



Economic Impact of Rock Climbing in the Nantahala and Pisgah National Forests

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Executive Summary of Study

Nantahala and Pisgah National Forests are an important climbing destination containing over 2,000 climbing routes.

Climbers visit the Nantahala and Pisgah National Forests an estimated 200,000 times per year, with approximately 60% of those visits by residents of western North Carolina.

Using data from an online survey of outdoor recreation enthusiasts to conduct an economic impact analysis, the research team finds:

- 1. Rock climber visitors spend an estimated **\$13.9 million** per year in and around the Nantahala and Pisgah National Forests.
- 2. Rock climber tourism supports the presence of **170 full-time jobs and \$4 million in job income.**
- 3. Western North Carolina residents who climb also spend an additional **\$12.9 million** as a result of climbing in the Nantahala and Pisgah National Forests. mountain biking in the Nantahala and Pisgah National Forests.

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Meet Your Research Team

DR. JAMES N. MAPLES is an assistant 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, economic development and social change in rural areas, and applied survey design. In his free time, he is conducting an oral history of rock climbing in Kentucky's Red River Gorge.

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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

BACKGROUND

The Nantahala and Pisgah National Forests (NPNF) is the combination of two national forests in western North Carolina. NPNF collectively covers over one million acres and is an important outdoor recreation area in the region.

NPNF includes a high concentration of climbing opportunities. Over 2,000 routes are clustered in the Northeastern, Central, and Southwestern portions of the NPNF. Routes include long multi-pitch routes, fascinating bouldering routes, accessible beginner routes, and even lengthy ice climbing routes. To date, the economic impact of climbing in the NPNF has yet to be examined.

STUDY PURPOSE

Working alongside Outdoor Alliance and the Access Fund, the research team conducted an online survey to collect data on climber expenditures in the NPNF with the goal of estimating climbers' annual economic impact in the NPNF.

DATA COLLECTION

The researchers collected data using an online survey hosted through Qualtrics. The study population was climbers who have climbed in the NPNF in 2017. The survey was open from June 28 through July 10. 593 climbers responded to the survey. The research team dropped 109 total cases (82 cases that completed less than 1/3 of the survey, 6 cases that climbed outside the three climbing study areas, and 21 cases with abnormally high expenditures that would skew and inflate mean expenditures). This left 158 climbers who lived in western North Carolina (local residents) and 326 climbers who lived outside western North Carolina (visitors) in the study. As the exact number of unique climbers who climb in the NPNF is unknown, this is best treated as a convenience sample.

ANALYSIS

The research team calculated mean expenditures across 13 categories (such as lodging or restaurant expenditures). The research team utilized IMPLAN to generate economic impact estimates based on the Access Fund's provided estimate of 200,000 climber visits per year to the NPNF, 60% of which Access Fund estimates live in western North Carolina. Stata 14 was used to generate additional respondent demographic tables.

Study Region

This study focuses on three study regions in the NPNF: the Northeastern Region, the Central Region, and the Southwestern Region. The research team created each study area in collaboration with Access Fund and Carolina Climbers Coalition.

REGION ONE: NORTHEASTERN

The Northeastern Region includes the following common climbing areas: The Dump, Little Wilsons, 221 Boulders, Lost Cove, and Linville Gorge. The research team built the region’s economic model around zip codes in Marion, Boone, Lenoir, and Morganton as these are the most common areas where climbers would spend funds while visiting this region. **Table 1A** includes recent economic indicators for the Northeastern Region study area.

Table 1A

Economic Indicator Summary of Northeastern Region, 2015	
Indicator	Value
Gross Regional Product	\$6,457,713,682
Total Personal Income	\$5,773,943,392
Total Employment	93,887
Number of Industries	294
Land Area (square miles)	1,050
Population	182,567
Total Households	73,179

REGION TWO: CENTRAL

The Central Region includes climbing areas at Black Mountains, Corner Rock/Snake Den, Looking Glass, Cedar Rock, and Catheys Creek. This region is unique in that it also spreads across both sides of the Asheville area. The research team built this region’s economic model around Asheville, Brevard, Hendersonville, Burnsville, Barnardsville, Spruce Pine, and Weaverville. **Table 1B** includes recent economic indicators for the Central Region study area.

