

Economic Impact of Paddling in the Grand Mesa, Uncompahgre & Gunnison National Forests

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Image Credit: Carl Zoch



Executive Summary of Study

Grand Mesa, Uncompahgre and Gunnison National Forest (GMUG) is an important American paddling destination.

Paddlers of different varieties visit the GMUG around 26,000 times per year, including commercial and non-commercial visits. An estimated 60% of these visits are from persons living outside the GMUG and surrounding region.

In all, 125 paddlers around the nation responded to the survey, with 102 respondents sharing the economic expenditures from their most recent 2017-2018 trip to the GMUG.

Based on the economic impact analysis and NVUM visitation figures, the research team estimates:

1. Paddling visitors who are not local residents annually spend an estimated \$4.7 million within the GMUG.
2. Paddling visitors' expenditures support an estimated 22 jobs and \$538,000 in job income in the GMUG and surrounding area.



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Meet Your Research Team

DR. JAMES N. MAPLES is an associate professor of sociology at Eastern Kentucky University, where he examines the political economy of renewable tourism. His research interests include the economic impact of outdoor recreation and social change in rural areas. In his free time, he is conducting an oral history of rock climbing in Kentucky's Red River Gorge. He is also an Eagle Scout, Girl Scout dad, and metal detectorist.



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DR. MICHAEL J. BRADLEY is an associate professor and director of graduate studies in the Department of Recreation and Park Administration at Eastern Kentucky University. His professional and academic interests include human dimensions of natural resource and wildlife management as well as sustainable recreation practices as it relates to outdoor recreation.



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CONTACT INFORMATION FOR FUTURE STUDIES

Our research team regularly conducts economic impact studies, surveys, assessments, interpretation studies, and other kinds of community-driven studies. If you or your organization is interested in conducting a study, please contact lead researchers Dr. James Maples or Dr. Michael Bradley (emails above) for further information.

Methodological Notes

STUDY PURPOSE

The purpose of this study was to examine the annual economic impact of paddling visitors in the GMUG based upon expenditure patterns from their most recent 2017 or 2018 visit to the GMUG. For this report, paddling includes commercial and non-commercial paddling which includes canoeing and stand-up paddle board use.

DATA COLLECTION

The researchers collected data using an online survey available from July 14, 2018 until August 24, 2018. This is best treated as a convenience sample. The final survey language is available upon request. The survey included questions examining economic expenditures across fifteen sectors and are outlined in this report. The survey included questions about where the respondent lives the majority of the year, the size of the group accounted for in the respondent's economic impact questions, and a lodging selection. The research team used all of these questions in creating the economic estimates.

ANALYSIS

The researchers used established techniques utilized in previous peer-reviewed economic impact studies. First, respondents were sorted by local residents (respondents who self-reported as being a resident of the GMUG and immediate surrounding area) and visitors (respondents self-reporting as living outside the GMUG area). Local residents are separated from the economic impact estimates as their expenditures, while important, are not typically treated as true economic impact. Their mean expenditures are, however, reported as a supplement to the economic impact estimates.

Second, mean expenditures were established for paddling visitors in each study area for each of the fifteen economic impact categories. Means are also included for expenditures outside the study area but still within the state of Colorado.

Third, group sizes in expenditures are addressed by dividing the respondent's reported expenditures by their reported group size.

Fourth, respondent cases in each mean with values higher than the third standard deviation were marked as missing data. This technique prevents overestimating economic impact and provides reliable, conservative means.

Fifth, these means are entered into IMPLAN, an industry-leading economic impact calculation system, which uses input-output modeling to establish economic impact across three measures: output, value added, and job income.

Sixth, these estimates are shaped by visitation data from the 2014 National Visitor Use Monitoring (NVUM) survey conducted by the Forest Service. Visitation data were discussed with American Whitewater and categorized by study area to create a more nuanced economic estimate by study area.

