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**American Whitewater**  
Summary of Recent Studies on the  
Economic Impact of River Recreation in the Rockies Region

River recreation, specifically float boating, contributes a notable amount to the US economy on numerous different levels. A variety of study techniques have been implemented to determine the economic effect of river recreation, both nationally and locally. Although not exhaustive, the following table summarizes the methods and findings of 19 significant economic studies.

The studies are organized by date, from 1980 to 2018. A direct link to each report is accessible through the report name in Column 2, and the author(s) and associated organization are provided in Column 3. The Region(s) of study, Column 4, describe which rivers and/or regions were included in each report. Most studies used a survey-based approach to gather data on participation and expenditures; Column 5 summarizes each survey methodology. Column 6 outlines the primary economic analytical tool or model used; for example, the IMPLAN model was the most common tool used to determine overall economic output. Some studies looked specifically at non-motorized recreation, while other studies looked at the combined effects of motorized and non-motorized activities; each study's approach is identified in column 7. The key results from each study are summarized in column 8.

**Summary of River Recreation Economic Impact Studies in the Rockies Region**

<b>1: Date</b>	<b>2: Name</b>	<b>3: Author</b>	<b>4: Region(s)</b>	<b>5: Survey Method</b>	<b>6: Primary Economic Analytical Tool</b>	<b>7: Are non-motorized and motorized recreation separated?</b>	<b>8: Results Summary</b>
1980	<a href="#">An Empirical Application of a Model for Estimating the Recreation</a>	Walsh, R., Ericson, R, Arosteguy, D.	Crystal River, Roaring Fork River, CO River near Glenwood	- 206 people interviewed at 9 different river sites (fishermen, kayakers, and	- Respondents reported total direct trip costs and maximum willingness to	- Specifically looked at whitewater kayaking, rafting, and	- At optimum capacity; average kayaking benefits were \$7-9/day and rafting benefits were \$7-8/day - Net benefits continually

	<a href="#">Value of Instream Flow</a>	CSU, Fort Collins	Springs	rafters) - Looked specifically at consumer surplus: willingness to pay - direct cost - Looked at how congestion, instream flow, and travel distance impacts willingness to pay	pay, and willingness to pay based on changes to congestion and instream flow - Used Contingent Valuation approach	fishing	increase with instream flows for kayaking and rafting. - Net benefits peak at 65% of max flow for fishing - Avg. kayaking benefit is \$15.20/day with no other encounters - Avg. Rafting benefit is \$14.89/day with no other encounters
2000	<a href="#">Using Meta-Analysis for Benefit Transfer: In-sample validity tests of an outdoor recreation database</a>	Rosenberger, R. and Loomis, J.  CSU, Fort Collins	National; Regional	- Didn't use any survey techniques; meta-analysis of previous studies	- National meta-analysis approach - Convergent validity tests	- Separated non-motorized and motorized boating.	- Value of float boating in the Rocky Mountains = \$72.42/day - Value of float boating nationally = \$21.61/day
2000	<a href="#">Preliminary Evaluation of the Beneficial Value of Waters Diverted in the Clear Creek Whitewater Park in the City of Golden</a>	Hagenstad, M., Henderson, J., Raucher, R., Whitcomb, J.	Clear Creek Whitewater Park in Golden, CO	- Non-event use determined by observations from the Public Works Office and an interview with a member of the Clear Creek Whitewater Park Board. - No empirical data	- Incorporates economic multipliers determined by cordell et al. in 1990 - Willingness to Pay values based off of Loomis (1999),	- Looks specifically at whitewater kayaking in the Clear Creek Whitewater Park	- CC Whitewater Park generates between \$1.36 and \$2.03 million in total economic benefit - Beneficial Recreation value = \$913,545 to \$1.15 million per year

