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DEVELOPMENT OF SPENDING PROFILES
FOR RECREATION VISITORS
TO CORPS OF ENGINEERS PROJECTS

by

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This report presents the process used to develop visitor spending profiles for visitors to US Army Corps of Engineers (CE) projects. Basic economic impact analysis principles and applications are presented in the context of the development of visitor spending profiles.

The survey of 12 CE projects yielded 3,144 onsite interviews that measured recreation use patterns and spending on durable goods. Trip spending was measured using a mailback questionnaire distributed to onsite interview respondents. The mailback survey yielded 2,190 completed questionnaires, resulting in a response rate of 70 percent.

Visitor spending profiles were developed for major CE user groups that can serve as the basis for future economic impact analyses. Visitor spending estimates were developed for the 12 CE study sites, all CE Divisions, and all CE projects nationally.

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PREFACE

The work reported herein was conducted as part of the Natural Resources Research Program (NRRP). The NRRP is sponsored by the Headquarters, US Army Corps of Engineers (HQUSACE), and is assigned to the US Army Engineer Waterways Experiment Station (WES) under the purview of the Environmental Laboratory (EL). Funding was provided under Department of the Army Appropriation No. 96X3121, General Investigation. The NRRP is managed under the Environmental Resources Research and Assistance Programs (ERRAP), Mr. J. L. Decell, Manager. Dr. A. J. Anderson was Assistant Manager, ERRAP, for the NRRP. Technical Monitors during this study were Mr. Robert Daniel and Ms. Judy Rice, HQUSACE.

This report was prepared by Dr. Dennis B. Propst, Dr. Daniel J. Stynes, and Mr. Ju Hee Lee of the Department of Park and Recreation Resources, Michigan State University, and Mr. R. Scott Jackson of the EL.

The study was supervised by Mr. H. Roger Hamilton, Chief, Resource Analysis Group. General supervision was provided by Dr. Conrad J. Kirby, Chief, Environmental Resources Division, EL, and Dr. John Harrison, Director, EL. Technical reviewers were Mr. William J. Hansen of the Institute for Water Resources and Mses. Tere DeMoss and Kathleen Perales of the EL. In addition, Ms. DeMoss provided significant technical support in preparation of the report.

At the time of publication of this report, Director of WES was Dr. Robert W. Whalin. Commander and Deputy Director was COL Leonard G. Hassell, EN.

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PART I: INTRODUCTION

Background

Corps of Engineers (CE) resource managers are often faced with alloca-
tion decisions that affect the mix of services produced by Corps projects.
While allocation decisions are primarily driven by the need to maximize
national economic development benefits, consideration must be given to the
regional effects of these decisions. For recreational use of Corps projects,
these regional effects can be expressed in terms of the economic benefits
derived from spending by visitors engaged in recreation.

The goal of this report is to assess visitor expenditures associated
with the recreational use of a representative sample of CE projects in the
United States. The results of this work will be used as part of a process of
assessing the economic impact of recreation opportunities at CE projects.

Purpose and Scope

Total visitor spending for both trip and durable goods and services was
estimated for a sample of 12 CE projects. Total spending estimates were
derived through accomplishment of the primary purpose of this study: to
develop nationally representative spending "profiles" for various subsegments
of visitors to CE projects. Attempts were made to define these visitor
subsegments so that they are homogeneous with respect to their spending pat-
terns. Each subsegment profile consists of average spending for various trip
and durable goods items. In the instrumentation, these items were defined so
that they could be readily margined and bridged to the specific economic sec-
tors contained in the US Forest Service's input-output model MICRO-IMPLAN.
This format will allow for estimation of the indirect, induced, and total
economic effects of both actual and projected recreation spending.

Summary of Key Results

Findings indicate that, for the 12 CE projects in the sample, total trip spending for 1989-90 was $738 million, and total durable goods spending attributable to the 12 projects was $1.6 billion. Extrapolating to all 460 CE projects nationwide, total trip spending was $6.2 billion, and spending for durable goods attributable to CE projects was $15 billion.

Proposed is a system for estimating economic impacts for any nonsampled CE project based on the spending profiles for visitor subsegments defined in this study. Spending may be estimated in 33 trip spending categories and four major categories of durable goods. These spending estimates for nonsampled projects may then be subjected to economic impact analysis.

Economic Impact Analysis

Economic impact analysis (EIA) is a broad term given to a set of concepts and procedures that attempt to estimate change in various economic parameters, usually income and employment, as a result of the implementation of a policy or management alternative. In terms of recreation management and planning, economic impact analysis is used to assess what happens to jobs and income when visitors purchase goods and services related to trips away from home. With EIA, current employment and income effects can be derived and then compared to a proposed policy change, such as the transfer of developed campground operations to non-Federal sectors. The effects of such policies can be addressed at both local and regional levels. Input-output analysis, a form of EIA, permits these effects to be assessed on an industry-by-industry basis.

Importance to CE recreation management

Recreation management is a complex process that involves more than routine operations and maintenance. In a broad context, recreation management means professional public service in which an attempt is made to maximize positive outcomes and minimize negative ones. Many regions of the United States depend, in varying amounts, on recreational and tourism spending to stimulate growth. Local leaders are increasingly recognizing the role of public recreation opportunities in enhancing such growth. To a large degree, public recreation managers control the nature and extent of recreation opportunities. Recreation management activities affect the type and amount of visitation a CE project receives. Changes in management activities produce

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changes in visitation which, in turn, alter visitor spending patterns. If substantial enough, altered spending patterns can greatly influence local economies. Economic impact analysis helps show the manager how to maximize two positive community outcomes: employment and household income. In other words, EIA helps demonstrate the "return on investment" to governments, communities, and the private sector as a result of changes in expenditures made by recreation visitors.

Furthermore, the CE has been encouraged to emphasize the participation of non-Federal sectors in providing recreation opportunities at CE projects. The non-Federal partners that the CE is attempting to encourage are interested in the economic effects of their involvement. Economic impact analysis can demonstrate the degree of economic activity in various sectors generated by additional non-Federal or Federal investment.

Difference between visitor
benefits and economic impacts

Economic benefit/cost analysis and economic impact analysis are two of the most basic tools economists use. Economic benefits and costs are microeconomic concepts reflecting how governmental agencies make decisions concerning which developments or programs to fund. Economic impacts are macroeconomic concerns about the aggregate number of jobs and amount of income a region can expect from economic development of various industries such as recreation and tourism. Although they are often confused, benefits and impacts have separate and distinct meanings.

The CE has traditionally evaluated proposed recreation development in terms of direct benefits to the visitor as defined in the National Economic Development Account of the Water Resources Council's Principles and Guidelines (US Water Resources Council 1983). According to these guidelines, net benefits are defined as the total amount an individual is willing to pay to engage in a recreational activity minus the cost incurred by the visitor to participate in that activity. "Cost" to participate is defined as user fees associated with the use of a site. Thus, costs other than user fees (e.g., expenses for equipment, food, gasoline, or lodging) are not included as benefits. The unit day, travel cost, and contingent valuation methods are accepted means of estimating visitor benefits (Walsh 1986). Benefits derived by these methods are then used in benefit-cost analyses of government investments.

"Impacts" include recreationists' expenditures other than use or activity fees. These expenditures include variable trip costs (e.g. food, lodging,

gasoline) and spending for durable items (equipment, recreation vehicles, etc.) that are used in conjunction with a recreation trip to a specific site. Spending on these items has "direct" impacts on various economic sectors (hotels, restaurants, gasoline stations, etc.) and "indirect" impacts that accrue to other sectors of communities and regions in terms of added income, employment, taxes, and revenues.

The important point is that the purposes of EIA are somewhat different than the purposes of benefit-cost analysis. Benefit-cost analysis is used to measure the efficiency of business decisions or government projects. Its strength lies in its examination of both benefits and costs. Economic impact assessments generally do not assess efficiency. Economic impact analyses measure <u>changes</u> in income and employment as a result of changes in economic activity. Furthermore, economic impact analysis procedures, especially input-output analysis, consider complex economic interdependencies; benefit-cost analysis does not. Furthermore, an EIA examines direct, indirect, and induced impacts, or the entire flow of an injection of visitor expenditures as they reverberate throughout an economy.

<u>Determining economic impacts</u>

To exemplify the EIA process, assume that a family on vacation to their favorite CE lake spends $20 on gasoline upon arrival at their destination. In EIA, the $20 spent on gasoline near the lake is counted as **sales** to the gasoline station. Gasoline purchases by all visitors to the lake yield the regional gasoline sector's total amount of sales to tourists.

In an EIA, the focus is not the amount of sales as such, but rather the impact of those sales on income and employment. Three elements contribute to the total impact of a given amount of sales:

> Direct impact: The first-round effect of tourist spending (e.g., income to gasoline station owners, increase in gasoline station sales, and wages paid to gasoline station employees per dollar of tourist spending).

> Indirect impact: The ripple effect of additional rounds of respending of the initial tourist dollars (e.g., the effects of purchases of additional goods and services by other firms in other sectors, such as transportation and oil refineries).

> induced impact: Further ripple effects created by employees in impacted firms spending some of their wages in other businesses (e.g., gasoline station employees spend part of their wages in local firms whose owners and employees also spend in a given area).

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The **total impact** equals the direct plus indirect plus induced effects.

Tourist spending is often desirable because it injects new dollars into a region. "New dollars" are defined according to the origin of the person spending the money. If the person is not a resident of the region, the amount spent in that region represents an injection of new dollars and can properly be subjected to economic impact analysis. Resident spending on locally produced tourism goods and services, while desirable, does not represent the circulation of new money and is generally not counted as new dollars or direct impact.[1] Thus, to determine what to include as the injection of new money, the boundaries of the study region must be carefully delineated.

Once the region is defined, the effects of the respending of new dollars can be expressed through the use of **multipliers**. The size of the multiplier reflects the impact of the various rounds of respending of visitor dollars before those dollars leak entirely from the region.

A multiplier expresses the impact of a given investment in terms of change in employment, income, or output (sales) in a region. The key word is change. Multipliers may be used to guide investment decision-making by demonstrating the income and employment changes resulting from alternative policy scenarios.

There is **no single tourism multiplier** that will apply to all situations in all regions. Richardson (1985) discusses at least 14 different types of multipliers and their mathematical formulae and interpretations, and the advanced reader is referred to that reference. If the wrong multiplier is used, the resulting economic impacts can be in error by millions of dollars in income and hundreds of jobs even for a relatively small region.

Importance of visitor
spending estimates to EIA

In estimating the economic impacts of recreation/tourism spending, the components of the following general equation (Tyrrell 1985) must be determined:

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[1] An exception would be when the management action causes a change in resident visitor behavior that results either in the transfer of dollars now being spent outside the region back into the region (positive impact) or the transfer of dollars now being spent inside the region to outside the region (negative impact).

$$TEI = V*S*M \qquad (1)$$

where

TEI = total economic impact (output, income, or jobs, usually)

V = number of visitors in a given segment, where segments are defined according to similarity in spending patterns (nonresident boaters, campers, people just visiting for the day, overnight visitors, festival attendees, etc.)

S = average spending by each of these groups

M = multiplier that expresses the change in the amount of employment or income

Errors in any of the multiplicands can cause large error in the estimates of total economic impacts.

The rationale for segmenting visitors into distinct spending-related subgroups is to reduce the amount of error when expenditures are estimated in surveys of a sample of the population in question (Stynes and Chung 1986, Tyrrell 1985). Another reason for segmenting visitors is to examine the relative differences in the expenditures of different subgroups, such as local day users versus nonresident boaters.

Keynesian-type multipliers are the appropriate types of multipliers to use for $\underline{M}$ in the above equation (Archer 1984). The multiplier $\underline{M}$ is defined by the following expression:

$$M = \frac{\Delta EP}{\Delta S} \qquad (2)$$

where

$\Delta\underline{EP}$ = change in economic parameter (income, employment, value added, etc.) that arises from an additional economic stimulus, such as tourism

$\Delta\underline{S}$ = injection, or change in tourist spending that brought about the additional income

These multipliers may be calculated by utilizing either relatively simple spreadsheet programs or more complex input-output modeling software. The advantage of input-output analysis is the ability to show employment and

income effects on an economic sector by economic sector basis, thus demonstrating complex economic interdependencies.

Preparing data for input-output model

Input-output analysis requires a logical sequence of four steps to estimate economic impacts. First, the analyst must obtain a reliable set of "expenditure profiles" that represent the point of final demand or final consumption. These profiles are vectors of spending averages associated with various goods and services purchased by a given segment of outdoor recreationists, for example, the average amount a nonresident camper spends on gasoline per trip. Complicating input-output analysis for recreation and tourism is the fact that visitors buy goods and services from a wide variety of sectors. The total economic impact will depend both on the total amount spent as well as which sectors receive this spending. The total amount of spending and its distribution among sectors varies according to recreation subgroup. For example, day users who do not engage in boating activities spend less in total and in different economic sectors than, say, nonresident boaters who stay overnight in hotels. For this reason, it is necessary to capture this variation in spending by developing expenditure profiles for different visitor subgroups.

The second step in calculating economic impacts using input-output analysis is to convert spending data into constant dollars. The analyst must convert the expenditure information into dollars that represent the year upon which the model's interindustry sales are based. For example, 1985 is the current base year for the US Forest Service's MICRO-IMPLAN, an input-output model that is receiving widespread use in the United States.

Third, the analyst must expand the expenditure profile averages, based on a survey sample, to the entire population of recreationists (CE visitors in this case). This third step requires reliable estimates of the number of visitors in a particular category.

Fourth, the analyst is required to "margin" and "bridge" expenditures to the economic sectors upon which the model is based. "Margining" requires the analyst to apportion recreation expenditures among retail, wholesale, transportation, and production sectors. Only markups are allocated to retail, wholesale, and transportation sectors. The remaining amount, production cost, is "bridged" to the industrial sectors that ultimately produce the good or service. An example of this margining and bridging process as applied to CE

visitor spending data from this study can be found in Propst and Siverts (1990).

The more detailed the visitor expenditure items are, the more precisely the analyst can build bridges to the model's sectors. For example, visitor spending for food can be more precisely allocated to a region's economic sectors if visitors are asked to report how much they spent for meals in restaurants versus grocery items instead of the aggregate question, "How much did you spend for food?" For this reason, the expenditure items in the questionnaire used in this study are relatively detailed.

PART II: STUDY PROCEDURES

The development of visitor spending profiles that are necessary in the economic impact analysis process requires visitor spending surveys at representative CE projects. This part describes the process of site selection, visitor segmentation, and survey design.

Survey Site Selection

The development of visitor spending profiles to support economic impact studies of CE projects nationally required the selection of Corps projects that represent the full range of spending behavior by CE visitors. The goal was to develop spending profiles that portray spending behavior in three ways: the total amount spent on a recreation trip, the distribution of that spending among economic sectors, and the geographic location of spending in relation to a given CE project.

The percentage of visitor spending that accrues to the local area is influenced by the complexity of the local economy (Archer 1977, 1984; McIntosh and Goeldner 1984; Murphy 1985). For instance, visitors to CE projects in remote locations with few opportunities for local spending will make a greater proportion of their purchases outside the local area compared to visitors to CE projects with numerous local retail establishments.

Project selection was coordinated with CE Division, District, and project staff. Priority was given to CE projects that

a. Received recreation use from a broad range of user segments.

b. Differed in adjacent county population sizes (assuming that variation in population size is an index of opportunities for local spending).

c. Were located in different geographic regions of the continental United States.

d. Varied according to lake size and degree of recreation development.

Figure 1 shows the geographic distribution of the projects selected for spending surveys. Table 1 summarizes characteristics of each project. J. Percy Priest Lake, Lake Sidney Lanier, McNary Lock and Dam, and the

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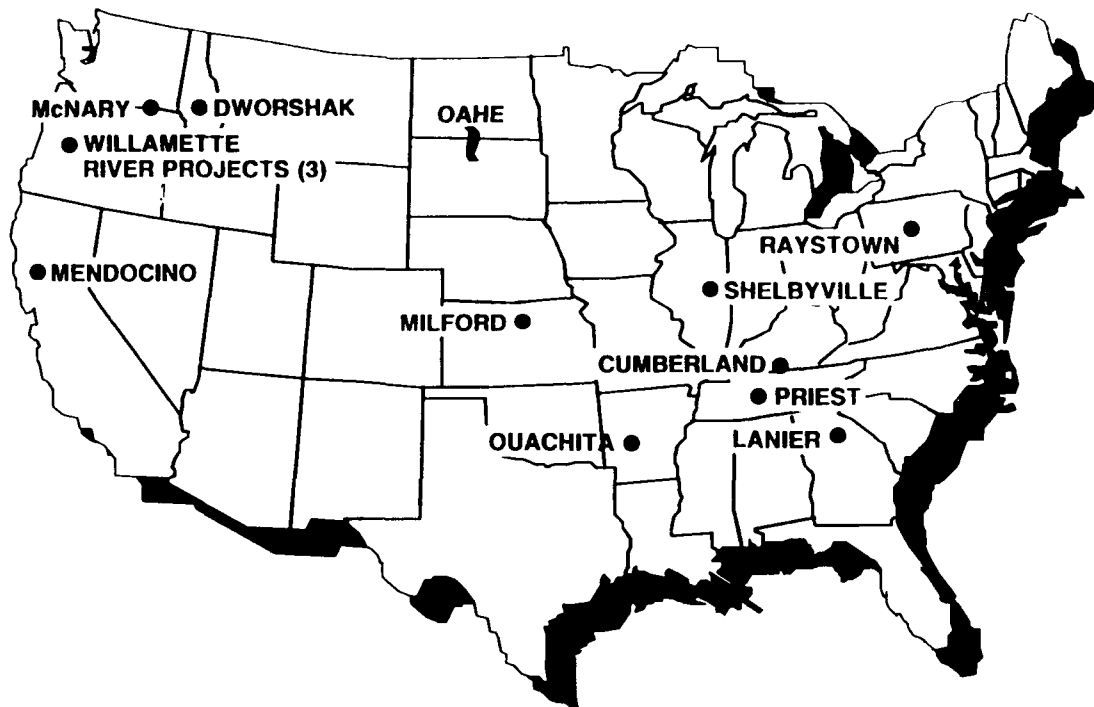
Figure 1. US map showing locations of 12 CE projects

Willamette River Lakes[1] are clearly the most urban of the 12 study sites.
Priest Lake, located primarily within the city of Nashville, has both the most
reported visitation and largest size of adjacent population. Furthermore, the
nature of visitation at Priest Lake (mostly day use) suggests its urban orien-
tation. Lanier, McNary, and Willamette Lakes show similar urban character-
istics and use patterns resulting from their proximity to Atlanta, the
tri-cities area of Oregon/Washington, and Eugene, respectively. Visitation at
the Willamette Lakes is relatively low because of their small size with few
large recreation developments and the competition from the numerous nearby
recreation opportunities on national and state forestlands.

Lakes Cumberland and Shelbyville are, respectively, the first and sixth
most frequently visited lakes in the sample. However, Lake Shelbyville's
adjacent population is one of the lowest, owing to its rural character. Lake
Cumberland has more than twice the adjacent county population as Lake Shelby-
ville, but is still primarily rural in character and is located near sparsely

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[1] The Willamette River Lakes include Fern Ridge Lake, Cottage Grove Lake, and
Fall Creek Lake. Because of their small sizes, these three lakes were
treated as a single project for sampling purposes.

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Table 1

Selected Characteristics of CE Study Projects (Corps of

Engineers Recreation Spending Study (CERSS) 1989-90)[1]

Lake Project Name (State)	Recreation Area Visitor Hours thousands	Number of Recreation Areas	Lake Size at Recreation Pool, acres[2]	Adjacent County Population thousands
McNary[3] (OR/WA)	6,333	20	19,543	191.9
Mendocino (CA)	4,759	5	1,740	66.7
Oahe[3] (ND/SD)	16,125	49	117,844	44.5
J. Percy Priest (TN)	25,810	29	14,200	617.9
Raystown (PA)	6,224	16	8,300	105.1
Shelbyville[3] (IL)	14,086	30	11,100	38.4
Cumberland (KY)	36,477	52	46,140	85.8
Dworshak (ID)	1,361	9	17,684	10.3
Lanier (GA)	35,004	81	35,000	286.0
Milford[3] (KS)	5,017	7	15,600	123.3
Ouachita[3] (AR)	14,957	23	40,060	77.6
Willamette Lakes[4] (OR)	5,609	20	11,966	275.2
Study project average	14,200	28	28,264	160.2

[1] Visitor hours, lake size, and number of recreation areas were obtained from the 1989 Natural Resource Management System.

[2] To convert acres to square meters, multiply by 4,046.873.

[3] Research and Demonstration Units--24 representative CE projects designated by the Headquarters, US Army Corps of Engineers, as sites for ongoing natural resources research as a part of the Research and Demonstration System. See Hart (1981) for a more detailed discussion of the selection and function of Research and Demonstration Units.

[4] Includes Fern Ridge, Fall Creek, and Cottage Grove Lakes.

populated counties containing much Federal land and residents whose household incomes are some of the lowest in the United States. Despite these characteristics, both lakes receive high numbers of visitors as a result of the expanding public and commercial recreation developments (e.g., state park resorts, golf courses, marinas, hotels), which attract visitors who are willing to travel some distance to reach the lakes. For example, according to discussions with site managers, Lake Cumberland shows high visitation due to a large market of vacationers from Ohio and Indiana who continue to return in growing numbers because of the availability of a large state park resort complex located on the lake coupled with numerous houseboat rental enterprises.

In terms of recreation pool size, Oahe Reservoir, stretching some 300 miles (483 km) across portions of two states, is the largest by far. Because its location in the central portions of North and South Dakota makes it the only significant flat-water recreation resource for many miles, Oahe receives relatively high visitation (fourth largest of the study sites) by people traveling long distances. Lake Ouachita receives the fifth highest amount of visitation because of its relatively large size, scenic surroundings, proximity to a major tourist destination (i.e., Hot Springs), and location. In terms of location, Lake Ouachita is within an hour's drive of Little Rock. It also attracts large numbers of long-distance travelers from Texas and Oklahoma, for whom Ouachita is the nearest large impoundment with clear water and mountain scenery. Lake Sidney Lanier, near Atlanta, has the most recreation areas, many of which are contracted to the private sector. Intense use pressure by Atlanta residents makes Lake Lanier the second most frequently visited in the sample.

Raystown Lake is relatively small in both recreation pool size and number of recreation areas, but receives substantial visitation and is an important regional recreation destination. Because of its relatively low adjacent county population size and remote location, Dworshak Lake receives correspondingly low amounts of visitation. Lake Mendocino has six times the surrounding county population as Dworshak as well as three times the visitation, but Mendocino's visitation is held somewhat in check by its small size and scarcity of recreation sites (ranked 12 out of 12 on both characteristics).

Selection of Visitor Segments

As indicated above, the calculation of total economic impacts requires the multiplication of three factors: spending by segment (S), total number of visitors by segment (V), and a multiplier (M). Furthermore, segments should be relatively homogeneous with respect to their spending patterns.

Previous studies (Lieber and Allton 1983, Stynes et al. 1983, Tyrrell 1985)[1] have shown that the types of activities visitors engage in and the distance they travel to a destination affect the total amount spent on a

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[1] See also report by C. Rose and R. Cooper (1986, unpublished), The economic impacts of recreation and tourism: St. Croix County, Wisconsin. Madison, WI: University of Wisconsin-Extension, Recreation Resources Center.

recreation visit as well as the distribution of spending among economic sectors. Thus, the sampling design for this study was based on the measurement of spending by 18 "user segments" representing visitor origin, type of overnight accommodations (if applicable), and activity participation. The process for specifying these 18 segments is discussed below. Because of the relationship between visitation and spending in deriving total impacts, a decision was made to define visitor spending segments similarly to the way in which the CE defines visitor use segments. In describing visitation, the CE finds the following distinctions useful: boater versus nonboater and day user versus camper versus other overnight accommodation user. The category "other overnight" was deemed to be rather broad and, in order to account for variations in spending, was subdivided into three segments reflecting overnight visitors who lodged either (a) in rented accommodations (e.g. hotels, motels); (b) with family, friends, or in a second home; or (c) on a boat.

Furthermore, in order to estimate total economic impacts properly, it is necessary to know if the visitor is a resident or nonresident of the region of interest. In general, spending within the region by visitors from outside the region (i.e., nonresidents) is used to derive $\underline{S}$ in the above equation. Spending by residents of a given region is excluded for economic impact purposes, but may be used to estimate total spending.[1] Combining the user/activity matrix with visitor origin yielded the 18 segments identified in Table 2. In developing sampling procedures, an attempt was made to obtain large enough samples to develop spending profiles for each of these 18 segments.

Survey Procedures

As discussed previously, the first step in economic impact analysis requires the development of visitor expenditure "profiles." A **trip expenditure profile** for a given segment is a vector of average expenditures for individual goods and services purchased during a recreation trip (e.g. gasoline, equipment rental) by members of the specified segment. Similarly,

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[1] D. B. Propst and D. J. Stynes. 1988. Collecting and analyzing Corps of Engineers recreation spending data. Report submitted to US Army Engineer Waterways Experiment Station, Vicksburg, MS.

Table 2

Initial Set of 18 CE Visitor Segments Judged to Be Homogeneous with

Respect to Spending Patterns (CERSS 1989-90)

Segment	Use Category	Boater	Resident	Type of Lodging
1	Day	Yes	Yes	--
2	Day	Yes	No	--
3	Overnight	Yes	Yes	Campground
4	Overnight	Yes	Yes	Rented accommodations
5	Overnight	Yes	Yes	Friends/relatives/2nd home
6	Overnight	Yes	Yes	Boat
7	Overnight	Yes	No	Campground
8	Overnight	Yes	No	Rented accommodations
9	Overnight	Yes	No	Friends/relatives/2nd home
10	Overnight	Yes	No	Boat
11	Day	No	Yes	--
12	Day	No	No	--
13	Overnight	No	Yes	Campground
14	Overnight	No	Yes	Rented accommodations
15	Overnight	No	Yes	Friends/relatives/2nd home
16	Overnight	No	No	Campground
17	Overnight	No	No	Rented accommodations
18	Overnight	No	No	Friends/relatives/2nd home

durable goods expenditure profiles may be created for such goods as boats and recreation vehicles, which are used over a period of time at many sites.

To develop both trip and durable goods expenditure profiles, a sample survey was conducted at the 12 projects indicated in Figure 1 during the summers of 1989 and 1990. Data collection procedures included a combination of personal, onsite interviews and mailback questionnaires (see Appendixes A and B, respectively). The interview locations were recreation sites on CE-managed lands. These sites were randomly assigned to several strata reflecting both temporal use patterns (e.g., month, weekday versus weekend, and morning versus afternoon versus evening) and type of use (e.g., day versus overnight and boating versus nonboating).

No more than four trained interviewers were involved in conducting the onsite interviews at any one time. With this small number of interviewers, the principal investigators were able to communicate with them constantly, thereby enhancing quality control by addressing potential problems as they arose. For example, the initial training required interviewers to follow established Corps of Engineers exit interview procedures (US Army Corps of

Engineers 1988), whereby parties are interviewed in their vehicles along the road as they are leaving a given recreation site for the last time. The purpose of this procedure is to reduce the probability of biasing the sample toward those parties who may be staying at a site for relatively long durations or who come and go frequently (e.g., length-of-stay bias). However, early in the first interview period (summer of 1989), the interviewers felt that the exit interview procedure had two flaws. First, there were long intervals of waiting at roadside exit points during periods of low use. More importantly, the interviewers noted that, once respondents were packed and ready to leave for the day, they were less willing to stop or were impatient with even a relatively short interview.

