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Economic Impacts from Spending by Marina Slip Renters at Raystown Lake

Benoni L. Amsden, Wen-Huei Chang, Richard Kasul, LiChu Lee, and Kathleen Perales, and Dennis B. Propst

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Final report

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Abstract: This report documents the local economic impacts of marina slip users at Raystown Lake, located in southern Pennsylvania. This economic assessment is based on the results of a 1999 survey of a sample of Raystown Lake marina slip renters. Spending estimates are adjusted to 2004 dollars. The economic impacts estimated for Raystown Lake are useful for accountability purposes, lake support, and explaining the role of the lake in the region's economy. This report demonstrates how the survey results can also be used to evaluate management alternatives and strategies and to conduct sensitivity analyses.

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Contents

Figures and Tables iv

Summary vi

Foreword viii

Preface x

1 Introduction 1

Raystown Lake 1

The Local Region 3

2 Three Lakes Marina Survey, 1998-99 5

3 Results 6

Respondent profiles 6

Boating characteristics 10

Activities while boating *11*

Type of boat and motor *13*

Slip user segments and spending 14

Average spending for full sample of slip renters *14*

Average spending by segment: Day use vs. overnight *16*

Average spending by boat length segments *18*

Total spending *21*

Economic impacts of slip user spending 24

1999 impacts *24*

Value of 1999 impacts in 2004 dollars *28*

4 Study Limitations and Error 30

5 Summary and Discussion 31

References 33

Report Documentation Page

Figures and Tables

Figures

Figure 1. Raystown Lake and the surrounding region. 2
Figure 2. Gender of marina slip renters at Raystown Lake, 1999 (N=216). 6
Figure 3. Age of marina slip renters at Raystown Lake, 1999 (N=213). 7
Figure 4. Education of marina slip renters at Raystown Lake, 1999 (N=210). 7
Figure 5. Race of marina slip renters at Raystown Lake, 1999 (N=203) (none of them were Hispanic or of Latino origin). 7
Figure 6. Survey conducted with registered boat owners at Raystown Lake Marina, 1999 (N=217). 8
Figure 7. Household Income of marina slip renters at Raystown Lake, 1999 (N=188). 8
Figure 8. Household size of marina slip renters at Raystown Lake, 1999 (N=213). 9
Figure 9. Number of people under 18 in households of marina slip renters at Raystown Lake, 1999 (N=214). 9
Figure 10. Permanent residence of marina slip renters at Raystown Lake, 1999 (N=214). 10
Figure 11. Seasonal home ownership of marina slip renters at Raystown Lake, 1999 (N=217). 10
Figure 12. Number of boating trips made by marina slip renters last year compared to previous 3-year average at Raystown Lake, 1999 (N=197). 11
Figure 13. "What other activities did you or others participate in during your boating trips last year that I have not already mentioned?" (from Raystown Lake Marina, 1999, N=203). 12
Figure 14. Expenditures by marina slip renters/users on most recent trip compared to similar trips in the last 12 months at Raystown Lake, 1999 (N=214). 16

Tables

Table 1. Summary of recreation visits to Raystown Lake, 1999. 3
Table 2. Economic activity in the Raystown region, 2000. 4
Table 3. Number of boating trips to Raystown Lake Marina the previous year (09/01/1998 to 08/31/1999). 11
Table 4. Recreation activity participation during previous year's boating trips to Raystown Lake Marina (09/01/1998 to 08/31/1999). 12
Table 5. Boat type and length cross-tabulation, Raystown Lake Marina slip renter survey, 1999 (N = 217). 13
Table 6. Boat type and motor cross-tabulation, Raystown Lake Marina slip renter survey, 1999 (N = 217). 13
Table 7. Boat length and motor cross-tabulation, Raystown Lake Marina slip renter survey, 1999 (N = 217). 13

Table 8. Summary of Raystown Lake Marina slip renters'/users' spending and use profiles, 09/1998 to 08/1999 (spending per party trip). 15

Table 9. Spending and use by length of stay segments, Raystown Lake Marina slip renter survey, 09/1998 to 08/1999 (spending per party trip). 17

Table 10. Spending and use by boat length segments, Raystown Lake Marina slip renter survey, 09/1998 to 08/1999 (spending per party trip). 19

Table 11. Total annual use figures for marina slip renter survey at Raystown Lake (1999). 22

Table 12. Total trip spending in local area by Raystown Lake Marina slip renters/users (1999) 22

Table 13. Total trip spending by Raystown Lake Marina slip renters/users (1999). 23

Table 14. Total spending on fixed, annual goods and services by marina slip renters at Raystown Lake (1999). 23

Table 15. Regional economic impacts of Raystown Lake Marina slip renters'/users' trip spending (1999, for trip spending within 30 miles only). 25

Table 16. Regional economic impacts of Raystown Lake Marina slip renters' durable goods and annual spending (1999). 27

Table 17. Regional economic impacts of Raystown Lake Marina slip renters'/users' trip and renters' annual spending (in 2004 dollars, for spending within 30 miles only). 28

Table 18. Direct impacts of an additional 1,000 marina slip renter party trips by segment, Raystown Lake. 32

Summary

This report documents the local economic impacts of marina slip renters and guests at Raystown Lake, located in Pennsylvania and situated within the U.S. Army Corps of Engineers District, Baltimore. This economic assessment is based on the results of a 1999 survey of a sample of Raystown Lake marina slip renters. Spending estimates are adjusted to 2004 dollars.

Raystown Lake is centrally located in southern Pennsylvania between Harrisburg, Pittsburgh, State College (Penn State) and the Pennsylvania Turnpike. Due to its location, mountain scenery and numerous developed recreation facilities, Raystown Lake attracts significant numbers of visitors. Raystown Lake encompasses nearly 8,300 surface acres and boasts 118 miles of primarily wooded shoreline. In addition, its size (27 miles long – the largest man-made lake entirely within the state boundaries) makes Raystown Lake highly desirable for boating and the associated need for marinas in which to dock and store boats of various sizes. The Corps of Engineers tallied over 1,100 marina slips at two marinas at Raystown Lake in 1999. The estimated 31,456 party trips taken by marina slip renters/users in 1999 accounted for 9 percent of the total recreation usage at the lake. Total tourism activity in the five-county region surrounding Raystown Lake is $343 million or 2.6 percent of all economic activity in that region.

In 1999, marina slip renters/users spent significant amounts of money in the local area, including $6.3 million on trip-related items (gasoline, meals, lodging, etc.) and $3.9 million on new boats, slip rental fees, insurance, and other annual services. Together, this $10.2 million in spending was associated with $6.3 million in direct sales, $1.8 million in direct personal income (wages and salaries) for local residents and 92 jobs in area tourism-related businesses. The $6.3 million in direct sales is about 1.9 percent of the total of all tourism activity ($343 million) (sales have been price inflated for this computation). In 2004 dollars, these figures become $7.7 million in trip-related expenditures and $4.7 million in new boats and annual expenses. The added economic effects—in 2004 dollars—are $7.7 million direct sales and $2.2 million direct personal income.

The above figures are direct effects only of the $10.2 million in slip renter/user spending in 1999. Another $2.9 million in sales ($3.5 million in 2004 dollars) is generated through secondary effects, as slip renter/user spending circulates through the local economy. While the direct effects accrue primarily to the retail trade sector, restaurants, manufacturing (mainly because of the purchases of new boats locally), and services, secondary effects benefit a wide range of local businesses. The tourism sales multiplier for the region is 1.48 indicating there is $0.48 in secondary sales for every dollar of direct sales.

Visitor segmentation is useful for planning purposes. This report provides results for the full sample of marina slip renters/users and for slip renter segments that are useful for planning purposes: day use vs. overnight stay slip renters and slip renters in three boat size classes. Day users comprised 35 percent of the sample of slip users, while 65 percent spent at least one night in the area on their last trip. In terms of total spending in the local region, day users of marina slips contributed 25 percent, and overnight stay slip users, 75 percent. Two-thirds of the sample had medium-sized boats (21 to 30 ft), while 21 percent were small (20 ft and smaller) and 12 percent were large (above 30 ft). Slip users with large boats contributed 18 percent of total spending locally, slip users with medium-sized boats, 70 percent, and those with small boats, 12 percent.

The economic impacts estimated for Raystown Lake are useful for accountability purposes, lake support, and explaining the role of the lake in the region's economy. This report demonstrates how the survey results can also be used to evaluate management alternatives and strategies and to conduct sensitivity analyses.

Foreword

This report represents one of nine market segmentation studies conducted at Corps of Engineers (Corps) water resources projects (lakes). The economic impact studies were conducted in 1999 and the information has been converted to 2004 dollars. It should be noted that no single study provides a complete portrait of any lake's boating market. The studies were limited to three market segments: marina slip renters, private dock, and community dock owners. These three groups do not reflect the spectrum of boating usage or market segments at any one of the lakes studied. The primary purpose of the studies was to obtain an understanding of these three market segments.

In addition to recreation usage, each of these segments is handled under different real estate instruments or shoreline use permit instruments. Marina slips (one boat per slip) are handled by the Corps at the marina facility level. Individual marina operators (lease holders) were involved in the development of contact lists for individual slip renters. Private dock owners (one dock permit, one household, potentially multiple boats) have a direct shoreline-use permit with the Corps and pay a fee. Community docks (one dock permit, multiple households, one boat per slip, a single household may hold multiple slips) are not tied to a single household but to a group of homes within a community. This permit type has a single point of contact (e.g. homeowner association). Typically the fee for a private or community dock permit is between $30 and $35 for 5 years. Additional administrative fees may also be collected to recover the cost of administration inspections and processing of permits; the cost is variable.

The lakes and market segments studied were:

- Table Rock Lake, community dock
- Rough River Lake, community dock
- Pomme de Terre Lake, community dock
- Harry S. Truman Dam and Reservoir, marina
- Raystown Lake, marina
- Hartwell Lake, private dock
- Lake Barkley, private dock
- Lake Sidney Lanier, private dock and marina

Each of the lakes studied has a variety of boating and water usage issues that were not a part of this economic impact evaluation. This economic impact assessed recreation visitor trip spending and annual durable goods-related expenditures. In order to provide managers with a tool to assess the effects of management, this report outlined the spending categories of boat owners and visitors associated with the recreational trip under study. Examples are provided illustrating changes in the number of boat trips and the changes that could be seen in economic impacts. These are provided as illustrations. The same illustration can be used by managers to help assess low water conditions and boating trips lost, to get a sense of the change in economic impacts. This study did not include the impacts of additional boats over time to determine changes in use, water quality, social or environmental impacts, or the like. This study did not include changes in use based on increases in gasoline prices or technological changes in boating products. These are elements outside the study parameters and would serve as useful points of departure for further research. These reports should be evaluated in part with the larger boating usage that occurs at the individual lake and the changes that have occurred over time (including expenditure changes such as the increasing cost of gasoline). They serve in part to document a baseline, which in part justifies publication at this late date.