		Stratus Consulting Inc.		on kayaker travel distances	Walsh et al. (1980), and Bishop et al. (1989)		
2005	<a href="#">The Economic Value of Recreational Fishing &amp; Boating to Visitors &amp; Communities along the Upper Snake River</a>	Loomis, J. CSU, Fort Collins	Snake River in ID and WY	<ul style="list-style-type: none"> <li>- Visitors were given a mail-back survey during the 99-day sampling period at the 11 different river segments; 787 surveys were returned</li> <li>- Each river segment surveyed 9 days</li> <li>- Surveying took place over one paddling season, May-September</li> </ul>	<ul style="list-style-type: none"> <li>- Travel Cost Method (TCM) and Contingent Valuation Method (CVM) to determine economic impact to visitors</li> <li>- Dispersed survey and IMPLAN Model to determine economic benefit to local communities</li> </ul>	<ul style="list-style-type: none"> <li>- Separated boaters from anglers; no distinction between private and commercial</li> </ul>	<ul style="list-style-type: none"> <li>- "Rafting and Other River Recreation" value = Snake River Henry's Fork estimated to be \$586,518; South Fork estimated value of \$1,479,455 and Snake River in Wyoming \$16,177,278</li> <li>- Total River Based Value = \$57.6 million annually</li> </ul>
2006	<a href="#">The Economic Contribution of Active Outdoor Recreation - Technical Report on Methods and Findings</a>	Southwick Associates for the Outdoor Industry Association	National; Regional	<ul style="list-style-type: none"> <li>- Harris Interactive Survey Database Used</li> <li>- 14,000 total surveys conducted, 5,150 qualified surveys</li> <li>- 16+ age group</li> </ul>	<ul style="list-style-type: none"> <li>- IMPLAN model used to determine total economic impact</li> <li>- Direct, indirect, induced impact = total economic impact</li> </ul>	<ul style="list-style-type: none"> <li>- Only non-motorized sports included</li> <li>- Kayaking includes sea, rec, and whitewater</li> </ul>	<ul style="list-style-type: none"> <li>- Total economic activity for paddlesports (seakayaking, rec kayaking, whitewater kayaking, canoeing, rafting) in US is \$36,091,100,000.</li> <li>- In Mountain Region, 1,590,000 participants in paddlesports; Nationally, 23,600,000 paddlesport participants</li> </ul>

2006	<a href="#">City of Durango, Colorado: Economic Impacts of Whitewater Recreation</a>	RPI Consulting	Lower Animas River, Durango, CO	<ul style="list-style-type: none"> <li>- Interviewed boat rental shops, commercial companies.</li> <li>- User days determined by combining number of kayakers in CO with known willingness to drive data</li> <li>- Willingness to travel data adapted from CO State Parks (no direct information on whitewater boaters)</li> <li>- User day expenditures based on Stratus (2000)</li> </ul>	<ul style="list-style-type: none"> <li>- Total employment estimated using RIMS model</li> <li>- Study completed before RICD was secured and further whitewater park developments were made</li> </ul>	<ul style="list-style-type: none"> <li>- Separates commercial, private, rafting, kayaking, and private instruction</li> </ul>	<ul style="list-style-type: none"> <li>- Commercial River Use = \$14 million</li> <li>- Private rentals/instruction = \$536,777</li> <li>- Private kayaking = \$2,945,214</li> <li>- Private rafting = \$847,198</li> <li>- Total Economic Benefit = \$19,397,633</li> </ul>
2007	<a href="#">State-Level Economic Contributions Of Active Outdoor Recreation - Technical Report on Methods and Findings</a>	Southwick Associates; Prepared for the Outdoor Industry Association	State Level Reports; 22 primary states and 28 non-primary states	<ul style="list-style-type: none"> <li>- Primary states allocated 125 completed surveys; non-primary allocated 50 surveys</li> <li>- Surveys conducted by Harris Interactive and their online polling database.</li> <li>- Weighting of the results was applied</li> </ul>	<ul style="list-style-type: none"> <li>- Total economic impact = direct + indirect + induced effects.</li> <li>- Expenditures based on survey responses.</li> <li>- IMPLAN model used to determine total</li> </ul>	<ul style="list-style-type: none"> <li>- Kayaking includes recreational, sea, and whitewater</li> <li>- Only non-motorized activities are looked at</li> </ul>	<ul style="list-style-type: none"> <li>- CO: 11.5% participates in paddle sports; Paddle sports generate \$408,743,329</li> <li>- AZ: Paddle sports generate \$100,877,944; 7.6% participate in paddle sports</li> <li>- NV: Paddle sports generate \$31,997,769; 4.5% of the State participates in paddle sports</li> <li>- NM: paddlesports generate</li> </ul>