Study Regions

This study builds around three areas based around paddling destinations in the Gunnison, Grand Mesa, and Uncompahgre National Forests. Economic impact study areas are built around common paddling destinations and the cities and towns where paddling user visitors are most apt to spend funds as part of their trip. Each of the study areas are discussed in detail below.

REGION ONE: GUNNISON AREA

The Gunnison study area is modeled around paddling opportunities in the Gunnison County area. Gunnison County includes a gross regional product of \$817 million and personal income of \$710 million. Total employment there exceeds 13,000 workers employed in 176 industries.

Table 1A

Economic Indicator Summary of Gunnison	
<i>Indicator</i>	<i>Value</i>
Gross Regional Product*	\$817,151
Total Personal Income*	\$710,875
Total Employment	13,044
Number of Industries	176
Land Area (square miles)	3,239
Population	16,408
Total Households	7,165

REGION TWO: GRAND MESA AREA

The Grand Mesa area is modeled around paddling in Mesa and Delta counties which includes cities/towns of Paonia, Crawford, Hotchkiss, Grand Junction, and Palisade. Notably, Mesa County includes the Grand Junction metropolitan statistical area. The gross regional product in this study area exceeds \$6 billion with a personal income of nearly \$7 billion. Total employment there exceeds 98,000 workers spread across 277 industries. The area includes over 71,000 households.

Table 1B

Economic Indicator Summary of Grand Mesa	
<i>Indicator</i>	<i>Value</i>
Gross Regional Product*	\$6,109,523
Total Personal Income*	\$6,933,247
Total Employment	98,419
Number of Industries	277
Land Area (square miles)	4,440
Population	180,525
Total Households	71,544

REGION THREE: UNCOMPAHGRE AREA

The Uncompahgre area includes recreation opportunities in Ouray, Montrose, and San Miguel counties. The study area's GRP exceeds \$2 billion with a personal income of \$2.3 billion. There are an estimate 35,190 employees in this study area employed in 229 different industries. The land area includes of 4,069 square miles, which includes over 54,245 residents and over 22,076 households.

Table 1C

Economic Indicator Summary of Uncompahgre	
<i>Indicator</i>	<i>Value</i>
Gross Regional Product*	\$2,099,645
Total Personal Income*	\$2,315,304
Total Employment	35,190
Number of Industries	229
Land Area (square miles)	4,069
Population	54,345
Total Households	22,076

*Gross Regional Product and Total Personal Income listed in 1000s

Visitor Mean Expenditures

Tables 2 features the estimate mean expenditures for paddling visitors in the study areas across fifteen common economic impact areas. Mean expenditures are an averaged figure of the economic activity created by one typical outdoor recreation visit to the study area. In this table, only visitors are represented (and later modeled) to estimate economic impact, as is the standard in economic impact research.

When possible, it is useful to individually model means for each study area. However, when studying smaller populations and/or addressing smaller response counts, attempting to model means for multiple study areas can create distorted means that misrepresent actual expenditures. Due to the population size and number of available responses, the research team elected to use one central mean expenditure to represent paddling visitors in all three areas.

In this study, paddlers visitor means are greatest in three areas: sit-down dining (e.g., dining with wait staff, \$32.00 per visit), grocery stores (\$33.52 per visit), and gasoline (\$34.95). These three areas are common to other human-powered outdoor recreation activities found in the GMUG.

Table 2

Visitor Mean Expenditures for All Study Areas (Estimated 26,000 Visitors)					
<i>Variable</i>	<i>Obs</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
Fast food	43	\$9.29	14.67	0	50
Sit-down dining	45	\$32.00	30.44	0	110
Grocery Stores	44	\$33.52	41.28	0	150
Gas station food	47	\$5.15	6.90	0	20
Gasoline & oil	46	\$34.95	29.92	0	100
Retail gear	46	\$0.04	0.25	0	2
Retail, non-food	45	\$3.11	7.73	0	30
Rental gear	47	0.00	0.00	0	0
Guide service	47	0.00	0.00	0	0
Rental Car	47	0.00	0.00	0	0
Taxi / Uber / Lyft	46	\$0.65	4.42	0	30
Adventure tourism	47	\$1.06	7.29	0	50
Entertainment	47	\$7.78	26.74	0	150
Hotels & resorts	45	44.44	29.81	0	200
Camping	45	\$11.09	23.08	0	100

Economic Impact Terminology

In the following paragraphs, three terms describe economic impact: *direct effect*, *indirect effect*, and *induced effect*.