For example, at a single lake, boating utilization should be evaluated within a larger context of the multipurpose mission of each of the lakes. To get an understanding of historical use and issues at Corps of Engineers facilities, the following documents have been recommended for further study: national and state regulations, project master-planning documents, shoreline management plans, environmental assessments, and other local studies. Consult the local project manager for an assessment of other documents that should be considered in addition to the ones provided.

Preface

The work reported herein was undertaken for the "Measuring the Economic Effects of Boat Dock Permit and Marina Slip Holders" work unit of the Recreation Management Support Program (RMSP). The RMSP is funded by the Operations and Maintenance (O&M) General Appropriation and encompasses activities previously conducted through the Recreation Research Program and the Natural Resources Technical Support Program. The U.S. Army Engineer Research and Development Center (ERDC) provides program management support for execution of approved RMSP activities. The RMSP is managed at ERDC by Scott Jackson, Environmental Laboratory (EL). Kathleen Perales has served as Principal Investigator of the work unit since its creation in 1995.

This report documents a joint effort between ERDC and Michigan State University under contract with the United States Department of Agriculture to conduct lake level investigations on the economic spending patterns of visitors to communities, private boat docks, and marinas on Corps of Engineers water resources projects.

A Recreation Leadership Advisory Team (RLAT) provides oversight for the RMSP. The team has representatives from each Major Subordinate Command/Regional Office within the Corps of Engineers. In addition, four district offices and four project offices are represented. Donald Dunwoody, RLAT representative from the Northwestern Division, served as proponent for this work unit.

This report was prepared by Benoni Amsden and Dr. Dennis Propst of Michigan State University under USDA contract. Dr. Wen-Huei Chang, ERDC, performed all economic impact analyses. Dr. LiChu Lee, ERDC, served to verify all data elements. Richard Kasul, ERDC, and Kathleen Perales, ERDC, were responsible for the design, instrumentation, sampling frame, and contract oversight. This work was conducted under the general supervision of Scott Jackson, Acting Chief, Ecological Resources Branch (ERB); Dr. David Tazik, Chief, Ecosystem Evaluation and Engineering Division (EEED); and Dr. Beth Fleming, Director, EL.

Peer reviewers of this report were Dwight R. Beall, Operations Manager, Raystown Lake, USACE; and Cori A. Brown, Outdoor Recreation Planner, Baltimore District, USACE.

COL Richard B. Jenkins was Commander and Executive Director of ERDC. Dr. James R. Houston was Director.

1 Introduction

This report documents the local economic impacts of marina slip users at Raystown Lake, located in southern Pennsylvania. These estimates are then adjusted to 2004 dollars. Economic impacts are measured as the direct and secondary sales, income, and jobs in the local area resulting from spending by those who use marina slips. The economic estimates are produced using the Recreation Economic Assessment System (REAS) (Chang et al. 2001). Three major inputs to the model are:

- number of visits broken down into day use/overnight segments and three boat size segments
- spending averages for each segment
- economic multipliers for the local region

Inputs are derived from results contained in this report, the Natural Resource Management System (NRMS) database (U.S. Army Corps of Engineers (USACE) 2006c), and IMPLAN input-output modeling software (Minnesota IMPLAN Group 1996). The REAS model (USACE 2006a) provides a spreadsheet template for combining marina slip user visitation data, spending and regional multipliers to compute changes in sales, personal income, jobs, and value added in the region.

Raystown Lake

The Army Corps of Engineers oversees this 29,000-acre project located along route 26 in Huntingdon County, Pennsylvania (Figure 1). The main attraction is the lake itself, which is the largest man-made lake entirely within the Pennsylvania state boundaries. It encompasses nearly 8,300 surface acres and boasts 118 miles of primarily wooded shoreline. Raystown Lake (USACE 2006b) was authorized by the Flood Control Act of 1962, and the current dam was completed in 1973.

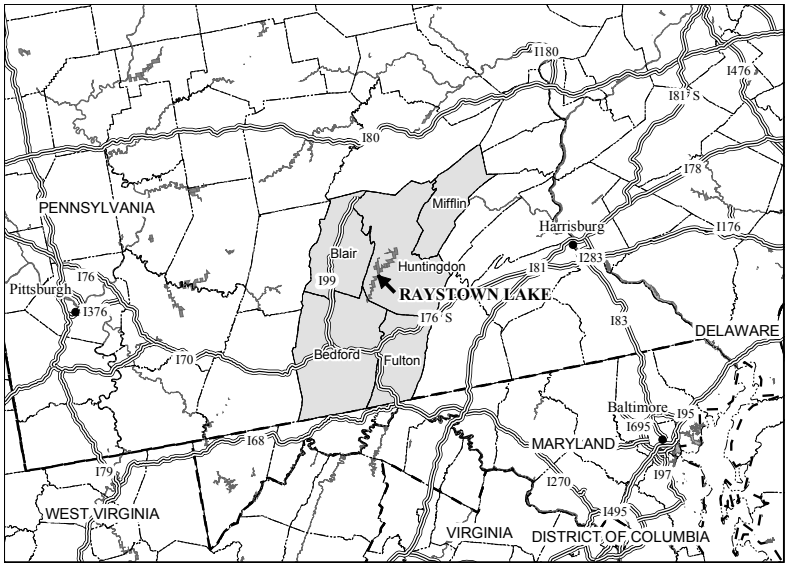

Figure 1. Raystown Lake and the surrounding region.

The project includes 12 public access areas, picnic areas, beaches, boat launches, campgrounds, trails, hunting, and fishing. In addition, four concessions currently exist at the project. The largest, Raystown Lake Resort, encompasses 407 acres on four peninsulas and consists of the following facilities: 292-site campground, 650-slip marina, 51-unit lodge/motel restaurant, water park complex, camp store/administration building, gas station, tour boat, and rental boats. The other concessions include a marina, campground, and snack facility. Because of these facilities, its mountainous scenery, centralized location between major population centers (Harrisburg and Pittsburgh) and proximity to the Pennsylvania Turnpike, Raystown Lake attracts significant numbers of visitors to the local region.

Raystown Lake hosted nearly 1.1 million recreation visits in 1999, 94 percent of which were by day users (Table 1, top row). Non-boaters accounted for 713,000 total day use visits, and boaters another 277,000. Since visitor spending and economic impacts in this report are based on party-days or nights, these figures are shown on the bottom row of Table 1. In 1999, there were roughly 431,000 party-days of recreation use.

Table 1. Summary of recreation visits to Raystown Lake, 1999.

	Camper[1]		Day User[2]		Other Overnight[3]		Total
	Boat	Non-Boat	Boat	Non-Boat	Boat	Non-Boat	
Visits (person-trips, 1000s)	8.7	22.4	277.4	713.3	8.3	21.4	1051.5
Average length of stay (days)	4.2	3.8	–	–	2.4	3.0	–
Average party size	3.5	2.8	2.8	2.8	3.3	2.5	–
Visits (party-days, 1000s)	10.5	30.9	99.7	257.8	6.2	26.0	430.9

[1] Number of campers in *party days* was derived from the 1998 NRMS (USACE 2006c), CUR_FEE database (the last year that camper revenue data is available) by dividing total camping revenue by an average of $8.00 per party day camping fee and expanding by the number of non-Corps managed campsites. The number of camper party-days was then adjusted to 1999 by multiplying the ratio of 1999 visits to 1998 visits from the PR_USE database Then, party-days were converted to person-trips by the following formula: Number of campers in *person-trips* = number of party-days times average party size/average length of stay. Percent of boaters was obtained from the NRMS, PR_USE database. Party Size and Length of Stay figures are based on the results of a national survey (Chang et al. 2003).

[2] Number of day users in *person-trips* was derived from the 1999 NRMS (USACE 2006c), PR_USE database by subtracting camper visits from total visits. Then, number of day users in *party-days* = number of person-trips times average length of stay/
average party size. Percent of boaters was obtained from NRMS, PR_USE database.

[3] Assumes that 3 percent of day users stayed overnight in lodging accommodations outside of project boundaries.

The Local Region

Bedford, Blair, Fulton, Huntingdon and Mifflin counties comprise the local economic impact study region for Raystown Lake. Although the population is relatively low (285,461 (1999), or 284,544 (2004 estimate) (U.S. Census Bureau 2006)), the region contains a high number of retail establishments compared to other regions in which Corps projects are located (Becker 1997). According to the U.S. Census Bureau (2006), the median household income for these counties is $33,192 (1999), compared to the statewide Pennsylvania average of $40,106 (1999).

The Construction, Manufacturing, Other Services, and F.I.R.E. (Finance, Insurance, and Real Estate) sectors are the principal economic base of the area, combining to account for 65 percent of sales, 49 percent of jobs, and 54 percent of compensation in the five-county region (Table 2). An estimate of total tourism sales in the four counties is $343 million (Table 2: 100 percent of hotel/motel + 100 percent of amusement and recreation + 25 percent of restaurant + 25 percent of retail sales). Thus, tourism

accounts for 6-7 percent of jobs in the region and 2-3 percent of sales.[1] In 2000, hotel sales in the area were $63 million, supporting 1,474 jobs in the hotels and lodging sector (Minnesota IMPLAN Group 2000).

Table 2. Economic activity in the Raystown region, 2000.

Industry	Output ($ millions)	Employment	Employee Compensation ($ millions)	Value Added ($ millions)	% Output
Agriculture, forestry, fish	355.14	6,219	35.23	117.41	3%
Mining	100.56	781	29.23	59.17	1%
Construction	1,080.64	10,393	258.58	403.78	8%
Food processing	260.94	1,062	27.42	50.96	2%
Apparel	143.42	1,451	33.78	44.31	1%
Manufacturing	4,081.53	21,355	814.29	1,266.44	31%
Sporting goods	145.73	1,115	33.78	63.99	1%
Auto parts and access	12.99	64	1.56	2.31	0.1%
Transp. and commu.	954.03	7,893	255.17	455.66	7%
Other services	1,948.81	33,393	813.04	1,153.37	15%
Wholesale trade	531.11	5,997	205.35	364.45	4%
Retail	805.97	19,606	343.60	648.58	6%
Eating and drinking	259.81	7,797	84.84	131.15	2%
Finance, insurance, and real estate	1,383.38	5,959	161.90	959.93	11%
Hotels and lodging places	62.58	1,474	19.48	36.08	0.5%
Auto services	129.47	1,732	29.16	73.75	1%
Other amusements	24.62	726	5.35	7.92	0.2%
Amusement and rec services	13.84	629	4.62	8.33	0.1%
Gov't and other	813.73	18,019	658.73	723.32	6%
Total	**13,108.30**	**145,666**	**3,815.12**	**6,570.92**	**100%**

Source: Minnesota IMPLAN Group 2000 county data files for the five- county region.

