

AN ABSTRACT OF THE THESIS OF

Lydia D. Newton for the degree of Master of Arts in Interdisciplinary Studies in Economics, Geography, and Rangeland Resources presented on May 22, 1998. Title: Markets and Competition in Private and Public Campground Sectors of Oregon: Implications from Oregon Campground Inventories and the 1997 Campground Questionnaire.

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Abstract approved: _____

Joe Kerkvliet

This study explores private and public campground markets in Oregon. A profile of private and public campgrounds, their prices, location, and amenities, served as the supply side statistics while responses from the *1997 Campground Questionnaire* provided data for demand of Oregon campgrounds. The questionnaire inquired about respondents' last camping trip in Oregon, where they camped, how much they paid, the facilities available, the activities in which they participated, socioeconomic attributes, and included a dichotomous choice contingent valuation (CV) question.

These data were used to statistically analyze differences in the supply and demand for the private and public campground sectors. First, the inventory was examined using OLS to estimate the effects of campground amenities and location on user fees charged at different campsite types at private, federal, and state campgrounds. Second, I used the survey data (i.e., respondent profiles and campground attributes) to estimate substitution probabilities among campsite type and campground ownership using a nonlinear multinomial logit model. Questionnaire information was also utilized to test for market

segmentation and identify the user groups' characteristics. Finally, I utilized responses to the CV question to determine the amount of consumer surplus for Oregon state parks.

The significant inventory results were as follows. The model predicted that tent sites at state campgrounds are more expensive, on average than tent sites at private campgrounds. National Forest campgrounds located in eastern Oregon, on average, are less expensive than those at private and state campgrounds.

The survey statistical results predicted that users of tent sites appear to be the least price sensitive, for both private and public markets. Recreational vehicle owners are more price sensitive than tent owners in both the private and public markets. Furthermore, those campers that choose a full hookup site are the most likely to use the OPRD reservation system.

The contingent valuation data revealed, through linear regression, that campers would be willing to pay \$44.71 more than they currently pay for a camping trip if the payment were used to improve and maintain state parks.

This research is intended to contribute statistical reference for user fees and general market information to the Oregon Parks and Recreation Department.

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**Markets and Competition in Private and Public Campground Sectors of Oregon:
Implications from Oregon Campground Inventories
and the 1997 Campground Questionnaire**

by

Lydia Newton

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I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

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DEDICATION

This thesis is dedicated to my parents, Bill and Mary, my sister, Jenny, and my beloved, Jeff, whose patience endured my long education, whose faith kept me optimistic, even in times of doubt, and whose empowerment fueled my success.

**Markets and Competition in Private and Public Campgrounds Sectors of Oregon:
Implications from Oregon Campground Inventories
and the 1997 Campground Questionnaire**

1. Introduction

1.1 A Brief History of the Oregon State Parks System

The Oregon State Parks System¹ has provided the Oregon community and other visitors with reputable park services since its initiation in 1929. From its first land acquisition in 1922 (known then as the State Highway Commission), the Oregon Parks and Recreation Division (OPRD) has acquired over 90,000 acres of topographically diverse, historic and scenically treasured public land.

State parks are positioned in all corners of the state including the Oregon coast; Cascade mountain range; coastal mountain range; Oregon high desert; and the Willamette Valley. Today, the department manages 225 parks, heritage sites, natural areas, recreation areas, corridors/viewpoints and highway waysides. The assortment of lands operated by OPRD includes 120 day-use parks that cater to a myriad of activities and 50 parks that facilitate overnight campers.

The development of the department starts in the early part of this century. With the success of the railroad industry and the invention of the automobile, the opportunity to travel and connect the sparsely populated communities of Oregon was made easy. Automobile tourism became increasingly more popular and as a result the demand for

¹ Oregon Parks System, Oregon Parks and Recreation, and Oregon State Parks Division are used synonymously for the purpose of this report.

better roads intensified. In 1913 the Oregon Legislature created the State Highway Commission to manage and promote the developing state highway system.

Moreover, natural resources in the western states were following a fast and furious path towards depletion. With the eastern states stripped of many of its natural resources, it was evident that Oregon (and the West in general) would follow the same plight if legislation did not include conservation as part of its natural resource use policy.

Influenced by the urgency for Oregon natural resource conservation and the broadening interest in Oregon tourism, Governor Ben Olcott addressed the Oregon Legislature in 1921 and asked for support in developing the tourism industry in Oregon. He proposed to empower the Highway Commission to acquire lands for state parks and authorize the Commission to accommodate travelers and tourists by establishing roadside shelters where drivers could find shade, water, and fuel. With help from a small, but determined, public interest group in 1925 the Oregon Legislature wrote into law the authorization of the State Highway Commission to acquire lands for state parks.

Yet, even before Legislation acknowledged park land acquisitions, the state Highway Commission showed its support for Olcott and his proponents by taking an active role in encouraging public involvement for state preservation by soliciting donations. The first of such donations was a five and one-half parcel of land bordering the Luckiamute River in Polk county by the Helmick family. The park, still facilitating visitors today, bears the family name as the Sarah Helmick State Recreation Site.

Because land acquisitions continued and pressure on the Highway Commission to secure a separate management plan and team for the parks intensified, the agency split and established a new Oregon State Parks Commission in 1929 to organize park site selection

and maintenance guidelines. The new division added the official sanction for land acquisition and designated these lands for specific park purposes.

Albeit a new generation of parks emerged, the early parks administration believed in preserving the natural settings of the parks and therefore little development was undertaken. Facilities for overnight camping did not even exist in Oregon state parks until 1950 when the National Park Service negotiated with the Oregon Parks Division to develop some parks for overnight use. From this point, the park system supplemented its management plan of preservation and land acquisition with recreational development.

With the new campground development plans, increasing public demand and the additional responsibilities: historical preservation, the Willamette Greenway, scenic waterways, land and water conservation, and trail system maintenance, came a need for more funding (Smith, 1987). Gasoline, vehicle registration, and transportation taxes supplemented federal and state funds for state park support. But with fluctuating government appropriations in years to come, the park system encountered monetary uncertainty. The following section explains the development of the funding crisis for OPRD.

1.2 Problem Statement: Funding State Parks

The OPRD mission statement defines the agency's objectives "to provide, protect, and enhance sites and areas of outstanding natural, scenic, cultural, historic, or recreational value for the enjoyment and education of present and future generations of Oregonians and their visitors" (OPRD, 1991).

Meeting these objectives, however, has become more challenging for the park system in recent years. Budget cuts and the discontinuation of gasoline tax appropriations in 1980 has caused the suspension of many planned developments. Moreover, less staff and increased visitation rates at Oregon state parks have contributed to general support shortfalls. Maintenance moratoriums have been placed for buildings, trails, walkways, and landscape enhancements. Although OPRD receives funds from many sources (i.e. the state General Fund, federal funds, user fees, vehicle and transportation taxes, donations, etc.) federal and general fund allowances have decreased in the past two decades. The reduction of government subsidies has impelled OPRD to increase its dependency on park user fees to sustain its operational budget.

The elevated reliance on park user fees for the OPRD operating budget brings our attention to the sources of these fees. In addition to day use facilities, campgrounds are a primary source for user fee revenues. Because campground visitation rates, and thus revenue, can depend on campground quality and price, I chose to examine OPRD campground's fee and amenity mix and compare it to their competitors. Many campgrounds charge an overnight fee, but how does OPRD compare to private campgrounds in terms of the amenities provided and the price with which visitors gain access to the use of these services? Answering this question and more are the objectives of this study.

1.3 Research Objectives

The purpose of this project was to investigate various aspects of the campground market in Oregon, and especially to consider possible differences between the private and public

campground sectors. Information from the campground inventory and survey was analyzed and reported to OPRD so the department can wisely respond to and manage its campgrounds to compete with other sectors. There are two essential parts of any market, supply and demand, and they are examined here.

On the **supply** side, the following were accomplished:

(S.1) Inventoried the existing differences between public and private campgrounds in terms of available facilities, activities, prices, and location.

i) Inventoried the facilities, activities, fees, and location of private, state, and National Forest campgrounds.

ii) Compared amenity mixes at public and private campgrounds that are close to one another.

iii) Compared amenity combinations found at public and private campgrounds with little or no geographic proximity.

(S.2) Assessed whether private and public campground prices are equally reflective of natural amenities and facilities services offered.

i) Compared private and public campgrounds prices.

ii) Conducted a linear regression analyses of price on campground attributes and compared coefficients for the private and public sectors.

On the demand the following were completed:

(D.1) Determined the important user characteristics that influence the choice between public campgrounds and private alternatives.

- i) Examined socioeconomic and recreational activity characteristics that help determine how a user chooses between private and public campgrounds.
- ii) Predicted the factors that distinguish user groups of public and private campgrounds.

(D.2) In order to estimate the ease with which consumers substitute between public campgrounds and private businesses and the degree of segmentation in each market, the following questions were answered:

- i) To what extent will the various user groups substitute between public and private campgrounds?
- ii) By how much is this substitution influenced by price?
- iii) By how much is this substitution influenced by differences in facilities?
- iv) By how much is this substitution influenced by differences in natural amenities?
- v) By how much is this substitution influenced by the reservation system?
- vi) How different are the various user groups in terms of their willingness to substitute?
- vii) Does effective market segmentation exist for public campgrounds and, if so, what user or campground attributes define market segments?

1.4 Procedures

This project contains four parts. Part 1 is a supply side analysis of the campground market. Parts 2 through 4 investigate the demand side characteristics of the campground market through a variety of lenses. The following sections describe the steps taken to meet each of the research objectives.

1.4.1 Campground Inventories

Part 1 depicts the inventory of public and private campgrounds in Oregon. The inventory data consists of a large sample of various kinds of campgrounds throughout the state, the fees charged for the various camp sites, and the amenities available at each campground. An Ordinary Least Squares regression analysis was conducted using 692 data points from 367 campgrounds to determine the effects of campsite type, facility, activity, and geographic location on camping fees for the three ownership types.

Inventories of state, National Forest, and private campground fees, amenities, and location served as the primary instrument to evaluate each of the supply side objectives. The *1997 Campground Questionnaire* served as the main tool for accomplishing our demand related objectives. The following list describes the steps taken to meet each objective.

- a) An inventory of state, National Forest, and private campgrounds open for overnight camping during 1996 was assembled.

A total of 367 campgrounds were catalogued; 50 managed by OPRD; 89 by the United States Forest Service; and 228 by the private sector. Information on campground locations, natural amenities, available facilities, and fees was provided

by OPRD, district offices of the twelve National Forests in Oregon and *Woodall's Camping Guide 1997*.

For each campground, the fee was recorded for all of the various camping modes available which included: full hookups, water and electric hookups, water hookups, tent sites, primitive sites, and premium sites. Since some campgrounds sell more than one type of campsite, the 367 campgrounds provided 692 price observations.

The state of Oregon was delineated into nine regions following the outline in the Oregon Tourism Division's *1995 Oregon Visitor Profile*. See the *1997 Campground Questionnaire* in Appendix B for the regional outline.

- b) Six-hundred ninety-two price observations were used to statistically test for differences, if any, in the overnight camping fees charged by state, federal, and private campgrounds. Contrast in fees by ownership type was checked after statistically controlling for the different mixes of amenities available at each campground. This is accomplished by the method of linear regression using the SHAZAM programming software.

The linear regression used 38 variables to statistically explain, or predict, campground fees. Twenty-two of these variables controlled for the mix of amenities at each campground. The remaining 16 variables are intercept shifters to detect possible variations in fees associated with the competing sectors and campground locations for each campsite type. See Appendix A for definitions of these explanatory variables.

1.4.2 Questionnaire Mailings

For Part 2, three-thousand and five mail surveys were sent to a list of “camping enthusiasts” from Oregon, Washington, and California. A total of 1,696 completed and returned questionnaires provided data on user characteristics, their preferences, and the decisions that they make. The survey asked each participant to recall his last camping trip in Oregon and describe the last campground at which he stayed in terms of facilities, activities, location, and price. This information served as the data for the statistical analyses and interpretation as described in section 1.4.3.

Salant and Dillman (1994) provided valuable questionnaire design and systems advice for the *1997 Campground Questionnaire*. Survey pre-tests, mailing, and follow-up requests corresponded with their methods. The following procedures were employed.

- a) The survey was pre-tested on 21 subjects, including Oregon State University students, Corvallis citizens, and a professor of economics experienced in questionnaire design. Participants completed the questionnaires and indicated possible changes to improve the survey. Suggestions on questionnaire format, grammar, syntax, and general presentation were received and considered in the revised questionnaire. Chris Havel of OPRD also read several drafts of the survey and cover letter and contributed to the improvement of both.
- b) A list of 3,005 names and addresses of “outdoor enthusiasts” (classified as such from previous surveys) from Oregon, Washington, and California were purchased from *American Business Systems*. Those on this list served as the sample population of users of public and private campgrounds in Oregon.

- c) Three thousand and five questionnaires were mailed initially. Fifty-five percent (1,652) of the questionnaires were mailed to Oregon residents; 36% (1,081) to Washington residents; and 9% (272) to California residents.
- d) The questionnaire asked detailed questions about the respondent's most recent camping trip, including duration, location, purposes of the trip, and the type of campground and camp site used. Also, respondents were queried about their outdoor activities, campground amenity preferences, work status, and general demographic information. At the end of the survey, respondents who had recently camped in Oregon were presented with a contingent valuation question regarding willingness to pay extra amounts to improve and maintain Oregon state parks.
- f) Before mailing, questionnaires were numbered sequentially. This was done for two reasons. First, because the cover letter had indicated that an *Oregon State Parks Guide* would be delivered to the respondent as a free gift from OPRD for participating in the survey, a record had to be kept of which addressees had returned a completed questionnaire. Second, to mark their name off of the mailing list so the respondent would not be sent a follow-up questionnaire.
- g) All questionnaires were sent through the mail via first class on December 9, 1997.
- h) Each envelope contained a numbered questionnaire, a first class postage paid, pre-addressed return envelope, and a cover-letter explaining the project's objectives and participation benefits. See Appendix B for the cover-letter and questionnaire examples.

- i) Those who had not returned their questionnaire by January 15, 1998 were sent a follow-up survey. One-thousand seven-hundred and fifty follow-up questionnaires were mailed.
- j) The follow-up mailing contained a cover letter, a numbered questionnaire, and a first class postage paid, pre-addressed return envelop. See Appendix C for a copy of the follow-up cover letter.

1.4.3 Statistical Analysis of Questionnaire Data

The survey data was used to statistically analyze, using the multinomial logit approach, four important types of choices made by campers: (1) the choice to go camping or not; (2) the choice of how many days to camp; (3) the choice of which type of camping site to use; and (4) the choice between a public and a private campground. Each model included typical camper attributes to assess if market segmentation exists between private and public campgrounds and to examine the relationships between individual characteristics and the various objectives listed above.

1.4.4 Contingent Valuation of State Parks

Part 4 embodies the discussion of the Contingent Valuation (CV) estimates for OPRD parks. The questionnaire contained a dichotomous choice CV question which asked participants to answer if they would pay an additional \$Xx.xx in order to help support Oregon state parks. The information was statistically analyzed under logit regression to determine the extent to which the survey respondent's may value OPRD parks in ways that cannot be measured by information on campground usage.

2. Economic Theory and Literature Review

2.1 Utility Theory and Discrete Choice Models for Campsite Preference

In this study, the effects of campground site attributes and socioeconomic characteristics of surveyed individuals were evaluated to estimate the share allocation of overnight camping trips among private and public campgrounds in Oregon. This is accomplished by employing a discrete choice model, or random utility model (RUM), of overnight camping choices. This method is common when evaluating recreation benefits as a function of user and site attributes (see Bockstael et al., 1989; Parsons and Kealy, 1992; Parsons and Needleman, 1992; Kaoru, et al., 1995) and is the necessary model when the observations are merely a record of whether or not the consumer engaged in the activity.

The discrete choices statistically evaluated in this study include the choice to go camping, length of the camping trip, the type of camp site, and whether to patronize a public or a private campground. The empirical analyses used survey data from campers who participated in the *1997 Campground Questionnaire* and the inventory of campground prices and amenities from 367 private, federal, and state campgrounds in Oregon.

In order to use camper preferences to predict camping behavior, the discrete choice model follows from a utility maximization problem. The discrete model posits that each choice provides consumers with a certain level of utility or well being. So, an individual will choose the set of actions that optimize, or maximize, his utility. The preferred set of alternatives is determined by exogenous factors and is based on an individual's utility maximization function (Milon, 1988). Given alternative bundles of goods presented to an

individual, the highest valued goods can be inferred by observing his choices (Freeman, 1993). Mathematically, the theory says that among two goods, X_1 and X_2 , an individual will choose X_1 over X_2 if the value of X_1 is greater than that of X_2 , or $u(X_1) > u(X_2)$. By this premise, an individual plans a camping trip based on the following utility maximization problem

$$\text{Max: } u(x, z) \quad (1)$$

where x is a vector of goods with specific characteristics and z is a vector of preferences subject to monetary and time budget constraints

$$(M - Px = 0) \quad (2)$$

where income (M) is exhausted by consumption of a bundle of goods x whose vector of prices are represented by P_x .

Based on the characteristics of a site and its associated price and the characteristics of the alternatives and their associated prices, the consumer makes the utility maximizing choice (Freeman, 1993). As a utility maximization problem, indirect utility becomes a function of (1) and (2)

$$V = v[x(M, P), z] \quad (3)$$

so utility (V) is a function of commodities, cost, and a set of individual preferences. In order to solve for the indirect utility maximization problem for various modes of camping the random utility model is constructed to evaluate all alternative sets by treating the model as one estimation problem where

$$V = v(M, P, z) \quad (4)$$

so that indirect utility is now a function of exogenous income and prices for all modes of camping and z , which could vary with any or all of the alternative choices.

An example of how indirect utility is used to estimate a discrete model for campsite choice is the seven choice model (Table 8) presented in section 6.3 of this thesis. This discrete choice model examined camper's selections of seven different campsite types based on price, site characteristics, monetary constraints, and random exogenous factors. The types of campsites were as follows: full hookup = q_1 ; water and electric hookup = q_2 ; water hookup = q_3 ; cabin or yurt rental = q_4 ; tent site = q_5 ; group site = q_6 ; and a premium site = q_7 . If a full hookup is the preferred site then the indirect utility function for a full hookup choice is presented as

$$V = V_1(q_1, z, M) + \varepsilon_1 \quad (5)$$

where indirect utility received for choosing a full hookup is a function of the characteristics of a full hookup site (including price), the individuals' preferences, his budget constraint, and an error term ε_1 to represent the random components of a full hookup choice.

Indirect utility from choosing alternative campsite types follow this example so that water and electric choice is represented as

$$V_2(q_2, z, m) + \varepsilon_2 \quad (6)$$

and so on for all other site types.

An individual's observed choice is that which maximizes his indirect utility, or:

$$V_1 = \max(v_1 + \varepsilon_1, v_2 + \varepsilon_2, \dots, v_7 + \varepsilon_7) \quad (7)$$

so that indirect utility is maximized by the full hookup choice above all others.

2.2 Multivariate Logit Models Versus Linear Models

The data used in the models of sections 6.1 - 6.5 were generated from a random sample of potential camping enthusiasts from Oregon, Washington, and California via the *1997 Campground Questionnaire*. Data from 1,696 returned questionnaires were statistically analyzed using the multivariate logit model, or discrete choice model. The multivariate logit model estimates the probability of a dependent variable as a function of a set of random exogenous variables. In other words, the independent variables are used to account for the variation of the dependent variable.

The name 'logit' comes from the word log, or natural log, of the odds (Demaris, 1992) where the odds refer to falling into one of two categories of interest. The model has also been called the "difference in utility model" (Adamowicz, et al., 1994) because the model is capable of estimating the differences in the probabilities for a qualitative or ordered dependent variable based on observed data of contrasting attribute levels.

Unlike linear regression (i.e. OLS) where the predictions are continuous and can take any value from negative infinity to positive infinity, nonlinear logit models produce maximum likelihood estimates for a dependent variable that is qualitative (Adamowicz, et al., 1984, Aldrich and Nelson, 1984, and Demaris, 1992). That is, the dependent variable for nonlinear models, such as the logit model, is a probability estimate that must be constrained to fit between the values of zero and one. If the measurement includes a qualitative or ordered endogenous variable, then the application of OLS, which assumes unconstrained independent variables, is highly suspect. Therefore, inference using OLS when the model calls for a binary dependent variable and any dichotomous independent variables can lead to erroneous estimates (Aldrich and Nelson, 1984). Demaris, 1992, has

suggested that if the applied data set possesses the following three characteristics then the nonlinear model is the appropriate choice: (1) the value of the dependent variable is binary; (2) the independent variables are ordinal or nominal indicators; and (3) there is at least one continuous explanatory variable.

Because of the different model specifications, inference from nonlinear models is unlike that of linear estimation and a bit more complex. Coefficient estimates for the simplest form of linear regression (OLS) represent the effect on the dependent variable with a one unit change in an exogenous variable as a constant. However, when the dependent variable is discrete the coefficient does not give a direct measure of the change in the probability estimate, nor does it indicate an identical change with each increment. For example, Table 5 shows the coefficients for the multinomial logit model that a person will choose to camp based on four parameters: residency, income, age, and working status. The coefficient for income is positive, indicating a positive correlation between income and the probability that an individual will go camping. It is not conclusive, however, that every \$1,000 addition to an individuals' income causes the probability of going camping to increase by .009% each time. In other words, the probability that an individual will camp with an income of \$1,000,000 is not much different than a person who earns \$50,000. This condition is indicative of the asymptotic behavior of the logit model, that as the value of a continuous independent variable approaches negative or positive infinity the probability effect slows as it reaches the upper and lower bounds of the constraint.

Another difficulty in interpreting nonlinear model results is that, the magnitude of the effect can not be determined from logit estimates. That is to say, that with a change in

the level of income, the coefficient estimate .00009 does not reflect the likelihood of going camping based on income alone, but is relative to the influence of all other exogenous variables (Aldrich and Nelson, 1984).

Furthermore, because logit models estimate the probability of various choices from a set of independent variables, estimates do not reflect the same slope characteristics as in OLS model coefficients. Whereas linear estimates are the slope of a regression line, results from nonlinear models point to the slope at a particular location on the probability curve.

Because the data utilized in this study are observations of discrete choice, the multinomial logit model is the applied method for the statistical analyses in sections 6.1 through 6.5. For mathematical description and justification of the logit model see Aldrich and Nelson (1984) and Demaris (1992).

3. Inventory Analysis and Empirical Results

In this section, I report the results of the statistical analyses of Oregon state, National Forest, and private campground inventories. Ordinary least squares regressions (OLS) were used to compare and detect possible differences in the overnight camping fees charged by private and public campground sectors. These comparisons were made while simultaneously controlling for the type of camp site, as well as the geographic location and the amenities of each campground.