Since the purpose of this study was not to obtain a representative sample of visitors at any given lake, but to garner a reasonable quota of parties across all lakes within each of the 18 segments (Table 2), the exit interview procedure was replaced with a system that allowed the interviewers to gather information at locations that enhanced respondents' willingness to participate. At campgrounds, this meant that interviewers obtained from the campground attendants a list of those campers leaving that day. They then interviewed as many of these parties as possible at their campsites during the time period to which the interviewers were assigned. At boat-launching facilities, boating parties were most frequently interviewed at "tie-down" areas where boaters spent time securing their equipment in preparation for towing. Regardless of location, interviewers ascertained that the group was leaving the site for the last time before conducting the interviews.

Debriefing sessions with the interviewers and perusal of their diaries indicated that this change in procedure was a success. Length-of-stay bias was still minimized while respondent willingness to participate was enhanced. Furthermore, respondents were willing to give the expenditure questions more thought and take more time to give accurate answers than was the case with the roadside procedure. Since respondent burden decreased, the interviewers were more motivated to probe. Interviewers also felt safer by not having to stand along a road to conduct interviews. Finally, CE personnel had fewer concerns about traffic delays and the potential for accidents. On the negative side, those visitors who did not frequent the contact areas may have been selectively omitted from the sample.

During the interviews, visitors provided recreation activity information, durable goods spending estimates, and trip characteristics. This

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information was gathered according to visitor origin and destination in order to meet a basic requirement of input-output analysis: the measurement of "new money" injected into a defined region. This requirement meant that the amount of nonresident spending accruing locally had to be assessed. Total expenditures _per recreation trip_ were reported as being either within or outside the "region," where the local region, delineated on a map handed each respondent, was defined as being within 30 miles (48 km) of a given project (see Figure 2). A "trip" was defined as beginning upon departure from the party's
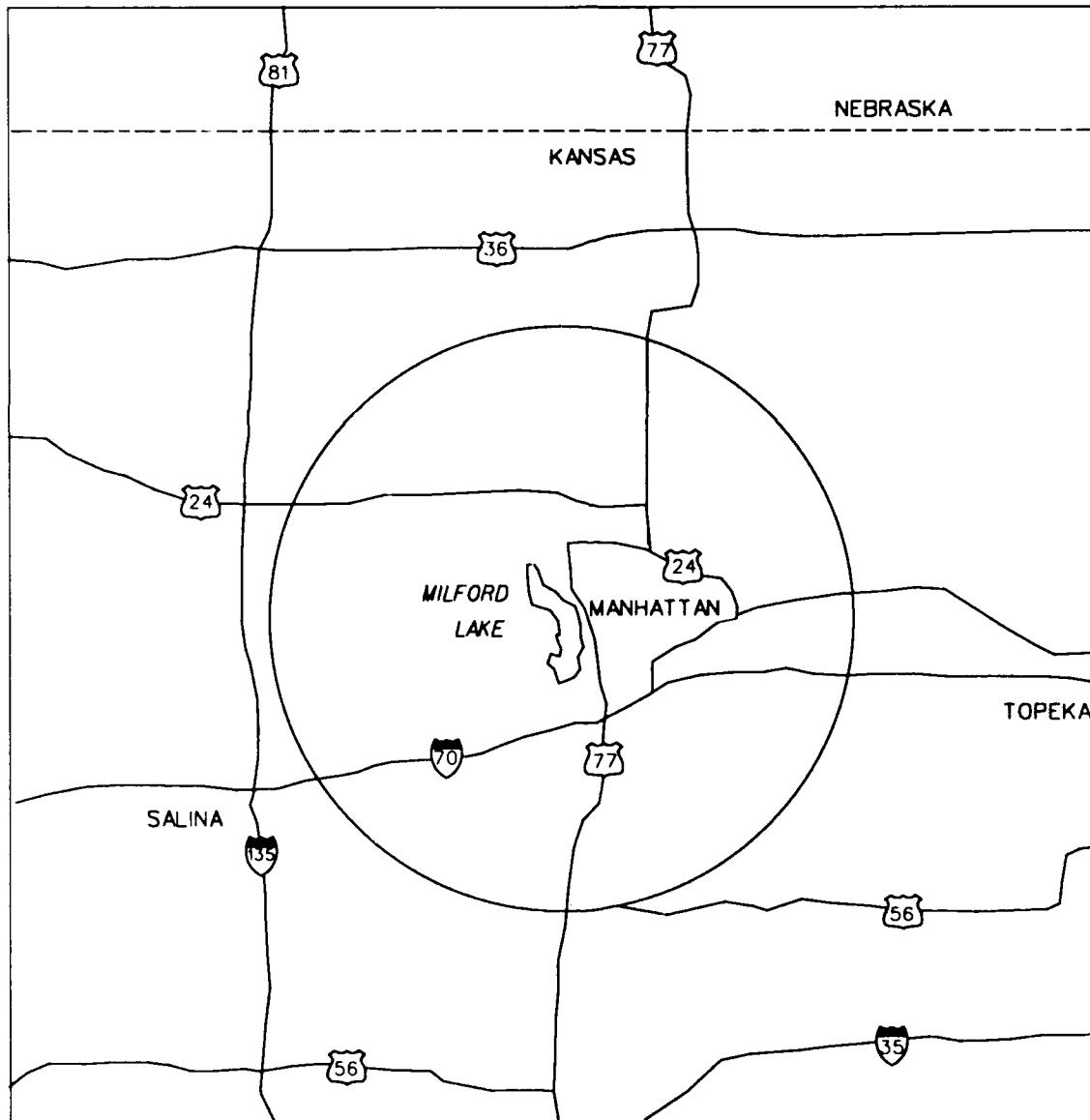
Figure 2. Example project map (Milford Lake, Kansas) with
30-mile boundary (local region) notated

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permanent residence and ending upon return to the same residence. A seasonal home was defined as a permanent residence if the party stayed there 14 days or more during a particular trip. If a party consisted of households with different permanent residences (i.e., different zip codes), the trip was defined as beginning and ending at the permanent residence nearest to the lake.

Interviews averaged 10 min in length (standard deviation (SD) = 3.7; median = 9 min). Length of the interview varied according to length of stay and presence or absence of durable goods. Thus, average interview length (6.4 min; SD = 3.8) was lowest at J. Percy Priest Lake, where the respondents were primarily resident day users, and highest (14.4 min; SD = 4.4) at Oahe Lake, where there was a much higher proportion of overnight nonresidents who had traveled some distance, bringing with them a varied assortment of durable equipment items.

To help avoid confusion with trip spending, data on durable goods were gathered during the onsite personal interviews. Parties were asked if they had brought with them any items that they had used or planned to use for recreation at the lake on this trip. Furthermore, they were asked only to respond to items costing $50 or more. If they responded "Yes," they were given a list of categories of durable items (see Appendix A). For each category, the quantity of items, cost, year of purchase, and location of purchase (county and state) were gathered. It was also determined if the items had been purchased new or used, and if used, whether from a dealer or not. The categories, including separation of new and used items, were designed to ensure consistency with MICRO-IMPLAN sectors as much as possible. Items that bridge to the same sectors could be grouped, while items bridging to distinct IMPLAN sectors were kept separate as much as possible.

Durable items were classified into 31 categories that were grouped into six major types according to the most common activities involving durable goods: boating, fishing, hunting, camping, off-road vehicles, and other (see Appendix A). Space was provided for the interviewers to gather data on up to 12 items. Up to seven items were subsequently coded for analysis, with similar items aggregated for the small number of subjects listing more than seven items. The location of purchases was coded using county FIPS (Federal Information Processing System) codes.

In 1989, one listing of all durable goods was presented to the respondent. In 1990, durable goods were presented in two lists: Equipment List 1 (consisting of major purchases of vehicles, boats, motors, and

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trailers) and List 2 (comprising smaller items such as boating and camping accessories, fishing and hunting gear, and other recreation equipment). Subjects reported information on all items from List 1 brought for use at the lake. Reporting of items from List 2 was restricted to items purchased within the past 12 months.

To obtain variable trip costs, visitors were asked to complete an expense questionnaire (Appendix B) and return it by mail as soon as possible after they had returned to their permanent residence. The two-stage survey procedure was used to avoid confusion on the part of the respondent and to elicit reliable and complete trip spending information. Previous experience with the Public Area Recreation Visitor Survey indicated that eliciting both trip and durable goods spending estimates on the same survey instrument not only added substantially to the length of the interview but also created some confusion concerning the difference between a trip expense and a durable good expense. Furthermore, since a major objective of this study was to measure total trip spending, providing the respondents a mailback questionnaire and asking them to return it upon return to their residence enabled the estimation of spending for the entire trip. Moreover, the two-step design provided a mechanism for assessing the degree of nonresponse bias in that the degree of similarity between interviewed parties who did and did not return a mailback questionnaire could be measured.

Results

A total of 3,185 parties were approached. (A party was defined as all occupants of a single vehicle.) Of these parties, 287 refused to be interviewed. The range of interview refusals was 3 refusals at one lake to 85 at another. Less than 20 refusals were encountered at 6 of the 12 lakes. Forty-one of the interviewed parties refused to complete the trip expense questionnaire, leaving a mailback sampling frame of 3,144 parties (3,185 minus 41). Of the remaining 3,144 parties who agreed to participate in the mailback portion of the study, 2,190 parties returned their trip expense questionnaires, yielding a response rate of 70 percent (see Table 3). Utilizing standardized procedures for data collection involving mailback questionnaires (Dillman 1978), two follow-up mailed reminders were employed to achieve the 70-percent response rate. The first reminder was a postcard, the mailing of which was timed to reach the respondent's permanent residence approximately 2 weeks

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Table 3

Survey Locations, Dates, and Mailback Questionnaire Response Rates (CERSS 1989-90)

Project Name	Survey Dates	Number of Recreation Areas Surveyed	Number of Survey Locations[1]	Sample Size			Mailback Response Rate (%) B/A*100
				Onsite	Mailback Frame[2] A	Mailbacks Returned B	
			1989				
J. Percy Priest	8/10-9/4	15	15	323	308	159	52
McNary/Ice Harbor	8/3-8/20	12	15	194	194	88	45
Mendocino	8/24-9/21	4	12	103[3]	100	66	66
Oahe	7/23-9/14	25	25	236	233	135	58
Raystown	7/25-10/1	13	13	416	415	279	67
Shelbyville	7/21-8/6; 9/7-9/14	13	13	266	260	165	63
1989 total		82	93	1,538	1,510	892	59
			1990				
Cumberland	8/4-8/20; 9/18-9/22	17	22	250	250	194	78
Dworshak	8/4-9/3	7	7	190	190	168	89
Lanier	6/21-7/28; 6/31-9/16	35	42	289	285	201	71
Milford	6/22-7/30	12	22	329	326	268	82
Ouachita	8/3-8/26	17	17	221	219	175	80
Willamette[4]	6/26-7/29	11	16	368	364	292	80
1990 total		99	126	1,647	1,634	1,298	79
Grand total		181	219	3,185	3,144	2,190	70

[1] A given recreation area that is relatively large and/or complex (e.g., a state park) was divided into several survey locations (e.g., campground, boat launch area, beach). Thus, the number of locations where interviews occurred exceeds the number of recreation areas.

[2] This value represents the number of onsite parties interviewed who also agreed to return the mailback questionnaire.

[3] Relatively low number of interviews resulting from a large portion of interview period in nonpeak season and loss of approximately 40 interview forms in the mail.

[4] Includes Fern Ridge, Cottage Grove, and Fall Creek Lakes. These lakes were grouped for subsequent analyses because of their proximity and similarities in size and visitor use patterns.

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after the obtained ending date of the trip. The second reminder consisted of a cover letter and an additional mailback questionnaire, which were mailed approximately 1 month after the respondent's specified trip ending date. Only respondents who agreed to participate in the mailback portion of the study were sent reminders.

The range of response rates was 45 percent at McNary Lock and Dam to 89 percent at Dworshak Lake. As Table 3 indicates, the response rate for the six sites surveyed during the summer of 1989 was 20 percent lower than the response rate for the six 1990 sites (59 versus 79 percent, respectively). The primary reason for the discrepancy in response rates between the 2 years is that, during the 1989 season, a whole month lapsed in which no follow-up reminders were mailed. Timely and thorough follow-up procedures coupled with experience in administering the survey design resulted in a significant gain in overall response both at individual lakes and in total.

Comments from both respondents and interviewers indicated that relatively low response rates at McNary/Ice Harbor and J. Percy Priest Lakes may have been caused by the high proportion of local day users in the sample having spent little or no money during a given outing. These respondents may have been less compelled to return the mailback trip expenditure questionnaire. Some support for this notion is contained in Table 4, which provides the mailback response rates by category of visitor. Even though response rates are relatively high regardless of the way in which the total sample is divided, Table 4 indicates lower response rates for residents (66 percent) and day users (65 percent) than for nonresidents (72 percent) and campers

Table 4

Response to Mailback Questionnaire by Visitor Segment

(CERSS 1989-90)

Visitor Categories	Response Rate, %	Mailback N	Interviews N
Day users	65	926	1,423
Campers	73	870	1,199
Other overnight	69	385	554
Residents	66	1,110	1,688
Nonresidents	72	1,071	1,488
Boaters	73	1,437	1,959
Nonboaters	61	744	1,217

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(73 percent). The boater/nonboater split, however, results in the largest discrepancy in response rates, with boaters demonstrating a 12-percent higher response rate than nonboaters (73 versus 61 percent, respectively).

Sample characteristics

As previously discussed, obtaining a representative sample of visitors at any given lake was not the purpose of this study. Instead, the purpose was to obtain a reasonable number of parties within each of the visitor segments (Table 2) across all lakes. To this end, the study design likely oversampled some groups at any given lake while undersampling others. Thus, the data presented in Tables 5 and 6 are intended to provide a profile of the visitors sampled in this study. These data are not necessarily representative of the total population of visitors at any given project.

The overall average party size was 3.12, ranging from 2.43 at Lake Mendocino to 3.66 at Lake Ouachita (see Table 5). For all lakes, the standard error associated with party size is relatively low, thus indicating little variation in the estimate of the mean. For overnight visitors, the average length of stay was 3.85 nights. The range was 2.42 nights at J. Percy Priest Lake to 4.64 nights at Lake Cumberland. Day users averaged 4.98 hr per visit with a low of 3.90 hr per visit at the Willamette Lakes to just over 6 hr at Dworshak. Again, standard errors were relatively small for the length of stay measures across all lakes.

Larger standard errors are associated with the average number of trips made in the previous year to a given project. This increase in standard error results from the presence of outliers due to a number of resident day users who indicated as many as 300 trips per year. Because of this variation, the median may be a more accurate way to describe number of trips. Across the 12 lakes, the median was five trips per party during the previous year. As might be expected from their large nearby urban populations, the highest medians (15 trips per year) were recorded at Priest and Lanier Lakes.

The age distribution of individual party members indicates that the greatest proportion of visitors was in the 18- to 61-year range (mean = 61 percent). In the under-18 age category, Lake Mendocino had the most, with 59 percent of individuals falling into this range. However, for reasons explained in the footnote to Table 3, this 59-percent figure may not be representative of the population. Lakes Milford and Cumberland display the greatest proportions of individuals aged 62 and over (12 and 13 percent, respectively).

Table 5

Sample Characteristics (CERSS 1989-90)

Lake	Party Size		Length of Stay				Number of Trips			Age Distribution[3] %			Sample Size
			Overnight (nights)		Day Use hr[2]					Under 18	18+	62+	
	Mean	SE[1]	Mean	SE	Mean	SE	Mean	SE	Median				
McNary	3.21	0.12	3.32	0.61	N/A	N/A	13.89	1.67	5	33	67	N/A	194
Mendocino	2.43	0.11	4.60	0.11	N/A	N/A	10.73	2.56	2	59	41	N/A	103
Oahe	2.51	0.09	3.93	0.38	N/A	N/A	22.97	3.01	7.5	23	77	N/A	236
Priest	2.35	0.08	2.42	0.28	N/A	N/A	42.67	3.86	15	26	74	N/A	323
Raystown	3.18	0.08	3.98	0.17	N/A	N/A	17.36	2.96	3	28	72	N/A	416
Shelbyville	2.96	0.11	3.31	0.30	N/A	N/A	25.12	3.10	6	30	70	N/A	266
Cumberland	3.49	0.12	4.64	0.28	4.32	0.56	13.97	2.17	2	19	68	13	250
Dworshak	3.08	0.12	3.48	0.21	6.05	0.37	6.14	0.68	3	28	63	9	190
Lanier	3.48	0.18	3.97	0.34	5.32	0.29	25.80	2.03	15	25	66	9	289
Milford	3.40	0.15	4.15	0.33	5.33	0.33	19.43	1.95	6	28	60	12	329
Ouachita	3.66	0.13	4.10	0.34	5.61	0.32	14.60	1.75	4	33	58	9	221
Willamette	3.28	0.1	4.50	0.41	3.90	0.12	18.77	1.68	6	37	60	3	368
1989 average	2.82	0.09	3.49	0.30	N/A	N/A	24.01	2.99	7	30	70	N/A	1,538
1990 average	3.40	0.13	4.19	0.33	4.98	0.31	17.39	1.76	6	29	62	9	1,647
12-lake average	3.12	0.11	3.85	0.31	4.98	0.31	20.58	2.36	5	29	61	10	3,185

[1] Standard error of the mean.

[2] Hours per visit for day users was not measured during summer 1989.

[3] The summer 1989 instrument used only two age categories: "under 18" and "18 and over." In summer 1990, a third age category was added.

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Table 6

Activity Participation[1] (Percent of Parties Participating) (CERSS 1989-90)

Lake	Pleasure Boating	Water Skiing	Boat Fishing	Camping	Shore Fishing	Swimming	Picnic	Sight-seeing[2]	H/W/B[3]	Other[4]	Sample Size
McNary	27	25	11	22	9	42	38	7	2	9	194
Mendocino	21	11	11	56	21	43	39	5	3	21	103
Oahe	15	5	59	30	23	24	44	2	1	12	236
Priest	21	9	18	11	17	32	10	6	6	30	323
Raystown	60	33	45	53	24	55	61	12	5	13	416
Shelbyville	29	12	31	22	15	43	16	12	3	14	266
Cumberland	68	31	45	39	28	58	47	4	46	46	250
Dworshak	45	26	68	64	10	49	34	3	15	8	190
Lanier	69	30	25	37	28	75	63	0	45	52	289
Milford	58	34	41	69	33	66	73	1	50	89	329
Ouachita	76	39	43	35	26	88	67	0	55	87	221
Willamette	46	27	11	22	7	44	37	0	8	27	368
1989 average	33	18	32	32	19	41	36	8	4	17	1,538
1990 average	60	31	35	43	22	62	54	1	36	53	1,647
12-lake average	47	24	34	38	20	52	45	5	20	34	3,185

[1] For a given lake, total activity participation sums to greater than 100 percent because most parties participated in more than one activity.

[2] The CE defines "sightseers" as those visitors who did not participate in any other recreation activity during their stay at a given lake. This definition explains why the percentages are relatively low.

[3] Hiking/walking/bicycling. For the first six lakes (summer 1989), parties were not directly asked if they hiked, walked, or biked. Thus, only a relatively few parties stated that they engaged in these activities, and the interviewers recorded this information under "other activities." In the summer of 1990, "hiking/walking/biking" was listed as a unique activity and thus elicited a much greater response.

[4] By far the most frequent other activities were sunbathing and some form of socializing (talking, drinking, playing games, etc.).

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Activity participation

Table 6 reports the percentage of parties engaging in 10 recreation activities. Pleasure boating, boat fishing, swimming, picnicking, and hiking/walking/biking were the most popular, although a great deal of variation was noted among the lakes. Since a deliberate attempt was made to emphasize overnight visitors and boaters in the sampling process, the extent to which the Table 6 percentages are representative of the total population at each lake is not known.

Sample versus population

Table 7 exhibits the proportion of day users and campers in the sample as compared to the respective share in the population. The sampling design employed in this study resulted in a greater share of campers and a smaller share of day users than is contained in the population at each lake. Thus, the Table 6 percentages for camping are likely overestimates of the true values for this activity, while the portions for day use are probably underestimated.

Based on CE visitation data (Table 7), with the exception of Milford Lake, the Corps lakes in the sample are frequented primarily by day use visitors (94 percent across the 12 projects). Excluding Milford, day use accounts for over 80 percent and as high as 99 percent of total visitation. Milford is somewhat of an anomaly in the sample, with day use comprising only 58 percent of the total. Day use, as defined by the CE for visitation reporting, includes all visitors who stay overnight off the project. Thus, a party that uses the lake for recreation and is staying in a nearby hotel or with family is counted as a day use party. The proportion of "other overnight" use to real day use (no overnight stay) is unknown because visitor use accounting procedures do not make such a distinction. Thus, according to CE definitions, the sampling design of this study resulted in an undersampling of the population of day users by 32 percent. This result was intentional. It was decided that the most efficient design would sample visitor segments in proportion to variation in their spending. A reasonable hypothesis is that there is as large or a larger variance in spending for overnight visitors than day users. Thus, it was desirable that there be no more day users than campers in the sample.

Table 7

Sample Versus Population Distribution of Day Users[1] and Campers (CERSS 1989-90)

Lake	Day Users					Campers				
	Party Trips (000's)	n	Percent of Sample	Percent of Population	Difference	Party Trips (000's)	n	Percent of Sample	Percent of Population	Difference
McNary	531	149	77	99	-22	5	45	23	1	22
Mendocino	127	45	44	91	-47	13	58	56	9	47
Oahe	400	164	70	89	-19	50	70	30	11	19
Priest	2,526	286	89	98	-8	61	34	11	2	8
Raystown	242	194	47	95	-48	13	222	54	5	49
Shelbyvie	1,071	204	78	98	-20	19	58	22	2	20
Cumberland	973	153	61	86	-25	158	97	39	14	25
Dworshak	41	68	36	88	-52	6	122	64	12	52
Lanier	1,922	181	63	95	-32	101	108	37	5	32
Milford	37	102	31	58	-27	27	227	69	42	27
Ouachita	315	143	65	82	-17	69	78	35	18	17
Willamette	217	288	78	91	-9	21	80	22	9	9
1989 total	4,897	1,042	68	97	-29	161	487	32	3	29
1990 total	3,505	935	57	90	-33	382	712	43	10	33
Grand total	8,402	1,977	62	94	-32	543	1,199	38	6	32

Source: 1989 National Resource Management System.

[1] CE visitation estimation procedures make the term "day user" a bit misleading. In fact, the CE day use category includes visitors who do not stay overnight as well as all overnight visitors who do not stay overnight on project lands. Thus, overnight visitors who stay with friends or in hotels, etc., are counted as day users. In order for valid comparisons to be made in this table, the sample day use category also includes all overnight visitors who are not campers.

Reduction of segments
for reporting purposes

There was wide variability in terms of the number of interviewed parties in each of the original 18 segments described in Table 2. Overall, 45 percent of the parties interviewed were day users, and 38 percent were campers (Table 8). The remaining 17 percent were overnight visitors who lodged either in rented accommodations (6 percent of sample), with friends or relatives (5 percent), or on a boat (6 percent). As these other (noncamping) overnight groups represent a small but unknown percentage of total visitation and because it is difficult to obtain a random sample of these groups onsite, the three overnight noncamping segments were merged into one group for reporting purposes. This merger results in a reduction from the 18 segments in Table 2 to the following 12 segments:

D/R/B:	day user, resident, boater
D/R/NB:	day user, resident, nonboater
D/NR/B:	day user, nonresident, boater
D/NR/NB:	day user, nonresident, nonboater
O/R/C/B:	overnight user, resident, camper, boater
O/R/C/NB:	overnight user, resident, camper, nonboater
O/NR/C/B:	overnight user, nonresident, camper, boater
O/NR/C/NB:	overnight user, nonresident, camper, nonboater
O/R/NC/B:	overnight user, resident, noncamper, boater
O/R/NC/NB:	overnight user, resident, noncamper, nonboater
O/NR/NC/B:	overnight user, nonresident, noncamper, boater
O/NR/NC/NB:	overnight user, nonresident, noncamper, nonboater

These 12 segments are defined in terms of four dichotomous variables: day use/overnight, resident/nonresident, camper/noncamper, and boater/ nonboater. The goal was to obtain roughly equivalent sample sizes within each dichotomy. The resulting sample consisted of 61 percent boaters, 53 percent residents, 45 percent day users, and 38 percent campers (Table 8). Figure 3 shows the distribution of the 12 segments across all 12 lakes. Table C1 (Appendix C) shows the lake-by-lake sample distribution of these segments for both the onsite interviews and the mailback questionnaires.

Trip expenditures

Trip-related expenditure profiles for each of the 12 segments are provided in Table C2 for each lake. Trip expenditure averages in all tables include zero spending because (a) the mailback expense questionnaire (Appendix B) was designed to distinguish between those who actually spent nothing on a particular expense item and those who intentionally or unintentionally left a response blank and (b) the intent was to represent the real spending behaviors

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Table 8

Sample Percentages of Four Key Segmentation Variables (CERSS 1989-90)

Lake	Boaters	Nonboaters	Residents	Nonresidents	All Overnight	Day Users	Campers	Other Overnight	Sample Size
McNary	45	55	77	23	31	69	22	9	194
Mendocino	25	75	29	71	65	35	56	9	103
Oahe	62	38	45	55	56	44	30	26	236
Priest	28	72	87	13	20	80	11	9	323
Raystown	75	25	31	69	69	31	53	16	416
Shelbyville	52	48	59	41	42	58	22	20	266
Cumberland	77	23	22	78	85	15	39	46	250
Dworshak	91	9	27	73	68	32	64	4	190
Lanier	61	39	76	24	65	35	37	28	289
Milford	67	33	44	56	75	25	69	6	329
Ouachita	80	20	29	71	78	22	35	43	221
Willamette	59	41	82	18	23	77	22	1	368
1989 average	52	48	55	45	47	53	32	15	1,538
1990 average	67	27	46	48	61	32	42	19	1,647
12-lake average	61	39	53	47	55	45	38	17	3,185

| 100% | 100% | 100% |

100%
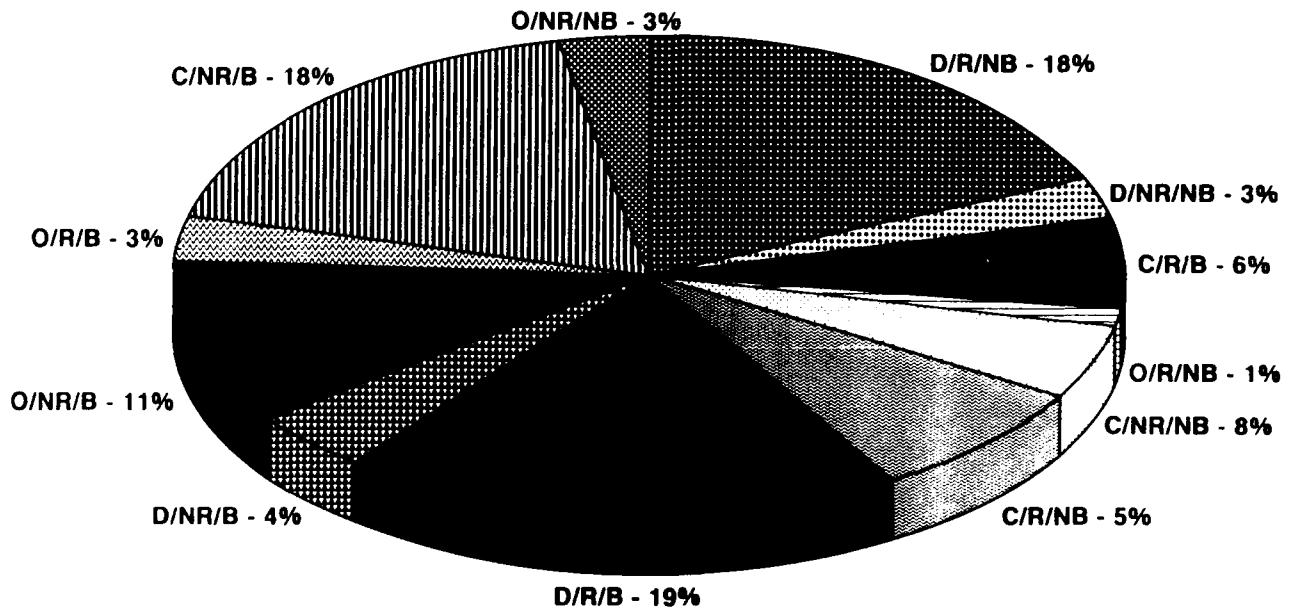
Figure 3. Distribution of 12 visitor segments (all 12 lakes combined) (CERSS 1989-90)

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of the total population. As to this latter justification, travelers in general do not spend money on every possible good or service. The goal was to derive a number which, when multiplied by total visitation, yields total dollars spent. Thus, reality is more closely represented by using the means for the entire sample, including those who spent nothing.

PART III: SPENDING PROFILE RESULTS

This part presents visitor spending profiles for relevant user groups generated from the spending survey data. In addition, total spending for the study sites, CE Divisions, and the total CE were estimated by applying spending profiles to estimated visitation (in party visits) within the appropriate user segment.

Trip Spending

Summary

In 1989 (base year of visitation statistics), 8.402 million day use party trips and 0.543 million camping party trips resulted in total trip spending of $738 million at the 12 study projects. This amounts to an average of $62 million per lake. Day users account for 78 percent of the total amount spent on variable trip items, whereas campers account for 22 percent. The percentage of variable trip costs attributed to other overnight users is some proportion of the 78 percent spent by day users, but is difficult to determine given the manner in which the CE estimates visitation (i.e., other overnight visitors counted as day users). On the average, however, other overnight visitors spend 7.5 times as much as day users ($\bar{x}$ = $63 versus $471 in Table 9).

Trip spending per visit

The 2,181 parties who returned their mailback questionnaires averaged $76 in variable costs per trip (see "total mean" column in Table 9). Table 9 further indicates that 76 percent of trip expenditures were made within 30 miles of the project. Day users spent less on trip-related goods and services, but made a larger portion of such purchases within the local region than campers (80 versus 62 percent, respectively). Overnight, noncamping visitors also spent a large portion locally (77 percent). With the exception of Lake Dworshak, the majority of trip spending occurred locally (Figure 4).

Table 10 further divides the sample spending estimates into the 12 detailed visitor segments described above. The profiles from these segments will be used in future work involving input-output analyses. Small sample sizes for some segments (e.g., n = 12 for the overnight, resident nonboaters

Table 9

Mean Trip Spending per Party by Day Use, Camping, and Other Overnight Segments (CERSS 1989-90)

Day Use (N = 926)

Spending Category	Mean	% of Category	With Zero Spending	% in Region	% Error[1]
Lodging	0	0	28	82	6
Food and beverages	16	25	23	72	9
Auto and RV	12	19	48	88	12
Boat	17	27	80	92	10
Fish	1	2	99	96	52
Hunt	0	0	95	77	24
Entertainment	2	4	82	66	18
Miscellaneous	9	15	95	64	36
Other	5	8			
Total	63	100	8	80	8

Camping (N = 870)

Spending Category	Mean	% of Category	With Zero Spending	% in Region	% Error[1]
Lodging	36	13	27	75	9
Food and beverages	88	32	12	63	4
Auto and RV	60	22	8	46	8
Boat	36	13	45	77	11
Fish	5	2	61	75	12
Hunt	0	0		0	0
Entertainment	6	2	87	60	15
Miscellaneous	25	9	53	52	13
Other	14	5	86	21	27
Total	270	100	1	62	6

Other Overnight (N = 385)

Spending Category	Mean	% of Category	With Zero Spending	% in Region	% Error[1]
Lodging	148	32	41	93	9
Food and beverages	126	27	5	71	7
Auto and RV	56	12	10	47	9
Boat	66	14	27	93	12
Fish	8	2	59	91	15
Hunt	1	0	98	100	69
Entertainment	14	3	74	67	22
Miscellaneous	35	7	49	49	18
Other	17	4	91	48	35
Total	471	100	1	77	7

Total (N = 2,181)

Spending Category	Mean[2]	% of Category	With Zero Spending	% in Region	% Error[1]
Lodging	2	3	59	81	7
Food and beverages	20	27	18	78	4
Auto and RV	15	20	15	65	6
Boat	18	24	43	87	7
Fish	2	2	69	54	8
Hunt	0	0	99	N/A	47
Entertainment	3	3	88	55	12
Miscellaneous	10	14	65	64	9
Other	5	7	91	64	19
Total	76	100	4	76	4

[1] One standard error as a percentage of the mean.
[2] Total means weighted by percent of day users and campers in total population to adjust for sampling bias; percentages for weights found in Table 7.

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DOLLARS

SPENDING OUTSIDE 30-MILE REGION

SPENDING WITHIN 30-MILE REGION

DOLLARS
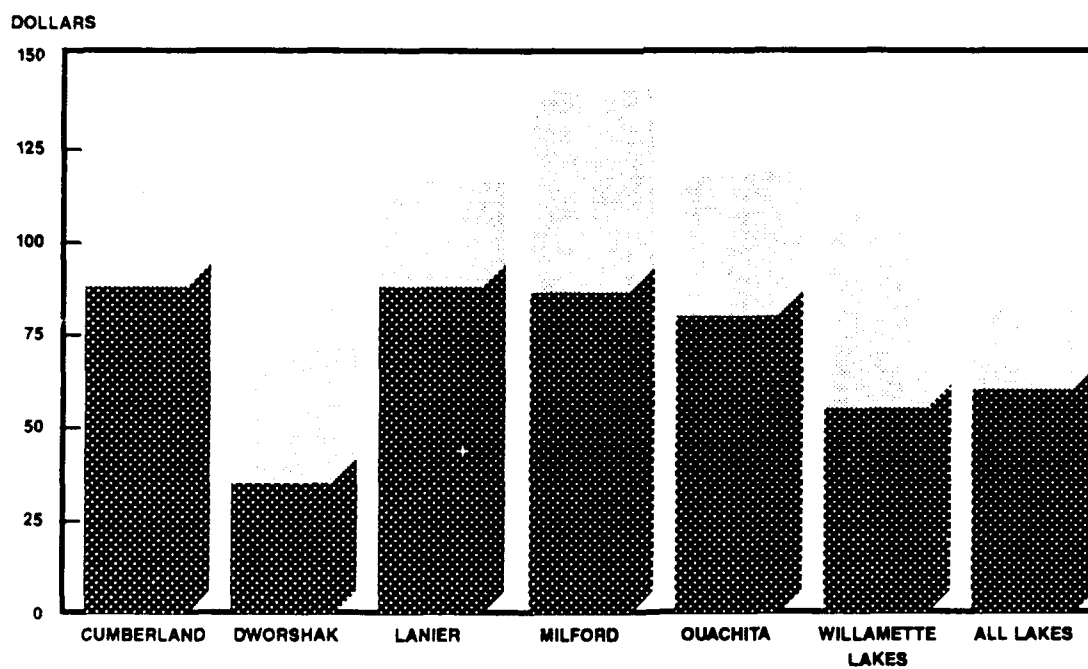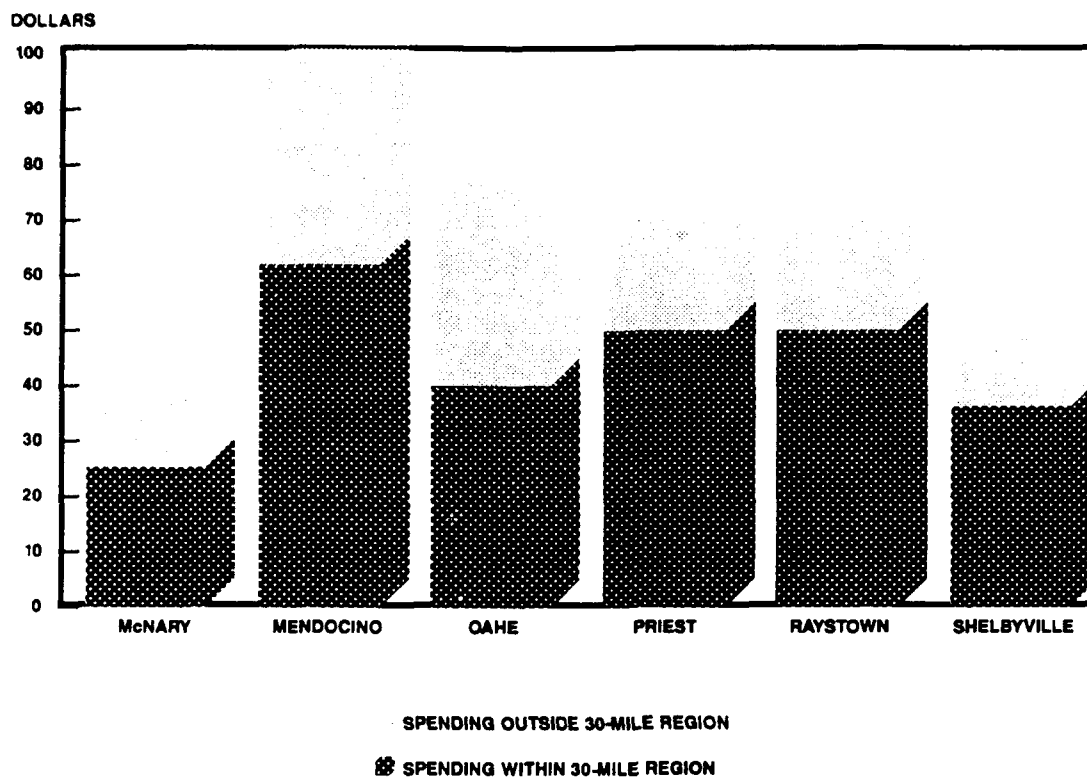
Figure 4. Average local and nonlocal trip spending per
party per trip by lake (CERSS 1989-90)

Table 10

Unadjusted[1] Mean Trip Spending by 12 Segments for All 12 Lakes (CERSS 1989-90)

Spending Category	Segment: D/R/B No. of Cases: 442				Segment: D/R/NB No. of Cases: 322				Segment: D/NR/B No. of Cases: 99				Segment: D/NR/NB No. of Cases: 63			
	Mean	% Of Category	% In Region	% SE Mean	Mean	% Of Category	% In Region	% SE Mean	Mean	% Of Category	% In Region	% SE Mean	Mean	% Of Category	% In Region	% SE Mean
Lodging	0.00	0			0.00	0			0.00	0			0.00	0		
Food and beverage	16.80	22	93	8	10.48	25	90	9	24.11	30	45	14	26.11	40	69	18
Auto and RV	12.98	17	92	11	7.07	17	86	19	25.78	32	24	24	13.29	20	43	16
Boat	24.96	33	95	12	7.57	18	100	46	22.98	29	40	20	1.14	2	59	42
Fish	1.41	2	99	12	1.03	2	92	22	2.09	3	68	32	0.10	0	100	70
Hunt	0.38	1	95	66	0.26	1	100	73	0.00	0			0.00	0		
Entertainment	2.27	3	89	40	2.73	6	77	33	1.13	1	72	51	2.62	4	14	71
Miscellaneous	8.45	11	75	27	10.52	25	74	31	3.19	4	28	26	19.90	31	26	50
Other	7.81	10	97	45	2.60	6	97	53	0.34	0	56	71	1.73	3	78	53
Total	75.06	100	92	11	42.26	100	85	18	79.62	100	38	13	64.89	100	49	17

Spending Category	O/R/C/B 153				O/R/C/NB 115				O/NR/C/B 424				O/NR/C/NB 178			
	Mean	% Of Category	% In Region	% SE Mean	Mean	% Of Category	% In Region	% SE Mean	Mean	% Of Category	% In Region	% SE Mean	Mean	% Of Category	% In Region	% SE Mean
Lodging	21.97	12	99	11	19.37	12	84	16	39.15	13	89	9	53.62	16	41	24
Food and beverage	72.61	39	88	8	58.47	35	74	11	95.65	32	61	5	100.06	30	50	10
Auto and RV	27.95	15	82	9	51.25	31	55	38	57.21	19	44	6	101.65	30	36	16
Boat	34.38	18	81	17	0.73	0	97	48	60.60	20	76	13	2.67	1	95	63
Fish	5.52	3	95	27	2.17	1	69	29	7.06	2	70	16	2.57	0	73	19
Hunt	0.00	0			0.00	0			0.00	0			0.00	0		
Entertainment	1.83	1	46	58	2.79	2	95	65	4.52	2	68	23	13.67	4	51	21
Miscellaneous	15.01	8	94	28	10.22	6	89	27	26.50	9	54	17	39.02	12	30	29
Other	9.31	5	82	43	20.03	12	93	73	9.54	3	70	28	24.89	7	15	57
Total	188.58	100	87	9	165.03	100	73	24	300.23	100	64	6	338.14	100	40	17

Spending Category	O/R/NC/B 66				O/R/NC/NB 12				O/NR/NC/B 253				O/NR/NC/NB 54			
	Mean	% Of Category	% In Region	% SE Mean	Mean	% Of Category	% In Region	% SE Mean	Mean	% Of Category	% In Region	% SE Mean	Mean	% Of Category	% In Region	% SE Mean
Lodging	61.36	17	100	33	58.25	34	81	64	182.30	34	94	11	115.94	32	79	19
Food and beverage	118.24	33	84	18	57.58	34	89	25	139.60	26	69	8	90.00	25	57	18
Auto and RV	28.29	8	66	28	13.33	8	81	14	64.93	12	45	10	57.50	16	47	29
Boat	69.86	19	99	20	5.42	3	100	68	81.23	15	92	14	3.04	1	91	59
Fish	4.61	1	100	34	2.58	2	100	57	9.70	2	89	17	2.83	1	88	52
Hunt	0.15	0	100	100	0.00	0			0.32	0	100	69	6.67	2	100	85
Entertainment	3.74	1	86	39	12.17	7	83	68	16.08	3	66	27	15.00	4	60	29
Miscellaneous	18.88	5	69	24	14.17	8	100	55	34.75	6	57	20	59.91	17	16	51
Other	53.61	15	62	95	6.25	4	100	100	8.35	2	71	32	11.63	3	100	88
Total	358.74	100	84	21	169.75	100	87	31	537.26	100	78	7	362.52	100	59	20

[1] Not weighted by proportion of visits at each lake.

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segment) prevent generalization. However, later in this report, it is recommended that regression analysis be used to extend the data set where gaps are created by small sample sizes.

A number of important findings result from the more detailed segment specification of Table 10. For example, day use nonresidents do not necessarily spend more than day use residents. Participation in boating interacts with place of residence. Thus, spending by day use, resident boaters ($75) averages $10 more than spending by day use nonboaters who reside outside the local region ($65). However, camping nonresident boaters spent $300, $38 less than camping nonresident nonboaters ($338). Spending by day use, resident boaters and day use, nonresident boaters is similar ($75 versus $80, respectively). The lowest mean spending across all 12 segments is by day use, resident nonboaters ($42 per party per trip).

Additionally, overnight visitors who use lodging accommodations other than campgrounds do not always average higher in trip spending than their campground counterparts. This time, place of residence is a critical factor. Table 10 shows that nonresident campers, regardless of whether they boat, spend substantially more than resident campers (means of $300 and $338 per trip versus $189 and $165 per trip, respectively). Also, nonresident campers average nearly the same amount of trip spending as two categories of other overnight lodging visitors (overnight resident boaters and overnight nonresident nonboaters) and greatly exceed the mean spending by overnight resident nonboaters.

Of the 12 segments, Table 10 shows that average spending is by far the greatest for nonresident boaters who lodge in accommodations other than campgrounds (average = $537 per party per trip). These other accommodations include hotels, homes of family or friends, and boats.

Trip spending by item

Table 9 shows the means and standard errors of visitor expenditures for nine aggregated categories of spending. The 33 specific trip expense items (see Appendix B) were combined to produce these nine aggregated categories.

The largest proportion of total spending (Table 9) occurred in the food and beverages sector (27 percent), followed by boat (24 percent) and auto/recreational vehicle (20 percent).

Of the three subgroups in Table 9 and Figure 5, overnight noncamping visitors had the highest averages in all categories (except auto/RV). The expenditures by overnight noncamping visitors were dominated by lodging

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DOLLARS
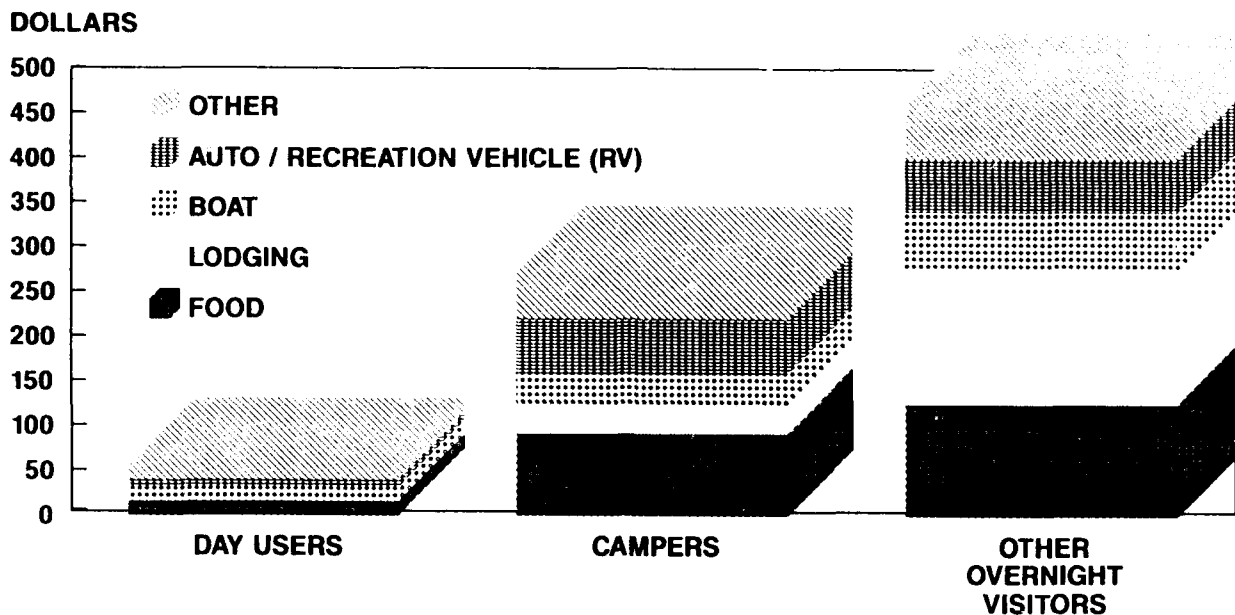
Figure 5.   Average trip spending by item (CERSS 1989-90)

(32 percent) and food/beverages (27 percent). Spending by campers tended to be greatest for food/beverages (32 percent) and auto/RV items (22 percent). The largest category of spending for day users was boat-related items (27 percent), followed closely by food/beverages (25 percent).

When examining expenditures within the 12 detailed segments (Table 10), spending on food/beverages ranges from 22 percent (day use, resident boaters) to 40 percent (day use, nonresident nonboaters). The proportion of lodging expenditures fluctuates widely from a low of 0 percent for all day use categories to about 33 percent for three of the four overnight, noncamping segments. Auto and RV expenses tend to be a major expense for most segments, clearly showing substantial increase when going from resident to nonresident segments. Boating-related expenses range from 15 to 33 percent of total trip costs associated with the six boater segments.

The proportion of spending attributed to the remaining five categories is relatively small with a few exceptions. For example, spending on miscellaneous items for three segments (overnight, nonresident boaters; day use, resident nonboaters; and day use, nonresident nonboaters) accounts for 17, 25, and 31 percent of average spending per trip, respectively. The miscellaneous

category includes camera film, film developing, souvenirs and gifts, footwear, and clothing.

Variation across the 12 lakes

Table 11 and Figure 4 summarize Table C2 by describing the lake-by-lake averages for trip spending per party. The lowest mean spending per trip was found at Shelbyville ($43 per trip); the highest was at Lake Milford ($135 per trip). The proportion of spending within the region went from a low of 46 percent at Dworshak to a high of 84 percent at Lanier. For half of the study projects, 70 percent or more of total trip spending occurred locally.

Differences across segments account for some of the lake-by-lake variation. For example, at McNary/Ice Harbor, J. Percy Priest, Shelbyville, and the Willamette Lakes, a much higher percentage of day users (see Table 7 and Table C1) was sampled than at Lakes Ouachita and Cumberland. Day users have fewer trip-related expenses than overnight visitors. The Lake Cumberland and Milford samples contained a relatively high proportion of overnight visitors, a group that spends a great deal more than day users.

Lake characteristics account for further variation in average trip spending. To illustrate, Lake Cumberland is surrounded by a relatively large

Table 11

Average Trip Spending per Party--Total and Percent Within Local Region by Lake--Day User, Camping, and Other Overnight Segments (CERSS 1989-90)

Lake	All Segments Average[1]	% Local	Day Use Average[2]	% Local	N	Camping Average[2]	% Local	N	Other Overnight Average[2]	% Local	N
McNary	44	79	43	79	54	184	67	28	293	57	6
Mendocino	95	65	93	54	24	340	51	35	91	82	7
Oahe	71	56	49	75	53	249	59	39	498	52	42
Priest	64	76	59	97	127	271	83	17	477	47	14
Raystown	65	77	56	82	90	244	71	152	353	91	37
Shelbyville	43	82	41	72	98	184	85	33	249	84	31
Cumberland	118	79	72	89	28	398	70	73	702	83	94
Dworshak	79	46	55	58	52	257	44	109	78	70	5
Lanier	110	84	104	80	75	227	81	71	423	88	56
Milford	135	66	77	84	59	215	66	191	181	45	17
Ouachita	114	69	73	52	35	302	64	66	498	74	73
Willamette	104	53	66	84	231	482	34	56	352	73	3
1989 lakes	59	80	53	82	446	245	68	304	371	67	137
1990 lakes	94	70	73	79	480	285	59	566	527	80	248
12 lakes	75	77	63	80	926	270	62	870	471	77	385

[1] To adjust for sampling bias, total means were weighted by percent of day users and campers at each lake; percentages for weights found in Table 7.
[2] Unweighted sample averages.

number of resorts, hotels, and cottages. Lake Cumberland also contains a number of houseboat rental operations. Parties pay as much as $1,500 to rent one of these houseboats for a weekend in the peak season. Thus, the Lake Cumberland data inflate both the 1990 lake average and the total 12-lake average for trip spending in the "other overnight" category.

Remoteness plays a role in the relatively low percentage of trip spending within 30 miles at Lake Dworshak. Dworshak is a relatively remote project with few opportunities for retail spending locally, thus accounting for a relatively low percentage of local trip spending (46%). Lanier and Priest Lakes are within an hour's drive of major metropolitan areas and contain numerous retail businesses locally. The relatively low trip spending averages at Shelbyville and McNary Lakes are likely a result of predominantly local day use involving few expenditures.

Comparisons according to the three aggregated segments are hampered somewhat by small sample sizes, especially in the other overnight category (e.g., N = 3 for other overnight visitors at the Willamette Lake projects). However, there are some general patterns. For example, the highest averages are clearly in the "other overnight" category, where three projects yielded around $300 in average trip spending, four projects in the $400 to $500 range, and one lake (Cumberland) reporting around $700.

For some lakes, campers also display relatively high average trip costs. Campers at the Willamette projects spend an average of $482 per party per trip, while campers at Mendocino, Ouachita, and Cumberland Lakes spend $300 to $400 per trip. Day users clearly spend the least on a per party per trip basis, but for 6 of the 12 projects (McNary, Oahe, Priest, Cumberland, Milford, and Willamette), the proportion of day use spending within the region is greater than that of either campers or other overnight visitors. For 5 of the 12 projects (Mendocino, Raystown, Dworshak, Lanier, and Ouachita), the proportion of within-region spending is highest for other overnight visitors. Campers and other overnight visitors show about the same proportion of local spending at Lake Shelbyville (84 and 85 percent, respectively).

Trip spending variance

Tables 9 and 10 show the standard error as a percent of the mean for the trip spending averages. The standard error as a percentage of the mean is the standard error divided by the mean and multiplied by 100. Presenting the standard error as a percentage aids in interpretation of error across means of different sizes. For example, Table 9 indicates that, for all 2,181 cases,

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the sampling error associated with the entertainment category mean is 3 times greater than the error for the food/beverage mean (12 versus 4 percent, respectively).

The standard error of the mean estimates possible sampling errors in generalizing from the sample to the population of visitors. The standard error is a function of sample size and variance in the population. Errors are larger for segments represented by small numbers of cases and for segments and spending categories with high variance. We also note that by expressing the standard error as a percentage of the mean, errors for items with little spending can be somewhat misleading. For example, errors for hunting expenses in Table 9 are over 50 percent on a relative basis, but involve less than $0.50 in spending on an absolute basis. Sampling errors for some smaller segments are also large. For example a 31-percent error in the estimate of total trip spending for the overnight, resident, nonboating segment is due to the small sample of 12 cases.

The goal for this study was to obtain a sample size of 200 for each of the 12 spending segments. Given the nature of CE visitation, this goal was not achieved. Segments simply not present in the population in large numbers generally resulted in relatively small sample sizes and larger standard errors. Such segments may need to be aggregated with others.

For the entire sample of parties who returned the mailback trip expense questionnaire (N = 2,181), the standard error was ±4 percent of the mean of $76 per trip (Table 9). The 95-percent confidence interval for the mean is derived by multiplying the percent standard error by 2. Thus, the 95-percent confidence interval for the overall average is 8 percent. Eight percent of $76 is $6 and, when added to and subtracted from the mean, yields the inter-val: $70 to $82. Thus, with 95-percent confidence, it is appropriate to conclude that the true trip spending average lies between $70 and $82 per party per trip. The standard error associated with each of the three aggre-gated visitor segments in Table 9 is less than 9 percent. The 95-percent confidence interval for each of these segments is $53.30 to $73.60 (day users), $238.02 to $302.94 (campers), and $404.79 to $536.59 (other overnight visitors).

For the 12 more detailed segments (Table 10), the range for the standard error was 6 to 31 percent of the mean. Error was lowest for three segments: nonresident campers who boat (6%); other overnight, nonresidents who boat (7%); and resident campers who boat (9%). The largest percentage errors for

trip spending are associated with the categories other overnight, residents who do not boat (31%); resident campers who do not boat (24%); other overnight, residents who boat (21%); and other overnight, nonresidents who do not boat (20%). However, these four segments account for a relatively small proportion of the sample and possibly a small proportion of total CE visitors as well.

Total trip spending

In this report, we have estimated totals for the study lakes by aggregating the 12 segments into only three: day users, campers, and other overnight visitors. While reporting average spending for other overnight visitors, we have ignored this segment in expanding to <u>total</u> spending (i.e., set their percentage of total use to zero) because of the lack of reliable estimates of the proportion of other overnight to total visitors. Table 7 displays 1989 CE estimates of total party trips made by day users and campers to each of the 12 lakes. For each lake, Table 7 visitation data are multiplied by their corresponding adjusted trip spending averages in Table 11. The results of these operations are provided in Table 12 and Figure 6 as total trip spending to the 12 lakes and in sum. Since <u>CE use estimation procedures count all overnight noncamping parties as day users</u>, no separate estimate of the number of party trips made by overnight noncampers is given in Table 7. Hence, it was not possible to derive separate estimates in Table 12 and Figure 6 for the other overnight group. Since the other overnight group has high spending means (Table 11), the reported totals in Table 12 are probably underestimates of total expenditures.

Durable Goods Spending

Given anticipated variation in durable goods spending and problems with detailed itemizations of equipment, a more aggregate analysis was proposed for durable goods spending than for trip spending. Additional detailed notes on the analysis of durable goods are provided in Appendix D.

