
A SUMMARY OF ECONOMIC IMPACTS OF COMMERCIAL WHITEWATER RAFTING IN WEST VIRGINIA

Final Report

Submitted as Part of

**Design, management, and implementation of a Limits of
Acceptable Change (LAC) process for a three-year
study on the Gauley, New, Cheat, Shenandoah,
and Tygart Rivers of West Virginia**

by: Steven A. Whisman, Steven J. Hollenhorst, and Christopher D. Jones

Research Associate, Associate Professor, and Doctoral Candidate
Recreation, Parks, and Tourism Management Program
Division of Forestry
West Virginia University
Morgantown, WV 26506

Candice Elliott and Virgil Norton
Masters Candidate and Professor
Division of Resource Management
West Virginia University

Stratford Douglas
Associate Professor
Department of Business and Economics
West Virginia University

David Greenstreet
Research Associate
Bureau of Business and Economic Research
West Virginia University

INTRODUCTION

The economy of West Virginia historically has been one dominated by resource extractive industries and manufacturing. As these industries have declined in recent decades, economic activity generated by commercial recreation and tourism has grown and has become a primary source of employment and income in many communities. Opportunities that attract tourists to West Virginia include those associated with the State's abundant wildland resources — its mountains, forests, and rivers. Many thousands of people take advantage of these opportunities each year by visiting West Virginia, and the economic impacts of these visitors are presumed to be substantial. Among the visitors are people who come both from within and outside the State for commercial whitewater rafting, and this report contains a summary of a 1995 survey of commercial whitewater boaters on the Cheat, New, and Gauley Rivers.

Socioeconomic information about commercial boaters was compiled from three separate surveys conducted in 1995 on the three rivers. Consequently, a relatively large sample was obtained to characterize commercial boaters in terms of their age, income, education level, state of residence, and size of their household (Table 1). Additional data were collected with a survey designed specifically to assess direct spending behavior and economic impacts of the commercial whitewater industry. Data from this survey were used to characterize boater's trips to West Virginia and to document the amount and type of expenditures they made when visiting the State for whitewater rafting. Expenditure categories included spending directly related to rafting (e.g., outfitter fees, river trip videos and photographs, etc.), and expenditures for food, gas, lodging, and other miscellaneous items. In an attempt to identify potential economic impacts for local communities and for the State, boaters were asked to report their expenditures for three geographic regions: the local area within 50 miles of the river they ran; outside the local area but in other parts of West Virginia; and outside of West Virginia.

Since boaters were surveyed in the midst of their visit, they were asked to report expenditures made up to the time at which they were surveyed, plus any additional expenditures they expected to make during the remainder of their trip. It was expected that boaters could reliably and accurately report the amount of money they had already spent. On the other hand, their estimates of additional amounts they expected to spend probably are less accurate. Despite the potential for error in boaters' estimates of expected additional spending, these estimates were combined with the reports of dollars already spent to approximate total spending by individual boaters. Also, up to as many as 20% boaters indicated having already spent or expecting to spend money in most expenditure categories, but provided no dollar values. These boaters were not included in calculations of total expenditures presented in this

Table 1. Socio-economic characteristics of commercial boaters on the Cheat, New, and Gauley Rivers in 1995

Variable	Categories	Cheat River	New River	Gauley River
Gender	Male	51%	54%	73%
	Female	35%	37%	23%
	Missing	14%	9%	4%
Age	Less than 20	16%	30%	10%
	20 to 29	42%	33%	34%
	30 to 39	27%	19%	35%
	40 to 49	11%	13%	17%
	50 to 59	4%	4%	3%
	60 to 69	1%	1%	1%
	70 or More	0%	<1%	0%
Income Level	Less than \$10,000	4%	6%	3%
	\$10,000 to \$19,999	5%	5%	4%
	\$20,000 to \$29,999	10%	7%	14%
	\$30,000 to \$39,000	14%	12%	16%
	\$40,000 to \$49,000	12%	11%	13%
	\$50,000 to \$74,999	21%	17%	15%
	\$75,000 to \$99,999	7%	9%	11%
	\$100,000 to \$149,999	6%	7%	7%
	\$150,000 or More	3%	6%	9%
Missing	19%	19%	8%	
Household Size	One Individual	23%	15%	30%
	Two People	25%	21%	28%
	Three People	13%	14%	15%
	Four People	14%	22%	12%
	More than Four People	8%	18%	10%
	Missing	16%	12%	5%
Education Level	Some High School	2%	12%	2%
	High School Graduate	11%	14%	12%
	Vocational/Technical	4%	3%	8%
	Some College	14%	17%	14%
	College Graduate	36%	28%	43%
	Graduate Study	20%	15%	18%
	Missing	14%	12%	3%

report, although their expenditures potentially could contribute substantially to total spending. Also, because of item non-response, which averaged approximately 18% across the three

rivers, data were missing in most expenditure categories. Consequently, it is not known if boaters who failed to provide a response did or did not spend in expenditure categories. Missing data also were excluded from expenditure estimates reported herein.

Estimates of direct spending were calculated in two ways: (1) by expenditure category; and (2) by individual boater. The former provides an indication of the amount and distribution of money spent during whitewater visits for various items such as lodging, food, transportation, etc. The latter provides estimates of individual spending that can be used to extrapolate the magnitude of per person spending during whitewater rafting visits. Direct expenditures reported herein show slight discrepancies between estimates derived by expenditure category and those derived by individual boaters. Such discrepancies result from rounding the percent of sample representation in the expenditure estimate calculations.

Local and statewide economic impacts of the commercial whitewater industry were estimated using the US Forest Service IMPLAN model, an input-output modeling system that facilitates estimation of direct, indirect, and induced economic effects within user defined impact regions (See Appendix A). For the Cheat River, the local impact region was defined as Monongalia and Preston Counties; for the New and Gauley Rivers, the local impact region included Fayette, Nicholas, and Raleigh Counties. Typically, only the expenditures of visitors from outside the defined impact regions are included in economic impact estimates as their spending represents an infusion of outside dollars into the economy. However, no effort was made in this study to exclude the expenditures of resident boaters. Overall, West Virginians comprised 2.8% or fewer of the boaters surveyed on the Cheat and Gauley Rivers, respectively, and about 7.5% of boaters surveyed on the New River. Of these West Virginians, less than 1% on each river resided within the defined local impact regions.

CHEAT RIVER EXPENDITURE SUMMARY

Boater and Trip Characteristics

Commercial boaters were surveyed on the Canyon section of the Cheat River where about 76% of all commercial rafting on the Cheat took place in 1995. Boaters on the Narrows section were not surveyed as part of this study, but it was assumed that they were similar in terms of travel characteristics and spending behavior. A majority of commercial boaters surveyed on the Cheat River were men (Table 1). The sample was made up of 51% male and 35% female respondents. Fourteen percent did not report their gender. The average age of surveyed boaters was 31.3 years, but almost 58% of the sample was younger than 30, and 85% younger than 40 years old. The median annual household income was between \$50,000

to \$74,999.

Most boaters reported that they were from households of two or fewer people: 23% came for single person households while 25% were from two person households. An additional 13% were from three person households and 14% had four persons in the household. Respondents also were highly educated. The median boater was a college graduate, with 36% of boaters having college degrees and an additional 20% with post-graduate study. Overall, 73% of respondents had education or training beyond high school. Fourteen percent did not report their education level.

Commercial boaters traveled a relatively long distance from several states to the raft the Cheat River in 1995. The average one-way travel distance to the Cheat was 269 miles, however there was substantial variation in distance traveled in that the standard deviation was 164 miles (Table 2). Boaters also reported that they traveled in relatively large group sizes. An average of six people per vehicle rode together as they traveled to the Cheat River area. Almost 83% of the boaters surveyed traveled from only six states, including in decreasing order, New York, Michigan, Pennsylvania, Maryland, Virginia, and Ohio (Figure 1). West Virginians comprised only 2.5% of the sample.

Thirty-five percent of boaters reported that they previously had been whitewater rafting

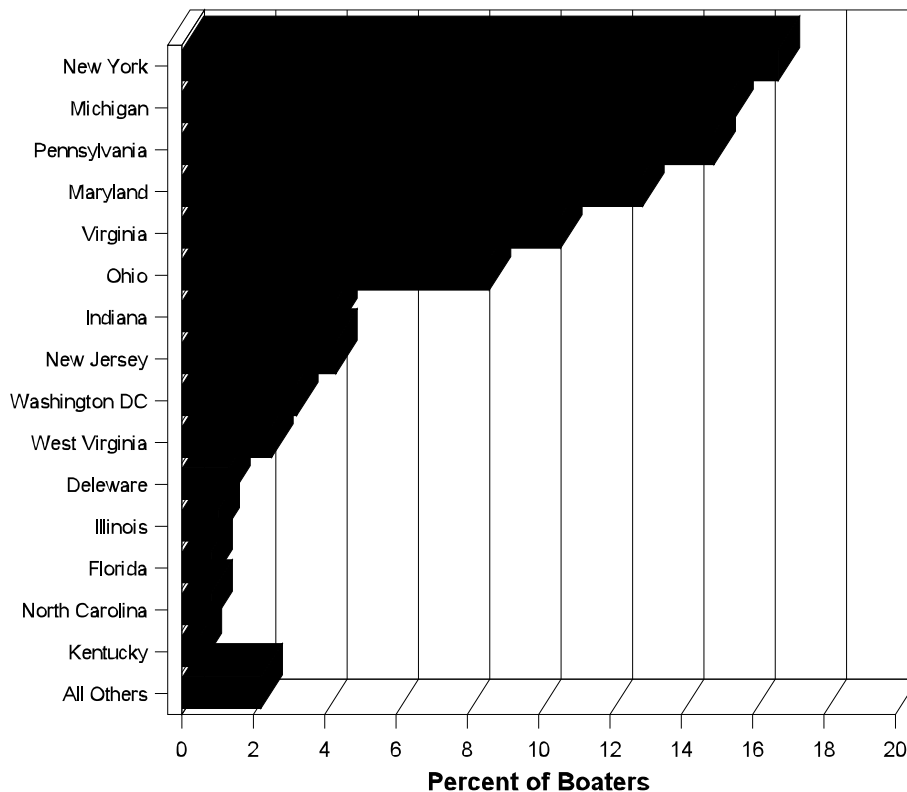


Figure 1. States represented by commercial boaters on the Cheat River Canyon in 1995

in West Virginia. Of the rivers that these boaters reported to have rafted, 40% indicated that they had rafted the New River, 27% had previously run the Cheat, 16% had rafted the Gauley, 3% the Big Sandy, and 1% the Tygart. Thirteen percent also reported having rafted the Youghiogheny River in Pennsylvania.

Ninety-six percent of boaters reported that running the Cheat River was the main reason for visiting the area on the day they were surveyed, and boaters indicated they were spending an average of two nights away from home during their trip. Both of those nights were spent within 50 miles of the Cheat River as opposed to nights spent in other parts of or outside WV. Boaters staying overnight during their trips sought lodging at a variety of places, but most (39%) stayed in a motel or hotel. This was followed by private or public campground (26%), outfitter's campground (15%), with friends or relatives (7%), in a rented home, condo or cottage (6%), or in other accommodations (5%).

Boaters were asked to identify from a list of alternatives those reasons that best described why they chose to run the Cheat River on the day they were surveyed. Of the alternative explanations, a majority of boaters (50%) came as part of a planned vacation to the area. Twenty-nine percent came on the weekend because they had no time off work during the week, 13% came on a holiday off from work, 4% took time off from work to come on a weekday, and 5% came to take advantage of a lower outfitter fee. Finally, only 1% chose to come rafting on a day that allowed them to avoid large numbers of people on the river.

Outfitter Fees and Other Related Spending

On the average, commercial boaters paid outfitter fees of \$77.00 for guiding and related services on the Cheat River (Table 2). About 75% of Cheat River customers who reported paying outfitter fees paid between \$50.00 to \$75.00, inclusive. Only 4% said they paid less than \$50.00, while 21% paid more than \$75.00. For these fees, outfitters provided several different forms of accommodations or services, depending on the expectations and preferences of their clientele. Most boaters (96%) reported that their fee included rafting equipment and river guide, 75% were provided meals, 11% received lodging, and 1% were provided camping equipment. On the average, boaters who reported that meals and lodging were included in their fee were provided 1.5 meals and lodging for 2 nights. None of the surveyed boaters indicated that kayak instruction, mountain biking, horseback riding, or fishing were included in their fee.

