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CONSUMER PROFILE DIFFERENCES
AMONG UTAH AND IDAHO BOATERS

by

Thomas D. Singleton

A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Agricultural Economics

Approved:

Utah State University
Logan, Utah
1976

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Thomas D. Singleton

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ABSTRACT

Consumer Profile Differences
Among Utah And Idaho Boaters

by

Thomas D. Singleton, Master of Science

Utah State University, 1976

Major Professor: Dr. John E. Keith

Department: Agricultural Economics

The purpose of this study was to describe and evaluate the consumer characteristics of boaters in Utah and Idaho. This has entailed a descriptive analysis of boater's socio-economic profiles, facilities and equipment, preferences and attitudes, and activity patterns.

Concomitantly a test of the hypothesis that boating is not a homogeneous recreational activity was attempted. Two statistical analyses were carried out. The first test was to determine whether the profiles of boaters having different activity specialities differed. This was accomplished by finding the means of selected boater characteristics (i.e., income, children, length of boat) for each boating speciality. The L.S.D. multiple means comparison test was then used to determine if a statistically significant difference existed between the means of each activity. The second test determined whether the effect of selected boater characteristics on activity levels was the same when regressed on the three dependent variables of hours fishing, hours skiing, and hours pleasure boating.

Boaters were found to have higher incomes, more education and higher percentages of household heads working in the highest paying professional, technical, and managerial occupations.

The results of the multiple mean and regression analysis support the hypothesis that boaters specializing in the different boating activities are not homogeneous. Boaters specializing in water skiing, pleasure boating and fishing were found to take different types of boating trips, have different socioeconomic levels, and own different kinds of boating equipment.

Fishermen were the most divergent group. They took fewer trips but traveled longer distances than skiing enthusiasts. Fishermen were found to own smaller boats with less horsepower. Boaters specializing in fishing were also found to have lower socioeconomic levels.

(50 pages)

INTRODUCTION

Two forces in the twentieth century receive major credit for the increase in outdoor recreation in the United States. First, the shifting from a largely agrarian to an industrial society moved the populace from the country to larger urban centers. Second, advancing technologies encouraged industrialization enabling labor to be more productive. The higher productivity of the labor force reduced the labor requirement for most heavy labor-using industries. A direct benefit of this increased productivity was shortening of the workweek and increased time allowed for leisure. A secondary benefit was that labor received higher real income thus permitting more resources for recreation and leisure.

Because the average citizen now has greater affluence he can divert more of his energy from supplying the basic necessities of life to other desires of which recreation is a part. Outdoor recreation, in all its many forms, has become one of the most important features of the American way of life.

Water-based outdoor recreation is much in demand in the United States. In a survey conducted by the ORRRC (Outdoor Recreation Resources Review Commission) in 1962, it was found that 44 percent of the United States population preferred water-based recreational activities over any others. Another survey in 1970 indicated that 29 percent of all United States households participated in boating activities for an average of 10.3 days per participant annually. In 1974, it was estimated that 48,075,000 people participated in recreational boating; 12 million people water skied, 850,000 for the first time. This

increasing demand for boating accounts for the 170,000 boats per year increase in sales between 1971 and 1973, for a total of 448,000 boats being sold in 1973 (Boating Industry, 1974).

Because of the abundance of outdoor recreation sites available in the Intermountain West, research is needed to insure proper recreational development in the region. As Stated in the ORRRC report No. 24 (1962):

The Nation's outdoor recreational demands will be met only through wise decisions on resource allocation, sound planning, and effective development of facilities. Those all require the support of thorough knowledge and extensive data, the product of research. (p. 24)

Much research has been done on outdoor recreation in Utah and Idaho, but the descriptions of the participants and participation has not been adequately accomplished. Information about the type of people who boat on the state's waters, personal and family characteristics of boaters compared to non-boaters, and types of boating activities preferred is not available. In fact, little is known about the socio-economic component of the boating recreational field. Empirical work has estimated the values and quality components of the boating waters in Utah and Idaho. But if public and private agencies responsible for the region's water resource development are to efficiently use their scarce funds in meeting the demands of both in-state and out-of-state boaters, they need additional information about the type of boaters using the lakes and reservoirs, preferences for different types of boating activities, and the socio-economic characteristics which influence choices of alternative recreation alternatives.

This thesis will study consumer characteristics and activities. First, a descriptive analysis of Utah and Idaho boaters will be presented. This will include a description of boater's activity

patterns, socio-economic levels, equipment types, and attitudes concerning the boating in Utah. The socio-economic characteristics will also be compared to the general population's socio-economic levels.

In the second part of the thesis, a test of the hypothesis that boaters specializing in the different boating activities are not homogeneous with respect to their activity patterns, socio-economic levels and boating equipment is reported.

OBJECTIVES

The objectives of this study are:

1. To develop the socio-economic profiles of Utah and Idaho boaters.
2. To test for homogeneity between the profiles of boaters specializing in the different boating activities.
3. To investigate the attitudes and preferences of Utah's boaters concerning the boating in Utah.¹

¹Idaho boaters are not included in this objective because the necessary data could not be obtained.

REVIEW OF LITERATURE

Scientific study in the field of recreation is relatively new. In June of 1958, the Congress of the United States created the Outdoor Recreation Resources Review Commission (ORRRC). It charged this group with the responsibility of compiling a national inventory of outdoor recreation facilities and resources needed by future generations. Since then, the literature has included many articles on outdoor recreation. The investigation and classification of consumer variables that effect the demand for outdoor recreation has been an area of study for many of the social sciences. Economists, sociologists and geographers all have contributed extensively.

Sessions (1960) was given the responsibility of the ORRRC to review the available literature to find data relevant to the survey. His preliminary study isolated eight variables which would influence the outdoor recreation patterns of households. Time available, age, distance traveled, family stage, income, residence, mode of transportation, and occupation were all found to be significant. From these variables, 14 specific hypotheses were developed to be tested in subsequent studies by the ORRRC.

From the 24 ORRRC reports presented to Congress, two have particular importance to this study. In Report 19, Ferris (1962) devoted Chapter Four to water sports. The statistical models he developed indicated that boating participation is highly correlated with other activities such as skiing, fishing, and camping. He found a positive relationship

between boat ownership, waterskiing, and income, A negative relationship between age and rate of participation was indicated for male fishermen. He also found evidence that the middle-range income groups participate in fishing more than the upper and lower income classes.