Durable goods analysis issues

Durable goods pose a number of measurement and analysis problems. They are used over many years and many trips, possibly to many different sites. Methods for amortizing costs of durable goods over time do not apply to economic impact analysis. If a $50,000 boat is purchased in 1989, the infusion of money to the local economy all occurs in 1989, even though the use of the

Table 12

Trip Spending Totals Expanded to the Population by Lake

(CERSS 1989-1990)[1]

Lake	Total Spending ($000's)	Day Use Total ($000's)	Day User Percent of Spending	Camping Total ($000's)	Camper Percent of Spending
McNary	23,753	22,833	96	920	4
Mendocino	16,231	11,811	73	4,420	27
Oahe	32,050	19,600	61	12,450	39
Priest	165,565	149,034	90	16,531	10
Raystown	16,724	13,552	81	3,172	19
Shelbyville	47,407	43,911	93	3,496	7
Cumberland	132,940	70,056	53	62,884	47
Dworshak	3,797	2,255	59	1,542	41
Lanier	222,815	199,888	90	22,927	10
Milford	8,654	2,849	33	5,805	67
Ouachita	43,833	22,995	52	20,838	48
Willamette	24,510	14,322	59	10,122	41
1989 total	301,730	260,741	86	40,989	14
1990 total	436,483	312,365	72	124,118	28
12-lake total	738,213	573,106	78	165,107	22
Avg. per lake	61,518	47,759		13,759	

[1] Spending figures determined by multiplying Day Use and Camping averages (Table 11) by Day Use and Camping visitation (Table 7).

MILLION DOLLARS

SPENDING OUTSIDE 30-MILE REGION

▓ SPENDING WITHIN 30-MILE REGION

T   D   T   D   T   D   T   D   T   D   T   D

McNARY   MENDOCINO   OAHE   PRIEST   RAYSTOWN   SHELBYVILLE

MILLION DOLLARS

T = TRIP SPENDING

D = DURABLE GOODS SPENDING (SHARES)

T   D   T   D   T   D   T   D   T   D   T   D

CUMBERLAND   DWORSHAK   LANIER   MILFORD   OUACHITA   WILLAMETTE LAKES
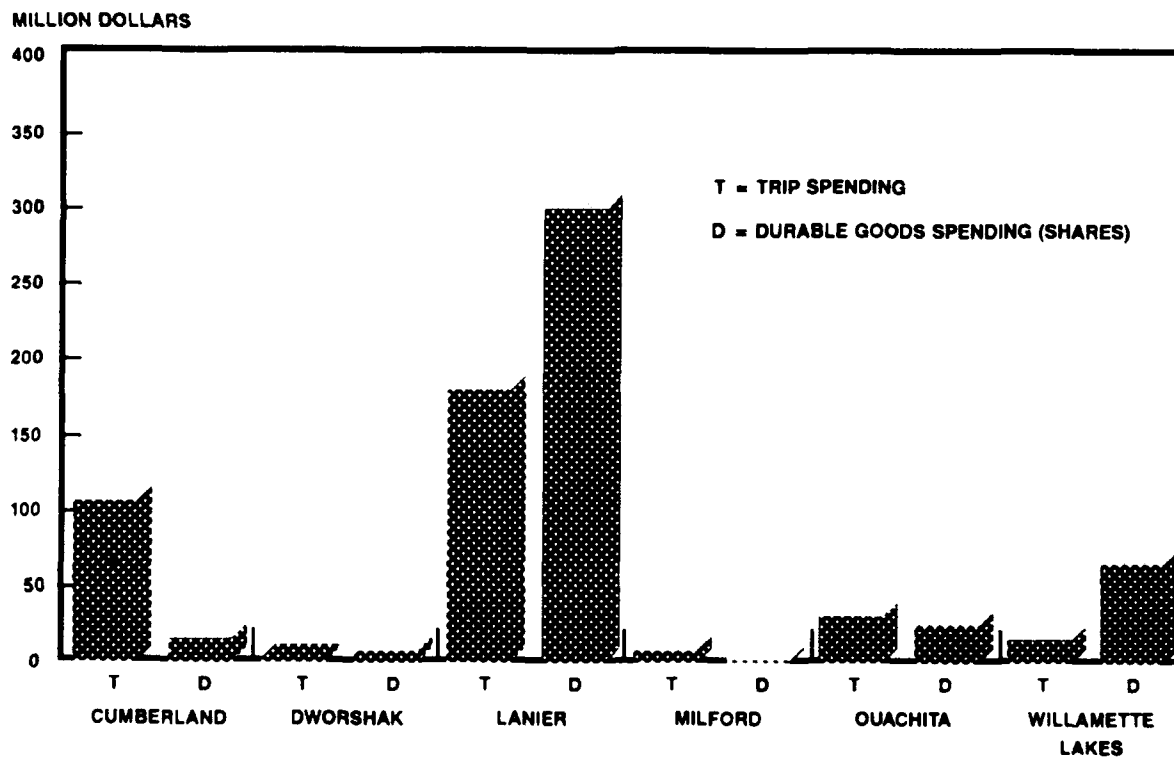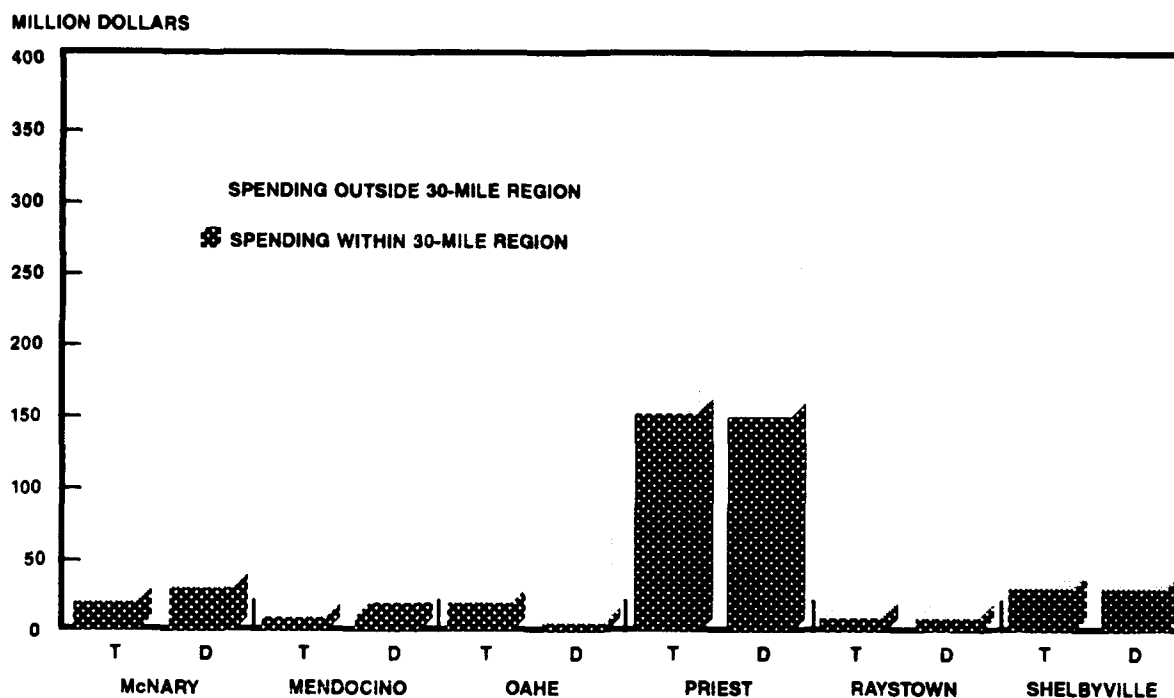
Figure 6. Total trip and durable goods spending locally and nonlocally by lake (CERSS 1989-90)

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boat may be spread over many years. The approach to handling the time issue was to restrict the analysis to goods purchased within the past year. This approach provides an annual imate of dollars being spent in a given area within a given year. This yearly estimate of durable goods spending corre- sponds to annual estimates of trip spending.

To expand the results to total use of a CE project, durable goods spend- ing was put on a per-trip basis, again, providing figures that correspond to those for trip spending. This was done by dividing durable goods spending for the year for each party by the number of trips to the site within the past 12 months. The assumption is made that the sample of trips in this study is representative of the types of equipment normally brought on trips to a given project. With durable expenses expressed as yearly amounts per trip, simple multiplication by total trips to the project for a given year yields popula- tion totals.

A final issue is estimating the portion of durable goods spending that can be reasonably attributed to the presence of the lake. Expensive durables, camping vehicles in particular, tend to be used at many different sites. Trailerable boats may also be used at several different sites, depending on the number and quality of substitutes in the area. In the 1990 survey, visi- tors were asked to estimate the number of trips within the past year to the study site versus trips to other sites at which each major durable item was used (see Appendix A). The ratio of trips to the site versus to all sites provides a rough means of allocating a share of durable expenses to the CE projects. This procedure is crude, subject to respondent recall bias, and is not strictly valid for determining whether or not a purchase would have been made in the absence of a given CE project. Although it would be more appro- priate to measure the with- versus the without-effects of a CE project on durable goods expenditures, it is not readily measureable in surveys such as this.

Durable spending summary

Visitors to the 12 study lakes spend a total of $2.704 billion annually on durable equipment brought to one of the 12 lakes (Table 13). This is equivalent to $394 per trip, counting only durable items purchased within the past year and used on the sampled trip to the lake (Table 14). Seventy per- cent of visitors bring at least one durable item with them (Table 15). Visi- tors with durable equipment include virtually all campers, 94 percent of boaters, and 68 percent of day users.

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Table 13

Durable Goods Spending Expanded to the Population by Day Users and Campers (CERSS 1989-90)

Lake	Total Last Year spending [1] ($millions)	Total Share Spending [2] ($millions)	Day Use				Camping			
			Mean [3] Spending	No. of Visits (000's)	Total ($millions)	Percentage of Share Total ($millions)	Mean [3] Spending	No. of Visits (000's)	Total ($millions)	Percentage of Share Total ($millions)
McNary	80	49	79	531	80	86	1,333	5	7	14
Mendocino	25	12	30	127	4	33	610	13	8	67
Oahe	212	90	23	400	9	10	1,624	50	81	90
Priest	644	371	109	2,526	275	74	1,562	61	96	26
Raystown	54	31	100	242	24	77	575	13	7	23
Shelbyville	129	82	69	1,071	74	85	405	19	8	9
Cumberland	661	370	281	973	273	74	614	158	97	26
Dworshak	29	13	203	41	8	63	858	6	5	37
Lanier	422	386	177	1,922	340	88	459	101	46	12
Milford	46	19	71	37	3	14	598	27	16	86
Ouachita	296	116	212	315	67	57	714	69	49	43
Willamette	105	83	308	217	67	80	793	21	16	20
1989 total	1,144	635	68	4,897	428	67	1,018	161	207	33
1990 total	2,704	987	209	3,505	758	77	680	382	229	23
12-lake total	2,839	1,622	139	8,402	1,186	73	849	543	436	27
Avg. per lake	225	135			99				36	

[1] Total durable goods spending during previous year (Table 14 means multiplied by number of visits).
[2] Total last year durable spending adjusted by ratio of times equipment was used at study lake versus elsewhere.
[3] Adjusted by "shares" (see Table 16).

Table 14

Average Durable Goods Spending per Party per Trip by Lake

(CERSS 1989-90)

Lake	N	1989-90 Cost ($)[1]	1989-90 % Error[2]	Local ($)[3]	% Local[4]
McNary	194	149	36	88	59
Mendocino	103	175	51	0	0
Oahe	232	470	67	24	5
Priest	320	249	32	99	40
Raystown	411	211	14	70	33
Shelbyville	262	119	20	65	38
Cumberland	246	584	18	24	4
Dworshak	184	621	23	237	38
Lanier	287	209	20	161	77
Milford	328	728	21	89	12
Ouachita	221	771	33	164	21
Willamette	361	441	25	344	78
1989 lakes	1,522	229		62	27
1990 lakes	1,627	559		170	38
All lakes	3,149	394	10	114	29

[1] Durable goods purchased in 1988-89 for first six lakes, 1989-90 for last six.
[2] Standard error of mean durable goods spending expressed as a percentage of mean; % SE Mean multiplied by 2 yields 95-percent confidence interval.
[3] 1989-90 durable goods spending within local region only.
[4] Local column divided by 1989-90 cost column.

Table 15

Percentage of Visitors With Durable Equipment by Segment by Lake (CERSS 1989-90)

Segment[1]	1989 Study Lakes						1990 Study Lakes						1989 Total	1990 Total	Grand Total
	McNary	Mendocino	Oahe	Priest	Raystown	Shelbyville	Cumberland	Dworshak	Lanier	Milford	Ouachita	Willamette			
D/R/B	92	100	100	93	97	89	95	96	98	97	100	94	94	96	95
D/R/NB	4	26	59	44	7	16	17	50	72	29	9	59	32	52	38
D/NR/B	100	100	100	100	95	90	67	86	67	100	100	95	96	91	93
D/NR/NB	14	67	62	50	29	12	0	50	75	50	0	53	33	49	39
C/R/B	100	0	100	75	100	100	100	91	98	95	100	100	96	97	97
C/R/NB	100	100	100	100	100	100	100	100	100	100	100	81	100	94	97
C/NR/B	100	100	100	0	97	100	100	93	90	100	100	94	98	98	98
C/NR/NB	77	97	100	100	97	100	96	82	92	98	88	100	96	94	95
O/R/B	100	0	100	100	100	100	86	0	87	100	100	100	100	91	94
O/R/NB	0	0	100	67	50	50	0	0	33	0	0	0	53	25	44
O/NR/B	50	75	100	50	93	96	74	71	69	100	81	67	94	77	83
O/NR/NB	11	80	50	50	36	36	0	100	14	0	25	0	41	16	33
Total	56	52	81	59	70	60	70	89	85	82	78	81	62	80	70
Local	61	43	82	61	76	61	75	92	90	84	84	82	65	85	75
Nonlocal	58	91	95	68	91	76	80	89	71	97	83	84	86	86	86
Boaters	92	96	100	91	97	93	85	91	89	99	93	94	95	92	94
Day users	53	44	79	59	68	51	65	88	84	70	73	80	60	79	68
Campers	93	98	100	94	97	100	99	92	97	99	97	91	98	96	97
Other overnight	29	78	95	61	82	77	66	75	70	100	77	83	77	73	75

[1] See Figure 3 for definitions of segment codes.

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Using the proportion of past-year trips during which major durables were used at the study lakes versus all other sites to allocate a share of durable spending to CE projects, it is estimated that just over half (52%) of durable spending may be associated with the study lakes (Table 16). If the figures are adjusted downward to account for the proportion of trips the equipment was used at one of the study lakes versus elsewhere, the totals become $1.622 billion annually (Table 13) with a calculated weighted average of $215 per trip spent on durables.

Percent with durable equipment

Across the 12 study lakes, 70 percent of visitors had durable equipment for use at the lake (Table 15). There is some lake-by-lake variation in the likelihood of bringing durable equipment, but much of this variation is captured by the four segmentation variables. The percentage of visitors with durable items varies from a low of 52 percent at Mendocino to a high of 89 percent at Dworshak Lake. This difference is primarily the result of a high percentage of boaters at Dworshak (91%) versus only one in four visitors boating at Mendocino. With the exceptions of Dworshak and Lanier Lakes, non-residents are slightly more likely to bring equipment than local residents (86% for nonresidents versus 75% for residents).

Durable spending per trip

Within the past year, the average visitor spent $394 per trip on durable items that were used at the site (Table 14). This is about a third of the total cost of durable goods brought to the site, as almost two-thirds of the costs were made in previous years. As expected, durable spending varies considerably by segment. Day users average $208 per trip, while campers average just over $2,000 per trip and other overnight visitors spend an equivalent of $857 per trip on durables purchased within the last year (Table 17 and Figure 7).

Twenty-nine percent of the durable spending occurs within the local area (Table 14). Durable spending at the local level varies from an average of $102 per trip for day users to $383 per trip for campers (Table 17 and Figure 7). Day users spend less on durables, but make a larger portion of durable purchases in the local area (45%) than campers (20%).

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Table 16

Average Durable Spending Shares by Day Use, Camping, and

Other Overnight Visitors (CERSS 1989-90)

		Cost of Durables ($ per trip)		
Lake	Number	1989-90	Share[1]	Percent
Day Users				
Cumberland	36	446	281	63
Dworshak	59	406	202	50
Lanier	99	177	176	100
Milford	83	146	71	49
Ouachita	49	337	214	63
Willamette	278	367	307	84
Subtotal	604	313	209	67
Campers				
Cumberland	96	1,429	618	43
Dworshak	117	2,201	865	39
Lanier	107	819	456	56
Milford	226	1,532	600	39
Ouachita	78	2,744	707	26
Willamette	78	1,220	788	65
Subtotal	702	1,657	672	41
Other Overnight				
Cumberland	114	1,306	869	67
Dworshak	8	3,532	1,225	35
Lanier	81	34	338	98
Milford	19	863	342	40
Ouachita	94	994	450	45
Willamette	5	391	350	89
Subtotal	321	1,239	596	48
Total Sample				
Cumberland	246	584	328	56
Dworshak	184	621	282	45
Lanier	287	209	190	91
Milford	328	728	293	40
Ouachita	221	771	303	39
Willamette	361	441	349	79
Average, 1990 lakes		559	291	52

[1] Cost of each durable item weighted by the proportion of use at the study lake versus all other sites.

Table 17

Average Durable Goods Spending by Day Use, Camping, and

Other Overnight Segments (CERSS 1989-90)

Lake	N	Durable Spending ($/trip)			
		$ Last Year[1]	% Error[2]	$ Local[3]	% Local[4]

Day Users

Lake	N	$ Last Year[1]	% Error[2]	$ Local[3]	% Local[4]
McNary	134	118	26	52	44
Mendocino	36	45	47	0	0
Oahe	102	35	39	9	26
Priest	255	163	50	91	56
Raystown	129	149	24	58	39
Shelbyville	152	103	28	63	61
Cumberland	36	446	61	17	4
Dworshak	59	406	41	244	60
Lanier	99	177	46	148	84
Milford	83	146	40	44	30
Ouachita	49	337	43	17→	52
Willamette	278	367	38	323	88
1989 lakes	808	102		46	38
1990 lakes	604	313		158	53
All lakes	1,412	208	17	102	45

Campers

Lake	N	$ Last Year[1]	% Error[2]	$ Local[3]	% Local[4]
McNary	43	3,251	38	2145	66
Mendocino	58	1,487	54	0	0
Oahe	70	3,960	73	145	4
Priest	34	3,810	41	401	11
Raystown	220	1,403	16	298	21
Shelbyville	58	988	27	101	10
Cumberland	96	1,429	30	66	5
Dworshak	117	2,201	26	183	8
Lanier	107	819	27	421	51
Milford	226	1,532	22	151	10
Ouachita	78	2,744	48	117	4
Willamette	78	1,220	30	566	46

(Continued)

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[1] 1988-89 for first six lakes, 1989-90 for last six.
[2] Standard error of the mean last year costs expressed as a percentage of the mean.
[3] Includes only durables bought locally, within the last year.
[4] Percent of durables purchased within the past year that were bought locally.

Table 17 (Concluded)

Lake	N	Durable Spending ($/trip)			
		$ Last Year	% Error	$ Local	% Local
1989 lakes	483	2,483		515	19
1990 lakes	702	1,657		251	21
All lakes	1,185	2,070	15	383	20
Other Overnight					
McNary	17	91	61	25	28
Mendocino	9	364	45	0	0
Oahe	60	350	43	16	5
Priest	31	435	66	114	26
Raystown	62	741	31	28	4
Shelbyville	52	871	37	143	16
Cumberland	114	1,306	21	330	25
Dworshak	8	3,532	48	163	5
Lanier	81	345	25	258	75
Milford	19	863	73	16	2
Ouachita	94	994	32	43	4
Willamette	5	391	93	391	100
1989 lakes	231	475		54	11
1990 lakes	321	1,239		200	16
All lakes	552	857	29	127	15

DOLLARS
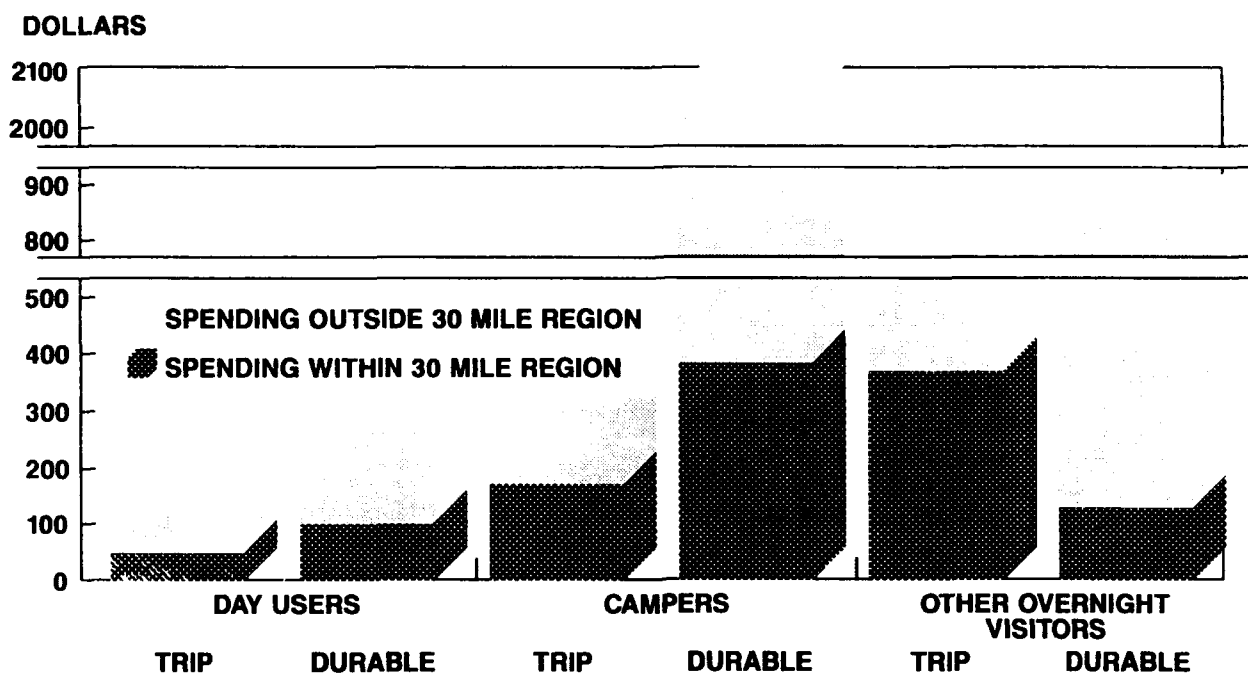
Figure 7. Average trip and durable goods spending by day use, camping, and other overnight segments (CERSS 1989-90)

Variation across the 12 projects

Table 14 and Figure 8 indicate considerable variation in durable spending across the study lakes. Per-trip spending on durables varies from a low of $149 (McNary) to $771 (Ouachita). Differences across segments partially explain this variation. For example, McNary Lake attracts a much higher percentage of day users than Lake Ouachita, and day users spend less on durables. However, durable spending within particular segments also varies considerably by lake (Table 17). The range for day users is $35 at Lake Oahe to $446 at Lake Cumberland. For campers, per-trip durable spending ranges from $819 at Lanier Lake to $3,960 at Oahe. The latter is high because of a couple of large purchases (one instance of $150,000 and one of $200,000 for large mobile home camping vehicles). The wide variation in durable expenses along with small samples when disaggregated to particular lakes or segments suggests caution in applying the individual lake or segment averages for durable goods.

Durable spending by equipment types

Expenses on durable items are mostly in camping and boating categories, with large camping vehicles and boats, trailers, and motors accounting for most durable spending (Table 18). Other smaller items that are lumped into the "Other" category include fishing tackle, binoculars, cameras, bicycles,

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DOLLARS

McNARY   MENDOCINO   OAHE   PRIEST   RAYSTOWN   SHELBYVILLE

SPENDING WITHIN 30-MILE REGION   SPENDING OUTSIDE 30-MILE REGION

DOLLARS

CUMBERLAND   DWORSHAK   LANIER   MILFORD   OUACHITA   WILLAMETTE   ALL LAKES
                                                            LAKES
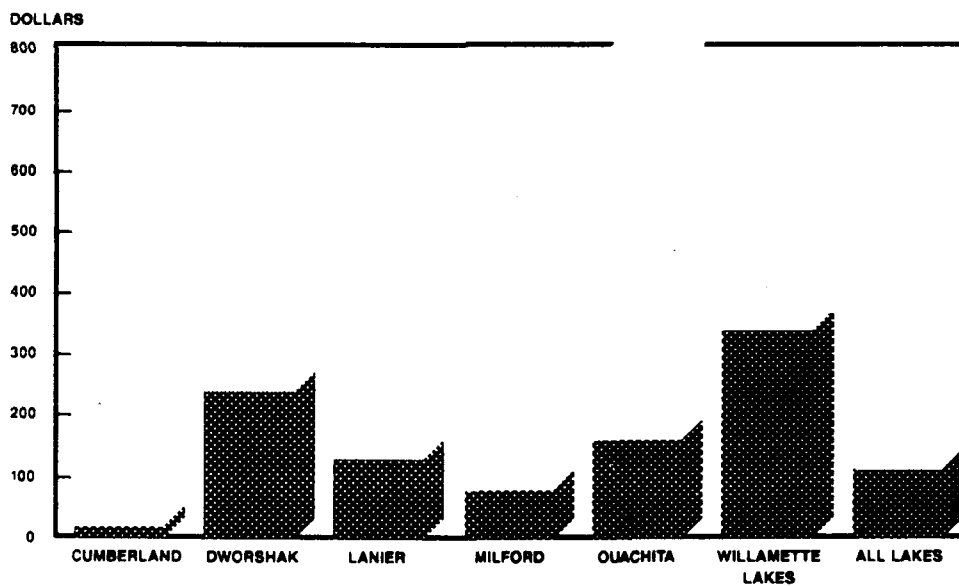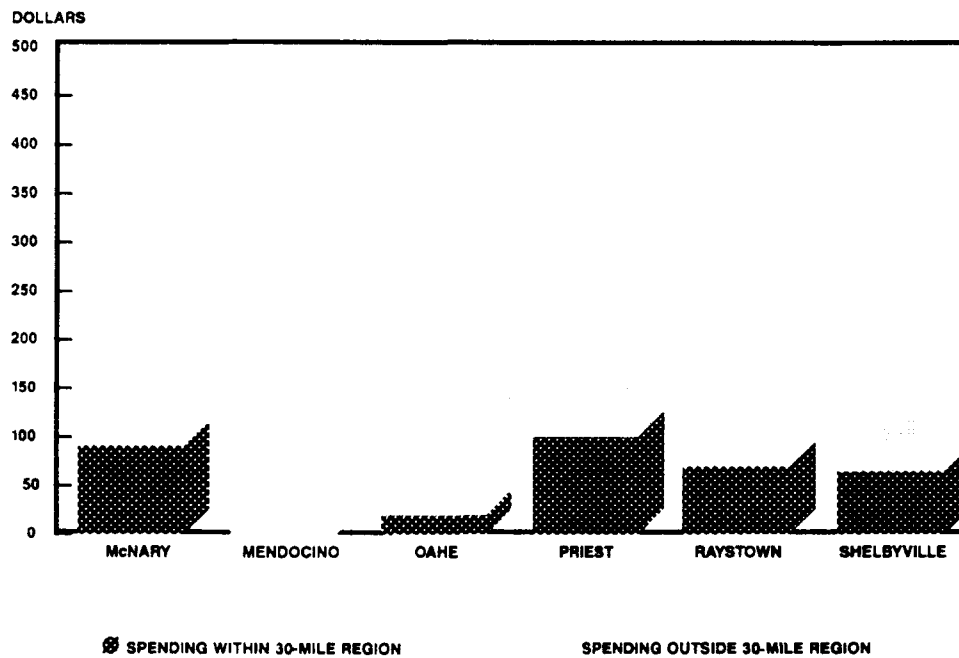
Figure 8. Average local and nonlocal durable goods spending per
party per trip by lake (CERSS 1989-90)

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Table 18

Average Durable Spending[1] by Item by Day Use, Camping, and
Other Overnight Segments ($ per Trip) (CERSS 1989-90)

Lake	N	Durable Item Category[2] ($ per trip)				
		Camp	Boat	Fish	Other	Total
Day Users						
McNary	134	0	114	3	0	118
Mendocino	36	0	46	0	0	45
Oahe	102	0	25	3	6	35
Priest	255	0	151	5	3	163
Raystown	129	0	132	6	9	149
Shelbyville	152	0	87	5	3	103
Cumberland	36	0	446	0	0	446
Dworshak	59	0	406	0	0	406
Lanier	99	0	176	0	0	177
Milford	83	0	146	0	0	146
Ouachita	49	0	337	0	0	337
Willamette	278	0	367	0	0	367
1989 lakes (avg.)	808	0	93	4	3	102
1990 lakes (avg.)	604	0	313	0	0	313
All lakes (avg.)	1,412	0	203	2	2	208
Campers						
McNary	43	3,210	39	4	0	3,251
Mendocino	58	1,311	144	16	19	1,487
Oahe	70	3,551	327	42	13	3,960
Priest	34	3,281	400	3	107	3,810
Raystown	220	546	768	27	13	1,403
Shelbyville	58	488	433	18	8	988
Cumberland	96	700	713	0	16	1,429
Dworshak	117	963	1,229	2	7	2,201
Lanier	107	619	177	0	18	819
Milford	226	1,189	322	0	21	1,532
Ouachita	78	2,151	593	0	0	2,744
Willamette	78	693	513	0	13	1,220
1989 lakes (avg.)	483	2,064	352	18	27	2,483
1990 lakes (avg.)	702	1,053	591	0	12	1,657
All lakes (avg.)	1,185	1,559	471	9	19	2,070

(Continued)

[1] Includes only goods purchased within the past year.
[2] Columns may not add due to rounding and some missing data.