3.1 Inventory Statistical Results

Table 1 presents coefficients estimates from the OLS regression of campsite fees on 38 independent variables and an intercept. Table 1 also presents t-statistics for each coefficient. The t-statistic indicates the probability that the true value of the coefficient is different than zero. In this analysis, I used 90 or 95% confidence intervals so that a t-statistic greater than 1.69 means that we are 90 % certain that the coefficient is not zero and a t-statistic greater than 1.96 means that we are 95 % certain. These t-statistics are an important component of the reported estimates and should be taken into account when making inferences.

The reference type of campsite is a private full hookup site. Thus, the intercept coefficient (denoted by α in Table 1) is to be interpreted as the best prediction of the fee for a full hookup site at a private campground, with no other amenities.

Four other variables allow the model to predict different fees for different types of private campsites. The coefficients for these four variables are denoted by δ_1 through δ_4 .

Table 1: Campground Fee Modeling Results with Coastal and Eastern Oregon Geographic Indicators: All Variables

Parameter	Variable	Estimate	St. Error	T-Statistic
α	Constant	13.72	3.387	4.052**
δ_1	Water-elec-fee	-1.92	2.724	-0.7061
δ_2	Tent-fee	-3.75	2.762	-1.358
δ_3	Primitive-fee	-6.33	2.930	-2.161**
δ_4	Premier	2.56	0.3948	6.477**
∂_1	Full hook State	-0.53	0.8446	-0.6253
∂_2	Full hook NF	3.21	2.940	1.093
∂_3	Water elec State	0.70	0.9633	0.7298
∂_4	Water elec NF	-1.91	3.767	-0.5060
∂_5	Tent State	1.79	0.9132	1.961**
∂_6	Tent NF	-4.32	2.959	-1.461
η_1	Private coast	1.08	.3375	3.213**
η_2	Coast State	-0.27	0.8481	-0.3181
η_3	Coast NF	1.09	0.9041	1.204
η_4	Private East	0.18	0.4142	.4424
η_5	East State	0.04	1.029	.0370
η_6	East NF	-5.19	1.210	-4.293**
β_1	Sites	0.01	0.002	5.517**
β_2	Non-flush toilet	-0.42	0.5726	-0.7293
β_3	Handicap	0.56	0.2570	2.190**
β_4	Showers	1.16	0.3149	3.694**
β_5	Grocery	0.51	0.3246	1.585
β_6	Ice	1.24	0.3459	3.599**
β_7	Tables	-0.07	0.3855	-0.1832
β_8	Fire ring/grills	-0.31	0.3191	-0.9655
β_9	Wood	0.01	0.3291	0.0169
β_{10}	Sewage/waste	-0.23	0.2592	-0.8692
β_{11}	Drinking H ₂ O	0.86	1.971	0.4376
β_{12}	Fresh H ₂ O swim	-0.64	0.3574	-1.794*
β_{13}	Salt H ₂ O swim	-1.71	0.8029	-2.126**
β_{14}	Boating	-1.13	0.5543	-2.036**
β_{15}	Canoeing	0.62	0.4543	1.357
β_{16}	Ramp	-0.03	0.4899	-0.0752
β_{17}	Dock	-0.20	0.4028	-0.4960
β_{18}	Boat rental	-0.19	0.4931	-0.3844
β_{19}	Fresh fish	0.42	0.3009	1.403
β_{20}	Salt fish	0.96	0.5404	1.785*
β_{21}	Playground	1.05	0.3350	3.121**
β_{22}	Hiking trail	0.16	0.2943	0.5603
Equation				
R^2		0.66	Adjusted R^2	0.64
Variance δ^2		6.9998		
St. error δ		2.6457		
SSE		3982.9		
μ_{Fee}		15.15		

Confidence at 90%, ** Confidence at 95%

The interpretation of these coefficients is the predicted increase or decrease in fees for the site type, compared to the private full hookup site. For example, the fee for a private water-electric site will be \$1.92 less than the fee for a full hookup site, while the fee for a premier site will be \$2.56 more.

Four additional variables allow the model to predict average fees for different types of sites depending on whether the fees are set by Oregon parks or the US Forest Service.

The coefficients for these variables are denoted as ∂_1 through ∂_6 . The coefficient ∂_1 indicates that Oregon state fees for full hookups are \$0.53 less than for private sites, but the t-statistic (-0.6253) indicates that we have little confidence that this difference is not really zero. The one difference that we find here that is almost certainly different from zero is the fee for state tent sites. The coefficient ∂_5 indicates that state tent site fees are \$1.79 more, on average, than equivalent site fees at private campgrounds.

Six additional variables allow the model to predict different fees depending on the geographic location and ownership of the campground. The coefficients for these variables are denoted η_1 through η_6 . We experimented with several geographic regions and found evidence suggesting large fee differences in the coastal (regions one through three) and eastern Oregon regions. Our major findings here are that private sector campgrounds on the Pacific coast have a \$1.08 higher fee than sites in the rest of the state. In addition, η_6 indicates that National Forest sites in eastern Oregon have fees that average \$5.19 lower than for the rest of the state. This result is probably due to the large number of zero fee National Forest campsites in eastern Oregon.

The remaining twenty-two independent variables measure the presence or absence of various amenities available at the campsite. The coefficients for these variables are denoted in Table 1 by β_1 through β_{22} . Several of these coefficients merit attention. The coefficient β_1 measures the effect for the number of sites at the campground, or campground size. The high t-statistic and positive sign for β_1 indicates fees at large campgrounds are higher than those at smaller and that this coefficient is probably not zero. However, the β_1 estimate is very small (\$0.01), indicating that the effect, while statistically significant, is probably not substantial.

Fees at campgrounds with handicap facilities average \$0.56 higher than in the absence of such facilities. Similarly, fees increase by \$1.16 in the presence of showers; \$1.24 in the presence of an ice machine; \$0.96 for salt water fishing; and \$1.05 with a playground. Conversely, fees fall by \$0.64 and \$1.71 when fresh or saltwater swimming is available, respectively. Similarly, the availability of boating decreases the average fee by \$1.13.

Several amenities do not appear to have any affect on fees. These include the presence of non-flush toilets, a grocery store, tables, fire rings and grills, wood, sewage/waste disposal, drinking water, canoeing, ramps, docks, boat rentals, fresh water fishing, and hiking trails.

After selecting the mode of camping and the managing agency of interest, the predicted fee with any bundle of amenities is obtained by adding or subtracting the appropriate coefficients. For instance, a private campground will charge, on average, \$13.72 for a full hookup and an additional \$2.56 if this site is a premier campsite.

The equation used to determine the average fee with any combination of campground attributes is

$$FEE = \alpha + \chi_i + \beta_1 + \beta_2 \dots + \beta_n$$

where χ_i represents the parallel shift in the dependent variable intercept for all δ_k , ∂_k , and η_k .

An example of how our statistical model predicts fees for various campsite types follows. Table 2 illustrates the estimated coefficients for full hookup sites at private, state and National Forest campgrounds. Table 3 lists the coefficients associated with tent sites for the three sectors. To show how fees will adjust with the addition of campground amenities we have extended the examples with two facilities: ice machines and playgrounds. By adding geographic location variables we can infer how price adjusts to campgrounds located along the popular Oregon coastline and compare these estimated rates to those charged at eastern Oregon campgrounds. The first row in Table 2 represents the reference; private campground, full hookup, with an expected fee of \$13.72 ($t = 4.052$) excluding all amenities. Calculations and resulting overnight camping fees for Table 2 follow.

Table 2: Average Full Hookup Camping Fees for private and public campgrounds with Amenities, Coastal and Eastern Oregon Parameters

Ownership	Constant (α)	Full Hookup (∂_1, ∂_2)	Fee (Y_i)	Coast Intercept ($\eta_1 - \eta_3$)	East Intercept ($\eta_4 - \eta_6$)	Ice and Playground ($\beta_6 + \beta_{21}$)	Fee Coast	Fee East
Private	13.72	NA	13.72	1.08	.18	2.29	17.09	16.19
State	13.72	-0.53	13.19	(+1.08- 0.27)	(+.18+.04)	2.29	16.29	15.70
Nat. Forest	13.72	3.21	16.93	(+1.08+1. 09)	(+.18- 5.19)	2.29	21.39	14.21

- A **full hookup** at a **private** campground will cost an average of \$13.72. This same campground at the coast with an ice machine and a playground has a predicted fee of \$17.09 (FEE_1). In eastern Oregon, this same combination of amenities will cost an average of \$16.19 (FEE_2).

$$FEE_1 = \alpha + \eta_1 + \beta_6 + \beta_{21} = \$17.09$$

$$FEE_2 = \alpha + \eta_4 + \beta_6 + \beta_{21} = \$16.19$$

- **State** campgrounds charge about \$0.53 less than private campgrounds for a **full hookup** with no amenities. If the campground is located along the coast with an ice machine and a playground, then the fee becomes \$16.29 (FEE_3). A state managed eastern Oregon campground with the same amenities may cost about \$15.70 (FEE_4).

$$FEE_3 = \alpha - \partial_1 + \eta_1 - \eta_2 + \beta_6 + \beta_{21} = \$16.29$$

$$FEE_4 = \alpha - \partial_1 + \eta_4 + \eta_5 + \beta_6 + \beta_{21} = \$15.70$$

- **Full hookups** at **National Forest** campgrounds are, on average, \$16.93 or \$3.21 more than private campground fees. With ice and a playground at the coast, the predicted fee is \$21.39 (FEE_5). In the eastern region the fee falls to \$14.21 (FEE_6) with the same amenities.

$$FEE_5 = \alpha + \partial_2 + \eta_1 + \eta_3 + \beta_6 + \beta_{21} = \$21.39$$

$$FEE_6 = \alpha + \partial_2 + \eta_4 - \eta_6 + \beta_6 + \beta_{21} = \$14.21$$

Table 3: Average Tent site Camping Fees for private and public campgrounds with Amenities, Coastal and Eastern Oregon Parameters

Ownership	Constant (α)	Tent Site Intercept ($\delta_2, \delta_5, \delta_6$)	Fee (Y_i)	Coast Intercept ($\eta_1 - \eta_3$)	East Intercept ($\eta_4 - \eta_6$)	Ice and Playground ($\beta_6 + \beta_{21}$)	Fee Coast	Fee East
Private	13.72	-3.75	9.97	1.08	0.18	2.29	13.34	12.44
State	13.72	(-3.75+1.79)	11.76	(+1.08-0.27)	(+.18+0.04)	2.29	14.86	14.27
N.F	13.72	(-3.75-4.32)	5.65	(+1.08+1.09)	(+.18-5.19)	2.29	10.11	2.93

- **Tent sites** for a **private** campground will cost an average of \$9.97. With the two amenities and coastal location the fee will rise to an average of \$13.34 (FEE₇). But if the campground is located in eastern Oregon, the fee falls to \$12.44 (FEE₈).

$$FEE_7 = \alpha - \delta_2 + \eta_1 + \beta_6 + \beta_{21} = \$13.34$$

$$FEE_8 = \alpha - \delta_2 + \eta_4 + \beta_6 + \beta_{21} = \$12.44$$

- A **tent site** at a **state** campground will cost approximately \$11.76, or \$1.79 more than at a private campground. If the site is located on the coast with an ice machine and a playground, the price increases to about \$14.86 (FEE₉). In the East, the overnight tent site fee falls a little to \$14.27 (FEE₁₀) with the same amenities.

$$FEE_9 = \alpha - \delta_2 + \partial_5 + \eta_1 - \eta_2 + \beta_6 + \beta_{21} = \$14.86$$

$$FEE_{10} = \alpha - \delta_2 + \partial_5 + \eta_4 + \eta_5 + \beta_6 + \beta_{21} = \$14.27$$

- **National Forest** campgrounds may charge an average of \$10.48 (FEE₁₁) for a **tent site** but the cost will rise to \$15.04 (FEE₁₂) for a coastal site with ice available and a playground.

$$FEE_{11} = \alpha - \delta_2 - \partial_6 + \eta_1 + \eta_3 + \beta_6 + \beta_{21} = \$10.11$$

$$FEE_{12} = \alpha - \delta_2 - \partial_6 + \eta_1 - \eta_6 + \beta_6 + \beta_{21} = \$2.93$$

Whereas National Forest, tent camp sites are the least expensive at a predicted fee of \$2.93 (FEE₁₂), state parks tent sites in eastern Oregon are the highest priced among the three sectors at an estimated \$14.27 (FEE₁₀). Such large variation in fees between state and National Forest sites stems from the number of federal tent sites that carry small or zero fees in eastern Oregon. Likewise, tent sites at OPRD coastal campgrounds are higher priced than both private and federal campgrounds.

3.2 Inventory Analysis Conclusions

The differences in fees charged by private, federal, and state campgrounds are slight. Only three camping mode intercept shifters are statistically significant at 90% or greater and only two geographic estimators show conclusive evidence of an effect on fees. These results suggest that fees for the various campsite types are determined by similar weights by the private, federal, and state sectors, with the exception of the variables mentioned below.

The statistical model results inform us that there are some combinations of campsite type and amenities that effect the overnight camping fees for the various sectors. First, both primitive and premier site fee coefficients are statistically significant at 95% and signal the estimated increase or decrease in the user fee for all sectors. Excluding all amenities, primitive sites are, on average, \$6.33 less for private and public campgrounds whereas premier sites are \$2.56 more. Tent sites at state campgrounds are the only other statistically significant intercept shifter variable. The positive sign on ∂_5 indicates that OPRD tent sites have a higher predicted fee than tent sites at a private or federal campground.

There are two statistically significant geographic location coefficients that effect the overnight camping fee. First, we can conclude, with 95% confidence, that private campgrounds charge an estimated \$1.08 more for coastal access. Second, the predicted fee difference for National Forest campgrounds in eastern Oregon is \$5.19 less than equivalent sites at a private or OPRD campground. This result probably reflects the large percentage of federal campgrounds that charge very little or no fee to camp overnight in eastern Oregon.

Campground amenities that have significant coefficients and, thus, impact the fees charged at private, National Forest, and state campgrounds are the number of sites available and the presence of handicap access, showers, an ice machine, fresh water swimming, salt water swimming, boating, salt water fishing, and a playground. Fresh water swimming, salt water swimming, and boating all negatively impact the predicted fees. Because these amenities depend upon the presence of a lake or reservoir we have concluded that there are negative implications involved with campsites located at bodies of water that allow these activities. Reasons for this relationship may be that these activities are dangerous and may be a deterrent to people with small children. Or, perhaps there is a decrease in the fee to offset the noise disamenity caused by motor boats. Other reasons for the negative relationship may be the presence of mosquitoes or raucous behavior. On the other hand, it is estimated that fees increase for campgrounds offering handicap access, showers, ice, salt water fishing, and a playground charge more for a campsite. It is possible that these facilities cost more to supply and therefore the cost is passed on to the consumer by way of a higher fee.

5. Survey Results

The percent of responses from the *1997 Campground Questionnaire* was encouraging. One-thousand one-hundred and sixty-three respondents returned completed surveys from the first mailing. Of these, 70 (6.0%) were from California residents; 340 (29.23%) from Washington; and 753 (64.75%) from Oregon.

The second mailing supplemented the data considerably with an additional 533 returned questionnaires. Of these, 40 (7.5%) came from California; 197 (36.96%) from Washington; and 296 (55.53%) from Oregon.

In total, 1,696 (56.44%) out of the 3,005 questionnaires sent were completed and returned. This response rate provides reliable and representative results and compares favorably with the expected response rates for well designed surveys (Salant and Dillman, 1994)

Undeliverable questionnaires constituted 4.96% (149) of the original 3,005 sent. Of this total, 20 were undeliverable addresses to California; 62 to Washington; and 67 to Oregon. As a result, the population sampled is reduced by the 149 undeliverable questionnaires to 2,856 and so the response rate can be reported as 59.38%.

5.1 Camping Characteristics

5.1.1 Share of Respondents that Camped in Private and Public Campgrounds

Eight hundred and ninety-two respondents (52.5 %) said they had camped in Oregon between September 3, 1996 and February, 1998. The remaining 804 declared that they had not.

Of the 892 campers, 152 (17.04%) had camped in a private campground; 625 (70.06%) had camped in publicly owned campground; 111 (12.44%) answered that they did not know who managed the campground where they stayed; and four people did not respond to the question. About 36% (319) of the campers stayed overnight at a state park; 19.28% (172) camped in a National Forest campground; and 9.14% (79) of the participants were not aware of the managing agency. The remainder of the public campground campers (64 or 7.17%) stayed at campgrounds managed by the BLM, Army Corps of Engineers, or city, county, or National Park agencies. See Figure 1 for a depiction of the relationship between state origin and choice among private and public campgrounds.

5.1.2 Camper Destinations

The camping destinations of the 892 camping respondents are illustrated in Figure 2. The Central coast of Oregon was the most popular, garnering 17.04% (152) of the overnight visits. This was followed closely by 16.59% (148) campers that visited the north Oregon coast. Central Oregon placed third for popularity at 15.81% (141) of the total overnight stays. The Willamette Valley was visited by 12.56% (112) of the campers, while southern Oregon received 10.09% (90). Eighty-seven respondents (9.75%) answered that they had camped at an eastern Oregon campground and 8.52% (76) visited campgrounds along the south coast. The Columbia Gorge/Mount Hood sector received 65 (7.29%) visitors and its neighboring sector, the Portland/Metro area, entertained only 14 (1.57%) visitors. Another 1.01% (9) could not answer which part of Oregon they had camped.

FIGURE 1: CAMPER STATISTICS

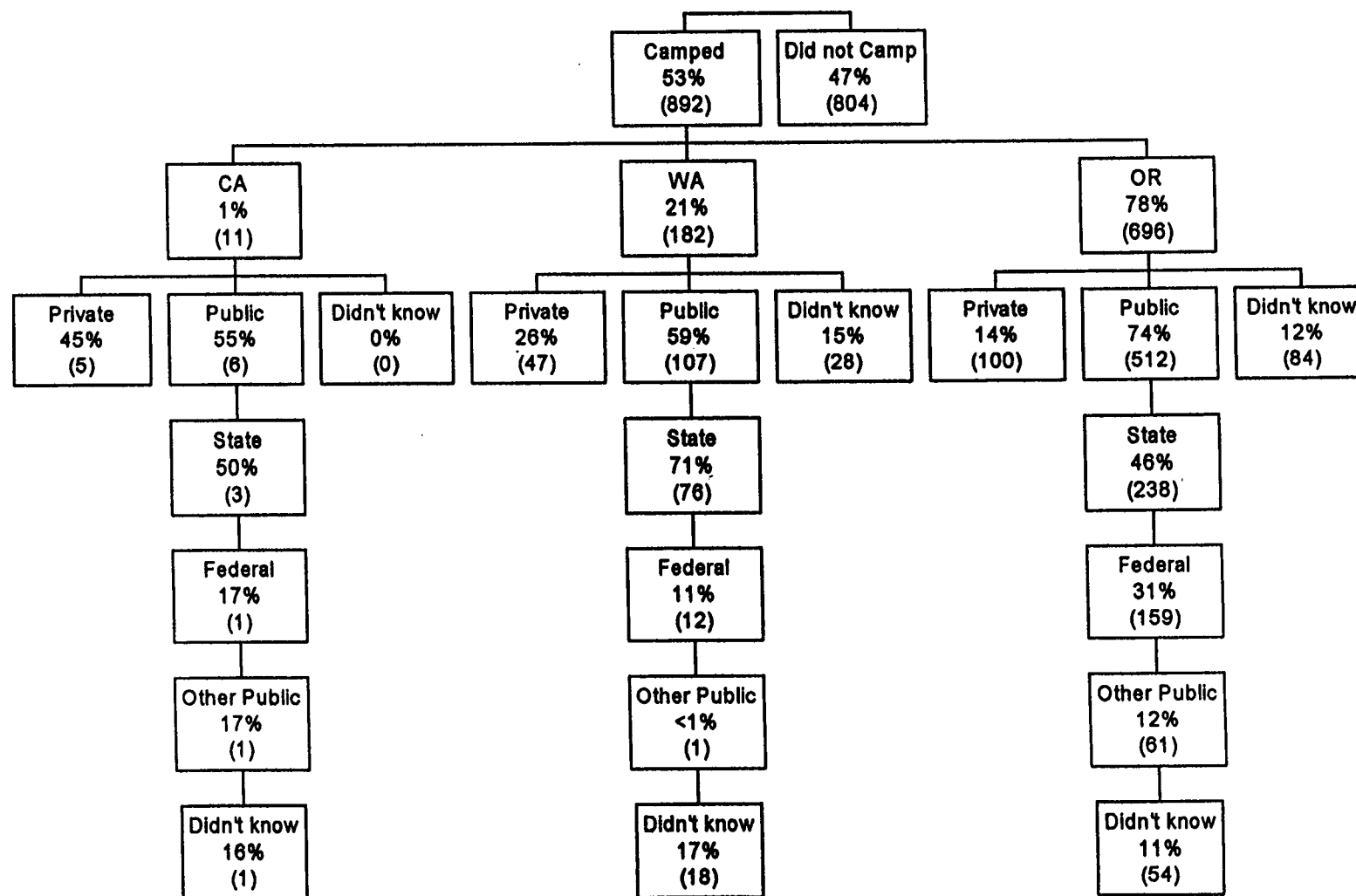
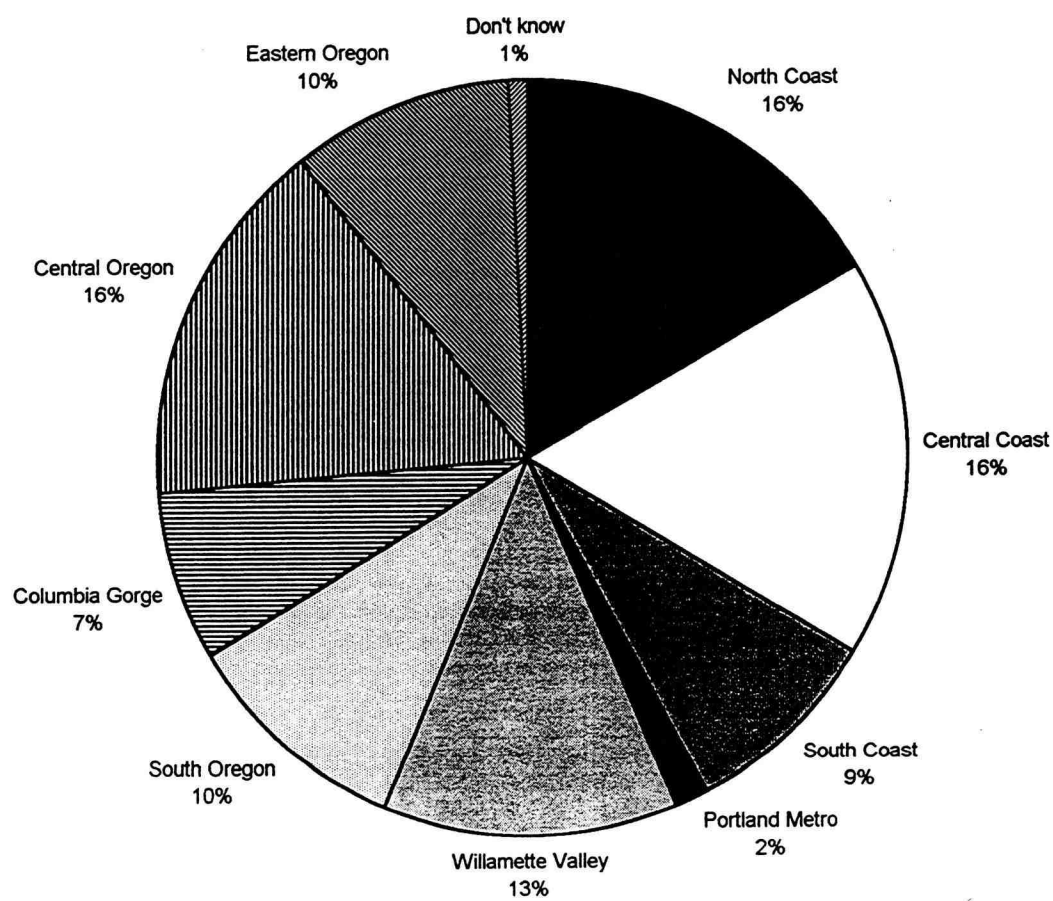


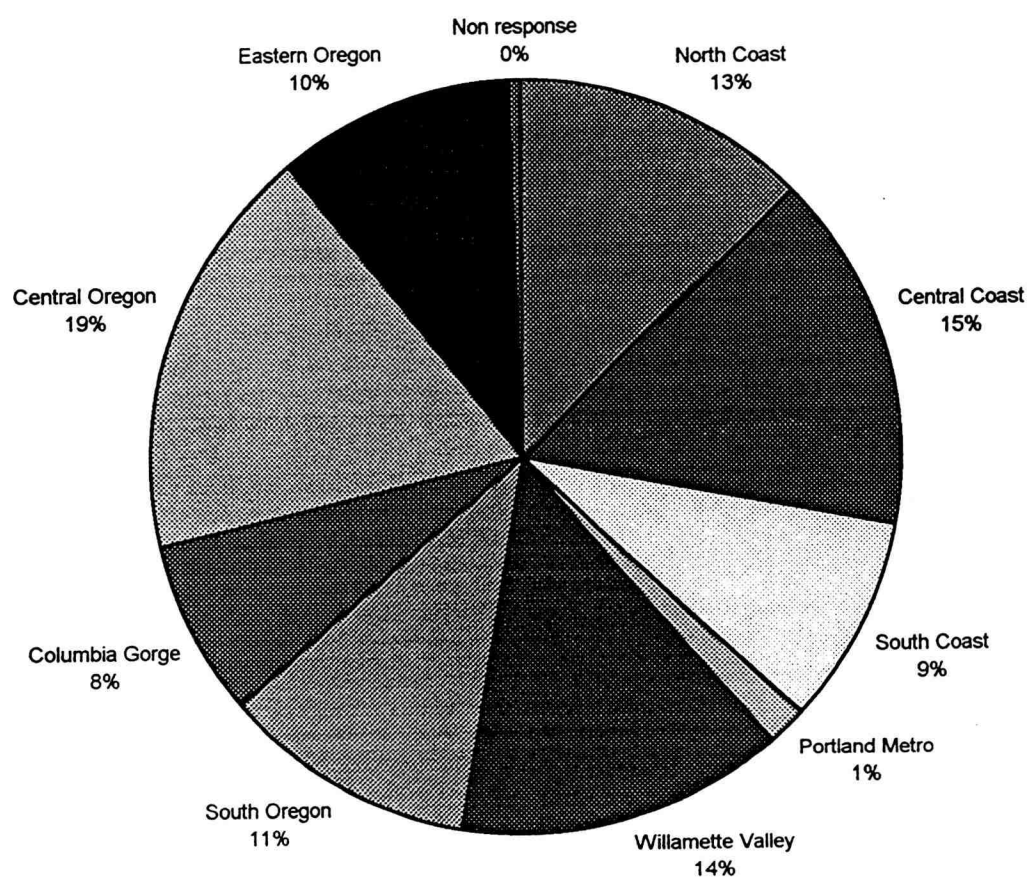
FIGURE 2: CAMPER DESTINATIONS: ALL STATES

n = 892

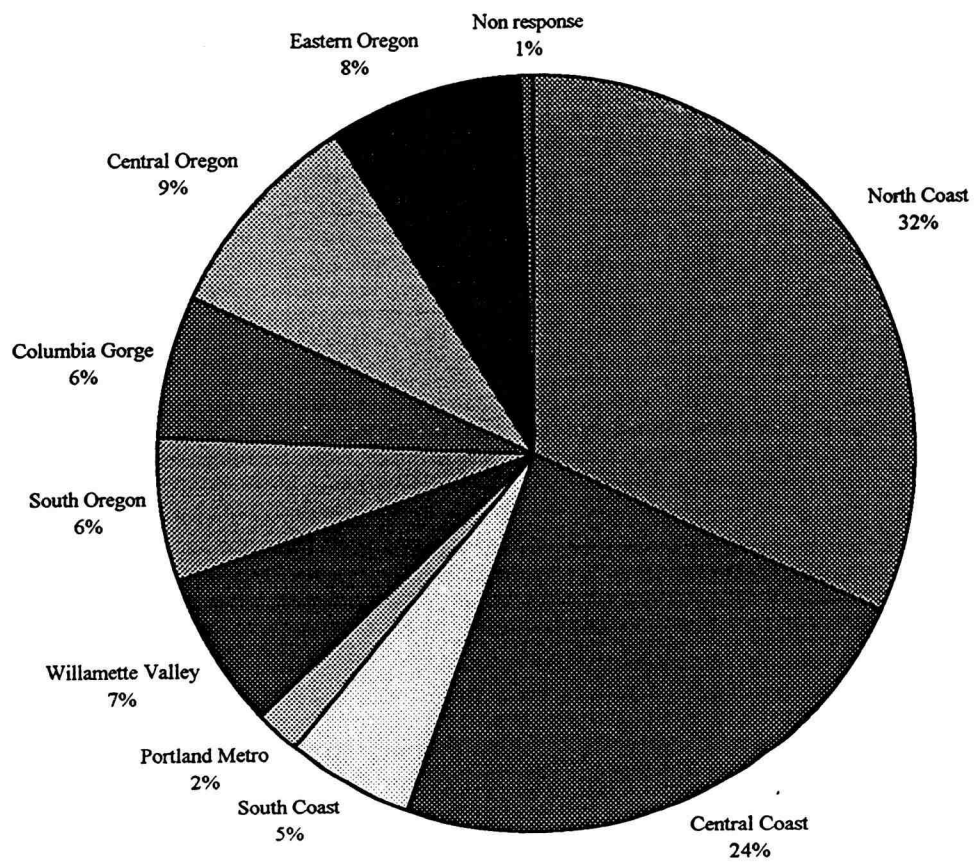
Camper destinations by state resident are presented in Figures 2.1, 2.2, and 2.3. The survey data reveals that Oregonians predominantly camped in the central Oregon region. The central coast came in second followed closely by the Willamette Valley for popularity. Because of travel distance, it is not surprising that Washington residents camped primarily along the north coast. Washington visitors preferred the central coast second to the north coast. These two regions made up the bulk of Washington camper destinations (55%). Although the data included only a small number of California visitors, our findings indicate a reasonable outcome that Californians opted to stay within the southern regions of Oregon--primarily the south coast and southern Oregon regions. The remainder of the coastal areas and the Columbia Gorge/Mount Hood sector also attracted Californians.

5.1.3 Campsite Types Chosen Among Private and Public Campground Users.

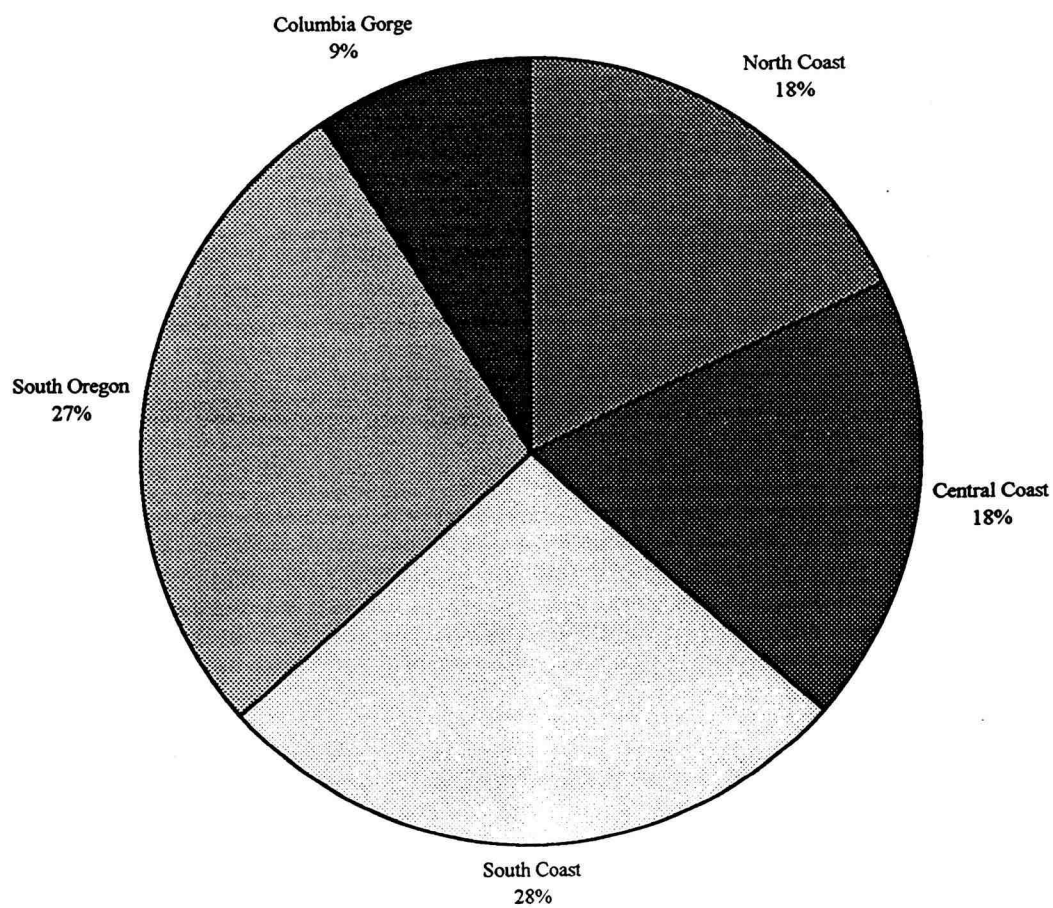
The questionnaire contained a question that asked respondents what type of campsite they stayed in during their last visit to an Oregon campground. Camper's choices are presented in Figure 3. With private and public campground user's combined, tent/car sites were the most occupied by our respondents. However, as separate groups (Figures 3.1 and 3.2), private campground visitors favored full hookup sites, whereas public campground patrons used tent sites predominantly. Water and electric hookup campsites were used more often (17%) at private campgrounds, but were used only by 13% of the public campground patrons. The percent of private campground users that utilized full hookups sites is 48%, but only 15% of public campground users chose a full hookup. There is also a large divergence among the percent of tent site users between public and private campgrounds. Tent sites are most favored at public campgrounds by 50% of the

FIGURE 2.1: CAMPER DESTINATIONS: OREGON RESIDENTS

n = 696

FIGURE 2.2: CAMPER DESTINATIONS: WASHINGTON RESIDENTS

n = 182

FIGURE 2.3: CAMPER DESTINATIONS: CALIFORNIA RESIDENTS

n = 11

respondents, while only 20% of private campground users stayed in a tent site. Moreover, primitive campsites are more popular at public campgrounds.

The questionnaire data shows that private campgrounds are dominant for full and water and electric hookup site users, whereas public campgrounds are favored for their less developed tent and primitive sites. If the statistical model in section 6.5 demonstrates that there is little substitution among competing campground sectors in terms of campsite choice, then market segmentation may be well represented here.

5.1.4 Facility Preferences

The amenities listed in the questionnaire can be broken-down into two categories: facilities and activities. Facilities are conveniences to the camper that are developed at the campground (i.e. handicap access or drinking water). Any pastime that a camper chooses to participate in while visiting the campground are considered activities (i.e. bird watching, canoeing, or sunbathing).

We asked the respondent to check three out of 14 facilities listed in the questionnaire that were most important to have access to at a campground. The results are presented in Figure 4. Among the fourteen facilities listed, drinking water was given the highest priority by the largest proportion of campers. The remaining amenities in descending order of importance, as indicated by the questionnaire respondents, are as follows: fire rings/grills, tables, showers, flush toilets, sewage waste disposal, campground security, boat ramp/launch, wood, grocery store, campground host, handicap access, laundry facilities, and finally ice.

FIGURE 3: CAMPSITE TYPE

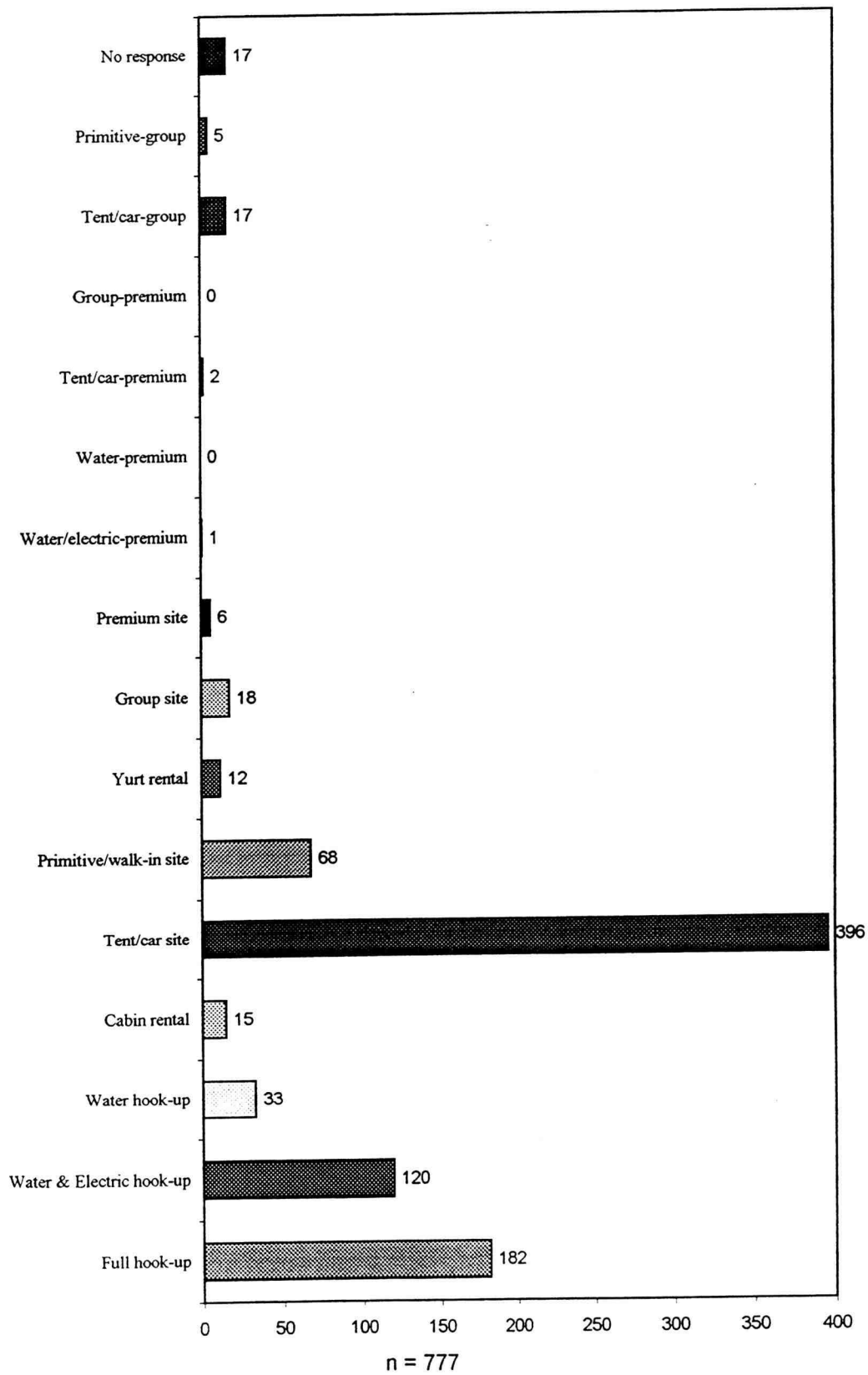


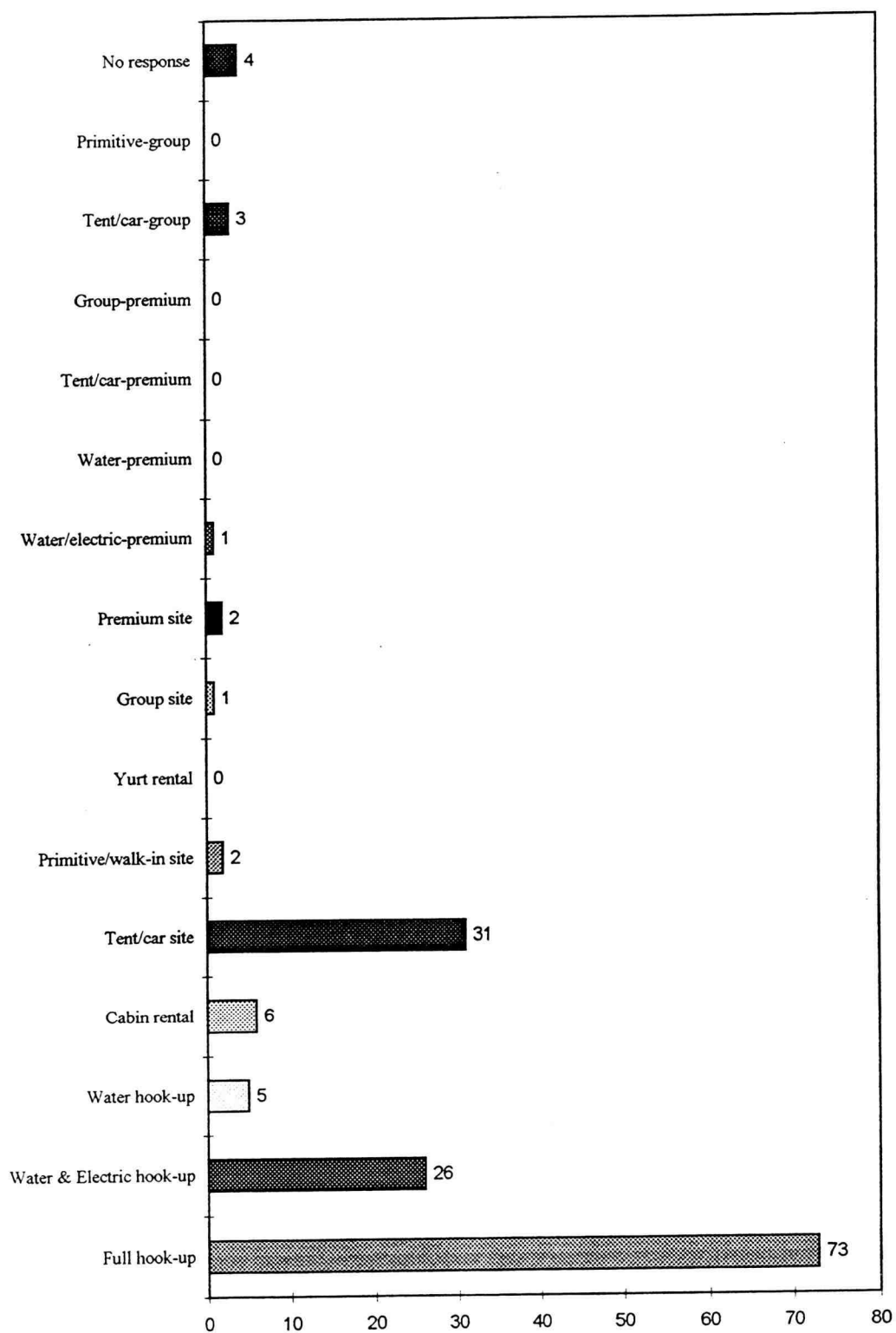
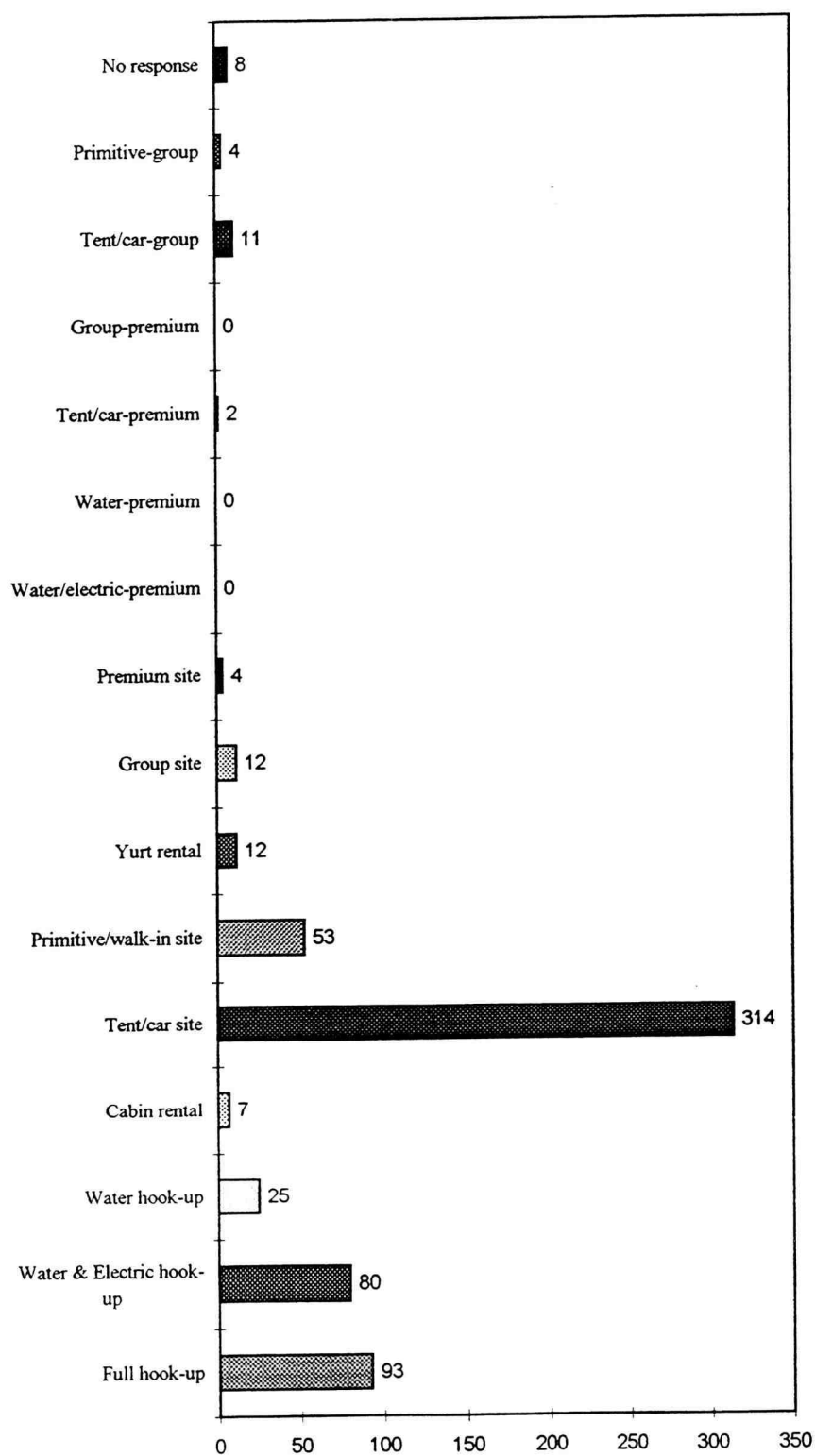
FIGURE 3.1: PRIVATE CAMPGROUND USER'S PREFERRED CAMPSITE TYPE

FIGURE 3.2: PUBLIC CAMPGROUND USER'S PREFERRED CAMPSITE TYPE



When the facility responses are grouped into private and public campground users (Figures 4.1 and 4.2) the results show some contrast in preference. Both private and public campground user groups considered drinking water most important when camping. However, private campground visitors preferred showers and sewage/waste disposal facilities next, whereas public campground users favored fire rings/grills and tables over showers and sewage disposal. The fourth and fifth most preferred facilities for public campground participants were showers and flush toilets. Private campground users considered campground security and tables as fourth and fifth place contenders. The three least important facilities were ice, laundry, and handicap access facilities for private campgrounds visitors and ice, laundry, and campground host for public campground patrons.

In essence, excluding drinking water, the data indicates that private campground patrons prefer facilities that cater to RV ownership. Since a larger proportion of public campground patrons chose tent sites over RV sites, the favoritism towards basic campground facilities, that one would otherwise have with an RV, (i.e., fires rings/grills, tables, and flush toilets) is reasonable. If the likelihood is high that an RV owner camps at campgrounds that offer facilities beyond the built-in capacity of his RV, relative to campgrounds that offer more primitive facilities, then the questionnaire data demonstrates rational behavior among the different types of campers. That is, if a camper receives more utility from camping in a private campground with more developed facilities then we should expect him to patronize these campgrounds before all others.

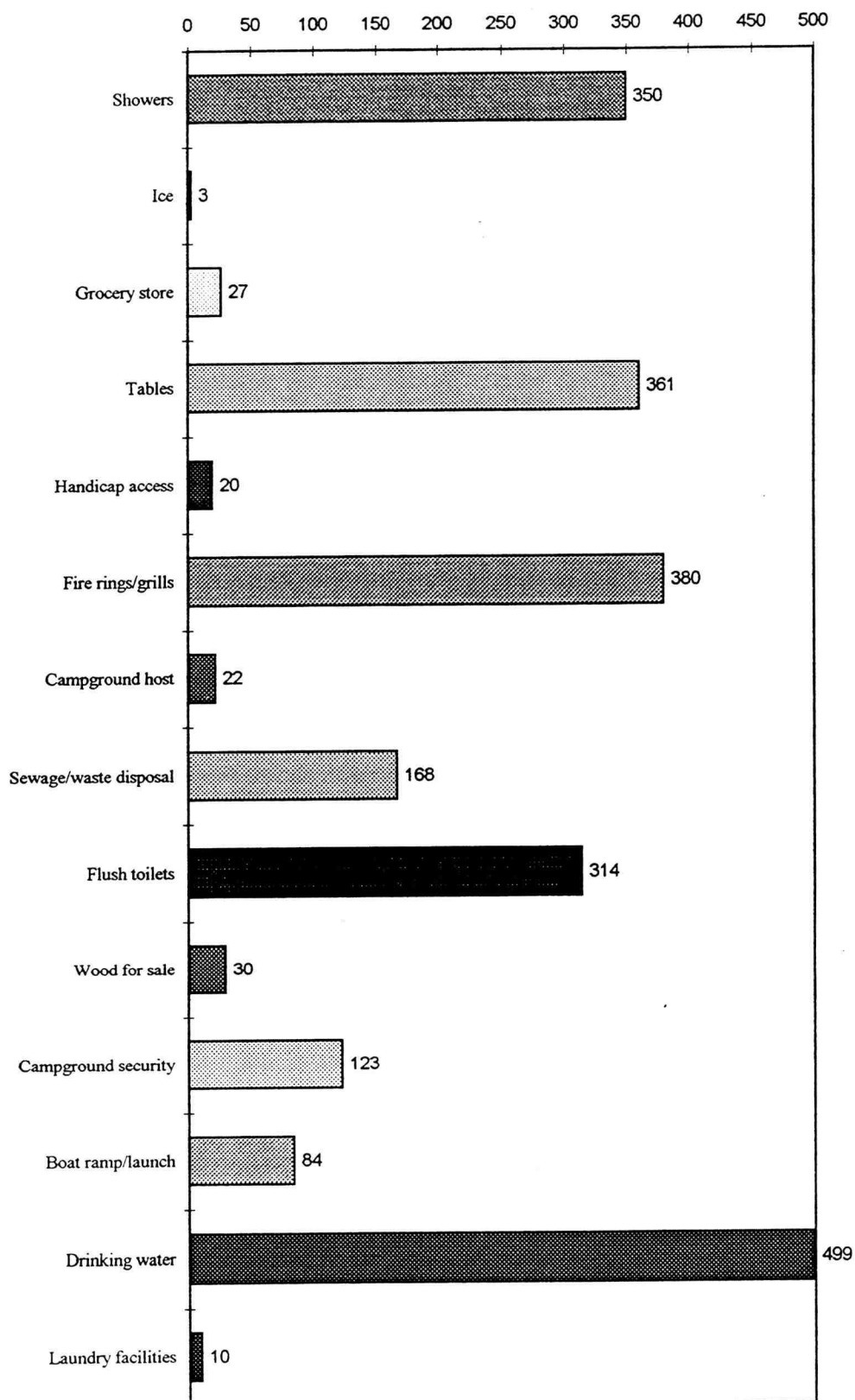
FIGURE 4: PREFERRED FACILITIES

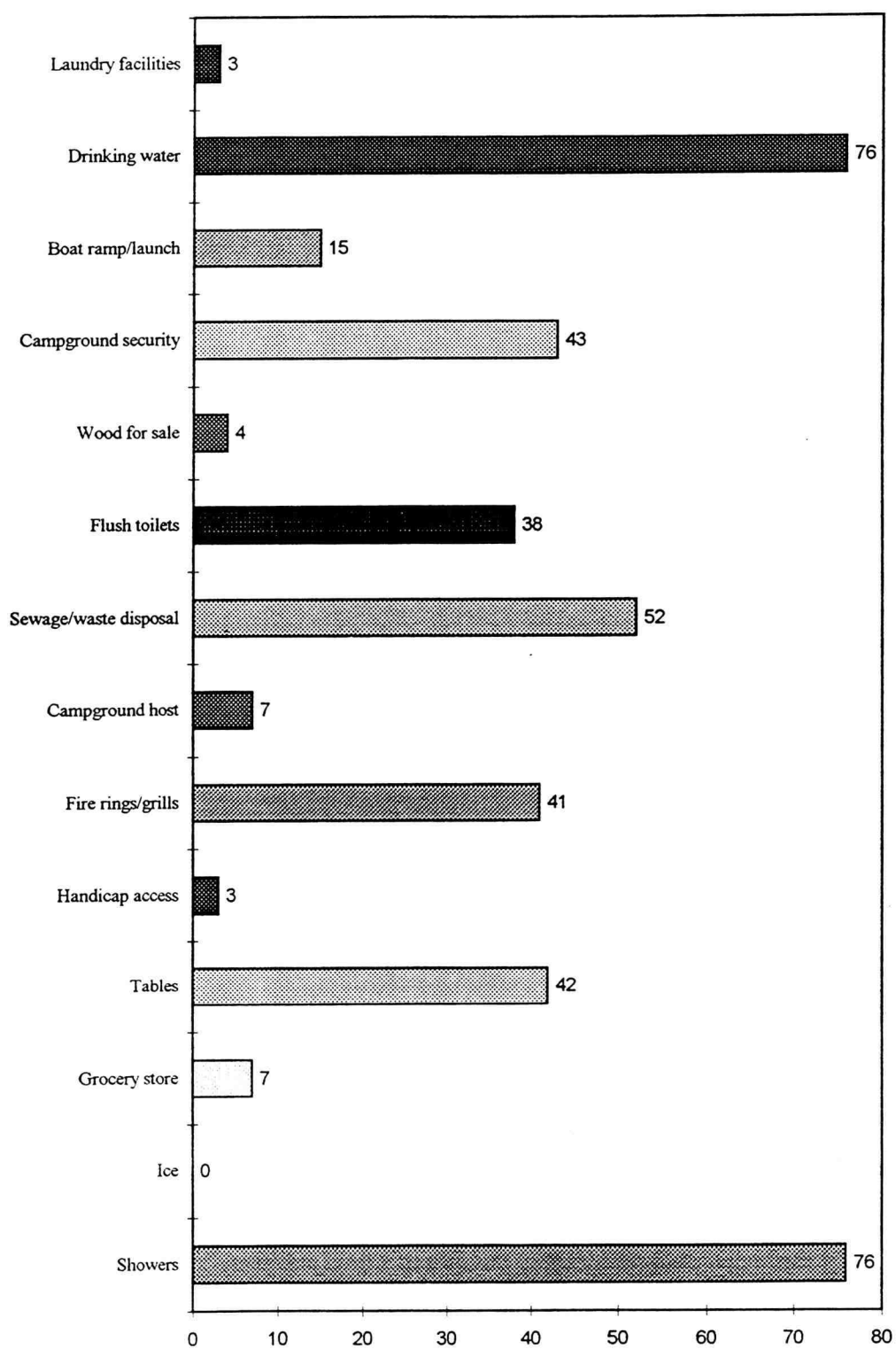
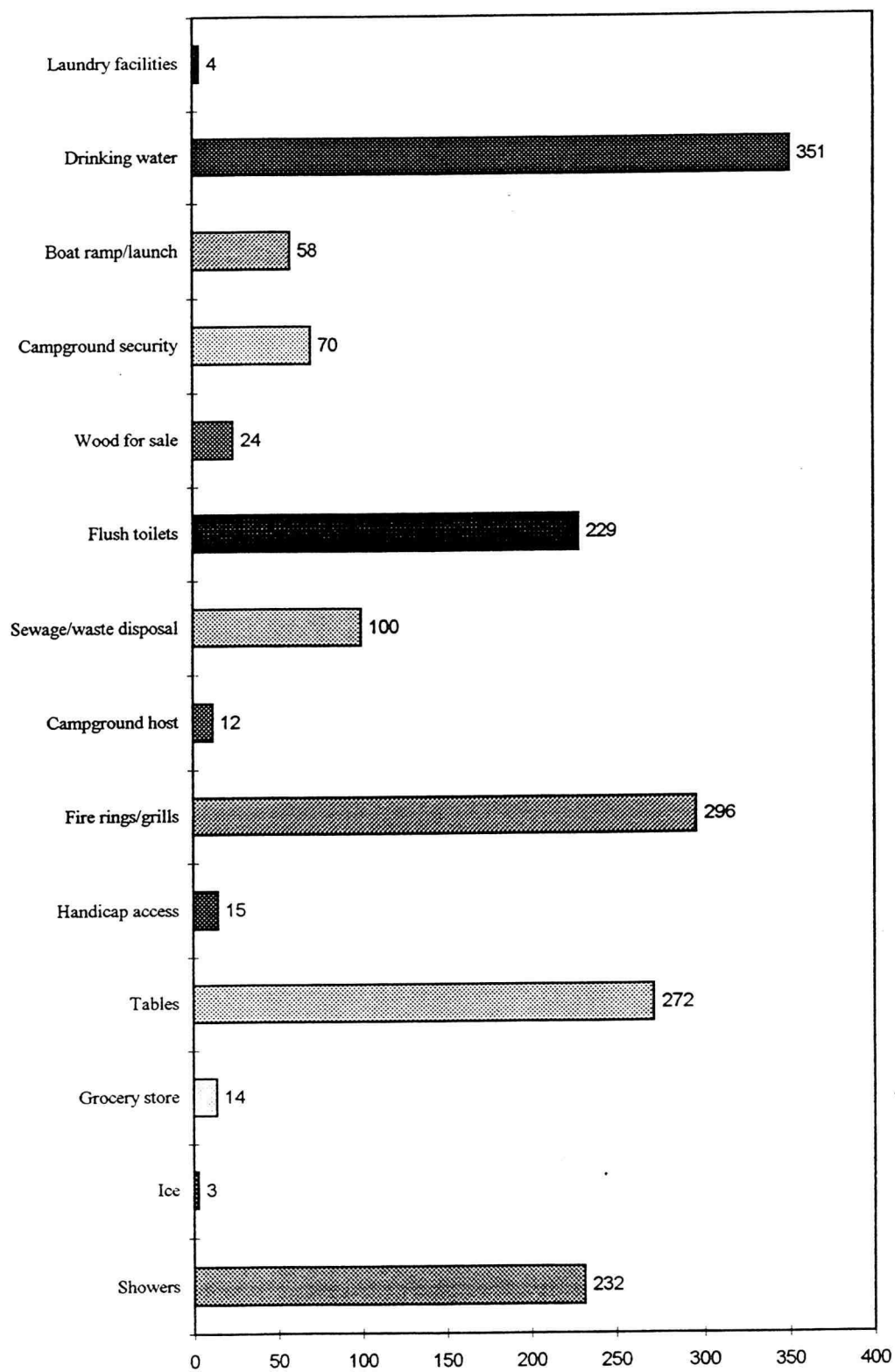
FIGURE 4.1: PRIVATE CAMPGROUND USER'S PREFERRED FACILITIES

FIGURE 4.2: PUBLIC CAMPGROUND USER'S PREFERRED FACILITIES

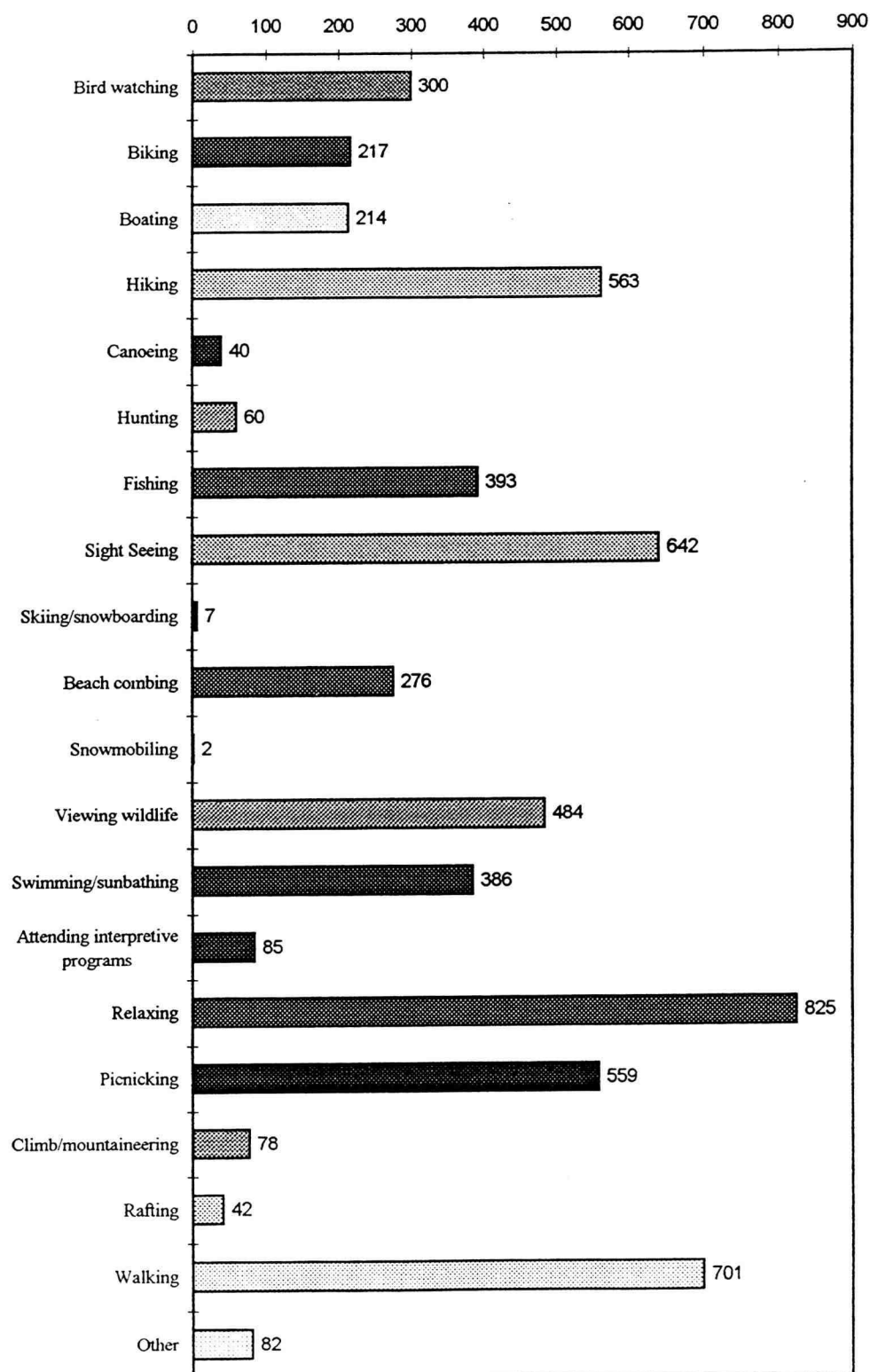
5.1.5 Activity Preferences

Each respondent was asked to indicate which activities, from a list of 19, he had participated in at the last campground he had stayed in Oregon. Figure 5 lists the set of activities that were most favored for all survey participants. Among Oregon, Washington, and California visitors, relaxing was the most popular pastime. Other activities participated in by one-third or more of the population sample were walking, sight seeing, hiking, picnicking, viewing wildlife, fishing, swimming/sunbathing, beach combing, and bird watching. Not surprisingly, the remaining activities that were chosen by the other two-thirds of the respondents require the use of more expensive recreational equipment.

Another interesting comparison is the proportion of each activity engaged in at separate regions of Oregon. Figures 5.1 through 5.9 illustrate which activities are most popular in the nine regions. Again, relaxing, was the most popular pastime for campers in all regions, however, aside from relaxing, activity proportions are dissimilar among the nine sectors.

The coastal regions share the top three activity preferences as relaxing, walking, and sight seeing and share the fourth—beach combing, which is distinct to the coastal areas. But central Oregon campers engaged in hiking more than sight seeing and Willamette Valley campers substituted sight seeing as the third most popular activity with picnicking. While eastern Oregon participants viewed wildlife more often than walking. Other activities of interest with significant share differences are fishing, attending interpretive programs, boating, biking, hunting, and bird watching. According to the survey, fishing is most popular on the east side of the Cascade Mountains and least popular along the

FIGURE 5: ACTIVITY PARTICIPATION



n = 885

Oregon coast. The percent of campers that fished in each region is as follows: central Oregon(55%) followed by eastern Oregon (54%); Mount Hood/Columbia

Gorge (52%); Portland/Metro area (50%); Willamette Valley (49%); southern Oregon (46%); south coast Oregon (46%); north coast Oregon (34%); and finally central coast Oregon (32%).

People tend to visit interpretive programs most often in the Portland/Metro area (21%), however, this sector is represented by only 14 visitors. Aside from the Portland Area, the north coast receives the highest number of interpretive program customers, whereas the Willamette Valley, Mt. Hood/Columbia Gorge, and eastern Oregon regions tied for the least amount (5%).

The mid-section of the state is used by boaters most frequently. Central Oregon, the Willamette Valley, Mount. Hood/Columbia Gorge, and southern Oregon sectors are most popular for this sport. The least popular regions are the three coastal areas and the Portland/Metro area.

Campers who biked during their last camping trip chose to do so at the more topographically challenging parts of the state. The flatter Willamette Valley and eastern Oregon regions were least popular for this activity whereas the more steep north and central coast (which include the coast range) and central Oregon (including the Cascades) were most represented by bicyclists. This pattern may indicate a preference towards mountain biking, however, this question was not asked separate of road biking.

The data revealed that hunters stayed in campgrounds in the Mt. Hood/Columbia Gorge area most often. Eastern Oregon was second for campgrounds that received

FIGURE 5.1: ACTIVITIES: OREGON NORTH COAST

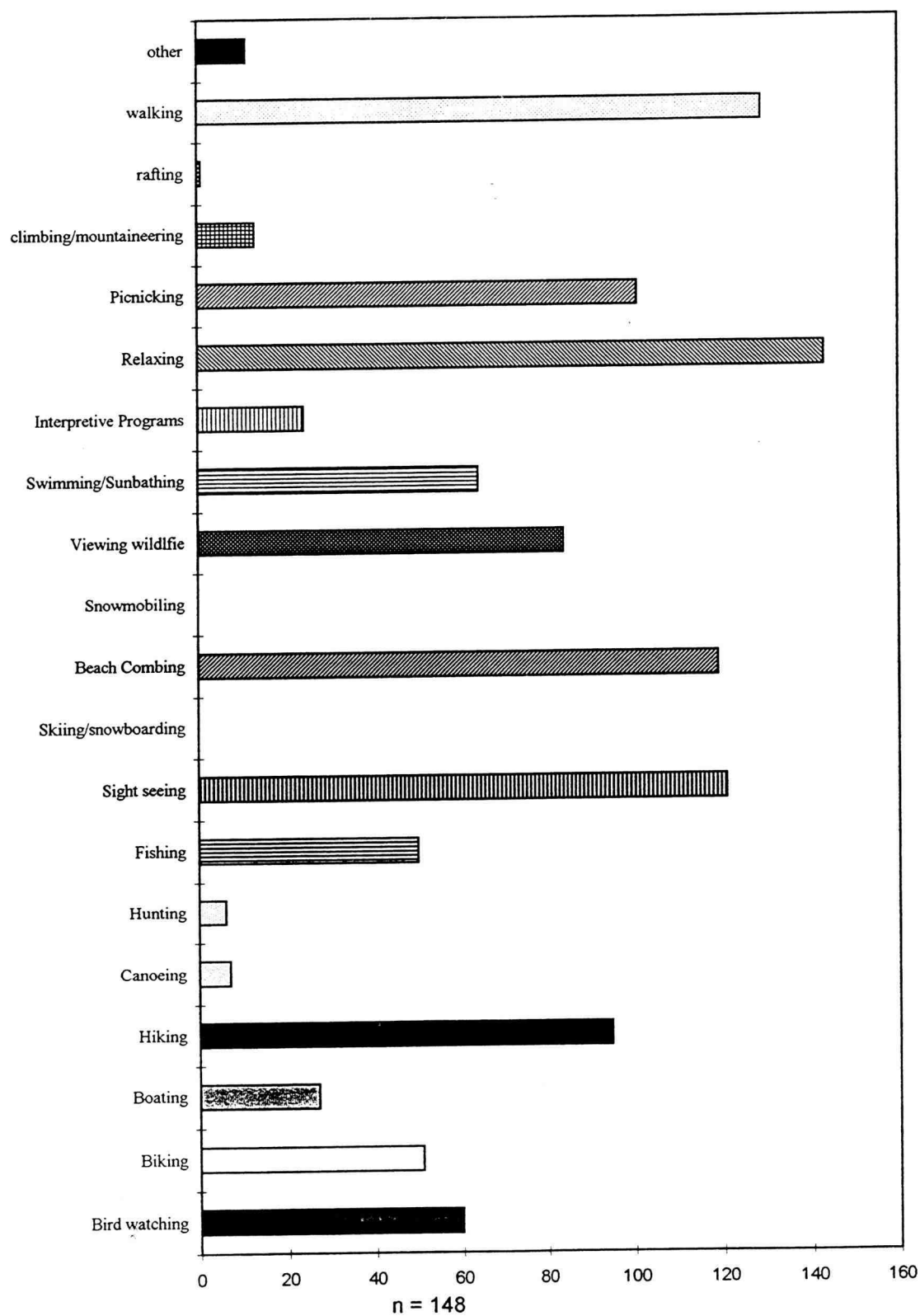


FIGURE 5.2: ACTIVITIES: OREGON CENTRAL COAST

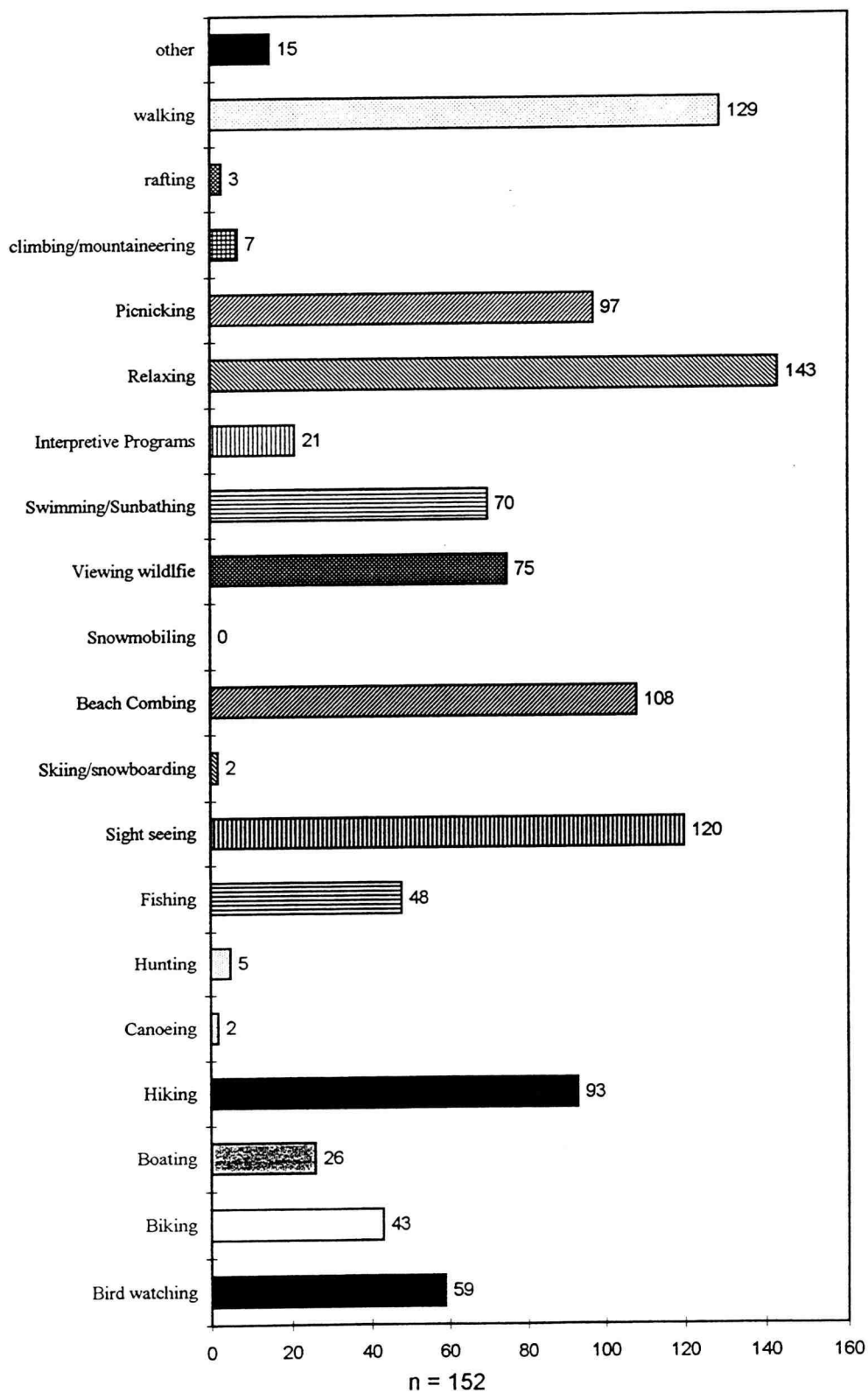


FIGURE 5.3: ACTIVITIES: OREGON SOUTH COAST

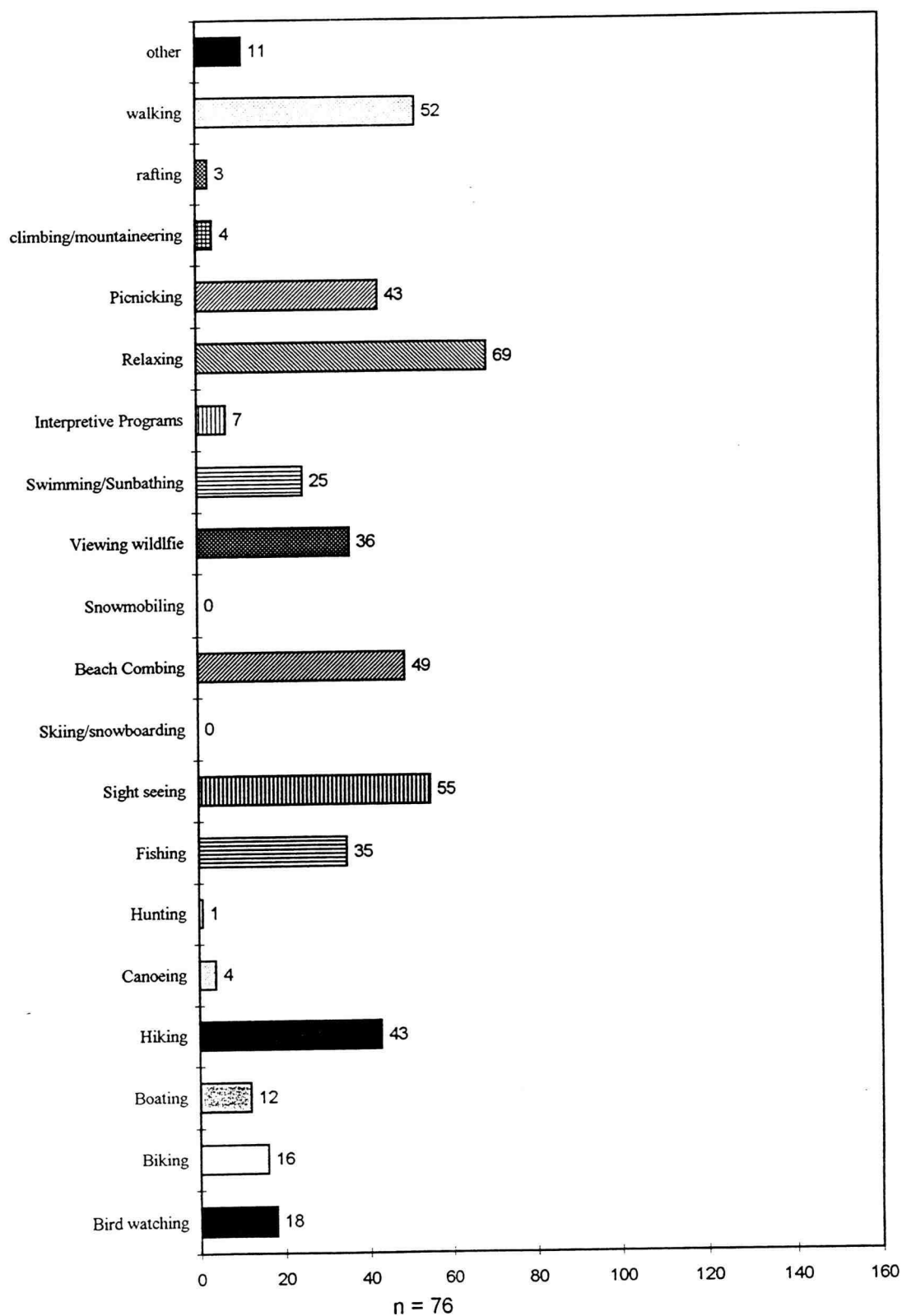


FIGURE 5.4: ACTIVITIES: PORTLAND/METRO AREA

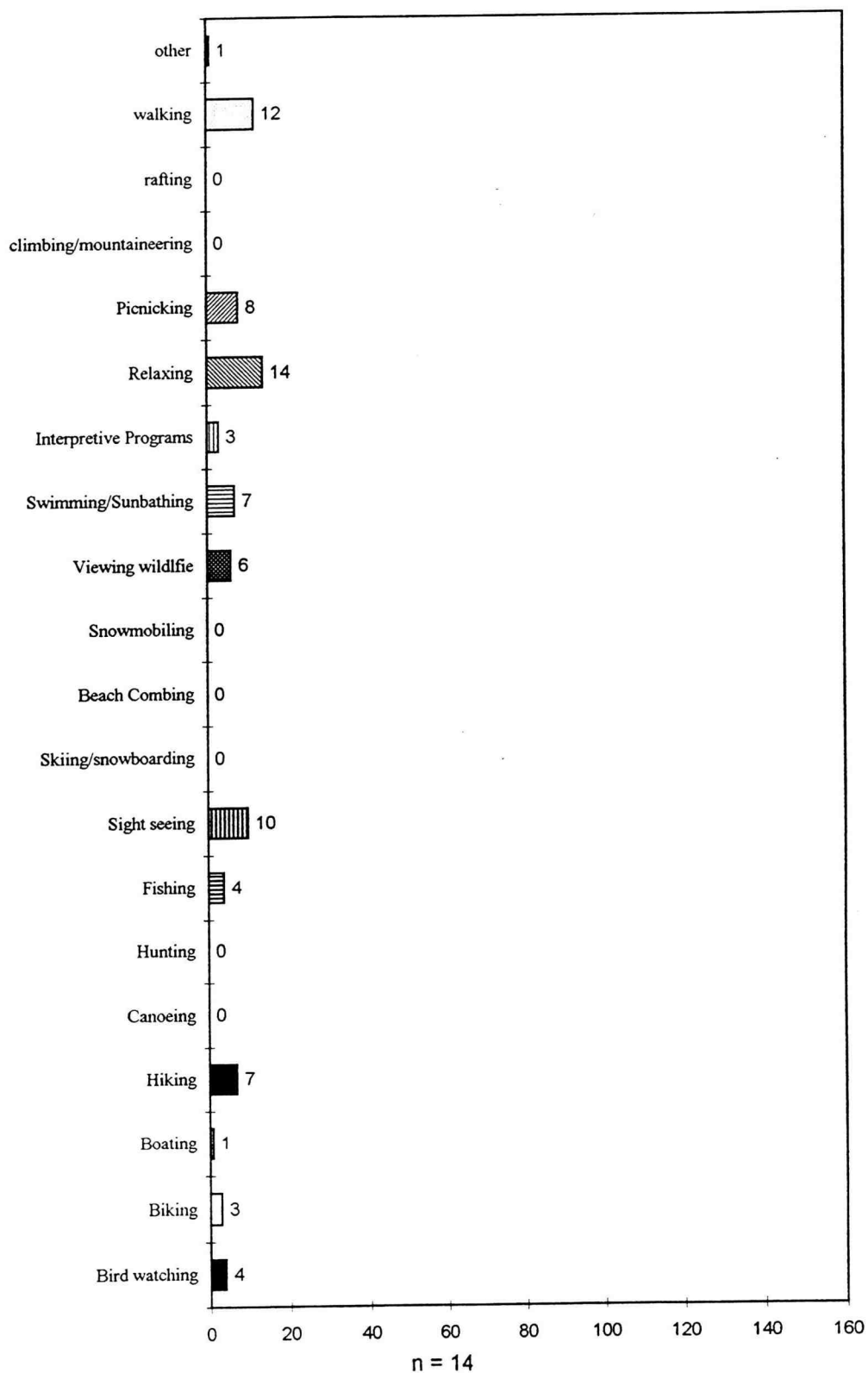


FIGURE 5.5: ACTIVITIES: WILLAMETTE VALLEY

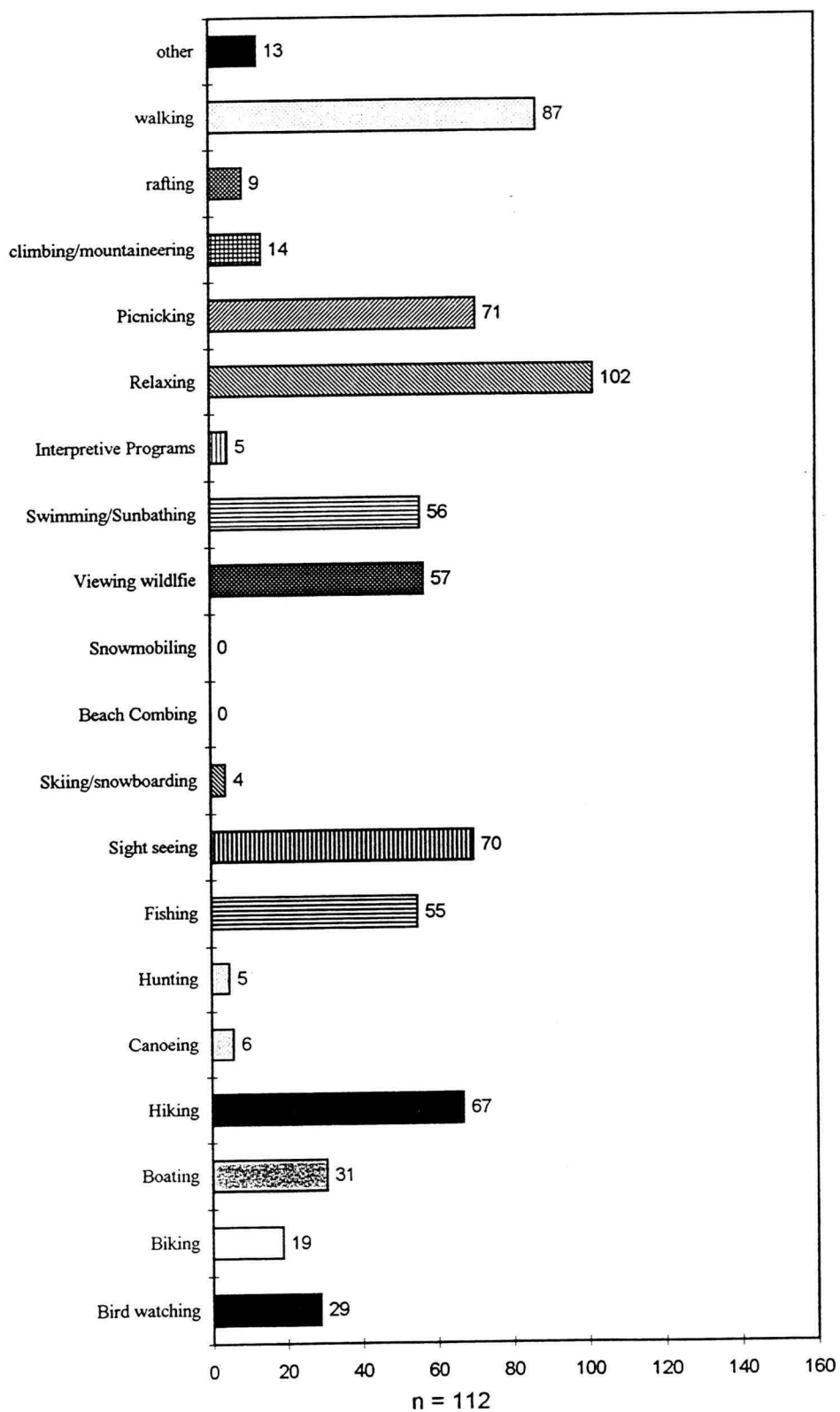


FIGURE 5.6: ACTIVITIES: SOUTH OREGON

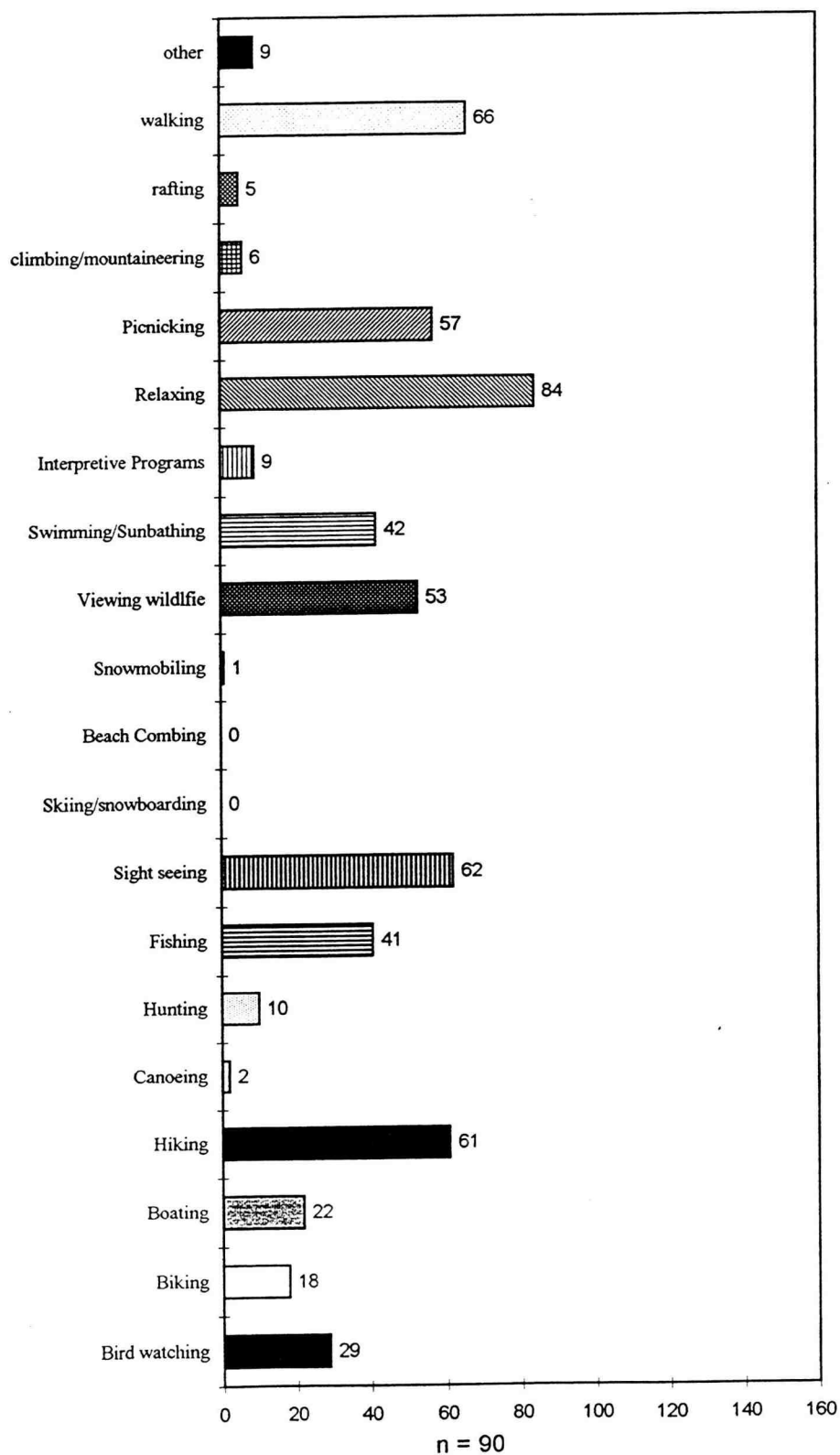


FIGURE 5.7: ACTIVITIES: COLUMBIA GORGE/MT. HOOD AREA

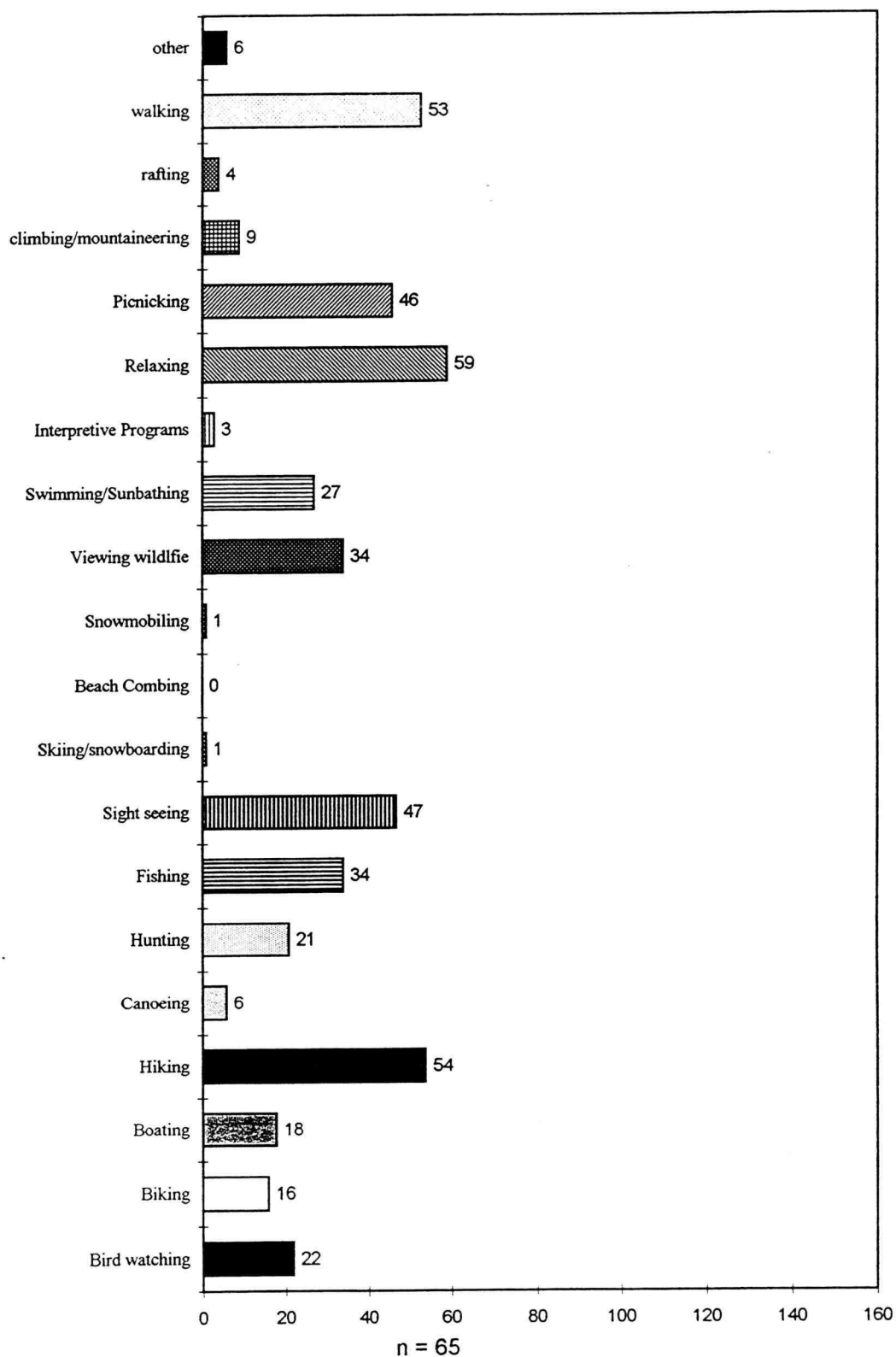


FIGURE 5.8: ACTIVITIES: CENTRAL OREGON

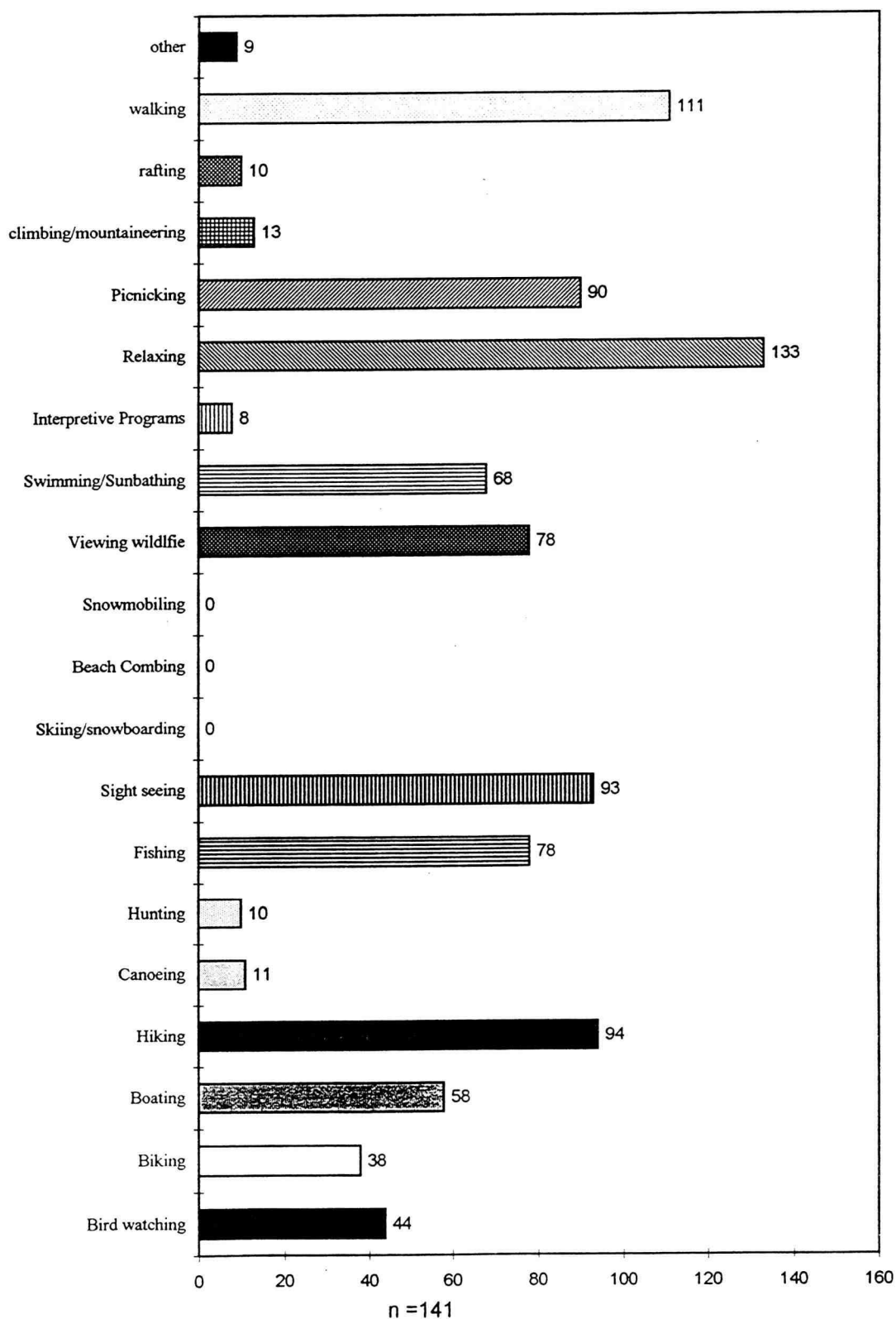
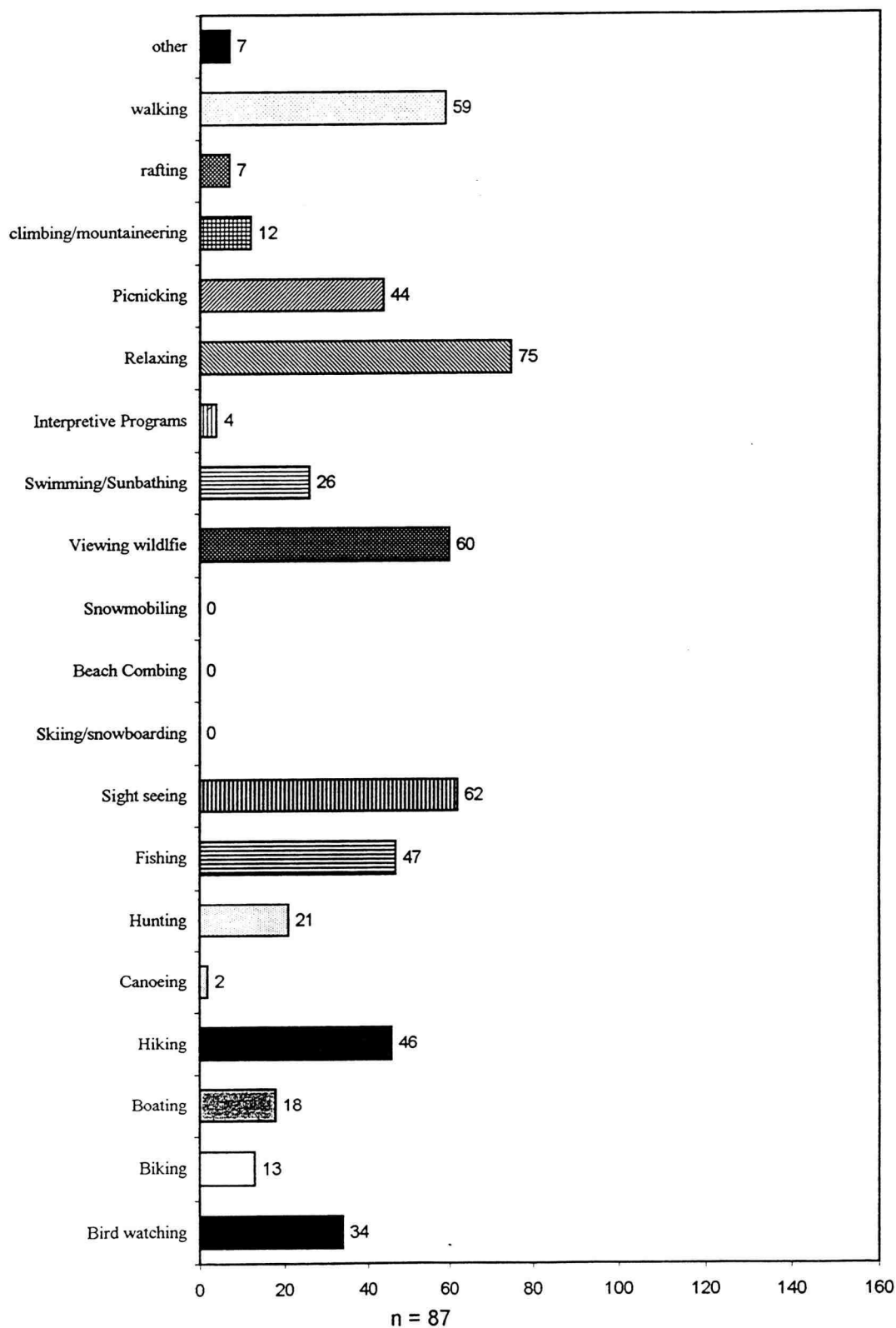


FIGURE 5.9: ACTIVITIES: EASTERN OREGON



campers who hunt. The North coast sector campgrounds received the largest proportion of bird watchers followed by the central coast and eastern Oregon which tied for second place.

5.2 Respondent Demographics

Obtaining demographic information on respondents is useful for several reasons. First, these data can be tested to determine which, if any, user characteristics influence choice between public and private campground alternatives. Second, if the data reveals that there are significant differences among user groups of private and public campgrounds, then market segmentation is likely. Finally, from these camper characteristics user attributes that influence campground choice can be distinguished. In this section, questionnaire demographic information is first reported as one group. Later, the individuals are divided into public and private campgrounds patrons so socioeconomic characteristics can be compared among user groups.

From 1,696 returned questionnaires, 401 (24%) participants were males; 1,232 (73%) were females; and 63 (3%) did not respond to the gender question. Married persons totaled 1,364 (80%), while 297 (19%) declared they were not married, and 25 (1%) did not answer the question. The number of children per family ranged from zero to eight with the median number of children at zero (50%). Another 37% answered that they had from 1 to two children whereas the remaining respondents (13%) had three or more children. One-hundred thirty-eight participants claimed that they live with extended family members, but only eight persons answered that they live with friends. The average age of

all respondents was 43, females averaged 42, and males averaged 49. Income averaged about \$40,250 per household.

With respondents divided into private and public campground patrons, most demographic characteristics from the large group sample are still representative of the separate user groups, however, age and working status differ slightly. Income medians for both groups remained at just over \$40,000 and the median education level completed was some college. Whereas the average age of public campground users was 43 years, private campground users were a bit older at an average of 51 years.

Moreover, although the most common work status for both groups was full time, the proportions of full time and retired persons varied (Table 4). About 38% of the private

Table 4: Working Status Shares Among Private and Public Campground Users

Work Status: Private*	Count	Percent	Percent	Count	Work Status: Public**
Full time	58	38	53	330	Full time
Part time	23	15	13	79	Part time
Unemployed	4	3	3	17	Unemployed
Household work	14	9	12	73	Household work
Retired	51	34	16	102	Retired
Student	1	<1	1	8	Student
Full time student	0	0	1	6	Full time student
Part time student	0	0	<1	3	Part time student
No response	1	<1	1	7	No response
TOTAL	152	100	100	625	TOTAL

n = 152, ** n = 625

campground group is made up of full time employees but the public group consists of 53% full time workers. The percent of retired persons in the private sector group is considerably larger than public campground users at 34% and 16%, respectively. These

socioeconomic differences among patrons of private and public campgrounds suggest that typically older, retired persons camp in the private sector. This information, coupled with the previous reported campsite type statistics, implies that these same visitors prefer more developed sites when camping.

6. Statistical Analysis of Camping Decisions

In this section, a statistical analysis was conducted to explain the camping decisions made by our survey respondents. These decisions are assumed to depend on the respondents' socioeconomic characteristics, prices and set of camping alternatives. Prices will be allowed to vary by the type of campground site and the ownership of the campground (public versus private). The statistical models are derived from the random utility model, a widely used model for the study of recreation (See, for example, Freeman, 1993; Milon, 1988; Parsons and Needelman, 1992; and Parsons and Keeley, 1995).

6.1 Probability of Camping: Two Choice Model

Questionnaire data indicates that 45% of respondents chose not to go camping between September 3, 1996 and February 1998 and that 55% did go on a camping trip. Table 5 lists the results from a logistic regression that helps determine the characteristics of persons most likely to go camping in Oregon. The characteristics examined were income, age, and four working status groups: full time employees; part-time employees; retired persons; and students. A variable to examine the effect of state origin (Washington or Oregon) on the camping decision was also included. California responses were too few to investigate probabilities.

The results indicate that camping is a very broad-based activity in Oregon. As expected, Washington residents are less likely to camp in Oregon than Oregon residents. However, once state of origin is controlled for, persons of all ages, incomes, and nearly all working statuses are equally likely to camp. The estimated logistic coefficients for

income and age are both very small and not statistically different from zero. This suggests that camping is equally popular among all age groups and income groups.

TABLE 5: Probability that an Individual will Camp: Two Choice Model

Variable	Coefficient	T-Statistic	Change in Probability
INTERCEPT	0.37	1.53	NA
WASHINGTON	-1.11	-9.39**	-0.26
INCOME	0.0009	0.076	0.0002
AGE	-0.0009	-0.16	-0.0002
FULL TIME	0.21	1.41	0.05
RETIRED	0.39	1.60	0.09
PART TIME	0.33	1.67	0.07
STUDENT	-0.84	-2.15**	-0.19

*Statistically significant at 90%, **Statistically significant at 95%

The working group coefficients are best interpreted as indicating the difference in the probability of going camping for a person in the working group, relative to a person in the reference working group. Here the reference group includes a very small bundle of unemployed persons. Since the coefficient for FULL TIME is positive, but with a small t-statistic, full time workers seem just as likely to camp as a person in the reference group. Similarly the coefficients for RETIRED and PART TIME persons are positive, but their t-statistics indicate that there is a good chance that the effect is not different than zero. Conversely, the coefficient for STUDENT is negative with a large t-value. This result suggests that students are less likely to go camping than someone in the reference category.

The changes in probability of going camping resulting from a change in a persons characteristics can also be inferred from this model. The last column in Table 5 represents

these changes. For example, the coefficient for WASHINGTON indicates a reduction in the probability of camping in Oregon. The probability that a person will choose to camp in Oregon decreases by 26% if that person is from Washington compared to an Oregon resident. Similarly, if the person is a student the probability of her will to camp decreases by 19% compared to a person in the reference category.

6.2 Probability of Camping: Five Choice Model

Table 6 lists the statistical analysis results for the probability that an individual will camp for specified lengths of time based on three demographic parameters: income, age and the four working status groups. These variables were tested to determine if working status effects the length of an individual's camping trip. Relative to not camping (CHOICE 0), the probability that an individual will camp for one to three days (CHOICE 1); four to seven days (CHOICE 2); eight to fourteen days (CHOICE 3); and greater than or equal to fifteen days (CHOICE 4) was predicted.

The results of the five choice model are presented in Table 6. The sign of the coefficients show that Washington residents tend not to camp in Oregon. This correlation remains true at the 95% confidence level until CHOICE 4. Referring to only the statistically significant variables, the results indicate that AGE is negatively related to camping trips that last for one to three days, but shifts to a positive effect for trips that last eight to fourteen days and greater than fourteen days. This result differs from that of the two choice model where AGE does not matter.

Table 6: Probability that an Individual will Camp: Five-choice Model

Variable	Coefficient	Asymptotic T-statistic	Change in Probability	Probability
PROBABILITY-1				.23
INTERCEPT-1	0.57	1.93**	NA	NA
WASHINGTON-1	-1.51	-8.73**	-0.19	.04
INCOME-1	-0.01	-0.95	-0.003	.23
AGE-1	-0.02	-2.76**	-0.004	.23
FULL TIME-1	0.13	0.73	0.0008	.23
RETIRED-1	-0.07	-0.22	-0.05	.18
PART TIME-1	0.10	0.41	-0.02	.21
STUDENT-1	-1.16	-2.20**	-0.10	.13
PROBABILITY-2				.23
INTERCEPT-2	-0.93	-2.99**	NA	NA
WASHINGTON-2	-0.96	-6.34**	-0.07	.16
INCOME-2	0.01	0.88	0.003	.23
AGE-2	0.57	0.88	0.001	.23
FULL TIME-2	0.24	1.22	0.02	.25
RETIRED-2	0.35	1.18	0.05	.28
PART TIME-2	0.44	1.76*	0.05	.28
STUDENT-2	-0.64	-1.21	0.05	.28
PROBABILITY-3				.06
INTERCEPT-3	-3.98	-6.50**	NA	NA
WASHINGTON-3	-0.59	-2.39**	0.0006	.06
INCOME-3	0.03	1.33	0.002	.06
AGE-3	0.03	2.82**	0.002	.06
FULL TIME-3	0.48	1.19	0.02	.08
RETIRED-3	0.67	1.30	0.03	.09
PART TIME-3	0.75	1.58	0.03	.09
STUDENT-3	-0.20	-0.19	0.05	.11
PROBABILITY-4				.02
INTERCEPT-4	-5.50	-3.97**	NA	NA
WASHINGTON-4	-0.30	-0.66	0.004	.02
INCOME-4	-0.02	-0.49	-0.0004	.02
AGE-4	0.03	1.13	0.0004	.02
FULL TIME-4	0.81	0.74	0.01	.03
RETIRED-4	2.12	1.76*	0.03	.05
PART TIME-4	1.41	1.20	0.02	.04
STUDENT-4	-21.39	-0.0002	-0.32	-.30

*Statistically significant at 90%, **Statistically significant at 95%

A similar result is obtained for part time workers. This group is more likely to take longer trips. At the 90% confidence level, there is a probability that part time employees are more likely to camp for four to seven days, whereas, retired folks tend to camp for greater than two weeks.

The estimated changes in the probability that an individual will take a camping trip of each duration are given in column four of Table 6. The sums of these changes for each type of individual and each choice are given in column 5 of Table 6. The largest effect is that of STUDENT on CHOICE 4. This is followed by the effect of Washington residency on CHOICE 1.

6.3 Probability of Choosing Campsite Types

An individual's campsite choice is based partly on the price of the various site types, on the camper's attributes, and some factors that are outside of the camper's control, such as the weather. Economic theory predicts that the higher the price of a type of campsite, relative to other prices, the less likely that the type of site will be chosen.

Given a random sample of individuals and each persons set of attributes, which campsite type will the camper most likely choose? What happens when the fee for his chosen campsite changes? Which type of campsite, among a predetermined set of alternatives, will he opt to use in replacement for his first choice? These questions were examined in the following two statistical models.

In the first statistical model, we use the mixed logit regression method (Greene, 1997, Chapter 19) to examine the campers' selections of seven different types of camping sites. These are named and numbered as follows: 1 = a full hookup site; 2 = a water and electric hookup; 3 = a water hookup, 4 = a cabin or yurt rental; 5 = a tent site; 6 = all group sites; and 7 = premium sites.

The model attempts to explain the campsite type chosen by each respondent who camped in Oregon as a function of seven explanatory variables. These variables are: prices, a variable Washington=1 if the respondent is from Washington, and 0 otherwise; RV = 1 if the respondent owns a recreational vehicle, and 0 otherwise; Travel Trailer=1 if the respondent owns a travel trailer, and 0 otherwise; Number of People = the total number of friends, relatives and family members in the camping group; and Sept. '97-Feb. '97=1 if the respondent's last Oregon camping trip was in the indicated time period, and 0 otherwise.

Each camper is confronted with an array of prices when she selects a campsite type. The prices we used in our analysis are not given in dollar terms, but rather in category terms. The survey question was:

What was the fee per day for this campground? Check the closest.

\$0.00	_____	\$1 - 4.99	_____	\$5 - 9.99	_____
\$10 - 14.99	_____	\$15 - 19.99	_____	\$20 - 24.99	_____
\$25 - 29.99	_____	\$30 - 34.99	_____	\$35 - 39.99	_____
Over \$40.00	_____				

A fee of \$0.00 is denoted as category 1, a fee of \$1 – 4.99 is denoted as category 2, and so on. From the survey results, the average price paid by the respondents for all types of campsites is 3.79, or about \$8.00.

Broken down by the various site types, average prices are given in Table 7. For estimation of the first statistical model, we have normalized the price of each site by the average price for all sites. This average is 3.79. These normalized prices are given in the rightmost column of Table 7.

Table 7: Normalized Campsite Fees

	<i>PRIVATE</i>	<i>PUBLIC</i>	<i>AVERAGE</i>	<i>NORMALIZED</i>
FULL	4.48	4.70	4.62	1.22
WATER & ELECTRIC	3.60	4.52	4.22	1.11
WATER	3.00	3.72	3.67	0.97
TENT	3.31	3.24	3.25	0.85
CABIN & YURT	7.20	5.56	5.64	1.49
GROUP	4.25	3.35	3.51	0.93
PREMIUM	3.00	3.50	3.22	0.85

Coefficient estimates for the 7-choice campsite model are given in Table 8. A large number of the coefficients have high t-statistics and the model does a good job of explaining campers' actual site choices. Because the model only allows a person to make a single choice out of a possible seven, the coefficients reported in Table 8 are difficult to interpret (see Greene, 1997, p. 917).

Table 8: Likelihood of Choosing Site Type with Camper Attributes

Variable	Coefficient	T-statistic
Price	-6.54	-13.66**
Washington-2	-0.55	-1.80*
RV-2	-0.80	-3.00**
Travel Trailer-2	-0.27	-1.06
Number of People-2	0.01	0.78
Reservation-2	-0.84	-3.42**
Sept. '97-Feb. '97-2	-0.43	-1.50
Washington-3	-1.21	-2.57**
RV-3	-2.08	-4.40**
Travel Trailer-3	-2.47	-4.41**
Number of People-3	0.01	0.80
Reservation-3	-2.47	-5.38**
Sept. '97-Feb. '97-3	-1.62	-3.29**
Washington-4	-0.30	-0.46
RV-4	-1.70	-2.48**
Travel Trailer-4	-2.70	-2.23**
Number of People-4	0.02	1.59
Reservation-4	0.75	1.93*
Sept. '97-Feb. '97-4	-0.04	-0.08
Washington-5	-0.51	-1.90*
RV-5	-1.79	-7.46**
Travel Trailer-5	-1.51	-6.25**
Number of People-5	0.02	1.51
Reservation-5	-1.61	-7.09**
Sept. '97-Feb. '97-5	-0.12	-0.48
Washington-6	-2.27	-3.91**
RV-6	-2.61	-5.39**
Travel Trailer-6	-2.40	-5.01**
Number of People-6	0.02	1.17
Reservation-6	-2.24	-6.01**
Sept. '97-Feb. '97-6	-1.22	-3.00**
Washington-7	-2.61	-2.13**
RV-7	-3.11	-2.91**
Travel Trailer-7	-2.12	-2.65**
Number of People-7	-0.47	-7.75**
Reservation-7	-1.70	-2.31**
Sept. '97-Feb. '97-7	-0.70	-0.83

*Significant at 90%, ** Significant at 95%

The coefficients are most useful, however, for computing predicted changes in the proportion of campers choosing the various sites, reported in Table 9. Since we are implicitly assuming that the number of campers is constant, these changes in proportion

are best interpreted as transfers in the market share of the various campsite types. The results can be interpreted as follows.

Table 9: Likelihood of Site Type with User Attributes

	Full (1)	Water & Electric (2)	Water (3)	Cabin & Yurt (4)	Tent (5)	Group (6)	Premium (7)
Washington	0.09	0.01	-0.02	0.01	0.10	-0.14	-0.04
RV	0.21	0.07	-0.03	-0.01	-0.11	-0.09	-0.04
Travel Trailer	0.17	0.11	-0.07	-0.04	-0.07	-0.09	-0.02
Number of People	-0.001	0.001	0.001	0.001	0.01	0.002	-0.01
Reservation	0.17	0.04	-0.07	0.05	-0.11	-0.08	-0.004
Sept. '97 - Feb. '97	0.05	-0.01	-0.09	0.01	0.11	-0.07	-0.004

A person from Washington is most likely to use a Full hookup site or a tent site. Washington residents are 14 percent less likely to use group sites than Oregon residents and only slightly less likely to use water and electric, water, premium sites, or cabins and yurts.

Recreational vehicle owners (RV=1) are 21 percent more likely than non-RV owners to use full hookup sites and 7 percent more likely to use water and electric sites. They are especially unlikely to use tent and group sites; these changes in proportions are negative, as one would expect.

A similar story emerges for travel trailer owners (Travel Trailer=1). Compared to non-owners, these campers are 17 percent more likely to use a full hookup site and 11 percent more likely to use a water and electric site. They are less likely to use any of the other 5 site types.

The Number of People increases the proportion of campers using all sites except full hookup and premium sites, however the effect is quite small. As expected, the larger the Number of People, the more likely that a group site will be chosen. Campers taking a trip between Sept. '97 and Feb. '98 choose a higher proportion of tent sites, followed by full hookup sites, and cabins and yurts. They are less likely to use water and electric sites, group sites, and premium sites.

Finally, those using Reservations dominantly use full hookup sites, followed by cabins and yurts, and water and electric sites. According to the model, it is quite unlikely that those using Reservations will use other types of sites, especially tent sites and water hookup sites.

6.4 Price Sensitivity for Campsite Types

The same model used in section 6.3 also allows inference into transfers in proportions of people choosing the various types of sites that would result from price changes. These estimates are presented in Table 10. Listed along the diagonal of Table 10 are the percent changes in the proportion of campers choosing a given type of site from a hypothetical increase in the price of that site type. The price changes are all approximated by a one percent increase in our normalized prices and are presented in the last row of the table. For example, a one percent increase in the price of a full hookup site (holding the price of all other types of sites constant) results in the percent of campers choosing full hookup sites to decrease by 4.82%. Since the price of site types differ, a one percent increase in our normalized price implies a dissimilar dollar increase for each site type.

Table 10: Substitution Among Alternative Campsites

	Price Effect						
Market Share Effect	Full	Water and Electric	Water	Cabin or Yurt	Tent	Group	Premium
Full	-4.82	1.95	1.53	1.63	1.02	1.71	2.44
Water and Electric	1.32	-5.85	1.67	1.11	.80	1.78	2.22
Water	.23	.39	-10.91	.32	.45	1.75	1.94
Cabin or Yurt	.28	.30	.37	-8.88	.24	.59	.44
Tent	1.70	2.04	4.89	2.27	-2.50	5.27	5.95
Group	.31	.49	2.07	.61	.57	-10.86	2.76
Premium	.08	.11	.42	.08	.12	.50	-13.44
Unit Change	\$2.50	\$1.50	\$2.00	\$1.25	\$1.00	\$0.50	\$1.50

From the numbers on the diagonal of Table 10, it is apparent that campers choosing premium sites are the most sensitive to price. A one percent increase in price would result in a 13.4 percent drop in the market share of premium sites. The price sensitivity of premium site users is followed by group site users (-10.86 %), water site users (-10.91 %) , and cabin and yurt users (-8.88 %).

Tent site campers seem to be the least sensitive to price changes. The model predicts that a one percent increase in the normalized price of tents (about \$1.00) will result in only 2.5 percent of tent site users switching to another type of site.

In our model we are implicitly assuming that the number of campers is constant. Therefore, if a camper does not choose a site whose price has increased, he must choose another type of site. An indication of the other types of sites chosen is given by reading the off-diagonal numbers in Table 10. For example, the 10.91 percent decrease in the share of campers choosing water sites that results from a 1 percent increase in the normalized price of water sites, is distributed as an increase in the share of full hookup sites by 1.53 %, water and electric sites by 1.67 %, tent sites by 4.89 %, and group sites by 2.07 %. Minor increases in the market share are predicted for premium sites and cabins and yurts. These numbers are indicative only; they do not add up perfectly due to approximation and rounding errors.

Two striking results emerge from studying Table 10. First, tent site users are the least sensitive to changing prices. Relatively, they appear reluctant to switch to other types of sites. Second, for all other site users, tent sites seem to offer the next best alternative. Without exception, the largest gainer in market share resulting from an increase the price of another type of site is the tent site.

6.5 Substitution Between Private and Public Campgrounds

The following section describes the results from a statistical model used to assess the level of consumer substitution between private and public campgrounds. That is, how much are campers willing to choose public versus private campgrounds on the basis of price differences.

To assess consumer substitution a logistic model of individual campers' choices between public and private campgrounds was estimated. I estimated substitution

behavior for a reference group of campers and tested the degree to which campers will substitute between public and private campgrounds for four different camper subgroups. These subgroups are based upon four user characteristics: Washington versus Oregon residents, RV owners versus non-owners, Reservation users versus non-users, Tent owners versus non-owners. In explaining the choice of campgrounds by these attributes I also controlled for price and effects of camping in the nine different regions of Oregon.

The results are reported in Table 11. We turn first to the effects of region on the public versus private campground choice. Binary variables for all but Region 1 were included in the regression, so that campers in Region 1 (Oregon's North Coast) serve as the reference group. The far left column of the shaded portion of Table 11 gives the estimated difference in the probability of choosing a public campground by region. The comparison is with a camper visiting Region 1.

The results suggest that, compared to Region 1 campers, those people camping in nearly all other regions are more likely to choose public campgrounds. The exception is Region 4 (Portland Metro) campers, who are 17 percent less likely to choose a public campground than Region 1 users. The regional effect is largest and most statistically significant in Region 5, where a camper is 12 percent more likely to choose a public campground, and in Region 1 as discussed above. The regional effect is small and not likely to be different from zero in Region 2 (Oregon's Central Coast).

Table 11 also gives the coefficient estimates for price sensitivity for five groups of campers. Economic theory predicts the negative sign for the Price Public/Private coefficient is rational consumer behavior. That is, that people are more likely to

Table 11: Coefficient Estimates for Public versus Private Campground Choice

Variable	Estimate	T-statistic	Change in Probability
Price Private/Public	-0.95	-2.88**	NA
Price Private/Public Washington	-0.28	-0.73	NA
Price Private/Public RV Owners	-0.42	-0.97	NA
Price Private/Public Reservation Users	0.00003	0.35	NA
Price Private/Public Tent Owners	0.97	2.66**	NA
All Campers Intercept	1.23	5.20**	0.19
Public Region 2	0.03	0.10	0.005
Public Region 3	0.25	0.62	0.04
Public Region 4	-1.16	-1.92*	-0.17
Public Region 5	0.81	1.93*	0.12
Public Region 6	0.65	1.50	0.10
Public Region 7	0.62	1.25	0.09
Public Region 8	0.49	1.34	0.07
Public Region 9	0.52	1.14	0.08

*Confidence level at 90%, ** Confidence Level at 95% The non-shaded portion of

choose a campground with a lower fee, holding everything else equal. Its large absolute t-statistic suggests that the Price Public/Private estimate is different from zero.

The remaining coefficients in the second column of the non-shaded portion of Table 11 show the results of allowing differences in price sensitivities for the four subgroups of campers discussed above, compared to the reference camper group. The coefficients for Price Public/Private Washington and Price Public/Private RV are both negative, but of low statistical significance. This suggests that, if anything, Washington residents and RV owners are more price sensitive than other types of campers and will therefore substitute more between public and private campgrounds than the reference group of campers.

The coefficient for Price Public/Private Reservation Users is nearly zero and has a very small t-statistic. This indicates that there is no difference in the price sensitivity of campers who use reservations and those who do not use reservations.

Finally, the Price Public/Private Tent Owners is positive and has a very large absolute t-statistic. This result strongly indicates that tent owners are less sensitive than other campers to prices in their choices between public and private campgrounds.

Since the coefficients from the logistic regression are sometimes difficult to interpret, price sensitivity results are presented in elasticity form in Table 12. The numbers given on the left side of Table 12 show the estimated percent change in the private and public market share if there were a one percent increase in private campground fees, with no change in public campground fees. The numbers on the right, give the estimated percent change in market share if there were a one percent increase in public fees, while private fees were held constant.

Table 12: Substitution Between Private and Public Campgrounds

	Change in Private Campground Price		Change in Public Campground Price	
	Variable	Percent Change	Variable	Percent Change
Private Market Share	All Other Campers	-1.17	All Other Campers	+1.02
	Washington Residents	-1.52	Washington Residents	+1.33
	RV Owners	-1.44	RV Owners	+1.48
	Reservation Users	-1.17	Reservation Users	+1.02
	Tent Owners	0.03	Tent Owners	+0.03
Public Market Share	All Other Campers	+1.17	All Other Campers	-1.02
	Washington Residents	+1.52	Washington Residents	-1.33
	RV Owners	+1.44	RV Owners	-1.48
	Reservation Users	+1.17	Reservation Users	-1.02
	Tent Owners	+0.03	Tent Owners	-0.03

Because this model is a two choice model, either the individual camps at a private or public campground, the predicted change in the market share for private and public campgrounds is equal between sectors, but has an opposite effect. In other words, if the price increases in the private market and causes a negative effect on consumption for private campgrounds, then the public campground sector will experience a positive effect and receive the percent of the market share that is lost to the private sector.

For the reference camper group, all other campers, from Table 12 the estimates show that a one percent increase in the price of a private campground causes a 1.17 percent decrease in the private campground market share. There is a corresponding 1.17 percent increase in the public campground market share. For Washington residents, a one percent increase in the price of private campgrounds produces a 1.52 percent decrease in the likelihood that he will choose the private sector, and a corresponding increase in the chance that he will choose a public campground.

The most price sensitive camper group appears to be RV owners. From Table 12, a one percent increase in private fees will lead to an estimated 1.44 decrease in the private market share, and a 1.44 percent increase in the public market share of RV campers. It also appears that price sensitivities are virtually the same for reservation users in the private market as the reference group of campers.

In contrast, the estimates suggest that tent owners are the least price sensitive among these groups. A one percent change in price in the private market leads to virtually no change in the market share between private and public campgrounds.

Implications from this result may be more effective if tent owners are also representative of tent site users. If this connection is true, then the conclusion can be expanded to say that tent site users are not sensitive to price changes in the private market and will therefore stay within their accustomed campground sector regardless of price.

The right-hand side of Table 12 illustrates the percent change in campground use for private and public campgrounds given a one percent change in the price of public campgrounds. The results indicate that price changes in the public campground market

affect consumption somewhat differently than changes in private market private. With the exception of RV owners, price sensitivities are smaller for all user groups. Even here, however, the conclusions remain the same. The most price sensitive group is composed of RV owners while the least sensitive group is tent owners.

7. Contingent Valuation: Willingness to Pay for OPRD Parks

In the forgoing analysis of the survey data, survey respondents' descriptions of their actual use (or failure to use) OPRD parks were utilized. The use to which consumers put Oregon parks will reflect some of the value that they place on parks, but it is possible that usage does not reflect all of the value. Besides the value of usage, there are at least two other sources of value that people may hold toward publicly owned natural resources. The first is existence value, the value that consumers place on just knowing that the resource is there. The second is option value, which is a value based on the option to use the resource in the future.

Usage does not reflect option value or existence value and, for a variety of reasons, no "market type" behavior is likely to do so.

In cases where usage value is an incomplete reflection of total value, economists are increasingly turning to the method of contingent valuation to obtain estimates of the relative importance of certain resources in the eyes of consumers. The *1997 Campground Questionnaire* concluded with a contingent valuation question for those who had camped in an Oregon campground during the last year. It read as follows:

Consider the last camping trip that you took and the cost of that trip. Would you have paid \$x.00 more to go on the same trip, if the extra amount you paid were used to maintain and improve Oregon State Parks?

This sort of question is known as a contingent valuation question and is commonly used to estimate the value that a group of consumers place on one or several environmental goods that have some or all of the qualities of public goods (see Freeman, 1993).

To see how answers to the contingent valuation question can be used to estimate the amount that individual respondents are willing to pay for Oregon Parks, consider the following. If the level of service provided by Oregon Parks is denoted z , we can conceive of two different levels of service, a lower level z_0 and an improved level of service, say, z_1 . Let the level of well-being of the respondent be denoted by

$$U = U(z, I),$$

where I is income. Then the respondent answers the contingent valuation question in the affirmative as long as

$$U(z_1, I - \$x.00) \geq U(z_0, I),$$

This means that the respondent would enjoy the improved level of service from Oregon Parks more than she would enjoy the extra income that she would have if she did not pay the amount $\$x.00$ and have the lower level of Oregon Park service.

By varying the $\$x.00$, or the bid, over a range large enough to encompass the preferences of most respondents, we are able to statistically analyze the answers to the contingent valuation question and obtain estimates of the average value that respondents attach to maintenance and improvements to Oregon Parks. This is called average willingness to pay. For this survey, the range of bids selected followed Boyle (1995), following a preliminary survey. Twelve bids amounts were used bid amounts ranging from \$1.00 to \$90.00 and averaging \$18.85. One of these bids amounts was randomly assigned to each survey at the time of printing.

Following Cameron (1988), logistic regression was used to estimate the probability that respondents will accept the bid, $\$x.00$, that they are presented with. The estimation

results for four slightly different models and samples are presented in Tables 13 through 16. Table 13 presents the results where four variables are used to explain the probability of accepting the bid. All respondents who camped within the last year in Oregon and who answered the contingent valuation question were included in the sample.

Table 13: Contingent Valuation of OPRD parks: All Respondents

Respondents Who Camped and Answered Contingent Valuation Question		
Probability of Accepting a Bid and Willingness to pay		
VARIABLE	COEFFICIENT ESTIMATE	T-STATISTIC
Constant	1.75	2.03
Bid	-0.0337	-9.14
Number of Camping Trips	-0.002	-0.12
Oregon Resident	-0.978	-1.13
Washington Resident	-0.406	-0.46
SAMPLE SIZE = 846		
AVERAGE WILLINGNESS TO PAY = \$26.84 STANDARD DEVIATION = 7.37		

From Table 13, the only coefficients that are statistically significant are the constant and the bid coefficient. The bid coefficient is negative, as predicted by economic theory, and highly significant. The insignificance of the remaining coefficients indicates that Oregon and Washington residents are no more, nor less likely, to accept the bid than the few California respondents and that the number of camping trips in the last year is not an

important determinant of the probability of accepting the bid. For this sample, the average willingness to pay is \$26.84, with a standard deviation of 7.37.

If respondents answered “no” to the contingent valuation question they were directed to a follow-up question:

If you answered “no” to the last question, please tell us why.

If respondents answered that they did not feel that they could afford the bid or that the purpose of the bid did not hold enough value to them, this was considered a credible “no” response and is consistent with the spirit of the contingent valuation question. On the other hand, some respondents claimed that they answered “no” because they did not think that the State of Oregon should receive more funds, or that taxes were already high enough, or that they don’t use state parks. These responses are considered “protest no’s” and their inclusion may bias the statistical results. To account for this, those observations that may have “protest no’s” were eliminated and then the model was re-estimated. The results are presented in Table 14.

With this smaller sample of 690, the results are similar. Again, only the bid variable has a significant coefficient. However, the estimated average willingness to pay increased to \$42.56 with a standard error of 5.06.

Finally, two other statistical experiments were performed by including income as an explanatory variable in the analysis of the probability of accepting the bid. For these experiments, observations from those who did not respond to the household income question were eliminated. The results are presented in Tables 15 and 16.

Table 14: Contingent Valuation of OPRD Parks: All Non-protest Bids

Respondents who Camped and Answered Contingent Valuation Question and Did Not Give a "Protest No"		
Probability of Accepting Bid and Willingness to Pay		
VARIABLE	COEFFICIENT ESTIMATE	T-STATISTIC
Constant	2.70	2.31
Bid	-0.0357	-8.99
Number of Camping Trips	-0.013	-0.83
Oregon Resident	-1.185	-1.01
Washington Resident	-0.917	-0.77
SAMPLE SIZE = 690		
AVERAGE WILLINGNESS TO PAY = \$42.56 STANDARD DEVIATION = 5.06		

In both sets of results, the coefficient for the income variable is highly significant and positive. This indicates that the enjoyment of Oregon Parks is a normal good, that is, the usage of Oregon Parks increases as income increases. As before, the bid coefficient is negative and highly significant each time.

In spite of the highly significant coefficient for income, the main results are affected only slightly by the inclusion of this variable. The average willingness to pay is \$28.20 in Table 15 and increases to \$44.71 when respondents with "protest no's" are eliminated. These results are very close to those obtained initially and reported in Tables 13 and 14.

Table 15: Contingent Valuation of OPRD parks: all respondents with income parameter

Respondents who Camped and Answered Contingent Valuation Question and Answered Income Question		
Probability of Accepting Bid and Willingness to Pay		
VARIABLE	COEFFICIENT ESTIMATE	T-STATISTIC
Constant	1.03	1.41
Bid	-0.0335	-9.87
Number of Camping Trips	-0.0011	0.081
Oregon Resident	-0.784	-1.07
Washington Resident	-0.222	-0.29
Income	0.069	3.95
SAMPLE SIZE = 789		
AVERAGE WILLINGNESS TO PAY = \$28.20 STANDARD DEVIATION = 12.79		

How are these results to be interpreted? In a word, cautiously. On the one hand, the contingent valuation method is highly controversial. Some economists express doubts that the it can produce any meaningful results (Diamond and Hausman, 1994). Others argue that the techniques need to be sharpened and/or modified but that, as this is done, contingent valuation will become a valuable tool for obtaining information on the values that people hold towards aspects of goods that are not completely reflected in market

Table 16: Contingent Valuation of OPRD parks: All non-protest bids with income Parameter

Respondents who Camped and Answered Contingent Valuation Question and Did not Give a "Protest No" and Answered Income Question		
Probability of Accepting Bid and Willingness to Pay		
VARIABLE	COEFFICIENT ESTIMATE	T-STATISTIC
Constant	1.79	1.88
Bid	-0.0356	-9.22
Number of Camping Trips	-0.009	0.54
Oregon Resident	-0.941	-1.02
Washington Resident	-0.659	-0.699
Income	0.088	3.82
SAMPLE SIZE = 690		
AVERAGE WILLINGNESS TO PAY = \$44.71 STANDARD DEVIATION = 13.31		

transactions (Haneman, 1994). Still others take a practical approach and argue (Portney, 1994):

Whether the economics profession likes it or not, it seems inevitable that contingent valuation methods are going to play a role in public policy formulation. Both regulatory agencies and government offices responsible for natural resource damage assessment are making increasing use of it in their work. This has been reinforced by the Department of Interior and NOAA {National Oceanic and Atmospheric Administration}—proposed regulations sanctioning the use of the contingent valuation method. (p. 16, braces added).

The results here conform to economic theory and to common sense. They indicate that campers from Oregon, Washington and California value Oregon State parks and may be willing to pay additional amounts to see that the parks are maintained and improved.

8. Conclusions

The purpose of this project was to investigate various aspects of the campground market in Oregon, and especially to consider possible differences between the private and public campground sectors. To this end the project contains four parts. For Part 1 I looked at the supply side of the campground market. In Parts 2-4 I examined the demand side of the market through a variety of lenses.

For Part 1, an inventory of public and private campground sites in Oregon was accomplished. The inventory data consisted of a large sample of various kinds of campgrounds throughout the state and the ownership of these campgrounds (private, OPRD, and federal), the fees charged for the various camp sites, and the amenities available at the campgrounds. Using 692 data points from 367 campgrounds, statistical analyses of the determinants of camping fees were conducted. The focus was on the possible relationship between the fees charged and the ownership of the campground.

The major conclusion from Part 1 of the project are as follows. With one notable exception there does not seem to be a systematic difference between the fees charged at OPRD campgrounds and the fees charged at private campgrounds. The exception is OPRD fees for tent sites. These average \$1.79 more than fees for similar sites at private campgrounds. Private campground fees on the Oregon coast average \$1.08 higher than fees in other parts of the state. Tent fees for National Forest campgrounds in eastern Oregon average \$5.31 less than OPRD and private fees in the same region. Finally, the existence of some amenities at campgrounds translate into increases or decreases in fees. Those amenities that seem to carry fee premiums include handicap access, showers, ice

machines, and playgrounds. The amenities associated with lower fees freshwater swimming, saltwater swimming, and boating.

For Part 2, the *1997 Campground Questionnaire* was conducted. There were 1,696 completed questionnaires obtained from outdoor enthusiasts in Oregon, Washington, and California. Of these slightly over half had gone camping at least once in Oregon in the past 18 months. The survey data provide a rich source of information on the type of people who camp in Oregon, their preferences, and the decisions that they make. The major conclusions from the survey responses are as follows.

From 1,696 completed questionnaires we can conclude that there are some contrasting characteristics between users of private and public campgrounds. First, the majority of survey participants (71%) answered that the last campground at which they had stayed in Oregon was a public sector campground. Private campgrounds entertained about 17% of the survey participants within the last year. The campers that patronized public campgrounds used tent sites predominantly while full hookup sites were the most favored site at private campgrounds. Overall, private campgrounds were dominated by more developed site users, such as those who require RV hookups, whereas campers at the public sector used the more primitive sites. Patrons of private campgrounds also favored facilities that supplemented developed site use (i.e. showers and sewage disposal), but public campground patrons preferred basic facilities like fire rings, grills, and tables.

Socioeconomic data obtained from questionnaire respondents indicates that there are differences in the users of public and private campgrounds in terms of age and working status. The average age of public sector campers was 43, but the average age of private campground patrons was older at 51 years. Furthermore, although about 70% of campers

for both private and public campgrounds were comprised of full time workers and retired persons, the proportions of each group were different between sectors. Whereas 53% of the respondents who stayed at a public campgrounds work full time, only 38% of private campground users were full time employees. Private campgrounds received a greater percentage (34%) of retired citizens compared to public campgrounds (16%).

In Part 3 of the project, the survey data regarding the respondents' last camping trips in Oregon (or lack thereof) was used to investigate four important types of choices made by campers: the choice to go camping or not; the choice of how many days to camp; the choice of which type of camping site to use; and the choice between a public and a private campground. The major conclusions from Part 3 are as follows. First, camping in Oregon is a popular activity among Oregonians. As expected, it is somewhat less popular with Washington residents. The popularity of camping does not vary with income levels, age, or working status. The only exception is students, who tend to camp less.

Second, when the decision of how many days to camp is analyzed some differences emerge. Fully employed people are more likely to take shorter camping trips, while retired people and part-time employed people tend to take longer trips. Age is also positively correlated with the number of camping days.

Third, when the decision of type of camping site is analyzed, prices become important. When the price of a certain type of campsite increases, holding everything else constant, people tend to substitute away from one type of campsite to others. Users of premium sites are the most prone to shifting to other types of sites, followed by water hookups, group, and cabin and yurts. Tent site users are the least likely to shift. Tent sites also seem to be the second choice for the users of all other types of campsite. That is, if

fees for other types of camping sites were to increase, the majority of the campers who switch would move to a tent site. As expected, the ownership of recreation vehicles and/or travel trailers also strongly influences the choice of campsite. The use of reservations is important to full hookup and tent and yurt users, but not to the users of other types of sites.

Fourth, when the decision between a public or private campground is considered prices are also important. The type of camper who is most sensitive to prices in the public/private choice is the RV owner. The camper who is least sensitive to prices is the tent owner. Users of reservations do not appear to be any more or less sensitive to price than those who do not use reservations.

Part 4 of the project is the exploration into the extent to which our survey respondents may value of ORPD parks in ways that cannot be measured by information on park usage. Following the practice of many economists in many circumstances, a contingent valuation question was asked of our survey respondents. The results suggest that campers would, on average, be willing to pay \$44.71 more than they currently pay for a camping trip if the payment were used to improve and maintain ORPD parks. The major conclusion from Part 1 are as follows.

- With one notable exception there does not seem to be a systematic difference between the fees charged at ORPD campgrounds and the fees charged at private campgrounds.
- The exception is ORPD fees for tent sites. These average \$1.79 more than fees for similar sites at private campgrounds.

- Private campground fees on the Oregon coast average \$1.08 higher than fees in other parts of the state.
- However, tent fees for National Forest campgrounds in eastern Oregon average \$5.31 less than OPRD and private fees in the same region.
- Finally, the existence of some amenities at campgrounds translate into increases or decreases in fees. Those amenities that seem to carry fee premiums include handicap access, showers, ice machines, and playgrounds. The amenities associated with lower fees freshwater swimming, saltwater swimming, and boating.

The major conclusions from the survey responses are as follows.

- The majority of survey participants (71%) answered that the last campground at which they had stayed in Oregon was a public sector campground. Private campgrounds entertained about 17% of the survey participants within the last year.
- The campers that patronized public campgrounds used tent sites predominantly while full hookup sites were the most favored site at private campgrounds. Overall, private campgrounds were dominated by more developed site users, such as those who require RV hookups, whereas campers at the public sector used the more primitive sites.
- Patrons of private campgrounds also favored facilities that supplemented developed site use (i.e. showers and sewage disposal), but public campground patrons preferred basic facilities like fire rings, grills, and tables.
- Socioeconomic data obtained from questionnaire respondents indicates that there are differences in the users of public and private campgrounds in terms of age and

working status. The average age of public sector campers was 43, but the average age of private campground patrons was older at 51 years.

- Although roughly 70% of campers for both private and public campgrounds were comprised of full time workers and retired persons, the proportions of each group were different between sectors. Whereas 53% of the respondents who stayed at a public campgrounds work full time, only 38% of private campground users were full time employees. Private campgrounds received a greater percentage (34%) of retired citizens compared to public campgrounds (16%).

The major conclusions from Part 3 are as follows.

- Camping in Oregon is a popular activity among Oregonians. As expected, it is somewhat less popular with Washington residents. The popularity of camping does not vary with income levels, age, or working status. The only exception is students, who tend to camp less.
- When the decision of how many days to camp is analyzed some differences emerge. Fully employed people are more likely to take shorter camping trips, while retired people and part-time employed people tend to take longer trips. Age is also positively correlated with the number of camping days.
- When the decision of the type of camp site is analyzed, prices become important. When the price of a certain type of campsite increases, holding everything else constant, people tend to substitute away from one type of campsite to others. Users of premium sites are the most prone to shifting to other types of sites, followed by water hookups, group, and cabin and yurts. While tent site users are the least likely to shift. Tent sites also seem to be the second choice for the users

of all other types of campsite. The use of reservations is important to full hookup and tent and yurt users, but not to the users of other types of sites.

- When the decision between a public or private campground is considered, prices are also important. The type of camper who is most sensitive to prices in the public/private choice is the RV owner. The camper who is least sensitive to prices is the tent owner. Users of reservations do not appear to be any more or less sensitive to price than those who do not use reservations.

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Appendices

Appendix A: Explanatory Variables

1. Constant	Autonomous fee charged with no facilities or activities.
2. Water-elec Private	Water and electric hookup fee for private campgrounds.
3. Tent Private	Tent site fee charged at private campgrounds.
4. Primitive	Primitive site fee charged at all campgrounds.
5. Premier	Premier site fee charged at all campgrounds.
6. Full hook State	Intercept shifter variable for full hookups at state campgrounds.
7. Full hook. NF	Intercept shifter variable for full hookups at National Forest campgrounds.
8. Water elec. State	Intercept shifter variable for water-electric hookups at state campgrounds.
9. Water elec. NF	Intercept shifter variable for water-electric hookups at National Forest campgrounds.
10. Tent State	Intercept shifter variable for state tent sites.
11. Tent NF	Intercept shifter variable for National Forest tent sites.
12. Private coast	Intercept shifter variable for private campgrounds along the coast regions.
13. Coast State	Intercept shifter variable for state campgrounds along the coast regions.
14. Coast NF	Intercept shifter variable for National Forest campgrounds along the coast regions.
15. Private East	Intercept shifter variable for private campgrounds in the eastern Oregon region.
16. East State	Intercept shifter variable for state campgrounds in the eastern Oregon region.
17. East NF	Intercept shifter variable for National Forest campgrounds in the eastern Oregon region.
18. Sites	Number of sites available at the campground.
19. Non-flush toilets	Non-flush toilets.
20. Handicap	Handicap access bathrooms and/or sites.
21. Showers	Showers.
22. Grocery	Grocery store on site.
23. Ice	Ice machine.
24. Tables	Tables.
25. Fire ring/grills	Fire rings and/or grills.
26. Wood	Firewood for sale.
27. Sewage/waste	Sewage and/or waste disposal.
28. Drinking water	Drinking water.
29. Fresh H ₂ O swim	Freshwater swimming.
30. Salt H ₂ O swim	Saltwater swimming.
31. Boating	Boating allowed.
32. Canoeing	Canoeing.
33. Ramp	Ramp.
34. Dock	Dock.
35. Boat rental	Motor and/or paddle boat rental.
36. Fresh fish	Freshwater fishing.
37. Salt fish	Saltwater fishing.
38. Playground	Playground.
39. Hiking trail	Hiking trail.

Appendix B: Questionnaire and Letter of Intent: First Mailing

November 28, 1997

Dear Camping Enthusiast:

Do you enjoy camping in Oregon? If so, this is your chance to take part in a survey that has an important role in shaping camping opportunities in the Beaver State.

Over five million people stay overnight at one of Oregon's campgrounds each year. With so many campers, it is hard to pin down the services and amenities that are important. Managers of the Oregon state park system (one of the key suppliers of camping opportunities in the state) want to establish the best services possible to ensure satisfied and returning guests.

We need your help to reach this goal. The Department of Economics at Oregon State University and the Oregon Parks and Recreation Department (OPRD) are conducting a survey in order to assess your preferences when choosing a campground in Oregon. This information will help OPRD better serve you and others with quality campgrounds and reputable campground services.

You are one of a select few chosen to participate in this survey. Even if you primarily patronize private or federal campgrounds rather than state park sites, we're interested in your thoughts. Please fill out the enclosed questionnaire and return it in the self addressed stamped envelope provided.

As a token of our appreciation, we will send you a complimentary copy of the *Oregon State Parks Guide* when you return your completed questionnaire to us. The guide is a full-color booklet covering all 200+ state parks.

All returned questionnaires and names will remain strictly confidential. Your questionnaire has an identification number only so we can check your name off our mailing list once we have received your completed questionnaire. No names will be mentioned in any report derived from this study. Your participation in this study is voluntary. However, because only a select few camping enthusiasts will receive a questionnaire, your participation is vital. If you have any questions regarding this questionnaire please call Lydia Newton at 541-737-7717.

This is your chance to help provide important consumer information for Oregon campgrounds. Please show your support and take a few moments to fill out this questionnaire.

Thank you for your assistance. We will send your copy of the *Oregon State Parks Guide* in the mail after we receive your questionnaire. Please allow 4 - 5 weeks for delivery.

Sincerely,

Lydia Newton
Project Coordinator

1997 Campground Questionnaire

Please take a moment to fill out the following questionnaire. Your responses will help us understand what is important when you visit a campground in Oregon. Your returned questionnaire and name will be kept confidential. Please fill out and return this survey today. Thank you and remember to look for your free copy of the *Oregon State Parks Guide* in the mail.

Think for a moment about the enjoyment that you receive from your outdoor activities.

1) From the following list, rank the activities you participate in while camping. Use the following numbers to rank each activity: 0 = do not participate in this activity; 1 = seldom participate; 2 = often participate; 3 = always participate.

Hiking _____	Swim/sunbathing _____
Boating _____	Wildlife viewing _____
Biking _____	Sightseeing _____
Bird watching _____	Rafting _____
Fishing _____	Hunting _____
Canoeing _____	Walking _____
Snowmobiling _____	Relaxing _____
Downhill skiing _____	X-Country skiing _____
Beachcombing _____	Climbing/mountaineering _____
Attending interpretive programs _____	Other(Please specify) _____

2) What types of recreational equipment do you own? Circle all that apply.

- | | |
|------------------------|--------------------------|
| 1. Travel trailer | 9. Recreational vehicle |
| 2. Pick-up camper | 10. Tent |
| 3. Van | 11. Camp stove |
| 4. Skis | 12. Boat, raft, canoe |
| 5. All terrain vehicle | 13. Hiking boots/shoes |
| 6. Firearm or bow | 14. Animal/plant guides |
| 7. Water skis | 15. Fishing rod & reel |
| 8. Binoculars | 16. Other(specify) _____ |

3) Did you stay overnight at any campgrounds in Oregon between September 3, 1996 and the present? Circle one.

1. NO If you have not camped during this time, skip to question number 22 on page 4.
2. YES PLEASE CONTINUE

4) During this same time frame, how many times have you gone camping in total?

Total number of times _____

Please answer the remaining questions about your last camping trip to Oregon.

5) What were the purposes of this trip? Circle all that are appropriate.

- | | | |
|-------------|----------------------|----------------------------------|
| 1. Business | 2. Pleasure/vacation | 3. Visiting relatives or friends |
|-------------|----------------------|----------------------------------|

6) When did you take your last camping trip to Oregon? *Circle one.*

1. September 1996 through May 1997
2. June 1997 through August 1997
3. September 1997 through the present

7) During your last visit to an Oregon campground, how many immediate family members, other relatives, and friends were with you, not counting yourself?

Number in immediate family _____ Number of friends _____
 Number of other relatives _____

8) How many days were you away from home during your last Oregon camping trip?

Number of days _____

9) Of these days, how many were regular days off from work, such as a weekend or an official holiday?

Number of days _____

10) Was this trip taken while you were on a paid vacation from work? *Circle one.*

1. Yes
2. No

For the remaining questions, please refer to the last campground in which you stayed during your last camping trip in Oregon.

11) Was this campground privately owned or publicly owned? *Circle one.*

1. Privately owned
 2. Publicly owned
 3. Don't know
- (skip to no.13) (skip to no.13)

12) If it was publicly owned, circle the agency that managed the campground. *Circle one.*

1. State Park
2. National Forest
3. BLM
4. Army Corps of Engineers
5. Don't know
6. Other _____

13) What was the fee per day for this campground? *Check the closest.*

\$0.00 _____ \$5-9.99 _____ \$15-19.99 _____ \$25-29.99 _____ \$35-39.99 _____
 \$1-4.99 _____ \$10-14.99 _____ \$20-24.99 _____ \$30-34.99 _____ Over \$40.00 _____

14) Did you make reservations to stay overnight at the campground? *Circle one.*

1. Yes
2. No

15) For the last Oregon campground you stayed in, what type of campsite did you occupy? *Circle all that apply.*

- | | |
|--|---------------------------|
| 1. Full Hook-up(includes water, electric, and sewer) | 7. Yurt rental |
| 2. Water & electric hook-up | 8. Group site |
| 3. Water hook-up | 9. Premium site |
| 4. Cabin rental | 5. Tent/car camping |
| | 6. Primitive/walk-in site |

16) For the last Oregon campground you stayed in, what types of facilities were available? *Circle all that were available.*

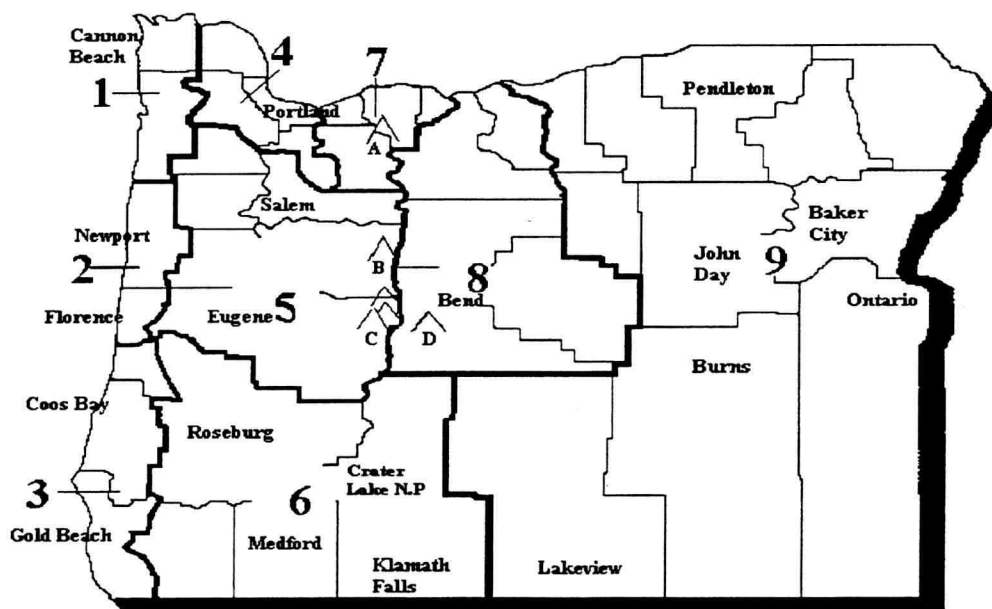
- | | | |
|-------------------|--------------------|-------------------------|
| 1. Drinking water | 5. Handicap access | 10. Fire wood for sale |
| 2. Flush toilets | 6. Tables | 11. Fire rings/grills |
| 3. Showers | 7. On-site host | 12. Sewage/waste |
| 4. Ice machine | 8. Grocery store | 13. Boat launch/ramp |
| | 9. Laundry | 14. Campground security |

17) At this last campground, in which activities did you and your companions participate? *Circle all that apply.*

- | | | |
|------------------|-------------------------------------|--------------------------|
| 1. Bird watching | 8. Sight seeing | 15. Relaxing |
| 2. Biking | 9. Skiing/snowboarding | 16. Picnicking |
| 3. Boating | 10. Beach combing | 17. Climb/mountaineering |
| 4. Hiking | 11. Snowmobiling | 18. Rafting |
| 5. Canoeing | 12. Viewing wildlife | 19. Walking |
| 6. Hunting | 13. Swimming/sunbathing | 20. Other(specify)_____ |
| 7. Fishing | 14. Attending interpretive programs | |

18) Please take a moment and look at the Oregon map below. On your last camping trip, where was your last campground located? *Circle one.*

- | | |
|---------------------------|-----------------------|
| 1 NORTH COAST | 2 CENTRAL COAST |
| 3 SOUTH COAST | 4 PORTLAND/METRO AREA |
| 5 WILLAMETTE VALLEY | 6 SOUTH OREGON |
| 7 MT. HOOD/COLUMBIA GORGE | 8 CENTRAL OREGON |
| 9 EASTERN OREGON | |



A=Mt.Hood; B=Mt. Jefferson; C=The Three Sisters; D=Mt. Bachelor

19) We want to know where you camped. What was the closest town, designated trailhead, park, or natural feature (for example a mountain, lake, or river) to this campground?

Town/city _____ Natural feature _____
 Trailhead _____ Park _____ Don't Know _____

20) Take a look at the following list of facilities. Circle the three campground facilities that are most important to you.

- | | | |
|------------------|--------------------------|-------------------------|
| 1. Showers | 5. Handicap access | 10. Fire wood for sale |
| 2. Ice machine | 6. Fire rings/grills | 11. Campground security |
| 3. Grocery store | 7. On-site host | 12. Boat launch/ramp |
| 4. Tables | 8. Sewage/waste disposal | 13. Drinking water |
| | 9. Flush toilets | 14. Laundry |
| | 6. | |

21) Among which of the following natural surroundings/settings are you most likely to camp? Circle all that apply.

- | | | |
|----------------------|--------------------|------------------|
| 1. Lake or reservoir | 3. River or stream | 5. Wooded area |
| 2. Beach/sand dunes | 4. Rural/open area | 6. Urban area |
| | | 7. No preference |

Please tell us something about yourself.

22) You are? 1. Male 2. Female

23) Your age is? _____ years

24) Besides you, who currently lives in your household?

Spouse or partner _____ Friends and others (How many?) _____
 Children (How many?) _____ Extended family members (How many?) _____

25) What will your household income be before taxes this year (1997)? Circle the closest one.

- | | | |
|--------------------|---------------------|-----------------------|
| 1. UNDER \$10,000 | 9. \$45,000-49,999 | 17. \$85,000-89,999 |
| 2. \$10,000-14,999 | 10. \$50,000-54,999 | 18. \$90,000-94,999 |
| 3. \$15,000-19,999 | 11. \$55,000-59,999 | 19. \$95,000-99,999 |
| 4. \$20,000-24,999 | 12. \$60,000-64,999 | 20. \$100,000-109,999 |
| 5. \$25,000-29,999 | 13. \$65,000-69,999 | 21. \$110,000-119,999 |
| 6. \$30,000-34,999 | 14. \$70,000-74,999 | 22. \$120,000-129,999 |
| 7. \$35,000-39,999 | 15. \$75,000-79,999 | 23. \$130,000-139,999 |
| 8. \$40,000-44,999 | 16. \$80,000-84,999 | 24. OVER \$140,000 |

26) What is your working status? Circle all that apply.

- | | | |
|-------------------------|------------------------|------------|
| 1. Full-time employment | 3. Unemployed | 5. Retired |
| 2. Part-time employment | 4. Household work only | 6. Student |

27) What is the highest level of education you have completed? Circle the most appropriate.

1. Eight grade or less
2. Some high school
3. Completed high school or GED
4. Some college
5. Bachelor's degree
6. Some graduate or professional school
7. Graduate or professional degree
8. Other _____

28) Consider the last camping trip you took and the cost of that trip. Would you have paid \$XX.00 more to go on the same trip, if the extra amount you paid were used to maintain and improve Oregon State Parks?

1. Yes 2. No

29. If you answered "no" to the last question, please tell us why.

Thank you for your help. Please return this booklet in the addressed, postage paid envelope and drop it in the mail. We will send your *Oregon State Parks Guide* in the mail soon. Thank you for your time.

Appendix C: Letter of Intent: Second Mailing

January 15, 1998

Dear Camping Enthusiast:

About five weeks ago we sent you a questionnaire about camping in the beautiful state of Oregon. As of today, we have not received a completed questionnaire from you. We understand that it is a busy time of the year and so we are offering you a second chance to respond.

To show our appreciation for your contribution, we will send you a free copy of the *Oregon State Parks Guide* in the mail after receiving your completed questionnaire. We have enclosed a replacement questionnaire and a postage paid return envelope for your convenience.

This project is being conducted by Oregon State University's *Department of Economics* and the *Oregon Parks and Recreation Department (OPRD)* to gather information about what amenities camper's seek when they camp. The information will help OPRD better manage Oregon state parks.

Although your participation is voluntary, your responses are valuable for this study and for the future success of the Oregon state parks system. Because we have contacted only a small group of people for this information we would genuinely appreciate hearing from you.

Again, we would like to affirm that all names and questionnaire responses are confidential. If you have any questions, please call Lydia Newton at (541)737 - 1711.

Thank you for your time. You will receive your *Oregon State Parks Guide* in the mail approximately 5-6 weeks after we hear from you.

Sincerely,

Lydia Newton
Project Coordinator