[1] Independent D.K.Shifflet and Associates estimates of the economic impacts of domestic travelers in the same five counties in the year 2000, reveals $352 million in sales, a figure that is very close to the IMPLAN estimate. For the same five counties, The Center for Rural Pennsylvania estimated in 2003 that domestic visitor spending was $379 million (The Center For Rural Pennsylvania,"Tourism (13) Domestic Visitor Spending (In thousands), 2003," County Profiles, http://www.ruralpa2.org/county_profiles.cfm?RDCategory2=Domestic+Visitor+Spending++%28In+thousands%29%2C+2003&Submit=Submit+Query) (accessed June 1, 2006).

2 Three Lakes Marina Survey, 1998-99

The Ecological Resources Branch (ERB) of the US Army Engineer Research and Development Center (ERDC) surveyed slip renters at Lake Sidney Lanier (Georgia), Raystown Lake (Pennsylvania), and Harry S. Truman Dam and Reservoir (Missouri). The ERB staff designed the survey, constructed the instrument, and provided the frame (a list of marina slip renters) to the Institution for Public Policy and Social Research (IPPSR) at Michigan State University (MSU) for sampling. IPPSR obtained additional approval through MSU's Human Subjects Office. The Office of Management and Budget authorized this study (Institute for Water Resources (IWR) 2006).

Working with the project managers, the ERB contacted marina operators and obtained lists of marina slip renters. Once the contact information was received, MSU IPPSR staff sent a pre-contact mailer to the slip renters in the sample. This information packet included a description of the study and a FAQ sheet for the renter. In addition, the slip renters received a worksheet outlining the spending categories and other information regarding the upcoming telephone interview. Calls were made to slip renters in the randomly ordered sequence, until a quota of interviews was completed. In this manner, 217 randomly selected marina slip renters were interviewed at Raystown Lake, representing 19 percent of the total of 1,163 eligible marina slips at the time of the survey.[1]

Spending and trip information were obtained through a Computer Assisted Telephone Interview (CATI) survey conducted by MSU IPPSR staff. Slip renters were asked to document the number of boating trips on the lake that originated from their marina and to report trip spending associated with their most recent trip. Spending information was collected only for the most recent trip to reduce recall bias and avoid selective recall in which renters may report spending on the most expensive trips. The telephone interview lasted an average of 15 minutes. Other information needed to estimate parameters for this population was also acquired during the interview.

[1] Number of marina slips derived from 1998 NRMS data.

3 Results

Results are provided in four parts: respondent profiles (including socio-economic characteristics); recreation trip characteristics (amount of boat use, recreation activities and boat type); per-trip and annual spending; and the economic impacts of slip renters'/users' spending on the local region surrounding Raystown Lake.

Respondent profiles

The general characteristics of marina slip renters as individuals and by households at Raystown Lake are shown in Figures 2 to 11. In general, the marina slip renters were mostly white males with high education and income. Among the respondents, 83 percent were male and 73 percent were aged 46 and above (Figures 2 and 3). The average age was 53 (range = 24 to 83 years old). The most frequent age (mode) was 62. Fifty-seven percent of the slip renters had at least some college education and 32 percent had college degrees or more. Thirteen percent of Raystown's marina slip renters held graduate degrees (Figure 4). Almost all of the renters interviewed were white (Figure 5). All marina slips have registered boats; surveys may or may not have been conducted with the registered boat owner. Ninety percent of the renters were also the registered boat owner at the time of the interview (Figure 6).

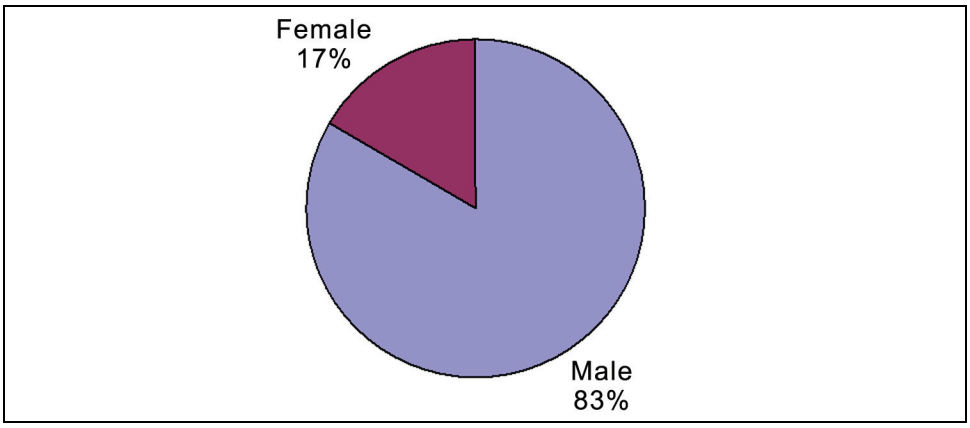

Figure 2. Gender of marina slip renters at Raystown Lake, 1999 (N=216).

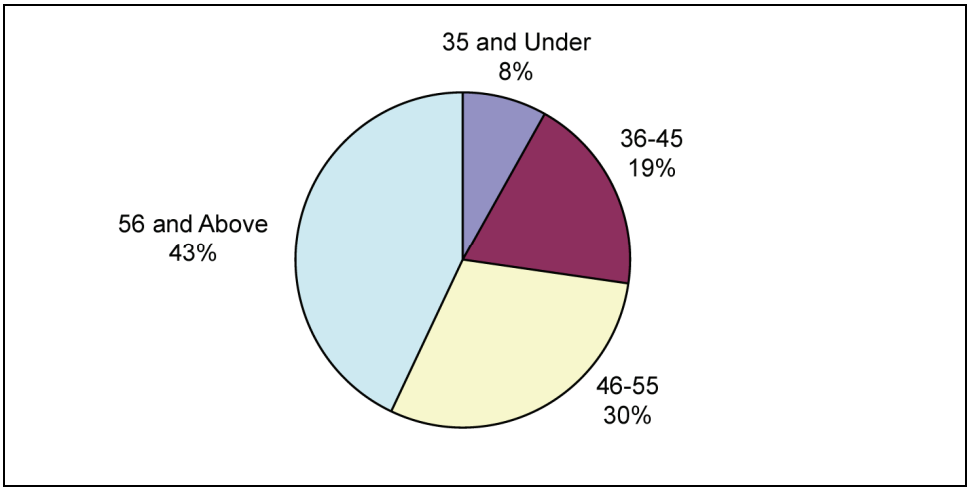

Figure 3. Age of marina slip renters at Raystown Lake, 1999 (N=213).

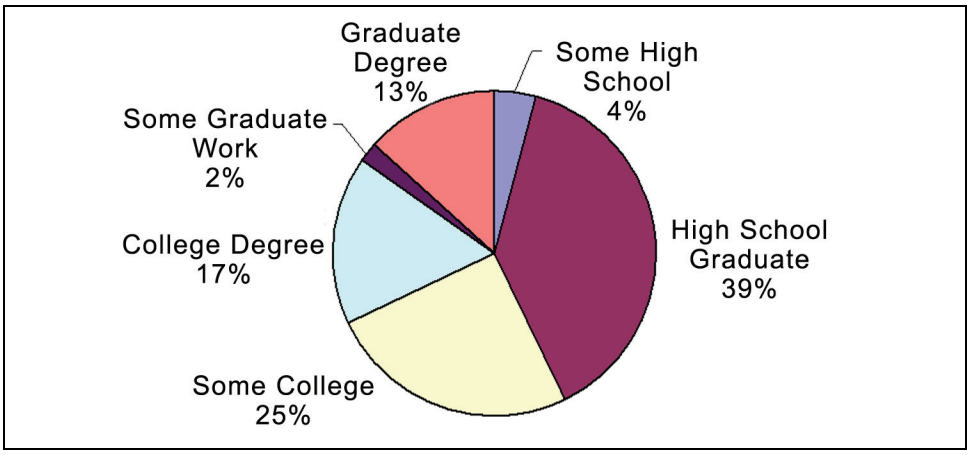

Figure 4. Education of marina slip renters at Raystown Lake, 1999 (N=210).

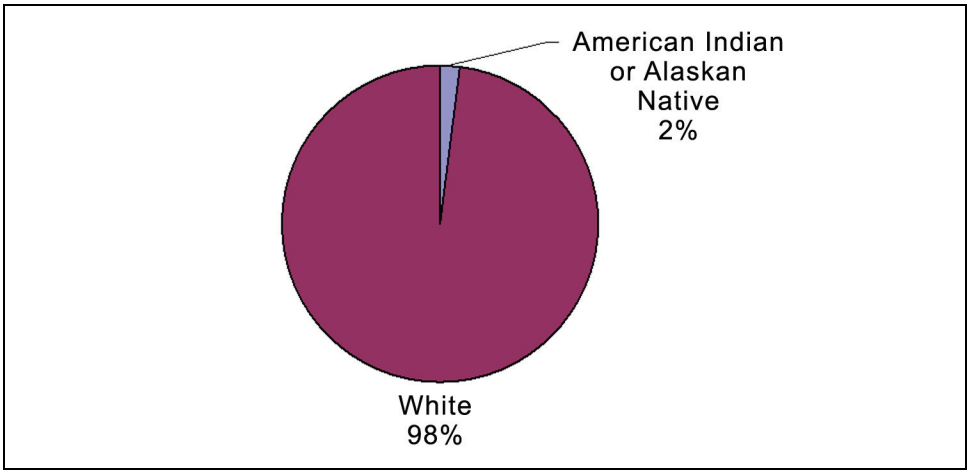

Figure 5. Race of marina slip renters at Raystown Lake, 1999 (N=203)
(none of them were Hispanic or of Latino origin).

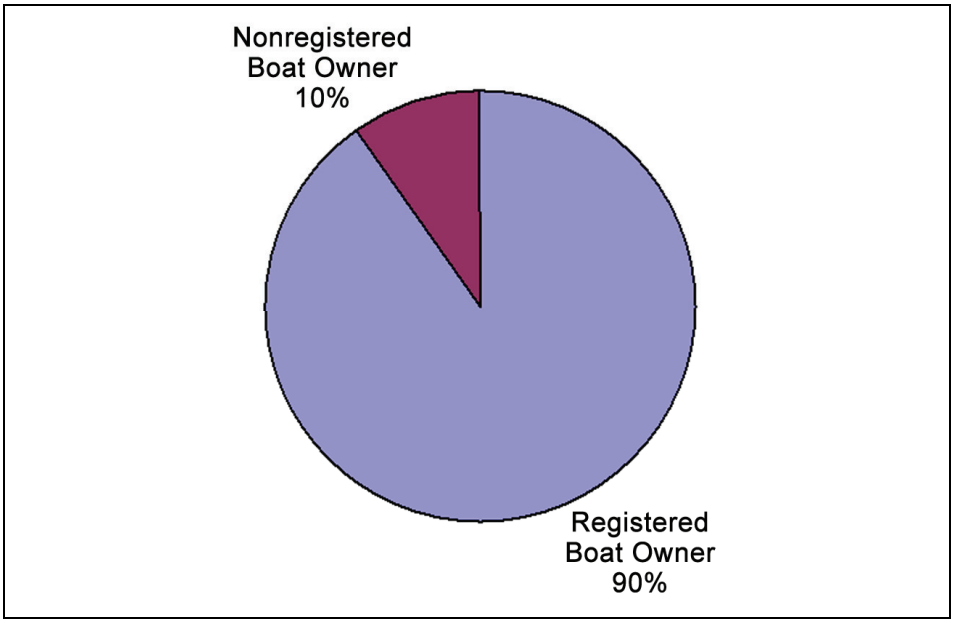

Figure 6. Survey conducted with registered boat owners at Raystown Lake Marina, 1999 (N=217).

Many marina slip renters reported high household incomes with no or few children living in the household. Thirty-one percent of the respondents had annual household incomes of at least $80,000, with 22 percent reporting incomes of over $100,000 (Figure 7). More than half of the renters lived in a household with two or less people and 72 percent of the renters did not have any children age under 18 in their households (Figures 8 and 9). The average number of individuals per household was 3. The most frequent household size (mode) was 2.

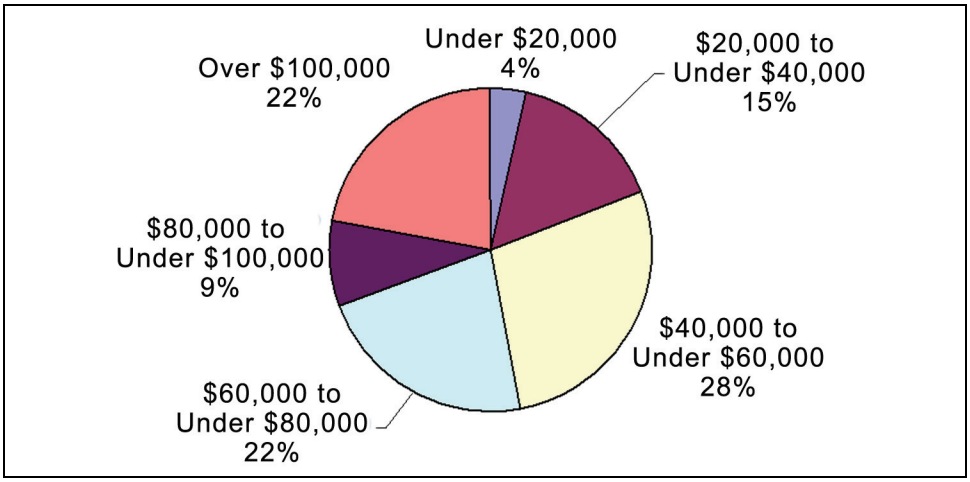

Figure 7. Household Income of marina slip renters at Raystown Lake, 1999 (N=188).

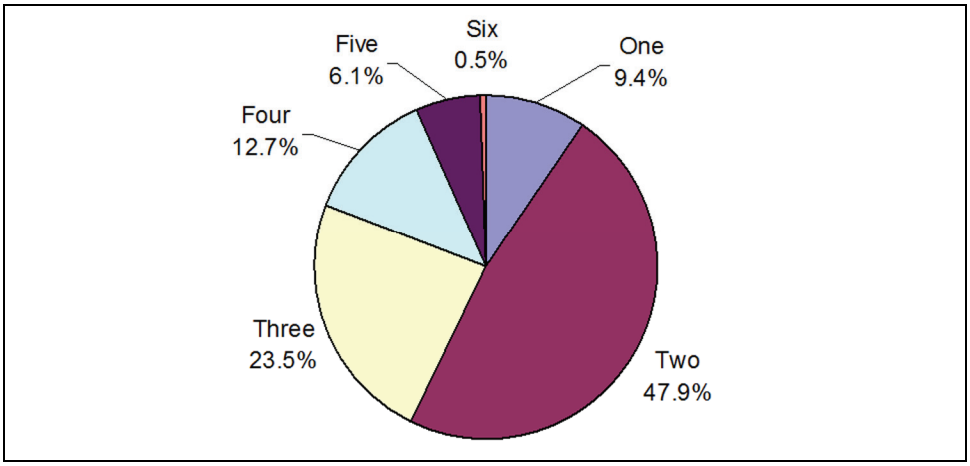

Figure 8. Household size of marina slip renters at Raystown Lake, 1999 (N=213).

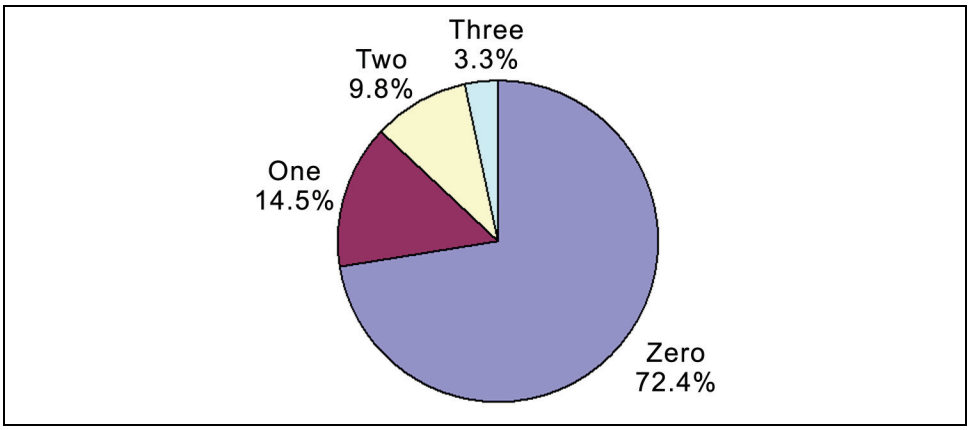

Figure 9. Number of people under 18 in households of marina slip renters at Raystown Lake, 1999 (N=214).

The permanent residences of 21 percent of the renters were within 30 miles of the marina (Figure 10). The average distance from the slip renter's permanent home to the marina was 62 miles. Twenty-five percent of the slip renters owned a seasonal home within 30 miles of the marina (Figure 11).

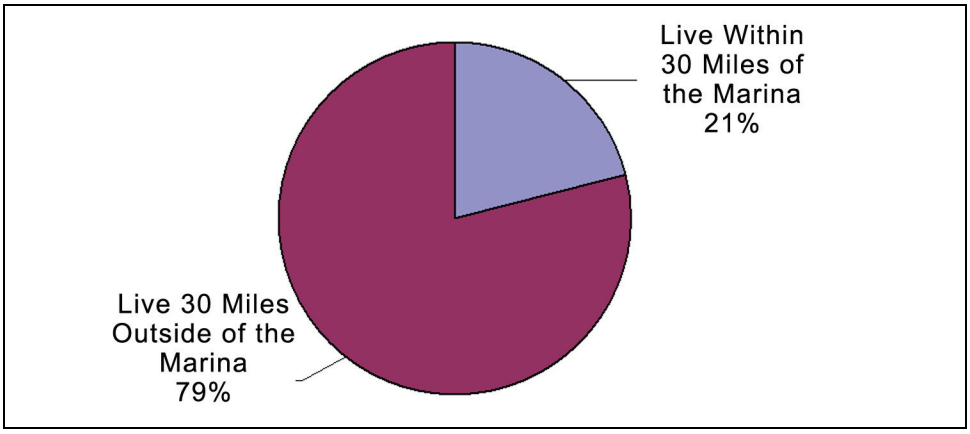

Figure 10. Permanent residence of marina slip renters at Raystown Lake, 1999 (N=214).

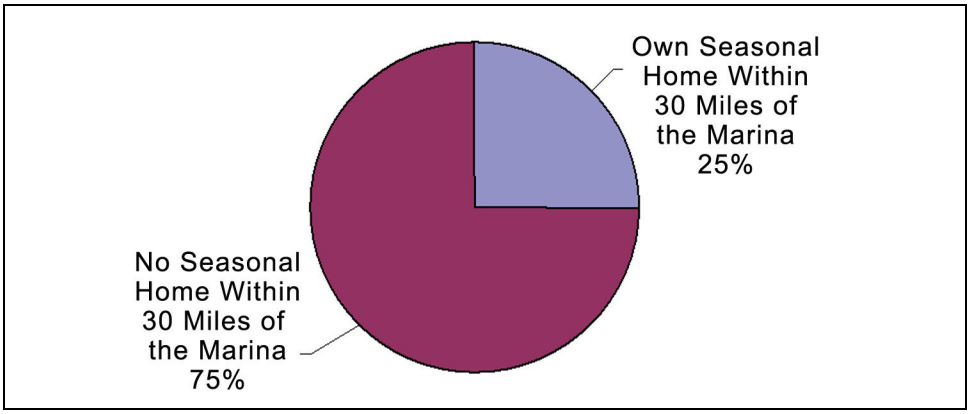

Figure 11. Seasonal home ownership of marina slip renters at Raystown Lake, 1999 (N=217).

Boating characteristics

Respondents had been boating on Raystown Lake for an average of 12 years (range = 66 years). On average, they and their guests (renters/users) took 27 boating trips the previous year from September 1, 1998 to August 31, 1999. Half of them made 20 or less trips and 25 percent made 30 or more trips in the same period (Table 3). The majority of trips were taken in the summer (14 trips), followed by spring (6 trips) and fall (5 trips). On average, the fewest number of trips were made in the winter (less than one trip per slip renter). When asked to compare the number of boating trips made last year to the previous three years, 68 percent of the renters felt that they had made about the same number of boating trips. Twelve percent said they had taken more trips last year than in the previous three years, and 20 percent said they had taken fewer trips (Figure 12).

Table 3. Number of boating trips to Raystown Lake Marina the previous year (09/01/1998 to 08/31/1999).

	Average	Std. Error	Minimum	Maximum	Percentiles			N
					25%	50%	75%	
Total number of trips	**27.05**	**1.84**	**0**	**300**	**15**	**20**	**30**	**212**
Trips made in fall	5.41	0.42	0	45	2	4	8	204
Trips made in winter	0.72	0.19	0	25	0	0	0	204
Trips made in spring	5.69	0.53	0	75	2	4	8	204
Trips made in summer	14.24	0.79	0	90	8	12	16	209

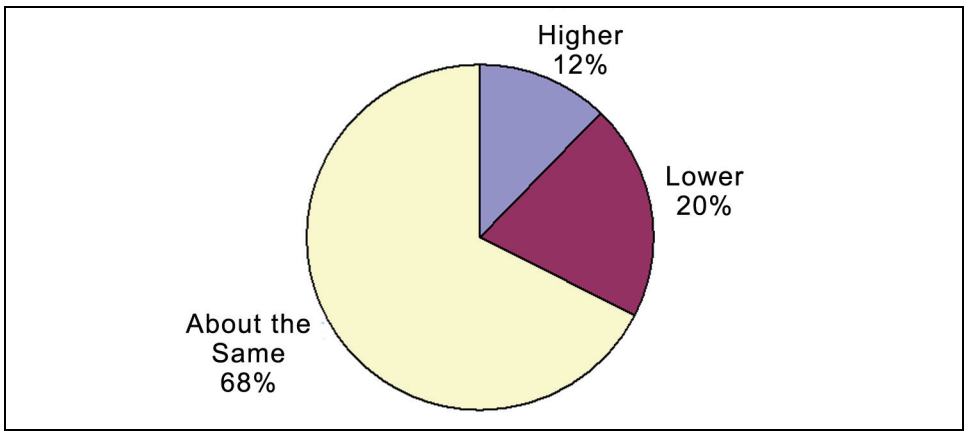

Figure 12. Number of boating trips made by marina slip renters last year compared to previous 3-year average at Raystown Lake, 1999 (N=197).

Activities while boating

During their boating trips the previous year, slip renters/users went swimming during 64 percent of their trips for an average of 17 times across the year (Table 4). Other activities they participated in during their boating trips including picnicking (on 48 percent of their boating trips), fishing from boats (34 percent), water skiing (20 percent), and camping and hiking (11 percent each). The participation rates for scuba diving and hunting were both 1 percent of the total boating trips. Forty-six percent of the slip renters/users reported participating in other activities that were not mentioned during the telephone interviews (Figure 13). On average, slip renters/users participated in other activities 6 times during 23 percent of their boating trips the previous year (Table 4). The most frequent other activities were tubing/wave running (18 percent of respondents) and jet skiing (9 percent) (Figure 13).

Table 4. Recreation activity participation during previous year's boating trips to Raystown Lake Marina (09/01/1998 to 08/31/1999).

Activity	Mean[1]	Percent of total trips[2]	Std. Error of			N
			Mean	Minimum	Maximum	
Boating	22.37	83%	1.17	0	100	203
Swimming	17.32	64%	1.00	0	96	200
Picnicking	12.90	48%	1.43	0	200	204
Fishing from boat	9.10	34%	0.92	0	80	202
Water skiing	5.40	20%	0.67	0	50	203
Camping	2.90	11%	0.48	0	50	204
Hiking	2.96	11%	0.65	0	120	204
Fishing from shore	2.10	8%	0.45	0	46	202
Scuba diving	0.33	1%	0.12	0	20	203
Hunting	0.31	1%	0.10	0	10	204
Other activities	6.19	23%	0.76	0	62	196

[1] Times participated in listed activity during previous year's boating trip.

[2] Times participated in the listed activity divided by total number of boating trips made the previous year.

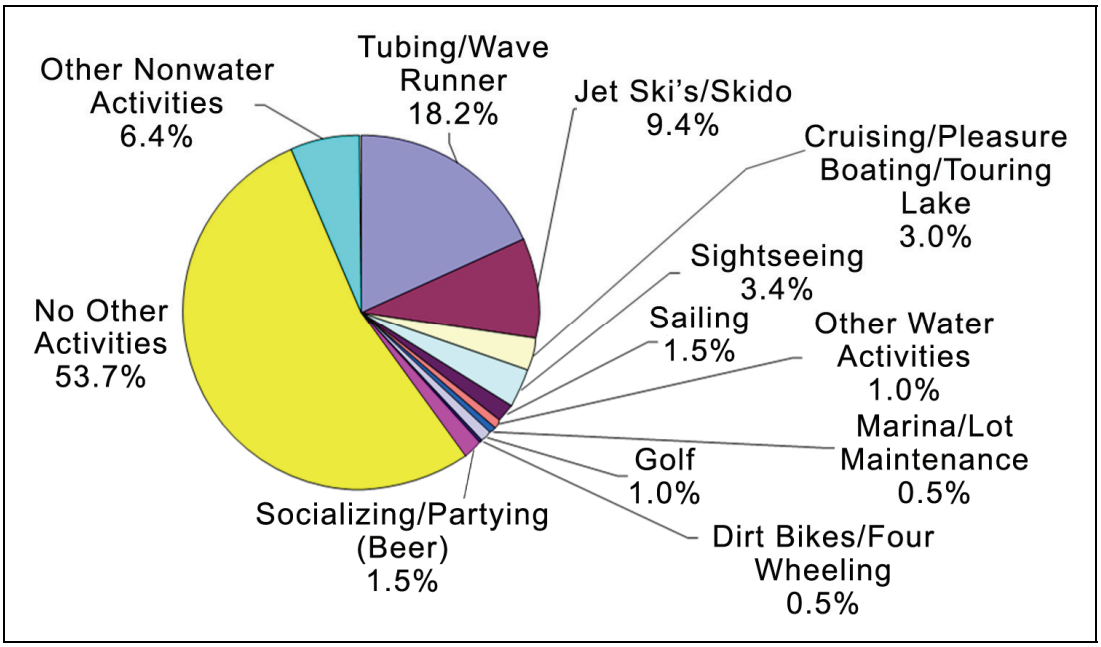

Figure 13. "What other activities did you or others participate in during your boating trips last year that I have not already mentioned?" (from Raystown Lake Marina, 1999, N=203).

Type of boat and motor

Twenty-one percent of the boats surveyed at Raystown Lake marinas were 20 ft and under with a minimum of 16 ft (Table 5). Sixty-seven percent were 21 to 30 ft long, and 12 percent were 31 ft and larger with a maximum of 66 ft. Open boats are mostly 20 ft or smaller, cabin cruisers, and pontoon boats were mostly 21 to 30 ft long, and the majority of houseboats are 31 ft or larger.

Table 5. Boat type and length cross-tabulation, Raystown Lake Marina slip renter survey, 1999 (N = 217).

Boat Length	Boat Type					Total
	Open	Cabin	Pontoon	Houseboat	Other	
20' and smaller	12.9%	2.8%	5.1%	0.0%	0.0%	20.7%
21' to 30'	8.3%	25.3%	32.3%	0.5%	0.5%	66.8%
31' and larger	1.4%	0.9%	1.4%	8.8%	0.0%	12.4%
Total	22.6%	29.0%	38.7%	9.2%	0.5%	100.0%

Fifty-one percent of the boats used at marinas had inboard motors. The majority of cabin cruisers, and open boats had inboard motors, while most pontoons did not (Table 6). Half or more of boats in all size classes had inboard motors (Table 7).

Table 6. Boat type and motor cross-tabulation, Raystown Lake Marina slip renter survey, 1999 (N = 217).

Inboard Motor	Boat Type					Total
	Open	Cabin	Pontoon	Houseboat	Other	
With	17.1%	24.9%	4.1%	5.1%	0.0%	51.2%
Without	5.5%	4.1%	34.6%	4.1%	0.5%	48.8%
Total	22.6%	29.0%	38.7%	9.2%	0.5%	100.0%

Table 7. Boat length and motor cross-tabulation, Raystown Lake Marina slip renter survey, 1999 (N = 217).

Inboard Motor	Boat Length			Total
	20' and smaller	21' to 30'	31' and larger	
With	11.1%	33.2%	6.9%	51.2%
Without	9.7%	33.6%	5.5%	48.8%
Total	20.7%	66.8%	12.4%	100.0%

Slip user segments and spending

Spending averages were estimated for all Raystown Lake's marina slip users (Table 8) and for two different segments based on length of stay (Table 9) and boat length (Table 10). Dividing visitors into segments helps explain differences in spending across distinct user groups. It gives managers the opportunity to apply these distinct spending profiles to project level use data. The two types of segments that fulfilled these purposes were: day user versus overnight stay segments and segments based on length of the boat.

Average spending for full sample of slip renters

Marina slip users averaged $241 in trip expenses associated with their last boating trip (for a party of 4.1 people). Slip users stayed away from home an average of 1.5 nights and used their boat 2.0 days during their last trip (Table 8). Eighty-four percent ($202) of spending occurred within 30 miles of their marina slip. Of the expenditures made within 30 miles of their marina slip, users spent the most on gas and oil for their boat ($40 per party trip), followed by other boat expenses ($37), groceries ($33), and restaurant meals ($26). A refined average of 27 boating trips were made from each slip in a marina during the previous year.

Slip renters spent an average of $1,027 annually on slip rentals, $309 on storage fees, $314 on insurance, and $363 on boat repair and maintenance (Table 8). The average cost of the boat was $28,401 (1999 dollars). The lowest boat cost was $1,589 and the highest was $187,920.

When asked to compare the amount spent on their most recent trip to prior similar trips, 70 percent of the renters felt that they had made about the same expenditures. Fifteen percent said they had spent more on the most recent trip than on similar trips in the last 12 months, and 15 percent said they had spent less (Figure 14).

Table 8. Summary of Raystown Lake Marina slip renters'/users' spending and use profiles, 09/1998 to 08/1999 (spending per party trip).

Spending Categories	Mean	Std. Error	Pct. Error[1]	N	Minimum	Maximum	Pct. Zeroes	Mean Exc. Zero
Spending Information for Last Trip								
Gas/oil auto	$24.71	$1.95	8%	207	$0	$200	11%	$27.80
Other expenses auto	$10.09	$3.75	37%	214	$0	$590	88%	$86.36
Gas/oil boat	$40.07	$3.64	9%	215	$0	$400	14%	$46.82
Other expenses boat	$37.49	$11.60	31%	208	$0	$1,235	89%	$354.41
Food/drink restaurants	$26.26	$5.25	20%	214	$0	$1,000	47%	$49.73
Groceries	$33.04	$4.60	14%	213	$0	$800	30%	$47.23
Campground fees	$3.71	$1.31	35%	214	$0	$140	95%	$72.18
Lodging	$6.73	$3.70	55%	214	$0	$750	95%	$144.10
Recreation fees	$1.77	$0.56	32%	215	$0	$60	94%	$31.75
Sporting goods	$10.64	$3.40	32%	214	$0	$500	87%	$81.29
Other supplies	$7.20	$0.92	13%	215	$0	$80	59%	$17.59
Total within 30 miles	**$201.71**							
Expenses for 30+ miles[2]	$39.38	$6.27	16%	209	$0	$860	42%	
Total trip spending[2]	**$241.08**							
Pct. of local spending (within 30 miles)	83.67%							
Use Information for Last Trip								
Nights away from home	1.54	0.12	8%	214	0	14		
Days used boat	1.99	0.10	5%	214	1	14		
Number of people on boat	4.09	0.20	5%	213	1	24		
Annual Spending for Last Year (09/01/98 - 08/31/99)								
Slip rental	$1,026.51	$34.46	3%	211	$400	$4,000		
Storage fees	$309.46	$28.54	9%	211	$0	$3,800		
Insurance payments	$313.70	$24.34	8%	199	$0	$3,802		
Repair/maintenance	$362.91	$49.81	14%	211	$0	$6,000		
Use Information for Last Year (09/01/98 - 08/31/99)								
Number of trips using boat	27.06	1.84	7%	211	0	300		
Cost of the boat (in 1999 dollars)	$28,401.41	$2,160.00	8%	195	$1,589	$187,920		

[1] Pct. Error = Std. Error/Mean. Two standard errors yield a 95-percent confidence interval.