Table 18 (Concluded)

Lake	N	Camp	Boat	Fish	Other	Total
				Durable Item Category		
				($ per trip)		

Other Overnight

Lake	N	Camp	Boat	Fish	Other	Total
McNary	17	0	85	7	0	91
Mendocino	9	6	354	3	0	364
Oahe	60	8	253	71	0	350
Priest	31	339	85	8	4	435
Raystown	62	140	546	27	29	741
Shelbyville	52	28	749	16	8	871
Cumberland	114	0	1,306	0	0	1,306
Dworshak	8	213	3,320	0	0	3,532
Lanier	81	0	345	0	0	345
Milford	19	56	807	0	0	863
Ouachita	94	27	966	1	0	994
Willamette	5	8	383	0	0	391
1989 lakes (avg.)	231	87	345	22	7	475
1990 lakes (avg.)	321	50	1,188	0	0	1,239
All lakes (avg.)	552	69	767	11	3	857

and off-road vehicles. Specific durable goods items for which visitors were queried are listed in Appendix A.

The types of durable purchases varied considerably by segment. Boating items account for almost all of the durables brought by day users. Of the $2,000 in durables purchased per trip by campers, three-fourths is camping equipment and about one-fourth boating items. Other overnight visitors primarily bring boating equipment; a few report bringing camping equipment. Average durable boating expenditures within all three segments was substantially larger at the 1990 study lakes than those surveyed in 1989, while camping expenditures were less. This is likely due to more intensive sampling of boaters in 1990 and points to the need for reliable estimates of boating use in order to adjust the sample for this bias.

Sampling errors

There is considerable variation in durable goods spending, and this variation yields larger sampling errors than for trip spending. Tables 14 and 17 report standard errors for the estimates of average durable spending within the last year on a per-trip basis. As a percentage of the mean, estimates for individual lakes within the three aggregated segments range between 20 and 50 percent, in most cases. This means that 95-percent confidence intervals for these estimates are between 40 and 100 percent of the estimates.

Errors for unsegmented lake averages cannot be estimated, as the sample does not appear to be sufficiently representative relative to durable goods spending, and data are lacking to adjust the sample for disproportionate sampling of different segments. While it is possible to adjust for the ratio of day users to campers, in standard visitation reports, the percentages of campers who boat and day users who boat are not included in these reports. Variations in durable spending between 1989 and 1990 study lakes indicate that boaters were likely sampled more intensively in 1990, generally resulting in higher durable spending estimates in 1990.

Boating expenditures constitute the majority of durable goods purchases at the 12 study lakes, and the proportion of visitors who are boaters appears to vary notably across CE projects. While durable spending for the more narrowly defined 12 segments has not been estimated, it appears that the percentage of visitors who are boaters is an important number for explaining variations in durable spending across CE projects. We speculate that the more refined segmentation would reduce errors in estimating durable spending for individual lakes to around 10 percent.

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Lake shares of durable purchases

Durables used at CE projects may, of course, be used elsewhere. To assign a "share" of the costs of durables to the study projects, the number of trips that each piece of equipment was used at the study lake versus t⟨ ⟩s to all other sites where it was used (within the past year) was measured. ⟨ ⟩ ratio of these two numbers was used to assign a share of the cost of each durable item to the study lake. These measures were made only for major durables (Equipment List 1, Appendix A). One hundred percent of the costs of smaller durable items (Equipment List 2, Appendix A) was assigned to the lake.

Across the six lakes surveyed in 1990, an average of 52 percent of the durable expenses made within the past year was assigned to the study lakes based on the trip ratios (Table 16). The proportion of durable purchases attributed to the lakes varied from a high of 91 percent at Lanier Lake to a low of 39 percent at Ouachita. This proportion will be a function of the number of other similar recreation opportunities in the area and the percentage of users that are local. These shares also varied by user segment, with 67 percent of durables purchased by day users attributable to the lake as compared to 41 percent for campers.

Total durable spending

All of the durable spending averages are reported on a per-trip basis and include parties who did not purchase any durables. These averages can therefore be multiplied by visitation statistics to estimate totals for a given lake. Multiplying by 1989 visitation statistics (party trips) for the 12 study lakes yields total durable spending estimates for each lake. In that year, visitors to the 12 study lakes spent a total of $2.704 billion on durable goods used at the lakes (Table 13 and Figure 9). "Other overnight" visitor segments were not included in project spending estimates presented in Figure 9 because the total use by these segments is unknown.

Adjusted downward to reflect the proportion of times used at one of the study lakes versus elsewhere, for a typical visitor party the durable spending averages are $215 per trip, $139 per trip for day users, $849 per trip for campers, and $411 per trip for other overnight visitors.

If the estimated lake share ratios (times used at the study lake versus elsewhere) are applied to the totals, $987 million dollars in durable spending is attributed to the six 1990 study lakes. The information needed to estimate these ratios was not gathered in 1989, but if the average for the six lakes surveyed in 1990 is applied to the six 1989 study lakes, $635 million in

58
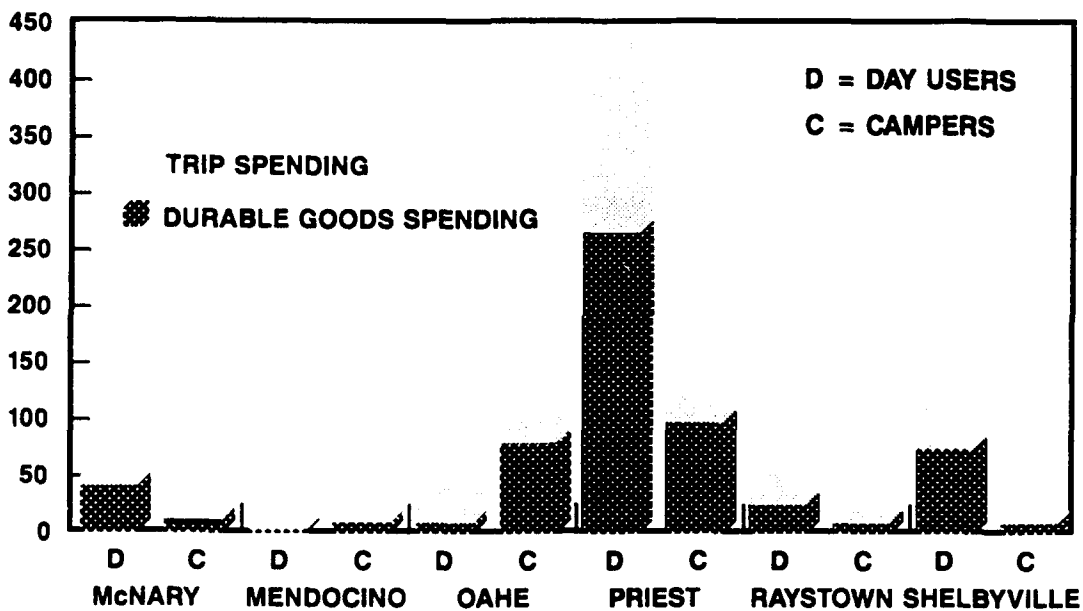
MILLION DOLLARS

MILLION DOLLARS
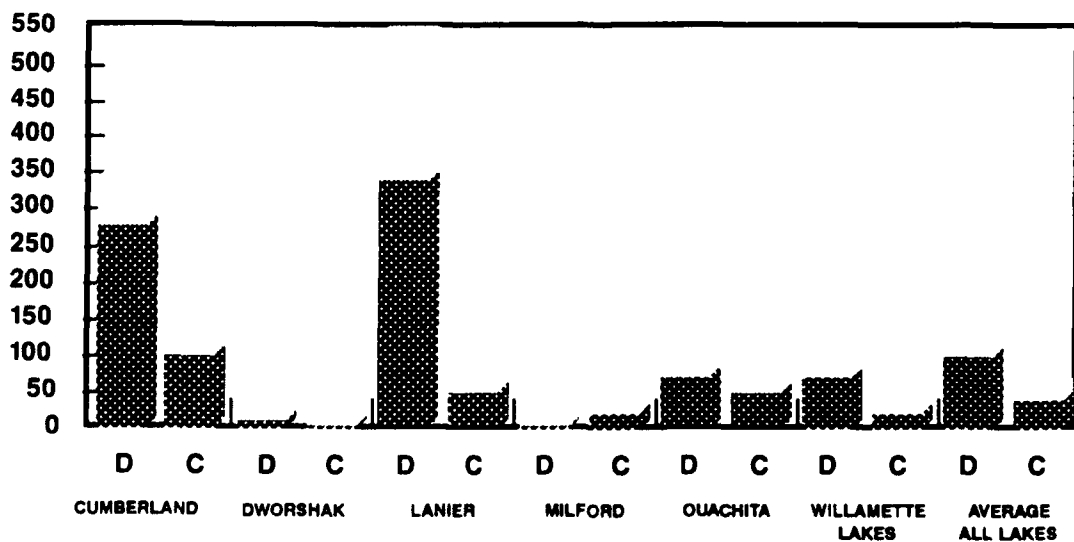
Figure 9. Total trip and durable goods spending by lake for day users and camping (CERSS 1989-90)

durable spending is attributed to the six 1989 study lakes, and a total of $1.622 billion for all 12 lakes is derived (Table 13).

PART IV: SPENDING PROFILE APPLICATIONS

The visitor spending profiles presented in Part III were developed to estimate visitor spending under a wide range of planning and management applications.   This part presents estimated total visitor spending for various CE organizational levels.   In addition, an initial process for adjusting visitor spending profiles to improve the ability to predict visitor spending at projects not included in this study is presented.

National and CE Division Trip/Durable Spending

Table 19 and Figure 10 display the results of multiplying the trip (Table 9) and durable (Tables 16 and 17) spending averages by CE national and Division visitation statistics.   Because visitor spending was measured in party trips, visitor hour statistics reported by the CE were transformed to party visits by applying to visitor hour reports appropriate trip length and party size averages from the spending survey.   Total spending associated with CE projects may be obtained by summing the separate trip and durable estimates.   Such totals, however, may be more misleading than helpful.   Errors are much larger in estimating durable spending than trip spending as there is much wider variation in durable expenses.   The durable spending estimates will also be subject to greater measurement, telescoping, and recall errors than trip expenses.   Finally, durable estimates are complicated by the problem of assigning a share of these estimates to the CE project.   This share is necessarily arbitrary.

In lumping the comparatively reliable trip spending estimate with the much less reliable durable goods spending estimate, one obtains a total number that rests on the extra assumptions and problems of the durable estimate. Furthermore, the durable goods and trip spending estimates are appropriate to distinct kinds of applications.   Trip spending is most appropr' -e for examining the local economic impacts of a particular CE project, while durable expenses are best used to illustrate broader regional and national impacts. Finally, the economic effect of trip spending accrues largely to a small number of service and trade sectors of the economy in the region where spending occurs.   However, the economic effects of durable goods purchases are principally felt in specific production sectors that may be located a great distance from the point of purchases.

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Table 19

Total Trip and Durable Spending[1] by CE Division

(CERSS 1989-90)

Division	No. Trips ($000's)	Trip Spending ($000's)	Durable Spending ($000's)	Total Spending ($000's)
Day Users				
Lower Mississippi River (LMRD)	4,884	307,692	678,876	986,568
Missouri River (MRD)	4,521	284,823	628,419	913,242
New England (NED)	1,111	69,993	154,429	224,422
North Atlantic (NAD)	1,498	94,374	208,222	302,596
North Central (NCD)	2,282	143,766	317,198	460,964
North Pacific (NPD)	2,581	162,603	358,759	521,362
Ohio River (ORD)	19,481	1,227,303	2,707,859	3,935,162
South Atlantic (SAD)	16,914	1,065,582	2,351,046	3,416,628
South Pacific (SPD)	943	59,409	131,077	190,486
Southwestern (SWD)	21,044	1,325,772	2,925,116	4,250,888
CE total	75,259	4,741,317	10,461,001	15,202,318
Percent of total spending		31	69	72
Campers				
Lower Mississippi River	385	103,950	326,865	430,815
Missouri River	461	124,470	391,389	515,859
New England	46	12,420	39,054	51,474
North Atlantic	31	8,370	26,319	34,689
North Central	129	34,830	109,521	144,351
North Pacific	109	29,430	92,541	121,971
Ohio River	1,080	291,600	916,920	1,208,520
South Atlantic	1,019	275,130	865,131	1,140,261
South Pacific	100	27,000	84,900	111,900
Southwestern	1,898	512,460	1,611,402	2,123,862
CE total	5,258	1,419,660	4,464,042	5,883,702
Percent of total spending		24	74	28

(Continued)

[1] Spending figures = "No. Trips" column multiplied by the following average spending per party per trip figures:

Spending Category	Day Users	Campers	Source
Trip	$63	$270	Appendix Table C2 Day Use/Camping means weighted by Table 7 (Use Statistics)
Durables	$139	$849	Table 17 adjusted by Table 16 "share"

Table 19 (Concluded)

Division	No. Trips ($000's)	Trip Spending ($000's)	Durable Spending ($000's)	Total Spending ($000's)
All Visitors				
Lower Mississippi River	5,269	411,642	1,005,741	1,417,383
Missouri River	4,982	409,293	1,019,808	1,429,101
New England	1,157	82,413	193,483	275,896
North Atlantic	1,529	102,744	234,541	337,285
North Central	2,411	178,596	426,719	605,315
North Pacific	2,690	192,033	451,300	643,333
Ohio River	20,561	1,518,903	3,624,779	5,143,682
South Atlantic	17,933	1,340,712	3,216,177	4,556,889
South Pacific	1,043	86,409	215,977	302,386
Southwestern	22,942	1,838,232	4,536,518	6,374,750
CE total	80,517	6,160,977	14,925,043	21,086,020
Percent of total spending		29	71	100

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BILLION DOLLARS
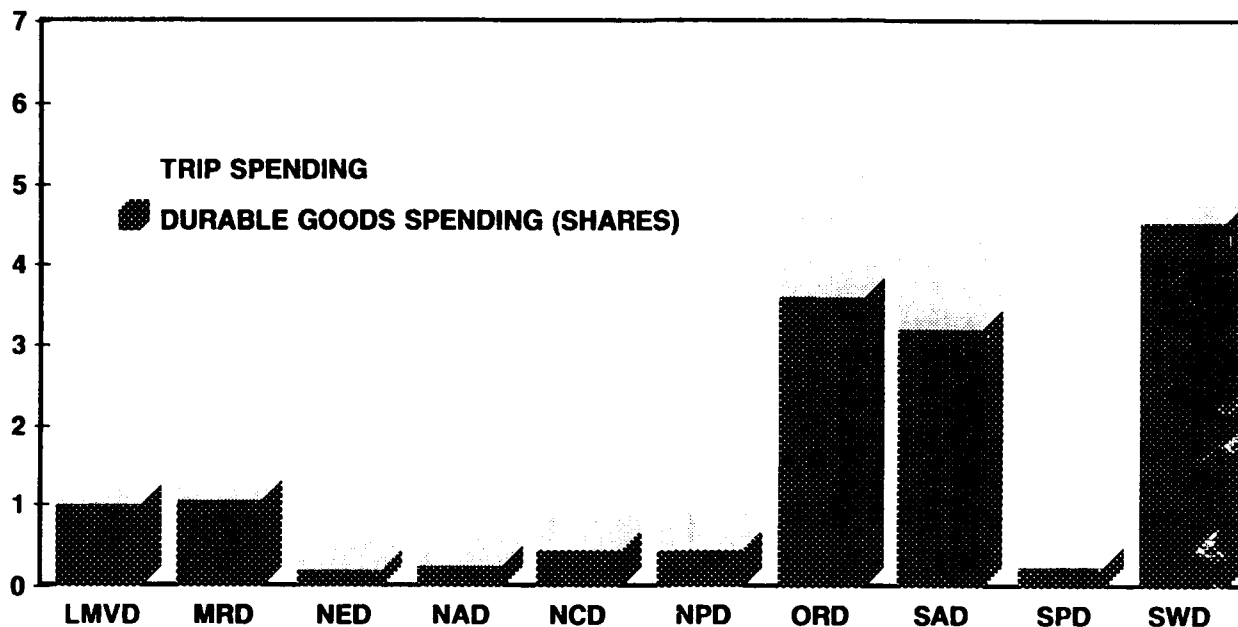
Figure 10. Total trip and durable goods spending by CE
Division (CERSS 1989-90)

In 1989 (year for which visitation data apply), all visitors to CE projects in the United States spent a total of $6.16 billion on trip-related goods and services and $14.9 billion on durable equipment (Table 19). Twenty percent of the total was trip-related spending, whereas 71 percent was spent on durables. Seventy-two percent of the total was spent by day users; 28 percent by campers. Finally, day users incurred proportionately higher trip-related costs (31 versus 24 percent, respectively) and lower durable goods costs (69 versus 76 percent, respectively) than campers.

One warning is in order. The figures in Table 19 are highly aggregated and are likely subject to much error. The 95-percent confidence range for average trip spending is plus or minus 16 percent of the mean for day users and plus or minus 12 percent of the mean for campers. Analogous confidence ranges for average durable spending are plus or minus 34 percent and 30 percent for day users and campers, respectively. The degree of error associated with the visitation data is unknown. In addition, it is not clear if the 12 study projects are representative of all CE projects nationally. Thus, the figures in Table 19 must be used in the context of these limitations.

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Regression Analysis

In this section, the results of regression analyses conducted on the trip spending data are reported. The regression analysis serves several related purposes:

a. To identify the strongest predictors of trip spending.

b. To statistically evaluate the segmentation variables and provide estimates of the amount of variation in trip spending explained by these variables.

c. To estimate predictive models that can be applied to nonstudy lakes.

d. To develop smoothed estimates of spending by segment.

Initially, the regression models were used to examine variation in total trip spending by lake and segment. Additional models for predicting both durable and trip spending within the local area and by major sectors are planned. The final model will entail a series of equations, which should improve the predictability of the overall model. In this report, however, a single equation that evaluates the proposed segmentation and predicts total trip spending is estimated.

A log-linear model is hypothesized:

$$\ln Y = a_0 + a_1 * X_1 + \ldots + a_n * X_n \tag{3}$$

where

Y = total trip spending

X_i = independent variables

a_0, a_i, a_n = coefficients to be estimated (a_i for i = 1 to n, etc.)

Since the goal is to predict average spending for a particular segment at a particular lake, the units of analysis for the regression were segment-lake combinations. With 12 lakes and 12 predefined segments, a total of 144 (12 × 12) cases were possible. Variables for use in the regressions were entered onto a spreadsheet consisting of 144 rows. Total trip spending for each of 144 segment-lake combinations was entered in the first column. Dummy variables to identify individual lake (L1 to L12) and individual segments (S1 to S12) were constructed. Dummy variables were also entered for the four segmentation variables: camp, boat, overnight, and nonresident.

Initial linear regression tests were run in Lotus 1-2-3. Data were then transferred to SPSS PC 3.0 using the SPSS Data Entry conversion package. Final regression runs were made in SPSS PC+ Version 3.0. Fourteen of the segment-lake combinations had no cases and were therefore deleted from the file, yielding a total of 130 cases for analysis. The cases are means for particular lake-segment combinations.

Several models were tested: a model with all 12 lake dummies, one with all 12 segment dummies, one with just the four segmentation variables, and models with various combinations of lake and segment variables. Both unweighted and weighted regression models were tested. As the cases are means based on different sample sizes, the error variance is not constant across cases. A weighted regression is therefore called for using the number of cases as the weighting variable.

The best and most concise model was

$$\ln Y = a_0 + a_1*CAMP + a_2*BOAT + a_3*OVNITE + a_4*NONRES + error \qquad (4)$$

where

$\qquad$ Y = total trip spending for a given lake-segment pair

$\qquad$ a_1 = coefficients to be estimated

$\qquad$ CAMP = 1 if camp, 0 if not

$\qquad$ BOAT = 1 if boat, 0 if not

$\qquad$ OVNITE = 1 if overnight, 0 if not

$\qquad$ NONRES = 1 if nonresident, 0 if not

All of the coefficients were significant with the expected signs. The model explains 74 percent (adjusted R^2) of the variation in the log of trip spending (see Table 20). Based upon the standardized regression coefficients, staying overnight is the most significant determinant of spending, with the other three variables of smaller and roughly equal importance.

Before retransforming the model and evaluating residuals, we briefly summarize the alternative models that were tested. The unweighted version of the above model explained 51 percent of variation in spending (log), and the CAMP variable was not significant at the 0.05 level. A weighted log-linear model with only the 11 lake dummies (one is omitted to avoid multicollinearity) explained only 18 percent of variation in trip spending with 6 of 11 lake

Table 20

Weighted Least Squares Results (Regression Weighted by Number of Cases)

and Log of Trip Spending as Dependent Variable (CERSS 1989-90)

Multiple R   0.866
R square   0.750
Adjusted R square   0.742

Analysis of variance

	DF	Sum of Squares	Mean Square
Regression	4	1,690.11	422.53
Residual	125	563.98	4.51

F	93.65		SIGNIF.	0.0000

Variable	Coefficient (a;)	Standard Error	Standardized Coefficient (Beta)	t	Significance
NONRES	0.433	0.109	0.213	3.969	0.0001
BOAT	0.445	0.098	0.208	4.552	0.0000
CAMP	-0.377	0.131	-0.181	-2.865	0.0049
OVNITE	1.614	0.147	0.789	10.996	0.0000
Constant	3.659	0.091		40.027	0.0000

dummies significant. A model with the 11 segment dummies explained 75 percent of variation in trip spending with 6 of 11 variables significant. The four-variable model reported above was chosen as being more concise. When lake dummies were included with the four segmentation variables, no significant improvement in explanation was noted, and only one lake dummy was significant. Interaction terms between the four segmentation variables also did not improve the model. The log-linear form with our four segmentation variables was therefore selected for further analysis.

It should be noted that all regression diagnostics in Table 16 refer to the log form of the equation. To predict trip spending, the model is retransformed by taking exponentials of both sides of Equation 4. Adjusting for the retransformation bias (see Stynes, Peterson, and Rosenthal 1986), this yields

$$Y = e^{s^2/2} * e^{a_0 + a_1*CAMP + a_2*BOAT + a_3*OVNITE + a_4*NONRES} \qquad (5)$$

where $\underline{s}$ is the standard error of the estimate. Substituting coefficients from Table 16 and simplifying, we have

$$Y = 1.21 * e^{3.659 - 0.377 \cdot CAMP + 0.445 \cdot BOAT + 1.614 \cdot OVNITE + 0.433 \cdot NONRES}$$

$$Y = 46.9 * e^{-0.377 \cdot CAMP} * e^{0.445 \cdot BOAT} * e^{1.614 \cdot OVNITE} * e^{0.433 \cdot NONRES} \tag{6}$$

Since all of the independent variables are dummy variables, this reduces to a simple product of up to five terms:

A constant	46.9
A camping factor	$0.6862 = e^{-0.377}$
A boating factor	$1.5606 = e^{0.445}$
An overnight factor	$5.0251 = e^{1.614}$
A nonresident factor	$1.5413 = e^{0.433}$

The constant applies to the case where all of the dummies are zero (i.e., the local, resident, day user, nonboater segment). To estimate trip spending for any other segment, simply multiply the constant times the appropriate factors (those whose dummy variables are 1). Spending for a local camping segment is 46.9 * 0.6862 * 5.0251. If they also boat, multiply this product times the boating factor, 1.5606.

The size of each factor indicates the increase or decrease in spending associated with that factor. Boaters spend 56 percent more than nonboaters, overnight visitors spend 5 times as much as day users, and nonresidents spend 54 percent more than residents. To obtain the camping effect, both the over-night and camping factors must be multiplied. Thus, campers spend 5.0251 * 0.6862 = 3.45 times as much as day users, but 68 percent of what other over-night visitors spend.

Residuals

Table 21 summarizes the ability of the model to predict variation across segments and lakes. Deleting two large outliers (nonresident, nonboating campers for Willamette projects and other overnight, resident boaters for Lake Oahe), the model predicts within 20 percent of the 12 lake averages for 7 of 12 segments. By using weighted regression, the model predicts best for

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lake-segment combinations with the largest sample sizes. **Hence, it is most accurate for the most frequently encountered segments.** The model's prediction is within 9 percent of the 12-lake average for local day users, within 3 percent for nonresident nonboating day users, within 2 percent for local campers, and within 4 percent for nonresident campers. It also predicts well for local day users with boats (-5%) and local overnight visitors (boating or not). The model overpredicts five segments by about 25 percent. As expected, the model has larger errors for individual lakes. Some portion of these errors is probably due to errors in the observations, small samples, and outliers, while other errors suggest individual differences for particular lakes.

Table 21

Summary of Trip Spending Model Predictions and Errors by Segment for
Table 20 Regression Model (CERSS 1989-90)

Segment	Predicted Spending	Observed 12-Lake Average	Unweighted Percent Error[1]	Observed Weighted Average[2]	Weighted Percent Error[1]
Day use/resident/boater	73	73	0%	77	-5%
Day use/resident/ nonboater	47	48	-1%	43	8%
Day use/nonresident/ boater	113	77	32%	81	28%
Day use/Nonresident/ nonboater	72	60	17%	70	3%
Camper/resident/boater	253	166	35%	189	25%
Camper/resident/ nonboater	162	141	13%	165	-2%
Camper/nonresident/ boater	390	325	17%	300	23%
Camper/nonresident/ nonboater	250	253	-1%	261	-4%
Overnight/resident/ boater	368	165	55%	293	20%
Overnight/resident/ nonboater	236	139	41%	170	28%
Overnight/nonresident/ boater	568	396	30%	537	5%
Overnight/nonresident/ nonboater	364	335	8%	363	0%

[1] Percent error = (predicted - observed)/predicted.
[2] Weighted by number of cases that reported trip spending.

PART V: CONCLUSIONS AND RECOMMENDATIONS

Visitor spending profiles presented in this report provide estimated spending for a detailed list of goods and services purchased by CE visitors to the 12 CE projects included in the survey. Visitor segments for which profiles were developed are more detailed than the user groups included in current CE visitation reports. Recommendations are provided in this chapter to aggregate segments to conform to current visitation reporting procedures and to generalize spending profiles to CE projects not included in this study.

In addition to the trip and durable spending profiles provided in this report, two additional products were required as part of this study. The first additional product was a discussion of recommendations for aggregating the 12 visitor segment profiles into a smaller set of segments that are similar with respect to their spending patterns. The second additional product required recommendations for generalizing from surveyed to nonsurveyed projects. These two sets of recommendations are provided below.

Aggregating Segments

It is recommended that the 12 segments proposed in this report are a minimum number for fully explaining variations in both durable and trip spending for an economic impact analysis. The segments are based on four variables, each of which is critical in explaining important aspects of spending. First, to estimate local impacts, it is important to separate local visitors from nonresidents of the area. Second, the most important variable in predicting total trip spending is whether the visitor is staying overnight in the area. Thus, the percentage of overnight versus day users will significantly impact total spending, while also being critical to estimating expenditures in particular categories, such as lodging. Third, among overnight visitors, both trip and durable spending varies considerably both in total and in type between campers and other overnight visitors. Thus, it is important to separate campers from other overnight visitors. To accomplish this, it is further recommended that the current CE visitation reporting system be modified to measure and report other overnight visitors including those using off-project accommodations. This modification will require a change in the standard visitation reporting procedure. The recently implemented survey component in the Visitation Estimation and Reporting System (VERS) includes the capability of

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measuring "other overnight" visitors. Modification would be required only in the analysis and reporting components of VERS. Fourth, among the 12 lakes surveyed, many differences in spending can be seen at lakes with large hotel facilities. The noncamping overnight visitor reports the highest trip spending of any segment. Finally, the need to discriminate between boating and nonboating segments is particularly apparent from the durable goods analyses. Boating segments are also important in estimating trip spending, as the boating variable enters significantly into most of the initial regression models of trip spending, and is critical to estimating trip spending in boat-related categories.

Thus, the recommendation to use at least these 12 segments in a general spending prediction system is based on the importance of the segments in explaining one or more of the important aspects of spending: total trip spending, total durable spending, local trip spending, and spending within particular spending sectors.

Three other factors must be considered in weighing the number and types of segments, as discussed below.

Estimating visitor trips by segment

In this report, we have estimated totals for the study lakes by aggregating the 12 segments into only three: day users, campers, and other overnight visitors. While reporting average spending for other overnight visitors, we have ignored this segment in expanding to total spending (i.e., set their percentage of total use to zero) because of the lack of reliable estimates of the proportion of other overnight to total visitors. Other overnight visitors are lumped with day users in visitation data.

Gathering reliable information on resident/nonresident and boater/nonboater shares of use will involve some additional costs, but reasonable estimates can likely be made from existing data or management judgments. Our analyses of spending patterns suggest this would be worth the cost in improving the accuracy of spending estimates for different lakes.

Obtaining representative samples

The system we are proposing requires samples that are representative of the 12 segments. If data on segment shares are available from secondary sources, samples at individual lakes need not be representative of visitors in total. This simplifies sampling methods and reduces the costs of surveys, as samples of particular segments are more efficiently taken. For example, campers may be sampled at campgrounds, boaters at marinas and launch sites,

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and day users via general exit surveys or at day-user areas. For many CE projects, obtaining representative samples of all visitors is difficult. Even where this is feasible, random samples of the general visitor population likely would yield mostly local day users and not enough members of the smaller segments, which often have more significant economic impacts.

As the samples obtained at the 12 study lakes are not representative of visitors in total, estimates of the shares of total visitor use by segment are necessary to develop unbiased estimates of spending for each individual lake. In this report we have compromised by adjusting only for the day user-camper shares at each lake. Potential biases in results may exist because of dispro- portionate sampling of boaters versus nonboaters or local residents versus nonlocals. The shares of boaters is probably the most important, particularly for durable goods spending, as camper shares will be correlated somewhat with the percentage of nonresidents. Also, total trip spending for nonresidents, particularly spending in the local area, does not vary dramatically from that of local residents, if one controls for the overnight variables.

Explaining variations in
spending across individual CE projects

Important differences occur in the spending patterns of these 12 seg- ments. To be important in explaining variations across lakes, the segments must also constitute a reasonable share of visitors to at least some lakes, and the shares of visitors from different segments must vary across lakes. One or both of these criteria seem to hold for most of the 12 segments. Some segments could, however, be collapsed into others, as they usually represent a small percentage of total use.

Segments that should maintain their integrity are local day use boaters, local day use nonboaters, and nonlocal campers (boaters and nonboaters). For most lakes, these segments likely account for the bulk of total use.

In roughly decreasing order, recommendations for grouping other segments are as follows:

a. The "other overnight" segment is small except for those lakes with numerous hotel accommodations onsite or an abundance of seasonal homes near the lake. All the other overnight visitors could be lumped into a single segment and perhaps assumed to be nonlocal or to have the same nonlocal share as campers. This would collapse the four other overnight segments into one or two (nonresident and resi- dent overnight).

b. Local overnight visitors are generally a small percentage, with the exception of projects with large cities within 30 miles. The four local overnight categories could be grouped, or all local users

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could be divided into a boating and nonboating segment. Either of these options would reduce the six local segments to two.

c. One could combine the boater and nonboater nonresident camping segments.

Thus, possible options for reduced segments are as follows:

a. Local day use boaters, local day use nonboaters, nonlocal camper, and other overnight including nonlocal day user - 4 segments.

b. Same as a but divide campers into boaters and nonboaters - 5 segments.

c. All local boaters, all local nonboaters, nonlocal campers, and all other nonlocal - 4 segments.

d. Same as c but divide campers into boaters and nonboaters - 5 segments.

Recommended Future Reseach

Equation 6 (page 68) can be used to estimate trip spending at a nonsurveyed CE project. A similar model that predicts durable goods spending is not yet available. However, before accepting the results of Equation 6 as reality, several productive lines of research are recommended to refine the model. Of primary importance are efforts to improve the explanation of lake-by-lake variations, which are substantial in several cases. Some variations may simply be due to sampling errors caused by small sample sizes, while others likely reflect significant differences in spending at different lakes. The fact that dummy variables for the 12 lakes do not add significantly to explained variation indicates that a simple lake shifter factor will probably not significantly improve the model for total trip spending and would therefore not be beneficial for application to nonsurveyed projects. It appears that lake and community characteristics influence spending of different segments in different ways. Explaining local community variations that are not accounted for by the proportions of different segments attracted to a given lake will require either interaction terms or disaggregation of trip spending into its components. Models to predict spending within the local area and within major sectors should be tested. Lake-specific variables (e.g., population, retail sales, disposable household income) may be more important in explaining local spending or specific types of spending. Extending the data set to additional lakes and increasing sample sizes of some segments would also be helpful.

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We recommend that implementation of the simple model reported here proceed simultaneously with efforts to refine the model. The current model may be readily implemented in a pencil-and-paper or spreadsheet format that would be quite accessible to management personnel. Until improvements are made in explaining variations in spending across lakes within particular segments, the model's average predictions can provide quick "ballpark" estimates for any project for which use estimates are available.

The model will likely need to be further simplified to a two-segment model (day users and campers) until use data can be further disaggregated into other overnight visitors, boaters, and resident/nonresident categories. Variations across these segments suggest that even rough estimates of the distribution of visitors across the 12 segments should improve the accuracy of spending estimates. The more well-defined segments become even more important if estimates of spending in particular categories are desired. The nonresident versus resident segments are crucial to separating local from nonlocal spending, and segments defined by camping, boating, and overnight variables will be critical to explaining differences in spending within particular categories, such as lodging, oil and gas, and boat-related sectors. Durable goods purchases depend significantly on whether the visitor is camping or boating, and many of the variations across the study lakes that are not explained by the broader three segments (day user, camper, and other overnight) are explainable when boating is added as a segmentation dimension. However, utilization of these detailed segments requires use data that can be disaggregated into more narrowly defined subgroups or visitor segments than currently is the case. Some of the added information can be gleaned from more complete analysis of existing records (e.g., examining campground registration forms for data on origin and presence of boating equipment). Manager estimates may be required for day users and other overnight visitors.

Limitations

Five primary limitations of the results reported in this report should be recognized. All five must be considered when applying the data or extending the results in a policy analysis framework.

a. With the exception of a handful of hunters, sampling of off-season visitors was nonexistent. Thus, summer visitors and their spending profiles are overrepresented.

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<u>b</u>. With the exception of the proportion of total visitation by day
users versus campers, information required to adjust the sample for
possible biases is lacking. Specifically, percentages of total
visitation are lacking for boaters versus nonboaters, residents
versus nonresidents, and other overnight visitors versus day users.

<u>c</u>. The degree to which the 12 study projects represent the entire CE
system is unknown. It is safe to assume that the 12 study projects
are diverse in many respects, but it is not safe to assume that the
12 study sites represent all the various types of CE visitors or
projects. Needed is a taxonomy or other way of classifying all CE
projects. With such a classification, it would be possible to iden-
tify which other CE projects the 12 sampled lakes represent as well
as determine how to weight the 12-lake data to obtain "national
average visitor profiles."

<u>d</u>. Small sample sizes and large variances are associated with some
spending estimates for specific segments and/or expenditure items.
Expansion of sample sizes for these segments/items or further aggre-
gation is required. Nonetheless, spending estimates are best for
the most frequent categories of visitors prevalent during the summer
months.

<u>e</u>. Durable goods expenses may be overestimated. Respondents were asked
to report the year in which major durable items were purchased. In
this report, only durable expenses that were incurred during the
"past year" were included. Since the interviews were conducted over
the course of two summers (1989 and 1990), durable expenditures that
were made between the summer of 1988 and 1989 and between the summer
of 1989 and 1990 were counted. Thus, it is possible that more than
1 but less than 2 years' worth of durable goods expenses were est-
imated. To account for this error, the durable goods estimates
should probably be reduced, although it is not clear how to deter-
mine the amount of reduction.

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APPENDIX A: ONSITE INTERVIEW INSTRUMENT AND DURABLE
GOODS EQUIPMENT CARD (1990 VERSION)

RECREATION EXPENDITURE SURVEY

6-12-90

On-site Portion

OMB # 0702 - 0016

_____   _____   Date:

Project   Recreation Area Name

AM / PM / ALL DAY   WEEKDAY / WEEKEND

MM DD YY

Code a unique number for every form. ID number:

****

Hello. My name is _____ and I am working for the Corps of Engineers (under government contract). We are interviewing visitors to find out about their recreational use of the lake and how their expenditures in this area affect the region's economy.

1. What was your **primary purpose** for visiting this recreation site today? Record below.

_____   _____   _____

(vehicle 1)   (vehicle 2)   (vehicle 3)

If *NON-RECREATION,* say: **That is all of the information that I need, thank you for stopping.** End interview; record as a non-rec vehicle.
If *RECREATION,* continue.

1 2 3

total
non-rec

2. Will you be returning to this recreation area today?

If *YES,* say: **That is all of the information that I need, thank you for stopping.** End interview; record as a returning vehicle.
If *NO,* continue.

1 2 3

total
returning

May I talk with you about your trip? Your answers are very important as they will help us understand current recreation use of this lake and make decisions about its future use and the use of others like it. The questions that I have to ask will take about 10 minutes of your time. All of your answers will be kept in confidence and you will not be identified in the results. You may ask any questions at any time during the interview.

If *YES,* continue
If *NO,* tally as a refusal and thank person for their time

1 2 3

total
refusals

If person agrees to the interview, record time and continue.
Keep track of the number of exiting vehicles passed during the interview.

_____ a.m. / p.m.
start

A3

3. **Please tell me If your permanent home Is located within the area marked on the map.** Circle "Y" or "N" under "W/in Area" in the chart below.

4. **What Is the ZIP Code of your home?** Record the ZIP Code in the column marked "Perm. Home" in the chart below. If the person does not know their ZIP Code, ask for the county (or city) and state where their permanent home is located. Record instead of ZIP Code in the "Perm. Home" column. Then, in the column marked "CO -- CI", circle "CO" for a county name or "CI" for a city name.

5. **How many of the people In this vehicle are from this ZIP Code?** Record the number of people under "No." in the chart below.

6. **Have you stayed at a vacation or second home since you left your permanent home?** Circle "Y" or "N" in the column marked "Stayed at 2nd Home". If "NO", skip to Question 10.

7. **By the time you return to your permanent home, will you have stayed at the vacation home for longer than 14 nights?** Circle "Y" or "N" under "More than 14". If "NO", skip to Question 10.

8. **What Is the ZIP Code of the vacation home?** Record response under "Second Home" and "CO - CI" according to instructions in Question 4.

9. **From the time you left the vacation home until you return there, will you have visited a friend or relative's home, attended a business meeting, or visited any recreation sites outside the area marked on the map?** Circle "Y" or "N" under "Other Activities". If everyone is from the same ZIP Code (Question 5), continue with the shaded box on the next page. Otherwise, skip to Question 11.

10. **From the time you left your permanent home until you return there, will you have visited a friend or relative's home, attended a business meeting, or visited any recreation sites outside the area marked on the map?** Circle "Y" or "N" under "Other Activities". If everyone is from the same ZIP Code (Question 5), continue with the shaded box on the next page. Otherwise, skip to Question 11.

11. **What other ZIP Codes do people In this vehicle come from?** Record answers in the chart provided according to the instructions in Question 4.

Repeat Questions 3-10 of someone from each ZIPCode.

	3	4	5	6	7	8	9 / 10	
	W/in Area	Perm. Home ZIPCode OR County or City, & State	CO -- CI	No.	Stayed at 2nd Home	More Than 14	Second Home ZIPCode OR County or City, & State	CO -- CI	Other Acti- vities
1	Y N		CO CI		Y N	Y N		CO CI	Y N
2	Y N		CO CI		Y N	Y N		CO CI	Y N
3	Y N		CO CI		Y N	Y N		CO CI	Y N

7 10   8 10
P   V   P

12. Ask all visitors, including those from ZIP Code #1: **Who has traveled the shortest distance to reach this recreation site?** Ask that person: **What ZIP Code did you come from?** Circle the number associated with that ZIP Code.

1 / 2 / 3
nearest ZIP

> The trip origin is the permanent home of the visitor who traveled the shortest distance (Question 12) unless that person answered "YES" to staying at a vacation home for longer than 14 nights. In that case, the trip origin is his or her vacation home.
> Refer to the person whose home was selected as the trip origin and if the trip started from a:
>
> * PERMANENT HOME, say: **For the rest of this interview, when I say TRIP I am referring to the time from when you left your permanent home until the time you return there.**
>
> * VACATION HOME, say: **For the rest of this interview, when I say TRIP I am referring to the time from when you left the vacation home until the time you return there or to your permanent home if you are not returning to your vacation home.**

13. **Have you spent or do you plan to spend any nights away from your (permanent / vacation) home while on this trip?** Circle "Y" or "N".

Y / N
nights away

If *YES*, go to next page, question 19.
If *NO*, continue with question 14.

DAY USERS ONLY

14. **How many hours have you spent at this area today?**

hours onsite

15. **During your trip today have you visited or will you be visiting any other recreation areas at this lake?** Circle "Y" or "N".

Y / N
other sites

If *"YES"*, continue.
If *"NO"*, skip to Question 29.

16. **Not including this area, how many of these other recreation areas will you have visited on your trip?**

# of sites

17. **How many hours have you spent so far at these other recreation areas?**

hours spent

18. **How many additional hours do you intend to spend at these other recreation areas today?** Skip to Question 29.

addt'l hours

A5

OVERNIGHT VISITORS ONLY

19. How many nights have you spent away from home so far on this trip?

|__|__| ⟸ spent

|__|__| ⟵◀ spent w/in area

20. How many of these nights have you spent within the area marked on the map?

|__|__| ⟸ additional

|__|__| ⟵◀ additional w/in area

21. How many additional nights do you plan to spend away from home?

22. How many of these nights will be within the area marked on the map?

|__|__| ⟸ total nights on trip

|__|__| ⟵◀ total nights w/in area

23. Follow-up: ⬎

---

a. Sum total nights spent and total additional nights. Record total and ask: **So for the entire trip you will have spent ____ nights away from home?**

b. Sum nights spent and additional nights to be spent within the area marked on the map. Record total and ask: **Of these, a total of ____ nights will be spent within the area marked on the map?**

---

24. Please refer to the list of lodging categories on the other side of the card that I gave you. For the ____ nights that you said you have spent or will spend <u>within the area marked on the map,</u> which types of lodging have you used or will you use?

Circle the "Y" next to all lodging types mentioned.

** If <u>only one</u> type of lodging was used, use total number of <u>nights within the area marked on the map</u> from Question 23b, to fill in nights.

** If <u>more than one lodging type was used</u>, ask the following question for <u>each</u> type of lodging:

How many nights did you stay at or plan to stay at _____ (lodging type)?

<u>used</u>   <u>nights</u>

Y |__|__| hotel

Y |__|__| camp

Y |__|__| family

Y |__|__| second home

Y |__|__| boat

Y |__|__| other

_____ type

Y / N

destination

25. Was this lake the primary destination of your trip?

A6

26. If one of the first two types of lodging were used (hotel/motel or campground) say: **Please look at the list of sites on the card that I gave you and tell me if the (hotel/motel/campground) that you stayed at is on the list.**

<div align="right">Y / N
lodging on list</div>

If *YES* <u>and</u> the lake was their primary destination, go to Question 29.
If *YES* <u>and</u> the lake was <u>not</u> their primary destination, continue.
If *NO,* continue.

27. **How many separate days have you visited recreation sites on the lake?**

<div align="right">└──┴──┘
days spent</div>

28. **How many additional days do you intend to visit recreation sites on the lake?**

<div align="right">└──┴──┘
additional days</div>

ALL RESPONDENTS

29. **Please refer to the list of activities on the card that I gave you and tell me how many of the people <u>in this vehicle</u> participated or plan to participate in <u>each</u> of these recreation activities while on <u>the trip to this lake</u>.** Record the <u>number of people</u> participating in each activity.

<u>*BOATING*</u>

- <u>*Total number*</u> *using boat*
- *Pleasure boating*
- *Waterskiing*
- *Fishing from boat*

<u>*NON-BOATING*</u>

- *Camping*
- *Fishing from shore*
- *Swimming*
- *Picnicking*
- *Hiking / walking / bicycling*

<u>*FALL / WINTER ACTIVITIES*</u>

- *Big game hunting* ★★★
- *Small game hunting* ★   If boat was used
- *Waterfowl hunting* ★★★ to access site,
- *Snowmobiling* ★★★ record under boating as well.
- *Ice fishing*
- *Cross-country skiing*

<u>*OTHER*</u> *- ex: sunbathing, socializing, etc.*

- Record type of activity: _____

<u>*SIGHTSEEING*</u>

An individual should be recorded as sightseeing only if he or she is not participating in any other activity.

A7

30. The card that I gave you has two lists of equipment on it. Please look at   Y / N
    Equipment List Number 1 and tell me if anyone in your vehicle owns any of these   equip #1
    items and has used it or will use it on this trip within the area marked on the
    map. Circle "Y" or "N". If there is no equipment, go to Question 32.

31. For each piece of equipment that has been used or will be used, please give
    me the number listed beside it. I also need to know the following:

    a. approximate cost,
    b. whether the item was purchased new or used and if used, from a
       dealer or not,
    c. the county and state where the equipment was purchased, and
    d. the year the equipment was purchased.
    e. For boats, I need to know the type of boat, power type, and length in feet.

    Record the responses in the chart below, placing each item on a separate line.
    When finished, continue with Question 32.

32. Please look at Equipment List Number 2. This time I am only interested in   Y / N
    equipment that was purchased some time during the past 12 months. Please tell   equip #2
    me if anyone in your vehicle owns any of these items and has used it or will use
    it on this trip to the lake? Circle "Y" or "N". If there is no equipment, go to Question 34.

33. Please give me the letter listed beside each category of equipment that has
    been used or will be used. I also need to know the following for each category:

    a. the number of items used in the area marked on the map,
    b. the approximate cost for all items in that category,
    c. whether most of the items in the category were purchased new or used and
       if used, from a dealer or not,
    d. the county and state where most of the items in the category were purchased, and
    e. during the past 12 months, the total number of trips this equipment was used.

    Record the responses in the chart below, using a separate line for each equipment
    category. If equipment was purchased from a catalog, write the catalog name under
    "County". When finished, continue with Question 34.

| Line # | Equip. number or letter | Number of Items | Cost | New / Used-Dealer / Used-No Deal. (circle one) | County and ST OR City and ST | County or City | Year ---- # 's Only | Number of Trips | BOATS ONLY | | |
									Boat Type	Power Type	Length (feet)
1				N / UD / UND		CO / CI					
2				N / UD / UND		CO / CI					
3				N / UD / UND		CO / CI					
4				N / UD / UND		CO / CI					
5				N / UD / UND		CO / CI					
6				N / UD / UND		CO / CI					
7				N / UD / UND		CO / CI					
8				N / UD / UND		CO / CI					
9				N / UD / UND		CO / CI					
10				N / UD / UND		CO / CI					

A8

34. If the visitor did not report a boat, camping vehicle, or other motorized vehicle Y / N
(Question 30), skip to Question 40. Otherwise ask: **Did you have or will you** storage
have any storage costs for the (boat, camping vehicle, and/or motorized
vehicle) **you used on this trip, including dry storage and annual marina slip**
rental, for this calendar year? Circle "Y" or "N". If "NO", skip to Question 37.

35. **How much will you spend for storage within 30 miles of the lake for your:**
(read from the chart all appropriate types of equipment) **for this calendar**
year? Record totals for that type of equipment in the chart below.

36. **How much will you spend for storage farther than 30 miles from the lake**
for your: (read from the chart all appropriate types of equipment) **for this**
calendar year? Record totals for that type of equipment in the chart below.

Marina Slip Rental and Storage Costs:

Equip. Type	Amount Spent Within 30 Miles of Lake	Amount Spent Farther Than 30 Miles From Lake
Boats		
RV's		
ORV's		

37. **Did you have or will you have any insurance costs in this calendar year** Y / N
for the (boat, camping vehicle, and/or motorized vehicle) **that you used on** insurance
this trip. Circle "Y" or "N". If "NO", skip to Question 40.

38. **How much will you spend in insurance with agents located within in 30 miles**
of the lake for your: (read from the chart all appropriate types of
equipment) **for this calendar year?** Record totals for that type of equipment
in the chart below.

39. **How much will you spend in insurance with agents located farther than 30**
miles from the lake for your: (read from the chart all appropriate
types of equipment) **for this calendar year?** Record totals for that type of
equipment in the chart below.

Insurance Costs:

Equip. Type	Amount Spent Within 30 Miles of Lake	Amount Spent Farther Than 30 Miles From Lake
Boats		
RV's		
ORV's		

40. If the visitor reported no expenditures (Questions 30 - 39) skip to
Question 41. Otherwise ask: **For most of the expenditures you
reported do you feel that the information you just gave is:** Circle "V",
"R", "N" or "D".

    a. **Very accurate?** (V)
    b. **Reasonably accurate?** (R)
    c. **Not very accurate?** (N)
    d. **Or you don't know** (D)

V / R / N / D

accuracy of responses

41. **Not counting this trip, how many trips have you made since this time
last year to recreation areas on this lake?**

of
trips
last yr

42. **If the lake were not available for recreation, which of the following
would you have done on this trip:** (Circle the letter corresponding to
response.) **DO NOT READ OPTION "d" OR "e".**

A / B / C / D / E

site not available

    a. **Still made a trip, but visited other recreation sites in the area
marked on the map?**
    b. **Still made a trip, but visited sites outside the area marked on the
map?**
    c. **Not made a trip?**

    DO NOT READ:
    d. Both a + b.
    e. Don't know.

43. **Including yourself, how many people are in your vehicle?**

of
people

44. **How many of these people are 17 or younger?** Record number.
How many are 18 to 61? Record number.
How many are 62 or older? Record number.

up to 17

18 - 61

62 +

45. **Which of the following groups best describes the people in this
vehicle?**

    a. **Family**
    b. **Friends**
    c. **Relatives**
    d. **Other**

Circle the "Y" for ALL appropriate categories. If the respondent specifies
a category not listed, write his response in the space provided and circle
the "Y" beside "other".

Y alone

Y family
Y friends
Y relatives
Y other

other category

Thank you for participating in this part of the study. We would also like some information about expenditures your party made while on this trip for items like food, lodging, and gasoline. I would like to give you a questionnaire to fill out when you finish your trip. On average, completing the form will take about 15 minutes. Your participation is important because you are representing many visitors who have a significant economic impact on businesses in the local region.

> * For a group with only one ZIPCode, ask the respondent: **Will you be willing to complete the questionnaire?**
> * For a group that has more than one ZIPCode, say to the person whose home is the trip origin: **Since I have been referring to your home as the trip origin, will you be willing to complete the questionnaire?**

Y / N

mailback

If *YES*, ask: (Transfer answers to the Address Sheet).   **Trip: Perm. / Vac.**

    a. May I have the address of your permanent home? _____

                      City, State and ZIPCode: _____

    b. May I also have your telephone number? ____/_____

    c. What date do you expect to arrive home? _____ **CLIP: Y / N**

FILL OUT A MAILBACK QUESTIONNAIRE WITH THE FOLLOWING INFORMATION:
    1. ID number (from page 1).
    2. Recreation area name (from page 1).
    3. Date of interview (from page 1).
    4. Trip origin - circle either permanent home or seasonal home (from page 2).
    5. Number of people in the vehicle (from page 8).

Show the mailback questionnaire to the respondent and explain briefly how it is to be completed. Point out that Column A of the expenditures (Within 30 miles) refers to the recreation site where the interview took place. Hand the questionnaire to the respondent.

Explain: **When you record trip spending, please include not only your spending, but the spending of everyone in this vehicle. If, for instance, two people paid restaurant costs, enter the total amount in the space provided.**

Whether the person agrees to complete the mailback or not, say: **THANK YOU FOR YOUR TIME.**

End the interview and record the following:

    a. Ending time   _____ *a.m. / p.m.*

                                                   ending

    b. Interviewer initials   _____ *initials*

    c. Record the number of exiting vehicles passed during this interview

                                                            total
                                                            passed

On the first page, fill in the number of Non-rec and Returning vehicles and the number of Refusals.

EQUIPMENT LIST # 2

USED ON THIS TRIP AND PURCHASED WITHIN THE LAST 12 MONTHS

BOATING

A   Water skis & equipment
B   Boat accessories

FISHING

C   Tackle, lures, files, etc.
D   Rods, reels, poles
E   Seines, traps, & nets
F   Depth & fish finders
G   Fishing vests & other clothing
H   Rubber boots, waders
I   Trolling motors

HUNTING

J   Rifles, shotguns, handguns, muzzle-loaders, etc.
K   Bows, arrows & other archery equipment
L   Decoys
M   Carriers & cases
N   Hunting boots
O   Rubber boots & waders
P   Hunting clothing

CAMPING

Q   Tents, sleeping bags, backpacks
R   Camping vehicle accessories

OTHER REC. EQUIP

S   Bicycles
T   Other (binoculars, etc.)

EQUIPMENT LIST # 1

USED ON THIS TRIP

BOATING

10   Motorized boat
11   Nonmotorized boat
12   Rubber boat
13   Jet ski
14   Sailboard
15   Boat engines, outboard motors
16   Boat trailer
17   Other boating: specify

CAMPING

40   Motorhome
41   Travel trailer
42   Pop-up trailer
43   Pickup camper
44   Converted van or bus
45   Other camping: specify

OTHER MOTORIZED VEHICLES

50   Snowmobiles
51   Trail bikes, scooters
52   3 or 4-wheelers
53   Other vehicles: specify

OTHER EQUIPMENT

60   Other trailers: specify
61   Other equipment: specify

LODGING CATEGORIES

* Hotel, motel, inn, bed & breakfast, resort, or rented house, cabin, boat cottage, condominium, hunting or fishing lodge, etc.

* Campground, rental RV site, etc.

* House, cabin, boat, or such, belonging to family, friends, or relatives (not rented)

* Own vacation or second home

* Own boat

* Anything other than above

RECREATION ACTIVITIES

BOATING-RELATED ACTIVITIES

* Any activity using a boat
* Pleasure boating
* Waterskiing
* Fishing from a boat

NON-BOATING ACTIVITIES

* Camping
* Fishing from the shore
* Swimming
* Picnicking
* Hiking, walking, bicycling

FALL / WINTER ACTIVITIES

* Big game hunting
* Small game hunting
* Waterfowl hunting
* Snowmobiling
* Ice fishing
* Cross-country skiing

OTHER ACTIVITIES NOT LISTED
SIGHTSEEING

APPENDIX B: MAILBACK QUESTIONNAIRE
(1990 VERSION)

CORPS OF ENGINEERS RECREATION SURVEY
TRIP EXPENDITURES

Please record the trip-related spending made by all of the people that were in your vehicle at the time of the interview. There are two columns on the form. COLUMN A, is for spending within 30 miles of the lake where you were interviewed. COLUMN B, is for spending everywhere else. The amounts you put in COLUMNS A and B should add up to the total spending for that spending category for your entire trip (based on the trip origin listed on the preceding page). For example, if the people in your vehicle spent $60 at restaurants during the trip, of which $20 was spent within 30 miles of the lake, you would enter $20 in COLUMN A and $40 in COLUMN B.

Please record only spending related to the recreation activities on your trip. For example, if you stayed overnight on the drive to the lake, write down the lodging cost. Report expenses for this trip only – do not report expenses for the whole year or for other trips.

Finally, it is important that you report how much was spent on the trip by everyone in the vehicle at the time of the interview, not just how much you spent. If you shared expenses with others, please find out how much they spent and add this to your expenditures before recording them on the form.

Please read through all items in each category of expenditures. If you have no expenditures to report for a given spending type, you do not need to write in 0's. Instead, place a check as instructed in the shaded box. For instance, if you had no lodging expenses, you would check the box as follows:

Put a check in the box [√] if
you had no lodging expenses.   [ ]

The questions that follow are based on your recent recreation trip to the:

_____
(Lake and Recreation Area Name)

where you were interviewed on _____ . At that time there were

_____ (Date)

_____ people in your vehicle. Record expenses for these people only.

Your trip origin for the purpose of this survey was established as your

permanent home / vacation home.

	COLUMN A within 30 miles of the lake	COLUMN B farther than 30 miles from the lake
D. BOAT EXPENSES (THIS TRIP ONLY!)		
1. Boat gas and oil	$	$
2. Boat or canoe rental	$	$
3. Boat repairs	$	$
4. Boat parts and accessories	$	$
5. Boat launch and transient slip fees	$	$
6. Boat fares on rivers, lakes or canals (not fishing charters, not ferry tolls)	$	$
Put a check in the box [√] if you had no boat expenses.	[ ]	[ ]
E. FISHING EXPENSES		
1. Temporary fishing license just for the trip (not an annual license)	$	$
2. Fishing boat charter fee	$	$
3. Fishing bait (live & processed, not artificial lures, flies, etc.)	$	$
Put a check in the box [√] if you had no fishing expenses.		[ ]
F. HUNTING EXPENSES		
1. Temporary hunting license just for the trip (not and annual license)	$	$
2. Ammunition and handloading materials, not handloading machinery	$	$
Put a check in the box [√] if you had no hunting expenses.		[ ]

B3

	COLUMN A within 30 miles of the lake	COLUMN B farther than 30 miles from the lake

A. LODGING

1. Hotels, motels, rental homes, rental boats, cabins, cottages, bed & breakfasts, resorts, rented condominiums, etc. ...... $_____ $_____

2. Campgrounds, rental RV sites .... $_____ $_____

If you stayed at a campground or rental RV site within 30 miles of the interview site, please give the campground or RV site name: _____

> Put a check in the box [√] if you had no lodging expenses. [ ]

B. FOOD AND BEVERAGE

1. Grocery, convenience, liquor, and other food and beverage stores (for eating and drinking off-premises) .... $_____ $_____

2. Restaurants, diners, taverns, bars, and other eating and drinking places .... $_____ $_____

> Put a check in the box [√] if you had no food or beverage expenses. [ ]

C. AUTO AND RECREATION VEHICLE (RV) EXPENSES

1. Auto or RV gas and oil .... $_____ $_____

2. Auto or RV rental .... $_____ $_____

3. Auto or RV repairs and washing .... $_____ $_____

4. Auto or RV parts

  a. tires .... $_____ $_____

  b. all other parts .... $_____ $_____

5. Parking fees and tolls (road, bridge, etc) $_____ $_____

> Put a check in the box [√] if you had no auto or recreation vehicle expenses. [ ]

There are two types of questions included in this questionnaire. The first deal with your opinions on the management of this lake and the Upper Mississippi River Basin. The rest deal with recreation-related spending made in preparation for, during, and after your trip to the site noted above.

1. Why did you choose to visit the site where you were interviewed?

2. What improvements would you like to see made at that site?

3. This survey is concerned with the Upper Mississippi River Basin - an area made up of the land surrounding the Mississippi River north of Cairo, Illinois, and the commercially navigable parts of the Illinois, St. Croix, Minnesota, and Kaskaskia Rivers. The successful management of this river basin requires a balance of competing uses, such as recreation and commercial navigation, with environmental features. An important part of achieving this balance is the understanding of public needs and opinions.

What do you believe is the most important issue that affects the management of the Upper Mississippi River Basin?

	COLUMN A within 30 miles of the lake	COLUMN B farther than 30 miles from the lake

G. OTHER ACTIVITY AND ENTERTAINMENT EXPENSES

1. Rental fees for recreation equipment - bicycles, golf carts, etc. (record boat, canoe rental in D.2.)	$_____	$_____
2. Fees for guide services (tour guides, fishing and hunting guides, etc.)	$_____	$_____
3. Admission to spectator sports	$_____	$_____
4. Admission to tourist attractions (amusement parks, museums, etc.)	$_____	$_____
5. Other recreation (bowling, skating, video games, skiing, golfing, etc.)	$_____	$_____

Put a check in the box [√] if you had no other activity or entertainment expenses. [ ] [ ]

H. OTHER EXPENSES

1. Camera film, video tape purchase	$_____	$_____
2. Film developing, video tape processing	$_____	$_____
3. Souvenirs and gifts (not clothes)	$_____	$_____
4. Clothing (not for hunting or fishing):		
a. Footwear	$_____	$_____
b. Men's and boys'	$_____	$_____
c. Women's and girls'	$_____	$_____
5. Other: If you have other expenses not listed above, please record the type and amount of spending here. Examples include: airline fares, haircuts, laundry, doctor visit, medications (prescription and nonprescription) etc.		
a. type: _____	$_____	$_____
b. type: _____	$_____	$_____
c. type: _____	$_____	$_____

Put a check in the box [√] if you had no other expenses. [ ]

I. FOLLOW-UP

1. In total, how many nights did you spend away
   from home on this trip. . . . .   _____ nights

2. How many nights did you spend within 30 miles
   of the lake where you were interviewed . . .   _____ nights

Place a check [√] in the appropriate box below to indicate how accurate you believe
your responses to the spending questions are.

| 100% | 90% | 80% | 70% | 60% | 50% | 40% | 30% | 20% | 10% | 0% |

The expenses I
reported are
accurate

The expenses I
reported are
fairly accurate

The expenses I
reported are
just guesses

**Please fold this questionnaire so that the address is on the outside.
Use the peel-off tab to seal it, then drop it in the mail.
No need to add postage.**

THANK YOU FOR YOUR HELP!

B6

APPENDIX C: DISTRIBUTION OF VISITOR SEGMENTS AND MEAN TRIP
    SPENDING PER PARTY FOR 12 CE LAKES (SUMMERS 1989-90)

Table C1

Distribution of Visitor Segments Across 12 CE Lakes (Summers 1989-90 Expenditure Study): OnSite and Mailback Surveys

Onsite Survey

Lake	McNary N	McNary PCT	Mendocino N	Mendocino PCT	Oahe N	Oahe PCT	Priest N	Priest PCT	Raystown N	Raystown PCT	Shelbyville N	Shelbyville PCT	Cumberland N	Cumberland PCT	Dworshak N	Dworshak PCT	Lanier N	Lanier PCT	Milford N	Milford PCT	Ouachita N	Ouachita PCT	Willamette N	Willamette PCT	Total N	Total PCT
Day Users																										
D/R/B	64	33	3	3	41	18	73	23	64	15	63	24	21	8	27	14	47	16	38	12	17	8	153	42	611	19
D/R/NB	54	28	23	22	46	20	178	56	30	7	62	24	12	5	2	1	43	15	28	9	11	5	92	25	581	18
D/NR/B	9	5	1	1	9	4	2	1	23	6	10	4	3	1	29	15	6	2	9	3	18	8	20	5	139	4
D/NR/NB	7	4	9	9	8	3	2	1	14	3	17	6	1	0	2	1	4	1	8	2	3	1	17	5	92	3
Overnight Users (Resident)																										
O/R/C/B	7	4	0	0	5	2	8	3	17	4	8	3	10	4	22	12	45	16	44	13	18	8	22	6	206	6
O/R/NC/B	2	1	0	0	4	2	5	2	6	1	6	2	7	3	0	0	39	14	7	2	14	6	3	1	93	3
O/R/C/NB	22	11	4	4	8	3	10	3	11	3	12	5	4	2	1	1	40	14	27	8	3	1	32	9	174	5
O/R/NC/NB	1	1	0	0	1	0	6	2	3	1	4	2	2	1	0	0	6	2	0	0	0	0	0	0	23	1
Overnight Users (Nonresidents)																										
O/NR/C/B	2	1	18	17	38	16	0	0	160	38	23	9	56	22	88	46	10	4	112	34	41	19	17	5	565	18
O/NR/NC/B	4	2	4	4	49	21	2	1	43	10	28	11	96	38	7	4	29	10	12	4	68	31	3	1	345	11
O/NR/C/NB	14	7	36	35	19	8	16	5	34	8	15	6	27	11	11	6	13	5	44	13	16	7	9	2	254	8
O/NR/NC/NB	8	4	5	5	6	3	18	6	11	3	14	5	11	4	1	1	7	2	0	0	12	5	0	0	93	3
Valid cases	194	100	103	100	234	100	320	100	416	100	262	100	250	100	190	100	289	100	329	100	221	100	368	100	3176	100
Missing	0		0		2		3		0		4		0		0		0		0		0		0		9	
Total	194		103		236		323		416		266		250		190		289		329		221		368		3185	

Mailback Survey

Lake	McNary N	McNary PCT	Mendocino N	Mendocino PCT	Oahe N	Oahe PCT	Priest N	Priest PCT	Raystown N	Raystown PCT	Shelbyville N	Shelbyville PCT	Cumberland N	Cumberland PCT	Dworshak N	Dworshak PCT	Lanier N	Lanier PCT	Milford N	Milford PCT	Ouachita N	Ouachita PCT	Willamette N	Willamette PCT	Total N	Total PCT
Day Users																										
D/R/B	27	31	2	3	18	13	52	33	47	17	52	32	12	6	25	15	35	17	30	11	14	8	128	44	442	20
D/R/NB	21	24	13	20	23	17	73	46	16	6	33	20	12	6	2	1	34	17	18	7	7	4	70	24	322	15
D/NR/B	5	6	0	0	5	4	1	1	17	6	3	2	3	2	23	14	5	2	8	3	11	6	18	5	99	5
D/NR/NB	1	1	9	14	7	5	1	1	10	4	10	6	1	1	2	1	1	0	3	1	3	2	15	5	63	3
Overnight Users (Residents)																										
O/R/C/B	4	5	0	0	3	2	5	3	12	4	4	2	8	4	20	12	28	14	38	14	15	9	16	6	153	7
O/R/NC/B	1	1	0	0	4	3	4	3	1	0	4	2	7	4	0	0	26	13	6	2	12	7	1	0	66	3
O/R/C/NB	15	17	0	0	3	2	3	2	10	4	8	5	3	2	1	1	26	13	22	8	3	2	21	7	115	5
O/R/NC/NB	0	0	0	0	1	1	2	1	2	1	2	1	2	1	0	0	3	1	0	0	0	0	0	0	12	1
Overnight Users (Nonresidents)																										
O/NR/C/B	1	1	15	23	24	18	0	0	108	39	10	6	41	21	78	47	5	2	95	36	35	20	12	4	424	19
O/NR/NC/B	3	3	3	5	36	27	1	1	29	10	15	9	76	39	4	2	20	10	11	4	53	31	2	1	253	12
O/NR/C/NB	8	9	20	30	9	7	9	6	22	8	11	7	21	11	10	6	12	6	36	14	13	8	7	2	178	8
O/NR/NC/NB	2	2	4	6	1	1	7	4	5	2	10	6	9	5	1	1	7	3	0	0	8	5	0	0	54	2
Valid cases	88	100	66	100	134	100	158	100	279	100	162	100	195	100	166	100	202	100	267	100	174	100	290	100	2181	100
Missing	0		0		1		1		0		3		0		0		0		0		0		0		5	
Total	88		66		135		159		279		165		195		166		202		267		174		290		2186	

C3

Table C2

Mean Trip Spending per Party by User Segments for 12 CE Lakes (Summer 1989-90): Mailback Survey

1. Lake McNary

Segment	Resident							Nonresident							Total
	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	
No. of Cases	27	21	4	1	15	0	68	5	1	1	3	8	2	20	88

Spending Category

Spending by Major Category Within Local Region Only

Segment	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
Lodging	0.00	0.00	21.50	0.00	11.87		3.88	0.00	0.00	48.00	37.33	9.63	125.00	24.35	8.54
Food and beverages	17.67	7.76	58.50	25.00	25.93		18.94	13.20	0.00	150.00	49.67	39.13	76.00	41.50	24.07
Auto and RV	11.00	5.86	27.00	30.00	43.73		17.65	7.40	0.00	200.00	16.33	61.25	0.50	38.85	22.63
Airline	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boat	15.26	0.24	15.00	30.00	0.00		7.46	9.60	0.00	72.00	31.67	0.00	0.00	10.75	8.21
Fish	1.30	0.00	0.00	0.00	0.67		0.66	0.00	0.00	0.00	0.00	1.25	0.00	0.50	0.63
Hunt	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Entertainment	0.00	0.00	0.00	0.00	1.07		0.24	0.00	0.00	30.00	0.00	4.88	32.50	6.70	1.71
Misc.	3.41	1.24	10.25	0.00	10.13		4.57	3.00	0.00	20.00	4.33	2.75	15.00	5.00	4.67
Other	1.11	0.10	0.00	0.00	3.87		1.33	0.00	0.00	0.00	0.00	1.25	0.00	0.50	1.14
Sub total	49.75	15.20	132.25	85.00	97.27		54.93	33.20	0.00	520.00	139.33	120.14	249.00	128.16	71.58

Total Spending Within and Outside Local Region

Segment	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
Lodging	0.00	0.00	21.50	0.00	18.40		5.32	0.00	0.00	48.00	58.67	11.75	125.00	28.40	10.57
Food and beverages	20.26	9.57	72.75	25.00	43.27		25.19	25.40	25.00	150.00	84.33	67.00	116.00	66.15	34.50
Auto and RV	13.41	6.95	39.25	30.00	60.60		23.59	24.80	5.00	200.00	69.67	103.00	13.00	69.40	34.00
Airline	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boat	16.74	0.24	15.00	30.00	0.13		8.07	15.80	0.00	72.00	51.00	0.00	0.00	15.20	9.69
Fish	1.30	0.00	0.00	0.00	5.80		1.80	1.20	0.00	0.00	0.00	1.75	0.00	1.00	1.61
Hunt	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Entertainment	0.00	0.00	0.00	0.00	1.07		0.24	0.00	0.00	30.00	0.00	4.88	37.50	7.20	1.82
Misc.	4.37	1.24	10.25	0.00	11.53		5.26	3.00	0.00	20.00	36.33	31.75	20.00	21.90	9.05
Other	1.11	0.86	0.00	0.00	7.20		2.29	0.00	0.00	0.00	50.00	1.25	0.00	8.00	3.59
Gd total	57.19	18.86	158.75	85.00	148.00		71.77	70.20	30.00	520.00	350.00	221.38	311.50	217.25	104.83

(Continued)

(Sheet 1 of 12)

C4

Table C2 (Continued)

2. Lake Mendocino

Segment	Resident						Nonresident							
	D/B	D/NB	O/C/B	O/NC/B	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
No. of Cases	2	13	0	0	0	15	0	9	15	3	20	4	51	66

Spending Category

Spending by Major Category Within Local Region Only

Segment	D/B	D/NB	O/C/B	O/NC/B	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
Lodging	0.00	0.00				0.00		0.00	34.20	42.00	25.55	27.50	24.71	19.09
Food and beverages	32.50	28.77				29.27		14.89	67.40	18.33	61.40	28.25	49.82	45.15
Auto and RV	13.50	11.92				12.13		1.67	19.47	0.00	86.05	17.00	41.10	34.52
Airline	0.00	0.00				0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boat	1.50	5.77				5.20		2.22	17.87	8.00	0.00	0.00	6.12	5.91
Fish	0.00	0.85				0.74		0.00	2.20	0.00	1.65	0.00	1.29	1.17
Hunt	0.00	0.00				0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Entertainment	0.00	0.15				0.13		0.00	0.53	0.67	0.50	0.00	0.39	0.33
Misc.	0.00	17.15				14.86		0.00	5.27	4.67	9.60	3.50	5.86	7.91
Other	0.00	7.69				6.66		0.00	5.27	0.00	2.50	0.00	2.53	3.47
Sub total	47.50	72.30				68.99		18.78	152.21	73.67	187.25	76.25	131.83	117.55

Total Spending Within and Outside Local Region

Segment	D/B	D/NB	O/C/B	O/NC/B	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
Lodging	0.00	0.00				0.00		0.00	39.53	42.00	63.60	27.50	41.20	31.83
Food and beverages	32.50	29.69				30.06		21.11	88.00	25.00	122.20	31.25	81.45	69.77
Auto and RV	13.50	15.08				14.87		10.67	68.60	15.67	187.05	21.75	98.04	79.14
Airline	0.00	9.23				8.00		0.00	0.00	0.00	0.00	0.00	0.00	1.82
Boat	1.50	5.77				5.20		2.22	23.40	8.00	0.00	0.00	7.74	7.17
Fish	0.00	0.85				0.74		0.00	2.20	0.00	1.65	0.00	1.29	1.17
Hunt	0.00	0.00				0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Entertainment	0.00	0.31				0.27		3.33	0.53	0.67	6.95	0.00	3.51	2.77
Misc.	0.00	69.46				60.20		1.89	9.93	8.00	32.25	4.75	16.74	26.62
Other	0.00	7.69				6.66		0.00	5.27	0.00	3.00	0.00	2.73	3.62
Gd total	47.50	138.08				126.00		39.22	237.46	99.34	416.70	85.25	252.70	223.91

(Continued)

(Sheet 2 of 12)

C5

Table C2 (Continued)

3. Lake Oahe

Segment	Resident						Nonresident							
	D/B	D/NB	O/C/B	O/NC/B	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
No. of Cases	18	23	3	4	1	52	5	7	24	36	9	1	82	134

Spending Category

Spending by Major Category Within Local Region Only

	D/B	D/NB	O/C/B	O/NC/B	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
Lodging	0.00	0.00	7.00	112.50	0.00	9.33	0.00	0.00	40.79	62.31	18.00	56.00	41.95	29.29
Food and beverages	6.22	6.43	29.00	174.50	20.00	21.44	7.00	5.86	73.38	67.11	27.78	40.00	55.40	42.22
Auto and RV	7.22	4.65	5.33	130.50	10.00	15.79	8.40	5.00	22.21	40.06	10.78	20.00	26.45	22.31
Airline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boat	60.00	0.00	0.00	53.00	0.00	24.85	6.40	0.00	15.83	21.72	0.00	66.00	14.56	18.55
Fish	2.72	0.78	1.33	22.50	0.00	3.27	4.80	0.29	18.13	15.72	1.78	0.00	13.53	9.54
Hunt	0.00	3.26	0.00	0.00	0.00	1.44	0.00	0.00	0.00	1.94	0.00	0.00	0.85	1.08
Entertainment	0.00	0.00	0.00	0.00	6.00	0.12	0.00	0.00	0.17	1.14	2.33	181.00	3.01	1.89
Misc.	0.56	0.83	11.67	34.00	5.00	4.04	0.00	0.00	29.21	8.22	0.00	15.00	12.34	9.12
Other	0.22	0.00	0.00	0.00	0.00	0.08	0.00	0.00	4.79	12.36	0.00	0.00	6.83	4.21
Sub total	76.94	15.95	54.33	527.00	41.00	80.34	26.60	11.15	204.51	230.58	60.67	378.00	174.93	138.22

Total Spending Within and Outside Local Region

	D/B	D/NB	O/C/B	O/NC/B	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
Lodging	0.00	0.00	7.00	114.50	0.00	9.48	0.00	0.00	42.25	78.97	48.89	56.00	53.08	36.16
Food and beverages	6.22	7.39	29.00	269.50	20.00	29.17	7.00	7.71	87.17	121.58	101.33	40.00	91.58	67.36
Auto and RV	9.72	5.43	5.33	232.50	10.00	24.84	11.40	14.29	57.08	119.31	129.67	67.00	86.05	62.30
Airline	0.00	0.00	0.00	325.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.70
Boat	71.94	0.00	0.00	53.00	0.00	28.98	8.40	0.71	18.63	25.03	0.00	66.00	17.01	21.66
Fish	2.72	1.00	1.33	22.50	0.00	3.36	4.80	0.29	18.75	19.14	1.78	0.00	15.21	10.61
Hunt	0.00	3.26	0.00	0.00	6.00	1.44	0.00	0.00	0.00	1.94	0.00	0.00	0.85	1.08
Entertainment	0.00	0.00	0.00	0.00	6.00	0.12	0.00	0.00	0.33	31.92	27.33	181.00	19.32	11.87
Misc.	11.67	2.09	11.67	62.00	5.00	10.60	0.00	0.43	30.92	31.17	43.33	15.00	27.71	21.07
Other	0.22	0.00	0.00	0.00	0.00	0.08	0.00	1.00	6.25	19.58	0.00	0.00	10.51	6.46
Gd total	102.49	19.17	54.33	1079.00	41.00	133.07	31.60	24.43	261.38	448.64	352.33	425.00	321.33	248.28

(Continued)

(Sheet 3 of 12)

Table C2 (Continued)

4. Lake J. P. Priest

Segment	Resident							Nonresident							Total
	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	
No. of Cases	52	73	5	4	3	2	139	1	1	0	1	9	7	19	158

Spending Category

Spending by Major Category Within Local Region Only

	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
Lodging	0.00	0.00	15.40	0.00	20.00	0.00	0.99	0.00	0.00	0.00	100.00	33.00	82.71	51.37	7.04
Food and beverages	15.48	7.13	58.00	21.25	26.67	42.50	13.42	10.00	0.00	0.00	100.00	73.78	48.86	58.74	18.87
Auto and RV	9.19	4.51	9.00	5.00	10.00	7.50	6.60	5.00	0.00	0.00	30.00	67.11	124.71	79.58	15.37
Airline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.71	15.00	1.80
Boat	20.60	9.75	19.00	14.00	0.00	15.00	14.13	0.00	12.00	0.00	40.00	0.00	3.57	4.05	12.92
Fish	1.63	0.71	45.00	3.25	6.67	3.00	2.88	0.00	0.00	0.00	340.00	0.00	2.71	18.89	4.81
Hunt	1.92	0.11	0.00	0.00	0.00	0.00	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68
Entertainment	8.37	0.49	0.00	0.00	0.00	5.00	3.46	0.00	0.00	0.00	0.00	80.67	1.43	38.74	7.70
Misc.	4.56	20.62	1.20	0.00	4.67	8.50	12.80	0.00	0.00	0.00	0.00	60.78	11.57	33.05	15.24
Other	11.40	4.86	0.00	0.00	11.67	0.00	7.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.22
Sub total	73.15	48.18	147.60	43.50	79.68	81.50	62.12	15.00	12.00	0.00	610.00	315.34	316.27	299.42	90.66

Total Spending Within and Outside Local Region

	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
Lodging	0.00	0.00	15.40	0.00	20.00	0.00	0.99	0.00	0.00	0.00	125.00	34.33	173.86	86.89	11.32
Food and beverages	16.00	7.71	58.00	22.00	26.67	42.50	13.94	10.00	7.00	0.00	100.00	98.22	122.43	97.79	24.02
Auto and RV	9.85	4.86	9.00	6.25	10.00	7.50	7.06	5.00	0.00	0.00	30.00	108.67	211.86	131.37	22.01
Airline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.71	15.00	1.80
Boat	20.88	9.75	19.00	14.00	0.00	15.00	14.23	0.00	12.00	0.00	40.00	0.00	3.57	4.84	13.10
Fish	1.63	0.78	45.00	3.25	6.67	3.00	2.92	0.00	0.00	0.00	340.00	0.00	5.00	19.74	4.94
Hunt	2.12	0.11	0.00	0.00	0.00	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75
Entertainment	8.56	0.49	0.00	0.00	0.00	5.00	3.53	0.00	0.00	0.00	0.00	89.00	19.29	49.26	9.03
Misc.	4.71	20.62	1.20	0.00	4.67	8.50	12.86	0.00	0.00	0.00	0.00	72.78	236.57	121.63	25.94
Other	11.40	4.90	0.00	0.00	11.67	0.00	7.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.24
Gd total	75.15	49.22	147.60	45.50	79.68	81.50	63.47	30.00	19.00	0.00	635.00	403.00	813.29	526.53	119.16

(Continued)

(Sheet 4 of 12)

C7

5. Lake Raystown

Spending by Major Category Within Local Region Only

Segment	Resident							Nonresident							Total
Spending Category	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	RTOTAL	D/B	D/NB	O/C/3	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	
No. of Cases	47	16	12	1	10	2	88	17	10	108	29	22	5	191	279
Lodging	0.00	0.00	23.17	0.00	5.70	0.00	4.94	0.00	0.00	29.85	93.86	24.09	30.40	34.70	25.31
Food and beverages	12.11	7.13	18.67	3.00	63.20	44.00	18.53	22.94	11.20	50.02	109.24	52.23	57.60	55.02	43.51
Auto and RV	19.04	3.75	13.75	11.00	20.30	13.50	15.46	13.88	14.30	26.06	39.59	23.59	7.20	25.64	22.43
Airline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.45	0.00	0.40	0.27
Boat	13.53	0.00	25.42	9.00	2.00	0.00	11.02	21.41	0.00	55.27	85.17	0.55	0.00	46.15	35.07
Fish	2.02	0.37	2.42	1.00	2.50	0.00	1.77	5.47	0.00	2.01	4.90	1.91	0.00	2.59	2.33
Hunt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00	1.57	1.08
Entertainment	0.68	8.63	3.25	0.00	26.50	0.00	5.39	3.53	2.10	5.05	13.66	14.45	2.80	7.09	6.55
Misc.	0.36	0.81	3.58	0.00	37.80	4.00	5.21	3.59	0.40	18.37	12.00	15.14	7.60	14.49	11.57
Other	1.91	0.50	0.00	0.00	8.30	0.00	2.05	0.00	0.00	2.02	7.21	3.77	60.00	4.24	3.55
Sub total	49.65	21.19	90.26	24.00	176.30	61.50	64.38	70.82	28.00	188.65	365.63	139.18	225.60	191.89	151.67

Total Spending Within and Outside Local Region

Spending Category	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
Lodging	0.00	0.00	23.17	0.00	15.70	0.00	4.94	0.00	0.00	32.37	93.86	24.09	46.60	36.55	26.58
Food and beverages	12.85	8.69	32.42	3.00	87.70	44.00	23.86	37.59	14.20	84.85	114.93	82.55	77.60	81.06	63.02
Auto and RV	20.53	5.31	20.83	11.00	73.90	13.50	19.05	23.47	20.50	47.57	57.48	49.00	15.80	44.85	36.71
Airline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.45	0.00	0.40	0.27
Boat	14.00	0.00	25.42	9.00	2.00	0.00	11.27	24.24	0.00	63.14	86.31	1.09	0.00	51.09	38.53
Fish	2.02	0.37	2.42	1.00	2.50	0.00	1.77	7.06	0.00	2.44	5.38	4.55	0.00	3.35	2.85
Hunt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00	1.57	1.08
Entertainment	0.68	8.63	3.25	0.00	28.00	0.00	5.56	5.41	2.10	5.05	15.79	14.45	14.60	7.89	7.15
Misc.	0.77	1.00	3.58	0.00	39.20	4.00	5.63	4.24	5.90	28.22	12.86	34.09	27.40	23.24	17.68
Other	1.91	0.50	0.00	0.00	8.30	0.00	2.05	0.88	0.00	3.09	7.21	4.32	60.00	4.99	4.06
Gd total	52.76	24.50	111.09	24.00	217.30	61.50	74.15	102.89	42.70	266.73	393.82	217.59	302.00	254.98	197.94

(Continued)

(Sheet 5 of 12)

C8

Table C2 (Continued)

Spending Category	Resident							Nonresident							Total
	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	
No. of Cases	52	33	4	4	8	2	103	3	10	10	15	11	10	59	162
Spending by Major Category Within Local Region Only															
Lodging	0.00	0.00	40.00	37.50	30.75	9.00	5.57	0.00	0.00	36.30	57.60	18.91	85.20	38.76	17.66
Food and beverages	10.38	5.30	34.50	95.00	41.13	64.00	16.40	10.00	25.20	62.60	68.40	19.36	54.10	45.56	27.02
Auto and RV	9.50	4.09	21.25	73.75	136.50	12.50	20.64	5.33	1.10	23.00	22.67	27.27	6.20	16.25	19.04
Airline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boat	12.85	0.00	16.00	130.25	0.00	0.00	12.17	26.67	0.00	45.90	48.60	0.00	0.00	21.49	15.56
Fish	1.77	0.61	2.00	23.75	0.63	7.50	2.28	0.00	0.00	8.50	1.00	0.55	4.20	2.51	2.37
Hunt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Entertainment	0.23	3.79	0.00	8.00	0.00	0.00	1.64	0.00	0.20	0.00	3.87	0.00	1.20	1.19	1.48
Misc.	0.54	0.00	2.75	25.00	20.00	10.00	3.10	0.00	0.00	20.30	7.07	2.55	4.20	6.46	4.32
Other	2.46	1.52	0.00	0.00	0.00	0.00	1.73	0.00	0.00	5.40	0.07	8.45	2.90	3.00	2.19
Sub total	37.73	15.31	116.50	393.25	229.01	103.00	63.54	42.00	26.50	202.00	209.28	77.09	158.00	135.22	89.64
Total Spending Within and Outside Local Region															
Lodging	0.00	0.00	40.00	37.50	30.75	9.00	5.57	0.00	0.00	36.30	57.60	23.09	101.10	42.24	18.93
Food and beverages	11.59	5.88	54.50	95.00	41.13	74.00	18.17	20.00	35.70	92.50	89.60	32.09	74.00	64.05	34.88
Auto and RV	10.15	5.30	26.75	73.75	138.88	17.50	21.85	10.33	7.50	37.10	39.80	35.55	12.80	27.00	23.73
Airline	0.00	0.15	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	13.20	0.00	0.00	3.36	1.25
Boat	13.68	0.00	19.00	130.25	0.00	0.00	12.70	49.34	0.00	45.90	50.40	0.00	1.40	23.34	16.58
Fish	1.77	0.61	2.00	23.75	0.63	7.50	2.28	0.00	0.00	8.50	1.00	0.55	4.50	2.56	2.38
Hunt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Entertainment	0.23	5.76	0.00	8.00	0.00	0.00	2.27	0.00	11.20	0.00	3.87	0.00	4.20	3.59	2.75
Misc.	0.54	0.00	2.75	25.00	20.00	10.00	3.10	0.00	44.20	23.90	9.54	2.91	8.70	15.98	7.79
Other	2.67	1.52	0.00	0.00	0.00	0.00	1.83	0.00	0.00	5.40	0.07	14.36	2.90	4.10	2.66
Gd total	40.63	19.22	145.00	349.50	225.14	118.00	65.65	79.67	98.60	249.60	265.08	107.63	209.60	186.05	109.50

(Continued)

(Sheet 6 of 12)

Table C2 (Continued)

7. Lake Cumberland

Segment	Resident							Nonresident							Total
	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	
No. of Cases	12	12	8	7	3	2	44	3	1	41	76	21	9	151	195

Spending Category

Spending by Major Category Within Local Region Only

	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
Lodging	0.00	0.00	5.75	97.14	4.67	0.00	16.82	0.00	0.00	80.15	331.20	25.43	161.89	201.64	159.94
Food and beverages	4.17	15.50	82.00	78.71	36.67	0.00	35.30	20.67	22.00	101.61	135.18	36.24	73.33	105.59	89.73
Auto and RV	6.08	10.17	22.00	13.14	3.33	0.00	10.75	6.67	0.00	36.02	28.39	21.33	23.33	28.56	24.54
Boat	47.00	4.08	24.50	61.71	0.00	0.00	28.20	45.67	0.00	131.78	108.87	13.81	9.44	93.97	79.13
Fish	3.75	4.58	8.38	7.14	3.33	0.00	5.16	0.00	0.00	8.29	10.26	4.19	0.78	8.04	7.39
Hunt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	6.67	0.46	0.36
Entertainment	1.67	13.83	0.00	3.14	0.00	0.00	4.73	0.00	0.00	7.32	10.70	3.81	4.00	8.14	7.37
Misc.	2.67	15.42	2.63	7.71	0.00	0.00	6.64	0.00	0.00	27.54	33.24	6.48	19.44	26.27	21.84
Other	0.00	1.42	6.75	1.57	0.00	0.00	1.86	0.00	0.00	13.17	2.68	3.00	0.22	5.36	4.57
Sub total	65.34	65.00	152.01	270.26	48.00	0.00	109.45	73.01	22.00	405.88	660.65	114.29	299.10	478.04	394.87

Total Spending Within and Outside Local Region

	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
Lodging	0.00	0.00	5.75	97.14	4.67	65.50	19.80	0.00	0.00	89.61	340.14	43.71	161.89	211.26	168.05
Food and beverages	4.17	17.58	82.00	101.57	50.00	27.50	41.66	46.33	22.00	163.32	195.70	93.05	88.67	162.14	134.95
Auto and RV	6.08	13.50	23.00	20.86	8.00	10.00	13.84	17.33	18.00	74.02	59.39	59.52	35.00	60.82	50.22
Boat	47.00	4.08	24.50	66.00	0.00	0.00	28.89	45.67	0.00	142.24	114.95	13.81	9.44	99.87	83.85
Fish	3.75	4.58	8.38	7.14	3.33	0.00	5.16	0.00	0.00	9.61	10.26	5.48	0.78	8.58	7.81
Hunt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	6.67	0.46	0.36
Entertainment	1.67	13.83	0.00	3.14	0.00	12.50	5.30	0.00	0.00	10.00	12.37	10.14	5.56	10.68	9.47
Misc.	2.67	16.83	2.63	10.00	1.00	0.00	7.46	3.33	0.00	41.46	55.61	13.05	55.78	44.45	36.10
Other	0.00	1.42	6.75	1.57	0.00	0.00	1.86	0.00	0.00	20.54	4.70	3.19	0.22	8.40	6.92
Gd total	65.34	71.82	153.01	307.42	67.00	115.50	123.95	112.66	40.00	550.80	793.25	241.95	364.01	606.65	497.74

(Continued)

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Table C2 (Continued)

8. Lake Dworshak

Segment	Resident						Nonresident							Total
	D/B	D/NB	O/C/B	O/NC/B	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
No. of Cases	25	2	20	1	0	48	23	2	78	4	10	1	118	166

Spending Category

Spending by Major Category Within Local Region Only

Spending Category	D/B	D/NB	O/C/B	O/NC/B	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
Lodging	0.00	0.00	7.40	0.00		3.08	0.00	0.00	17.41	10.00	16.00	6.00	13.25	10.31
Food and beverages	15.48	5.00	57.70	125.00		34.92	2.57	0.00	37.37	19.00	39.40	60.00	29.69	31.20
Auto and RV	14.68	6.50	20.40	50.00		17.46	1.65	0.00	15.85	10.00	49.70	40.00	15.69	16.20
Boat	18.36	0.00	47.15	0.00		29.21	0.87	0.00	28.14	0.00	0.00	0.00	18.77	21.79
Fish	1.80	0.00	2.10	5.00		1.92	1.00	0.00	1.71	0.20	0.00	0.00	1.33	1.50
Hunt	0.80	0.00	0.00	0.00		0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
Entertainment	0.00	20.00	0.00	0.00		0.83	0.00	0.00	0.26	0.00	0.80	0.00	0.24	0.41
Misc.	5.64	0.00	6.25	0.00		5.54	0.22	0.00	3.74	0.00	11.30	0.00	3.47	4.07
Other	0.20	0.00	0.30	0.00		0.23	0.00	0.00	0.97	0.00	0.00	12.00	0.74	0.59
Sub total	56.96	31.50	141.30	180.00		93.60	6.31	0.00	105.45	39.20	117.20	118.00	83.20	86.21

Total Spending Within and Outside Local Region

Spending Category	D/B	D/NB	O/C/B	O/NC/B	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
Lodging	0.00	0.00	7.40	0.00		3.08	0.00	0.00	20.10	12.50	25.30	6.00	15.91	12.20
Food and beverages	15.96	13.00	59.70	125.00		36.33	18.22	1.00	86.13	25.00	130.30	60.00	72.90	62.33
Auto and RV	15.48	13.00	23.60	50.00		19.48	17.65	3.00	61.90	24.25	96.10	40.00	53.71	43.81
Boat	18.96	0.00	47.15	0.00		29.52	14.26	0.00	68.24	3.50	0.00	0.00	48.01	42.66
Fish	1.84	2.50	2.10	5.00		2.04	1.96	0.00	4.99	3.25	1.60	0.00	3.93	3.38
Hunt	0.80	20.00	0.00	0.00		0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
Entertainment	0.00	20.00	0.00	0.00		0.83	0.00	0.00	0.26	0.00	0.80	0.00	0.24	0.41
Misc.	5.64	0.00	6.25	0.00		5.54	2.78	0.00	35.06	0.00	25.00	0.00	25.84	19.97
Other	0.20	0.00	0.30	0.00		0.23	0.00	0.00	0.97	0.00	42.00	12.00	4.30	3.12
Gd total	58.88	48.50	146.50	180.00		97.48	54.87	4.00	277.65	68.50	321.10	118.00	224.83	188.00

(Continued)

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Table C2 (Continued)

9. Lake Lanier

Segment	Resident						Nonresident							Total
	D/B	D/NB	O/C/B	O/NC/B	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	
No. of Cases	35	34	28	26	3	152	5	1	5	20	12	7	50	202

Spending Category

Spending by Major Category Within Local Region Only

	D/B	D/NB	O/C/B	O/NC/B	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
Lodging	0.00	0.00	42.18	89.12	183.33	31.37	0.00	0.00	41.20	163.25	21.08	103.43	88.96	45.62
Food and beverages	19.14	19.15	97.29	145.69	98.33	64.83	16.60	0.00	85.20	82.55	97.42	32.00	71.06	66.37
Auto and RV	7.60	16.85	25.21	9.58	17.67	14.49	4.00	0.00	11.40	27.35	51.00	7.00	25.70	17.27
Boat	15.17	46.29	28.64	98.77	11.67	36.39	17.20	0.00	23.40	37.05	2.08	5.71	20.18	32.38
Fish	1.23	2.32	6.11	0.19	3.33	2.35	0.00	0.00	1.00	2.80	2.42	0.00	1.80	2.22
Hunt	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Entertainment	0.00	2.82	3.21	5.12	35.00	2.79	0.00	0.00	3.20	27.40	0.42	14.14	13.36	5.41
Misc.	3.00	13.38	15.39	12.31	40.00	10.84	1.20	0.00	15.00	7.25	15.00	7.29	9.14	10.42
Other	24.60	3.18	7.71	83.54	25.00	23.88	0.00	0.00	1.00	1.50	25.08	0.00	6.72	19.63
Sub total	70.74	103.99	225.74	444.32	414.33	186.94	39.00	0.00	181.40	349.15	214.50	169.57	236.92	199.31

Total Spending Within and Outside Local Region

	D/B	D/NB	O/C/B	O/NC/B	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
Lodging	0.00	0.00	42.18	89.12	183.33	31.37	0.00	0.00	41.20	168.30	24.42	103.43	91.78	46.32
Food and beverages	21.91	21.21	107.82	162.23	98.33	71.52	21.40	18.00	133.20	101.45	139.92	92.00	102.86	79.28
Auto and RV	9.40	18.62	29.14	12.54	17.67	16.99	11.20	20.00	73.60	43.80	112.00	68.29	62.84	28.34
Boat	17.80	46.29	35.39	98.88	11.67	38.26	17.20	10.00	33.40	39.65	2.08	5.71	22.42	34.34
Fish	1.37	2.32	6.11	0.19	3.33	2.39	0.00	0.00	3.00	2.80	2.42	0.00	2.00	2.29
Hunt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Entertainment	0.00	6.94	8.57	5.12	35.00	4.70	0.00	0.00	3.20	27.40	0.42	20.71	14.28	7.07
Misc.	22.71	16.85	16.32	21.85	40.00	18.12	4.20	0.00	17.00	11.65	17.42	29.00	15.02	17.35
Other	27.46	3.18	7.71	85.65	25.00	25.62	0.00	0.00	1.00	1.50	27.17	0.00	7.22	21.06
Gd total	100.65	115.41	253.24	475.58	414.33	208.96	54.00	48.00	305.60	396.55	325.85	319.14	318.42	236.06

(Continued)

(Sheet 9 of 12)

Table C2 (Continued)

10. Lake Milford

Segment	Resident						Nonresident							
	D/B	D/NB	O/C/B	O/NC/B	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/NC/NB	NRTOTAL	Total
No. of Cases	30	18	38	6	22	0	114	8	3	95	11	36	0	153	267

Spending Category

Spending by Major Category Within Local Region Only

	D/B	D/NB	O/C/B	O/NC/B	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/NC/NB	NRTOTAL	Total
Lodging	0.00	0.00	19.89	7.50	16.86		10.28	0.00	0.00	25.66	13.82	18.47		21.27	16.58
Food and beverages	31.73	5.67	68.11	34.50	35.18		40.55	9.00	102.33	56.22	32.91	30.14		46.84	44.16
Auto and RV	13.20	5.22	21.97	5.00	25.64		16.83	0.00	25.67	29.56	14.00	20.11		24.60	21.28
Boat	34.20	0.56	28.00	3.50	0.00		18.61	0.50	0.00	29.81	20.45	1.28		20.31	19.58
Fish	3.30	2.00	3.63	2.00	1.73		2.83	0.25	1.33	5.95	4.45	1.81		4.48	3.78
Hunt	1.33	0.00	0.00	0.00	0.00		0.35	0.00	0.00	0.00	0.00	0.00		0.00	0.15
Entertainment	1.67	2.50	0.03	0.00	1.14		1.06	0.00	0.00	0.69	0.00	0.00		0.43	0.70
Misc.	14.17	1.94	21.79	6.67	1.32		11.90	0.00	0.00	7.71	6.73	1.78		5.69	8.34
Other	0.00	0.17	8.11	0.00	4.55		3.61	0.00	3.33	11.53	0.00	0.06		7.24	5.69
Sub total	99.60	18.06	171.53	59.17	86.42		106.03	9.75	132.66	167.13	92.36	73.65		130.85	120.26

Total Spending Within and Outside Local Region

	D/B	D/NB	O/C/B	O/NC/B	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/NC/NB	NRTOTAL	Total
Lodging	0.00	0.00	20.53	7.50	16.86		10.49	0.00	0.00	28.64	32.00	45.00		30.67	22.06
Food and beverages	31.73	5.67	72.18	41.17	59.59		46.97	25.88	125.67	78.43	75.64	71.03		74.67	62.84
Auto and RV	13.20	5.22	22.76	6.33	32.73		18.53	18.00	30.00	52.48	77.64	105.25		64.46	44.85
Boat	34.47	0.56	29.05	3.50	0.00		19.03	43.25	0.00	36.83	24.36	1.28		27.18	23.70
Fish	3.30	2.00	4.42	2.00	1.73		3.10	0.88	1.33	10.33	4.45	2.22		7.33	5.52
Hunt	1.33	0.00	0.00	0.00	0.00		0.35	0.00	0.00	0.00	0.00	0.00		0.00	0.15
Entertainment	1.67	2.50	0.03	0.00	1.14		1.06	0.00	0.00	1.13	1.36	4.00		1.74	1.45
Misc.	14.17	1.94	21.79	6.67	3.77		12.38	1.00	5.33	10.42	28.00	17.33		12.72	12.57
Other	0.00	0.17	8.11	0.00	4.55		3.61	0.00	3.33	19.06	0.00	3.81		12.80	8.87
Gd total	99.87	18.06	178.87	67.17	120.37		115.52	89.01	165.66	237.32	243.45	249.92		231.57	182.02

(Continued)

(Sheet 10 of 12)

C13

Table C2 (Continued)

11. Lake Ouachita

Segment	Resident						Nonresident							
	D/B	D/NB	O/C/B	O/NC/B	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
No. of Cases	14	7	15	12	0	51	11	3	35	53	33	8	123	174

Spending Category

Spending by Major Category Within Local Region Only

Lodging	0.00	0.00	12.47	33.33	2.33	11.65	0.00	0.00	59.11	159.83	21.62	95.75	94.20	70.01
Food and beverages	17.50	11.71	66.67	69.25	20.67	43.53	3.09	42.67	71.46	90.21	56.08	46.00	69.44	61.85
Auto and RV	7.50	5.43	44.20	11.58	11.33	19.20	8.64	11.33	27.69	28.13	19.62	14.38	24.06	22.63
Boat	25.64	0.43	21.27	57.67	8.33	27.41	10.55	0.00	41.20	102.45	6.15	0.00	57.46	48.65
Fish	0.00	0.57	7.20	3.17	0.00	2.94	0.00	0.00	7.49	4.62	3.31	0.00	4.47	1.02
Hunt	0.00	0.00	0.00	0.83	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
Entertainment	0.00	0.00	0.00	2.08	0.00	0.49	1.82	0.00	9.06	15.92	0.62	8.63	10.23	7.37
Misc.	0.71	2.00	10.47	17.50	0.00	7.67	0.00	6.67	21.00	26.23	5.92	8.08	18.64	15.43
Other	0.00	0.00	3.47	0.00	0.00	1.02	1.73	0.00	0.86	7.51	1.54	0.00	6.07	4.59
Sub total	51.35	20.14	165.75	195.11	42.66	114.10	25.83	60.67	245.87	434.90	114.86	173.64	284.58	234.61

Total Spending Within and Outside Local Region

Lodging	0.00	0.00	12.47	33.33	2.33	11.65	0.00	0.00	74.03	180.06	37.85	149.63	112.38	82.86
Food and beverages	17.79	11.71	80.00	85.75	40.67	52.59	26.09	54.33	127.06	141.40	87.77	122.00	117.95	98.80
Auto and RV	11.57	5.43	54.20	19.75	14.67	25.37	69.55	18.00	67.89	61.45	37.23	54.38	59.93	49.80
Boat	26.71	0.43	28.60	58.08	8.33	29.96	21.00	0.00	60.00	118.30	6.15	0.00	70.58	58.67
Fish	0.00	0.57	8.20	3.17	0.00	3.24	0.00	0.00	10.17	6.66	3.54	0.00	6.14	5.29
Hunt	0.00	0.00	0.00	0.83	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
Entertainment	0.00	0.00	0.00	5.00	0.00	1.18	1.82	0.00	20.63	16.92	5.46	13.63	14.79	10.80
Misc.	0.71	2.00	10.67	18.33	2.67	8.08	4.09	6.67	39.63	39.87	9.38	72.00	34.66	26.87
Other	0.00	0.00	3.47	0.00	0.00	1.02	1.73	0.00	10.03	8.26	1.92	0.00	6.77	5.09
Gd total	56.78	20.14	197.61	224.24	68.67	133.27	124.28	79.00	409.44	572.92	189.30	411.64	423.20	338.22

(Continued)

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Table C2 (Concluded)

12. Willamette Lakes

Segment	Resident							Nonresident							Total
	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	
No. of Cases	128	70	16	1	21	0	236	18	15	12	2	7	0	54	290

Spending Category

Spending by Major Category Within Local Region Only

	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
Lodging	0.00	0.00	23.38	0.00	5.33		2.06	0.00	0.00	25.08	52.50	38.43		12.50	4.00
Food and beverages	15.78	7.30	40.94	25.00	32.38		16.49	12.39	8.87	34.92	180.00	126.00		37.35	20.37
Auto and RV	13.65	3.03	17.94	12.00	12.43		10.68	5.78	3.13	19.50	16.00	43.71		13.39	11.18
Boat	28.38	0.14	25.69	32.00	0.71		17.37	1.78	0.67	30.33	36.00	0.00		8.85	15.79
Fish	0.24	0.36	0.44	0.00	0.00		0.27	0.00	0.00	2.08	1.50	0.29		0.56	0.32
Hunt	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00
Entertainment	2.68	0.34	0.00	0.00	0.00		1.55	0.00	0.13	0.42	0.00	4.29		0.69	1.39
Misc.	13.22	0.67	28.38	0.00	4.57		9.70	0.00	19.93	6.58	53.00	55.71		16.18	10.91
Other	12.73	0.71	32.81	0.00	79.05		16.37	0.00	5.00	28.58	12.50	7.14		9.13	15.02
Sub total	86.68	12.55	169.58	69.00	134.47		74.49	19.95	37.73	147.49	351.50	275.57		98.65	78.99

Total Spending Within and Outside Local Region

	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	RTOTAL	D/B	D/NB	O/C/B	O/NC/B	O/C/NB	O/NC/NB	NRTOTAL	Total
Lodging	0.00	0.00	24.88	0.00	17.24		3.22	0.00	0.00	27.17	52.50	438.43		64.82	14.69
Food and beverages	17.54	8.30	63.87	25.00	56.19		21.41	19.83	19.20	77.33	255.00	318.86		79.91	32.30
Auto and RV	14.27	3.47	34.50	12.00	107.67		20.74	29.00	11.33	62.25	56.00	322.29		70.50	30.01
Boat	29.36	0.14	66.31	32.00	0.71		20.66	25.06	1.67	52.17	46.00	1.43		22.30	20.97
Fish	0.24	0.50	0.44	0.00	0.00		0.31	0.28	0.00	2.08	1.50	0.29		0.65	0.37
Hunt	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00
Entertainment	3.46	0.34	0.00	0.00	0.00		1.98	0.00	1.13	4.25	0.00	64.29		9.31	3.34
Misc.	13.26	0.96	35.56	0.00	4.57		10.29	4.50	46.47	11.92	70.00	391.43		70.39	21.48
Other	12.73	0.71	49.25	0.00	79.52		17.53	0.00	6.13	28.58	12.50	436.43		65.09	26.39
Gd total	90.86	14.42	274.81	69.00	265.90		96.14	78.67	84.93	265.75	493.50	1973.45		382.97	149.55

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APPENDIX D: DETAILED DURABLE GOODS
ANALYSIS PROCEDURES

APPENDIX D: DETAILED DURABLE GOODS ANALYSIS PROCEDURES

For those who may wish to replicate the methods or results of this study, we summarize the particular methods for generating the information in the durable spending tables. Much more detailed tables (reporting spending on particular durable items by specific segments, and percent of purchases that are new, used, from dealers, etc.) have been produced, but are not reported here because of small sample sizes for such narrowly defined categories and segments and for simplicity.

The percentage bringing durable goods is from a direct yes or no question in 1989. In 1990, questions for each of two lists were combined to yield the percent bringing either a large durable (Equipment List 1, Appendix A) or a smaller item over $50 (List 2). The 1989 results include purchases of smaller durables prior to the last 12 months, while the 1990 survey restricted reporting of small durables to those purchased within the past year.

Durable expenses were restricted to the past year by including only items purchased within the past year. This was defined as 1988 or 1989 for the 1989 study lakes and 1989 or 1990 for the 1990 study lakes. A small number of items with missing years or reporting of items in the aggregate across many years are not counted in our "past year" estimate. As subjects could report up to seven items, the procedure for estimating per-trip expenses for the past year was to recode the year of purchase to dummy variables (last year = 1, otherwise = 0) and then to compute a weighted sum of the reported costs, i.e.,

$$COSTY = YR1 * COST1 + YR2 * COST2 + \ldots + YR7 * COST7$$

where YR_i is the year dummy for up to seven items and $COST_i$ is the reported cost of that item. In this way, only recent purchases were included in the sum. All missing years and costs were set to zero, yielding a conservative estimate of total durable costs. This cost estimate was then divided by the number of trips to the site within the past year (plus one to include the current trip).

The estimates of cost by particular equipment type and within the local area were also handled by creating dummy variables and taking sums of costs of up to seven items, weighted by the appropriate dummies to include only the items desired for a particular measure. For example, to obtain spending on

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camping equipment within the local area in the last year, three sets of dummy variables were multiplied times each of seven cost variables and summed.

$$COST(camp, last\ year, local) = \Sigma\ i(COST_i * EQTYP_i * FIPS_i * YR_i)$$

where

$EQTYP_i$ = dummy = 1 only if a camping item

$FIPS_i$ = dummy = 1 only if bought in surrounding 30-mile area, defined by FIPS codes

YR_i = dummy = 1 only if bought in last year

In these computations, all missing variables were set to zero.

APPENDIX E: COUNTIES LOCATED WITHIN
30 MILES OF CE LAKES

Lake	County	Lake	County
Oahe (ND/SD)	Burleigh	McNary (OR/WA)	Benton
	Morton		Franklin
	Oliver		Wallawalla
	Emmons		Umatilla
	Sioux		
	Corson	J. Percy Priest (TN)	Robertson
	Campbeil		Sumner
	Walworth		Wilson
	Dewey		Cheatham
	Potter		Trousdale
	Ziebach		Davidson
	Sully		Smith
	Hughes		Williamson
	Stanley		Rutherford
	Haakon		Cannon
	Jones		
	Lyman	Shelbyville (IL)	Moultrie
			Shelby
Raystown (PA)	Centre		Effingham
	Mifflin		Fayette
	Cambria		Cumberland
	Blair		Coles
	Juniata		Piatt
	Perry		Macon
	Huntington		Christian
	Fulton		
	Bedford	Dworshak (ID)	Clearwater
			Latah
Mendocino (CA)	Mendocino		Lewis
			Nez Perce
Ouachita (AR)	Garland		
	Hot Spring	Milford (KS)	Clay
	Montgomery		Dickinson
	Perry		Geary
	Pike		Pottawatomie
	Yell		Riley
Sidney Lanier (GA)	Lanier	Cumberland (KY)	Adair
	Barrows		Casey
	Banks		Clinton
	Cherokee		Cumberland
	Dawson		Lincoln
	De Kalb		McCreary
	Franklin		Pulaski
	Forsyth		Rockcastle
	Gwinnett		Wayne
	Habersham		Clay
	Hall		Pickett
	Jackson		
	Lumpkin	Willamette (OR)	Lane
	Pickens		
	Stephens		
	Union		
	White		