he should raise his fees, or (2) if he should try to increase his number of customers per trip. These decisions will of course have to be made within the limits of what the market will bear concerning higher fees. In 1977 small operators averaged \$118 per trip, medium \$126, and high volume operators averaged \$172 per trip. The average large volume operator grosses \$46 more than medium size operators and \$54 more than small operators because: (1) the large operator averages half a customer more per trip, and (2) the large operator also averages almost seven dollars more in revenue per customer at \$38.41 versus \$31.07 and \$31.64 for small and medium size operations (Table 6).

The asset turnover ratio (gross revenue divided by total assets) tells a manager how much volume his operation generates in relation to its value in boat, motor(s) and equipment. The average asset turnover ratio for small, medium and large charter operations is 0.22, 0.58, and 0.73 respectively (Table 6). For example, the small operator's ratio of 0.22 means that \$1.00 of assets is required to support every 22¢ of sales, and similarly for medium and

Table 6: Average Financial and operating ratios for small, medium and large charter boat fishing operators, Michigan 1977

Gross Income Category	Small	Medium	Large
Income Range	0-\$6000	\$6001-\$12,000	\$12,000+
Average Gross Revenue	\$4,381	\$8,954	\$18,935
Customers per trip	3.8	4.0	4.5
Gross revenue per trip	\$118	\$126	\$172
Gross revenue per customer	\$31	\$32	\$38
Asset turnover (gross revenue/assets)	0.22	0.58	0.73
Gross profit margin	(-30%)	31%	45%
Net profit margin	(-64%)	(-2%)	19%
Gross profit per trip	(-\$36)	\$39	\$76
Net profit per trip	(-\$75)	(-\$2)	\$33

large operators. It is difficult to compare the asset turnover ratio of a charter business with that of other small businesses because there are few similarities. Usually, though, an asset turnover ratio less than one indicates either volume is low, capital investment is too high, or both.

The gross profit margins¹ for Michigan's small, medium, and large volume charter operators average -30%, 31% and 45% respectively. After taking into account the opportunity

¹Gross profit is the total revenue minus fixed and variable costs. Gross profit margin is the gross profit divided by total revenue (Table 4). Net profit equals total revenue minus total costs, operators labor, and operators management (Table 4).

costs of labor and management, the net profit margin comes to -64%, -2%, and 19% for small, medium, and large respectively. Gross profit contribution per trip is -\$36, \$39, and \$76. In other words, every trip the average small operator takes costs him \$36 (not including labor and management). Medium and large operators make \$39 and \$76 respectively on their average charter. However when opportunity costs of labor and management are added in, the net profit per trip comes to \$-75, \$-2, and \$33. These figures show that the average small operator is paying \$75 per trip for the pleasure and satisfaction of working on his own charter boat. Medium size operators come close to breaking even, losing only \$2.00 per trip. Large operators average \$33 per trip above their labor and management costs (Table 6).

CHAPTER VIII

MANAGEMENT TECHNIQUES

A. Alternative Uses of Boat

The only money making techniques employed by charter boaters interviewed, other than fishing charters, were site-seeing cruises and scuba diving charters. Site-seeing cruises were not advertised heavily by any owner. Some mentioned being available for short cruises but this service is not emphasized. Most sport fishing charter operators consider themselves fishermen, not boat drivers.

Only one operator advertises charters for both fishing and scuba diving. In this case scuba chartering is the main business and sport fishing secondary. For efficient scuba charters the boat is equipped with a side-scanning sonar. This device gives a profile of the lake bottom and makes it possible to locate wrecked ships and other underwater sites of interest.

All operators interviewed who had taken site-seeing charters reported it amounting to less than five percent (5%) of their yearly gross revenue. Operators agree that site-seeing cruises are not economical at the fees customers are willing to pay, especially when the operator's time is included in operating costs.

B. Record Keeping Practices

All full-time operators keep some type of financial records but less than half keep any count of the number of fish their charters catch. Completeness and accuracy of expenses and receipts records varies from operator to operator.

