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Economic Contributions of Big Game Hunting in Wyoming

Produced For:

Cody Country Outfitters & Guides Association
Jackson Hole Outfitters & Guides Association
Lake Superior SCI Chapter
Realtree
Sublette County Outfitters & Guides Association
Wyoming County **Commissioner's Association**
Wyoming Outfitters & Guides Association
Wyoming Game Wardens Association

Dubois Outfitters & Guides Association
Jim Conrad
NE Michigan SCI Chapter
Safari Club International
Wyoming Office of Tourism
Wyoming Stock Growers Association
Wyoming Game & Fish Commission
Wyoming Hunter Defense Fund



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Wyoming Stock Growers Association
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Wyoming Outfitters & Guides Association
Wyoming Game & Fish Commission
Wyoming Game Wardens Association
Wyoming Hunter Defense Fund

WYOGA and Southwick Associates appreciate the generosity of these organizations. Southwick Associates is responsible for all report content.

Executive Summary

This study was commissioned to determine the economic contributions generated by resident and non-resident big game hunters in Wyoming. Drawing from license sales records and custom resident and non-resident surveys, this report provides details for all hunters combined, plus separately for residents, guided non-residents and unguided non-residents.

Wyoming hosted over 119,000 big game hunters in 2015, of which 37% were non-residents. (Table E1).

Table E1. Participation and spending by big game hunters in Wyoming in 2015

	Resident Licensed Big Game Hunters	Licensed Nonresident Big Game Hunters			All Hunters
		Guided	Unguided	Total	
Total Number of Hunters	74,577	10,523	33,921	44,444	119,021
% of All Big Game Hunters	63%	9%	29%	37%	

These big game hunters spent \$224 million on equipment, supplies, travel, guides and other services in Wyoming, generating significant economic returns benefitting all state residents. If big game hunters did not spend these dollars in Wyoming, the state economy would lose 3,100 jobs, \$85.6 million in income and local and state tax revenues would fall \$28.2 million. Overall, total economic activity – measured by the dollars that change hands in-state – would shrink by \$303.6 million. (Table E2).

Table E2. **Total economic effect of big game hunting on Wyoming's economy in 2015**

Retail Sales and Economic Contributions	Resident Hunters	Nonresident Hunters			TOTAL, Residents + Non-Residents Unguided
		Guided	Unguided	Total	
Retail Sales	\$137,437,641	\$53,969,862	\$32,701,718	\$86,604,698	\$224,042,338
Total Economic Contribution	\$179,938,941	\$77,097,934	\$46,551,198	\$123,649,132	\$303,588,073
Salaries and Wages	\$49,465,331	\$20,830,102	\$15,257,262	\$36,087,364	\$85,552,695
Jobs	1,523	910	667	1,577	3,100
State & Local Taxes	\$13,570,190	\$11,941,784	\$2,710,796	\$14,652,581	\$28,222,771

The economic returns vary based on residence and type of big game hunting. As shown above, residents spend 61% of big game-associated dollars. However, the greatest impacts are generated by non-residents. **With 37% of the State's licensed hunters and only 39% of all big game hunting retail sales, non-residents generate 41% of the economic activity, 51% of the jobs and 52% of the tax receipts.** This is because non-resident hunters spend a higher percentage of

their dollars on travel-related items. A greater proportion of travel-related dollars stay in-state, changing hands between businesses multiple times before exiting the state unlike dollars associated with equipment sales.

When comparing guided and unguided non-resident big game hunters, the impacts are also quite different. The typical guided non-resident hunter spends 5.3 times more annually in Wyoming than unguided non-resident hunters, creating 4.5 times more jobs per hunter and 14 times more in local and state tax revenues. Compared to resident hunters, guided non-resident big game hunters create 4.5 times more jobs per hunter even though they hunt fewer days per year, and 6.2 times more local and state tax revenues even though they spend only 2.8 times more annually in-state.

The economic impacts are even greater, recognizing many visiting hunters bring non-hunting spouses, friends and other companions with them. Overall, 9% of guided non-resident big game hunters brought non-hunters with them, and 7% of unguided big game non-resident hunters did so. The typical guest of these non-resident hunters spent \$1,020 in-state, while \$203 was spent **for each unguided visitor's guest. In total, this represents \$1,442,458 in additional spending for Wyoming.** Considering \$11.4 million was spent by non-hunting guests accompanying resident hunters, Wyoming experiences an additional \$12.8 million in retail sales which increases big game hunting's economic impact as reported above by 5.8%.