Other expenditures for rafting that were not part of the outfitter fee were for items such as clothing, videos and/or photographs of the river trip, souvenirs, and other unspecified items. Twenty-seven percent of respondents reported spending an average of \$20.68 on clothing or

equipment. However, about 15% of the sample indicated buying clothing for the river trip but gave no dollar value, and 58% either did not buy clothing or did not respond to the question. Twenty percent of boaters purchased videos and/or photographs of their trip. Boaters giving a dollar value for this expenditure reported spending an average of \$17.18 in this category. An average of \$36.93 was spent by 6% of commercial boaters for souvenirs such as caps, tee shirts, or other items. An additional 8% indicated spending money for souvenirs but again gave no dollar value (Table 2). Finally, an average of \$70.00 was spent for other unspecified items related to rafting by only 1% of the sample.

The total magnitude of spending for the rafting expenses just described was calculated by multiplying average expenditures in each category by the total population of commercial boaters on both the Narrows and Canyon sections of the Cheat River in 1995 (i.e., 12,746 users), and adjusting to the proportion of the sample used to calculate the averages. It should be noted, however, that average spending estimates calculated for each expenditure category include only those boaters who reported spending in the category and who gave a dollar value for the expenditure. To illustrate, 6% of commercial boaters on the Cheat River reported spending an average of \$36.93 for souvenirs (Table 2). Consequently, total spending for souvenirs was estimated as follows: $(12,746 \text{ Users} * 6\%) * \36.93 . In total, commercial boaters visiting the Cheat River spent an estimated \$845,909 for expenses related to rafting. The bulk of this expenditure was for the outfitter fee (\$717,907), followed by clothing or equipment (\$71,998), souvenirs (\$30,509), videos and photographs (\$17,234), and other expenses (\$8,261). It was not clear whether expenditures for clothing or equipment specifically for the rafting trip were made locally, at the visitors place of residence, or in route to the river. All other rafting expenditures were assumed to take place in locally.

Calculating total expenditures related to rafting the Cheat River by individual boaters, rather than by expenditure category, yielded similar estimates of total direct spending (Table 3). Individual estimates for rafting expenditures were obtained by summing across expenditure categories (i.e., outfitter fee, videos, souvenirs, etc.) for each boater, then averaging this sum for the entire sample. Few boater spent in all rafting expense categories, but all categories were included in the individual totals. From the data obtained from commercial boaters on the Cheat, the average boater spent \$87.47 on rafting expenses. Expanding this average to the total population of boaters and adjusting for sample representation, individual boaters spent an estimated \$841,331 on rafting expenses (this estimate differs by 0.5% from total rafting expenses reported by expenditure category in Table 2 due to rounding error). Median spending estimates for individual boaters also were calculated (Table 3). Median estimates represent the spending behavior of the boater at the middle of the sample. In other words,

50% of surveyed boaters spent more than the median, and 50% spent less. Median individual rafting expenses on the Cheat were \$75.00. Expanded to reflect the commercial boater population on the Cheat, the aggregate median expenditure was approximately \$721,288 in 1995.

Local Expenditures: Within 50 Miles of the Cheat River

The total magnitude of expenditures made locally -- within 50 mile of the Cheat -- for other trip expenses such as food, gas, and lodging, was calculated using a formula similar to that described above (Table 2). The average of expenditures already made and the average of expected additional expenditures were combined to obtain an estimate of total spending in each expenditure category. This value was multiplied by the total 1995 population of commercial boaters on the Cheat River (i.e., 12,746 users), and adjusted to reflect the proportion of the sample represented in the averages. As an example, 46% of commercial boaters on the Cheat River reported having already spent an average of \$21.60 at restaurants in the local area, and 32.9% expected to spend an average additional \$21.41 in local restaurants (Table 2). Using these proportions and averages, total spending in local restaurants was estimated as follows: $[(12,746 \text{ Users} * 46\%) * \$21.60] + [(12,746 \text{ Users} * 32.9\%) * 21.41]$.

Aggregating these estimates of total spending across expenditure categories suggests that Cheat River boaters spent approximately \$733,115 locally in 1995 (Table 2). Most of this spending occurred at local restaurants, where boaters spent an estimated \$216,345, followed by lodging at a motel or hotel (\$147,360), transportation expenses for fuel, gas, or oil (\$118,198), night clubs or bars (\$71,050), food or beverages in local retail stores (\$59,242), and camping fees (\$46,806). The remainder was distributed among miscellaneous retail, lodging, or entertainment purchases.

When analyzed in terms of local spending by individuals, it appears that on the average each boater spent or expected to spend a total of about \$104.41 (Table 3). Expanded to the total commercial boating population on the Cheat in 1995, individual local spending amounted to \$732,601. The median expenditure was \$78.00 in the local area, for an aggregate median spending estimate of \$556,221.

Expenses in Other Parts of West Virginia

Boaters were asked to provide information on their actual and expected spending outside the local area, but still within West Virginia. This amounted to a relatively small

contribution to total trip expenditures. Data obtained from boaters on the Cheat River yielded aggregate estimates of only \$54,468 when evaluated by expenditure categories (Table 2), and \$54,465 when evaluated in terms of individual boaters (Table 3). It should be noted that 6% or less of the sample reported expenditures in other parts of West Virginia. Consequently, these estimates should be viewed cautiously.

Expenses Outside of West Virginia

Estimates of combined actual and expected expenditures outside of West Virginia were substantially larger than expenditures in other parts of the state. Up to approximately 20% of surveyed boaters reported actual or expected expenditures outside of the state, mostly for food in restaurants (\$53,932) and retail stores (\$47,142), and for transportation expenses (\$71,648). In total, out-of-state expenditures were estimated to be \$254,630 when evaluated by expenditure categories. Individual boater expenditures were comparable, with estimated average expenditures of \$67.82 and median expenditures of \$39.00 outside West Virginia. These amounted to aggregated estimates of total out-of-state spending of \$254,623 and \$146,579, respectively.

Total Expenses

Total direct spending by commercial boaters on the Cheat River in 1995 was estimated at approximately \$1.88 million. Approximately 45% of this spending was for rafting related expenses and were presumed to occur within the local area. About 39% of the total expenditure for food, lodging, and other items purchased in the local area. Fourteen percent of total spending was reported as out-of-state spending, mostly for food and transportation expenses. Finally, only 3% of the total expenditure took place outside the local area but still in West Virginia. Most boaters come from out-of-state to raft the Cheat River and it appears they incur substantial expenses en-route. However, the majority of their expenses occur in the form of rafting related expenses and for food, lodging and entertainment in the local area surrounding the Cheat River.

NEW RIVER EXPENDITURE SUMMARY

Boater and Trip Characteristics

Commercial boaters were surveyed on the Lower New River where approximately 87% of all commercial rafting on the New occurred in 1995. Boaters on the Upper New River were

Table 2. Summary of Economic Impact Data for the Cheat River.

Summary of Travel Information	N	Average	Std Dev	Frequency (%)
How many miles (one way) did you travel?	204	269	164	N/A
Including yourself, how many people rode in the vehicle in which you traveled to this area of WV?	212	6	9	N/A
Have you ever been whitewater rafting on this or other river in WV before?	216	N/A	N/A	35% = Yes 65% = No
Is running the river the main reason to this area today?	214			96% = Yes 4% = No
In total, how many nights will you spend away from home during your trip?	216	2	1	N/A
Number of nights w/in 50 miles of the river?	212	2	1	N/A
Number of nights in other parts of WV?	212	0	1	N/A
Number of nights outside WV?	212	0		N/A
Where are you staying while in this area?				
Friends or relatives	210	N/A	N/A	6%
Rented home, condo, or cottage	210	N/A	N/A	4%
Motel or hotel	210	N/A	N/A	39%
Outfitter campground	210	N/A	N/A	15%
Other private or public campground	210	N/A	N/A	26%
Other	210	N/A	N/A	5%
Which of the following best describes your reasons for choosing today to run the river?				
Part of planned vacation to the area	211	N/A	N/A	50%
Holiday off from work	211	N/A	N/A	13%
Came on weekend because I had no time off during the week	211	N/A	N/A	29%
Took time off from work to come on a weekday	211	N/A	N/A	4%
To take advantage of a lower outfitter fee	211	N/A	N/A	5%
To avoid large numbers of people on the river	211	N/A	N/A	1%
Other	211	N/A	N/A	N/A

Table 2. Summary of Economic Impact Data for the Cheat River (Continued)

Summary of Trip Expenditures	N	Average	Std Dev	Frequency	Average Expenditure @ 12,746 Users
Outfitter Fee	158	\$77.00	34	73%	\$717,907
Outfitter Fee Included:					
Raft and River Guide	186	N/A	N/A	96%	
Camping Equipment	186	N/A	N/A	1%	
Meals	185	N/A	N/A	75%	
Number of Meals	134	1.5	1.1	N/A	
Kayak School	186	N/A	N/A	0%	
Mountain Bike Ride	186	N/A	N/A	0%	
Lodging	186	N/A	N/A	11%	
Number of Nights	18	2	0.3	N/A	
Horseback Trek	186	N/A	N/A	0%	
Fishing Trip	186	N/A	N/A	0%	
Other Expenditures for Rafting					
Clothing or Equipment	216	\$20.68		27% Gave dollar value > \$0.00 15% Spent in category - no dollar value 58% Spent \$0.00 or did not respond	\$71,998
Videos / Photographs	216	\$17.18		8% Gave dollar value > \$0.00 12% Spent in category - no dollar value 80% Spent \$0.00 or did not respond	\$17,234
Souvenir	216	\$36.93		6% Gave dollar value > \$0.00 8% Spent in category - no dollar value 86% Spent \$0.00 or did not respond	\$30,509
Other	216	\$70.00		1% Gave dollar value > \$0.00 1% Spent in category - no dollar value 98% Spent \$0.00 or did not respond	\$8,261
Total Expenditure					\$845,909.00

Table 2. Summary of Economic Impact Data for the Cheat River (Continued)

Summary of Trip Expenditures		N	Already Spent (Average)	% Giving dollar value > \$0.00	% Spending in category but gave no dollar value	% Spending \$0.00 or did not respond	Additional Expect to Spend (Average)	% Giving dollar value > \$0.00	% Spending in category but gave no dollar value	% Spending \$0.00 or did not respond	Average Expenditure @ 12,746 Users
L O C A L A R E A w/ i n 50 M I L E S	Restaurants	216	\$21.60	46.0%	1.9%	52.0%	\$21.41	32.9%	1.4%	65.7%	\$216,345
	Food/beverages in retail store	216	\$15.91	20.8%	1.4%	77.8%	\$11.52	11.6%	1.9%	86.5%	\$59,242
	Fuel/gas/oil	216	\$20.23	32.4%	3.2%	64.4%	\$16.77	16.2%	1.9%	81.9%	\$118,198
	Lodging: Motel/Hotel	216	\$38.82	22.7%	2.8%	74.5%	\$39.67	6.9%	0.0%	93.1%	\$147,360
	Lodging: Camping	216	\$18.23	18.5%	0.9%	80.6%	\$12.80	2.3%	0.5%	97.2%	\$46,806
	Lodging: Other	216	\$15.00	1.4%	0.0%	98.6%	\$0.00	0.0%	0.5%	99.5%	\$2,655
	Night clubs, lounges, bars	216	\$18.21	15.3%	0.9%	83.8%	\$25.13	11.1%	0.9%	88.0%	\$71,050
	Other entertainment	216	\$4.60	2.3%	0.5%	97.2%	\$8.33	1.4%	0.0%	98.6%	\$2,831
	Other clothing or equipment	216	\$16.33	4.2%	0.5%	95.4%	\$24.43	3.2%	0.5%	96.3%	\$18,764
	Other retail store purchases	216	\$16.25	3.7%	0.9%	95.4%	\$27.50	3.7%	0.0%	96.3%	\$20,653
All other expenses	216	\$73.75	1.9%	0.5%	97.7%	\$200.00	0.5%	0.0%	99.5%	\$29,210	
Total Local Expenditure											\$733,115
O T H E R P A R T S O F W V	Restaurants	216	\$16.67	4.2%	0.0%	95.8%	\$13.75	1.9%	0.0%	98.1%	\$12,099
	Food/beverages in retail store	216	\$10.17	2.8%	0.0%	97.2%	\$7.75	1.9%	0.0%	98.1%	\$5,430
	Fuel/gas/oil	216	\$17.69	6.0%	0.0%	94.0%	\$14.17	2.8%	0.0%	97.2%	\$18,587
	Lodging: Motel/Hotel	216	\$10.00	0.5%	0.0%	99.5%	\$0.00	0.0%	0.0%	100.0%	\$590
	Lodging: Camping	216	\$0.00	0.0%	0.0%	100.0%	\$0.00	0.0%	0.0%	100.0%	\$0
	Lodging: Other	216	\$220.00	0.5%	0.0%	99.5%	\$0.00	0.0%	0.0%	100.0%	\$12,982
	Night clubs, lounges, bars	216	\$0.00	0.0%	0.0%	100.0%	\$0.00	0.0%	0.0%	100.0%	\$0
	Other entertainment	216	\$0.00	0.0%	0.0%	100.0%	\$0.00	0.0%	0.0%	100.0%	\$0
	Other clothing or equipment	216	\$16.00	0.5%	0.0%	99.5%	\$0.00	0.0%	0.0%	100.0%	\$944
	Other retail store purchases	216	\$15.00	0.5%	0.0%	99.5%	\$0.00	0.0%	0.0%	100.0%	\$885
All other expenses	216	\$0.00	0.0%	0.0%	100.0%	\$50.00	0.5%	0.0%	99.5%	\$2,950	
Total Expenditure in Other Parts of WV											\$54,468