Table 1B

Economic Indicator Summary of Central Region, 2015	
Indicator	Value
Gross Regional Product	\$14,653,888,982
Total Personal Income	\$14,209,741,824
Total Employment	224,061
Number of Industries	348
Land Area (square miles)	1,308
Population	365,650
Total Households	154,119

REGION THREE: SOUTHWESTERN

The Southwestern Region includes climbing at Big Green, Panthertown Valley, and Whiteside Mountain. The economic model for this region is built around Brevard, Highlands, Cashiers, Sylva, and Franklin. **Table 1C** includes recent economic indicators for the Southwestern Region.

Table 1C

Economic Indicator Summary of Southwestern Region, 2015	
Indicator	Value
Gross Regional Product	\$2,244,840,007
Total Personal Income	\$2,410,639,656
Total Employment	43,243
Number of Industries	216
Land Area (square miles)	676
Population	70,977
Total Households	30,910

Economic Impact Categories

This study examines thirteen economic categories in each study region. Expenditures are also separated by visitors and residents in the analysis. These figures account for group size and represent individual expenditures for each visit. The figures are presented as a mean, or average, value.

Table 2A lists the mean expenditures per visit by climbers visiting western North Carolina. On average, expenditures are highest in the Central Region. This is logical, as this area includes Asheville.

Table 2A

Mean Expenditures Per Visit By Visitor Climbers			
Sector	Northeast	Central	Southwest
Lodging	\$24.14	\$45.80	\$15.86
Food & Drink at Restaurants	\$34.67	\$49.93	\$28.13
Food & Drink at Grocery Stores	\$20.21	\$27.62	\$13.98
Food & Drink at Gas Stations	\$6.43	\$5.52	\$4.37
Gasoline	\$25.05	\$31.24	\$24.42
Retail Purchases, Climbing Gear	\$5.76	\$16.45	\$1.49
Other Retail Purchases, Excluding Food	\$5.58	\$10.95	\$10.98
Rental Climbing Gear	\$0	\$1.10	\$0
Climbing Personal Guides	\$7.51	\$32.38	\$0
Personal Services	\$0.65	\$0.26	\$0.61
Rental Vehicles	\$0.27	\$2.34	\$0
Airplane Tickets	\$1.61	\$8.41	\$0
Taxi / Public Transport	\$0.67	\$0	\$0

Table 2B

Mean Expenditures Per Visit By Resident Climbers			
Sector	Northeast	Central	Southwest
Lodging	\$8.93	\$4.12	\$20.45
Food & Drink at Restaurants	\$24.08	\$24.36	\$17.95
Food & Drink at Grocery Stores	\$18.00	\$25.80	\$20.41
Food & Drink at Gas Stations	\$4.76	\$3.62	\$3.18
Gasoline	\$26.16	\$25.96	\$21.55
Retail Purchases, Climbing Gear	\$9.08	\$11.31	\$4.55
Other Retail Purchases, Excluding Food	\$4.99	\$7.19	\$6.36
Rental Climbing Gear	\$0	\$0	\$0
Climbing Personal Guides	\$11.99	\$5.15	\$0
Personal Services	\$1.52	\$0.88	\$0
Rental Vehicles	\$0	\$0	\$0
Airplane Tickets	\$0	\$0	\$0
Taxi / Public Transport	\$0.51	\$0.29	\$0

Likewise, **Table 2B** lists the mean expenditures per visit by climbers who reside in western North Carolina. Here, Northeast and Central Regions are similar and higher than expenditures in the Southwest Region.

Economic Impact Modeling

REGION ONE: NORTHEASTERN

Table 3A details the economic impact of visitor climbers in the Northeastern Region. Here, visiting climbers spend an estimated \$4.77 million annually. This estimate correlates with supporting 56 full-time jobs and over \$1 million in labor income across the direct, indirect, and induced impact levels. Most of these jobs are projected to be in restaurants, personal services, lodging, and retail sales. Visiting climbers support over \$2 million in business revenues (output) and over \$3 million to the study area’s gross regional product (value added).

Table 3A

Economic Impact Summary of Northeastern Region				
<i>Impact Type</i>	<i>Full-time Jobs Supported</i>	<i>Labor Income</i>	<i>Value Added</i>	<i>Output</i>
Direct	47	\$915,698	\$1,501,367	\$2,294,832
Indirect	4	\$114,908	\$206,033	\$481,191
Induced	5	\$172,997	\$320,674	\$618,203
<i>Total Effect</i>	56	\$1,203,603	\$2,028,074	\$3,394,226
<i>Estimates based on estimated annual visits of 36,000 and annual expenditures of \$4.77 million.</i>				

REGION TWO: CENTRAL

Table 3B details the economic impact of visitor climbers in the Central Region. In this region, visiting climbers spend an estimated \$8.35 million each year. This supports the presence of 97 full-time jobs and almost \$2.5 million in labor income. As in the Northeastern Region, jobs linked to climbing expenditures in the Central Region are projected to be in restaurants, personal services, lodging, and retail sales. Climbers also help generate an estimated \$4 million in business revenues and \$7.5 million in the gross regional product.

Table 3B

Economic Impact Summary of Central Region				
<i>Impact Type</i>	<i>Full-time Jobs Supported</i>	<i>Labor Income</i>	<i>Value Added</i>	<i>Output</i>
Direct	74	\$1,719,637	\$2,646,025	\$4,863,612
Indirect	11	\$333,722	\$596,154	\$1,254,544
Induced	12	\$423,934	\$763,257	\$1,404,798
<i>Total Effect</i>	97	\$2,477,293	\$4,005,436	\$7,522,954
<i>Estimates based on estimated annual visits of 36,000 and annual expenditures of \$8.35 million.</i>				

Economic Impact Modeling, Continued

REGION THREE: SOUTHWESTERN

Table 3C details the economic impact of visitor climbers in the Southwestern Region. In this region, visiting climbers spend an estimated \$728,000 dollars. This supports an estimated 15 jobs and \$395,000 in job income. Here, job growth is almost entirely based in restaurants and lodging. In the Southeastern Region, climbers help create an estimated \$763,000 in business revenues and contribute \$652,000 to the gross regional product.

Table 3C

Economic Impact Summary of Southeastern Region				
Impact Type	Full-time Jobs Supported	Labor Income	Value Added	Output
Direct	14	\$324,689	\$629,989	\$385,831
Indirect	0	\$18,028	\$32,785	\$74,918
Induced	1	\$52,922	\$100,967	\$191,331
Total Effect	15	\$395,640	\$763,741	\$652,080
Estimates based on estimated annual visits of 8,000 and annual expenditures of \$798,000.				

TAX GENERATION

Table 4 lists estimated taxation created by visitor climber expenditures across five common areas. In state taxes, climbers help create over half a million dollars in production taxes and \$105,000 in household taxes. At the Federal level, visiting climber expenditures generate \$407,000 in employee compensation taxes, \$252,000 in household taxes, and \$160,000 in corporate taxes.

Table 4

Annual Estimated Taxation Generated by Visitor Climbers					
Region	State Production Taxes	State Household Taxes	Federal Employee Comp. Taxes	Federal Household Taxes	Federal Corporate Taxes
Northeast	\$177,364	\$31,060	\$109,118	\$73,221	\$45,708
Central	\$310,547	\$64,432	\$250,089	\$155,483	\$95,667
Southwest	\$69,347	\$9,738	\$48,639	\$23,674	\$19,256
Totals	\$557,285	\$105,230	\$407,846	\$252,378	\$160,631

EXPENDITURES OF CLIMBERS WHO LIVE IN WESTERN NORTH CAROLINA

Table 5 includes estimates of local residents and their funds spent climbing in the NPNF. It is important not to mistake local residents who spend money climbing as economic impact as these funds are already present in the study area and are redirected from other potential expenditures in the study region. However, these amounts are worth noting. **Additionally, 95% of local residents who completed the survey indicated western North Carolina’s outdoor recreation opportunities was a factor in their decision to move to the state.**

Table 5

Annual Estimated Climbing Expenditures by Western North Carolina Residents	
Region	Annual Redirected Expenditures Estimate
Northeast	\$5,941,080
Central	\$5,868,720
Southwest	\$1,133,400
Estimates based on estimated annual visits of 54,000 (Northeastern and Central) and 12,000 (Southwestern) and mean expenditures for each region	

Demographics

Table 6 describes the demographics of all climber respondents in this study. Note that these statistics also include persons who may have been excluded from the economic impact study. The sample was 80% male. About 80% of the sample made \$30,000 or more in individual annual income. A notable 37% of the sample had more than a four year college degree. Over one in five respondents owned their own businesses, with almost 30% of those businesses being in outdoor recreation. Almost one in four described their job as being in the outdoor recreation industry. The most common age category was between 18 and 35. Although not listed on Table 6, the sample was largely white and non-Latino/Hispanic.

Table 6

Demographics of Sample			
<i>Variable Category</i>	<i>Variable</i>	<i># Of Cases</i>	<i>% Of Cases</i>
Sex	Male	275	80.5%
	Female	67	19.5%
Income	\$0 - \$19,999	36	10.9%
	\$20,000 - \$29,999	33	10.0%
	\$30,000 - \$49,999	92	27.8%
	\$50,000 - \$74,999	64	19.3%
	\$75,000 - \$99,999	46	13.9%
	Greater than \$99,999	60	18.1%
Education	Less than BA / BS	51	15.0%
	BA / BS	163	47.9%
	Greater than BA / BS	126	37.1%
Business owner?	Yes, I do.	75	22.3%
	No, I do not.	261	77.7%
Job in outdoor recreation?	Yes, it is.	84	24.5%
	No, it is not.	259	75.5%
Age	18 - 35	195	56.0%
	36 - 50	110	31.6%
	51 - 64	38	10.9%
	65 and up	5	1.4%
<i>Do Not Record or Not Sure responses are not reported or included in percentages.</i>			

OMISSIONS & CONSIDERATIONS

During the research process, the research team identified minor issues that should be noted. First, as with all 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, and person to person.

Second, the estimates in this report are framed around generalized expenditure categories. For example, lodging is distributed among campgrounds, cabins, and motels, but the survey made no distinction. Similarly, restaurants include full service (formal dining) and limited service (fast food) restaurants, but the survey made no distinction. Although economic impact studies often use this approach to save room on the survey, it may, nonetheless, be useful for future research to be more specific in these areas.

OMISSIONS & CONSIDERATIONS, CONTINUED

Third, this study does not take into account length of visit and how this may alter the economic impact of the mean expenditures per visit. On average, climbers in this study reported staying around three nights on their most recent trip to the NPNF to climb.

Fourth, this study uses data from an online survey to create economic impact measures. Online surveys are not as effective or as accurate as in-person field surveys. We advise conducting an in-person field study to validate the results of this preliminary study.

Fifth, the inclusion of taxes and fees paid in making purchases may inflate economic impact estimates. For example, renting a cabin for one night may cost \$100 plus \$30 in fees and taxes and be misreported as a \$130 lodging purchase in the survey.

STUDY TERMINOLOGY & ABBREVIATIONS

NPNF: Nantahala and Pisgah National Forests

Visitor: A person who has responded in the survey that they *are not* a resident of western North Carolina.

Resident: A person who has responded in the survey that they *are* a resident of western North Carolina.

ECONOMIC IMPACT TERMINOLOGY

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.