A bigger economic benefit from big game hunting not often considered is the number of real estate transactions generated by resident and non-resident hunters wanting to gain access to big game hunting, plus the number of businesses relocated to Wyoming by their owners wanting better access to big game hunting. In total, \$138.7 million has been spent in recent years by **Wyoming's 2015 licensed big game hunters for real estate in-state**, with \$63.6 million of this attributable to non-resident big game hunters, both guided and unguided. The total payroll generated annually in-state from **businesses who were relocated by Wyoming's current resident and non-resident big game hunters** is roughly \$243 million, nearly equal to the total amount spent annually in-state for all big game hunting activities, making big game hunting a major economic development contributor in Wyoming.

Big game hunting provides income to landowners as well in the form of access payments provided by guides and outfitters. In 2015, \$9.5 million was received by Wyoming landowners as payment for allowing access to their property, with \$8.1 million or 85% attributable to guided non-resident big game hunters.

In conclusion, the economic contributions from big game hunting are substantial in Wyoming. Various allocations of hunting privileges will impact the economic health of the communities serving hunters. Future license allocations can best serve state residents when the economic contributions per hunter, especially from visiting hunters, are carefully considered along with all other factors and benefits associated with hunting in Wyoming.

Introduction

This study quantifies the total economic contributions of big game hunting in Wyoming that occurred between June 2015 and July 2016, which covers primarily the 2015 hunting season. These impacts include not only the jobs and other benefits directly generated by big game hunters, but also the “ripple effects” (indirect effects) created as hunters’ dollars are spent and re-spent through the state economy. Reported variables include:

Participation: total numbers of hunters, days of hunting and recent trends.

Spending – total spending by residents and non-residents, including all equipment, services, travel, second homes, taxidermy, processing, licensing and more.

Jobs – total Wyoming jobs that would disappear if big game hunting ceased.

Tax revenues – all forms of tax revenue received by state and local governments.

Salaries, wages and business profits– total paychecks in Wyoming created by big game hunting activities, paid to employees and owners of mostly local and small businesses.

Total economic activity – the total level of economic activity generated by big game hunters. Another way of looking at this number is, if big game hunting ceased and those dollars **weren’t spent within the state, this is how much the overall state economy would shrink.**

Landowners’ income – the revenues received by licensed and non-licensed landowners directly from state access programs.

The goal of the study is to communicate the magnitude of spending by big game hunters and their associated contributions to the Wyoming economy and inform discussions among legislators, agency personnel and other stakeholders to assist with strategic decision-making regarding wildlife resources. The contributions associated with big game hunting are a powerful economic engine for communities across Wyoming, generating additional spending, supporting and creating jobs, and building future investments in communities, open spaces and wildlife areas.

Approach and Results

The general process employed for producing **Wyoming's big game hunting** participation, spending and economic impact results is presented in this section. Additional details can be found in the appendices, including:

Appendix A: Methodology for estimating economic contributions

Appendix B: Explanation of economic contribution

Three big game hunting measures (participation, spending and estimated economic contribution) are provided for resident and non-resident big game hunters separately and in total. Total participation and average spending per person are reported separately, but are then combined to estimate total big game spending in Wyoming. These spending estimates were then applied to Wyoming-specific economic models to determine the economic contributions associated with big game hunting. Separate analyses were conducted for residents and non-residents. Specific steps and findings follow.

All resident and non-resident data were obtained via online surveys conducted in October and November, 2016. The surveys were distributed to licensed hunters via lists supplied by the Wyoming Game and Fish Department. Names of hunters who purchased big game licenses were selected randomly, with 11,497 resident and 11,298 non-resident big game hunters drawn. After three rounds of survey distribution, considering undeliverable addresses and requests to unsubscribe, 2,215 resident and 1,940 non-resident surveys were received, yielding response rates of 19% and 12% respectively. Of these, nearly half of the resident surveys contained conflicting responses and were deemed unusable, for a net of 1,113 usable surveys. For non-residents, 1,327 usable surveys were netted. Eliminating surveys with conflicting responses helps ensure quality results. Surveys were fielded by Southwick Associates using in-house online survey software built on the SurveyGizmo platform. Surveys were distributed in confidence, assuring **anonymity for all recipients'** identities and responses.

Participation

Hunting license data for Wyoming resident and non-resident big game hunters provided counts for the overall number of participants. Survey data were used to estimate their average annual spending. The survey asked all respondents to report their days of big game hunting in 2015, with additional information collected on the percent of residents and non-residents pursuing specific species in Wyoming.

In all, 119,021 hunters purchased big game licenses in Wyoming for the 2015 season. Of these, 63% were residents and 37% were non-residents. Of non-resident big game hunters, 24% used guides and outfitters while the rest hunted on their own. Of all Wyoming big game hunters, guided non-residents represent 9%. Table 1 lists details about their total and average trips and days of hunting.

Table 1. Participation, Days and Trips

		Resident Hunters	Non-resident Hunters		
			Guided	Unguided	Total
Total Number of Hunters		74,577	10,523	33,921	44,444
Hunting Trips to Wyoming	Per Hunter	n/a	1.3	1.3	1.3
	Total	n/a	13,426	45,213	58,639
Total Days Stayed in Wyoming	Per Hunter	n/a	10.0	8.6	9.0
	Total	n/a	105,008	293,038	398,046
Total Days Hunted Big Game in Wyoming	Per Hunter	12.8	4.5	5.2	5.1
	Total	954,992	47,358	177,561	224,943

Overall, the typical resident hunter who responded to the survey hunted nearly 13 days for big game in the 2015 season, while the typical non-resident hunter spent 9 days in state, and hunted 5.1 of these days. There are differences between non-residents who did and did not use guides. The typical guided non-resident hunter spent 10 days in Wyoming and hunted 4.5 of these days. By comparison, the typical unguided non-resident hunter spent less time in the state, staying only 8.6 days and hunting 5.1 days.

Interest levels in various big game and other species varies. Elk is the most targeted species by resident and guided non-resident hunters. Antelope and mule deer are preferred by unguided non-resident hunters. Mule and whitetail deer hold less interest among guided visitors to Wyoming compared to residents and unguided hunters.

Table 2. Species Targeted in 2015 by Resident and Non-Resident Big Game Hunters

Species	% of Resident Big Game Hunters Pursuing Each	% of Non-resident Big Game Hunters Pursuing Each		
		<i>Guided</i>	<i>Unguided</i>	<i>Total</i>
Antelope	26.3%	31.2%	43.5%	40.6%
Deer (mule deer or white-tailed deer)	60.1%	27.5%	40.0%	37.1%
Elk	75.9%	50.0%	25.3%	31.2%
Upland game birds and/or waterfowl	24.9%	0.6%	1.9%	1.6%
Big horn sheep, mountain goat	0.3%	0.8%	0.0%	0.2%
Black bear	5.5%	1.7%	0.5%	0.8%
Mountain lion	2.1%	1.9%	0.3%	0.7%
Bison	0.7%	1.4%	0.1%	0.4%
Turkey	8.5%	4.6%	3.7%	3.9%
Moose	1.3%	0.6%	0.2%	0.3%
Small game	19.5%	0.4%	2.1%	1.7%
Trapping	1.2%	0.0%	0.0%	0.0%
Falconry	0.0%	0.0%	0.1%	0.1%
Other not listed here	0.5%	1.0%	0.2%	0.4%
<i>N</i>	<i>1,113</i>	<i>443</i>	<i>1,497</i>	<i>1,940</i>

Spending

Statewide average expenditure profiles for big game hunting were constructed based upon **responses to the surveys' detailed spending questions**. The average spending per hunter was then matched with the total number of hunters as provided by the Wyoming Game and Fish Department. In total, big game hunting generated \$224 million in retail spending in Wyoming in 2015.

While only **representing 37% of Wyoming's 119,021 big game hunters**, non-residents provided Wyoming with 63% of all travel dollars associated with big game hunting (Table 3). These are dollars received by lodge operators, motels, restaurants, gas stations, grocery stores, guides **and outfitters and other businesses supporting hunters' travel needs**. Among all non-resident big game hunters, guided visitors spend 64% of all travel-related dollars, even though they only represented 24% of all licensed non-resident big game hunters. The typical guided non-resident big game hunter spent \$3,623 on guides and outfitters in 2015, and when their total spending in Wyoming is included, they spent over five times more per hunter than unguided non-residents (Table 4). Including equipment, non-residents spend 39% of all dollars associated with big game hunting in Wyoming, and 85% of all big game guide and outfitter fees. In total, outfitters and guides received \$45,435,629 from resident and non-resident big game clients in 2015.

Table 3. Total Spending by Itemized Category for Residents and Non-Residents

Spending Categories	Residents	Non-residents			All Big Game Hunting
		Guided	Unguided	Total	
Commercial transportation	\$4,626,309	\$4,990,622	\$4,569,393	\$9,509,908	\$14,136,218
Other transportation costs	\$12,970,958	\$1,901,014	\$6,421,511	\$8,323,036	\$21,293,995
Groceries	\$9,033,352	\$943,013	\$3,834,037	\$4,777,381	\$13,810,733
Restaurants and bars	\$3,903,413	\$1,268,000	\$3,564,140	\$4,830,731	\$8,734,144
Lodging	\$2,319,997	\$2,083,324	\$4,548,655	\$6,619,139	\$8,939,137
Equipment rental	\$525,831	\$279,630	\$825,479	\$1,104,881	\$1,630,711
Fees paid to landowners	\$460,257	\$808,332	\$2,648,278	\$3,456,781	\$3,917,038
Heating/cooking fuel, ice, etc.	\$2,926,317	\$205,064	\$1,007,640	\$1,212,464	\$4,138,781
Other items	\$2,599,875	\$525,171	\$1,337,185	\$1,859,285	\$4,459,161
Guides/Outfitters	\$7,140,706	\$38,294,923	\$0	\$38,294,923	\$45,435,629
Total Travel Spending:	\$46,507,016	\$51,299,094	\$28,756,318	\$79,988,530	\$126,495,546
Ammunition	\$4,966,439	\$51,008	\$158,355	\$209,364	\$5,175,803
Firearms & bows	\$7,555,665	\$34,837	\$220,522	\$255,359	\$7,811,025
Optics	\$9,729,233	\$97,013	\$164,778	\$261,791	\$9,991,024
Binoculars, cameras	\$2,800,035	\$53,941	\$46,361	\$100,302	\$2,900,337
Clothing	\$4,241,195	\$194,239	\$366,641	\$560,881	\$4,802,076
Other hunting gear	\$3,328,389	\$62,812	\$235,640	\$298,452	\$3,626,841
ATV, trailer, accessories	\$13,523,368	\$3,223	\$66,692	\$69,915	\$13,593,283
Boat, motor, trailer, accessories	\$438,346	\$6,217	\$8,651	\$14,867	\$453,213
Travel trailer, motor home, etc.	\$8,721,968	\$0	\$1,839	\$1,839	\$8,723,807
Motor vehicle	\$20,518,031	\$0	\$13,764	\$13,764	\$20,531,794
Maps	\$806,807	\$31,433	\$211,694	\$243,127	\$1,049,933
Repair of hunting equipment	\$1,424,723	\$18,449	\$140,503	\$158,952	\$1,583,676
Taxidermy	\$3,970,331	\$865,714	\$519,640	\$1,385,354	\$5,355,685
Meat processing and/or shipping	\$3,948,332	\$1,146,633	\$1,283,972	\$2,430,605	\$6,378,937
Camping equipment	\$1,739,412	\$29,315	\$151,129	\$180,445	\$1,919,856
Hunting dogs	\$1,230,594	\$1,604	\$0	\$1,604	\$1,232,198
Books, magazines,	\$436,845	\$7,653	\$39,787	\$47,440	\$484,286
Other hunting-related equipment	\$1,550,911	\$66,675	\$315,432	\$382,107	\$1,933,018
Total Equipment Spending:	\$90,930,625	\$2,670,767	\$3,945,400	\$6,616,168	\$97,546,792
Total Travel + Equipment =	\$137,437,641	\$53,969,862	\$32,701,718	\$86,604,698	\$224,042,338

Significant differences are seen when looking at hunters on a per-day or per-trip basis. While comprising only 24% of all non-residents, guided hunters spend over five times more while in Wyoming compared to unguided visitors (Table 4). Compared to resident hunters, guided visitors spend 178% more annually. Looking at per-day spending, the average non-resident spends 6% more annually than residents on travel-related items and can only match 12% of the **average resident's equipment spending. However, among non-residents**, those who use a guide or outfitter spend 6.2 times more than unguided visitors.

Table 4. Total Spending, Spending per Hunter and Spending per Day

Spending Categories	Resident	Non-resident		
	Total	Guided	Unguided	Total
# Hunters	74,577	10,523	33,921	44,444
Total Spending:				
Total Trip Spending:	\$46,507,016	\$51,299,094	\$28,756,318	\$79,988,530
Total Equipment Spending:	\$90,930,625	\$2,670,767	\$3,945,400	\$6,616,168
Total Spending:	\$137,437,641	\$53,969,862	\$32,701,718	\$86,604,698
Per Hunter:				
Trip Spending per Hunter:	\$623.61	\$4,874.73	\$847.76	\$1,799.76
Equipment Spending per Hunter:	\$1,219.29	\$253.79	\$116.31	\$148.87
Total Spending per Hunter:	\$1,842.90	\$5,128.52	\$964.07	\$1,948.63
Per Day:				
Trip Spending per Day:	\$48.70	\$1,083.21	\$161.95	\$355.59
Equipment Spending per Day	\$95.22	\$56.39	\$22.22	\$29.41
Total Spending per Day	\$143.91	\$1,139.60	\$184.17	\$385.01

Economic Contributions

The direct spending made by resident and non-resident big game hunters cycles through the state economy generating additional rounds of spending by businesses and individuals who receive these dollars. This is known as the multiplier effect and includes indirect contributions arising from additional spending by businesses supporting those enterprises frequented by big game hunters, as well as the contributions resulting from household spending by employees of affected businesses. **The total economic contributions reflect the sum of hunters' direct** as well as indirect expenditures and the induced effect. These many rounds of spending cease when **the hunters' dollars leave the state economy** or when the successive rounds of spending become too small to measure. More information appears in the appendices.

The economic contributions are estimated using the IMPLAN input-output modeling system. This system allows for the development of economic models **unique to Wyoming's big game** hunting economy. Five types of economic activity are reported:

Retail Sales – these include expenditures made by big game hunters for equipment, travel expenses and services over the course of the 2015 season.

Total Economic Contribution – **also known as “total output” or “total multiplier effect,” this measure reports the total activity in the economy generated by big game hunters’** retail purchases. Another way to look at this figure is, if big game hunting was to disappear and participants did not spend their money elsewhere, the Wyoming economy would contract by this amount.

Salaries & Wages – this figure reports the total salaries and wages paid in all sectors of the economy as a result of big game hunting. These are not just the paychecks of those employees directly serving hunters or manufacturing their goods, it also includes portions of the paychecks of, for example, truck drivers who deliver food to the restaurants and accountants who manage the books for companies down the supply chain, etc.

Jobs – much like Salaries and Wages, this figure reports the total jobs in all sectors of the **economy as a result of big game hunters’ spending**. These are not just the employees directly serving recreationists or manufacturing their goods, they also include, for example, the truck driver who delivers food to the restaurants serving recreationists and accountants who manage the books for companies down the supply chain, etc.

Tax Revenue: All local and state taxes received in Wyoming that were paid by individuals and businesses that **benefited from big game hunters’ spending**.

The \$224 million spent annually in Wyoming for Big Game Hunting generates significant **economic benefits. In all, considering the effects from big game hunters’ dollars changing hands between businesses, Wyoming’s economy would contract by \$304 million if big game hunters stopped spending money in Wyoming and didn’t spend their money any other place.** Wyoming residents enjoy 3,100 additional jobs and \$85 million in additional pay and income resulting from big game hunting, and the state and local municipalities collect \$28 million annually as a result of big game hunting.

Of these benefits, **non-residents generate a significant share. With 37% of the State’s licensed hunters and only 39% of all big game hunting retail sales, non-residents generate 41% of the economic activity, 51% of the jobs and 52% of the tax receipts.** This is because non-resident hunters spend a higher percentage of their dollars on travel-related items. A greater proportion of travel-related dollars stay in-state, changing hands between businesses and their employees before exiting the state versus equipment sales, where most of these dollars are sent by retailers immediately outside the state to wholesalers, manufacturers and other suppliers. The more times a dollar changes hands within the state, the greater the economic impact. Tables 6 and 7 show the annual impacts per type of hunter and per day of activity.

Looking at guided non-resident hunters, the impacts are more significant. The typical guided non-resident hunter spends 5.3 times more annually in Wyoming than an unguided non-resident hunter (Table 7). They also create 4.5 times more jobs per hunter than unguided visitors and 14 times more local and state taxes per visitor. Compared to resident hunters, they create 4.5 times more jobs per hunter even though they hunt fewer days per year, and 6.2 times more local and state tax revenues even though they spend only 2.8 times more annually in-state.

Table 5: Total Spending and Economic Impacts

Retail Sales and Economic Contributions	Resident Hunters	Non-resident Hunters			TOTAL Residents + Non-Residents
		Guided	Unguided	Total	
Retail Sales	\$137,437,641	\$53,969,862	\$32,701,718	\$86,604,698	\$224,042,338
Total Economic Contribution	\$179,938,941	\$77,097,934	\$46,551,198	\$123,649,132	\$303,588,073
Salaries and Wages	\$49,465,331	\$20,830,102	\$15,257,262	\$36,087,364	\$85,552,695
Jobs	1,523	910	667	1,577	3,100
State & Local Taxes	\$13,570,190	\$11,941,784	\$2,710,796	\$14,652,581	\$28,222,771

Table 6. Per Hunter Spending and Economic Impacts

Retail Sales and Economic Contributions per hunter	Resident Hunters	Non-resident Hunters		
		Guided	Unguided	Total
Number of Hunters	74,577	10,523	33,921	44,444
Retail Sales	\$1,842.90	\$5,128.52	\$964.07	\$1,948.63
Total Economic Contribution	\$2,412.79	\$7,326.27	\$1,372.36	\$2,782.13
Salaries and Wages	\$663.28	\$1,979.39	\$449.79	\$811.97
Jobs	0.02	0.09	0.02	0.04
State and Local Taxes	\$181.96	\$1,134.77	\$79.92	\$329.69

Table 7. Per Day Spending and Economic Impacts

Retail Sales and Economic Contributions per hunter	Resident Hunters	Non-resident Hunters		
		Guided	Unguided	Total
Number of Hunting Days	954,992	47,358	177,561	224,943
Retail Sales	\$143.91	\$1,139.60	\$184.17	\$385.01
Total Economic Contribution	\$188.42	\$1,627.97	\$262.17	\$549.69
Salaries and Wages	\$51.80	\$439.84	\$85.93	\$160.43
Jobs	0.002	0.019	0.004	0.007
State and Local Taxes	\$14.21	\$252.16	\$15.27	\$65.14

Many visiting hunters bring spouses, friends or their children with them when visiting Wyoming. Overall, 9% of guided non-resident big game hunters did so and 7% of unguided big game non-resident hunters did so (Table 8). The typical guest of these guided hunters spent \$1,020 during **their time in Wyoming, while \$203 was spent for each unguided visitor's guest. In total, this** represents \$1,442,458 in additional spending for Wyoming, which is in addition to the total dollars and impacts presented in the previous tables. Considering \$11.4 million was spent by non-hunting guests accompanying resident hunters, Wyoming experiences an additional \$12.8 million in retail sales which increases big game hunting's economic impact as reported above by 5.8%.

Table 8. Spending for People Accompanying Non-Resident Big Game Hunters

	Average	% of Guided Non-Residents Bringing Non-Hunting Companions	Average	% of Unguided Non-Residents Bringing Non-Hunting Companions
Only for those who accompanied you but did not hunt, what was the total amount spent for them in Wyoming for travel, lodging, meals, shopping, entertainment, etc.? Only include dollars actually spent in Wyoming and not purchased prior to departing home.	\$1,019.62	28.5%	\$203.15	71.4%

Real Estate and Business Impacts

Big game draws many people to Wyoming. To better fulfill their passions, many non-residents decide to purchase real estate (cabins, houses or undeveloped land) or relocate their

businesses to Wyoming to better access big game hunting. According to the non-resident big game survey results:

Purchased Real Estate in Wyoming for Big Game Hunting:

% of Current Non-Resident Big Game Hunters = 0.3%

% of Current Resident Big Game Hunters = 0.5%

The typical non-resident who purchased real estate for the primary purpose of big game hunting spent \$542,146 on their real estate purchase, which works out to \$1,431.36 per non-resident hunter, or \$63,615,364 in total land purchases for non-residents who hunting big game in Wyoming in 2015. The typical Wyoming resident who purchased real estate for the primary purpose of big game hunting spent \$125,260 on their real estate purchase, which works out to **\$654.87 per resident hunter, or \$75,032,576 in total. Combined, Wyoming's 2015 resident and non-resident big game hunters spent \$138.7 million for real estate for the primary purpose of big game hunting.**

The typical non-resident who relocated a business for the primary purpose of big game hunting provides an annual payroll, or income, injection to Wyoming of \$32,489. With 0.7% **of 2015's** non-resident big game hunters having relocated a business, this represents \$231.83 annually **for each of Wyoming's 44,444 non-resident hunters**, or \$10,303,452 in total payroll. Many non-residents who relocated business have since changed their residency status and are now resident big game hunters. The resident big game survey shows 4.2% of resident big game hunters relocated a business to Wyoming for the primary purpose of being closer to big game hunting opportunities. The average annual payroll for each relocated business is \$74,767, which represents \$3,127.77 per resident big game hunter, or \$233,259,559 annually for all big game hunters combined. Together, the total annual payroll in Wyoming from all businesses relocated here for the primary purpose of big game hunting is \$243.6 million.

Insights into Outfitters

As part of this project, a short survey was sent to outfitters. Contact information was obtained online from the outfitter directory maintained by the State of Wyoming. Fifty completed surveys were received. In addition, resident and non-resident hunters were queried regarding the services obtained from guides and outfitters. Results to these survey questions are listed below and analysis regarding the dollars earned annually by landowners follows.

<p>1. Of the total revenues received only from hunting the following species (antelope, bighorn sheep, bison, black bear, deer, elk, moose, mountain goat, mountain lion, and turkey), what percentage goes to the following sources:</p>		
	a. Landowners to provide me access to hunt lands	20.9%
	b. Independent contractors and businesses (guides, hospitality, transportation, lodging, etc.), NOT including full, part-time or seasonal employees	19.2%

	c. Equipment and supplies (food and beverage, hunting equipment, camp gear, vehicles, etc.)	27.2%
	d. Licenses (business and for clients), taxes, permits	14.8%
	e. Taxidermy and meat processing, including shipping	5.1%
	f. Other not included above	12.8%
		100.0%
2. Approximately, how many clients and guests on average do you serve in a typical hunting season, over the past three years? Please include only clients who hunted the following species: antelope, bighorn sheep, bison, black bear, deer, elk, moose, mountain goat, mountain lion or turkey		
		Average = 51
3. What percent of your big game hunting clients are not Wyoming residents? Please include only clients who hunted the following species: antelope, bighorn sheep, bison, black bear, deer, elk, moose, mountain goat, mountain lion or turkey		
		92.8%

Table 9. Types of services obtained from outfitters and guides by client big game hunters

Service Provided by Outfitters	Residents	Non-residents
Accommodations	53.3%	76.7%
Landowner Fees	38.6%	45.6%
Shipping	2.3%	0.3%
Food & beverage	66.2%	74.8%
License &/or permits	0.0%	14.3%
Camp staff services	64.1%	59.8%
Ground transportation	9.9%	18.6%
Firearm rental & ammunition costs	0.0%	0.4%
Gratuities and tips	70.8%	45.8%
Professional hunter fee/Outfitter fee	52.7%	64.6%
Taxidermy	0.0%	1.2%
Other:	6.1%	2.8%
N	23	437

Annual Landowner Earnings

Considering that 20.9% of all outfitters revenues are paid to landowners, as reported above, and that big game hunters annually spend \$45.4 million in Wyoming for outfitters (Table 3), Wyoming landowners receive approximately \$9.5 million annually from land access fees paid for big game hunting. With guided non-resident hunters spending 85% of all outfitter and guide fees, Wyoming landowners receive \$8.075 million annually from these hunters.

In conclusion, the economic contributions from Wyoming big game hunting are substantial. Various allocations of hunting privileges will impact the economic health of the communities serving hunters. Future allocation decisions can better serve state residents when the economic contributions per hunter, especially from visiting hunters, are carefully considered along with all other factors associated with resource allocation issues.

Appendices

Appendix A: Methodology for estimating economic contributions

Appendix B: Explanation of economic contribution

Appendix A: Methodology for estimating economic contributions

The extent of the economic contributions associated with spending for outdoor recreation can be estimated in two ways:

- Direct effects: these include the jobs, income and tax revenues that are tied directly to the spending by outdoor recreationists without including multiplier effects.
- Total effects: these include the jobs, income and tax revenues that are tied directly to the spending by outdoor recreationists plus the jobs, income and tax revenues that result from the multiplier effects of outdoor recreation spending. The multiplier effect occurs when a direct purchase from a business leads to increased demand for goods and services from other businesses along their supply chain. Also included is economic activity associated with household spending of incomes earned in the affected businesses.

The economic contributions from outdoor recreation, both direct effects and total effects, were estimated with an IMPLAN input-output model for the state and regional economies of Wyoming, and the county economies for hunting economic contributions. The IMPLAN model was developed by MIG, Inc. originally for use by the U.S. Forest Service. Inherent in each IMPLAN model is the relationship between the economic output of each industry (i.e. sales) and the jobs, income and taxes associated with a given level of output. Through those models, it is possible to determine the jobs, income and taxes supported directly by wildlife-based recreationists with and without the multiplier effects.

Input-output models describe how sales in one industry affect other industries. For example, once a consumer makes a purchase, the retailer buys more merchandise from wholesalers, who buy more from manufacturers, who, in turn, purchase new inputs and supplies. In addition, the salaries and wages paid by these businesses stimulate more benefits. Simply, the first purchase creates numerous rounds of purchasing. Input-output analysis tracks the flow of dollars from the consumer through all of the businesses that are affected, either directly or indirectly.

To apply the IMPLAN model, each specific expenditure for outdoor recreation activities was matched to the appropriate industry sector affected by the initial purchase. The spending was estimated with models of the Wyoming economy, therefore all of the resulting contributions represent salaries and wages, total economic effects, jobs and tax revenues that occur within the state of Wyoming. Likewise, models based on specific regions or counties represent the economic effects within the selected region or county. The results do not include any economic activity or indirect contributions that leak out of the state, region or county of interest. As a result of this leakage, economic contributions at the state level are larger than the sum of corresponding regional or county contributions. This occurs because a portion spending in a particular region (or county) leaks to other regions (or counties) within the state, and this within-state leakage is captured in the Wyoming model.

Estimating Tax Revenues

The IMPLAN model estimates detailed tax revenues at the state and local level and at the federal level. The summary estimates provided in this report represent the total taxes estimated by the IMPLAN model including all income, sales, property and other taxes and fees that accrue to the various local, state and federal taxing authorities.

Appendix B: Explanation of Economic Contributions

Estimations of economic benefits can be calculated through two types of measures: economic contributions and economic values. An economic contribution addresses the business and financial activity resulting from the use of a resource. Economic value, on the other hand, is a non-business measure that estimates the value people receive from an activity after subtracting for their costs and expenditures. This concept is also known as consumer surplus.

There are three types of economic contribution: direct, indirect and induced. A direct contribution is defined as the economic contribution of the initial purchase made by the consumer (the original retail sale). Indirect contributions are the secondary effects generated from a direct contribution, such as the retailer buying additional inventory, and the wholesaler and manufacturers buying additional materials. Indirect contributions affect not only the industry being studied, but also the industries that supply the first industry. An induced contribution results from the salaries and wages paid by the directly and indirectly effected industries. The employees of these industries spend their income on various goods and services. These expenditures are induced contributions, which, in turn, create a continual cycle of indirect and induced effects.

The direct, indirect and induced contribution effects sum together to provide the overall economic contribution of the activity under study. As the original retail purchase (direct contribution) goes through round after round of indirect and induced effects, the economic contribution of the original purchase is multiplied, benefiting many industries and individuals. Likewise, the reverse is true. If a particular item or industry is removed from the economy, the economic loss is greater than the original lost retail sale. Once the original retail purchase is made, each successive round of spending is smaller than the previous round. When the economic benefits are no longer measurable, the economic examination ends.