It is difficult to determine if there is any correlation between accurate, complete records and a profitable operation. This would seem to be the case however, because in our interviews operators who had poor records tended to underestimate costs and over estimate receipts. For some operators who have impressive fish catch success, accurate records of this area of high customer interest can be used for advertising purposes.

C. Fish Catch Success

Records of fish caught by charter customers are kept by less than half of the operators we interviewed. Completeness of the records that were available varied widely, adding to the difficulty of determining an average catch per customer per trip. However, by combining both the available records with estimates from the operators who did not keep records, the average catch per customer was estimated to be 2.5 salmon and/or trout per trip.

Average catch for warm water species in Area V is most likely considerably higher than 2.5 fish per trip. Because warm water charters catch many small panfish, operators

do not attempt to record their number. Since accurate records were not available to base an estimate on, we did not attempt to estimate average catch per customer per trip for warm water charters.

CHAPTER IX

OUTLOOK AND CONCLUSIONS

The future of Michigan's charter fishing industry will probably be determined by a combination of five factors, customer demand for charter services, the availability of slip space, fuel costs, fish availability, and the price of alternative activities. In recent years industry growth has been strong. Increases in leisure time and a growing awareness of Great Lakes fishing has stimulated the Michigan charter industry. Growth potential however is not limitless in Michigan. Slip space all over the state is at a premium, with many new owners having to trailer their boat or bid up the slip rental prices. If slip space shortages continue, growth of Michigan's charter fleet could level-off.

Since fuel is a major expense (16% of total operating costs), its ever rising price will force operators to:

(1) raise their fee to maintain profit margins, (2) try to save on other variable costs i.e. first mate, travel to slip, booking fees and equipment replacement, or (3) accept a lower profit margin and attempt to increase customer volume. A combination of these three alternatives will probably

be the wisest strategy in dealing with the high fuel cost problem.

The fourth major factor that will partially determine the future of Michigan's charter industry is the availability of fish. Michigan's salmon and trout fishery is based on an artificially planted population. Where and how many of these fish are planted can directly affect charter fishing businesses. Therefore, future fish planting policies will influence the health and growth of charter fishing in Michigan. As far as can be determined, state planting policies will continue to provide a sufficient fishery for the present charter industry.

As the price of charter fishing increases because of higher fees and travel costs, the price of alternative means of recreation closer to home may become more attractive to some current charter customers. This tendency could lower demand from out of state customer forcing operators to concentrate more on local markets.

High capital investment, low profit margins, a short season, and limited boat capacity all work together to make charter fishing in Michigan a difficult way to make a living. From a monetary profit point of view, there are better ways to make money. But for the independent person who loves to be on the Great Lakes fishing from his own boat, enjoying it with other people, charter fishing provides a high return of pleasure and satisfaction. For this type of person accepted business evaluation methods do

not tell the whole story. To discover the rest of the story, book a charter this summer.

APPENDICES

APPENDIX A

PRELIMINARY SURVEY, QUESTIONNAIRE I

MICHIGAN SEA GRANT PROGRAM
1978 CHARTER BOAT BUSINESS SURVEY

1. How many years have you operated a charter boat business?

0-2	☐	7-8	☐
3-4	☐	9-10	☐
5-6	☐	11+	☐

2. Did your charter boat business supply MORE than HALF of your 1977 personal income? YES ☐ NO ☐

3. What percentage of your fishing EFFORT while chartering in 1977, was directed towards the following groups of fish?
 - ☐ % Salmon and trout from the Great Lakes and connecting waters.
 - ☐ % Salmon and trout from inland lakes and streams.
 - ☐ % Warm water game fish. (Pike, Walleye, Muskie, or Bass)
 - ☐ % Perch, panfish or OTHER _____

4. Please mark the box that best estimates the 1977 GROSS REVENUE (Before Costs) of your charter boat business.

\$0.00	-	\$3,000	☐
\$3,001	-	\$6,000	☐
\$6,001	-	\$9,000	☐
\$9,001	-	\$12,000	☐
\$12,001	-	\$15,000	☐
\$15,001	-	\$18,000	☐
Greater than	-	\$18,001	☐

5. In YOUR OPINION which item or items below best describes the major problem(s) in the charter boat industry? (If you choose more than one, please mark the most important by circling the box.)
 - ☐ High Insurance rates.
 - ☐ PCB and other fish contaminants.
 - ☐ Non-licensed operators taking business away.
 - ☐ Rates too low to make a profit.
 - ☐ Season too short to make a profit.
 - ☐ Energy crisis problems.
 - ☐ Not enough fish in the lakes.
 - ☐ Docking space shortage.
 - ☐ Too many governmental regulations.
 - ☐ Commercial netting impact on sport fisheries.
 - ☐ Indian fishing rights.
 - ☐ Increases in boat and equipment costs.
 - ☐ OTHER _____

THANK YOU for your cooperation.

Michigan Sea Grant Program
Michigan State University
Dept. of Fisheries & Wildlife
East Lansing, MI 48824

APPENDIX B

QUESTIONNAIRE II

MICHIGAN CHARTER BOAT OPERATORS QUESTIONNAIRE

The first half of this questionnaire will consume the most time, the second half consists of quickly answerable questions. The entire questionnaire should not take more than twenty minutes to complete.

OPERATOR INFORMATION

Age _____
Harbor(s) _____
Other Occupation _____
Operating Season _____

BOAT INFORMATION

Estimated Resale Value \$ _____ Is it paid for? YES ___ NO ___
Engine(s) 1 , 2 , I/O, Outboard, Inboard; Gas , Diesel.
(circle one from each group)
Hull material: (circle) Wood, Fiberglass, Aluminum, Steel, Other _____
Do you have plans to purchase a new boat in the next two years? YES ___ NO ___
WHY? _____

PRESENT VALUE OF INVESTMENT IN EQUIPMENT (resale value)

Radios _____
Radar _____
Fishfinders _____
Rods & Reels _____
Baits & Tackle _____
Downriggers _____
Shore Facilities _____
(office, phone answering equipment)
Other Equipment _____
(ice chest, rain gear, etc.)

RECORD KEEPING

Indicate the type of records you keep and the frequency of recording for your operation in 1977.

	NONE	DAILY	WEEKLY	MONTHLY	YEARLY
No. of fish caught	_____	_____	_____	_____	_____
Species, depth, bait	_____	_____	_____	_____	_____
Customer names, addresses	_____	_____	_____	_____	_____
Each charter's receipts	_____	_____	_____	_____	_____
Fuel costs	_____	_____	_____	_____	_____
Other _____	_____	_____	_____	_____	_____

Turn to next page

VOLUME OF BUSINESS

Number of half-day charters in 1977 _____ at _____ hrs./charter.

Number of full-day charters in 1977 _____ at _____ hrs./charter.

Total Trips _____

How many times in 1977 did you have morning and afternoon half-day charters on
on the same day? _____

Total number of customers in 1977 _____

Total Gross Revenue in 1977 \$ _____ (before expenses)Considering bad weather and your available time to charter, what is the maximum
number of days you could possibly charter? _____

How many charters did you lose in 1977 because of weather? _____

If not available to charter everyday during season, specify which days you
usually charter. _____

Which month is your busiest? _____ What percent of total? _____ %

CHARTER BOAT BUSINESS EXPENSES IN 1977

Fuel: Gallons burned _____ Total cost _____

Change in resale value of boat from '77 to '78 _____
(can be + or -, assume normal maintenance)

Change in resale value of equipment from '77 to '78 _____

Maintenance and Repair for
Bull _____
Engine _____
Other _____

Interest on loan(s) _____

Telephone _____

Slip(s) Rental _____
(specify number of)

Insurance Premium _____

Advertising _____

Winter Storage _____

Licenses, Inspections _____

Car Expense _____
(use .15 per mile)

Meals & Lodging _____

Rods & Reels, Baits _____

Downriggers _____

First-mate Salary _____

Federal Income Tax _____

Other Taxes _____

Accountant _____

Booking Fees _____

Misc. Supplies
& Postage _____

Other _____

Turn to next page

INSURANCE COVERAGE

Hull Coverage _____ Deductable _____

Equipment Coverage _____ Deductable _____

Liability Coverage _____

Comments _____

ADVERTISEMENT

Rank in order of effectiveness, the methods you use.

_____ Word of mouth	_____ Sports shows
_____ Brochures	_____ Newspaper
_____ Direct mail	_____ Radio ads
_____ Business cards	_____ TV ads
_____ Signs & billboards	_____ Magazine ads
	_____ Other _____

CONSUMER PROFILE

_____ % Michigan residents within 20 miles of port where you operate.

_____ % Michigan residents, but not within 20 miles of your port.

_____ % Non Michigan residents.

Describe your average customer. _____ Male _____ Low income _____ Experienced
 (check one from each group) _____ Female _____ Medium income _____ fisherman
 _____ Children _____ High income _____ Not Exper.
 _____ fisherman

FISH DATA

How many of the following species did your charters catch in 1977?

Lake Trout _____	Chinook Salmon _____	Bass _____
Brown Trout _____	Coho Salmon _____	Muskie _____
Steelhead _____	Atlantic Salmon _____	Walleye _____
	Perch _____	Other _____

Circle the species toward which you direct your fishing.

GENERAL INFORMATION QUESTIONS

Do you charter other than troll fishing charters? YES _____ NO _____
 (Scuba, Sight-seeing, etc.)

If YES, what percent is it of your total business? _____

What was your total income outside of chartering in 1977? _____

How many years do you plan to stay in the charter boat business? 0-1 _____ 5-6 _____
 2-3 _____ 7-9 _____
 3-4 _____ 10+ _____
 Don't know _____

Estimate the number of days in 1977 you used your boat for personal fishing or pleasure.

0 _____	26-40 _____
1-10 _____	41+ _____
11-25 _____	

Turn to last page

GENERAL INFORMATION QUESTIONS (continued)

In 1977 did you trade fish or reduced rates for other food or services? YES__ NO__
 (services being repair work or other favors) Estimated value in dollars _____

Would you be interested in any of the following information in regards to operating
 your charter boat business?
 (Check appropriate line)

	Very Interested	Moderately Interested	Not Interested
Business management	_____	_____	_____
Fish and lake biology	_____	_____	_____
Mechanics (boat, engine, radios)	_____	_____	_____
Laws affecting your business	_____	_____	_____
Publicity techniques	_____	_____	_____
Know data of fish populations in your area	_____	_____	_____
Information explaining Great Lakes fishing to give to your customers	_____	_____	_____
Information of PCB and other contaminants	_____	_____	_____
Other _____	_____	_____	_____

ADDITIONAL BRIEF COMMENTS:

SEA GRANT PROGRAM
 Dept. Fisheries & Wildlife
 Michigan State University
 East Lansing, Mich. 48824
 (517) 355-7494

Thank you for your time and cooperation

APPENDIX C

RANGE OF AVERAGE OPERATING COSTS

TABLE C: Range of average costs, for charter boat fishing operation by area, Michigan 1977.

Number of samples Area	8 I	16 II	6 III	4 IV	3 V	37 Industry
<u>Variable Costs</u>						
Fuel	245-1800	300-2500	300-2500	248-2310	500-1652	245-2500
Maintenance	200-3200	25-5000	35-5000	50-1294	750-940	25-5000
Travel expense to slip	0-4200	0-1330	0-462	0-659	0-280	0-4200
Meals & lodging	0-500	0-1400	0-180	0-100	150-252	0-1400
Rods, reels & bait replace.	0-400	0-800	156-808	0-325	175-1100	0-1100
Downriggers	25-200	0-300	0-30	50-190	0-50	0-300
First-mate	0-800	0-1800	0-690	0-1050	-	0-1800
Booking fees	0-500	0-750	0-15	0-110	-	0-750
Miscellaneous	0-300	0-300	10-469	80-150	30-650	0-650
<u>Fixed Costs</u>						
Telephone	25-500	25-1200	0-120	50-375	100-485	0-1200
Slip	75-750	125-1400	50-150	0-464	250-390	0-1400
Insurance	340-600	280-1100	160-450	188-600	337-416	160-1100
Advertising	100-1800	0-1000	0-300	50-200	385-427	0-1800
Storage	0-750	0-1500	0-150	0-304	138-150	0-1500
Licenses & inspection	61-161	61-183	25-61	46-61	61-111	25-183
Accounting fees	0-150	0-198	0-35	0-100	60-75	0-198
Depreciation	676-3533	1161-6425	467-2210	660-3870	595-1418	467-6425
Total Fixed Costs						
TOTAL COSTS	2209-13022	274-17290	3654-6179	3120-9630	4140-6489	2209-17290

APPENDIX D

**PERCENTAGE INVESTMENT IN PERMANENT
EQUIPMENT BY AREA**

TABLE D: Percentage breakdown of total industry investment in permanent equipment, Michigan 1977.

	AREA					Industry
	I	II	III	IV	V	
Boat & Motor(s)	71.2%	71.5%	64.4%	82.3%	48.4%	71.0%
Radios	4.3	2.5	4.6	3.7	5.8	3.3
Radar	-	2.6	-	-	-	1.5
Fishfinders	5.5	6.0	4.1	4.1	3.7	5.4
Rods & reels	3.9	2.9	7.4	2.1	9.7	3.8
Baits	6.8	5.6	4.8	2.2	17.2	5.8
Downriggers	4.2	4.3	3.6	4.7	2.2	4.1
Shore facilities	0.2	2.4	7.4	-	1.5	2.2
Other	3.9	2.2	3.8	1.0	11.6	2.9
<u>TOTAL</u>	100%	100%	100%	100%	100%	100%
Turnover Ratio (Gross rev./assets)	.66	.63	.37	.36	1.04	.60

APPENDIX E

**AVERAGE INVESTMENT IN PERMANENT EQUIPMENT FOR SMALL,
MEDIUM, AND LARGE VOLUME OPERATIONS**

TABLE E1: Average size of investment in permanent equipment; small, medium and large volume operations, Michigan 1977.

(percentages are percent of total investment for each category)

Size Number of samples	Volume of Operation					
	Small 13		Medium 13		Large 11	
	Dollars	%	Dollars	%	Dollars	%
Boat & motor(s)	14,461	72.9	9730	62.5	19,136	73.3
Radio(s)	646	3.3	1002	6.4	788	3.0
Radar	5,500*	4.3	—	—	—	—
Fishfinder(s)	935	4.7	711	4.6	1593	6.1
Rods & reels	592	3.0	846	5.4	826	3.2
Baits & tackle	850	4.3	1431	9.2	1270	4.9
Downriggers	967	3.7	775	4.6	1145	4.4
Shore facilities	1223	1.4	1239	2.4	4080	3.1
Other equipment	529	2.5	742	4.8	525	2.0
Average total present value of assets	19,845	100.0%	15,558	100.0%	26,100	100.0%

*Two operators only.

TABLE E2: Range of Investment

	Dollars	Dollars	Dollars
Boat	2500 - 50,000	5500 - 25,000	6500 - 30,000
Radio	350 - 1000	300 - 1000	300 - 2000
Radar	0 - 8000	-----	-----
Fishfinder	300 - 2000	400 - 1600	500 - 3000
Rods & reels	180 - 3000	400 - 1800	200 - 2000
Baits & tackle	50 - 2000	200 - 3000	200 - 4000
Downriggers	0 - 2000	0 - 1000	550 - 3000
Shore facilities	0 - 3500	0 - 2600	0 - 8000
Other	0 - 1500	75 - 2000	100 - 1200

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