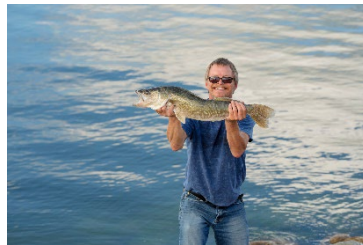


Resident and Nonresident Hunter and Angler Expenditures, Characteristics, and Economic Effects, North Dakota, 2023-2024



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Abstract

This study assessed the economic contribution of hunting and fishing activities on the North Dakota economy and evaluated trends by comparing the findings with prior studies. An online survey of 25,236 resident hunters and anglers, and 12,354 nonresident hunters and anglers, collected data on 18 specific hunting and fishing activities during the 2023-24 season.

Total expenditures by hunters and anglers in North Dakota in 2023-24 were estimated at \$1.1 billion, excluding license purchases. Resident and nonresident in-state expenditures were estimated at \$921.4 million and \$222.0 million, respectively. Spending related to hunting activities was estimated to \$344.7 million while spending related to fishing activities was estimated to be 798.7 million. Of total hunter and angler expenditures, residents spent approximately \$310.0 million in rural areas of North Dakota, while nonresidents spent \$92.4 million in rural areas of North Dakota.

Direct expenditures of \$1.1 billion from hunting and fishing generated an additional \$328.1 million in secondary economic effects, resulting total direct and secondary effects (total business volume) of \$1.5 billion. Hunter and angler expenditures generated \$62.7 million in state tax revenues and supported 6,959 jobs statewide.

In nominal terms, total spending on hunting and fishing in North Dakota increased by \$169.1 million since 2017-18, but when adjusted for inflation, total spending on hunting and fishing activities decreased by \$40.1 million or 3 percent. After adjusting for inflation, resident expenditures for hunting and fishing activities decreased by \$107.2 million (10 percent) while nonresident spending increased by \$67.1 million (43 percent). Resident and nonresident hunting expenditures increased by \$118.1 million or 52 percent after adjusting for inflation, while resident and nonresident angling expenditures decreased by \$158.2 million or 17 percent. The decline in adjusted inflation spending was the result of a decrease in the number of hunters and anglers' participants despite an increase in per person spending.

These findings underscore the continued importance of hunting and fishing as key economic drivers in North Dakota, with shifting patterns of participation and spending reflecting changes in wildlife availability and recreational preferences.

Highlights

Evaluations of hunter and angler expenditures in North Dakota have been ongoing for several decades. These assessments quantify overall spending, and track changes in spending patterns across various hunting and fishing activities. Data collection methods in this study were consistent with previous studies, enabling current estimates to be compared with past studies.

In 2024, the North Dakota Game and Fish Department conducted an online survey of licensed hunters and anglers. The survey utilized a random sample of 25,236 resident participants and 12,354 nonresident participants to collect data on demographics and expenditure patterns. Hunting and fishing activities were classified into 18 categories based on license type (e.g., resident, nonresident, gratis), game type (e.g., deer, turkey, small game), and, when applicable, device type (e.g., archery, firearm, muzzleloader).

Spending among survey groups varied substantially. Resident hunters average daily spending ranged from \$42 to \$288 while nonresident average daily hunter expenditures ranged from \$183 to \$317. Resident anglers average daily spending ranged from \$134 to \$252. Nonresident anglers spent \$259 daily on average.

Resident waterfowl hunters had the highest average seasonal spending among all hunting categories, at \$3,517, followed by special big game hunters at \$2,805. Among nonresidents, archery deer hunters and small game hunters had the highest seasonal expenditures at \$2,330 and \$2,092, respectively. Of all hunting and fishing activities, resident open water anglers had the highest averages seasonal expenditure; \$5,976 per year. Average seasonal expenditures for nonresident anglers were \$1,970 per year.

Total spending by hunters and anglers during the 2023-24 season was estimated at \$1.1 billion, excluding license purchases. Resident spending was estimated to be \$921.4 million, and nonresident spending was estimated to be \$222.0 million. Of total hunter and angler expenditures, hunter expenditures were \$344.7 million, while angler expenditures were \$798.7 million.

Expenditures related to small game hunting (upland and waterfowl hunting) accounted for 45 percent (\$102.3 million) of all resident hunting expenditures, followed by deer hunting at 39 percent (\$89.7 million). Among nonresidents, expenditures related to small game hunting (upland and waterfowl) accounted for 90 percent (\$103.1 million) of all nonresident hunting expenditures. Expenditures related to resident anglers accounted for \$798.7 million, while nonresident anglers accounted for 107.5 million.

Direct expenditures of \$1.1 billion from all hunting and fishing activities generated \$328.1 million in secondary economic effects. Total direct and secondary effects (gross business volume) from all hunting and fishing activities was estimated at \$1.5 billion, contributed \$62.7 million in state tax revenues and supported 6,959 jobs statewide.

In rural areas (defined as towns with populations under 2,500), direct expenditures by resident hunters and anglers were estimated to be \$309.9 million, while nonresidents direct expenditures in rural North Dakota were estimated to be \$92.4 million.

From 2017-18 to 2023-24, inflation-adjusted spending by resident and nonresident hunters and anglers in North Dakota decreased by \$40.1 million (3 percent). Resident hunter and angler spending decreased by \$107.2 million (10 percent), while nonresident hunter and anglers spending increased by \$67.1 million (43 percent). Hunter expenditures (resident and nonresident) increased by \$118.1 million (52 percent), whereas angler expenditures (resident and nonresident) fell by \$158.2 million (17 percent). Gross business volume (direct and secondary effects) from all hunting and fishing activities, decreased by \$38.8 million (3 percent) from 2017-18 to 2023-24.

Introduction

Wildlife management in North Dakota involves multiple stakeholders, including sportsmen, policymakers, businesses, wildlife groups, biologists, and landowners, each facing various challenges. A key issue is balancing the demand for wildlife-related recreation among diverse interest groups with the available wildlife resources. Policies influencing either the demand or supply of these resources can have wide-ranging impacts on these stakeholders.

This study builds on a series of studies that have periodically examined hunting and fishing activities in North Dakota. It focuses on the characteristics, spending patterns, and economic effects of hunters and anglers, offering valuable insights into trends and their implications for wildlife management. Although socio-economic data alone should not dictate policy decisions, it is instrumental in understanding hunter and angler demographics, tracking trends, and assessing the economic effects of different management strategies.

The North Dakota Game and Fish Department initiated socio-economic studies in 1976, initially focusing on nonresident hunters and anglers. Since then, studies have been conducted approximately every five to ten years. These studies have provided a comprehensive overview of spending and activity patterns across different periods, with the most recent data covering the 2023-24 season.

This study compares current findings with historical data to identify changes in participation and expenditure patterns related to hunting and fishing activities in the state.

Methods

A survey of resident and nonresident hunters and anglers was conducted to assess current expenditure patterns and characteristics. An input-output analysis was performed to evaluate the economic impact of these activities on the state's economy. Historical data from previous studies were compared with the current findings to highlight trends in expenditures, participant characteristics, and economic contributions.

Survey Design

The North Dakota Game and Fish Department implemented an online survey in early 2024 to gather information on hunting and fishing expenditures for the 2023-24 season. The sample included 18 categories of licensed hunters and anglers, based on residency (resident and nonresident), license type (lottery, gratis¹), target game (special big game, deer, furbearers, pronghorn, turkey, upland, waterfowl, and fish), and, when applicable, device type (archery, firearm, muzzleloader). (Table 1).

The sampling methods were modeled after those used by Kerestes and Leitch (1983), ensuring consistency with previous expenditure studies. The number and types of activities in this assessment are the same as earlier research efforts.

While survey questions were similar to earlier studies, questionnaires were specifically tailored for each survey group to capture expenditure data specific to their activity (Appendix A). The survey process for this study differed from previous studies as the questionnaire was only available online, contained a different structural flow of questions, and had disaggregated spending categories that produced a more detailed itemization of expenditures.

Data was scrubbed to identify and replace outlier responses. Entries exceeding the 99th percentile in an expense category were flagged and set to zero. Expenses were further scrutinized to ensure reasonableness. Examples of excessive and unreasonable entries included \$5,000 for

¹ Gratis licenses are available to North Dakota residents owning or leasing for agricultural purposes and actively farming or ranching, at least 150 acres of land located in an open hunting unit and are valid only upon land described on the application and, subsequently the license.

ammunition for a single day of hunting or \$2,000 for food during a two-day hunting trip. When necessary, days participated and miles traveled, along with overall patterns of spending, were used to identify outliers.

Sample sizes for the survey groups ranged from 158 participants (nonresident firearm deer hunters) to 4,949 participants (nonresident small game hunters) (Table 1). Response rates ranged from 10 percent for resident open water fishing participants to 47 percent for resident muzzleloader deer hunters. The overall response rate for the survey was 24 percent.

Table 1. Sample Size, Response rate by Survey Group, North Dakota, 2023-24

Residence/Survey Group	Sample Size	Non-Response	Response	Response Rate (%)	Participated in Season's Activity
Resident					
<i>Deer</i>					
Archery	2,496	1,809	687	28	586
Firearm	2,769	2,006	763	28	709
Gratis	1,088	807	281	26	233
Muzzleloader	942	499	443	47	374
Special Big Game	801	457	344	43	330
Pronghorn	381	250	131	34	118
Furbearer	2,475	2,097	378	15	149
<i>Small Game</i>					
Upland	2,485	2,000	485	20	322
Waterfowl	2,488	2,094	394	16	204
<i>Turkey</i>					
Fall	1,860	1,266	594	32	376
Spring	2,481	1,696	785	32	587
<i>Fishing</i>					
Open Water	2,484	2,246	238	10	253
Ice	2,486	2,149	337	14	89
Total Resident	25,236	19,376	5,860	23	4,330
Non-Resident					
<i>Deer</i>					
Archery	2,496	1,569	927	37	865
Firearm	158	85	73	46	70
Small Game	4,949	3,744	1,205	24	1160
Furbearer	2,297	1,852	445	19	266
Fishing	2,454	2,129	325	13	292
Total Nonresident	12,354	9,379	2,975	24	2,653
Total, all groups	37,590	28,755	8,835	24	6,983

Expenditures

A key objective of the study was to estimate specific types of recreational expenditures linked to hunting and fishing activities in North Dakota. Each survey group (e.g., archery deer, open water fishing) received a tailored questionnaire designed to capture expenditure data specific to their activity. For instance, fishing participants were not asked about ammunition or firearm purchases. The questionnaires focused exclusively on expenditures that were made within North Dakota and expenditures directly related to the specified activity and season. Expenditures were categorized as either durable goods or fixed expenses and nondurable goods or variable expenses (Table 2).

Durable Goods/Fixed Expenses

Durable goods are items that can be used repeatedly over multiple seasons or extended periods before replacement is necessary. Examples include optics, device type, fishing rods, clothing, boats, knives, decoys, and ice augers. These items are typically classified as fixed expenses because their cost is not influenced by the level of activity. For example, the price of a knife remains the same whether someone hunts for two days or 20 days. While durable goods may eventually wear out, become obsolete, or require replacement over time (e.g., 20 years), this study allocated the full purchase cost of all durable goods (except vehicles, ATV/UTVs, campers, and trailers) to the hunting or fishing category rather than attempting to annualize the expenses.

This treatment aligns with previous studies, recognizing that not all hunters and anglers incur fixed expenses every year. For instance, only a subset of anglers may purchase a boat in a given year, and only some firearm deer hunters might buy a new rifle. To estimate overall annual expenditures on durable goods, the study multiplied the statewide number of participants in each survey category by the average expenses reported for that group.

Durable goods were attributed to the activity for which they were originally purchased. However, many of these items can be used across multiple recreational activities. For example, binoculars bought for deer hunting also could be used for other hunting activities or non-hunting purposes. To maintain consistency with previous studies and align with the study's scope, no

effort was made to estimate the proportion of durable goods (except vehicles, ATV/UTVs, campers, and trailers) used exclusively for the surveyed activity.

Table 2. Expenditure Categories for Survey Groups, North Dakota, 2023-24

Category	Description
<i>Variable Expenditures</i>	
Access	Expenses paid to gain access to land or to launch boats
Ammunition	Expenses for cartridges, shot shells, and reloading components
Bait	Purchases of bait (live, frozen, or otherwise) used for fishing
Equipment Fuel	Expenses for fuel for boats, ice house heaters, and/or other equipment
Food	Purchases of food and beverages
Guide	Expenses for guide services (hunting and/or fishing)
Lodging	Expenses paid for overnight stays while hunting or fishing
Meat	Expenses for meat processing, packing, and/or fish cleaning
Rentals	Expenses for rental of boat, motor, fish house, and/or other equipment
Repairs	Expenses for repair of hunting or fishing equipment
Taxidermy	Fees or material costs for mounting fish, birds, or animals
Transportation	Expenses for gas, oil, air fare, or other transportation costs
Veterinarian	Fees for veterinarian care of animals used while hunting
Other	Any other variable expenses not included in the above categories
<i>Fixed Expenditures</i>	
Auger	Purchases of ice augers, and/or ice drill used for ice fishing
Binoculars	Purchases of binoculars, scopes, range finders, and/or other optics
Boat	Purchases of boats, motors, and boat trailers for hunting/fishing
Calls	Purchases of predator calls
Camera	Purchases of underwater cameras for fishing
Camping	Purchases of camping equipment used while hunting/fishing
Clothing	Purchases of clothing used primarily for hunting/fishing
Decoy	Purchases of decoys for hunting and spearing
Dogs	Purchases of hunting dogs
Finders	Purchases of electronic depth or fish finders
Ice House	Purchases of ice fishing houses, shelters, and/or heaters
Rods	Purchases of fishing rods
Skinning Equipment	Purchases of stretchers, knives, and/or other tools for use on hides/fur
Tackle	Purchases of fishing tackle
Traps	Purchases of traps, snares, and/or trapping supplies (lures, scents)
Vehicles	Purchases of vehicles, campers, ATVs primarily for hunting/fishing
Device type	Purchases of rifles, shotguns, bows, arrows, accessories
Other	Any other durable goods not included in the above categories

Nondurable Goods/Variable Expenses

Nondurable goods refer to items or services that are consumed in direct proportion to activity levels. Examples related to hunting and fishing include bait, ammunition, fuel, food, and guide services. These purchases are categorized as variable expenses because their costs depend on the level of activity (e.g., fuel expenses are linked to the number of miles traveled). Typically, nondurable goods are fully consumed within a short period. Unlike durable goods, which may not directly correlate with activity levels and could be used for other purposes, nondurable goods are closely tied to specific hunting or fishing activities and are usually exclusive to specific activities. For instance, lodging expenses for pheasant hunting would not apply to fishing activities.

Estimation of Average Expenditures

This study used methods similar to those outlined by Lewis et al. (1998) and Bangsund and Leistritz (2003) to calculate average seasonal variable expenses. The process involved summing the averages of individual expenditure categories (e.g., fuel, food, lodging) for each survey group. However, this study diverged from earlier methods in how vehicle expenses, fixed expenses, and total seasonal expenses were calculated. Adjustments introduced by Bangsund and Leistritz (2003) were applied to address those expenses.

Earlier studies, like Lewis et al. (1998), included the full value of vehicle purchases in fixed seasonal expenses, which created two key issues:

1. Assigning the entire vehicle cost to hunting or fishing overstated the actual expense attributable to these activities.
2. Calculating vehicle expenses separately for each group resulted in substantial variations, often influenced by small sample sizes. For example, some groups displayed unusually high vehicle costs (e.g., \$1,200 per pronghorn hunter), while others had minimal or no vehicle expenses (e.g., \$0 for gratis turkey hunters).

To address these issues, techniques developed by Bangsund and Leistritz (2003) were used in this study to estimate vehicle expenses. This technique was also used in the 2017-18 report. Assigning a vehicle expense to the various survey groups posed challenges due to

frequency of purchases. To address these issues, the 18 survey groups were condensed into five categories for estimating vehicle expenses:

1. Gratis hunters
2. Resident hunters
3. Resident anglers
4. Nonresident hunters
5. Nonresident anglers

The consolidation did not entirely solve the issue of allocating vehicle expenses to hunting and fishing activities. Most individuals use vehicles for purposes that extend well beyond hunting and fishing. Vehicles, such as pickups, sport utility vehicles, and ATVs, are typically used extensively for purposes unrelated to hunting or fishing. Once hunting or fishing seasons conclude, these vehicles continue to serve a variety of transportation and recreational needs. Even vehicles like all-terrain vehicles (ATVs/UTVs), which are often associated with activities such as hunting or ice fishing, are frequently used year-round. Considering the multi-purpose nature of vehicles, attributing the full purchase cost of a vehicle to a single, short-term activity lasting only a few days or weeks is inappropriate. Further, decisions to purchase vehicles are rarely driven solely by participation in hunting or fishing. For example, it is unlikely that someone would buy a new vehicle specifically because of a deer tag draw or a planned pheasant hunting trip.

To account for the use of vehicles, sport utility vehicles and ATVs for non-hunting and fishing activities the study used a weighting method to allocate a percentage of vehicle purchases to hunting or fishing activities based on participation days. (Bangsund and Leistritz 2003). Further details on the allocation process can be found in Appendix B.

As a result of these adjustments, estimated vehicle expenses and average season fixed expenses in this study differed from those calculated by Lewis et al. (1998) but aligned with the estimates produced by Bangsund and Leistritz (2003) and all subsequent studies. Average vehicle expenses across the five primary categories (e.g., gratis hunters, resident anglers) were distributed to the 18 individual survey groups (Appendix B). Expenses for all other durable

goods were averaged using the same methodology applied to variable expenses. The average season fixed expenses were then calculated as the sum of allocated vehicle costs and the average costs of all other durable goods.

Previous studies, including Lewis et al. (1998), calculated total seasonal expenses by summing data only from respondents who reported both variable (nondurable) and fixed (durable) expenses. However, not all participants purchased both types of goods or reported both expenses. Consequently, the number of observations combining variable and fixed expenses was smaller than the total observations for either type. Moreover, averaging only those observations with both expense types often resulted in mismatches between total seasonal expenses and the sum of average variable and fixed expenses for a group. This discrepancy could lead to overestimations, where the average total expense exceeded the combined averages of variable and fixed expenses.

Bangsund and Leistritz (2003) introduced a method of separately estimating average variable and fixed expenses for each survey group. These estimates were then combined to calculate average total seasonal expenditures. This approach incorporated all expenditure data, providing a more accurate representation of total seasonal spending.

To estimate average daily variable and fixed expenses, the total variable and fixed expenses reported by each individual were divided by the number of days they participated. The resulting daily averages for variable and fixed expenses were then averaged across all individuals within each survey group. The average daily total expenditures for each group were calculated by summing the average daily variable and average daily fixed expenses.

Economic Effects

The economic effects of a project, program, policy, or activity are generally split into direct and secondary effects.

- **Direct effects** refer to immediate changes in economic output, employment, or income resulting from the initial activity, program, event, or activity.

- **Secondary effects** (further split into indirect and induced effects) are generated through subsequent rounds of spending and economic responses within the economy relating to a change in the demand for goods and services created by the direct effects.

An **economic contribution analysis** measures all economic activity (gross) tied to an industry or activity. In contrast, an **economic impact analysis** examines only the net economic activity. Both approaches incorporate direct and secondary effects to assess total economic activity. The economic effects measured in this assessment represent an economic contribution analysis. Finding in this estimate measures all economic activity (economic contribution) associated with hunting and fishing in North Dakota.

Direct Effects

Direct effects, also referred to as total direct expenditures in this report, represent total spending by resident and nonresident hunters and anglers. Direct expenditures were calculated by multiplying the average spending per survey group by the total number of participants in each activity during the 2023-24 season.

Secondary Effects

The secondary effects of hunting and fishing expenditures in North Dakota were estimated using the IMPLAN modeling platform. These effects represent additional economic activity generated by the re-spending of hunter and angler expenditures. Input-output (I-O) analysis is a mathematical framework that identifies linkages between different sectors of an economy and accounts for the production and consumption of all goods and services.

Total direct expenditures by hunters and anglers for durable and nondurable goods were allocated to various sectors of the North Dakotan economy. Secondary effects, when combined with direct effects, provide an estimate of the total gross business volume (direct and secondary effects) generated by hunting and fishing activities in North Dakota.

State-Level Tax Collections

Tax collections serve as an essential metric for evaluating the economic effect of an industry, activity, or event on an economy. For this study, state-level tax revenues generated by

hunting and fishing activities were estimated based on both direct and secondary economic effects.

Table 3. Hunter and Angler Expenditures by General Economic Sector

General Economic Sectors	Expenditure Categories
Retail Trade	ammunition, bait, equipment fuel, film, food, transportation, ice auger, optics, boats, calls, cameras, camping equipment, clothing, decoys, 2/3 of dog purchases, fish finders, ice houses, rods, skinning equipment, spears, fishing tackle, traps, vehicles, and device types
Services	guide services, lodging, meat processing, rental equipment, repairs, taxidermy, veterinarian, and 1/3 of dog purchases
Households	access fees

Expenditures in Rural Areas

In previous studies, communities in North Dakota with populations of 2,500 or less were classified as rural, and spending within these communities was estimated. Similarly, this study asked participants to estimate the proportion of their total seasonal expenditures that occurred in rural communities. Rural spending by expense category (e.g., gas, lodging, food) was not estimated, instead only average seasonal expenditures in rural area was calculated for rural and urban participants in each survey group.

Total rural spending by hunters and anglers was estimated by multiplying the average seasonal expenditures of rural and urban participants by the number of active participants from each group in rural communities. This method provides a comprehensive view of the economic contributions made in rural areas.

Hunter and Angler Characteristics

The survey collected data on participant demographics such as age, residence, and income, as well as information on activity-specific details like days participated, miles traveled, land ownership for hunting, and the perceived per day value of hunting or fishing. Characteristics from the 2023-24 survey were compared to those from prior studies.

Residents

Depending on hunting activity, average hunter age ranged from 45 years old for waterfowl to 58 years old for deer gratis. Number of days hunted averaged between 3 days for pronghorn to 18 days for furbearer. Depending upon the hunting activity, resident hunters lived in a community with a population exceeding 2,500, and had a gross household income of at least \$75,000. Average age of resident open water anglers was 53 years old and the average number of days fished was 24. Average age of ice fishing anglers was 45 years old and average number of days fished was 11. Fifty-eight percent of resident open water anglers resided in urban communities and 77 percent reported a gross household income of at least \$75,000. Fifty-two percent of resident ice water anglers resided in rural communities and 68 percent reported a gross household income of at least \$75,000. Further characteristics for all hunting and fishing groups are discussed in the following sections.

Age

The majority of hunters and anglers were at least 35 years old (Table 4). Gratis deer hunters were the oldest group, with an average age of 58 years, while waterfowl hunters and ice anglers were the youngest, with an average age of 45 years. Average age of open water anglers was 53 years, while average age of ice anglers was 45 years.

Table 4. Average Age and Distribution of Resident Hunters and Anglers by Age Categories, North Dakota, 2023-24

Activity	Average Age	17 to 24 Years	25 to 34 Years	35 to 44 years	45 to 54 Years	55 to 64 Years	65 Years and Over
		----- % -----					
<i>Deer</i>							
Archery	46	7	19	25	19	17	13
Firearm	48	8	16	21	18	20	17
Gratis	58	2	6	9	21	23	38
Muzzleloader	49	4	10	29	17	25	15
Special Big Game	50	5	17	19	14	22	23
Pronghorn	51	3	12	24	25	15	22
Furbearer	51	6	12	15	22	24	20
<i>Small Game</i>							
Upland	49	11	16	18	12	18	24
Waterfowl	45	13	21	21	13	11	21
<i>Turkey</i>							
Fall	51	6	13	21	15	16	28
Spring	46	10	19	22	17	17	16
<i>Fishing</i>							
Open Water	53	2	13	19	18	25	22
Ice	45	16	15	21	10	21	17

Note: Percentages may not total due to rounding.

Residence

Population trends in North Dakota show an increasing proportion of residents living in urban areas (North Dakota Compass, 2025). In 2010, the state's four largest metropolitan areas - Fargo-West Fargo, Grand Forks, Bismarck-Mandan, and Minot - accounted for 45 percent of the population. Between 2010 and 2020, the population in these metro areas grew by 39 percent, compared to a 7 percent statewide increase. In 2023, population in the state's four largest metro areas accounted for 48 percent of the state's total population. Overall, the population in North Dakota's has increased by 17 percent since 2010.

Given the demographic trend of expanding populations in urban areas a corresponding increase in hunters from urban areas would be expected. Survey respondents were asked to identify the size of their community by selecting one of five categories, enabling the analysis of hunting and angling participation across rural and urban populations.

Among resident hunters, 53 percent resided in communities with populations of 2,500 or more. Similarly, 53 percent of resident anglers lived in communities with populations of 2,500 or more. Open water anglers were more frequently from urban communities (58 percent) than ice anglers were (52 percent), (Table 5).

Small game upland hunters had the highest proportion of urban participants, 66 percent (Table 5). In contrast, gratis deer hunters had the highest proportion of rural participants, 69 percent. The higher percentage of rural gratis hunters from rural communities would be expected given gratis licenses are typically issued to landowners. Furbearer hunters were also more frequently from rural communities; 56 percent.

Comparing residence data from 2023-24 study to the 2017-18 study, some changes in participants residence was observed. Urban participation among upland hunters and archery deer hunters increased by 11 and 9 percentage point respectively (Ndembe et al., 2019, p 14). There was also an increase in urban participation among muzzleloader deer hunters during 2023-24 compared to 2017-18 (53 percent to 48 percent, respectively). Urban participation for special big game and waterfowl decreased by 4 percentage points. The proportion of gratis deer hunters from rural communities decreased from 78 percent in 2017-18 to 69 percent in 2023-24. The proportion of ice fishing participants from rural communities increased from 45 percent in 2017-18 to 52 percent in 2023-24. The percentage of open water anglers from rural communities declined from 43 percent in 2017-18 to 42 percent in 2023-24.

Table 5. Residence of Survey Respondents, Resident Hunters and Anglers, by Activity, North Dakota, 2023-24

Activity	Urban			Rural			
	City 2,500 to 50,000	City Over 50,000	Total Urban	Community under 2,500	Farm or Ranch	Rural Nonfarm	Total Rural
	----- % -----						
<i>Deer</i>							
Archery	25	33	58	18	10	14	42
Firearm	27	35	62	22	7	9	38
Gratis	15	16	31	16	45	8	69
Muzzleloader	26	27	53	21	10	16	47
Special Big Game	24	23	47	27	16	9	53
Pronghorn	21	27	48	15	25	13	52
Furbearer	21	23	44	15	21	19	56
<i>Small Game</i>							
Upland	28	38	66	14	8	12	34
Waterfowl	26	29	56	24	12	9	44
<i>Turkey</i>							
Fall	30	32	62	22	9	7	38
Spring	27	35	63	16	9	13	38
<i>Fishing</i>							
Open Water	28	30	58	15	10	17	42
Ice	23	25	48	20	11	21	52

Note: Percentages may not total due to rounding.

Income

Most participants reported having household income of at least \$75,000. Pronghorn hunters had the highest percentage of participants with gross annual household incomes of \$75,000 and above (81 percent). Across all hunting categories, 70 to 81 percent of participants reported annual household income of at least \$75,000 (Table 6). Most anglers also reported annual household income of at least \$75,000; 68 percent of open water anglers and 76 percent of ice fishing participants had annual household income of at least \$75,000 (Table 6).

A comparison between 2023-24 and 2017-18 survey periods indicated an increase in participant incomes (not adjusted for inflation) for most hunting and fishing activities (Ndembe et al., 2019, p 16). For firearm deer hunters, the percentage earning \$75,000 or more rose from 55 percent in 2017-18 to 78 percent in 2023-24. Similarly, the percentage of muzzleloader deer hunters' annual household income of \$75,000 or more increased from 60 percent to 79 percent.

The percentage of pronghorn hunters and waterfowl hunters with income of \$75,000 or more increased from 76 percent and 64 percent in 2017-18 to 81 percent and 70 percent in 2023-24 respectively. Among open water anglers, the proportion of participants earning at least \$75,000 increased from 58 percent in 2017-18 to 76 percent in 2023-24.

Table 6. Gross Household Income, Resident Hunters and Anglers, by Activity, North Dakota, 2023-24

Activity	\$150,000 and over	\$125,000 - \$149,999	\$100,000 - \$124,999	\$75,000 - \$99,999	\$50,000 - \$74,999	\$25,000 - \$49,999	\$10,000 - \$24,999	Under \$10,000
	----- % -----							
<i>Deer</i>								
Archery	32	13	18	14	13	8	2	1
Firearm	29	16	17	16	13	7	2	1
Gratis	37	10	13	20	11	5	2	2
Muzzleloader	27	14	15	19	12	10	2	2
Special Big Game	35	10	16	14	16	7	1	1
Pronghorn	32	13	17	20	13	3	2	1
Furbearer	28	12	14	25	8	6	4	3
<i>Small Game</i>								
Upland	32	12	14	21	11	7	2	1
Waterfowl	27	9	10	24	19	9	0	3
<i>Turkey</i>								
Fall	23	14	18	19	16	6	2	2
Spring	33	14	14	15	15	5	2	1
<i>Fishing</i>								
Open Water	30	10	21	16	14	6	2	2
Ice	32	8	18	9	18	8	6	0

Note: Percentages may not total due to rounding.

Days Participated

Depending on hunting activity, resident respondents typically spent 3 to 18 days hunting during the 2023-24 season. Furbearer and waterfowl hunters had the greatest average days of hunting, 18 days per year and 16 days per year, respectively. (Table 7). Pronghorn and turkey hunters had the fewest average days of hunting, 3 and 4 days per year, respectively. Among anglers, open water anglers fished an average of 24 days per year, while ice anglers fished an average of 11 days per year. (Table 7).

Over the previous four decades (1981-2018), the average number of days participated² remained relatively consistent among the various hunting activities. A number of factors may influence total days spent afield, both over time or for a specific season. For example, wildlife populations, harvest rates, leisure time, personal incomes, weather, and competition from other recreational activities, length of hunting season may affect hunting or fishing participation. The survey did not solicit information on which factors may influence time spent afield.

For some hunting activities average number of days of participation increased substantially from 2017-18 season to the 2023-24 season. Participation for some other activities remained stable while others recorded a decline. Average days participation nearly doubled from 2017-18 to 2023-24 for deer archery, deer firearm and upland hunters. Waterfowl hunters' average number of days participating more than doubled - increasing from 7 days in 2017-18 to 16 days in 2023-24. Furbearer hunters' average number of days participation remained roughly the same - 19 days in 2017-18 and 18 days in 2023-24.

Average days of participation by resident open water anglers increased from 16 days in 2017-18 to 24 days in 2023-24, whereas average days participated in ice fishing remained unchanged (11 days).

² Participation was defined as having a license and actively pursuing game. A license holder that did not pursue game was not counted as a participant.

Table 7. Average Days Spent Hunting and Fishing, by Residents, by Activity, North Dakota, 1981, 1982, 1986, 1990, 1996, 2001, 2011, 2018 and 2024

Activity	1981	1982	1986	1990	1996	2001	2011	2018	2024
	----- Days -----								
<i>Deer</i>									
Archery	13	14	13	14	16	13	11	9	16
Firearm	4	4	5	4	4	4	4	4	7
Gratis	na	na	na	-	3	4	na	6	7
Muzzleloader	na	na	na	4	4	na	6	6	6
Special Big Game	4	5	4	5	5	5	6	10	11
Pronghorn	na	3	5	5	5	5	na	2	3
Furbearer	17	12	12	12	13	11	12	19	18
<i>Small Game</i>									
Upland	6	5	9	13	8	9	8	7	11
Waterfowl	7	6	8	11	8	8	8	7	16
<i>Turkey</i>									
Fall	2	2	2	2	2	4	4	3	4
Spring	na	na	na	na	na	na	3	3	4
<i>Fishing</i>									
Open Water	22	18	13	13	17	18	14	16	24
Ice	na	na	12	11	10	13	9	11	11

Miles Traveled

Spring turkey hunters traveled the fewest average miles, 306 miles in 2023-24, In contrast, waterfowl hunters on average traveled the most, on average 1,980 miles. (Table 8). Average miles traveled by water fowl hunter doubled from 2017-18 to 2023-24, increasing from 957 miles to 1,980 miles. Participants across all fishing categories also reported higher average miles traveled in 2023-24 compared to 2017-18 (Table 8).

Table 8. Average Miles Traveled by Residents, by Activity, North Dakota, 1981, 1982, 1986, 1990, 1996, 2001, 2011, 2018 and 2024

Activity	1981	1982	1986	1990	1996	2001	2011	2018	2024
	----- Miles -----								
<i>Deer</i>									
Archery	437	164	465	645	674	678	757	712	1,124
Firearm	270	205	338	335	375	356	422	445	580
Gratis	na	na	na	-	112	122	256	219	556
Muzzleloader	na	na	na	na	247	215	293	381	487
Special Big Game	397	567	583	1,131	970	1,081	1,080	1,232	1,529
Pronghorn	na	490	527	598	488	533	na	629	573
Furbearer	796	612	636	625	694	530	549	716	803
<i>Small Game</i>									
Upland	415	na	521	869	878	870	1,216	578	967
Waterfowl	476	na	480	904	779	778	654	957	1,980
<i>Turkey</i>									
Fall	249	207	232	340	203	213	261	284	337
Spring	na	na	na	na	na	na	210	254	306
<i>Fishing</i>									
Open Water	na	103	649	860	815	974	628	1,011	1,952
Ice	na	na	651	672	495	648	441	625	794

Note: na = not available.

Value of a Day of Hunting and Fishing

Respondents were asked to provide a monetary value for a single day of hunting or fishing to gauge the value participants place on single day of hunting or fishing. Muzzleloader hunters placed the highest value on a day of hunting among all categories (\$514), while furbearer hunters assigned the lowest value (\$92). The next highest value of a day of hunting was reported by special big game hunters; \$345 per day. Resident anglers valued a day of ice fishing at \$72 and a day of open water fishing at \$151 (Table 9).

Table 9. Average Value of a Day Spent Hunting or Fishing by Residents, by Activity, North Dakota, 1981, 1982, 1986, 1990, 1996, 2001, 2011, 2018 and 2024

Activity	1981	1982	1986	1990	1996	2001	2011	2018	2024
	----- 2023 \$ -----								
<i>Deer</i>									
Archery	143	na	113	108	81	72	141	120	115
Firearm	329	na	140	123	92	107	165	145	148
Gratis	na	na	na	-	64	81	98	171	171
Muzzleloader	na	na	na	389	67	na	na	94	514
Special Big Game	2,309	924	686	255	261	259	232	684	345
Pronghorn	na	na	131	154	135	135	na	205	275
Furbearer	321	261	119	115	72	80	78	89	92
<i>Small Game</i>									
Upland	123	na	193	87	108	101	119	108	106
Waterfowl	123	na	175	119	92	90	135	171	135
<i>Turkey</i>									
Fall	315	na	504	102	80	87	80	115	100
Spring	na	na	na	na	na	na	85	83	94
<i>Fishing</i>									
Open Water	140	na	881	86	216	94	216	130	151
Ice	na	na	87	79	58	113	92	90	72

Note: na = not available.

Gender

The majority of resident hunters are male. Among all hunting and fishing activities 79 to 100 percent of respondents were male. Firearm deer and special big game hunting had the highest level of female participation among all hunting categories at 19 percent (Table 10). Open water angling had higher female participation rates (21 percent) compared to hunting activities.

Table 10. Gender of Resident Hunters and Anglers, North Dakota 2023-24

Activity	Female	Male
	----- % -----	
<i>Deer</i>		
Archery	5	95
Firearm	19	81
Gratis	10	90
Muzzleloader	0	100
Special Big Game	19	81
Pronghorn	10	90
Furbearer	7	93
<i>Small Game</i>		
Upland	4	96
Waterfowl	4	96
<i>Turkey</i>		
Fall	5	95
Spring	8	92
<i>Fishing</i>		
Open Water	21	79
Ice	17	83

Note: Percentages may not total due to rounding

Nonresidents

Nonresident hunters were on average 50 years old, primarily resided in urban communities, had gross annual household incomes of at least \$75,000, and participated in hunting activities in North Dakota for an average of 7 days per year. Nonresident angler respondents averaged 57 years old, primarily resided in urban communities, had average household income of at least \$75,000, and fished on average for 8 days in North Dakota during the 2023-24 season.

Age

The average age of nonresident hunters ranged from 45 to 53 years, with firearm and small game hunters being the oldest and archery hunters the youngest. (Table 11). Nonresident anglers averaged 57 years old.

Table 11. Average Age and Distribution of Nonresident Hunters and Anglers by Age Categories, North Dakota, 2023-24

Activity	Average Age	17 to 24 Years	25 to 34 Years	35 to 44 years	45 to 54 Years	55 to 64 Years	65 Years and Over
		----- % -----					
<i>Deer</i>							
Archery	45	5	25	24	20	16	11
Firearm	53	3	11	17	24	16	29
Small Game	53	5	11	14	16	29	25
Furbearer	50	4	12	24	18	24	18
Fishing	57	4	5	12	17	25	36

Note: Percentages may not total due to rounding.

Residence

The majority of nonresident deer firearm hunters resided in urban areas (66 percent), while a majority of the nonresident furbearer and deer archery hunters resided in rural areas. Just over half (56 percent) of nonresident anglers reported living in urban areas (Table 12).

Table 12. Residence of Survey Respondents, Nonresident Hunters and Anglers, by Activity, North Dakota, 2023-24

	Urban			Rural			
Activity	City 2,500 to 50,000	City Over 50,000	Total Urban	Community under 2,500	Farm or Ranch	Rural Nonfarm	Total Rural
	----- % -----						
<i>Deer</i>							
Archery	30	17	48	19	10	24	52
Firearm	29	37	66	17	8	8	34
Small Game	35	24	60	16	8	17	40
Furbearer	33	15	48	15	12	24	52
Fishing	36	20	56	23	8	13	44

Note: Percentages may not total due to rounding.

Income

More than 70 percent of nonresident hunters and anglers had \$75,000 or more of household income (Table 13). The proportion of nonresident firearm deer hunters with income of at least \$75,000 was notable - 94 percent. Seventy-three percent of nonresident anglers had over \$75,000 in annual household income.

Table 13. Gross Household Income, Nonresident Hunters and Anglers, by Activity, North Dakota, 2023-24

Activity	\$150,000 and over	\$125,000 - \$149,999	\$100,000 - \$124,999	\$75,000 - \$99,999	\$50,000 - \$74,999	\$25,000 - \$49,999	\$10,000 - \$24,999	Under \$10,000
	----- % -----							
Deer								
Archery	32	17	15	16	13	6	1	0
Firearm	39	15	17	24	2	2	2	0
Small Game	40	13	16	15	11	3	1	1
Furbearer	36	13	14	18	11	5	2	1
Fishing	24	15	14	20	18	6	2	2

Note: Percentages may not total due to rounding.

Days participated

Day of participation for nonresidents were similar among all activities. Nonresident archery and furbearer hunters participated an average of 9 days per year and firearm deer hunters participated an average of 6 days per year (Table 14). Days of participation for nonresident archery and furbearer increased an average of two days since the previous study. Nonresident anglers participated an average of 8 days per year up from 7 days in 2017-18 season.

Table 14. Average Days Spent Hunting and Fishing, by Nonresidents, by Activity, North Dakota, 1976, 1983, 1990, 1996, 2001, 2011, 2018 and 2024

Activity	1976	1983	1990	1996	2001	2011	2018	2024
	----- Days -----							
<i>Deer</i>								
Archery	7	8	8	7	8	7	7	9
Firearm	4	4	4	3	3	4	4	6
Small Game	5	4	5	6	6	5	6	7
Furbearer	na	na	na	na	na	12	9	9
Fishing	na	8	6	9	6	9	7	8

Miles Traveled

Among nonresident hunters and anglers, small game hunters traveled on average more miles than other participant in other activities. Average number of miles also increased substantially; a 37 percent increase in average miles traveled from 2017-18. Firearm deer hunters traveled the fewest average miles among nonresident hunters, 1,293 miles. Furbearer hunters traveled slightly fewer miles in 2023-24 than in 2017-18, 1,295 and 1,329 respectively. Nonresident anglers traveled more miles in 2023-24 than in 2017-18, 1,117 compared to 1,034, respectively.

Table 15. Average Miles Traveled by Nonresidents, by Activity, North Dakota, 1976, 1983, 1990, 1996, 2001, 2011, 2018 and 2024

Activity	1976	1983	1990	1996	2001	2011	2018	2024
	----- miles -----							
<i>Deer</i>								
Archery	373	502	1,169	1,357	1,627	1,116	1,391	1,561
Firearm	588	639	567	993	1,001	951	1,020	1,293
Small Game	482	701	610	1,369	1,251	628	1,479	2,024
Furbearer	na	na	na	na	na	441	1,329	1,295
Fishing	na	696	489	1,047	1,031	718	1,034	1,117

Note: na = not available.

Value of a Day of Hunting and Fishing

When asked to place a monetary value on a day's activity, nonresident hunters reported average values between \$146 (furbearer) and \$370 (small game) (Table 16). Nonresident anglers placed the average value of a day of fishing at \$205.

Table 16. Average Value of a Day Spent Hunting or Fishing by Nonresidents, by Activity, North Dakota, 1983, 1990, 1996, 2001, 2011, 2018 and 2024

Activity	1983	1990	1996	2001	2011	2018	2024
	----- 2023 \$ -----						
<i>Deer</i>							
Archery	364	169	198	208	196	226	189
Firearm	434	228	198	183	336	370	227
Small Game	367	200	180	168	137	219	370
Furbearer	na	na	na	na	134	138	146
Fishing	361	140	164	137	335	199	205

Note: na = not available.

Gender

The vast majority of the nonresident hunters were male; over 97 percent of participants across all activities were male. Similarly, 87 percent of nonresident anglers were male (Table 17).

Table 17. Gender of Nonresident Hunters and Anglers, North Dakota 2023-24

Activity	Female	Male
	%	
<i>Deer</i>		
Archery	2	98
Firearm	0	100
Small Game	2	98
Furbearer	1	99
Fishing	13	87

Hunter and Angler Expenditures in the 2023-24 Season

Average expenditures of hunting and fishing participants in North Dakota during the 2023-24 season were estimated for all hunting and fishing activities (detailed data can be found in Appendix C). Average expenditures, combined with the estimated number of participants, were used to calculate total seasonal direct spending by hunters and anglers. The total direct expenditures were then used with the IMPLAN modeling platform to estimate secondary economic effects.

Seasonal Expenditures

Among all resident hunters and anglers, spring turkey hunters had the lowest average total seasonal expenditures, followed by fall turkey hunters, \$409 and \$471, respectively. In contrast, waterfowl hunters reported the highest average expenditures among residents, at \$3,517 per season. Resident hunters for special big game, archery deer, and furbearer spent \$2,805, \$2,078, and \$1,654 on average per season, respectively (Table 18).

Nonresident archery deer hunters spent the most on average than other nonresident hunters with average expenditures of \$2,331 per season. Nonresident small game hunters, made up of upland and waterfowl hunters, reported average seasonal expenditures of \$2,093 (Appendix D contains additional discussion of nonresident small game hunter expenditures). Nonresident furbearer hunters spent \$2,135 on average for the 2023-24 season which is the second-highest average total seasonal expenditure among nonresident hunters.

Resident open water anglers had the highest average spending among resident and nonresident hunting and fishing activities - \$5,976 per season. Resident ice fishing anglers' average expenditures were \$1,523 per season. Nonresident anglers spent an average of \$1,970 annually on fishing activities (Table 18). Further breakdowns of expenditures by activity are available in Appendix C.

Table 18. Average Season Expenditure, by Activity, North Dakota, 2023-24

Residence/Activity	Average Season Expenditure		
	Variable	Fixed	Total
Resident	----- \$ -----		
<i>Deer</i>			
Archery	765.56	1,312.95	2,078.51
Firearm	569.88	515.74	1,085.62
Gratis	453.52	531.20	984.72
Muzzleloader	306.31	402.87	709.18
Special Big Game	1,814.40	990.78	2,805.18
Pronghorn	556.33	394.22	950.55
Furbearer	754.44	899.56	1,654.00
<i>Small Game</i>			
Upland	728.41	407.32	1,135.73
Waterfowl	1,740.73	1,776.63	3,517.36
<i>Turkey</i>			
Fall	232.02	238.92	470.94
Spring	202.72	206.52	409.24
<i>Fishing</i>			
Open Water	1,980.45	3,995.87	5,976.32
Ice	563.77	959.46	1,523.23
Non-Resident			
<i>Deer</i>			
Archery	1,228.76	1,101.94	2,330.70
Firearm	748.43	275.33	1,023.76
Small Game	1,513.17	579.47	2,092.64
Furbearer	1,022.21	1,112.47	2,134.68
Fishing	1,244.15	725.77	1,969.92

Daily Expenditures

Average daily expenditures were calculated by dividing total seasonal spending by the average number of days of participation. This metric is particularly useful for comparing spending across activities, as total expenditures alone may not provide an appropriate basis for comparison due to differences in season lengths, harvest limits, and activity requirements. For instance, firearm deer hunters have a relatively short season (16.5 days) and are typically restricted to harvesting one or two animals, while upland game hunters may hunt for several months and harvest birds throughout the season.

In 2023, nonresident small game hunters reported the highest average daily expenditures among all hunting categories with \$317 per day (Table 19). Resident pronghorn hunters spent on average \$288 per day, and nonresident archery deer hunters averaged \$271 per day. Resident special big game hunters spent on average \$260 per day. Nonresident furbearer hunters and resident waterfowl hunters averaged \$251 and \$225 per day, respectively. Resident furbearer hunters and fall turkey hunters had the lowest average daily expenditures among hunting activities at \$92 and \$42, respectively. For anglers, nonresident anglers had the highest average daily expenditure at \$259, followed by resident open water anglers at \$252 (Table 19).

While total seasonal expenditures for residents and nonresidents were comparable for similar activities, nonresidents typically spent fewer days hunting or fishing in the state, leading to higher daily expenditures. Nonresidents generally spent more per day on lodging, meals, and other daily expenses. In contrast, residents had higher average daily spending on equipment-related items, such as clothing, device types, and decoys, as well as on specialized services like meat processing, taxidermy, repairs, and veterinarian care (Appendix C Tables).

Table 19. Average Daily Expenditure, by Activity, North Dakota, 2023-24

Residence/Activity	Average Days Participated	Average Season Daily Expenditure		
		Variable	Fixed	Total
Resident		----- \$ -----		
<i>Deer</i>				
Archery	16	48.76	83.63	132.39
Firearm	7	86.35	78.14	164.49
Gratis	7	69.77	81.72	151.50
Muzzleloader	6	51.92	68.28	120.20
Special Big Game	11	168.00	91.74	259.74
Pronghorn	3	168.58	119.46	288.05
Furbearer	18	41.91	49.98	91.89
<i>Small Game</i>				
Upland	11	65.62	36.70	102.32
Waterfowl	16	111.59	113.89	225.47
<i>Turkey</i>				
Fall	11	20.90	21.52	42.43
Spring	4	54.79	55.82	110.61
<i>Fishing</i>				
Open Water	24	83.56	168.60	252.17
Ice	11	49.45	84.16	133.62
Non-Resident				
<i>Deer</i>				
Archery	9	142.88	128.13	271.01
Firearm	6	133.65	49.17	182.81
Small Game	7	229.27	87.80	317.07
Furbearer	9	120.26	130.88	251.14
Fishing	8	163.70	95.50	259.20

Participation Rates

The ND Game and Fish Department (2024) reported the total number of licenses sold for the season and corresponding number of participants. However, not everyone who purchases a license ultimately participates in hunting or fishing. Data from this survey, along with data from other surveys conducted by the ND Game and Fish Department, were used to estimate the number of participants. ND Game and Fish Department estimates participation using several indicators, including license purchases, animal harvests, days spent participating, and expenditure reporting for license holders.

Participation rates varied across hunting and fishing categories for several reasons (Table 20). Licenses that are harder to obtain – such as those issued through lotteries for special big game – often have higher participation rates. For instance, participation rates exceeded 80 percent for resident archery, firearm deer, muzzleloader deer, special big game, and pronghorn antelope. Meanwhile, participation rates for resident furbearer, and small game (upland and waterfowl) hunters were less than 50 (Table 20). Participation rates for some hunting categories are largely influenced by license structures and general popularity, and may not be indicative of general participation. For example, furbearer hunters must purchase the same small game license required for most other hunting activities (e.g., upland, waterfowl, deer), therefore the purchase of a small game license may not indicate participation in furbearer hunting. An increase in upland hunting, by itself, may generate a reduction in furbearer participation rates but that does not imply fewer hunters pursued furbearers.

Nonresident hunters had participation rates ranging between 70 percent (furbearer) and 96 percent (firearm and small game). Nonresident anglers had high participation rates (93 percent) while resident open water and ice fishing participation rates were lower, 74 percent and 29 percent, respectively (Table 20).

Nonresident participation is usually high because non-resident licenses allow participation for only the specific licensed activity. Resident hunters or anglers can purchase licenses that enable them to participate in several hunting and/or fishing activities.

Resident open water fishing had the highest number of participants (105,084) of all hunting and fishing activities, followed by resident deer hunters (66,100 participants) and resident small game hunters (52,882 participants) (Table 20). Resident turkey hunters (combined fall and spring) had 9,295 participants. Among the nonresident hunting and angling activities, fishing had the highest number of participants at 54,555, followed by small game hunting with 49,284 residents. Nonresident firearm deer hunters had the fewest participants at 354.

Table 20. License Sales, Active Participants, and Estimated Participation Rates, Resident and Non-Resident Hunters and Anglers, North Dakota 2023-24

Residence/Activity	License Sales	Participation Rate	Active Participants
		%	
Resident			
<i>Deer</i>			
Archery	24,395	80	19,565
Firearm	40,293	89	35,982
Gratis	12,184	79	9,662
Muzzleloader	1,022	87	891
Special Big Game	860	95	814
Pronghorn	420	85	357
Furbearer	67,653	28	18,706
<i>Small Game</i>			
Upland	74,420	47	35,163
Waterfowl	74,420	24	17,861
<i>Turkey</i>			
Fall	4,217	68	2,851
Spring	8,126	79	6,444
<i>Fishing</i>			
Open Water	141,718	74	105,084
Ice	141,718	29	41,523
Non-Resident			
<i>Deer</i>			
Archery	3,355	92	3,085
Firearm	370	96	354
Small Game	51,337	96	49,284
Furbearer	2,591	70	1,816
Fishing	58,661	93	54,555

Source: ND Game and Fish Department (2024).

Projected Total Direct Expenditures

Total hunting and fishing expenditures were calculated by multiplying the total participants in each activity by average season total expenditures. Total resident spending for hunting and fishing activities was \$921.4 million or 81 percent of total direct expenditures. Total nonresident expenditures for hunting and fishing activities were estimated at \$222.0. Spending by resident and nonresident anglers amounted to \$798.7 million, representing 70 percent of overall direct expenditures. Resident and nonresident hunter expenditures were estimated to be

\$344.7 million. Overall, the direct expenditures by resident and nonresident hunters and anglers during the 2023-24 season in North Dakota was estimated at \$1.1 billion (Table 21). Appendix E contains summary-level estimates of spending, by expenditure type, by hunting and fishing categories.

Table 21. Total Direct Expenditure, Resident and Nonresident Hunters and Anglers, North Dakota 2023-24

Activity	Resident		Nonresident		Total	
	Total	Percentage	Total	Percentage	Total	Percentage
	-- 000s \$--		--000s \$ --		-- 000s \$ --	
Hunting	230,177		114,562		344,739	30
Percent of hunting		67		33		
Fishing	691,265		107,468		798,733	70
Percent of fishing		87		13		
Total hunting/fishing	921,442		222,030		1,143,472	
Percent of total		81		19		100

Among resident hunters, direct expenditures related to small game (upland and waterfowl) and deer hunting accounted for 84 percent of total resident hunter expenditures, \$102.8 million (45 percent) and \$89.9 million (39 percent), respectively (Table 22). Resident pronghorn and big game hunter total expenditures were the lowest among hunting activities, \$340,000 and \$2.3 million, respectively. For some hunting activities such as pronghorn and special big game, total spending is directly related to the number of licenses (tags) available in any given season.

Non-resident small game hunter expenditures accounted for 90 percent or \$103.1 million of total non-resident hunter expenditures. Non-resident deer hunter and furbearer hunter expenditures were estimated to be \$7.6 million and \$3.9 million, respectively.

Direct expenditures by resident open water anglers were \$628.0 million and represented nearly 91 percent of all resident anglers' expenditures. Nonresident angler expenditures were estimated to be \$107.5 million.

Table 22. Total Direct Expenditure (excluding license purchase), by Hunting and Fishing Activity, