

THE ECONOMIC IMPACT OF OUTDOOR RECREATION IN BEAVERHEAD COUNTY

OCTOBER 2021



BUREAU OF BUSINESS AND
ECONOMIC RESEARCH
UNIVERSITY OF MONTANA

CONTENTS

Contents..... 1

Acknowledgements..... 2

Executive Summary..... 3

Introduction and Overview 10

Describing Hunting and Angling in Beaverhead County 11

The Economic Impact of Outdoor Recreation in Beaverhead County..... 21

Conclusion..... 26

Appendix 1: Policy Analysis With The Remi Model..... 27

ACKNOWLEDGEMENTS

The BBER would like to acknowledge the substantial assistance of the Montana Wildlife Federation and Montana Fish Wildlife and Parks for contributing to the data efforts of this study.

EXECUTIVE SUMMARY

Outdoor recreation in Beaverhead County spans a wide variety of activities, including big game hunting, upland game bird hunting, hiking, camping, rafting, mountain biking, and angling. The Beaverhead-Deerlodge National Forest is located within the county and is famous for big game such as elk, mule deer, white-tailed deer, bighorn sheep, black bear, moose, mountain goat and antelope. In particular, the relatively high concentration of elk in the region has made Southwest Montana one of the highest hunting use areas in the state¹. The abiding and ubiquitous presence of hunters, outfitters, anglers, and other outdoor enthusiasts in the sparsely populated county has made them so familiar that the economic impact of their activities can sometimes go unnoticed.

These activities are important for many reasons. For Montana residents, they are a fundamental aspect of the way of life in the state. For nonresidents, these activities are a major attraction and reason for visiting the state. Outdoor recreation sustains and improves the physical and mental health of those participating. When residents and nonresidents engage in outdoor recreation in Beaverhead County they also contribute to the fabric of the communities there.

Outdoor recreation, and particularly hunting and angling in Beaverhead County, is also an important piece of the economy. The spending of hunters and anglers, the spending of hunting and angling outfitters, and the increased population of the state that comes about because of the outdoor recreation activities all contribute to the income of businesses and governments that are not directly part of the outdoor recreation industry themselves. As this income is received and spent again, further economic activity is supported.

This study represents a comprehensive effort to assess the size of that total economic contribution. We have gathered and assembled data on the size and scope of measurable outdoor recreation in Beaverhead County. Reliable and detailed data on recreational activities that do not require a permit (such as hiking, camping, and rafting) are not available. We therefore necessarily restrict the remainder of this analysis to outdoor recreational activities in Beaverhead County that do require a permit, namely hunting and angling. The data available for these activities includes details on the type of recreation activity, the number of resident and nonresident days spent in that activity, and the amount of resulting local expenditures. We presented that information to an economic model to assess the (hypothetical) research question: what would the Montana economy look like if outdoor recreation in Beaverhead County did not exist? The model is used to represent all of the linkages between the spending and production of the industry and the rest of the state economy.

A comparison of this hypothetical “no outdoor recreation” economy to the actual economy gives a measure of the total contribution the existence of outdoor recreation in Beaverhead County makes to the overall economy of the state.

¹ Montana FWP, “The Economics of Big Game Hunting in Montana,” 2016.

Summary of Findings

Our principal finding is that the presences of outdoor recreation in Beaverhead County makes the Montana economy larger, more prosperous and more populous than would be the case in their absence.

Table 1: The Economic Impact of Outdoor Recreation in Beaverhead County: Summary

Category	Units	Impact
Total Employment.....	Jobs	1,451
Personal Income.....	\$ Millions	74.1
Disposable Personal Income.....	\$ Millions	66.7
Output.....	\$ Millions	167.2
Population	People	2,050

The activities of hunting and angling in Beaverhead County ultimately produce an economy with:

- 1,451 more jobs, spread across the state in a wide-ranging spectrum of industries. For comparative reference, the total population of Beaverhead County was 9,415 in 2019², and the total number of people employed in the county was 3,774 in 2020³;
- \$74 million more each year in income received by Montana households, with over \$66.7 million representing after tax income;
- \$167 million each year in additional output, or gross receipts to Montana businesses and non-business organizations, and
- More than 2,000 more people attracted and retained to live in our state.

There is a wealth of detail and variability that lies behind these summary findings. Characteristics, expenditures, products and services and physical locations of outdoor recreation are highly varied and the impacts reported in Table 1 reflect the impact of their operations as a total. Considerable insight can be obtained by examining different categories of outdoor recreation separately.

For this analysis we consider the most recent data from seven categories of hunting: elk, deer, antelope, moose, bighorn sheep, mountain goats, and upland game birds. We also include data on angling in the county. The number of hunter and anglers days by category are displayed in Table 2. It is important to note that the number of hunter and angler days displayed in Table 2 are point estimates taken from the

² U.S. Census, American Community Survey, 5-year estimate.

³ U.S. Bureau of Labor Statistics.

most recent, complete, and historically representative data from Montana Fish Wildlife and Parks. The daily expenditures by outdoor recreation category are shown in Table 3.

Table 2: Annual Number of Hunter and Angler Days by Category in Beaverhead County

Category	Resident	Nonresident
Elk	105,854	26,358
Deer	52,779	14,168
Antelope	6,976	594
Moose	774	19
Bighorn Sheep	52	0
Mountain Goat	53	0
Upland Game Birds	4,442	587
Lake Fishing	28,860	8,428
Stream Fishing	69,997	69,565

Table 3: Montana Daily Hunter & Angler Expenditures by Category⁴

Category	Resident	Nonresident
Elk	\$94.87	\$634.74
Deer	\$79.04	\$527.31
Antelope	\$113.62	\$727.08
Moose	\$172.86	\$500.30
Bighorn Sheep	\$154.77	\$1,077.78
Mountain Goat	\$251.96	\$1,306.91
Upland Game Birds	\$92.51	\$398.74
Lake Fishing	\$96.08	\$417.23
Stream Fishing	\$91.73	\$710.79

The impacts of outdoor recreation in Beaverhead County are primarily felt in Southwestern Montana, but the effects extend to every corner of the state. It is important to note that many – in fact, most – of the job impacts shown above are only indirectly connected with outdoor recreation itself. While the 64 jobs in the recreation industry included in this analysis are part of the totals shown in Table 1, there are also jobs that come about due to the spending, production, and income flows that propagate throughout the economy.

⁴ Montana FWP. Statewide Estimates of Resident and Nonresident Hunter and Angler Trip Related Expenditures in Montana. 2020.

These come about through three basic mechanisms:

- The spending of the outdoor recreation workers is received in the local economy as income, which in turn, supports other jobs which create more spending.
- The spending of the hunters and anglers themselves on hospitality, vendors, materials and services, including tax payments to state and local spending, supports jobs and further spending as those entities receiving payment employ workers and pay their own vendors.
- The migration of people towards job opportunity ultimately grows the population, creating new demand for goods and services and bringing talent to our state.

Table 4: Employment Impacts

Industry	Impact
Construction.....	83
Finance and Real Estate.....	84
Retail Trade.....	155
Transportation and Warehousing.....	47
Professional and Technical Services.....	53
Administrative and Waste Services.....	44
Health Care and Social Assistance.....	64
Utilities.....	5
Accommodation and Food Services.....	509
Other Services, except Public Administration.....	42
Other Private.....	222
Government.....	141
TOTAL.....	1,451

Some of these mechanisms can be seen at work from a more detailed breakdown of the employment impacts of outdoor recreation in Beaverhead County by major industry groupings, as shown in Table 4. Some of the job impacts shown above reflect, in part, the employment in the recreation industry itself. But many categories in the table, such as Accommodation and Food Service, Retail Trade and Government, have substantial employment impacts without any direct connection to employment in the outdoor recreation industry.

This illustrates the manner in which spending spreads through the economy. The additional people and the additional spending create more demand for a wide spectrum of seemingly unrelated industries, including restaurants, construction and health care. Also note the industry impacts coming from state and especially local government, the latter driven by increased demand for local services including K-12 education.

The larger economy that comes about because of the presence of outdoor recreation has more income as well. Much of that increase is tied directly to employment, but the gains in dollars received by Montana households – personal income – is larger than the gain in income that comes from earnings.

This is apparent from Table 5, which details the impacts that the presence of outdoor recreation in the economy has on the separate components of personal income. As the table shows, the biggest component of the nearly \$67 million increase in annual personal income that occurs because of outdoor recreation is accounted for by the \$48.3 million increase in net earnings. But while smaller, the \$15.2 million gain in property income – consisting of dividends, interest and rent – is not insubstantial. It shows how the increased size of the economy is reflected in more people and more prosperity, which involves more income from things other than jobs.

Table 5: Personal Income Impacts

Category	Impact
Total Earnings by Place of Work	57.1
Total Wage and Salary Disbursements	41.3
Supplements to Wages and Salaries	11.8
Employer contributions for employee pension and insurance funds	7.4
Employer contributions for government social insurance	4.4
Proprietors' income with inventory valuation and capital consumption adjustments	4.0
Less:	
Contributions for government social insurance	8.6
Employee and self-employed contributions for government social insurance	4.2
Employer contributions for government social insurance	4.4
Plus:	
Adjustment for residence	(0.2)
Gross In	1.9
Gross Out	2.1
Equals:	
Net earnings by place of residence	48.3
Plus:	
Property Income	15.2
Dividends	5.5
Interest	6.8
Rent	2.9
Plus:	
Personal Current Transfer Receipts	10.7
Equals:	
Personal Income	74.1
Less:	
Personal Current Taxes	7.4
Equals:	
Disposable Personal Income	66.7

Table 6: Compensation Impacts

Category	Units	Impact
Wages and Salaries.....	\$ Millions	41.3
Compensation.....	\$ Millions	53.1
Earnings.....	\$ Millions	57.1
Earnings per Job, New Jobs.....	\$ Dollars	\$39,369

New jobs average \$39,369 for each new job created in the state economy because of hunting and angling in Beaverhead County. That is about 6 percent lower than the state average of \$41,789 in earnings per job. The slightly lower than average earnings occur in part because of the comparatively low pay of jobs at in the tourism and hospitality industries.

Finally, we note that an economy with the job opportunities supported directly and indirectly by the activities of outdoor recreation in Beaverhead County is also an economy with more people. This reflects the attraction of investment, workers and their (current or future) families toward economic opportunity.

Table 7: Population Impacts

Age Cohort	Impact
Ages 0-14.....	516
Ages 15-24.....	246
Ages 25-64.....	1,225
Ages 65+.....	63
Total.....	2,050

We estimate that about 2,050 more people live in the state because of the presence of outdoor recreation in Beaverhead County. As a point of comparison, this is more than 20 percent of the 9,415 populating the county itself. These additional people increase demand for products and services, including public services. Note from Table 7 that many of the additional people are school-aged children,

who can be expected to increase demand for K-12 education. This has helped stabilize school systems challenged by falling class sizes.

Thousands of outdoor recreationists visit Beaverhead County from all over the world each year. Hunters and anglers are more connected to the communities they visit than many other tourists. Yet it is still useful to get the “big picture” on how they collectively impact the economy of the state as a whole. As this report makes clear, their contributions are significant.

INTRODUCTION AND OVERVIEW

Outdoor recreation has been part of the fabric of the Montana economy for longer than we have been a state. Its footprint is significant in industries that are central to the state's economy, including tourism and hospitality, retail trade, and government. While its presence is most notable in Montana's rural communities, it is an important economic driver in urban areas as well.

The long-standing presence of outdoor recreationists in cities and communities across the state has at times made their impact less visible to the general public. Yet they are responsible for thousands of jobs, millions of dollars of income and investment, and the stability and viability of community members who do business with them. Assessing and presenting the economic contributions made by these recreation activities to the Montana economy is a useful way of highlighting their importance.

About This Study

This study was conducted by the Bureau of Business and Economic Research at the University of Montana (BBER) for the Montana Wildlife Federation (MWF). The principle author of this report is Brandon Bridge, Ph.D., BBER economist.

Research Approach

BBER has conducted an analysis that addresses the research question – what would the economy of the state look like if outdoor recreation in Beaverhead County did not exist? The question is clearly hypothetical – no conceivable policy could (or should) make this event actually occur. Rather it is a way of highlighting how the activities of outdoor recreationists connect with the rest of the economy.

When one (hypothetically) removes the sales, production, employment and income of outdoor recreation from the economy, the reduction in economic activity is much larger than those employed in the outdoor industry itself, since the spending of the recreationists is received as income for other businesses and governments within their communities and in the state. Thus, the activity of outdoor recreation supports many jobs and livelihoods beyond those with a direct connection to the industry itself.

Our approach to this research involves constructing two scenarios for the economy. The first is a baseline, status-quo projection where no changes are made. The second is a “no outdoor recreation” scenario where the spending, production, sales and employment of outdoor recreation is subtracted from the economy. In the second case, the economy comes to a new equilibrium, or resting point, as other jobs and activities in the rest of the economy adjust to the absence of the outdoor recreation. The difference between the economic activity actually observed and this “no outdoor recreation” scenario is the total economic contribution of outdoor recreation in Beaverhead County.

Since this “no outdoor recreation” Beaverhead County economy cannot be directly observed, it must be constructed by means of an economic model. BBER uses its policy analysis model, leased from Regional Economic Models, Inc. (REMI) and constructed explicitly for this purpose, to conduct this analysis. The REMI model is a well-known, well-respected tool for economic analysis that has been used in hundreds of studies and is the subject of dozens of peer-reviewed scholarly articles.

DESCRIBING HUNTING AND ANGLING IN BEAVERHEAD COUNTY

The paragraphs that follow present a descriptive analysis of the number of hunter and angler days, along with their associated expenditures, in Beaverhead County. These tables below display this data by hunting and angling area/district.

Daily Expenditures by Hunters and Anglers

Montana Fish Wildlife and Parks conducted a baseline expenditure survey of resident and nonresident hunting and fishing license holders in Montana in 2014. The resulting estimated average daily expenditures by group were updated in 2020 to account for the inflation occurring between 2014-2020. The estimates from that survey are displayed in Table 8. These trip-related expenditures include spending on all goods and services related to their hunting and angling activities. These include: gasoline, car rental, airfare, other transportation costs, food, beverages, lodging, equipment purchased for the trip, and access and/or guide fees. These expenditures do not include the costs of their license or any durable consumer goods such as rifles, fishing reels, boots, boats, and other durable fishing and hunting equipment.

Table 8: Daily Hunter and Angler Expenditures by Residency⁵

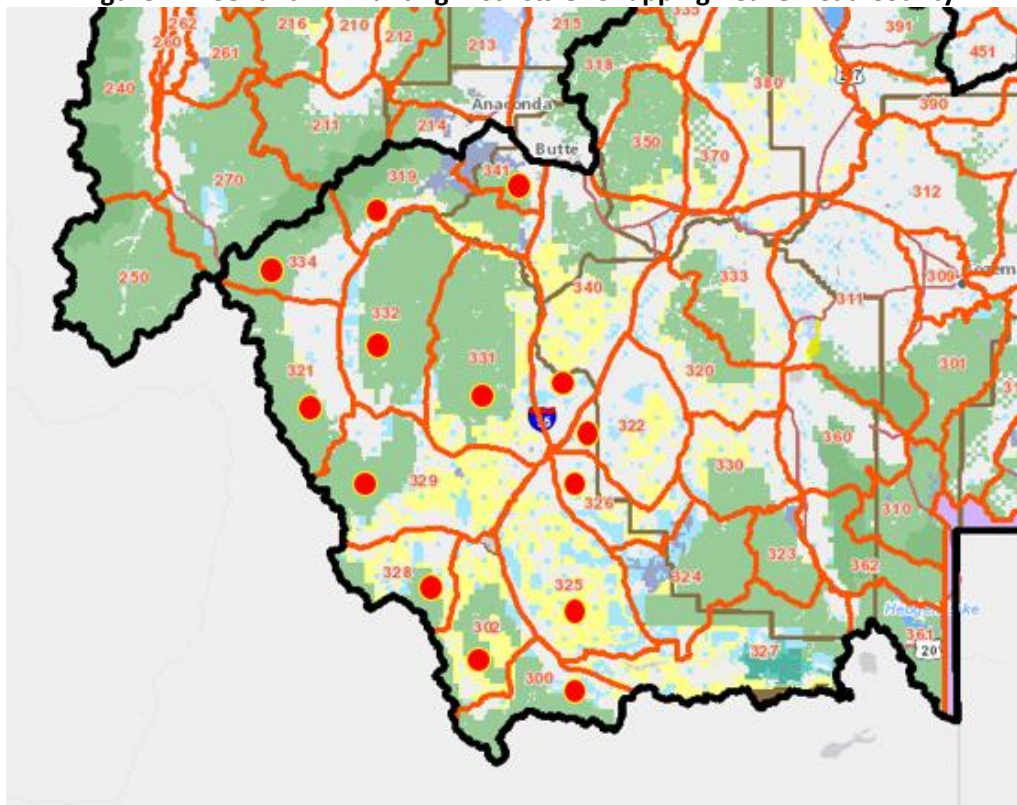
Category	Resident	Nonresident
Elk	\$94.87	\$634.74
Deer	\$79.04	\$527.31
Antelope	\$113.62	\$727.08
Moose	\$172.86	\$500.30
Bighorn Sheep	\$154.77	\$1,077.78
Mountain Goat	\$251.96	\$1,306.91
Upland Game Birds	\$92.51	\$398.74
Lake Fishing	\$96.08	\$417.23
Stream Fishing	\$91.73	\$710.79

⁵ Montana FWP. Statewide Estimates of Resident and Nonresident Hunter and Angler Trip Related Expenditures in Montana. 2020.

Elk Hunting in Beaverhead County

There are 14 deer and elk hunting districts that overlap the geographical territory of Beaverhead County. These are highlighted by the red dots in Figure 1, and will be the focal points of both the deer and elk hunting expenditure estimates that follow.

Figure 1: Deer and Elk Hunting Districts Overlapping Beaverhead County



The number of elk hunter days by residency status, and their ensuing expenditures are detailed in Table 9 below. The number of elk hunter days by residency were multiplied by the elk hunting expenditure figures shown in Table 8 above to arrive at total expenditures by elk hunters, detailed by hunting district in Table 9. In a representative year, the 14 elk hunting districts focused on see over 105,000 hunter days by Montana residents and over 26,000 hunter days by nonresidents. The total expenditures by these hunters in a given year add up to over \$26 million spent in the county, which is the largest expenditure group among big game hunters.

Table 9: Elk Hunter Days and Expenditures by District

District	Resident Days	Nonresident Days	Resident Expenditures (\$)	Nonresident Expenditures (\$)	Total Expenditures (\$)
300	8,018	3,472	760,668	2,203,817	2,964,485
302	5,814	2,444	551,574	1,551,305	2,102,879
319	10,895	1,390	1,033,609	882,289	1,915,897
321	4,992	1,623	473,591	1,030,183	1,503,774
322	4,431	1,372	420,369	870,863	1,291,232
325	9,947	3,097	943,672	1,965,790	2,909,462
326	3,509	1,416	332,899	898,792	1,231,691
328	3,915	1,179	371,416	748,358	1,119,775
329	9,336	3,138	885,706	1,991,814	2,877,520
331	10,812	2,329	1,025,734	1,478,309	2,504,044
332	6,646	1,895	630,506	1,202,832	1,833,338
334	3,992	854	378,721	542,068	920,789
340	17,613	1,427	1,670,945	905,774	2,576,719
<u>341</u>	<u>5,934</u>	<u>722</u>	<u>562,959</u>	<u>458,282</u>	<u>1,021,241</u>
TOTALS	105,854	26,358	\$10,042,369	\$16,730,477	\$26,772,846

Deer Hunting in Beaverhead County

Table 10 below displays the number of deer hunter days by residency status, and their ensuing expenditures. The number of deer hunter days by residency were multiplied by the deer hunting expenditure figures shown in Table 8 above to arrive at total expenditures by deer hunters, detailed by hunting district in Table 10. In a representative year, the 14 deer hunting districts focused on see over 52,000 hunter days by Montana residents and over 14,000 hunter days by nonresidents. The total expenditures by these hunters in a given year add up to over \$11 million spent in the county.

Table 10: Deer Hunter Days and Expenditures by District

District	Resident Days	Nonresident Days	Resident Expenditures (\$)	Nonresident Expenditures (\$)	Total Expenditures (\$)
300	2,211	716	174,757	377,554	552,311
302	2,143	1,536	169,383	809,948	979,331
319	2,562	310	202,500	163,466	365,967
321	2,107	326	166,537	171,903	338,440
322	4,300	1,531	339,872	807,312	1,147,184
325	6,036	2,397	477,085	1,263,962	1,741,048
326	2,528	827	199,813	436,085	635,898
328	911	536	72,005	282,638	354,644
329	3,290	1,762	260,042	929,120	1,189,162
331	8,434	1,731	666,623	912,774	1,579,397
332	2,561	781	202,421	411,829	614,251
334	1,387	433	109,628	228,325	337,954
340	10,706	1,125	846,202	593,224	1,439,426
<u>341</u>	<u>3,623</u>	<u>157</u>	<u>286,362</u>	<u>82,788</u>	<u>369,150</u>
TOTALS	52,799	14,168	\$4,173,233	\$7,470,928	\$11,644,161

Antelope Hunting in Beaverhead County

There are eight antelope hunting districts that overlap the geographical territory of Beaverhead County. These are highlighted by the red dots in Figure 2, and will be the focal points of the antelope hunting expenditure estimates that follow.

Figure 2: Antelope Hunting Districts Overlapping Beaverhead County

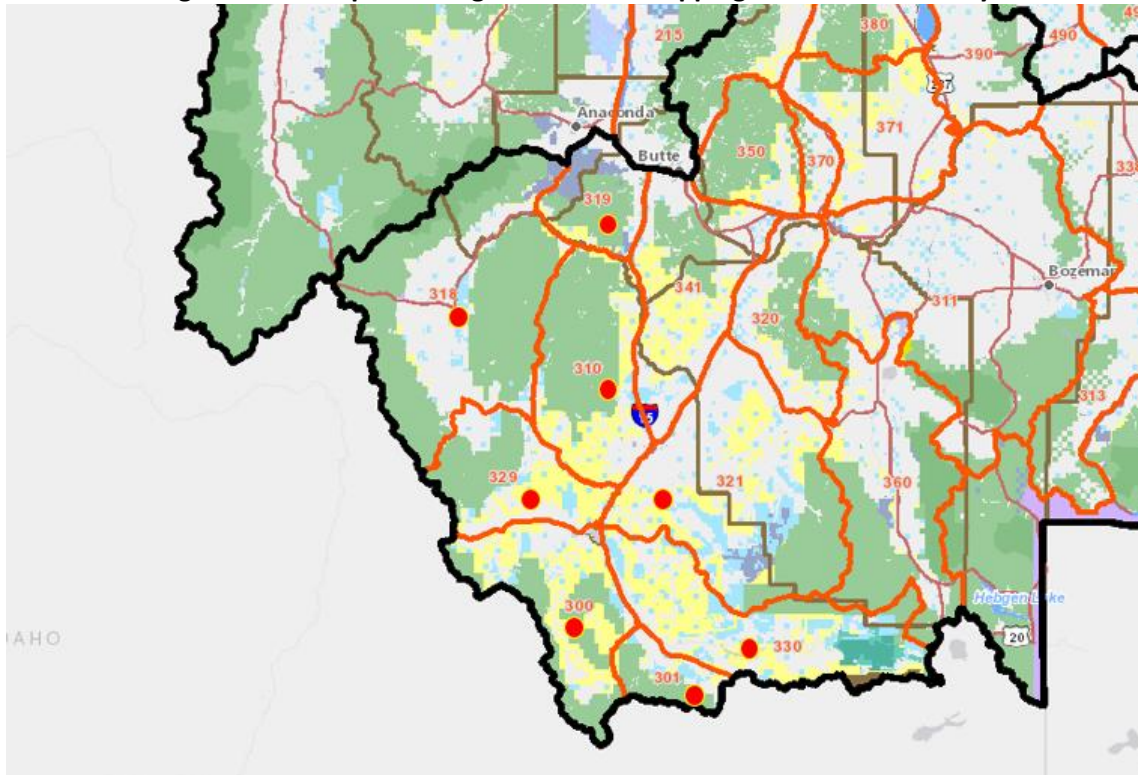


Table 11 below displays the number of antelope hunter days by residency status, and their ensuing expenditures. The number of antelope hunter days by residency were multiplied by the antelope hunting expenditure figures shown in Table 8 above to arrive at total expenditures by antelope hunters, detailed by hunting district in Table 11. In a representative year, the eight antelope hunting districts focused on see almost 7,000 hunter days by Montana residents and about 600 hunter days by nonresidents. The total expenditures by these hunters in a given year add up to over \$1 million spent in the county.

Table 11: Antelope Hunter Days and Expenditures by District

District	Resident Days	Nonresident Days	Resident Expenditures (\$)	Nonresident Expenditures (\$)	Total Expenditures (\$)
300	879	102	99,872	74,162	174,034
301	122	6	13,862	4,362	18,224
310	896	71	101,804	51,623	153,426
318	593	42	67,377	30,537	97,914
319	439	6	49,879	4,362	54,242
321	1,515	149	172,134	108,335	280,469
329	471	51	53,515	37,081	90,596
<u>330</u>	<u>2,061</u>	<u>167</u>	<u>234,171</u>	<u>121,422</u>	<u>355,593</u>
TOTALS	6,976	594	\$792,613	\$431,886	\$1,224,499

Moose Hunting in Beaverhead County

There are 11 moose hunting districts that overlap the geographical territory of Beaverhead County. These are highlighted by the red dots in Figure 3, and will be the focal points of the moose hunting expenditure estimates that follow.

Figure 3: Moose Hunting Districts Overlapping Beaverhead County

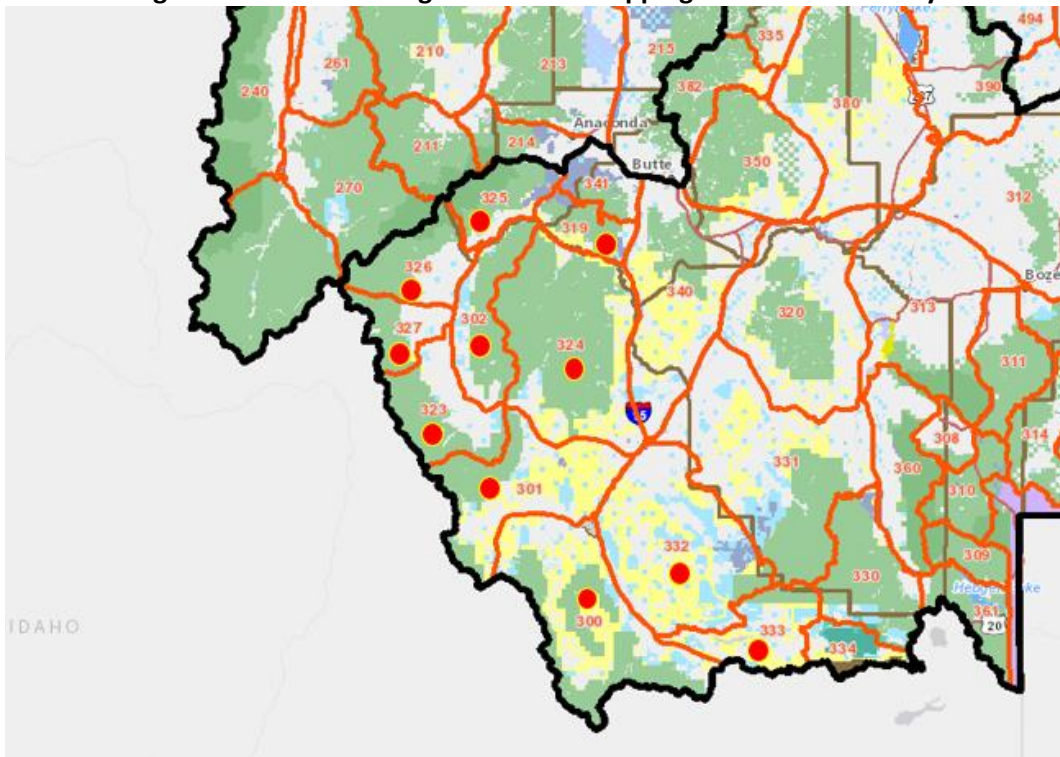


Table 12 below displays the number of moose hunter days by residency status, and their ensuing expenditures. The number of moose hunter days by residency were multiplied by the moose hunting expenditure estimates shown in Table 8 above to arrive at total expenditures by moose hunters, detailed by hunting district in Table 12. In a representative year, the 11 moose hunting districts in Beaverhead County provide over 700 hunter days by Montana residents and about 20 hunter days by nonresidents. The total expenditures by these hunters in a given year add up to over \$140,000 spent in the county.

Table 12: Moose Hunter Days and Expenditures by District

District	Resident Days	Nonresident Days	Resident Expenditures (\$)	Nonresident Expenditures (\$)	Total Expenditures (\$)
300	142	-	24,546	-	24,546
301	49	-	8,470	-	8,470
302	58	-	10,026	-	10,026
319	32	-	5,532	-	5,532
323	154	-	26,620	-	26,620
324	141	7	24,373	3,502	27,875
325	57	-	9,853	-	9,853
326	44	-	7,606	-	7,606
327	9	-	1,556	-	1,556
332	69	12	11,927	6,004	17,931
<u>333</u>	<u>19</u>	<u>-</u>	<u>3,284</u>	<u>-</u>	<u>3,284</u>
TOTALS	774	19	\$133,794	\$9,506	\$143,299

Bighorn Sheep and Mountain Goat Hunting in Beaverhead County

In addition to elk, deer, and moose, there is also bighorn sheep and mountain goat hunting in Beaverhead County. The hunting expenditures and the resulting economic impact from these two types of game are quite small, but they are discussed here. There are two bighorn sheep hunting districts and two mountain goat hunting districts that overlap the geographical territory of Beaverhead County. The most recent estimates of hunter days in these districts did not include any nonresident hunter days for either species.

Table 13 and Table 14 below display the number of bighorn sheep and mountain goat hunter days by residency status, and their ensuing expenditures. The number of hunter days by residency were multiplied by the hunting expenditure estimates by game type as shown in Table 8 above to arrive at total expenditures by sheep and goat hunters, detailed by hunting district in Table 13 and Table 14. In a representative year, the two hunting districts in Beaverhead County provide 52 bighorn sheep hunter days and 53 mountain goat hunter days by Montana residents. The total expenditures by these hunters in a given year add up to about \$21,000 spent in the county.

Table 13: Bighorn Sheep Hunter Days and Expenditures by District

District	Resident Days	Nonresident Days	Resident Expenditures (\$)	Nonresident Expenditures (\$)	Total Expenditures (\$)
330	15	-	2,321	-	2,321
340	37	-	5,726	-	5,726
TOTALS	52	-	\$8,048	\$-	\$8,048

Table 14: Mountain Goat Hunting Days and Expenditures by District

District	Resident Days	Nonresident Days	Resident Expenditures (\$)	Nonresident Expenditures (\$)	Total Expenditures (\$)
312	29	-	7,307	-	7,307
331	24	-	6,047.04	-	6,047
Totals	53	-	\$13,354	\$-	\$13,354

Upland Game Bird Hunting in Beaverhead County

Table 15 below displays the number of upland game bird hunter days by residency status, and their ensuing expenditures. The number of upland game bird hunter days by residency were multiplied by the upland game bird hunting expenditure estimates shown in Table 8 above to arrive at total expenditures by upland game bird hunters in Table 15. In a representative year, Beaverhead County provides over 4,000 hunter days by Montana residents and almost 600 hunter days by nonresidents. The total expenditures by these hunters in a given year add up to over \$645,000 spent in the county.

Table 15: Upland Game Bird Hunting

Area	Resident Days	Nonresident Days	Resident Expenditures	Nonresident Expenditures	Total Expenditures
Beaverhead County	4,442	587	\$410,966	\$234,165	\$645,131

Angling in Beaverhead County

There are three fishing management drainages that overlap the geographical territory of Beaverhead County. They are the Red Rock River drainage, the Beaverhead River drainage, and the Big Hole River drainage. These are shown in the southwest corner of Figure 4 (drainage numbers 11, 13, and 14), and will be the focal points of the angling expenditure estimates that follow.

Figure 4: Fishing Districts in Montana⁶

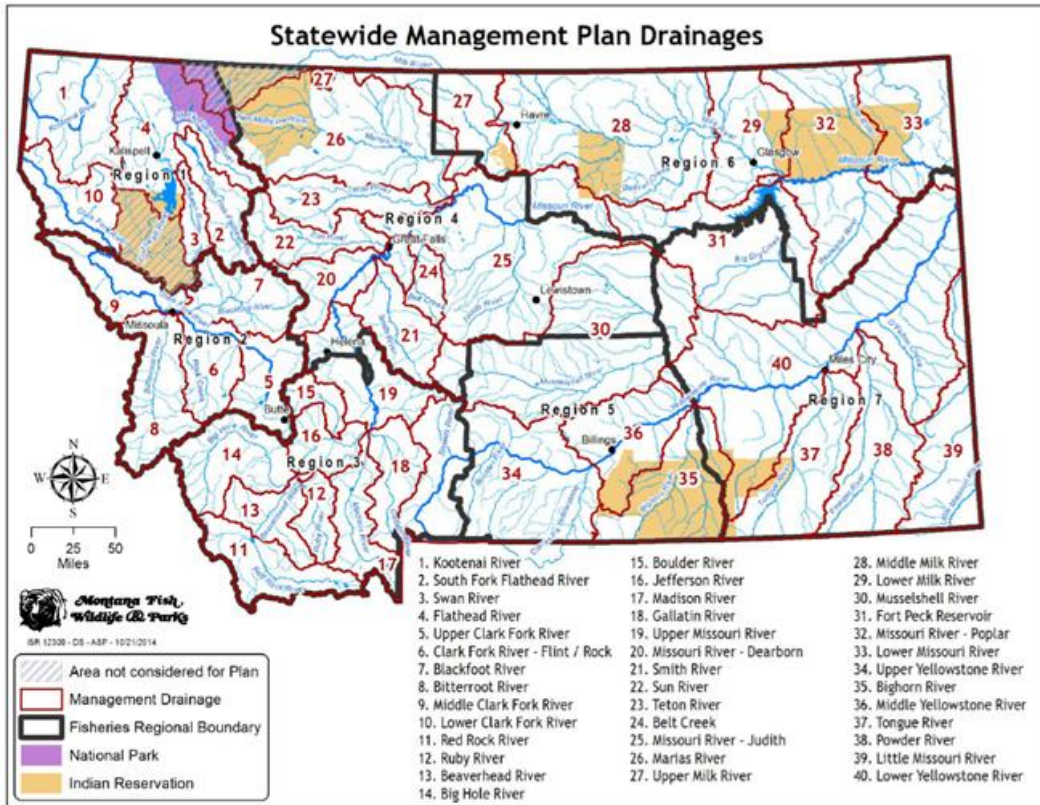


Table 16 and Table 17 below display the number of angler days in Beaverhead County by residency status, and their ensuing expenditures. Table 16 breaks down angler days and expenditures for lake fishing and Table 17 does the same for stream fishing. The number of angler days by residency were multiplied by the lake and stream fishing expenditure estimates shown in Table 8 above to arrive at total expenditures by anglers in Beaverhead County.

In a representative year, Beaverhead County provides almost 29,000 lake fishing days by Montana residents and over 8,000 lake fishing days by nonresidents. The total expenditures by these lake fishers in a given year add up to over \$6 million spent in the county. Table 17 shows that stream fishing in Beaverhead County accounts for a much greater degree of expenditures from outdoor recreation than

⁶ Source: Montana FWP, Montana Statewide Angling Pressure, 2019, Summary Report.

lake fishing. We can see that the county provides for almost 70,000 angler days for residents and the same for nonresidents, totaling almost \$56 million in stream fishing expenditures in a representative year. This is notably more than all big game hunting expenditures combined.

Table 16: Lake Fishing Days and Expenditures by District

District	Resident Days	Nonresident Days	Resident Expenditures (\$)	Nonresident Expenditures (\$)	Total Expenditures (\$)
Red Rock	16,866	7,935	1,620,485	3,310,720	4,931,205
Beaverhead	1,571	0	150,941	0	150,941
Big Hole	10,423	493	1,001,441	205,694	1,207,136
TOTALS	28,860	8,428	\$2,772,868	\$3,516,414	\$6,289,283

Table 17: Stream Fishing Days and Expenditures by District

District	Resident Days	Nonresident Days	Resident Expenditures (\$)	Nonresident Expenditures (\$)	Total Expenditures (\$)
Red Rock	1,703	6953	156,216	4,942,122	5,098,339
Beaverhead	12,222	15,516	1,121,124	11,028,617	12,149,741
Big Hole	56,072	47,096	5,143,484	33,475,365	38,618,850
TOTALS	69,997	69,565	\$6,420,824	\$49,446,406	\$55,866,931

THE ECONOMIC IMPACT OF OUTDOOR RECREATION IN BEAVERHEAD COUNTY

Outdoor recreation is a vital aspect of the way of life in Montana. It is a primary reason that many residents call Montana home, and it is a main driver of tourism and tourism dollars in the state. Beaverhead County, while having a relatively small resident population, is situated in a part of the state that provides ample outdoor recreational activities. In particular, it is very productive county for hunting and angling. Its natural beauty and large fish and wildlife populations makes it an attractive destination for hunters and anglers from Montana and around the world. In a given year, Beaverhead County is home to over 380,000 combined hunter and angler days from residents and nonresidents. The presence of this outdoor recreation in the economy can be expected to be felt widely.

The principal findings of this report, presented in the section, confirm that expectation. The results of our analysis show that the presence of outdoor recreation in Beaverhead County produces a significantly larger, more prosperous, and more populous economy that would occur in their absence.

Specifically, we find that an economy with the outdoor recreational activities taking place in Beaverhead County ultimately produces an economy that has:

- 1,451 additional permanent, year-round jobs which are ultimately supported by the spending of those engaged in outdoor recreation;
- About \$74 million each year in additional income received by Montana households, of which more than \$66 million is after-tax income, available for spending elsewhere in the economy;
- An increase in the gross receipts of business and non-business organizations across the economy of \$167 million per year, and
- More than 2,000 additional people, as workers and their families are attracted to and retaining in Montana due to expanded economic opportunities.

Table 18: The Economic Impact of Outdoor Recreation in Beaverhead County: Summary

Category	Units	Impact
Total Employment.....	Jobs	1,451
Personal Income.....	\$ Millions	74.1
Disposable Personal Income.....	\$ Millions	66.7
Output.....	\$ Millions	167.2
Population	People	2,050

These impacts represent permanent, ongoing contributions to the state economy. They represent the comparison between the actual economy, which includes outdoor recreation, with an artificially constructed, “no outdoor recreation” scenario of the economy which removes outdoor recreation employment and spending.

The outcomes summarized in Table 18 mask a wealth of detail that yields insights into how the activities of outdoor recreation in Beaverhead County ultimately make the economy larger. We now turn to a more complete examination of those impacts.

Employment Impacts

There are 1,451 jobs in Montana that ultimately owe their existence to the presence of outdoor recreation in Beaverhead County. As can be seen from Table 19, most of the jobs in the larger total are in industries with no direct connection to the outdoor recreation industry. They ultimately come about because of the spending flows within the economy that are induced.

Table 19: Employment Impacts

Industry	Impact
Construction.....	83
Finance and Real Estate.....	84
Retail Trade.....	155
Transportation and Warehousing.....	47
Professional and Technical Services.....	53
Administrative and Waste Services.....	44
Health Care and Social Assistance.....	64
Utilities.....	5
Accommodation and Food Services.....	509
Other Services, except Public Administration.....	42
Other Private.....	222
Government.....	141
TOTAL.....	1,451

Consider, for example, the more than 80 construction jobs created in the economy due to the operations of outdoor recreation in Beaverhead County. Some of these jobs are linked to the outdoor recreation business operations. But most come about because higher population and higher incomes induce more building on residential, commercial and municipal projects.

The breadth of employment impacts across major industry categories is apparent from the Table. Significant job impacts can be found in categories such as accommodation and food service, retail trade, and government. This spread across sectors helps illustrate the propagation of spending across the economy set in motion by the spending flows of the hunters and anglers in Beaverhead County.

Personal Income Impacts

The increase in income that Montana households receive because of the activities of outdoor recreation in Beaverhead County reflects more than the higher employment those activities support. As Table 20 shows, almost every source of income is larger in an economy that contains outdoor recreation.

Table 20: Personal Income Impacts

Category	Impact
Total Earnings by Place of Work	57.1
Total Wage and Salary Disbursements	41.3
Supplements to Wages and Salaries	11.8
Employer contributions for employee pension and insurance funds	7.4
Employer contributions for government social insurance	4.4
Proprietors' income with inventory valuation and capital consumption adjustments	4.0
Less:	
Contributions for government social insurance	8.6
Employee and self-employed contributions for government social insurance	4.2
Employer contributions for government social insurance	4.4
Plus:	
Adjustment for residence	(0.2)
Gross In	1.9
Gross Out	2.1
Equals:	
Net earnings by place of residence	48.3
Plus:	
Property Income	15.2
Dividends	5.5
Interest	6.8
Rent	2.9
Plus:	
Personal Current Transfer Receipts	10.7
Equals:	
Personal Income	74.1
Less:	
Personal Current Taxes	7.4
Equals:	
Disposable Personal Income	66.7

The bulk of the nearly \$67 million in annual personal income that occurs because of the presence of outdoor recreation in Beaverhead County is due to the more than \$48 million increase in net earnings. The latter represents income from employment. Clearly, in an economy with more jobs there is more earnings, and the impacts shown in Table 20 reflect that.

But there are significant impacts on income that come from other sources. Two are shown in the table. Transfer receipts are payments from government and businesses for which no service is performed. These include social security payments, some retirement payments, and welfare programs such as the Supplemental Nutritional Assistance Program (SNAP, formerly known as Food Stamps). Property income includes dividends, interest, royalties and rent. Both of these sources of income are higher because of outdoor recreation as well, simply because there is more wealth and more people in the economy.

Output Impacts

Economic output in this study is defined as gross receipts to businesses and non-business organizations, with the exception of businesses in retail and wholesale trade, where markup is used instead. This measure captures the “business” in terms of sales that companies and other organizations can expect to see because of the presence of outdoor recreation in the economy. It is distinct from (and significantly larger than) value added, which nets out costs from this top line revenue measure.

The impact of outdoor recreation on economic output in Beaverhead County is roughly \$167 million each year. Roughly 24 percent of this output (\$39.6 million) comes from the accommodations and food service industry, which makes sense given the amount of hunting and angling expenditures in this industry.

Table 21: Output Impacts (millions of dollars)

Industry	Impact
Construction.....	12.4
Telecommunications.....	0.2
Finance and Real Estate.....	19.1
Retail Trade.....	17.3
Transportation and Warehousing.....	9.9
Professional and Technical Services.....	7.6
Administrative and Waste Services.....	4.0
Health Care and Social Assistance.....	8.9
Utilities.....	1.5
Accommodation and Food Services.....	39.6
Other Services, except Public Administration.	3.3
Other Private.....	27.2
Government.....	16.3
TOTAL.....	167.2

Aside from the large output impacts associated with accommodation and food services, the output impacts by industry show a spread of impacts across a wide range of industries. As was the case with employment impacts, many of these industries have no direct connection to outdoor recreation themselves. Examining these impacts gives a different perspective on how outdoor recreation in Beaverhead County act to make the statewide economic pie bigger.

Population Impacts

An important mechanism at work in explaining the nature and the size of outdoor recreation’s economic impacts is population migration. Simply put, workers ultimately respond to changes in economic opportunities, even if those responses take time. When job and earnings opportunities improve, more people are retained who might have otherwise left, in addition to people from other areas being attracted. The result is an increase in population that brings its own economic effects.

Some portion of the impacts shown thus far are due to population changes. More people translate into higher demand for goods and services, particularly government services. These contribute to the overall impact of outdoor recreation.

These impacts are of special importance because of the prominence of rural areas in Beaverhead County, where in some instances population decline has put pressure on basic services, including hospitals and schools. The presence of outdoor recreation in the economy thus acts as a stabilizing force.

The age structure of the population impacts due to outdoor recreation is also relevant. Migration is dominated by working aged people and their families, including their present and future children. Thus, the population impacts by age, as shown in Table 22, contain a sizable fraction of school-aged children. This is a special significance for the viability of institutions including K-12 schools.

Table 22: Population Impacts

Age Cohort	Impact
Ages 0-14.....	516
Ages 15-24.....	246
Ages 25-64.....	1,225
Ages 65+.....	63
Total.....	2,050

CONCLUSION

The total contribution any sector of the economy makes to the whole can be assessed by assessing how the economy would look in its absence. While this is an artificial exercise, it illustrates and quantifies the connections in spending, income, production and employment that ultimately support economic activity beyond the sector itself.

Beaverhead County's outdoor recreational activities share close connections to the communities adjacent to which they take place. Those connections make what those businesses do and where they do it of special importance, and combine to create a substantial economic impact.

This section has presented the main findings of this study, addressing the basic research question posed by this report. That is, what would the economy of Montana look like if the outdoor recreation from hunting and angling taking place in Beaverhead County did not exist?

Our finding is that the activities of outdoor recreation in Beaverhead County makes the economy significantly larger, more prosperous and more populous. The more than 1,400 jobs, the \$74.1 million in annual personal income, the \$167.2 million in economic output every year, and the 2,050 additional people in Montana that exist because of their operations is vivid testimony to the substantial economic benefits their presence brings.

APPENDIX 1: POLICY ANALYSIS WITH THE REMI MODEL

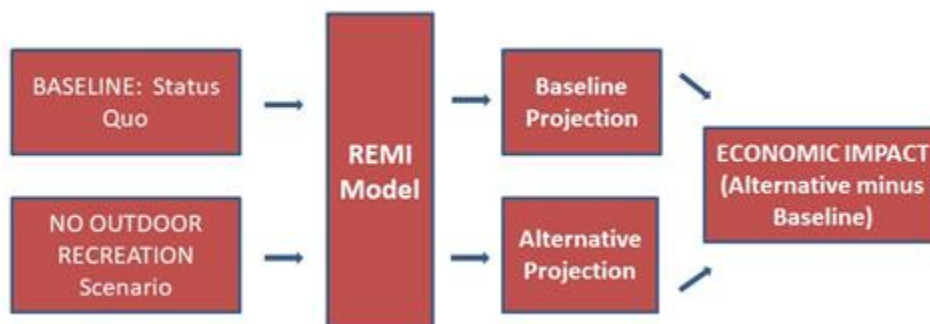
Regional economic impacts occur because of events or activities that create new expenditures within a region. “New spending” constitutes spending that is over and above existing expenditures, and which does not displace other spending elsewhere in the region. It not only adds to economic activity in its own right, but also induces further spending when the recipients of wages, sales, and tax revenues spend portions of their income in the local economy. Changes in the paths of investment, migration, prices, and wages are also possible.

This study utilized an economic model, calibrated to represent the interactions specific to the Montana economy, to estimate the economic impacts resulting from outdoor recreation in Beaverhead County. Leased from Regional Economic Models, Inc., the REMI model is one of the best known and most respected analytical tools in the policy analysis arena, and has been used in more than 100 previous studies as well as in dozens of peer-reviewed articles in scholarly journals. It is a state-of-the-art econometric forecasting model that incorporates dynamic feedbacks between economic and demographic variables. The REMI model forecasts employment, income, expenditures, and populations for counties and regions based on a model containing over 100 stochastic and dynamic relationships, as well as a number of identities. A full explanation of the design and operation of the model can be found in Treyz (Treyz, 1993).

The REMI Modeling Methodology

The basic approach of using the REMI model to produce the results for this study is illustrated in Figure 5, below. The analysis started with a baseline projection for the Montana economy, using the status quo assumption that outdoor recreation in Beaverhead County continues to operate at current levels. Next, the analysis employed the REMI model a second time, simulating an alternative scenario where the outdoor recreation in Beaverhead County and its associated economic activity are absent from the Montana economy.

Figure 5. Policy Analysis Using the REMI Model

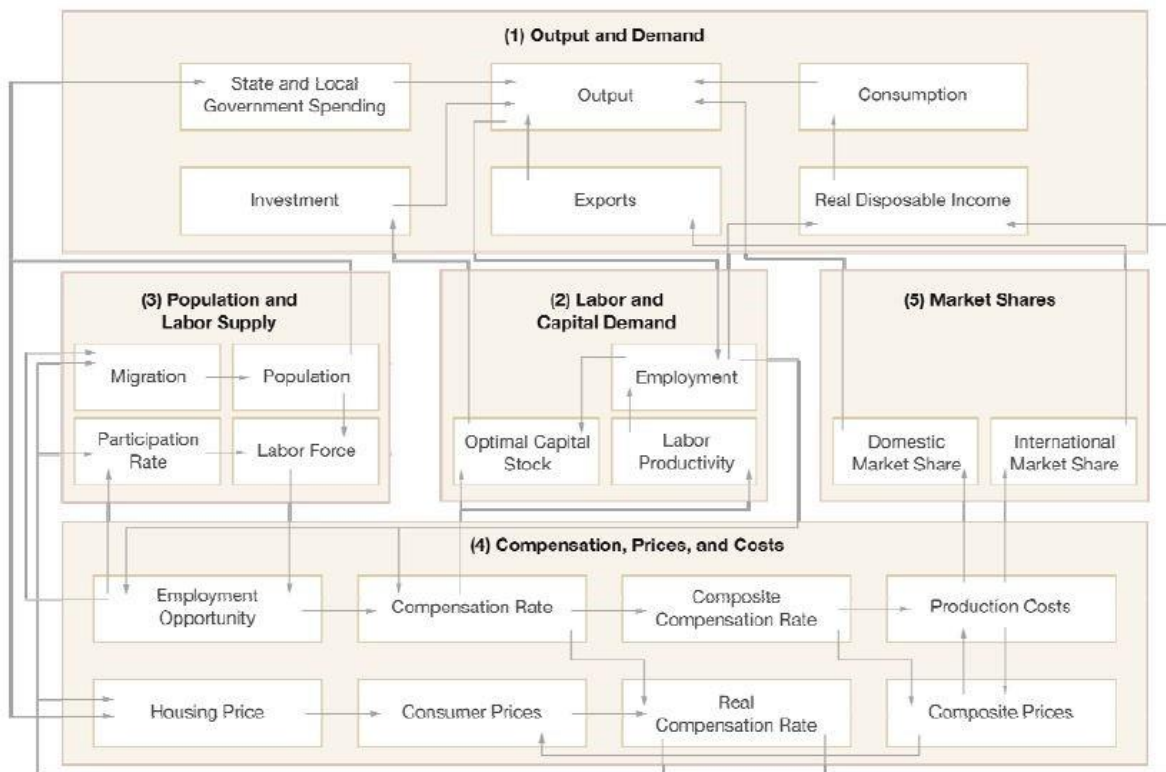


The difference between the baseline scenario and the simulated scenario constitutes the magnitude of the impact of outdoor recreation in Beaverhead County on the state economy, and represents the gains the state is experiencing due to its operation.

The differences in production, labor demand, and intermediate demand associated with the absence of outdoor recreation in Beaverhead County impact these blocks, causing them to react to the changes and adjust to a new equilibrium. This new equilibrium constitutes the alternative scenario referred to above—the absence of outdoor recreation in Beaverhead County.

The REMI model utilizes historical data on production, prices, trade flows, migration, and technological advances to calibrate the relationship between five basic blocks of the state economy: 1) Output and Demand; 2) Labor and Capital Demand; 3) Population and Labor Supply; 4) Compensation, Prices and Costs; and 5) Market Shares. These linkages are shown in Figure 6, below.

Figure 6: Schematic Model of REMI Linkages



The underlying philosophy of the REMI model is that regions throughout the country compete for investments, jobs, and people. When events occur in one region, they set off a chain reaction of events across the country that causes dollars to flow toward better investment and production opportunities, followed over time by workers and households toward better employment opportunities and higher wages. The REMI model consists of an 82-sector input/output matrix that models the technological inter-dependence of production sectors of the economy, as well as extensive trade and capital flow data. Together, these components enable the estimates of the shares of each sector's demand that can be met by local production. Simplified illustrations of the schematic model in Figure 6 are provided on the following pages, in Figures 7 through 11.

Figure 7. Output Linkages

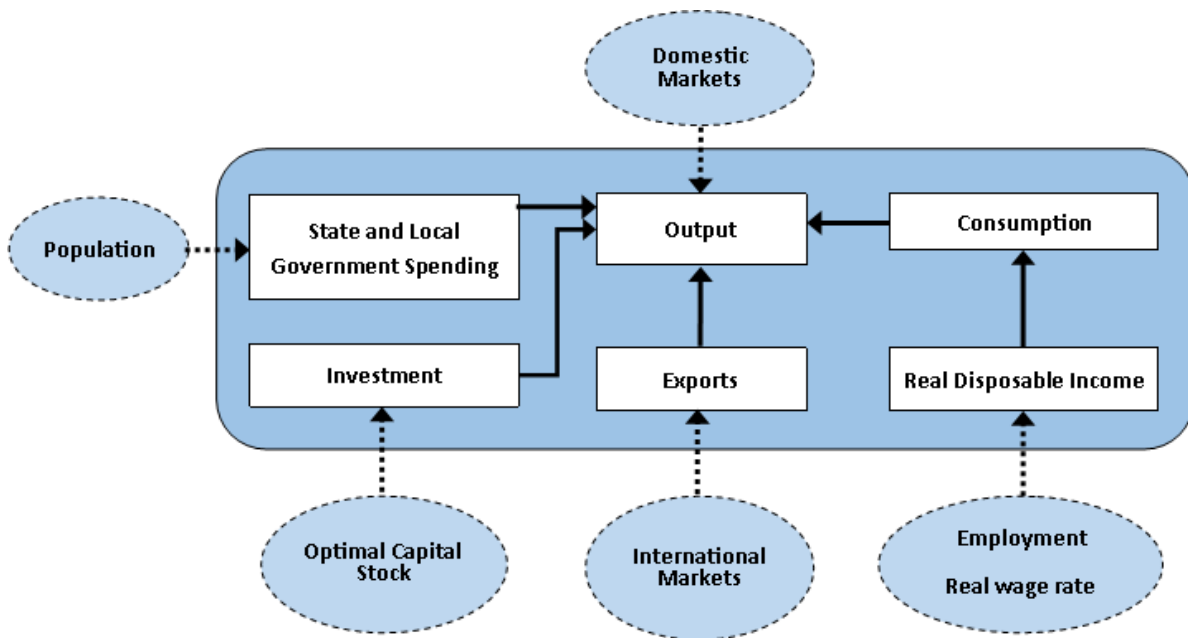


Figure 8. Labor and Capital Demand Linkages

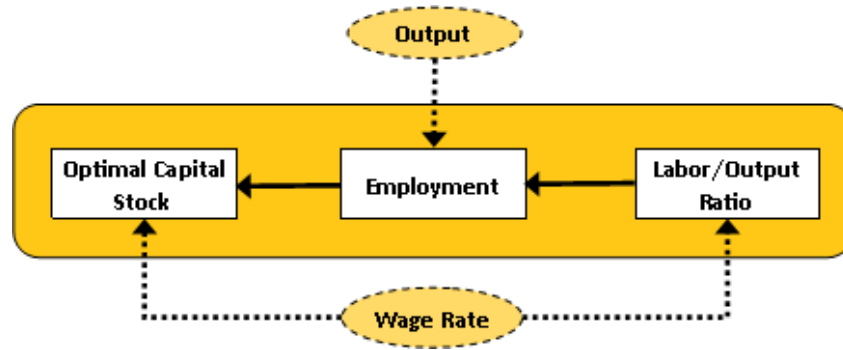


Figure 9. Demographic Linkages

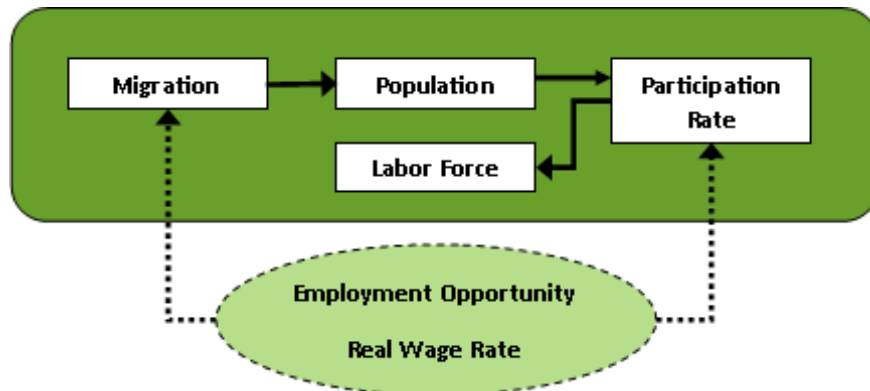


Figure 10. Wages, Prices and Production Costs Linkages

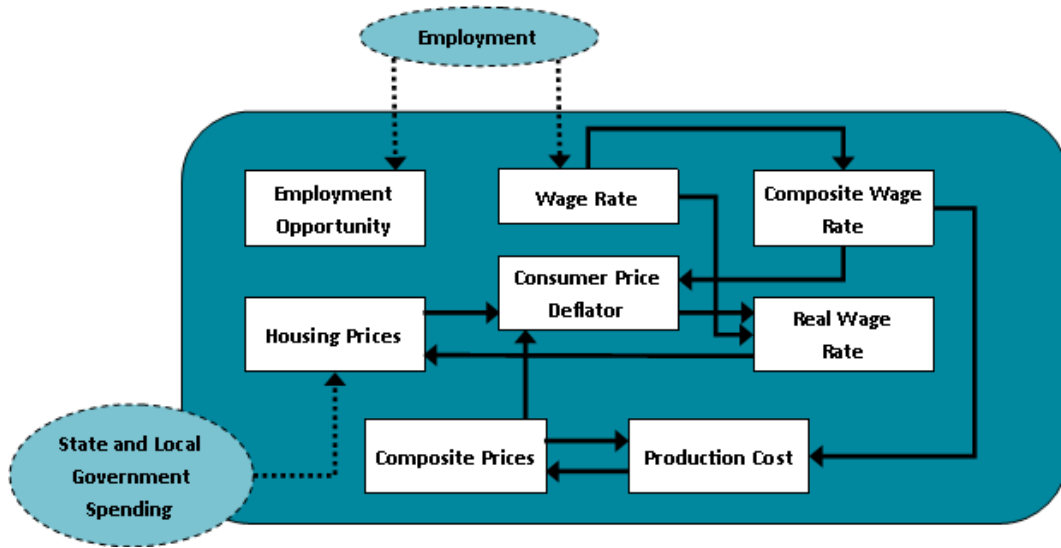
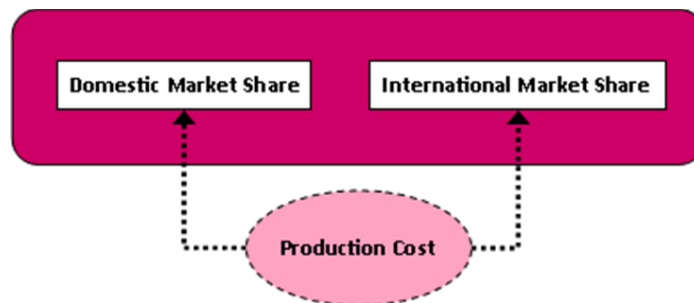


Figure 11. Market Share Linkages



As powerful and flexible as this tool is, the output it provides is only as good as the inputs provided. The majority of the work for this study was to carefully craft the inputs used to construct a scenario for the economy that faithfully represents all of the events, income flows, and the direct and indirect impacts that would not occur in the absence of outdoor recreation in Beaverhead County.