				to adjust for demographics and propensity to complete online surveys.	economic contributions		\$40,778,172; 4.7% participates in paddlesports - UT: Paddlesports generate \$99,675,087 in expenditures and 14.9% of the state participates in paddlesports - WY: Paddle sports = \$37,903,958; 8.5% participates in paddle sports
2010	<a href="#">National Survey on Recreation and the Environment: PaddleSports Participation Report</a>	ACA; the Forest Service and NOAA are responsible for the NSRE  *Participation Only	National	- NSRE conducts over 100,000 phone surveys throughout all different ethnic groups in the US. - Phone numbers were provided by Survey Sampling Inc. (SSI) - The CATI system was used to conduct interviews - Survey weighting was implemented based on socio-demographics - Survey also includes ACA specific questions in some of the modules		- Does not differentiate between different types of kayaking  - Differentiates between motorized and non-motorized	- In 2008, the study estimates that of ages 16+ 9.7% of people canoe (22,800,000), 6.3% of people kayak (14,700,000), and 5.7% of people raft (13,400,000) - 38.2% of respondents said they owned a kayak, raft, or canoe - 48.4% of paddling respondents reported that they made at least \$50,000

2010	<a href="#">Fort Collins Whitewater Park Economic Assessment</a>	Loomis, J and McTernan, J.  Department of Agriculture and Resource Economics, CSU	Cache la Poudre River, Colorado	<ul style="list-style-type: none"> <li>- Surveyed non-commercial river patrons in the Poudre Canyon and at the Clear Creek Whitewater Park.</li> <li>- 11 survey days in the canyon and 4 survey days at the Clear Creek Park.</li> <li>- Surveys were hand delivered with prepaid envelopes.</li> </ul>	- No model approach was used	<ul style="list-style-type: none"> <li>- Whitewater kayaking, inner tubing, and rafting were analyzed.</li> <li>- Only private boaters were surveyed.</li> </ul>	<ul style="list-style-type: none"> <li>- 49% of survey respondents said they would visit the whitewater park</li> <li>- Estimated trip expenditures ranged from \$16.67 to \$69.73, depending on water level and distance traveled.</li> <li>- Annual sales revenue ranged from \$294,765 to \$745,337 for current flow levels and from \$331,610 to \$838,504 for increased flows on the Cache la Poudre River.</li> </ul>
2012	<a href="#">Economic Contributions of Recreation on the Colorado River and its Tributaries</a>	Southwick Associates	Colorado River Basin States	<ul style="list-style-type: none"> <li>- Worked with DJ Case and Delve Research to design a telephone survey</li> <li>- Total of 1,050 outdoor respondents in 6 basin states</li> <li>- Participation significantly lower than NSRE study</li> </ul>	- IMPLAN model	- "water sports" encompasses both motorized and non-motorized	<ul style="list-style-type: none"> <li>- Total spending on CO River and its tributaries is \$25.6 billion, \$9.6 billion in CO</li> <li>- Water sports make up %15.6 of activities</li> <li>- River related business activity from the Colorado River generates more than \$1.6 billion in federal taxes and \$1.6 in state and local tax revenue</li> </ul>
2012	<a href="#">The Outdoor Recreation Economy: Technical Report on</a>	Southwick Associates; Prepared for the Outdoor	National; Western Region	<ul style="list-style-type: none"> <li>- Two different Harris Interactive surveys</li> <li>- Harris Interactive Online Panel</li> </ul>	- IMPLAN model for total economic impact - Direct	<ul style="list-style-type: none"> <li>- Separate surveys</li> <li>- Separate direct spending</li> <li>- Combined</li> </ul>	<ul style="list-style-type: none"> <li>- Non-motorized water recreation participation: 11.4% nationally and 11.5% in Western Region</li> <li>- Non-motorized total</li> </ul>

	<a href="#">Methods and Findings</a>	Industry Association		database used - 3,133 human-powered qualified respondents -3,191 motorized qualified respondents	spending determined from survey responses	IMPLAN outputs; combined total economic benefit	spending: \$30,665,485,828 - Non-motorized and motorized spending: \$86,197,498,227 - Total water-sport output: \$206,311,014,957
2014	<a href="#">Statewide Comprehensive Outdoor Recreation Plan</a>	State of Colorado; Economic Impact report done by Southwick Associates; partially based on OIA's 2012 Economic Impact report	CO	- 10 page survey mailed to 7,000 randomly selected CO residents (option to do survey online or with printed mail-back survey); 1,405 responses were collected - Data was weighted based on demographics and region	- Economic Analysis same as Southwick Associates (2012) report for OIA	- Separates motorized from non-motorized for participation - Economic analysis combines motorized and non-motorized	- 9.3% of the CO population participates in rafting and 5.1% of the CO population participate in kayaking (all types) - Whitewater Kayaking increased by 13% between 2009 and 2012; rafting decreased by 5% -Economic results the same as 2012 Southwick Report
2014	<a href="#">The Economic Importance of the Colorado River to the Basin Region</a>	James, T., Evans, A., Madly, E., and Kelly, C	CO River Basin States: CO, UT, NM, AZ, WY, CA, NV	No surveys; historical economic data obtained from each industry	- IMPLAN model used for economic impact analysis - Looks at Gross State Product, Employment,	- 'Arts, Entertainment, Recreation' is an all encompassing category	- Impact to Arts, Entertainment, Recreation sector: - CO: \$2.68 billion loss; 50,569 employee loss - NV: \$2.03 bill. Loss; 33,165 employee loss

		Arizona State University			and Labor Income - Results quantified in terms of estimated loss without the CO River		- NM: \$0.64 bill. Loss and 18,287 employee loss - UT: \$0.75 bill. Loss; 19,021 employee loss - WY: \$0.24 bill. Loss; 6,170 employee loss
2015	<a href="#">Special Report on Paddlesports</a>	Outdoor Industry Association  *Participation Only	National	- Data obtained from annual Physical Activity Council report - US Online Panel by Synovate/IPSOS used for surveys	- Participation self-reported in surveys	- Separates Rec, Sea, and WW kayaking	Between 2010 and 2014: - US Population that kayaks grew from 3% to 4.4% - Rafting participants declined from 1.6% to 1.3% of the population - Whitewater Kayaking participation grew from 0.6% to 0.8%
2016	Commercial River Use in the State of Colorado	Colorado River Outfitters Association	Colorado	- User days and economic impact determined for each river	- Economic multiplier data obtained from Colorado Tourism Board	- Only commercial rafting	- 2016 was a record commercial use year - 550,861 user days in 2016; economic impact of \$179.8 million - Arkansas River had the greatest amount of economic impact, \$73 million in 2016
2017	<a href="#">Outdoor Participation Report</a>	Outdoor Industry Association	National	- US Online Panel by Synovate/IPSOS - 0.0008% of the population was interviewed - 24,134 interviews	- Participation self-reported in surveys	- Separates Rec, Sea, and WW kayaking	- All ages participation in ww kayaking was 0.4% or 1,207,000 people in 2007 and 0.9% or 2,552,000 in 2016



		*Participation Only		carried out			- All ages participation in rafting was 1.6% or 4,340,000 people in 2007 and 1.2% or 3,428,000 in 2016
2017	<a href="#">The Outdoor Recreation Economy</a>	Southwick Associates for Outdoor Industry Association	National; Regional	- Methodology assumed to be the same as the 2012 Economic Report	- Methodology assumed to be the same as the 2012 Economic Report	- Motorized and non-motorized water sports presented together	- \$14 billion spent on water sports gear - Total water sports expenditures: \$140 billion and 1.2 million jobs
2017	<a href="#">Outdoor Recreation Participation Topline Report</a>	Outdoor Industry Association  *Participation Only	National	- 24,134 online surveys were conducted using the Online Panel Database by Synovate/IPSOS - A sport with a participation rate of five percent has a confidence interval of plus or minus 0.31 percentage points at the 95 percent confidence level.	N/A	- Different types of boating are separated; non-motorized versus motorized separated	- 10,046 canoists - 2,552 whitewater kayakers - 3,428 rafters - 3,220 SUP boarders
2018-2019	<a href="#">Bureau of Economic Analysis Study (In Progress)</a>	Federal Bureau of Economic Analysis	National	- Methodology currently unpublished	- Methodology unpublished - Looks at US GDP	-Unknown	- Final results unpublished