In Report 20, Mueller and Guren (1962) analyzed the factors that effect demand for outdoor recreation. Income, education, occupation, length of paid vacation, race, age, life-cycle states, religion and place of residence were used as the explanatory variables. The types of outdoor recreation evaluated were fishing, hunting, winter sports, hiking, sightseeing, nature walks, picnics, camping, and horseback riding. All of the explanatory variables except place of residence appeared to have a significant relationship to participation in outdoor recreation. Income, education, and paid vacation were all shown to have a significant relationship to participation in outdoor recreation. Increasing occupational status, from unskilled laborers to professionals also exhibited correlation with increases in participation in outdoor recreation. Age was shown to have the strongest inverse relationship to outdoor recreation.

Mueller and Guren developed a multivariate analysis in order to discover the unique contribution of each explanatory variable. Although every variable except one was statistically significant, their total contribution to explaining the variation in participation in outdoor recreation (R^2) was only 28 percent for males and 29 percent for females. They concluded: "...it is clear that factors other than socio-economic characteristics are major determinants of outdoor recreational activity."

Owens (1965) tested the hypothesis that participation in outdoor recreation in Kentucky, Ohio, and West Virginia was effected by certain

socio-economic variables. Fourteen different outdoor recreation activities were grouped into four categories: overall family participation, active outdoor recreation activities, passive outdoor recreation activities, and water-based activities. Water-based activities included fishing, swimming, power boating, canoeing, rowing, sailing, water skiing, and skin diving.

The socio-economic variables which were significant in explaining participation in water-based outdoor recreation were size of family, age, occupation, family life cycle, race, income, education, health of head of family, and leisure time.

Burdge (1965) made an in-depth social study of the effects of occupation on outdoor recreation. His findings suggest that the amount of leisure time available does not influence participation in outdoor recreation while job status and income do.

Green (1966) hypothesized that camping, boating, fishing, and hunting would be significantly effected by income, occupation, age, days of paid vacation, age of youngest child at home, education, sex marital status, number of children living at home, employment status of wife, distance traveled between home and site, and distance between home and nearest acceptable site. Years of boat ownership was included in his analysis of boating. The statistically significant variables were income, days of paid vacation, number of years that boat has been owned, average one-way distance between home and the vacation site, and distance between home and the nearest suitable boating site. No significant relationship was found for occupation, age, and sex.

Guedry (1970) argued that values estimated for one set of outdoor recreational resources were rarely applicable to another, although the

resources might be similar. He suggested two reasons for this limitation: First, the use of visitor days as the quantity variable for the total facility is too broad; and second, characteristics of the user population were not included. To improve the specification of the quantity variable, he grouped camping sites into classes on the basis of levels of remoteness. His model included population characteristics which a priori would appear significant as determinants of demand for forest recreation: ie., income, occupation, education, age, place of residence and years of camping experience. All of the variables except years of camping experience were statistically significant, and the degree of their significance varied according to the remoteness level.

Gillespie and Brewer (1968) stated that it was important to discover those variables other than the price that effected demand for outdoor recreation. They drew their sample from a single metropolitan area (St. Louis) so that all members of the sample would be facing nearly the same price or set of prices for their outdoor recreation opportunities. Fourteen different water-oriented activities were included in the dependent variable. Significant variables were family income, age of household head, education of household head, age squared, education, income, age household head (male or female, white or nonwhite), and occupation. To determine the net effect that each variable had on the model, the partial derivatives of the different quantitative variables (age, income, and education) were taken. Income and age were positively correlated. They hypothesized that income is a greater determinant of participation in outdoor recreation for older people than for younger people. Education had a negative relationship

to participation for up to ten years of formal training, and a positive effect for more than ten years. The R^2 was 62 percent.

Boyet and Tolley (1966) argued that the assumption of population homogeneity within concentric zones was invalid. They suggested use of states instead of concentric zones as units of observation to provide accurate data on potential demand shifters. Their model used seven variables to explain the total number of visits to national parks from each state: travel cost (measured by distance), population, per capita income, median age, median education, percent of population residing in urban areas, and percent of population which was white. All of the distance and population coefficients were significant with the expected signs. The income coefficients had the expected signs, but were not uniformly significant as a result of the high correlation with the population variables. They then excluded all the population variables except population itself. The resulting model explained a large amount of the variation ($R^2 = .75$ to $.95$), and income variables became significant.

Phillips, Mewes, and Blood (1969) designed their study to identify the economic characteristics of both the resident and non-resident boaters using Wyoming lakes and reservoirs. Participation rates and activity patterns for different classes of boaters were also examined. The Wyoming boater had an above-average income, had an occupation included in the more prestigious occupational categories, and had a higher than average education. Sixty percent of the total boating activity time was devoted to fishing, and pleasure cruising and water skiing accounted for the remaining time in about equal proportions. The study also attempted to classify the boater's characteristics

given different distances traveled, levels of activity, and types of boating activity engaged in.

Lentnik, VanDoren, and Trail (1969) hypothesized that there is a spatial structure to activity specialization. Their findings indicated that the distance traveled by sailors, water skiers, fishermen and nonspecialized boaters did not differ significantly, while pleasure cruisers differed significantly from sailors, but did not differ significantly from the other three groups. The mean distance traveled by sailors was 25.6 miles, by water skiers 27.9 miles, by pleasure cruisers 33.1 miles, by fishermen 36.8 miles, and by non-specialists 37 miles. The authors concluded that there are distinct boating groups defined by activity specialization, and that these groups have different propensities to travel.

Owens (1970) based his study on a sample of 776 families from Ohio, Kentucky, and West Virginia. The purpose of the study was to determine the relationships between participation in various outdoor recreational activities and the characteristics of the participants. A model predicting the effect of all the user characteristics on amount of activity was not presented. However, quadratic equations were developed using one predictive variable at a time. The equations predicted overall activity days in outdoor recreation, and activity in swimming, boating, horseback riding, ice skating, golf, hunting, and fishing. Variables evaluated were education, leisure time, occupation, family life cycle, residence, race, and sex. It was found that participation was positively related to a socio-economic scale consisting of education, occupation, and income. The most popular outdoor activities were picnicking, sightseeing, swimming, and fishing. Recreationists traveled

farther for long-term experiences such as camping than for short-term activities such as swimming.

Brewer and Gillespie (1969), using data taken from the St. Louis Metropolitan area, identified relationships between socio-economic characteristics and participation in water-based outdoor recreation. They also evaluated and analyzed the desired goals for leisure activities and the satisfaction of respondents with their present level of leisure activities. Relaxation was identified by 43.2 percent as their primary goal in outdoor recreation. Of the respondents surveyed, 40.5 percent were completely satisfied with their present leisure activities, 40 percent were generally satisfied, and 19 percent were somewhat dissatisfied.