Direct effect is the economic impact created by the presence of the economic activity. For example, if a local restaurant sells \$1K in food, its direct effect would be \$1K.

Indirect effect is economic activity created when local businesses purchase goods and services from other local industries as a result of the direct effect.

Induced effect is the estimated local expenditures by local households and employees as a result of income created from the direct effect.

Labor income impact is measured by the estimated labor income created by the economic activity in the region. This is a conservative measure of economic impact.

Value added is a measure of the increase in the study region's gross domestic product. Gross domestic product is a measure of all goods and services produced in the study area and is treated as a measure of the size of the economy.

Output is a measure of the increase in business sales revenue in the study area as a result of the economic impact being studied. It includes business revenues as well as costs of doing business. It includes value added as part of its calculation.

Economic Impact Modeling

Tables 3A - 3C detail the economic impact linked to paddling visitation across the three study areas. In sum, paddling visitors spent an estimated \$4.7 million across the three study areas. Across all three areas, paddling users support an estimated 22 jobs and \$582,368 million in job income.

Table 3A summarizes results for the Gunnison study area. Here, paddling visitors support eight jobs and \$193,000 in job income.

Table 3A

Economic Impact Summary of Paddling in Gunnison Study Area (Estimated 6,128 Annual Visits)				
<i>Impact Type</i>	<i>Jobs Supported</i>	<i>Labor Income</i>	<i>Value Added</i>	<i>Output</i>
Direct	6.5	\$147,936	\$210,860	\$375,379
Indirect	0.7	\$22,813	\$46,170	\$91,354
Induced	0.8	\$22,789	\$48,878	\$90,916
Total Effect	8.0	\$193,538	\$305,908	\$557,649

Table 3B describes visitor paddling user expenditures in the Grand Mesa study area. There, paddling visitors support an estimated nine jobs and over \$236,000 in labor income.

Table 3B

Economic Impact Summary of Paddling in Grand Mesa Study Area (Estimated 6,128 Annual Visits)				
<i>Impact Type</i>	<i>Jobs Supported</i>	<i>Labor Income</i>	<i>Value Added</i>	<i>Output</i>
Direct	7.2	\$162,286	\$247,459	\$421,699
Indirect	1.0	\$32,069	\$55,038	\$117,577
Induced	1.2	\$42,518	\$75,856	\$142,395
Total Effect	9.3	\$236,874	\$378,353	\$681,671

Table 3C examines the Uncompahgre study area. There, paddling visitors support an estimated five jobs and an estimated \$151,956 in job income.

Table 3C

Economic Impact Summary of Paddling in Uncompahgre Study Area (Estimated 3,268 Annual Visits)				
<i>Impact Type</i>	<i>Jobs Supported</i>	<i>Labor Income</i>	<i>Value Added</i>	<i>Output</i>
Direct	3.8	\$113,459	\$155,305	\$259,784
Indirect	0.5	\$17,895	\$32,537	\$67,188
Induced	0.6	\$20,602	\$40,128	\$74,482
Total Effect	5.0	\$151,956	\$227,971	\$401,455

Taxation Generation Within the Study Areas

Tables 4A - 4C detail the estimate taxes generated by paddling visitors in the three study areas.