[2] Expenses outside 30 miles of the marina on last trip.

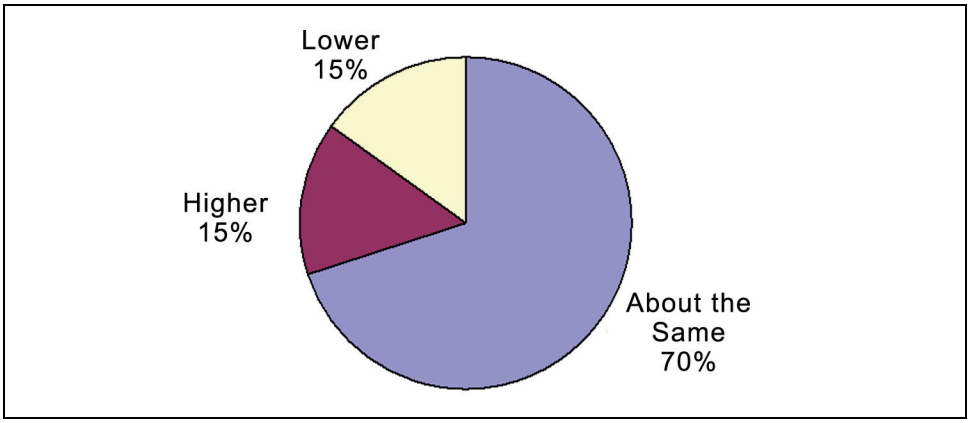

Figure 14. Expenditures by marina slip renters/users on most recent trip compared to similar trips in the last 12 months at Raystown Lake, 1999 (N=214).

Many of the respondents reported no spending on their last trip in many of the spending categories listed. Categories in which a large percentage (more than 80 percent) of users did not spend money on their last trip were: other expenses on auto (88 percent), other expenses on boat (89 percent), campground fees (95 percent), lodging (95 percent), recreation fees (94 percent), and sporting goods (87 percent). Although the estimates of average trip expenditures in this report are based on the full sample, it is worthwhile to recognize the difference between the average spending of all marina slip users and average spending of just the spenders. The average spending of those who spent something on an item is generally much higher than the average computed from all visitors. For instance, while the average across all slip users was $6.70 on lodging per party trip, the 10 marina slip parties who did spend money on lodging spent an average of $144 per party trip (Table 8). For estimating total spending of all Raystown marina slip users, it is appropriate to apply the means that include zeros. The means without zeros should not be used to expand the data to population totals, as they represent spending for specific segments only (i.e., slip users who stayed in hotels spent an average of $144 on lodging per trip).

Average spending by segment: Day use vs. overnight

Raystown slip renters were grouped into two segments based on whether or not they stayed overnight away from their permanent home during their last trip. The slip renters/users who did not stay away from home (i.e., day users) spent an average of $135 for that trip, 88 percent ($119) of which was spent within 30 miles of the marina slip (Table 9). The average party

Table 9. Spending and use by length of stay segments, Raystown Lake Marina slip renter survey, 09/1998 to 08/1999 (spending per party trip).

Spending Categories	Day Users				Overnight Users			
	Mean	Std. Error	Pct. Error[1]	N	Mean	Std. Error	Pct. Error[1]	N
Per Party Trip Spending								
Gas/oil auto	$14.94	$1.55	10%	75	$30.62	$2.86	9%	130
Other expenses auto	$1.39	$0.81	58%	76	$15.10	$5.84	39%	136
Gas/oil boat	$24.37	$2.41	10%	76	$49.15	$5.41	11%	137
Other expenses boat	$42.92	$19.65	46%	73	$35.07	$14.63	42%	133
Restaurants	$13.14	$2.36	18%	76	$32.88	$8.05	24%	136
Groceries	$14.25	$4.21	30%	75	$43.43	$6.67	15%	136
Campground fees	$0.00	–	–	76	$5.84	$2.05	35%	136
Lodging	$0.00	–	–	75	$10.52	$5.77	55%	137
Recreation fees	$0.13	$0.13	100%	76	$2.27	$0.77	34%	137
Sporting goods	$2.51	$1.96	78%	76	$14.89	$5.19	35%	136
Other supplies	$4.86	$1.33	27%	76	$8.39	$1.22	14%	137
Total within 30 miles	**$118.52**				**$248.13**			
Expenses 30+ miles[2]	$16.07	$5.82	36%	74	$52.71	$9.12	17%	133
Total trip spending	**$134.59**				**$300.85**			
Pct. of local spending (within 30 miles)	88%				82%			
Annual Spending								
Slip rental	$857.70	$28.81	3%	76	$1,090.29	$44.30	4%	133
Storage fees	$241.92	$30.52	13%	76	$330.16	$39.24	12%	133
Insurance payments	$203.86	$14.21	7%	70	$357.13	$33.73	9%	127
Repair/maintenance	$267.49	$54.63	20%	75	$417.25	$71.89	17%	134
Cost of the boat (in 1999 dollars)	$17,802.40	$1277.56	7%	71	$32,880.50	$3,019.72	9%	122
Visitor Characteristics								
Total trips using boat (last year)	29.63	2.59	9%	76	23.35	1.41	6%	133
Nights away from home (last trip)	0.00	–	–	76	2.39	0.15	6%	138
Days used boat (last trip)	1.00	–	–	76	2.50	0.13	5%	137
People on boat (last trip)	3.97	0.29	7%	75	4.18	0.27	6%	137

[1] Pct. Error = Std. Error / Mean. Two standard errors yield a 95-percent confidence interval.

[2] Expenses outside 30 miles of the marina on last trip.

size was 4.0 people per trip. The slip renters/users who stayed overnight spent an average of 2.4 nights away from home and used the boat for 2.5 days with a party size of 4.2 people per trip. They spent an average $301 for the entire trip, 82 percent ($248) of which was spent within 30 miles of the marina slip. Day users made an average of 30 boating trips in the previous year, whereas overnight slip users made 23 trips.

Slip renters in the overnight segment owned more expensive boats than day users ($32,881 vs. $17,802 respectively). Consequently, they paid more annually in slip rentals fees, insurance payments, storage fees, and repairs and maintenance than day users.

Day users comprised 35 percent of the sample of slip users, while 65 percent spent at least one night in the area on their last trip. In terms of total spending in the local region, day users of marina slips contributed 25 percent, and overnight stay slip users, 75 percent.

Average spending by boat length segments

Based on the length of the boat, the slip renters were grouped into three segments: boats that were 20 ft and shorter, boats between 21 and 30 ft, and boats 31 ft and longer. The 20-ft and smaller segment spent an average of $132 per party on the last trip during which about 92 percent ($121) was spent within 30 miles of the marina slip (Table 10). They stayed an average of 1.2 nights away from home and used their boat for 1.6 days with a party size of 3.2 people per trip. Slip renters/users in this segment made an average of 25 boating trips the previous year.

The 20- to 31-ft boat segment spent an average of $277 per party on the last trip ($230 within 30 miles of the marina slip). They stayed an average of 1.6 nights away from home, used their boat for 2.0 days with a party size of 4.3 people per trip. They made an average of 25 boating trips the previous year. Renters/users in the largest boat size segment averaged more than $223 per party on goods and services during their last trip, ($181 of the money was spent locally). They stayed away from home an average of 2.0 nights and used the boat for 2.7 days per trip. The average party size for this group was 4.8 people per trip. Renters/users in this segment made an average of 43 boating trips the previous year.

Table 10. Spending and use by boat length segments, Raystown Lake Marina slip renter survey, 09/1998 to 08/1999 (spending per party trip).

Spending Categories	20' and smaller				21' to 30'				31' and larger			
	Mean	Std. Error	Pct. Error[1]	N	Mean	Std. Error	Pct. Error[1]	N	Mean	Std. Error	Pct. Error[1]	N
Per Party Trip Spending												
Gas/oil auto	$21.25	$3.01	14%	44	$25.75	$2.54	10%	140	$25.00	$6.24	25%	23
Other expenses auto	$10.80	$9.13	85%	44	$7.56	$2.63	35%	144	$22.88	$22.69	99%	26
Gas/oil boat	$20.00	$2.95	15%	44	$45.04	$4.81	11%	145	$46.31	$11.60	25%	26
Other expenses boat	$30.12	$19.15	64%	41	$46.54	$16.14	35%	141	$0.00	$0.00	-	26
Restaurants	$17.02	$3.08	18%	44	$30.90	$7.60	25%	145	$15.60	$6.22	40%	25
Groceries	$12.11	$1.94	16%	44	$34.48	$6.07	18%	143	$60.54	$15.77	26%	26
Campground fees	$0.00	$0.00	0%	44	$5.48	$1.93	35%	144	$0.19	$0.19	100%	26
Lodging	$5.35	$3.74	70%	43	$8.32	$5.35	64%	145	$0.19	$0.19	100%	26
Recreation fees	$0.00	$0.00	0%	44	$2.21	$0.73	33%	145	$2.31	$2.31	100%	26
Sporting goods	$0.39	$0.27	71%	44	$15.20	$5.00	33%	144	$2.69	$2.32	86%	26
Other supplies	$4.32	$1.49	35%	44	$8.37	$1.18	14%	145	$5.58	$2.66	48%	26
Total within 30 miles	**$121.36**				**$229.85**				**$181.29**			
Expenses 30+ miles[2]	$11.09	$2.80	25%	43	$47.55	$8.74	18%	141	$41.92	$15.41	37%	25
Total trip spending	**$132.45**				**$277.40**				**$223.21**			
Pct. of local spending (within 30 miles)	92%				83%				81%			
Annual Spending												
Slip rental	$693.84	$19.81	3%	44	$957.36	$24.13	3%	141	$1,964.46	$135.63	7%	26
Storage fees	$103.28	$20.46	20%	43	$313.43	$34.30	11%	143	$641.40	$106.89	17%	25
Insurance payments	$173.28	$13.18	8%	43	$294.97	$29.71	10%	132	$668.29	$83.57	13%	24
Repair/maintenance	$156.60	$35.02	22%	45	$338.81	$46.60	14%	141	$870.20	$306.06	35%	25
Cost of the boat (in 1999 dollars)	$13,228.08	$896.37	7%	41	$24,480.08	$1,513.36	6%	135	$89,005.96	$,12384.10	14%	19

Visitor Characteristics												
Total trips using boat (last year)	25.45	2.73	11%	44	24.88	1.39	6%	143	42.96	12.81	30%	24
Nights away from home (last trip)	1.24	0.24	19%	45	1.56	0.16	10%	145	2.00	0.31	15%	24
Days used boat (last trip)	1.60	0.17	11%	45	1.99	0.12	6%	144	2.72	0.35	13%	25
People on boat (last trip)	3.16	0.30	9%	45	4.27	0.23	5%	143	4.76	0.89	19%	25

[1] Pct. Error = Std. Error/Mean. Two standard errors yield a 95-percent confidence interval.

[2] Expenses outside 30 miles of the marina on last trip.

In general, the larger the boat, the more slip renters spent on annual expenses. Slip rentals ranged from $694 for boats 20 ft and shorter to $1,964 for boats 31 ft and longer. The cost of the boat ranged from $13,288 for the 20-ft and smaller segment to $89,006 for the 31-ft and larger segment, while the insurance payments ranged from $173 to $668 a year across the three segments. Boat repair and maintenance costs similarly grew from $157 to $870 per year as boat size increased (Table 10).

Two-thirds of the sample had medium-sized boats (21 to 30 ft), while 21 percent were small (20 ft and smaller) and 12 percent were large (above 30 ft). Slip users with large boats contributed 18 percent of total spending locally, slip users with medium-sized boats, 70 percent, and those with small boats, 12 percent.

Total spending

The figures in Table 11 were derived from secondary data sources, the Natural Resource Management System (NRMS) (USACE 2006c), and from survey data for Raystown (e.g., average number of trips per boat last year). The 100 percent occupancy rate for marina slips came from the 1999 NRMS database. Based on the assumption that there was one boat for each occupied slip, the total number of 1,163 boats used by slip users at Raystown Lake was computed by multiplying the occupancy rate by the total number of wet slips (1,163 from NRMS). Raystown slip users took 31,456 boating party trips in 1999 (9 percent of total recreation use[1]), and purchased 86 new boats (Table 11).

Local and total trip-related spending (Tables 12 and 13) is calculated by multiplying the number of party-trips in Table 11 (31,456) by the trip spending averages in Table 8. Total spending on boats and fixed, annual goods and services (Table 14) is estimated by multiplying the number of boats in Table 11 (1,163) by the annual expenditures on boats, slip rental fees, boat repairs and maintenance, and storage in Table 8. Total spending on insurance is estimated by multiplying the number of boats (1,163) by the proportion of local boat owners who purchased boat insurance and their average insurance payment. Total spending on purchasing new boats is estimated by multiplying the number of new boats purchased last year

[1] 1.05 million recreation visits in 1999 from Table 1 divided by an average party size of 3.0 from Propst et al. (1998) equals 351,000 total party trips; 31,456 is 9 percent of 351,000 party trips.

(86) by the proportion of local slip renters who bought new boats and the average local new boat cost for three years: 1997-1999.

Table 11. Total annual use figures for marina slip renter survey at Raystown Lake (1999).

Category	Total Use	Computation Procedures
Occupancy rate	100%	[1]From NRMS (1999)
Number of slips	1,163	[1]From NRMS (1999)
Number of boats	1,163	Number of slips times occupancy rate
Number of party trips	31,456	Total party trips (from Table 3) times total number of boats (Reference Foreword)
Percent of new boats purchased last year	7.41%	Computed from survey results, using the 3-year average (1997 to 1999)
Number of new boats purchased last year	86	Total boats times percent of new boats purchased last year

[1] Those numbers were quoted from project level marina slip study parameter (1999).

Table 12. Total trip spending in local area[1] by Raystown Lake Marina slip renters/users (1999)

Spending Category	Spending ($MM)
Gas/oil auto	$0.78
Other expenses auto	$0.32
Gas/oil boat	$1.26
Other expenses boat	$1.18
Food/drink restaurants	$0.83
Groceries	$1.04
Campground fees	$0.12
Lodging	$0.21
Recreation fees	$0.06
Sporting goods	$0.33
Other supplies	$0.23
Total trip spending	**$6.34**

[1] Local trip spending equals spending within 30 miles of the slip.

Table 13. Total trip spending[1] by Raystown Lake Marina slip renters/users (1999).

Spending Category	Spending ($MM) [2]
Gas/oil auto	$1.02
Other expenses auto	$0.42
Gas/oil boat	$1.26
Other expenses boat	$1.18
Food/drink restaurants	$1.09
Groceries	$1.37
Campground fees	$0.15
Lodging	$0.28
Recreation fees	$0.07
Sporting goods	$0.44
Other supplies	$0.30
Total trip spending	**$7.58**

[1] Total trip spending equals spending within and outside 30 miles of the slip.

[2] Slip renters were asked to report trip spending outside 30 miles of the marina slip as one total amount, not broken down by item as this table shows. This aggregate spending figure was then proportionally distributed into all but two categories based on the spending proportions within 30 miles. Proportional allocations were not made to the "gas/oil boat" and "other expenses boat" categories. It was assumed that, for these two categories, there were no boating expenditures outside 30 miles of the marina slip.

Table 14. Total spending on fixed, annual goods and services by marina slip renters at Raystown Lake (1999).

Spending Category	Spending ($MM)
Slip rentals	$1.19
Storage fees	$0.36
Insurance payments (include only payments from slip renters who lived within 30 miles of the marina)	$0.07
Repair/maintenance	$0.42
Purchases of new boats (within 30 miles)	$1.86
Total durable goods spending	**$3.90**

A recreation visit, as reported in the NRMS database, is one person entering a Corps project. Spending depends on how long a person stays in the local region rather than how many times they enter the project or how much time they spend in recreation activities while there. Recreation

visits are therefore converted to party trips[1] in the region before applying spending averages. This procedure avoids double-counting the spending of marina slip users who may enter the project multiple times on the same day and also takes into account additional days a slip user may spend in the area outside the project.

The estimated trip spending for all Raystown marina slip users in 1999 was $6.3 million spent within the local region (Table 12). If trip spending outside 30 miles is included, the total rises to $7.6 million (Table 13). Only trip spending within 30 miles of the marina slip ($6.3 million) should be included when conducting economic impact analysis at the project level (multi-county region).

Fixed, annual goods and services related to boating activities in this study were new boats, slip rental fees, storage fees, insurance, and repairs and maintenance. Raystown's marina slip renters spent $3.9 million (1999 dollars) on boating-related annual goods and services (Table 14). Forty-eight percent of the money was spent on purchases of new boats ($1.9 million), followed by slip rental fees ($1.2 million), repairs/maintenance ($420,000), storage fees ($360,000), and insurance ($70,000).

Economic impacts of slip user spending

1999 impacts

The $6.3 million in trip-related spending from Table 12 had a direct economic impact on the region of $4 million in direct sales, $1.4 million in personal income (wages and salaries), and supported 73 jobs in the region (Table 15). The retail trade sector received the largest amount of direct sales ($1 million) followed by eating and drinking (restaurants and bars) sector ($0.8 million).

[1] See Table 11 for the conversion steps. A party is a travel group staying in the area (within 30 miles of the marina). The travel group is usually all individuals in the same vehicle or on the same boat or staying in the same room or campsite. During the interviews, slip renters were asked to report expenditures for their entire party for the last trip. Thus, the units for expenditures are party trips. Converting visits to party trips assures that the units are the same in the multiplication steps that lead to estimates of total expenditures (visits in party trips times expenditures in party trips).

Table 15. Regional economic impacts of Raystown Lake Marina slip renters'/users' trip spending (1999, for trip spending within 30 miles only).

SUMMARY RESULTS TABLE IMPACTS ON LOCAL ECONOMY				
Economic Measure		Direct	Multiplier	Total
Output/sales ($MM)		$4.01	1.48	$5.93
Total income ($MM)		$1.39	0.52	$2.08
Total value added ($MM)		$2.18	0.82	$3.29
Jobs		73.24	24.80	99.37
Total visitor spending ($MM)			6.34	
Capture rate			63%	
Effective spending multiplier			0.94	
Direct Effects				
Sector	Sales ($MM)	Income ($MM)	Value Added ($MM)	Jobs
Lodging	$0.33	$0.12	$0.19	8.06
Eat and drink	$0.83	$0.30	$0.42	25.72
Amusement and recreation	$0.03	$0.01	$0.02	1.55
Retail	$1.00	$0.48	$0.79	22.73
Wholesale	$0.31	$0.13	$0.21	3.62
Other services	$0.45	$0.12	$0.19	4.65
Groceries	$0.11	$0.02	$0.03	0.52
Sporting goods	$0.04	$0.01	$0.02	0.31
Other manufacturing	$0.80	$0.19	$0.28	5.47
Government	$0.11	$0.02	$0.03	0.62
Total	**$4.01**	**$1.39**	**$2.18**	**73.24**
Total Effects				
Sector	Sales ($MM)	Income ($MM)	Value Added ($MM)	Jobs
Lodging	$0.35	$0.13	$0.20	8.57
Eat and drink	$0.91	$0.32	$0.46	28.10
Amusement and recreation	$0.05	$ 0.02	$0.02	2.07
Retail	$1.18	$0.57	$0.93	27.17
Wholesale	$0.45	$0.19	$0.31	5.17
Other services	$1.56	$0.49	$0.84	17.25
Groceries	$0.15	$0.02	$0.04	0.83
Sporting goods	$0.04	$0.01	$0.02	0.31
Other manufacturing	$1.09	$0.30	$0.41	8.68
Government	$0.16	$0.04	$0.06	1.24
Total	**$5.93**	**$2.08**	**$3.29**	**99.37**

Direct effects are less than total spending, as only the retail and wholesale margins on visitor purchases of goods accrue to the local economy. The local region surrounding Raystown Lake captures 63 percent of slip user spending. Thirty-seven percent leaks out of the local economy to cover the costs of imported goods bought by visitors.[1]

The sales multiplier[2] for the region is 1.48, meaning that an additional $0.48 in sales is generated through secondary effects for every dollar of direct sales. Secondary effects generate an additional 26 jobs, for a total of 99 direct and secondary jobs (Table 15). Likewise, secondary effects generate an additional $0.7 million in personal income and $1.1million in value added (personal income + proprietor's income + indirect business tax). Roughly 12 direct jobs are supported by each million dollars in total slip user spending. Including multiplier effects, each million dollars in total slip user spending supports about 16 jobs.

The $3.9 million in spending on new boats, slip rental fees, storage fees, insurance, and repairs/maintenance from Table 14 had a direct economic impact on the region of $2.3 million in direct sales, $0.4 million in personal income (wages and salaries), and supported 18 direct jobs in the region (Table 16). The other services sector received the largest amount of direct sales ($1.6 million), followed by retail ($370,000).

Direct effects only accrue to the industries where slip renter spending is directly received. For example, since no money is spent in the Lodging sector from slip renter annual or durable goods spending, that cell is blank in the top sector of Table 16 (Direct Effects). However, other companies receiving direct payments, e.g. insurance companies may hire employees who live in the region and spend money in the local Lodging sector. Since this is a multiplier (secondary) effect upon the Lodging sector, some amount of sales appears in the Lodging cell in the total effects sector of Table 16.

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[1] For example, if a visitor buys $50 worth of clothing that is not manufactured in the local region, only the local margins (retail and locally operated wholesale and transportation), say $30, will be captured by the local economy as direct sales. The remaining $20 will leak immediately outside the local economy to cover the producer price (or price of good at the factory), and non-local margins (wholesale and transportation).

[2] Multipliers for the 5-county region are from a 2000 input-output model estimated with the IMPLAN system.

Table 16. Regional economic impacts of Raystown Lake Marina slip renters' durable goods and annual spending (1999)

SUMMARY RESULTS TABLE IMPACTS ON LOCAL ECONOMY				
Economic Measure		Direct	Multiplier	Total
Output/sales ($MM)		$2.32	1.42	$3.29
Total income ($MM)		$0.40	0.33	$0.76
Total value added ($MM)		$0.64	0.51	$1.18
Jobs		18.28	13.42	31.20
Total visitor spending ($MM)			3.90	
Capture rate			60%	
Effective spending multiplier			0.84	
Direct Effects				
Sector	Sales ($MM)	Income ($MM)	Value Added ($MM)	Jobs
Lodging	$ –	$ –	$ –	–
Eat and drink	$ –	$ –	$ –	–
Amusement and recreation	$ –	$ –	$ –	–
Retail	$0.37	$0.16	$0.28	6.51
Wholesale	$0.03	$ 0.01	$0.02	0.41
Other services	$1.59	$0.14	$0.22	8.99
Groceries	$ –	$ –	$ –	–
Sporting goods	$ –	$ –	$ –	–
Other manufacturing	$ 0.34	$0.08	$0.12	2.38
Government	$0.00	$0.00	$0.00	0.00
Total	**$2.32**	**$0.40**	**$0.64**	18.28
Total Effects				
Sector	Sales ($MM)	Income ($MM)	Value Added ($MM)	Jobs
Lodging	$ 0.01	$0.00	$0.01	0.21
Eat and drink	$0.03	$0.01	$0.01	0.83
Amusement and recreation	$0.01	$0.00	$0.00	0.21
Retail	$0.43	$0.20	$0.33	8.16
Wholesale	$0.09	$0.04	$0.06	1.03
Other services	$ 2.22	$0.37	$0.58	16.73
Groceries	$0.01	$0.00	$0.00	0.00
Sporting goods	$0.00	$0.00	$0.00	0.00
Other manufacturing	$0.47	$0.13	$0.17	3.72
Government	$0.04	$0.01	$0.01	0.31
Total	**$3.29**	**$0.76**	**$1.18**	**31.20**

The local region surrounding Raystown Lake captures 60 percent of slip renter spending on new boats and annual services. Forty percent leaks out of the local economy to cover the costs of imported boats and services bought by visitors.

The sales multiplier for the region is 1.42, meaning that an additional $0.42 in sales is generated through secondary effects for every dollar of direct sales. Secondary effects generate an additional 13 jobs, for a total of 31 direct and secondary jobs (Table 16). Likewise, secondary effects generate an additional $360,000 in personal income and $540,000 in value added (personal income + proprietor's income + indirect business tax). Roughly 5 direct jobs are supported by each million dollars in total slip renter spending for new boats and annual services. Including multiplier effects, each million dollars in total slip renter spending supports about 8 jobs.

Value of 1999 impacts in 2004 dollars

The 1999 economic impacts reported above were adjusted to 2004 impacts by multiplying 1999 figures by an average consumer price index of 1.21 (U.S. Department of Labor 2006). The results are presented in Table 17.

Table 17. Regional economic impacts of Raystown Lake Marina slip renters'/users' trip and renters' annual spending (in 2004 dollars, for spending within 30 miles only).

Economic Measure	Trip Spending (within 30 miles)		Durable Goods and other Annual Costs Spent Locally	
Total spending ($MM)	$ 7.67		$4.72	
	Direct Effects	Total Effects	Direct Effects	Total Effects
Output/sales ($MM)	$4.85	$7.18	$2.81	$3.98
Total income ($MM)	$1.69	$2.52	$0.49	$0.91
Total value added ($MM)	$2.63	$3.98	$0.77	$1.42

Note: Spending and economic effects in this table are in 2004 dollars, as opposed to the 1999 dollars reported elsewhere in this report.

In 2004 dollars, total marina slip user trip spending locally of $7.7 million resulted in $1.7 million in the region in personal income and $2.63 million in value added (personal income + proprietor's income + indirect business tax).With secondary (multiplier) effects, total impacts locally were $2.5 million in personal income and $4 million in value added. There is no change to the number of direct jobs (92) in going from Tables 15 and 16 to Table 17. This is because no new expenditures by slip users are being

estimated in Table 17. Instead, expenditures from the 1999 survey are being inflated to 2004 dollars. Since there are no new expenditures, there are no additional jobs being created in 2004.

After converting annual goods and services to 2004 dollars, the results are $4.7 million marina slip renter spending on new boats, storage fees, insurance, and repairs/maintenance. The impacts of annual spending include $0.5 million in personal income and $0.8 million in value added. With secondary (multiplier) effects, total impacts locally were $0.9 million in personal income and $1.4 million in value added.

4 Study Limitations and Error

The accuracy of the estimates in this report rests on the three inputs: visits, spending averages, and multipliers. The number of trips reported by the sample of marina slip renters and the occupancy rate of the marinas are likely the largest potential sources of error.

The multipliers and economic ratios used to convert spending to jobs and income and to estimate secondary effects come from an IMPLAN model for the five-county region. Although it is difficult to estimate the levels of error, multipliers can vary by about 10 percent between different modeling systems. Multipliers largely influence estimates of secondary effects.

Depending on the direction and magnitude of errors in visits, spending, and multipliers, the different errors may compound or cancel each other. The most important potential errors are in the estimates of total trips. As the model is linear, doubling the amount of visitation will double spending and economic impacts.

In addition to these issues, there are also conceptual issues regarding how much and which spending may be claimed by the project. It is not simple to determine if marina slip users would spend their money elsewhere if marinas were not available at Raystown Lake. Furthermore, local visitors are usually excluded in estimating economic impacts, but have been included here. Since they are not a distinct segment, their contribution to the total effects is not readily estimated. However, 21 percent of the slip renters interviewed stated that their permanent residences were within 30 miles of the project. Since around 84 percent of total trip spending occurred within 30 miles of the project, the impact of local spending cannot be ignored.

Only new boat purchases within 30 miles of the project are counted in this analysis. Further, it is assumed that slip rental fees and storage fees go primarily to local businesses. However, slip renters were not asked to identify the locations of their insurance companies or boat repair shops. Thus, the extent to which these expenditures accrue to the local economy is not known, but they have been counted as occurring locally (within the five-county region).

5 Summary and Discussion

Marina slip users at Raystown Lake spent $6.3 ($7.7[1]) million in trip-related expenditures and $3.9 ($4.7) million in purchases of new boats and annual services within 30 miles of the lake in 1999. Combining both trip-related and durable expenditures, the direct economic effects of slip user spending were $6.3 ($7.7) million in sales, $1.8 ($2.2) million in personal income, $2.8 ($3.4) million in direct value added, and 92 jobs. With multiplier effects, created by the recirculation of the money spent by slip users, visitor spending generated a total (direct + secondary) of $9.2 ($11.2) million in local sales, and an associated $2.8 ($3.4) million in personal income and $4.5 ($5.4) million in value added, and 131 jobs. Sectors receiving the greatest benefit from marina slip users were manufacturing, retail trade, food and drink, and other services. The $6.3 million in direct sales is about 1.9 percent of the total of all tourism activity ($343 million) (sales have been price inflated for this computation).

Total economic impacts (Tables 15, 16, and 17) are useful for accountability purposes, lake support, and explaining the role of the lake in the region's economy. The REAS model results can also be used to evaluate management alternatives and strategies, and to conduct sensitivity analyses. The marginal economic impacts of particular visitor segments are useful for evaluating particular actions. Table 18 shows the changes in sales, jobs, income and valued added associated with an increase or decrease of 1,000 additional party-trips by each segment. Marginal impact analysis provides answers to the question: "What if?" (reference Foreword).

For example, to evaluate the regional economic impacts of adding an additional 38 marina slips, first compute the change in party trips – 10 slips produce 270 party trips (average of 27 trips per slip per year from Table 3). That means 38 slips would produce about 1,000 extra party trips per year. Applying the marginal impacts for the overnight segment in Table 9, the expansion generates an additional $248,000 in total trip spending ($248 per party trip from Table 9 times 1,000), $157,000 dollars in direct sales in the region, $55,000 in personal income, $85,000 in value added and 2.9 jobs in direct effects (computed from ratios in Table 15). In 2004 dollars, the extra 1,000 party trips per year by marina slip users would result

[1] Numbers in parentheses are in 2004 dollars (See Table 17).

in $190,000 in direct sales in the region and $66,000 in direct personal income.[1] The impact of this alternative could be compared to others.

Table 18. Direct impacts of an additional 1,000 marina slip renter party trips by segment, Raystown Lake.

Segments	Local Spending ($)	Direct Sales ($)	Personal Income ($)	Value Added ($)	Jobs
(marginal impacts per 1,000 party-trips, in 1999 dollars)					
Day use	$118,519	$74,899	$26,037	$40,659	1.4
Overnight stay	$248,133	$156,809	$54,512	$85,125	2.9
Small boat	$121,357	$76,692	$26,661	$41,633	1.4
Medium boat	$229,849	$145,254	$50,495	$78,853	2.7
Large boat	$181,292	$114,568	$39,828	$62,195	2.1
(marginal impacts per 1,000 party-trips, in 2004 dollars)					
Day use	$143,408	$90,627	$31,505	$49,198	1.4
Overnight stay	$300,241	$189,738	$65,959	$103,001	2.9
Small boat	$146,842	$92,797	$32,259	$50,376	1.4
Medium boat	$278,117	$175,757	$61,099	$95,412	2.7
Large boat	$219,364	$138,628	$48,191	$75,255	2.1

The economic impacts presented in this report document the economic significance of 31,456 marina slip user trips at Raystown Lake in 1999. The impacts will vary from year to year with changes in prices, visitor volumes, the mix of visitors attracted, and other changes in the lake and surrounding communities. The REAS model has built-in procedures to price adjust spending averages over time, as we have done in this report, so updated figures may be obtained fairly easily, if there are not significant changes in visitor use and spending patterns. In the absence of significant structural changes in the local economy, multipliers will be quite stable. The primary input for updating the estimates is visitation, which must take into account any changes in the mix of visitors or their length of stay in the area.

[1] The number of jobs, 2.9, remains the same in 2004 because Table 18 reflects the marginal impacts of 1,000 additional party trips; since the ratio between sales and jobs remains the same between 1999 and 2004, the number of jobs per 1,000 additional party trips does not change.

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14. ABSTRACT

This report documents the local economic impacts of marina slip users at Raystown Lake, located in southern Pennsylvania. This economic assessment is based on the results of a 1999 survey of a sample of Raystown Lake marina slip renters. Spending estimates are adjusted to 2004 dollars. The economic impacts estimated for Raystown Lake are useful for accountability purposes, lake support, and explaining the role of the lake in the region's economy. This report demonstrates how the survey results can also be used to evaluate management alternatives and strategies and to conduct sensitivity analyses.

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