The most expansive outdoor recreation survey was conducted by the United States Department of the Interior Bureau of Outdoor Recreation in 1970. This survey provides information on participation in 14 major activities based on a sample population of 46,450 persons aged nine and over. Recreation days per person and per participant were classified according to sex, age, race, population density, place of residence, census region, income and education. Neither income nor education had an effect on participation when days per participant were analyzed, but when days per person were considered, both had a significant positive effect. Whites participated in 70.4 boating days, while blacks and others participated in 6.8 recreation days per year. Those living in small cities, suburbs, towns and rural areas had at least three more boating days per year than do those living in a large city. The study also indicated days of participation by selected socio-economic characteristics; no mention was made of activity models

or significant differences which might exist between means of the various characteristics.

Rengist (1970) examined those people who travel for vacation purposes to determine what factors influenced the distance people traveled to vacation. The independent variables included both socio-economic and behavioral variables. Socio-economic variables found to influence distance traveled were occupation, income, and number of children. Behavioral indicators of importance were the degree to which individuals had expanded their action space (their knowledge of various geographical areas) and the vacationers' attitude towards an active compared to an inactive vacation. Alone, neither the socio-economic or behavioral variables accounted for much variation; however, when the two classes of variables were interacted, the model became highly significant.

Cunningham, Montaze, Metzner, and Keller (1970) evaluated the relationships between occupational groups and participation in active leisure activities. Subjects were placed into five occupational headings: professional and technical, managerial, clerical and sales, or service and labor. Little or no relationship was found between participation in active leisure activities and occupational grouping.

Gray and Blair (1971) and Gray (1973) did extensive studies on outdoor recreational resources in northeastern New Mexico. Data was gathered from personal interviews with recreators using facilities in Calfax County. The preliminary report outlined the characteristics of the recreationists and determined the facilities or resources that were considered essential by the recreationists. The second report

categorized the recreationists' activity preference for different sites in the study area, analyzed activity changes associated with changes in time and money, and determined both the direct and indirect economic benefits of the study sites. The researchers used Lagrangian multipliers to estimate the recreational values of various activities when income and leisure time changed. The analysis gave evidence that when recreationists' time or income increases, they will frequently choose to visit a higher quality site.

ANALYTICAL PROCEDURES AND METHODOLOGY

Data collection

Data for this study were collected by a mail questionnaire from a 30 percent sample of boaters from both Utah and Idaho during the 1973 boating season. The mailing list was drawn randomly from the total population of licensed boats in the two states for 1972. Utah boater registrants totaled 31,676 and Idaho boater registrants totaled about 34,000. Three mailings were made during the boating season on July 1, August 1, and September 15. Each mailing requested boating information from the preceding month. A second socio-economic questionnaire was included with every tenth questionnaire from the 30 percent sampling. Thus, approximately 3 percent of Utah and Idaho boaters were sampled for the socio-economic data. In Utah, approximately 950 socio-economic questionnaires were mailed, and 1,025 in Idaho. Utah residents returned about 130 usable questionnaires (about 14 percent), while Idaho returned 125 usable questionnaires (12 percent). Both samples were used in this study. Information on the boater's city of residence, the various boating waters visited, the number of trips taken to each site, the hours at each site at various types of boating activities, the size and age of the boat, and whether the boater owned overnight facilities at the site was included in one questionnaire. The second questionnaire solicited information on the boater's income, age, number of children, education, occupation, hours available for recreation, and his opinions concerning the best sites for water skiing, pleasure

boating, and fishing, possible improvements that could be made at the state's boating sites, and factors most important in the selection of a boating site.

A letter was sent with the questionnaires that explained the purpose and importance of the study, gave instructions in filling out the questionnaires, and asserted strict confidentiality of requested information. Television and radio news coverage was also given to the study requesting the recreationist's cooperation.

Hypothesis

The major hypothesis tested in this study was that boaters specializing in the different boating activities are not homogeneous with respect to the type of boating trip taken, the boater's socio-economic characteristics, and the boater's equipment.

Two specific tests were conducted. First, boaters were classified into five groups including water skiers, pleasure boaters, fishermen, mixed activity, and no activity. The grouping of boaters was done by analyzing the time spent by each boater in the various boating activities. If a boater spent two-thirds or more of his total monthly boating time in any one activity, he was listed as specializing in that activity. A boater spending less than two-thirds of his total boating time in any one activity was put in the mixed activity group. Of course, those boaters not boating during the month sampled were listed in the non-activity group. Averages for each of the following variables were found: Trips per month, total boating days per month, boating days per trip, miles traveled to boating site, boater's age, boater's income, boater's education, number of children,

hours available for recreation, length of boat, boat horsepower, age of boat, percentage of boaters that own overnight facilities.

To determine whether the means for each boating activity were statistically different (thus nonhomogeneous), the Least Significant Difference (L.S.D.) multiple mean comparison test was used.

The L.S.D. test indicates treatment means are significantly different when:

$$\bar{X}_i - \bar{X}_j > \text{LSD}, \quad i = 1 \dots 5, \quad j \geq i + 1$$

$$\text{LSD} = t_{df} \text{MSE} \sqrt{\text{MSE} \left(\frac{1}{N_i} + \frac{1}{N_j} \right)}$$

Where:

i, j = boating activities of skiing, pleasure boating, fishing, mixed activity, and no activity

\bar{X}_i, \bar{X}_j = means for variables in boating activities i, j .

$t_{df} \text{MSE}$ = t distribution with degrees of freedom for the mean square error

N_i = number of observations from boating activity i

N_j = number of observations from boating activity j

The second test used regression analysis and analysis of variance to determine whether time spent water skiing, pleasure boating, and fishing were correlated in a similar manner to variables representing boaters' socio-economic levels and equipment types. Three different regressions were run. Each regression model used the same independent variables, but used the hours boating of a different boating activity for its dependent variable. Conceptually, the regression models compared were:

$$Y_1 = b_{11} X_1 + b_{12} X_2 + \dots + b_{18} X_8$$

$$Y_2 = b_{21} X_1 + b_{22} X_2 + \dots + b_{28} X_8$$

$$Y_3 = b_{31} X_1 + b_{32} X_2 + \dots + b_{38} X_8$$

Where:

Y_1 = Hours water skiing

Y_2 = Hours pleasure boating

Y_3 = Hours Fishing

X_1 = Age of boater

X_2 = Family income

X_3 = Education of boat owner

X_4 = Hours available for recreation

X_5 = Horse power of boat

X_6 = Length of boat

X_7 = Age of boat

X_8 = Ownership of overnight facilities

The boating activities (dependent variables) were considered to be non-homogeneous with respect to any of the independent variables when the regression coefficients of the independent variables were either of a different sign or were significant in one boating equation, but not significant in another.