Table 4A

Annual Estimated Taxation Generated by Paddling in Gunnison Study Area		
<i>Tax Type</i>	<i>State & Local</i>	<i>Federal</i>
Employee Compensation	\$615	\$21,217
Proprietor Income	\$0	\$585
Tax on Production & Imports	\$36,122	\$5,529
Households	\$4,716	\$14,384
Corporations	\$532	\$4,300

Table 4A focuses on the Gunnison area, where paddling visitor expenditures support nearly \$42,000 in state / local taxes on and \$46,000 in federal taxes.

Table 4B

Annual Estimated Taxation Generated by Paddling in Grand Mesa Study Area		
<i>Tax Type</i>	<i>State & Local</i>	<i>Federal</i>
Employee Compensation	\$756	\$28,205
Proprietor Income	\$0	\$671
Tax on Production & Imports	\$48,464	\$6,660
Households	\$5,517	\$17,258
Corporations	\$613	\$5,063

Table 4B examines taxation in Grand Mesa. Here, paddling visitors support an estimated \$55,350 in state/local taxes and \$57,857 in federal taxes.

Table 4C

Annual Estimated Taxation Generated by Paddling in Uncompahgre Study Area		
<i>Tax Type</i>	<i>State & Local</i>	<i>Federal</i>
Employee Compensation	\$451	\$16,942
Proprietor Income	\$0	\$881
Tax on Production & Imports	\$27,452	\$2,836
Households	\$3,755	\$11,477
Corporations	\$270	\$2,210

Table 4C lists tax generation in the Uncompahgre study area. In this study area, paddling visitors support an estimated \$32,928 in state/local taxes and imports, as well as over \$34,000 in federal taxes.

Visitor Expenditures Beyond Study Area But In State

Table 5 lists mean expenditures for paddling visitors who reported funds spent outside the study areas but still within the state’s boundaries as a result of their most recent trip to a study area. These are important expenditures that, even though they are not modeled in the study, continue to demonstrate the economic importance of human-powered outdoor recreation in the region.

Table 5 summarizes these expenditures for visitors in this study. Beyond the borders of the GMUG and surrounding region, paddlers spent an average of \$18.66 in gasoline, \$13.83 in retail gear, and \$9.95 in sit-down dining. Again, these expenditures are the direct result of paddlers visiting the GMUG and add another \$837,000 to the state economy.

Table 5

Tourists Spending Outside Study Area but still in Colorado (Estimated 15,525 Annual Visits)					
<i>Variable</i>	<i>Obs</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
Fast food	38	\$0.00	0.00	0	0
Sit-down dining	46	\$9.95	21.82	0	100
Grocery Stores	45	\$6.92	14.67	0	70
Gas station food	46	\$0.76	2.78	0	15
Gasoline & oil	46	\$18.66	27.88	0	100
Retail gear	47	\$13.83	53.63	0	280
Retail, non-food	45	\$3.11	7.73	0	30
Rental gear	47	\$0.00	0.00	0	0
Guide service	47	\$0.00	0.00	0	0
Rental Car	47	\$0.00	0.00	0	0
Taxi / Uber / Lyft	47	\$0.00	0.00	0	0
Adventure tourism	47	\$0.00	0.00	0	0
Entertainment	47	\$0.00	0.00	0	0
Hotels & resorts	47	\$0.00	0.00	0	0
Camping	48	\$0.70	3.47	0	20

Local Resident Expenditures by Study Area

Table 6 describes local residents' expenditures as a result to visits to one of the three study areas. Although local resident paddling users are not regarded as true economic impact in their local economies, local residents do make a noted contribution to the local economy while visiting the GMUG.

Local resident paddling users spent an estimated \$2.4 million annually as a result of visiting the study areas, which is an average of \$239.11 per visit to the GMUG.

Local residents spend an average of \$62.50 purchasing retail gear, \$51.14 in gas, and \$46.82 in groceries as part of their trips to the GMUG.

Table 6

Local Resident Expenditures in All Study Areas (Estimated 10,350 Annual Visits)					
<i>Variable</i>	<i>Obs</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
Fast food	29	\$5.24	10.82	0	50
Sit-down dining	34	\$42.89	61.43	0	200
Grocery Stores	33	\$46.82	62.25	0	250
Gas station food	33	\$2.91	6.63	0	30
Gasoline & oil	35	\$51.14	58.08	0	200
Retail gear	36	\$62.50	147.05	0	500
Retail, non-food	34	\$10.20	25.28	0	110
Rental gear	34	\$0.00	0.00	0	0
Guide service	34	\$0.00	0.00	0	0
Rental Car	34	\$0.00	0.00	0	0
Taxi / Uber / Lyft	34	5.98	22.11	0	100
Adventure tourism	34	\$0.00	0.00	0	0
Entertainment	34	\$0.00	0.00	0	0
Hotels & resorts	35	\$11.43	47.10	0	200
Camping	35	\$0.00	0.00	0	0

Local Resident Expenditures Beyond Study Area But Inside State

Local residents also continue to spend funds outside the study area as a result of visits to the GMUG. As a result of these trips, local residents spent an average of \$148.07 per visit to the GMUG beyond the study areas but within Colorado, totaling \$1.5 million added to the state’s economy.

Table 7

Local Resident Expenditures beyond Study Area but within Colorado (Estimated 10,350 Annual Visits)					
<i>Variable</i>	<i>Obs</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
Fast food	34	2.65	9.31	0	50
Sit-down dining	35	21.24	44.98	0	200
Grocery Stores	35	19.86	41.32	0	175
Gas station food	34	0.29	1.71	0	10
Gasoline & oil	34	29.36	65.85	0	300
Retail gear	35	58.57	235.30	0	1000
Retail, non-food	34	10.20	25.28	0	110
Rental gear	35	0.86	5.07	0	30
Guide service	35	0.00	0.00	0	0
Rental Car	35	0.00	0.00	0	0
Taxi / Uber / Lyft	35	0.00	0.00	0	0
Adventure tourism	35	0.00	0.00	0	0
Entertainment	35	0.00	0.00	0	0
Hotels & resorts	35	0.00	0.00	0	0
Camping	34	0.00	0.00	0	0

OMISSIONS & CONSIDERATIONS

During the research process, the research team identified minor issues that should be noted. First, as is always the case with economic impact studies, the findings in this report must be treated as estimations. This economic impact study utilizes mean figures to estimate expenditures that may vary from year to year, visit to visit, event to event, and person to person.

Second, this study does not account for length of visit. As point of reference, visitors in the study indicated staying an average of 4.3 days when staying at least one night.

Third, collecting economic impact data well after the initial day of expenditures can result in unavoidable errors in data collection. For examples, respondents rounding expenditures to the nearest dollar, forgetting expenditures, or misstating expenditures are common issues. As such, the research team recommends repeating this study by collecting data in the field at or around the day expenditures are made.

Fourth, this study uses generalized categories (e.g. paddling users) to account for expenditures across more than one form of outdoor recreation. Individual outdoor recreation types may have unique spending patterns that are lost in aggregated data. The researchers suggest conducting future field studies on separate outdoor recreation categories to create a more nuanced economic estimate.

Fifth, NVUM visitation estimates are unable to account for every single visit that occurs into a particular area or study area. Outdoor recreation is particularly easy to undercount as outdoor recreation users are often less visible or in remote areas of a national forest.

Sixth, this study treats non-commercial and commercial user expenditures as being similar. It is advisable to conduct a field study in this location that can verify this assumption for future research.

Seventh, NVUM classification of visitor use includes generalized uses (e.g. non-motorized boat use) which may cause inflation in the actual number of visits for the use being studied. As well, NVUM data allow for recreational users to visit the GMUG for more than one purpose. As such, persons and expenditures represented in this study may also overlap with other user groups' economic contributions.

Eighth, the estimates in this report look to account for approximately 95% of visitors to the GMUG in a given year by focusing on the major areas of use. This may result in underreporting users of areas not included in the report.