Table 2. Summary of Economic Impact Data for the Cheat River (Continued)

Summary of Trip Expenditures		N	Already Spent (Average)	% Giving dollar value > \$0.00	% Spending in category but gave no dollar value	% Spending \$0.00 or did not respond	Additional Expect to Spend (Average)	% Giving dollar value > \$0.00	% Spending in category but gave no dollar value	% Spending \$0.00 or did not respond	Average Expenditure @ 12,746 Users	
O U T S I D E	Restaurants	216	\$13.33	19.4%	0.5%	80.1%	\$12.21	13.4%	0.5%	86.1%	\$53,932	
	Food/beverages in retail store	216	\$28.38	12.0%	0.5%	87.5%	\$10.17	2.8%	0.0%	97.2%	\$47,142	
	Fuel/gas/oil	216	\$18.23	20.4%	0.5%	79.2%	\$18.73	10.2%	0.0%	89.8%	\$71,648	
	Lodging: Motel/Hotel	216	\$39.38	3.7%	0.0%	96.3%	\$20.00	0.5%	0.0%	99.5%	\$19,770	
	Lodging: Camping	216	\$30.00	0.5%	0.5%	99.1%	\$5.00	0.5%	0.5%	99.1%	\$2,065	
	Lodging: Other	216	\$0.00	0.0%	0.0%	100.0%	\$10.00	0.5%	0.0%	99.5%	\$590	
	Night clubs, lounges, bars	216	\$10.00	0.5%	0.0%	99.5%	\$16.67	1.4%	0.0%	98.6%	\$3,541	
	Other entertainment	216	\$0.00	0.0%	0.0%	100.0%	\$10.00	0.5%	0.0%	99.5%	\$590	
	W V	Other clothing or equipment	216	\$38.25	1.9%	0.0%	98.1%	\$0.00	0.0%	0.0%	100.0%	\$9,028
		Other retail store purchases	216	\$16.67	1.4%	0.0%	98.6%	\$12.50	0.9%	0.0%	99.1%	\$4,426
All other expenses		216	\$355.00	0.9%	0.0%	99.1%	\$0.00	0.0%	0.0%	100.0%	\$41,897	
Total Expenditure Outside WV											\$254,630	
Total Overall Expenditure											\$1,888,122	

Table 3. Summary of individual commercial boater expenditures on the Cheat River in 1995

	Average Individual Expenditure	Aggregate Average ^a Expenditure at 12,746 Users	Median Individual Expenditure	Aggregate Median ^a Expenditure at 12,746 Users	Proportion of Sample Represented
Rafting Expenditure	\$87.47	\$841,331	\$75.00	\$721,388	75%
Already Spent Local	\$59.43	\$480,448	\$48.00	\$388,045	63%
Expect to Spend Local	\$44.98	\$252,152	\$30.00	\$168,176	44%
Total Local Spending	\$104.41	\$732,601	\$78.00	\$556,221	--
Already Spent in Other Parts of West Virginia	\$29.25	\$41,424	\$12.50	\$17,703	11%
Expect to Spend in Other Parts of West Virginia	\$20.09	\$13,040	\$16.00	\$10,386	5%
Total Spending in Other Parts of West Virginia	\$49.34	\$54,465	\$28.50	\$28,088	--
Already Spent Outside West Virginia	\$46.78	\$198,753	\$27.00	\$114,714	33%
Expect to Spend Outside West Virginia	\$21.04	\$55,870	\$12.00	\$31,865	21%
Total Spending Outside West Virginia	\$67.82	\$254,623	\$39.00	\$146,579	--
Total Individual Expenditure	\$172.49	\$1,883,019	\$146.00	\$1,452,277	--

^a Aggregate expenditures were obtained by multiplying individual average and median scores by the total population of commercial boaters on the Cheat River in 1995 (i.e., 12,746 users), and adjusting for the proportion of the sample represented in the respective average or median score.

not surveyed as part of this study, but it was assumed that Upper New boaters were similar in terms of spending and trip characteristics. A majority of commercial boaters surveyed on the Lower New were men (Table 1). The sample was made up of 54% male and 37% female respondents. The average age of New River boaters was 29.2 years, with about 63% being less than 30, and 82% being less than 40 years old. As on the Cheat River, the median annual household income was between \$50,000 to \$74,999.

Fifteen percent of boaters reported that they were from single person households, while 21% were from two person households. An additional 14% and 22% were from three and four person households, respectively. Eighteen percent reported living in households of more than four people, but 12% did not respond to the question.

The median boater on the Lower New was a college graduate. Twenty-eight percent reported having college degrees and 15% had post-graduate study. Twelve percent of New River boaters failed to report the extent of their education, but overall 62% who did respond had education or training beyond high school.

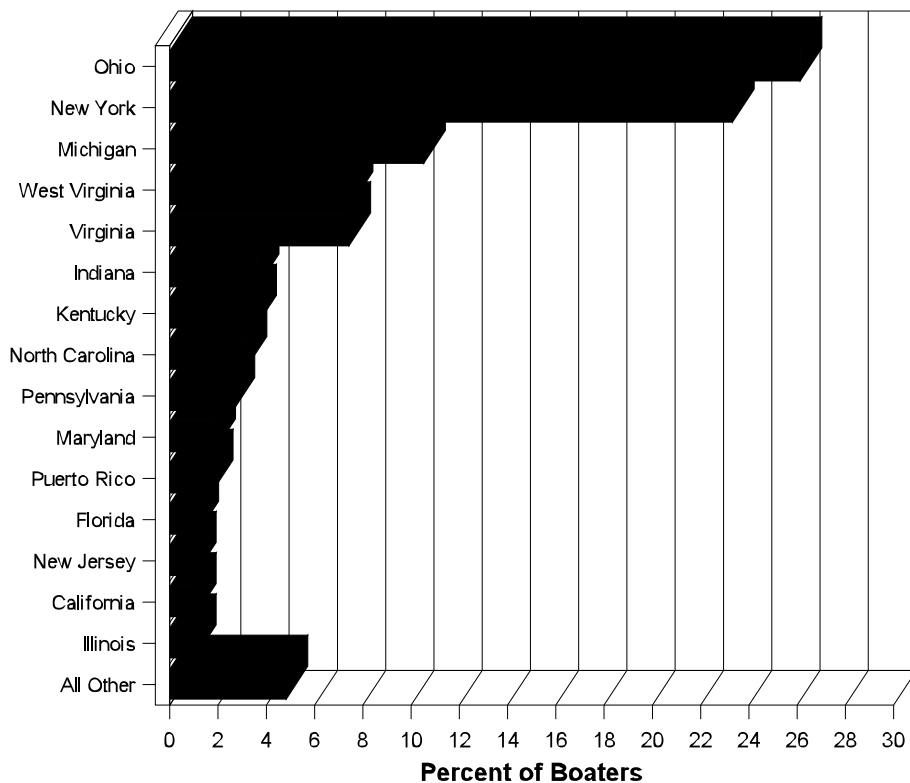


Figure 2. States represented by commercial boaters surveyed on the New River in 1995.

Commercial boaters traveled a relatively long distance from several states to raft the New River in 1995. The average one-way travel distance was 304 miles, but this was highly variable in that the standard deviation was 366 miles (Table 4). Boaters also reported that they traveled in relatively large group sizes. An average of six people per vehicle rode together as they traveled to the New River. Almost 78% of the boaters surveyed traveled from only six states, including in decreasing order, Ohio, New York, Michigan, West Virginia, Virginia, and Indiana (Figure 2). Ohio alone accounted for 26% of boaters surveyed on the Lower New.

Twenty-eight percent of boaters reported that they previously had been whitewater rafting in West Virginia. Of the rivers that these boaters reported to have rafted, 61% indicated that they had rafted the New River, 17% had previously run the Gauley, and 15% had rafted other rivers.

Ninety-two percent of boaters reported that running the New River was the main reason for visiting the area on the day they were surveyed, and boaters indicated they were spending an average of two nights away from home during their trip. Most boaters spent these nights within 50 miles of the New River, as opposed to nights spent in other parts of or outside WV.

Boaters staying overnight during their trips sought lodging at a variety of places, but most (40%) stayed in a motel or hotel. This was followed by private or public campground (24%), outfitter's campground (16%), with friends or relatives (6%), in a rented home, condo or cottage (5%), or in other accommodations (4%).

A majority of boaters (56%) came to raft the New River as part of a planned vacation to the area. Nineteen percent came on the weekend because they had no time off work during the week, but 12% took time off from work to come on a weekday. Seven percent each came to take advantage of a lower outfitter fee or came rafting on a day that allowed them to avoid large numbers of people on the river. Only 6% came on a holiday off from work.

Outfitter Fees and Other Related Spending

On the average, commercial boaters paid outfitters fees of \$83.28 for guiding and related services on the New River (Table 4). About 86% of New River customers reported paying outfitter fees greater than \$50.00, 53% paid more than \$75.00, and 21% paid more than \$100.00. For these fees, several different forms of accommodations or services were provided. Eighty-seven percent of boaters reported that their fee included rafting equipment and river guide, 76% were provided meals, 24% received lodging, 7% were provided camping equipment, 1% took mountain bike rides, and 1% took horseback treks. On the average, boaters who reported that meals and lodging were included in their fee were provided 1.9 meals and lodging for 2 nights. None of the surveyed boaters indicated that kayak instruction or fishing were included in their fee (Table 4).

Other expenditures for clothing, videos and/or photographs of the river trip, souvenirs, and other unspecified items that were not part of the outfitter fee were substantial. On the average, 9% of respondents reported spending about \$41.18 on clothing or equipment. However, another 9% of the sample indicated buying clothing or equipment for the river trip but gave no dollar value for the expenditure, and 82% either did not buy clothing or did not respond to the question. Twenty-four percent of boaters purchased videos and/or photographs of their trip. Boaters giving a dollar value for this expenditure (14%) reported spending an average of \$23.69 in this category. An average of \$30.86 was spent by 11% of commercial boaters for souvenirs such as caps, tee shirts, bandanas, or other items. An additional 12% indicated spending money for souvenirs but gave no dollar value (Table 4). Two percent reported spending an average of \$39.14 for other unspecified items for rafting.

The total magnitude of spending for the rafting expenses was calculated by multiplying average expenditures in each category by the total population of commercial boaters on both the Upper and Lower sections of the New River in 1995 (i.e., 160,142 users), and adjusting to

the proportion of the sample used to calculate averages (Table 4). In total, commercial boaters visiting the New River spent an estimated \$11,567,376 for expenses related to rafting. The bulk of this expenditure was for the outfitter fee (\$9,769,019), followed by clothing or equipment (\$603,819), videos and photographs (\$531,263), souvenirs (\$505,732), and other expenses (\$157,543). Again, it was not clear whether clothing or equipment expenditures specifically for the rafting trip were made locally, at the visitors place of residence, or in route to the river. All other rafting expenditures were assumed to take place in locally.

Calculating total expenditures related to rafting the New River by individual boaters, rather than by expenditure category, yielded similar but smaller estimates of total rafting expenses (Table 5). It appears that the average commercial boater on the New River spent \$96.02 on rafting expenses. Expanding this average to the total population of boaters and adjusting for sample representation, individual boaters spent an estimated \$11,567,134 on rafting expenses. Median individual rafting expenses on the New River were about \$83.00. Expanded to reflect the commercial boating population on the New, the aggregate median expenditure was approximately \$9,998,668 in 1995 (Table 5).

Local Expenditures: Within 50 Miles of the New River

The total magnitude of local expenditures made within 50 mile of the New River for other trip expenses such as food, gas, and lodging, was calculated using the formula described above for the Cheat River. Aggregating estimates of total average spending across expenditure categories suggests that New River boaters spent approximately \$12,102,546 locally in 1995 (Table 4). Most of this spending occurred at local restaurants (\$3,552,783) and lodging at a motel or hotel (\$3,387,797). These categories were followed by transportation expenses for fuel, gas, or oil (\$1,805,775), food or beverages in local retail stores (\$984,635), night clubs or bars (\$656,022), and purchases for other clothing or equipment (\$419,788). The remainder was distributed among miscellaneous retail, lodging, or entertainment purchases.

When analyzed in terms of local spending by individuals, it appears that on the average each boater spent about \$151.31 (Table 5). Expanded to the total commercial boating population on the New in 1995, individual spending amounted to \$12,102,043 in the local area. The median New River boater spent \$80.00 in the local area, for an aggregate median spending estimate of \$6,428,681.

Expenses in Other Parts of West Virginia

As was the case for the Cheat River, boater's spending in West Virginia but outside the

local area amounted to a relatively small contribution to economic activity. Data obtained from boaters on the New River yielded aggregate average estimates of only \$1,211,663 when evaluated by expenditure categories (Table 4), and \$1,131,353 when evaluated in terms of individual boater averages (Table 5). It should be noted that 10% or less of the sample reported expenditures in other parts of West Virginia. Again, these estimates should be viewed cautiously.

Expenses Outside of West Virginia

Up to about 15% of New River customers reported spending money in the expenditure categories outside of West Virginia, mostly for transportation expenses (\$1,190,168), and for food in restaurants (\$944,070) and retail stores (\$789,543). In total, out-of-state expenditures were estimated to be \$4,560,890 when evaluated by expenditure categories. Individual boater expenditures were comparable, with each spending an average \$153.86 and a median of \$51.50 outside West Virginia. These amounted to aggregated estimates of average and median out-of-state spending of \$4,560,867 and \$1,578,994, respectively.

Total Expenses

Total average expenditures made by commercial boaters on the New River in 1995 were estimated at approximately \$29.4 million. Approximately 39% of this spending was for rafting related expenses and were presumed to contribute to the local economy. About 41% of the total expenditure was for food, lodging, and other items purchased in the local area. Sixteen percent of total spending was reported as out-of-state spending, mostly for food and transportation expenses. Finally, only 4% of the total expenditure took place outside the local area but still in West Virginia.

GAULEY RIVER EXPENDITURE SUMMARY

Boater and Trip Characteristics

Commercial boaters were surveyed on both the Upper and Lower sections of the Gauley River in 1995. A much larger majority of the boaters surveyed on the Gauley were men compared to the Cheat and New Rivers (Table 1). The sample was made up of 73% male and 23% female respondents. Boaters on the Gauley River were slightly older than the Cheat or New River Boaters. The average age of a Gauley River boater was 33 years, with only about 44% being less than 30, and 79% being less than 40 years old. However, the median annual household income was between \$40,000 to \$49,999, which was lower than on

the other two

Table 4. Summary of Economic Impact Data for the Lower New River.

Summary of Travel Information	N	Average	Std Dev	Frequency (%)
How many miles (one way) did you travel?	509	304	366	N/A
Including yourself, how many people rode in the vehicle in which you traveled to this area of WV?	542	6	8	N/A
Have you ever been whitewater rafting on this or other river in WV before?	549	N/A	N/A	28% = Yes 72% = No
If yes, which rivers have you run?	201			61% New River, 17% Gauley, 15% Other
Is running the river the main reason to this area today?	547			92% = Yes 8% = No
In total, how many nights will you spend away from home during your trip?	545	2	4	N/A
Number of nights w/in 50 miles of the river?	536	2	2	N/A
Number of nights in other parts of WV?	536	0	1	N/A
Number of nights outside WV?	536	1	4	N/A
Where are you staying while in this area?				
Friends or relatives	542	N/A	N/A	6%
Rented home, condo, or cottage	542	N/A	N/A	5%
Motel or hotel	542	N/A	N/A	40%
Outfitter campground	542	N/A	N/A	16%
Other private or public campground	542	N/A	N/A	24%
Other	542	N/A	N/A	4%
Which of the following best describes your reasons for choosing today to run the river?				
Part of planned vacation to the area	539	N/A	N/A	56%
Holiday off from work	539	N/A	N/A	6%
Came on weekend because I had no time off during the week	539	N/A	N/A	19%
Took time off from work to come on a weekday	539	N/A	N/A	12%
To take advantage of a lower outfitter fee	539	N/A	N/A	7%
To avoid large numbers of people on the river	539	N/A	N/A	7%
Other	539	N/A	N/A	N/A

Table 4. Summary of Economic Impact Data for the New River (Continued)

Summary of Trip Expenditures	N	Average	Std Dev	Frequency	Average Expenditure @ 160,142 Users
Outfitter Fee	408	\$83.28	36	73%	\$9,769,019
Outfitter Fee Included:					
Raft and River Guide	485	N/A	N/A	87%	
Camping Equipment	487	N/A	N/A	7%	
Meals	487	N/A	N/A	76%	
Number of Meals	349	1.9	1.8	N/A	
Kayak School	485	N/A	N/A	0%	
Mountain Bike Ride	485	N/A	N/A	1%	
Lodging	486	N/A	N/A	24%	
Number of Nights	107	2	1.2	N/A	
Horseback Trek	485	N/A	N/A	1%	
Fishing Trip	485	N/A	N/A	0%	
Other Expenditures for Rafting					
Clothing or Equipment	557	\$41.18		9% Gave dollar value > \$0.00 9% Spent in category - no dollar value 82% Spent \$0.00 or did not respond	\$603,819
Videos / Photographs	557	\$23.69		14% Gave dollar value > \$0.00 20% Spent in category - no dollar value 66% Spent \$0.00 or did not respond	\$531,263
Souvenir	557	\$30.86		11% Gave dollar value > \$0.00 12% Spent in category - no dollar value 77% Spent \$0.00 or did not respond	\$505,732
Other	557	\$39.14		2% Gave dollar value > \$0.00 2% Spent in category - no dollar value 96% Spent \$0.00 or did not respond	\$157,543
Total Expenditure					\$11,567,376

Table 4. Summary of Economic Impact Data for the New River (Continued)

Summary of Trip Expenditures		N	Already Spent (Average)	% Giving dollar value > \$0.00	% Spending in category but gave no dollar value	% Spending \$0.00 or did not respond	Additional Expect to Spend (Average)	% Giving dollar value > \$0.00	% Spending in category but gave no dollar value	% Spending \$0.00 or did not respond	Average Expenditure @ 160,142 Users
L O C A L A R E A w/ i n 50 M I L E S	Restaurants	557	\$30.00	42.4%	4.0%	53.7%	\$28.07	33.8%	3.4%	62.8%	\$3,552,783
	Food/beverages in retail store	557	\$19.44	22.8%	2.9%	74.3%	\$16.48	10.4%	2.7%	86.9%	\$984,635
	Fuel/gas/oil	557	\$22.66	33.6%	5.0%	61.4%	\$18.92	19.4%	3.1%	77.6%	\$1,805,775
	Lodging: Motel/Hotel	557	\$85.14	19.7%	2.5%	77.7%	\$73.27	5.9%	0.9%	93.2%	\$3,387,797
	Lodging: Camping	557	\$21.45	9.9%	1.8%	88.3%	\$7.33	0.5%	0.4%	99.1%	\$345,510
	Lodging: Other	557	\$25.50	0.7%	0.5%	98.7%	\$15.00	0.2%	0.2%	99.6%	\$33,638
	Night clubs, lounges, bars	557	\$32.71	5.0%	0.7%	94.3%	\$41.39	5.9%	1.1%	93.0%	\$656,022
	Other entertainment	557	\$19.43	3.8%	0.7%	95.5%	\$23.12	3.1%	1.1%	95.9%	\$230,314
	Other clothing or equipment	557	\$28.45	5.2%	1.3%	93.5%	\$39.69	2.9%	0.9%	96.2%	\$419,788
	Other retail store purchases	557	\$24.07	5.2%	1.4%	93.4%	\$30.29	3.1%	1.6%	95.3%	\$348,736
	All other expenses	557	\$54.95	3.4%	0.2%	96.4%	\$26.00	0.9%	0.5%	98.6%	\$337,549
Total Local Expenditure											\$12,102,546
O T H E R P A R T S O F W V	Restaurants	557	\$19.26	6.3%	1.3%	92.5%	\$23.58	5.9%	1.8%	92.3%	\$417,531
	Food/beverages in retail store	557	\$19.00	2.0%	1.3%	96.8%	\$12.00	1.1%	1.3%	97.7%	\$80,790
	Fuel/gas/oil	557	\$18.21	5.2%	1.4%	93.4%	\$19.78	3.2%	1.4%	95.3%	\$254,195
	Lodging: Motel/Hotel	557	\$223.00	0.9%	0.2%	98.9%	\$75.00	0.4%	0.2%	99.5%	\$363,698
	Lodging: Camping	557	\$3.00	0.2%	0.0%	99.8%	\$0.00	0.0%	0.0%	100.0%	\$863
	Lodging: Other	557	\$0.00	0.0%	0.0%	100.0%	\$0.00	0.0%	0.0%	100.0%	\$0
	Night clubs, lounges, bars	557	\$15.00	0.4%	0.0%	99.6%	\$10.00	0.2%	0.0%	99.8%	\$11,500
	Other entertainment	557	\$50.00	0.2%	0.4%	99.5%	\$40.00	0.4%	0.2%	99.5%	\$37,376
	Other clothing or equipment	557	\$5.00	0.2%	0.4%	99.5%	\$0.00	0.0%	0.4%	99.6%	\$1,438
	Other retail store purchases	557	\$26.33	0.5%	0.5%	98.9%	\$0.00	0.0%	0.4%	99.6%	\$22,710
	All other expenses	557	\$17.50	0.4%	0.0%	99.6%	\$20.00	0.4%	0.0%	99.6%	\$21,563
Total Expenditure in Other Parts of WV											\$1,211,663

Table 4. Summary of Economic Impact Data for the New River (Continued)

Summary of Trip Expenditures		N	Already Spent (Average)	% Giving dollar value > \$0.00	% Spending in category but gave no dollar value	% Spending \$0.00 or did not respond	Additional Expect to Spend (Average)	% Giving dollar value > \$0.00	% Spending in category but gave no dollar value	% Spending \$0.00 or did not respond	Average Expenditure @ 160,142 Users
O U T S I D E	Restaurants	557	\$28.23	13.8%	1.8%	84.4%	\$19.82	10.1%	2.9%	87.1%	\$944,070
	Food/beverages in retail store	557	\$19.76	6.6%	0.9%	92.5%	\$125.94	2.9%	1.4%	95.7%	\$789,543
	Fuel/gas/oil	557	\$30.16	15.3%	2.2%	82.6%	\$31.52	9.0%	3.1%	88.0%	\$1,190,168
	Lodging: Motel/Hotel	557	\$71.30	1.8%	0.4%	97.8%	\$49.67	1.1%	0.5%	98.4%	\$290,676
	Lodging: Camping	557	\$11.67	0.5%	0.4%	99.1%	\$260.00	0.4%	0.2%	99.5%	\$159,570
	Lodging: Other	557	\$0.00	0.0%	0.0%	100.0%	\$0.00	0.0%	0.0%	100.0%	\$0
	Night clubs, lounges, bars	557	\$102.00	0.9%	0.2%	98.9%	\$16.67	0.5%	0.2%	99.3%	\$161,018
	Other entertainment	557	\$51.25	0.7%	0.2%	99.1%	\$133.50	0.7%	0.2%	99.1%	\$212,468
	Other clothing or equipment	557	\$45.83	1.1%	0.5%	98.4%	\$22.50	0.4%	0.2%	99.5%	\$91,997
	Other retail store purchases	557	\$9.00	0.4%	0.7%	98.9%	\$15.00	0.5%	0.4%	99.1%	\$18,113
W V	All other expenses	557	\$331.25	0.7%	0.4%	98.9%	\$280.00	0.7%	0.0%	99.3%	\$703,265
	Total Expenditure Outside WV										\$4,560,890
	Total Overall Expenditure										\$29,442,474

Table 5. Summary of individual commercial boater expenditures on the New River in 1995

	Average Individual Expenditure	Aggregate Average ^a Expenditure at 160,142 Users	Median Individual Expenditure	Aggregate Median ^a Expenditure at 160,142 Users	Proportion of Sample Represented
Rafting Expenditure	\$96.02	\$11,567,134	\$83.00	\$9,998,668	75%
Already Spent Local	\$91.96	\$8,143,287	\$50.00	\$4,427,624	55%
Expect to Spend Local	\$59.35	\$3,958,756	\$30.00	\$2,001,056	42%
Total Local Spending	\$151.31	\$12,102,043	\$80.00	\$6,428,681	--
Already Spent in Other Parts of West Virginia	\$44.53	\$704,150	\$20.00	\$316,259	10%
Expect to Spend in Other Parts of West Virginia	\$33.77	\$427,203	\$17.50	\$221,381	8%
Total Spending in Other Parts of West Virginia	\$78.30	\$1,131,353	\$37.50	\$537,640	--
Already Spent Outside West Virginia	\$66.80	\$2,458,309	\$26.50	\$975,227	23%
Expect to Spend Outside West Virginia	\$87.06	\$2,102,558	\$25.00	\$603,767	15%
Total Spending Outside West Virginia	\$153.86	\$4,560,867	\$51.50	\$1,578,994	--
Total Individual Expenditure	\$223.96	\$29,361,397	\$151.50	\$18,543,984	--

^a Aggregate expenditures were obtained by multiplying individual average and median scores by the total population of commercial boaters on the New River in 1995 (i.e., 160,142 users), and adjusting for the proportion of the sample represented in the respective average or median score.

rivers.

Thirty percent of Gauley River boaters reported that they were from single person households, while 28% were from two person households. An additional 15% and 12% were from three and four person households, respectively. Ten percent reported living in households of more than four people, and 5% did not respond to the question.

The median boater on the Gauley was a college graduate, with 43% having college degrees and 18% with post-graduate study. Overall, 83% who responded had education or training beyond high school. Only 3% of Gauley boaters failed to report the extent of their education.

Commercial boaters traveled a substantially longer distance to raft the Gauley River in 1995 than to the New and Cheat Rivers (Table 6). The average one-way travel distance was 436 miles, but again this was highly variable with a standard deviation of 519 miles. Boaters also reported that they traveled in an average group size of five people per vehicle. Roughly 64% of boaters surveyed traveled from six states or territories, including in decreasing order,

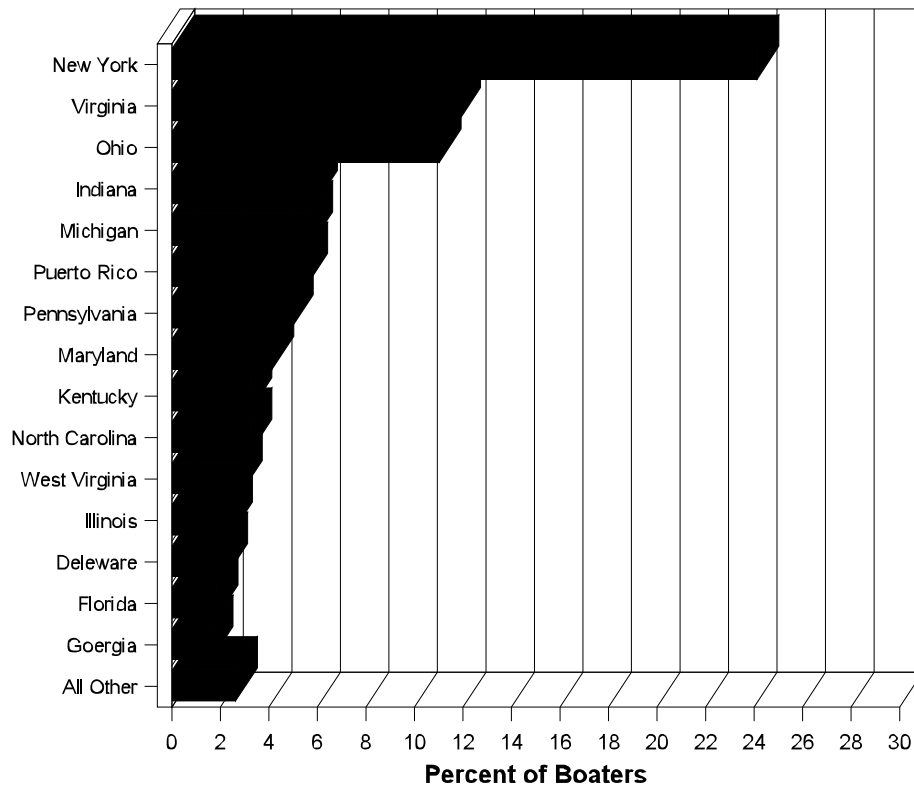


Figure 3. States represented by commercial boaters surveyed on the Gauley River in 1995.

New York, Virginia, Ohio, Indiana, Michigan, and Puerto Rico (Figure 3). West Virginians made up 2.8%.

Fifty-four percent of boaters reported that they previously had been whitewater rafting in West Virginia. Of the rivers that these boaters reported to have rafted, 45% indicated that they had rafted the New River, 41% had previously run the Gauley, and 14% had rafted other rivers.

Ninety-two percent of boaters reported that running the Gauley River was the main reason for visiting the area on the day they were surveyed, and boaters indicated they were spending an average of two nights away from home during their trip. Most boaters spent these nights within 50 miles of the Gauley River, as opposed to nights spent in other parts of or outside WV. Boaters staying overnight during their trips sought lodging at a variety of places, but most (44%) stayed in a motel or hotel. This was followed by outfitter’s campground (35%), private or public campground (13%), in other unspecified accommodations (5%), in a rented home, condo or cottage (3%), or with friends or relatives (2%).

Fifty-seven percent of Gauley River boaters came as part of a planned vacation to the area. Twenty-five percent came on the weekend because they had no time off work during the week, but 10% took time off from work to come on a weekday. Only 3% came to take

advantage of a lower outfitter fee and 3% came on a holiday off from work. One percent came rafting on a day that allowed them to avoid large numbers of people on the river, but 15% came on the day they did for other unspecified reasons.

Outfitter Fees and Other Related Spending

On the average, commercial boaters paid outfitter fees of \$145.69 for guiding and related services on the Gauley River (Table 6). This was at least \$65.00 more than the average spent on for outfitter fees on either the New or Cheat Rivers. About 73% of Gauley River customers reported paying outfitter fees between \$100.00 and \$200.00, inclusive. About 14% paid less than \$100.00, and 13% paid more than \$200.00. For these fees, outfitters provided several forms of accommodations or services. Ninety-eight percent of surveyed boaters reported that their fee included rafting equipment and river guide, 77% were provided meals, 31% received lodging, 13% were provided camping equipment, and 2% took horseback treks. None of the surveyed boaters indicated that kayak instruction, mountain biking, or fishing were included in their fee. On the average, boaters who reported that meals and lodging were included in their fee were provided 2 meals and lodging for 2 nights.

Other expenditures for rafting not part of the outfitter fee (i.e., for clothing, videos and/or photographs of the river trip, souvenirs, and other unspecified items) were substantial. On the average, 54% of respondents reported spending about \$25.57 on clothing or equipment. However, about 5% of the sample indicated buying clothing for the river trip but gave no dollar value for the expenditure, and 41% either did not buy clothing or did not respond to the question. Thirty-eight percent of boaters purchased videos and/or photographs of their trip. Boaters giving a dollar value for this expenditure (29%) reported spending an average of \$32.19 in this category. An average of \$33.05 was spent by 19% of commercial boaters for souvenirs such as caps, tee shirts, bandanas, or other items, but an additional 6% indicated spending money for souvenirs but gave no dollar value (Table 6). Another 6% reported spending an average of \$46.50 for other unspecified items for rafting.

The total magnitude of spending for rafting expenses was calculated by multiplying average expenditures in each category by the total population of commercial boaters on both sections of the Gauley River in 1995 (i.e., 65,438 users), and adjusting to the proportion of the sample used to calculate averages (Table 6). In total, commercial boaters visiting the Gauley River spent an estimated \$9,657,304 for expenses related to rafting. The bulk of this expenditure was for the outfitter fee (\$7,565,704), followed by clothing or equipment (\$890,353), videos and photographs (\$599,082), souvenirs (\$406,751), and other expenses (\$195,413). Again, it was not clear whether clothing or equipment expenditures specifically for

the rafting trip were made locally, at the visitors place of residence, or in route to the river. All other rafting expenditures were assumed to take place in locally.

Calculating total expenditures related to rafting the Gauley River by individual boaters, rather than by expenditure category, yielded similar but smaller estimates of total rafting expenses (Table 7). The average commercial customer on the Gauley spent \$173.91 on rafting expenses. Expanding this average to the total population of boaters and adjusting for sample representation, individual boaters spent an estimated \$9,657,613 on rafting expenses. Median individual rafting expenses on the Gauley River were about \$165.00. Expanded to reflect the commercial boating population on the Gauley, the aggregate median expenditure was approximately \$9,162,821 in 1995 (Table 7).

Local Expenditures: Within 50 Miles of the Gauley River

The total magnitude of local expenditures made within 50 mile of the Gauley River for other trip expenses such as food, gas, and lodging, was calculated using the formula described for the Cheat and New Rivers. Aggregating estimates of total average spending across expenditure categories suggests that Gauley customers spent locally approximately \$6,382,780 (Table 6). Most of this spending occurred at local restaurants (\$2,011,612) and lodging at a motel or hotel (\$1,476,374). These categories were followed by transportation expenses for fuel, gas, or oil (\$895,768), night clubs or bars (\$658,573), food or beverages in local retail stores (\$470,895), and purchases for other clothing or equipment (\$286,384). The remainder was distributed among miscellaneous retail, lodging, or entertainment purchases.

When analyzed in terms of local spending by individuals, it appears that on the average each boater spent about \$148.00 (Table 7). Expanded to the total commercial boating population on the Gauley in 1995, individual spending locally amounted to \$6,382,811. The median Gauley River boater spent \$100.00 in the local area, for an aggregate median spending estimate of \$4,430,573.

Expenses in Other Parts of West Virginia

Information provided by Gauley River boaters about their spending in West Virginia but outside the local area amounted to a relatively small contribution to economic activity, as was found on both the New and Cheat Rivers. Aggregate average estimates of only \$619,800 when evaluated by expenditure categories (Table 6), and \$619,857 when evaluated in terms of individual boater averages (Table 7). It should be noted that at best only 10% of the sample reported expenditures in other parts of West Virginia.

Expenses Outside of West Virginia

Up to 19% of Gauley River customers reported spending money in the expenditure categories outside of West Virginia, mostly for transportation expenses (\$462,923), and for food in restaurants (\$371,664) and retail stores (\$122,465). In total, out-of-state expenditures were estimated to be \$1,447,537 when evaluated by expenditure categories. Individual boater expenditures were comparable, with each spending an average \$89.12 and a median of \$50.00 outside West Virginia. These amounted to aggregated estimates of average and median out-of-state spending of \$1,447,435 and \$828,481, respectively.

Total Expenses

Total average expenditures made by commercial boaters on the Gauley River in 1995 were estimated to be approximately \$18.1. Approximately 53% of this spending was for rafting related expenses and were presumed to contribute to the local economy. About 35% of the total expenditure was for food, lodging, and other items purchased in the local area. Eight percent of total spending was reported as out-of-state spending, mostly for food and transportation expenses. Finally, only 4% of the total expenditure took place outside the local area but still in West Virginia.

SUMMARY OF COMMERCIAL WHITEWATER SPENDING

Data collected in 1995 from commercial boaters on the Cheat, New, and Gauley Rivers suggest that total direct expenditures associated with rafting these rivers were approximately \$49.4 million. Of these total trip expenditures, approximately \$43.1 million were made within West Virginia, with \$41.3 million of that taking place in local areas surrounding the three rivers. These estimates are considered somewhat conservative in that they included only survey respondents who provided dollar values for the expenditures they made during their trips.

A relatively large proportion of total expenditures made by commercial boaters -- 45% on the Cheat; 39% on the New; 53% on the Gauley -- was in the form of expenses directly related to the rafting trip. These expenses included outfitter fees for rafting and guiding services, clothing and/or equipment, videos and photographs, trip souvenirs, and other unspecified expenses. Average expenditures by individual boaters for these rafting expenses were \$87.47 on the Cheat, \$96.02 on the New, and \$173.91 on the Gauley. Using these average estimates to extrapolate to the commercial boaters on each river, rafting expenses amounted to approximately \$0.84 million on the Cheat; \$11.6 million on the New; and \$9.7 million on the Gauley. The commercial whitewater industry presumably distributes a large

fraction of the revenue from fees and purchases of items such as videos and souvenirs into the local communities surrounding these rivers.

Commercial rafting customers spent comparable amounts at restaurants, retail stores, gas stations, motels and hotels, and night clubs and bars in the local area surrounding these rivers. Local spending was defined as expenditures made within 50 miles of the respective rivers, and accounted for an additional 35% to 41% of total direct spending of commercial rafters. Estimates of average local spending by individual boaters were \$104.41 on the Cheat River, \$151.31 on the New, and \$148.00 on the Gauley. Expanded to the total population of commercial boaters on each of these rivers, local spending amounted to approximately \$0.73 million on the Cheat; \$12.1 million on the New; and \$6.4 million on the Gauley.

Commercial boaters traveled an average of 269 to 436 miles one way to raft the Cheat, New, and Gauley Rivers, and came from several states. States most represented by boaters include New York, Ohio, Michigan, Virginia, Pennsylvania, Maryland, and Indiana. West Virginians made up only a small proportion of surveyed boaters: 2.5% on the Cheat; 7.5% on the New; and 2.8% on the Gauley. Data obtained from boaters suggest that they made substantial expenditures while traveling to and from West Virginia. However, most of that spending took place outside the state. In route, boaters reported spending between 8% and 16% of their total trip expenditure outside the borders of West Virginia. Only 3% to 4% of total expenditures occurred in other parts of the state while traveling to and from their rafting destination.

ECONOMIC IMPACTS

The expenditures reported above were used to estimate the economic impacts of commercial whitewater rafting in terms of effects on local communities and statewide. The infusion of dollars into an economy generates direct, indirect, and induced impacts within various economic sectors. Direct impacts reflect the value of goods and services purchased through initial direct expenditures; indirect impacts reflect the value of secondary purchases by businesses or service providers for operational needs; and induced impacts reflect the economic activity traced through employee earnings and resulting household spending. Total economic impacts simply are the sum of direct, indirect, and induced impacts. Impact measures for which impacts were estimated in this study include total output, personal income, employee compensation, tax revenue, and employment (See Appendix A for definitions). With

Table 6. Summary of Economic Impact Data for the Gauley River.

Summary of Travel Information	N	Average	Std Dev	Frequency (%)
How many miles (one way) did you travel?	211	436	519	N/A
Including yourself, how many people rode in the vehicle in which you traveled to this area of WV?	218	5	7	N/A
Have you ever been whitewater rafting on this or other river in WV before?	215	N/A	N/A	54% = Yes 46% = No
If yes, which rivers have you run?	148			45% New River, 41% Gauley, 14% Other
Is running the river the main reason to this area today?	218			92% = Yes 8% = No
In total, how many nights will you spend away from home during your trip?	217	2	5	N/A
Number of nights w/in 50 miles of the river?	216	2	1	N/A
Number of nights in other parts of WV?	213	0	1	N/A
Number of nights outside WV?	213	1	3	N/A
Where are you staying while in this area?				
Friends or relatives	216	N/A	N/A	2%
Rented home, condo, or cottage	216	N/A	N/A	3%
Motel or hotel	216	N/A	N/A	44%
Outfitter campground	216	N/A	N/A	35%
Other private or public campground	216	N/A	N/A	13%
Other	216	N/A	N/A	5%
Which of the following best describes your reasons for choosing today to run the river?				
Part of planned vacation to the area	214	N/A	N/A	57%
Holiday off from work	214	N/A	N/A	3%
Came on weekend because I had no time off during the week	214	N/A	N/A	25%
Took time off from work to come on a weekday	214	N/A	N/A	10%
To take advantage of a lower outfitter fee	214	N/A	N/A	3%
To avoid large numbers of people on the river	214	N/A	N/A	1%
Other	214	N/A	N/A	15%

Table 6. Summary of Economic Impact Data for the Gauley River (Continued)

Summary of Trip Expenditures	N	Average	Std Dev	Frequency	Average Expenditure @ 65,438 Users
Outfitter Fee	175	\$145.69	63	80%	\$7,565,704
Outfitter Fee Included:					
Raft and River Guide	200	N/A	N/A	98%	
Camping Equipment	200	N/A	N/A	13%	
Meals	200	N/A	N/A	77%	
Number of Meals	140	2	1.3	N/A	
Kayak School	200	N/A	N/A	0%	
Mountain Bike Ride	200	N/A	N/A	0%	
Lodging	193	N/A	N/A	31%	
Number of Nights	57	1.9	0.5	N/A	
Horseback Trek	200	N/A	N/A	2%	
Fishing Trip	200	N/A	N/A	0%	
Other Expenditures for Rafting					
Clothing or Equipment	218	\$25.57		54% Gave dollar value > \$0.00 5% Spent in category - no dollar value 41% Spent \$0.00 or did not respond	\$890,353
Videos / Photographs	218	\$32.19		29% Gave dollar value > \$0.00 9% Spent in category - no dollar value 62% Spent \$0.00 or did not respond	\$599,082
Souvenir	218	\$33.05		19% Gave dollar value > \$0.00 6% Spent in category - no dollar value 75% Spent \$0.00 or did not respond	\$406,751
Other	218	\$46.50		6% Gave dollar value > \$0.00 2% Spent in category - no dollar value 92% Spent \$0.00 or did not respond	\$195,413
Total Expenditure					\$9,657,304

Table 6. Summary of Economic Impact Data for the Gauley River (Continued)

Summary of Trip Expenditures		N	Already Spent (Average)	% Giving dollar value > \$0.00	% Spending in category but gave no dollar value	% Spending \$0.00 or did not respond	Additional Expect to Spend (Average)	% Giving dollar value > \$0.00	% Spending in category but gave no dollar value	% Spending \$0.00 or did not respond	Average Expenditure @ 65,438 Users
L O C A L A R E A w/ i n 50 M I L E S	Restaurants	218	\$27.42	61.5%	0.5%	38.1%	\$35.20	39.5%	0.0%	60.1%	\$2,011,612
	Food/beverages in retail store	218	\$15.61	30.7%	0.0%	69.3%	\$18.03	13.3%	0.0%	86.7%	\$470,895
	Fuel/gas/oil	218	\$20.40	45.9%	0.5%	53.7%	\$19.67	22.0%	0.0%	77.1%	\$895,768
	Lodging: Motel/Hotel	218	\$57.85	32.6%	0.5%	67.0%	\$50.69	7.3%	0.0%	92.7%	\$1,476,374
	Lodging: Camping	218	\$13.94	16.5%	0.0%	83.5%	\$7.50	0.9%	0.0%	99.1%	\$155,142
	Lodging: Other	218	\$7.00	0.5%	0.0%	99.5%	\$0.00	0.0%	0.0%	100.0%	\$2,101
	Night clubs, lounges, bars	218	\$40.90	18.3%	0.0%	81.6%	\$26.57	9.6%	0.0%	89.9%	\$658,573
	Other entertainment	218	\$26.57	3.2%	0.0%	96.8%	\$15.00	0.5%	0.0%	99.5%	\$60,332
	Other clothing or equipment	218	\$30.61	10.6%	0.0%	89.5%	\$22.73	5.0%	0.0%	95.0%	\$286,384
	Other retail store purchases	218	\$19.29	7.8%	0.0%	92.2%	\$22.86	3.2%	0.0%	96.8%	\$146,470
	All other expenses	218	\$72.50	3.7%	0.0%	96.3%	\$37.50	1.8%	0.0%	98.2%	\$219,127
Total Local Expenditure											\$6,382,780
O T H E R P A R T S O F W V	Restaurants	218	\$10.36	10.1%	0.0%	89.9%	\$18.73	6.9%	0.0%	93.1%	\$152,750
	Food/beverages in retail store	218	\$8.00	5.0%	0.0%	95.0%	\$6.00	1.8%	0.0%	98.2%	\$33,620
	Fuel/gas/oil	218	\$17.47	8.7%	0.0%	91.3%	\$21.40	2.3%	0.0%	97.7%	\$131,756
	Lodging: Motel/Hotel	218	\$37.20	2.3%	0.0%	97.7%	\$80.00	1.8%	0.0%	98.2%	\$151,888
	Lodging: Camping	218	\$0.00	0.0%	0.0%	100.0%	\$0.00	0.0%	0.0%	100.0%	\$0
	Lodging: Other	218	\$0.00	0.0%	0.0%	100.0%	\$60.00	0.5%	0.0%	99.5%	\$18,010
	Night clubs, lounges, bars	218	\$20.00	0.5%	0.0%	99.5%	\$0.00	0.0%	0.0%	100.0%	\$6,003
	Other entertainment	218	\$0.00	0.0%	0.0%	100.0%	\$10.00	0.5%	0.0%	99.5%	\$3,002
	Other clothing or equipment	218	\$140.00	0.5%	0.0%	99.5%	\$0.00	0.0%	0.0%	100.0%	\$42,024
	Other retail store purchases	218	\$9.00	0.5%	0.0%	99.5%	\$30.00	0.9%	0.0%	99.1%	\$20,712
	All other expenses	218	\$0.00	0.0%	0.0%	100.0%	\$200.00	0.5%	0.0%	99.5%	\$60,035
Total Expenditure in Other Parts of WV											\$619,800

Table 6. Summary of Economic Impact Data for the Gauley River (Continued)

Summary of Trip Expenditures		N	Already Spent (Average)	% Giving dollar value > \$0.00	% Spending in category but gave no dollar value	% Spending \$0.00 or did not respond	Additional Expect to Spend (Average)	% Giving dollar value > \$0.00	% Spending in category but gave no dollar value	% Spending \$0.00 or did not respond	Average Expenditure @ 65,438 Users	
O U T S I D E	Restaurants	218	\$17.49	18.8%	0.0%	81.2%	\$15.79	15.1%	0.0%	84.9%	\$371,664	
	Food/beverages in retail store	218	\$16.14	9.6%	0.0%	90.4%	\$8.63	3.7%	0.0%	96.3%	\$122,465	
	Fuel/gas/oil	218	\$24.62	17.9%	0.0%	82.1%	\$24.25	11.0%	0.0%	88.5%	\$462,923	
	Lodging: Motel/Hotel	218	\$25.80	2.3%	0.5%	97.2%	\$40.00	0.5%	0.5%	99.5%	\$50,729	
	Lodging: Camping	218	\$0.00	0.0%	0.0%	100.0%	\$0.00	0.0%	0.0%	100.0%	\$0	
	Lodging: Other	218	\$0.00	0.0%	0.0%	100.0%	\$0.00	0.0%	0.0%	100.0%	\$0	
	Night clubs, lounges, bars	218	\$100.00	0.5%	0.0%	99.5%	\$50.00	0.5%	0.0%	99.5%	\$45,026	
	Other entertainment	218	\$15.00	0.9%	0.0%	99.1%	\$0.00	0.0%	0.0%	100.0%	\$9,005	
	W V	Other clothing or equipment	218	\$90.00	0.5%	0.0%	99.5%	\$0.00	0.0%	0.0%	100.0%	\$27,016
		Other retail store purchases	218	\$10.00	0.5%	0.0%	99.5%	\$0.00	0.0%	0.0%	100.0%	\$3,002
All other expenses		218	\$195.00	1.4%	0.0%	98.6%	\$600.00	0.5%	0.0%	99.5%	\$355,707	
Total Expenditure Outside WV											\$1,447,537	
Total Overall Expenditure											\$18,107,421	

Table 7. Summary of individual commercial boater expenditures on the Gauley River in 1995

	Average Individual Expenditure	Aggregate Average ^a Expenditure at 65,438 Users	Median Individual Expenditure	Aggregate Median ^a Expenditure at 65,438 Users	Proportion of Sample Represented
Rafting Expenditure	\$173.91	\$9,657,613	\$165.00	\$9,162,821	85%
Already Spent Local	\$87.12	\$4,445,702	\$65.00	\$3,316,926	78%
Expect to Spend Local	\$60.88	\$1,937,109	\$35.00	\$1,113,647	49%
Total Local Spending	\$148.00	\$6,382,811	\$100.00	\$4,430,573	--
Already Spent in Other Parts of West Virginia	\$25.72	\$301,099	\$14.00	\$163,895	18%
Expect to Spend in Other Parts of West Virginia	\$55.89	\$318,758	\$10.00	\$57,033	9%
Total Spending in Other Parts of West Virginia	\$81.61	\$619,857	\$24.00	\$220,928	--
Already Spent Outside West Virginia	\$47.74	\$888,480	\$30.00	\$558,324	28%
Expect to Spend Outside West Virginia	\$41.38	\$558,955	\$20.00	\$270,157	21%
Total Spending Outside West Virginia	\$89.12	\$1,447,435	\$50.00	\$828,481	--
Total Individual Expenditure	\$298.63	\$18,107,715	\$264.50	\$14,642,803	--

^a Aggregate expenditures were obtained by multiplying individual average and median scores by the total population of commercial boaters on the Gauley River in 1995 (i.e., 65,438 users), and adjusting for the proportion of the sample represented in the respective average or median score.

exception to employment impacts, which reflect full and part-time jobs created, all impacts are reported in dollars. The estimated sales tax revenue from the IMPLAN model was based on an assumption that some portion of gross income (i.e., employee compensation) is spent on sales taxes. As a result, sales tax estimates from IMPLAN do not include sales taxes collected on direct expenditures reported above. Consequently, the estimated tax revenue reported in the following pages includes the IMPLAN sales tax estimates plus the 6% West Virginia state sales taxes on direct expenditures.

Local Economic Impacts

To assess the economic effects of commercial whitewater rafting on local economies, data on the expenditures of commercial boaters within 50 miles of the river they paddled was collected. As indicated earlier, most boaters were nonresidents of West Virginia and likely had little knowledge of local place names or county boundaries. However, in the IMPLAN model counties or states often are used as the most convenient and practical unit to define local impact regions. In this study, the counties surrounding respective study rivers were defined as

local impact regions for the estimation of economic impacts. Also, impacts are reported in two formats: (1) unitary impacts per 1,000 commercial user days; and (2) cumulative impacts for the total 1995 population of commercial boaters on each river -- 12,746 on the Cheat; 160,142 on the New; and 65,438 on the Gauley.

On the Cheat River, each 1,000 commercial user days were estimated to generate approximately \$160,800 in total output, \$61,000 in personal income, \$41,700 in employee compensation, \$10,000 in tax revenue, and 4.5 jobs within Preston and Monongalia counties (Table 8). Extrapolated to the entire commercial boater population on the Cheat River in 1995, local economic impacts were estimated at about \$2.1 million in goods and services in Preston

Table 8. Summary of local and statewide economic impacts per 1,000 commercial boaters (thousands of 1995 dollars and number of jobs)

Economic Sector		Cheat River		New River		Gauley River		Cumulative Statewide
		Local	Statewide	Local	Statewide	Local	Statewide	
Total Output	Direct	108.3	112.6	127.2	134.8	216.6	225.3	158.4
	Indirect	20.7	24.3	23.4	29.7	38.3	47.5	34.3
	Induced	31.8	39.7	37.1	47.4	64.2	80.1	56.0
	Total	160.8	176.6	187.7	211.9	319.1	352.9	248.7
Personal Income	Direct	43.6	46.5	52.6	55.4	91.8	94.6	65.7
	Indirect	6.3	7.6	7.4	9.2	11.9	14.7	10.7
	Induced	11.1	14.0	13.6	16.7	23.6	28.2	19.7
	Total	61.0	68.1	73.6	81.3	127.3	137.5	96.0
Employee Compensation	Direct	26.8	30.9	34.9	37.9	57.2	60.5	43.7
	Indirect	5.3	6.4	6.2	7.7	10.0	12.3	8.9
	Induced	9.6	12.1	11.7	14.4	20.3	24.4	17.0
	Total	41.7	49.4	52.8	60.0	87.5	97.2	69.6
Tax Revenue	Sales	8.5	9.0	10.2	10.8	16.9	17.8	12.7
	Personal Income	0.9	1.1	1.2	1.4	2.0	2.2	1.6
	Corp. Net Income and Franchise	0.6	0.6	0.7	0.8	1.2	1.3	0.9
	Total	10.0	10.7	12.1	13.0	20.1	21.3	15.2
Employment	Direct	3.6	3.2	3.6	3.8	6.1	6.4	4.5
	Indirect	0.3	0.4	0.4	0.4	0.6	0.7	0.5
	Induced	0.6	0.6	0.7	0.8	1.2	1.4	1.0
	Total	4.5	4.2	4.6	5.0	7.9	8.5	6.0

and Monongalia counties as indicated by the total output impact (Table 9). Personal income,

which includes compensation to employees and the income of proprietors, was estimated at approximately \$777,000, while employee compensation alone was \$530,000. In terms of employment, an estimated 56.9 full- and part-time jobs were created as a result of the Cheat River rafting industry. Finally, approximately \$128,000 in various tax revenue was generated.

Local impacts stemming from commercial whitewater rafting on the New and Gauley Rivers were substantially higher than on the Cheat as a result of larger numbers of users and higher average expenditure levels of those users. Each 1,000 commercial boaters on the New River generated about \$187,700 of total output, \$73,600 in personal income, \$52,800 in employee compensation, \$12,100 in taxes, and 4.6 jobs in the local impact region (Table 8).

**Table 9. Summary of local economic impacts by study river
(thousands of 1995 dollars and number of jobs)**

Economic Sector		Cheat River	New River	Gauley River
Local Impact Region (Counties)		Preston and Monongalia	Fayette, Raleigh, and Nicholas	Fayette, Raleigh, and Nicholas
Total Output	Direct	1,380	20,370	14,173
	Indirect	264	3,752	2,509
	Induced	405	5,942	4,200
	Total	2,049	30,064	20,882
Personal Income	Direct	556	8,422	6,010
	Indirect	80	1,184	780
	Induced	141	2,184	1,544
	Total	777	11,790	8,334
Employee Compensation	Direct	342	5,585	3,743
	Indirect	67	991	652
	Induced	122	1,878	1,327
	Total	530	8,454	5,723
Tax Revenue	Sales	109	1,636	1,108
	Personal Income	12	193	131
	Corp. Net Income and Franchise	7	108	76
	Total	128	1,937	1,315
Employment (Jobs)	Direct	45.6	571.2	399
	Indirect	3.9	55.5	37
	Induced	7.4	109.7	77.5
	Total	56.9	736.4	513.5

Expanded to the entire population of 160,142 commercial boaters in 1995, the New River rafting industry generated approximately \$30.1 million in total output, \$11.8 million in personal income, \$8.5 million in employee compensation, \$1.9 million in tax revenue, and 736.4 jobs for Fayette, Raleigh, and Nicholas counties of West Virginia (Table 9).

Because of substantially higher per person spending levels, per 1,000 user economic impacts on the Gauley River are markedly higher than on the Cheat and New Rivers. Each 1,000 commercial users on the Gauley generated an estimated \$319,100 in total output, \$127,300 of personal income, \$87,500 in employee compensation, \$20,100 in taxes, and 7.9 local jobs (Table 8). For the 65,438 commercial boaters on the Gauley River in 1995, these unitary impact estimates translate into local impacts in Fayette, Raleigh, and Nicholas counties of \$20.9 million in total output, \$8.3 million in personal income, \$5.7 million in employee compensation, \$1.3 million in taxes, and 513.5 jobs (Table 9).

Statewide Economic Impacts

It was reported earlier that up to 4% of customer expenditures were made outside of local areas surrounding each study river but still within West Virginia. Adding the economic impacts of these additional in-state expenditures to the local spending estimates made it possible to approximate the contribution of each respective river to the state economy. Additionally, by summing across rivers it was possible to estimate the cumulative impact of the commercial whitewater industry on the three rivers on the state economy (Table 10). Statewide impacts estimated for each study river were only 10% to 13% higher than the local impacts reported above. One reason for this is that a large proportion of boater expenditures were in economic sectors containing businesses providing services (outfitters, restaurants, lodging, etc.) in local areas and along travel routes. These businesses tend to be highly labor intensive and generally contribute to higher induced economic impacts (e.g., household incomes of local labor force). As well, expenditures made in these businesses typically leak out of local economies at relatively low rates.

Based on the cumulative statewide estimates, each 1,000 commercial river users who raft the Cheat, New, or Gauley Rivers generates about \$248,700 in total output, \$96,000 of personal income, \$69,600 in employee compensation, \$15,200 in tax revenue, and 6.0 jobs in West Virginia (Table 10). Expanded to the total number of commercial user days on these three rivers in 1995, total statewide impacts are estimated at \$59.3 million in total output, \$22.9 million in personal income, \$16.6 million in employee compensation, \$3.6 million in taxes, and 1,415.8 jobs (Table 10).

**Table 10. Summary of statewide economic impacts by study river
(thousands of 1995 dollars and number of jobs)**

Economic Sector		Cheat River	New River	Gauley River	Cumulative Statewide Impact
Total Output	Direct	1,435	21,581	14,746	37,762
	Indirect	310	4,755	3,106	8,172
	Induced	506	7,588	5,243	13,336
	Total	2,251	33,924	23,095	59,270
Personal Income	Direct	593	8,871	6,190	15,654
	Indirect	97	1,480	962	2,539
	Induced	178	2,668	1,844	4,690
	Total	868	13,019	8,996	22,883
Employee Compensation	Direct	394	6,068	3,961	10,423
	Indirect	81	1,238	804	2,122
	Induced	154	2,312	1,597	4,063
	Total	629	9,617	6,362	16,608
Tax Revenue	Sales	114	1,739	1,162	3,015
	Personal Income	14	220	145	379
	Corp. Net Income and Franchise	8	120	83	210
	Total	136	2,079	1,390	3,604
Employment (Jobs)	Direct	40.4	606.8	421.8	1,069.0
	Indirect	4.4	67.7	44.5	116.7
	Induced	8.7	130.9	90.4	230.1
	Total	53.5	805.4	556.7	1,415.8

Multipliers

Multipliers were calculated for each impact measure as the ratio of total impacts to direct impacts for both local regions and statewide (Table 11). Impact multipliers are sensitive to the amount and type of visitor expenditures and the structure of the local and state economy. In the present study, local impact multipliers ranged from approximately 1.25 for employment to about 1.6 for employee compensation, and were relatively consistent across rivers (Table 11). For the monetary impact measures of total output, personal income, and employee compensation multipliers ranged from 1.39 to 1.55.

Cumulative and per river statewide multipliers were slightly higher than local multipliers. Statewide economies are larger, more diverse, and typically experience less leakage than the economies of local regions. Cumulative statewide multipliers ranged from 1.32 for employment

Table 11. Type III multipliers (Total Impacts / Direct Impacts)

Economic Sector	Cheat River		New River		Gauley River		Cumulative Statewide
	Local	Statewide	Local	Statewide	Local	Statewide	
Total Output	1.48	1.57	1.48	1.57	1.47	1.57	1.57
Personal Income	1.40	1.46	1.40	1.47	1.39	1.45	1.46
Employee Compensation	1.55	1.60	1.51	1.58	1.53	1.61	1.59
Employment	1.25	1.32	1.29	1.33	1.29	1.33	1.32

to 1.57, 1.46, and 1.59 for total output, personal income, and employee compensation, respectively. The multipliers calculated for the impact estimates reported in this study are consistent with those published by the U.S. Department of Commerce for West Virginia. For example, total output multipliers for West Virginia are expected to range from 1.1 to 2.2 (U.S. Department of Commerce, 1992).

Comparison to Previous Studies

The findings reported in this study for boater expenditures and the resulting economic impacts of whitewater rafting appear to be relatively consistent with previous studies. DeHart (1990) estimated total direct spending of approximately 35,000 commercial boaters on the Gauley River in 1989 at over \$9 million. It is presumed that these estimates were for local expenditures. Average boater spending in 1989 was estimated at about \$300, which included \$128 for outfitter fees, \$50 for lodging, \$37 for meals, \$16 for gifts and souvenirs, \$11 for other recreation or entertainment, \$10 for photographs and videos, and \$4 for equipment. In the present study, total local spending, including rafting expenses, of Gauley boaters was approximately \$16 million among 65,438 boaters. Also, the magnitude of expenditures in the various categories reported by DeHart (1990) were distributed similarly.

English and Bowker (1996) reported statewide economic impacts from a 1993 study of the Gauley and four other whitewater rivers. On a per 1,000 nonresident boater basis, they estimated total output impacts at \$209,500, personal income impacts of \$115,000, and employment impacts at 5.14 jobs. Extrapolated to the population of nonresident boaters, total statewide impacts in 1993 were about \$8.5 million in total output, \$4.7 million in personal income, and 271 jobs (English and Bowker, 1996). These impacts are somewhat smaller than estimates reported in this study for at least two reasons. First, it appears that English and Bowker (1996) may have underestimated boater spending within West Virginia. For example,

they report total average spending within West Virginia by nonresident boaters of \$148.74, with average in-state spending for activities -- including outfitter fees -- of only \$73.40. These are substantially lower than average spending estimates reported in this study and by DeHart (1990). Second, English and Bowker (1996) appear also to have underestimated the proportion of nonresident boaters on the Gauley River. In their study, they estimated 80% of boaters on the Gauley were from outside West Virginia. However, this and other studies (e.g., USDI 1993) indicate that the nonresident proportion of commercial boaters to be greater than 95%.

McClung (1996) reported on the economic impacts of business and tourism travel in West Virginia in 1995. Overall statewide economic impacts of tourism related travel were estimated at about \$2.3 billion in total output, 42,000 jobs, and \$799 million in payroll (employee compensation). Based on the estimated economic impacts generated by commercial whitewater rafting on the Cheat, New, and Gauley Rivers, it appears that the rafting industry accounts for approximately 2.6% of the total economic output from tourism, 3.4% of tourism related employment, and 2.1% of the payroll or employee compensation from the tourism industry.

Accuracy of Impact Estimates

The estimates of commercial boater expenditures and corresponding economic impacts reported herein are considered somewhat conservative. As noted in the introduction, only boaters who provided dollar values for their expenditures were used to calculate average and total direct spending estimates, which in turn were used to estimate local and statewide economic impacts. The total expenditures of commercial boaters may have been underestimated by excluding those who reported spending money but failed to provide dollar values and those for whom data were missing. For example, including boaters who provided no dollar values for their expenditures would have increased total expenditure estimates by 9.4% on the Cheat River, 18.7% on the New River, and 3.0% on the Gauley River, assuming they spent the average of boaters who provided dollar values. The local and statewide economic impacts of these rivers also would have increased proportionally.

Also excluded from the expenditure and impact estimates reported in this study are boaters who rafted the Tygart and Shenandoah Rivers. Commercial rafting on the Tygart occurs at relatively low levels (e.g., less than 500 visitors annually) and likely contributes little to the local and statewide economies. On the other hand, approximately 19,000 people raft the Shenandoah River annually. However, the Shenandoah is located at the junction of West Virginia, Virginia, and Maryland and is in very close proximity to major metropolitan areas such

as Washington DC and Baltimore. As a result this river serves a market of mostly single-day visitors who make a large proportion of their expenditures outside of West Virginia. Also, outfitter fees for a rafting trip on the Shenandoah River at the time of this study were approximately \$40 to \$45 per person.

SUMMARY OF ECONOMIC IMPACTS OF COMMERCIAL WHITEWATER RAFTING

Data collected in 1995 from commercial boaters on the Cheat, New, and Gauley Rivers suggest that total statewide economic impacts associated with rafting on these rivers was approximately \$59.3 million in terms of total output, \$22.9 million in personal income, \$16.6 million in employee compensation, and 1,416 full- and part-time jobs. Because of larger numbers of commercial boaters, most (57%) of these impacts are attributable to the New River, followed by the Gauley River (39%) and the Cheat (4%). Local and statewide impacts likely result from rafting on the Tygart and Shenandoah Rivers, but are suspected to occur at lower levels.

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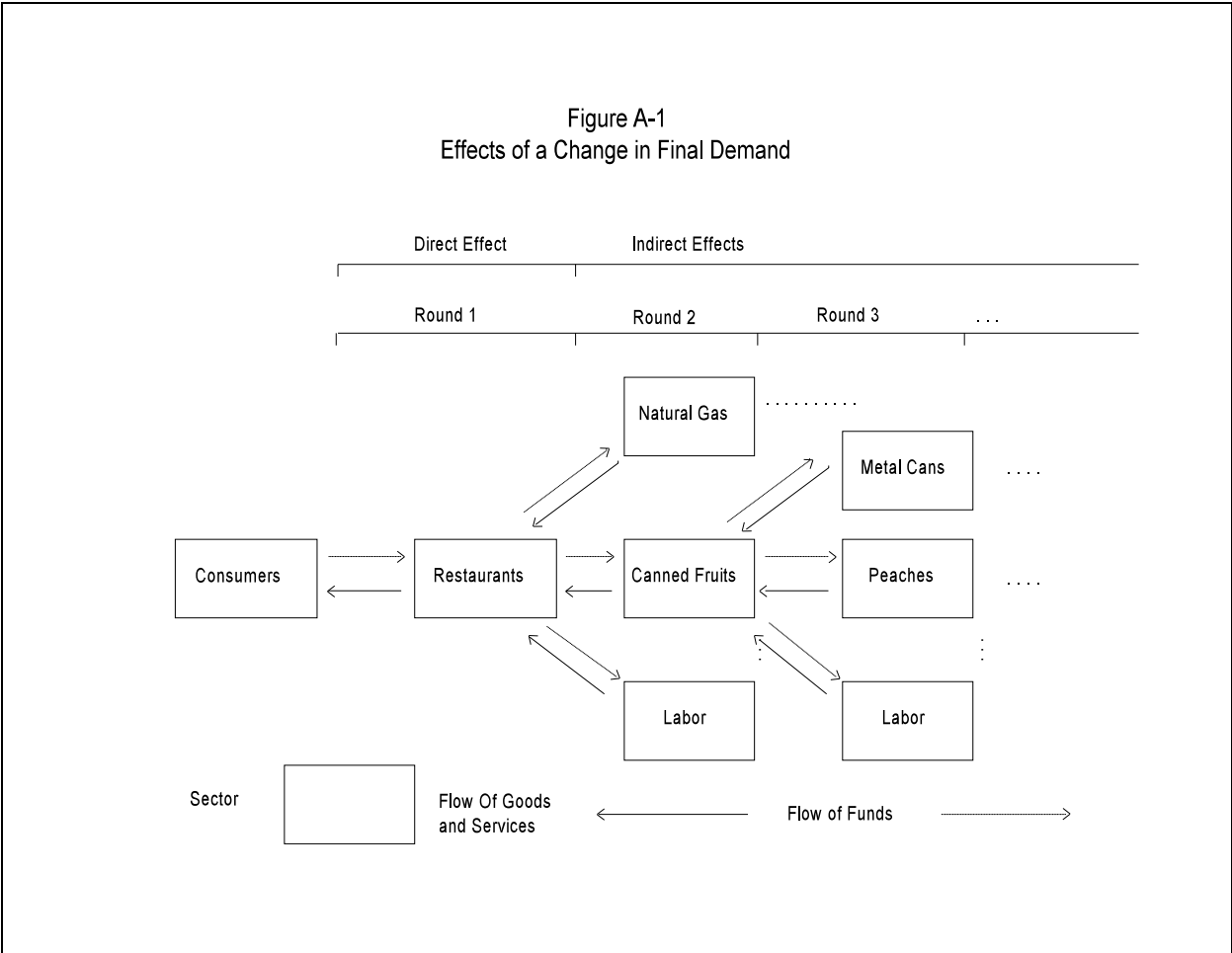
APPENDIX A

BASICS OF INPUT-OUTPUT MULTIPLIERS

Input-output models represent the economy of a region by describing the flows of goods and services among the sectors of that economy. The core of any input-output model is a table of inter-industry accounts. These accounts record, for each industry in its own column, the purchase of intermediate inputs from other industries, as well as employee compensation and gross business income. The accounts are also arranged so that each row shows the shipments of an industry to each industry in the region and to the various types of final demand, including personal consumption expenditures. The total value of sales and shipments, plus any change in finished inventory, is known as a sector's gross output. The outputs of certain industries that handle products without transforming them, notably trade and parts of transportation, are measured by gross mark-up rather than total sales, so that the accounts can credit a producer with sales to the ultimate purchasers. Because gross income is computed as sales minus operating expenses, column totals also equal sector gross outputs.

The crucial assumption in transforming an input-output table of accounts into an input-output model is that a sector's pattern of purchases represents its technology. Specifically, the model assumes that for each purchasing sector (column) the ratio of each intermediate input (table entry) over the purchasing sector's gross output (column total) is a constant, regardless of the sector's level of output. This implies that any change in the sales of a sector will cause proportionate changes in all of the sector's intermediate inputs. The ratios are known as technical coefficients. Because of regional trade some portion of an intermediate input may be coming from outside the region. The ratio of the regionally supplied portion of an intermediate input over gross output, known as an input coefficient, is also assumed to be constant. These input coefficients are the building blocks for estimating input-output multipliers and the indirect and induced portions of economic impacts.

When the demand increases for a business' products or services, that business will purchase more of its own inputs. For example, in the first round of Figure A-1 consumers spend some of their money to eat out, increasing the number and sales of restaurants. This direct effect of household spending leads the restaurants to purchase more supplies, including natural gas for cooking and heating and canned fruits for some of their recipes. They also hire additional employees. Given the dollar amount spent in restaurants, the restaurant industry's input coefficients tell how much the restaurants purchase from these suppliers as a result of the households' purchases. These indirect effects continue as each of the restaurants'



suppliers, in turn, increases purchases from its suppliers. For example, the middle portion of Figure A-1 shows the canned fruit processor buying metal cans and fresh peaches and hiring its own employees. Again, the model's input coefficients for the canned fruit sector estimate the size of these purchases. In this fashion, the input-output model traces round after round of the indirect effects from the initial change in consumer patronage of restaurants. These rounds become progressively smaller as some of the money leaks out at each step for things like non-regional suppliers, interest and capital costs, profits, and taxes. Often, as in this study, the flows are traced through employees' earnings and the resulting household expenditures, adding induced effects to the indirect and direct impacts.

There are several ways of measuring the total (direct plus indirect and induced) impacts of an initial change in consumption or production. In addition to output, IMPLAN's West Virginia model estimates employment, employee compensation, and value added. Table A-1 defines each of these types of impacts, as well as summarizing the previous paragraph's description of how an expenditure creates an economic impact. It is important to note that none of these impacts are a measure of benefits as used in cost benefit analysis. Benefits in an economist's

sense are a measure of an individual's or business' willingness to pay for a good or service because they attach intrinsic value to it or because it reduces the costs of some other product or activity. Impacts, on the other hand, are a way to examine the distribution of industries and resources covered in the costs of the expenditures that create the impacts.

Multipliers are a convenient way to summarize an input-output model's estimate of the relationships between the direct effects of an economic activity and its total impacts in a region. There are many different kinds of multipliers, but what they all have in common is that they are ratios of an economic impact over a measure of the size of the precipitating initial direct effect. There are sets of multipliers for each of the five of impact defined in Table A-1, but the multipliers' denominators are always measured as the value of production in the initial sector. Because different industries have different patterns of suppliers, the impact of a dollar of output will depend on the sector producing it. IMPLAN divides the state economy into 515 industry sectors and estimates multipliers for each of them. Multiplying an establishment's output with the multiplier for its sector generates estimates of the business' or facility's total economic impacts.

Table A-1. Definition of economic impact and impact categories.	
Impact Category	Definition
Impact	The results of the recirculation of funds throughout a regional economy due to the activity of a business, industry, or institution. Estimated by tracing back the flow of money through the initial businesses' employees and suppliers, the businesses selling to the employees and suppliers, and so on. Thus, they are a way to examine the distribution of industries and resources covered in the costs of the initial activity.
Assorted Taxes	West Virginia state revenues from consumer sales tax, personal income tax, corporate net income tax, and business franchise tax.
Business Volume	Sales plus net increase in finished inventories and the value of intra-corporate shipments. Equals output (see below) plus cost of goods sold in retail and wholesale trade.
Employment	The number of jobs in a business, industry, or region. Also the number of jobs attributable to an impact (see above). This is a measure of the number of full-time and part-time positions, not necessarily the number of employed persons. Annual average by place of work unless otherwise stated.
Employee Compensation	Wages and salaries plus employers' contribution for social insurance (social security, unemployment insurance, workers compensation, etc.) and other labor income (pension contributions, health benefits, etc.). By place of work unless otherwise stated.
Output	For most sectors, measured as sales plus net increase in inventories and the value of intra-corporate shipments. For retail and wholesale trade, measured as gross margins (i.e. mark-ups on goods sold).
Personal Income	Employee compensation (see above) plus proprietors' income. <i>Not</i> equal to personal income as reported in statistics from the U.S. Bureau of Economic Analysis.
Value Added	A measure of the value created by a business or industry, or attributable to an impact (see above). Equal to value of production minus the cost of purchased goods and services. Also equal to employee compensation plus capital income (profits, interest paid, depreciation charges) and indirect business taxes (e.g. severance, excise). Corresponds to the aggregate concepts of gross domestic product (GDP) and gross state product (GSP).