The following relationships were hypothesized.

Distance of trip, days per trip, and length of stay. It was hypothesized that fishing enthusiasts take fewer trips, but stay more days per trip and travel longer distances for each trip taken than those boaters specializing in water skiing. Fishing enthusiasts require

quality sites where there is good fishing. Good fishing areas are often located many miles from the population centers, necessitating that fishermen travel long distances to reach the quality fishing areas. Once the fisherman has reached the site, however, there will be a minimal physical cost or endurance required to remain fishing for long periods; likewise, still fishing or trolling uses little or no fuel, thus boating costs are also minimal.

The average skiing experience, however, is quite different. First, the only site quality a skiing enthusiast requires in a site is it be sufficiently large and warm to permit skiing. In the Utah and Idaho areas these qualities are found in most boating areas that are close to the population centers.

Second, skiing is a physically demanding sport requiring comparatively little time before the skier has exhausted his physical energy and is ready to return home. Likewise, skiing requires much higher operating costs per unit of time than does fishing.

Differences were also hypothesized to exist between water skiers and pleasure boaters. The average pleasure boating trip was hypothesized to be to a site where there is much scenic beauty and sufficiently large to permit hours of exploration. As these qualities are not common at all sites, pleasure boaters will have to travel longer distances. Once at the site, however, both the physical and monetary costs will be small compared to skiing. Thus the pleasure boater, like the fisherman, was expected to travel longer distances per trip, stay more days, but take fewer trips than the skier.

Age and number of children living at home. Because skiing is a physically exhausting sport, while fishing requires little physical strength, it was hypothesized that skiers would be younger than fishermen. Likewise, in a regression model, age was expected to be positively correlated to fishing, but negatively correlated to skiing. The older a boater is, the more time he will devote to fishing and the less time he will devote to skiing.

Skiing families were hypothesized to have more children living at home than fishing families. If fishing trips are taken to more distant sites and are of longer duration as postulated, it is financially and physically difficult to take children along, and if they are left at home, it is difficult and expensive to find a sitter. Boat owners with a large family may find it more difficult to go fishing than those with smaller families. The skiing trip is of shorter duration and there would be fewer physical or financial barriers to taking the children along. An equally important basis for this hypothesis is that children gain more enjoyment from skiing than from fishing. Number of children was hypothesized to have a positive correlation with hours skiing, and a negative correlation to the hours spent fishing.

Horsepower, boat length. Boaters using their boats primarily for fishing were hypothesized to have boats that were smaller in both length and horsepower. A recreationist buying a boat primarily for fishing would find a smaller boat more suitable for fishing small water bodies and less expensive to buy and operate. However, because a boater can use both a small or a large boat to fish from, no correlation was expected between boat size and hours spent fishing.

Horsepower was, however, hypothesized to be positively correlated

to the amount of skiing done. Important to the skiing experience is having a boat sufficiently powerful to pull the skier out of the water. As horsepower increases, a skier can ski at faster speeds, and/or more skiers can ski behind the boat at the same time assumably giving greater satisfaction from the boating experience.

Pleasure boating was the only activity hypothesized to be correlated to the length of the boat. A typical pleasure boating trip would be a long, sight-seeing type expedition where the scenic beauties of the lake are explored. A larger boat allows the family to stay on the water longer periods of time, and to carry equipment for picnicking and camping overnight. A large boat is also more capable of handling rough water that might be encountered on a long boating trip. It was hypothesized that boat length would be positively correlated to time spent pleasure boating and that boats used primarily for pleasure boating would be longer than either skiing or fishing craft.

The skiing boat was hypothesized to be newer than boats used for other boating activities. The boat's age was also expected to be negatively correlated to the amount of skiing done. Skiing is a sport unique to boating. A recreationist can sight-see or fish without a boat, but water skiing requires a boat. Hence, when a boat is first owned, the greatest demand will be to use it for skiing. As the skiing experience grows more common with each years activity, less skiing may be done. The family life cycle also has an important bearing on the use of the boat. When the boat is first bought, the boat owner is more physically able to ski, and more of the children will still be living at home, thus placing greater demand on the boat for skiing. With each year's boating activity, the boat owner is less physically able

to ski and there are less children living at home to encourage the family to go skiing. Thus, as the boat ages with the family life cycle, its use was expected to shift from skiing to the other boating activities.

Although recreators not boating during the months sampled cannot be classified as to their boating preferences, specific hypothesis were made concerning their socio-economic and equipment characteristics. These boaters were hypothesized to have a lower socio-economic level and less expensive boating equipment than boaters in the other activity specialities who did boat during the months sampled. Since family income was expected to be positively correlated to all types of boating, those boaters not boating were hypothesized to have lower incomes than those who did boat. Since education has been found to be positively correlated to income Green (1966), Gilespeie, and Brewer (1968) and Phillips, Mewes and Blood (1969) boaters not participating were also expected to have fewer years of education than the boating participants.

Time available for recreation was another variable hypothesized to be positively correlated to all types of boating. As such, non-participants were hypothesized to have less time available for recreation than the active boaters.

Mixed activity boaters (those boaters not spending two-thirds or more of their time in any one activity) were also analyzed in the multiple mean comparison tests; however, as this group is a composite of the other activities, no specific hypothesis were made.

PROFILE OF BOATING RECREATIONISTS

The average boating recreationist in Utah and Idaho traveled 350 miles during each of the summer months to boat on the state's lakes and reservoirs, and made 2.5 trips a month each of which lasted two days. Almost one-fourth of the boaters surveyed indicated they owned overnight facilities (i.e., a cabin) on a lake or reservoir.

The boating population is characterized by a relatively higher socio-economic profile than the general population. Utah and Idaho boaters have a mean family income of \$13,500, which is \$4,700 greater than the average income of the general population in the two states. Fifty-nine percent of the boating population (26 percent more than the general population) has an occupation in the categories of professional, technical, or managerial. The average boat owners age is 49 years, 7 years older than the average household head of the general population. There is no comparable difference in the number of children (about 1.5 children per family) between boaters and the general public. These general characteristics are compared with the general population of Utah and Idaho in Table 1.

Income, occupation, and education profiles

Many outdoor recreational activities require only an investment of time and initiative to participate. Boating, however, requires a large initial investment in a boat and relative equipment. A boater might be expected to have a high income relative to non-boaters. The effect a person's earnings has on his ability to join the boating

Table 1. Mean comparisons of socioeconomic profiles of Utah and Idaho boaters with the general public

Profile Characteristic	Boating Survey	General Population ¹
Income	\$13,500	\$8,850
Education (years)	14	12.4
Occupation (% in Professional, Technical or Managerial)	59%	33%
Children	1.6	1.5
Age	50	43

¹Source: U.S. Bureau of the Census, Characteristics of the Population: 1970, Volume 1, Parts 14 and 46, Idaho and Utah.

Table 2. Annual family income distributions: Utah & Idaho boaters compared to the general population (percentage distribution of respondents indicating family income)

Annual Family Income	Boating Survey	General Population
Under \$6,000	5	27
\$6,000 - \$8,999	13	24
\$9,000 - \$11,999	20	21
\$12,000 - \$14,999	20	13
\$15,000 and over	42	15

force is readily seen in Table 2. The income distribution of boaters is almost the reverse to that of the general population. Only 18 percent of the boaters have incomes in the lowest two income categories compared to only 51 percent for the population as a whole. Forty-two percent of the boaters are in the upper two income categories compared to only 28 percent for the general population.

The educational level of boaters was found to be higher than the general educational level of the public. Over 50 percent of the respondents in the boating survey had attended some college. Of this group, 12 percent had graduated from college after four years and 20 percent had completed some post graduate work. Only 29 percent of the general public had ever attended college. Seven percent had completed four years of college, while 5 percent had completed more than four years of college. Only 11 percent of the boating population did not have at least a high school education compared to 36 percent for the general public.

The occupational profile of boaters is also easily distinguishable from that of the general population. Fifty-nine percent of the boaters listed their occupations as professional, technical, or managerial, while the 1970 census shows that only 33 percent of the total population is employed in these occupations. The 1970 census lists a greater percentage of household heads working in the farming-ranching, clerical, craftsman-foreman, and laborer occupations than was found in the percentages of retirees between the two groups. The boating survey indicated that 14.1 percent of the boaters were retired, while the 1970 census had 13.9 percent of the adult population in Utah and Idaho as being retired.

Table 3. Comparison of educational level of Utah and Idaho boaters and the general population (percentage distribution of respondents indicating educational level)

Educational Level	Boating Survey	General Population
Elementary school	1	4
High school, did not graduate	10	32
High school, graduate	36	35
Some college, did not graduate	21	17
College graduate	12	7
Post graduate work	20	5
	<u>100</u>	<u>100</u>

Table 4. Occupational comparisons of Utah and Idaho boaters and the general population (percentage distribution of respondents giving occupations).

Occupation	Boating Survey	1970 Census
Professional-Technical	39	18
Managerial	20	15
Farmer-Rancher	4	7
Clerical-Sales	9	14
Craftsman-Foreman	12	24
Equipment Operators	8	7
Private Household Worker	*	*
Farm Laborer	*	3
Other Laborer	5	8
Other	3	4
	<u>100</u>	<u>100</u>

*Less than one-half of one percent.

Age and number of children of Utah
and Idaho boaters

The age profile of boaters again reflects the high income required to boat. Only 15 percent of all boaters surveyed were under 34 years of age, compared to 31 percent of the adult populations as given by the 1970 census. Seventy-nine percent of the boaters surveyed were between the ages of 35 and 63 years of age. Only 57 percent of the boaters gave their ages as being greater than or equal to 65 years old, although 14 percent of the boating respondents indicated they were retired. Presumably, many household heads retiring at an early age are taking up boating or are already members of the boating force. Although the percentage of retirees is the same for both the boating survey and the 1970 census, retired boaters have a younger age distribution than the general population.

Equipment and facility profile of
Utah and Idaho boaters

Table 7 indicates the distribution of boats in Utah and Idaho according to horsepower, length and age. The high percentage of boats powered by motors having less than 36 horsepower is a probable indication of the popularity of fishing in the two states. Boat lengths are rather evenly distributed throughout the 13 to 18 foot range, with 75 percent of all boats being in this category. Almost three-fourths of the boaters surveyed indicated their boat was less than 10 years old.

Average monthly activity: trips,
boating days, and miles traveled

Forty percent of the boaters surveyed took a boating trip at

Table 5. Age comparisons of Utah and Idaho boaters and the general population (percentage distribution of respondents giving age).

Age	Boating Survey	General Population
Head of household under 25	3	9
Head of household 25-34	11	22
Head of household 35-44	25	21
Head of household 45-54	30	20
Head of household 55-64	23	16
Head of household 65 or older	<u>7</u> 100	<u>12</u> 100

Table 6. Comparison of number of children living at home: boaters and the general population (percentage distribution of number of children living at home).

Number of children	Boating Survey	General Population
None	36	39
One	17	17
Two	18	17
Three	17	13
Four or more	<u>12</u> 100	<u>14</u> 100

Table 7. Description of boats in Utah and Idaho (percentage distribution).

Boats	
<u>Horsepower</u>	
Less than 36 H.P.	31
36 - 55 H.P.	12
56 - 75 H.P.	14
76 - 115 H.P.	15
116 - 155 H.P.	11
156 - 195 H.P.	10
196 H.P. and over	7
Total	<u>100</u>
<u>Length</u>	
Less than 12'	9
13 - 14'	21
15 - 16'	29
17 - 18'	25
19 - 20'	10
21' and greater	6
Total	<u>100</u>
<u>Age of Boat</u>	
1 year	9
2 - 3 years	16
4 - 5 years	17
6 - 7 years	15
8 - 10 years	17
12 years or older	26
Total	<u>100</u>

Table 8. Average monthly activity for boaters: percentage distribution of trips, boating days and miles traveled.

Percentage	
<u>Number of trips</u>	
1	29
2	17
3	14
4	11
5 or more	29
Total	100
<u>Boating days per trip</u>	
1	60
2	17
3	14
4	6
5 or more	3
Total	100
<u>Average miles per trip</u>	
Less than 31	41
31 - 60	22
61 - 90	14
91 - 120	10
121 - 150	2
151 - 180	2
Greater than 180	9
Total	100

least once a week (Table 8). Sixty percent of all boating trips lasted for one day only. Almost all the trips which lasted two or three days were taken on weekends by families which began boating on Friday afternoon. Families owning overnight facilities at a boating site (29 percent of the respondents) participated in these boating trips on 75 of all weekends throughout the summer. Only 3 percent of the boaters surveyed took trips (probably vacations) which lasted five days or longer.

Most boating trips taken in Utah and Idaho are to sites relatively close to the boater's home. Sixty-three percent of all boating trips were to sites within 60 miles of the boater's origin.

Table 9. Response to the question: what could be done to improve the state's boating waters? (percentage distribution of respondents)

Needed Improvements	Percentage Responded
Build additional site facilities	65
Separate boating activities (skiers from fishermen)	10
Enforce regulations	8
Keep water clean from moss and pollution	6
Keep facilities clean from litter	6
Build boating sites closer to population centers	3
Plant more fish	<u>2</u> 100

Attitudes and preferences of Utah boaters

Three attitudinal questions were asked on the boating questionnaire in an attempt to determine how boaters felt concerning the boating in Utah: (1) What could be done to improve the state's boating waters, (2) What factors are most important to your choice of a boating site, and (3) What site do you prefer most for water skiing, pleasure boating, fishing, and why do you prefer these sites. Tables 9, 10, and 11 outline the boaters' responses to these questions. The distribution of boating activity between skiing, pleasure boating, and fishing is presented in Table 12.

Table 10. Response to the question: what factors are the most important in your choice of a boating site (percentage distribution of respondents).

Important Factors	Percentage Responded
Physical facilities	40
Distance to site	20
Fishing success	19
Congestion	12
Environmental setting	6
All other responses	<u>3</u>
	100

Table 11. Response to the question: what site do you prefer most for water skiing, pleasure boating, and fishing? (percentage distribution).

Most Preferred Site*	Skiing	Fishing	Pleasure Boating
Willard Bay	22		8
Pine View	17	6	7
Utah Lake	11		5
Lake Powell	10	4	42
Bear Lake	10		6
Rock Port	8		
Flaming Gorge	7	41	25
Echo	5		
Starvation	5	4	
Hyrum	5		
Strawberry		34	
Fish Lake		4	
All others		7	7
	<u>100</u>	<u>100</u>	<u>100</u>

*No site was mentioned that did not receive at least four percent of the respondent's vote.

Table 12. Percentage distribution of boaters participating in different boating activities.

Boating Activity	Time Distribution	Activity Speciality Distribution
Water skiing	24	19
Pleasure boating	24	9
Fishing	52	44
Mixed	no allocation	<u>28</u>
	<u>100</u>	<u>100</u>

Needed improvements for boating sites. A large majority of boaters indicated a need for more physical facilities at the boating sites. The types of facilities mentioned most often are docking and launching facilities, picnic areas, restrooms, and culinary water.

Many boaters (mostly fishermen) said sites should have use scheduling whereby certain hours of the day (usually morning and evening hours) would be scheduled for fishing only.

Water skiers comprised the majority of boaters who felt the boating regulations needed stricter enforcement. Many boat owners advocated that boaters be required to have a boating license similar to a driving license. A test would be required to demonstrate the boater's proficiency and understanding of boats and boat driving.

Important factors in the selection process. Boaters felt that the presence of physical facilities is the most important factor in their choice of a boating site. Distance to the boating site, fishing success, and congestion were also frequently mentioned as important factors in their selection. Nineteen percent of the boaters responding said fishing success was the most important factor in site selection, but only 2 percent of the respondents felt the state's waters should be planted with more fish.

The majority of the respondents who sought a pleasing environmental setting were boaters who spent most of their time pleasure boating.

Favorite boating sites. Boaters named Willard Bay and Pine View as the two most popular skiing sites. Flaming Gorge and Strawberry Reservoir were the most preferred fishing areas, and Lake Powell and

Flaming Gorge were named as the two most popular pleasure boating sites.

The top two skiing sites were only named in 39 percent of the responses while the top two fishing sites were named by 75 percent and the top two pleasure boating sites were named by 67 percent of the boaters responding. There are many good skiing areas, but only a few fishing and pleasure boating sites. Preferred fishing sites were so named because of the good fishing at the site, and pleasure boating sites were selected on the basis of the scenic beauty of the area. For both pleasure boating and fishing the majority of boaters gave only the one reason for selecting their favorite sites. However, favorite water skiing sites were selected for a variety of reasons. The most common characteristics of the preferred skiing sites were proximity to the boater's home, size, and clean, warm water.

Activity distribution. Table 12 illustrates the percentage distribution of boaters, according to both their speciality classification and the amount of time spent in each activity. Fishing is the most popular boating activity in Utah and Idaho. Boaters not specializing in any particular category are second in popularity, followed by water skiing and pleasure boating. A comparison of the total time distribution with the specialized activity distribution indicates that pleasure boating is mainly a secondary activity. Only 9 percent of the boaters surveyed could be classified into the pleasure boating speciality, yet 24 percent of total boater time is spent pleasure boating. Both fishermen and water skiers spend some time pleasure boating on their boating trips.

PROFILE DIFFERENCES BETWEEN ACTIVITY SPECIALITIES

Average trips, days per trip,
and miles traveled

Boaters specialized in water skiing were found to take more boating trips than boaters in the other specialities. Table 13 also indicates the relationship between boating trips taken, miles traveled, and length of stay. While skiers take more trips, they were found to travel fewer miles and stay less days per trip than fishermen. However, no statistical difference was found between the average trips of a pleasure boater and water skier. The average skiing enthusiast took 4.7 trips during each of the summer months, while the average fisherman took only 2.6 trips. Fishermen, however, stayed an average of 2.6 days per trip and visited sites an average 93 miles from their home. The average skiing trip lasted only 1.8 days and was to a site which was 55 miles from the boaters home. The average fishing trip was found to be very similar to the average mixed activity trip with respect to days per trip and distance traveled. Pleasure boaters were expected to have an activity pattern similar to that of fishermen; however, the results do not confirm this hypothesis. Pleasure boaters' activities were found to be more closely related to that of water skiers.

Total boating days per month were also included. No statistically significant differences were found to exist in total boating days between any of the activity actegories.

Average income, education,
number of children, age,
and hours available for recreation

The results found in Table 14 lend credence to the hypothesis that the boater's age and number of children living at home differ between activities. Water skiers, with an average age of 43 years, were the youngest activity group, while fishermen were found to have the oldest age profile with an average age of 50 years. The L.S.D. test indicated that skiers had a statistically significant younger age than fishermen, pleasure boaters, and mixed activity boaters. Non-participant boaters also were found to be statistically younger than fishermen. No significant differences were found between pleasure boaters, fishermen, and mixed activity boaters.

Table 13. Comparisons of average trips, days per trip, and miles traveled for boaters in different activity specialities

Activity	Trips per month	Total days per month	Days per trip	Miles Traveled
Water skiing	4.1*	6.1	1.8-*	55-*
Pleasure boating	3.5	5.9	2.0	75
Fishing	2.6	5.5	2.6	92
Mixed activity	3.3	6.4	2.5	93

* = Significantly different from fishing¹

- = Significantly different from mixed activity

¹Significance is at the 90 percent probability level for these and all other comparisons made in this section.

Table 14. Comparison of average income, education, children, age, and hours available to recreate for boaters in different activity specialities

Activity	Age	Income	Education	Children	Hours Available
Skiing	43*-†	15,900* Δ	14.9* Δ	2.4Δ-†*	27
Pleasure Boating	48	16,700* Δ	15.6* Δ	1.2	27
Fishing	50	13,000	12.9	1.1	28
Mixed Activity	48	15,500* Δ	14.5*	1.5	25
No Activity	46*	12,300	13.4	1.8*	23

+ = Significantly different from pleasure boating

* = Significantly different from fishing

- = Significantly different from mixed activity

Δ Significantly different from no activity

The skiing family was also found to have more children living at home than boaters from any other activity. Skiing families averaged 2.4 children while families specializing in fishing averaged 1.1 children, pleasure boaters average 1.2 children, mixed activity boaters averaged 1.5 children, and non-participants averaged 1.8 children. The L.S.D. test also demonstrated that non-participants had statistically more children than fishermen.

Recreational boaters specializing in pleasure boating, water skiing, and mixed activity boating all had significantly higher incomes than fishermen and boat owners taking no trips. The

non-participating boat owner had the smallest average income. These families made an average of \$4,400 less than the average pleasure boating family, \$3,600 less than the average skiing family, and \$3,200 less than those families engaging in mixed activity boating. Boaters not participating were expected a priori to have significantly smaller incomes; however, no such hypothesis was made for fishermen. The average fishing family made \$13,000 per year, which was just \$700 more and not significantly different from non-participants.

The educational levels of boaters are found to parallel very closely the income levels just described. Again, fishermen and non-participants had the lowest educational levels averaging 12.9 years and 13.4 years respectively. Pleasure boaters had the highest average educational level with 15.6 years, followed by skiers with 14.9 years and mixed activity boaters with 14.5 years.

The average boat owner feels he has between 23 and 28 hours a week available for recreation. Boaters in the different boating specialities were all found to have similar time allocations for recreation. The only statistical difference was found between fishermen with 28 hours available for recreation, and non-participating boat owners who said they had only 23 hours available for recreation. Pleasure boaters and skiers both had an average of 27 hours available and mixed activity boaters indicated they had an average of 25 hours available during the week for recreation.

Average length, horsepower,
age of boat, and ownership
of overnight facilities

The results of the L.S.D. tests supported the hypotheses about boat length, horsepower, and boat age. From Table 15, it can be seen that boats used primarily for fishing were significantly shorter and less powerful than boats used either for skiing or pleasure boating. Boats used for fishing had an average length of 14.4 feet in length. This was about 2 feet shorter than the average skiing craft and 4 feet shorter than the average fishing boat. Motors on skiing, pleasure boating, and mixed activity boats were all similar, with their horsepower ranging from 116 for skiing craft to 139 for pleasure boats. However, boat owners not participating and fishermen had much smaller boat motors, averaging 51 to 56 horsepower respectively.

Water skiing specialists owned newer boats than boaters specializing in the other activities. Boats used for skiing had an average age of 5 years. The L.S.D. test indicated this was significantly different than boats used for pleasure boating and fishing whose average ages were both 8 years. Boat owners not participating had the oldest boats with an average age of 9 years.

The last column of Table 14 shows the percentage of boaters owning overnight facilities. Of the boaters surveyed, pleasure boating enthusiasts had the largest percentage owning cabins at the boating site with a 50 percent ownership ratio. Pleasure boaters were followed by mixed activity boaters with 40 percent owning cabins, skiers with 30 percent, and fishermen with 20 percent. Of the boaters not taking any trips, none indicated that he owned a cabin or other overnight facilities at the boating site.

Table 15. Comparison of average facility and equipment characteristics for boaters in different activity specialities

Activity	Length	Horsepower	Age of Boat	Overnight Facilities
Skiing	17.1* Δ	116* Δ	5 **	30 +
Pleasure Boating	19.3* Δ δ	139* Δ	8	50
Fishing	15.4	56	8	20 + -
Mixed Activity	18.6 Δ * δ	126* Δ	7	40
No Activity	15.7	57	9 Δ	0 δ

+ Significantly different from pleasure boating

* Significantly different from fishing

- Significantly different from mixed activity

Δ Significantly different from no activity

δ Significantly different from water skiing

Regression model comparisons

In this section, the regression models for each of the boating activities are compared. As can be seen from Table 16, the same independent variables were regressed on the total hours of boating for each of the boating activities. The purpose of the regression models was to compare the correlations that the independent variables had with each of the boating activities. If, for example, boat length was positively correlated to hours pleasure boating, but negatively correlated to hours spent fishing, the two activities would be

Table 16. Effects of boater characteristics on different boating activities¹

Independent Variables	Dependent Variables - Measured in Hours		
	Water Skiing	Pleasure Boating	Fishing
Income	-0.1756	0.4894	2.0788**
Education	0.2323	0.1047	-1.081**
Number Children	0.8252	-0.3167	-1.7484**
Hrs. Available	0.0116*	0.0341**	0.2241**
Length Boat	-0.2489	0.6419**	-0.3133
H.P. - Boat	0.0373**	0.0192	-0.0342
Age Boat	-0.2279*	-0.0841	-0.0108
Overnight Fac.	3.1683**	3.0598**	1.960

*Significant at the 90 percent level of probability

**Significant at the 95 percent level of probability

¹The numerical values are the beta coefficients in the regression analysis.

considered non-homogeneous with respect to boat length. The same conclusion would be reached if boat length was not significantly correlated to hours spent fishing, but was correlated to hours spent pleasure boating.

Socio-economic characteristics. Income, education, and number of children living at home were all found to be significantly correlated to the hours boaters spend fishing. None of these variables were found

to be significantly correlated with hours spent pleasure boating. Children living at home was the only variable found to have a significant relationship with water skiing.

The positive beta coefficient for income regressed on fishing indicates that as a fisherman's income increases, he tends to spend more time fishing. The lack of a significant income coefficient on hours pleasure boating or skiing indicates that boaters specializing in these two activities do not engage in appreciably more boating as income rises.

This analysis indicates that education has a negative effect on time spent fishing. Boaters with more years of education tend to do less fishing than do boaters with less education. This, in part, confirms the results of the last section where fishermen were found to have less years of education than other boaters.

As hypothesized, number of children living at home was found to be positively correlated to hours skiing and negatively correlated to hours fishing.

Equipment, overnight facilities, and available recreation time. None of the boating equipment variables had any significant relationship or correlation to the amount of fishing done. However, both boat horsepower and age was found to be significantly correlated to skiing, while boat length was significantly correlated to pleasure boating. The results indicated that as boat's horsepower increased, so did the time spent skiing. As was hypothesized, the skiing experience is apparently enhanced by a more powerful boat. Boat length was found to have this same relationship with pleasure boating. As boat length

increased, so did the time a boater would spend pleasure boating.

Boat age was found to be negatively correlated to skiing. With each year's boating activity, the time spent skiing would decrease. A boat's age was not found to have a significant effect in reducing the time spent fishing or pleasure boating, although it did have a negative coefficient for both boating activities.

The ownership of overnight facilities at the boating site was strongly related to increased skiing and pleasure boating. However, no relationship was found to exist between ownership of overnight facilities and time spent fishing.

Time available for recreation was the only variable used in the regression model which was significantly related to all three boating activities. As expected, increased time available for recreation resulted in increased boating for all activities.

SUMMARY AND CONCLUSIONS

The objective of this study was to describe and evaluate the consumer characteristics of boaters in Utah and Idaho. This has entailed a descriptive analysis of boater's socio-economic profiles, facilities and equipment, preferences and attitudes, and activity patterns.

Concomitantly a test of the hypothesis that boating is not a homogeneous recreational activity was attempted. Two statistical analyses were carried out. The first test was to determine whether the profiles of boaters having different activity specialities differed. This was accomplished by finding the means of selected boater characteristics (i.e., income, children, length of boat) for each boating speciality. The L.S.D. multiple means comparison test was then used to determine if a statistically significant difference existed between the means of each activity. The second test determined whether the effect of selected boater characteristics on activity levels was the same when regressed on the three dependent variables of hours fishing, hours skiing, and hours pleasure boating.

Descriptive analysis

The analysis of boater's socio-economic profile indicated that boaters in Utah and Idaho have higher incomes than the overall population. Boaters were also shown to have more years of education and have higher percentages of household heads working in the highest paying professional, technical, and managerial occupations. There was

no difference in the family size between the two groups; but boaters were found to be older than the average household head from the overall population.

The average boat in Utah and Idaho is 16.5 feet long and has an 8 $\frac{1}{2}$ horsepower motor. Almost 60 percent of all boat motors, however, have 75 horsepower or less, and are 16 feet or less in length. The smallness of both boat and motor indicate the popularity of fishing in the two state region. The boaters surveyed said they spent 52 percent of their total boating time fishing. Comparatively, 24 percent of the boater's time was spent water skiing with the remaining 24 percent spent pleasure boating or cruising.

Boaters are active recreationists during the summer. During each summer month the average boater traveled 350 miles to boat on the states' lakes and reservoirs. Boaters spread this distance over an average 2.5 trips per month which lasted approximately two days per trip.

Utah boaters named Flaming Gorge as their favorite fishing site, Willard Bay as their favorite skiing site, and Lake Powell as their favorite pleasure boating area. These same Utah boaters said the state's boating waters could best be improved by building additional physical facilities at the site. The availability of physical facilities was also rated as the most important factor in the selection of a boating site.

Analysis of homogeneity

The results of the multiple mean and regression analysis support the hypothesis that boaters specializing in the different boating

activities are not homogeneous. When comparisons were made between boaters specializing in water skiing, pleasure boating, and fishing, considerable differences were found in the type of boating trips taken, the boater's socio-economic levels, and their equipment. Fishing enthusiasts were the most divergent group, while water skiers and pleasure boaters exhibited a greater degree of homogeneity. Fishermen on the average took fewer boating trips per month than boaters specializing in the other boating activities, but stayed more days per trip and visited more distant boating sites. However, when total boating days per month were analyzed, all boating groups were found to spend about the same number of days boating.

Socio-economically, fishermen and boaters not participating during the months sampled were found to have lower incomes and less education than the other activity specialities, while water skiers were found to be younger and have more children still living at home.

Fishermen and boaters not recreating own smaller boats with less horsepower than the other boating groups. These two groups also had the smallest percentage owning overnight facilities at the boating sites. Pleasure boaters had the largest percentage owning overnight facilities followed by mixed activity boaters and skiers.

The results of the regression analysis also added credence to the hypothesis of heterogeneity between boating activities. Hours fishing was found to be related to the socio-economic variables income, education, and children, while hours pleasure boating was not related to any of the three. The number of children living at home was found to be positively correlated to skiing, but negatively correlated to fishing.

Time spent fishing was not found to be correlated to boat length, horsepower, age of boat, or ownership of overnight facilities. Hours spent skiing, however, was related to all of these variables except boat length, while pleasure boating was significantly correlated to length of boat and overnight facilities. Hours available for recreation was the only variable that had the same effect on all three activity types.

The results of this study should serve outdoor recreational resource managers, entrepreneurs in the boating industry, and researchers studying the realm of outdoor recreation.

Information on boater's socio-economic traits, preferences for different boating sites, and types of boating equipment being used will enable the recreational resource manager to better allocate moneys for the state's public boating sites.

Entrepreneurs are constantly seeking information which will help them meet the demands of the consumer in the present and the future. Understanding the boater, his equipment choices, and preferences for different boating experiences will aid the boating industry in choosing the kinds of boating products that consumers will want now and in the future.

Researchers should use the results of this study to raise questions concerning the assumption of homogeneity used in the consumer surplus boating demand models developed at Utah State University (Wennergren, 1965, et.al. 1975). In the consumer surplus model, boaters from all origins receive consumer surplus from the boater or boaters visiting the site from the most distant origin, the assumption being that boaters from the closer origins would visit the site the site in

a similar manner as the most distant boater if they lived at the most distant origin. The present study indicates that fishermen travel considerably longer average distances to boat than do skiers. If in the consumer surplus model the most distant boater or boaters are fishermen, it would be difficult to assume that a skiing enthusiast would still visit the site if he lived as far away from the site as the fishermen.

In light of these results it might be hypothesized that the consumer surplus model would bias upward the value placed on multi-use sites popular for both fishing and skiing. However, the development of models and reasoning to test this hypothesis is beyond the scope of this study and will be left for future research.

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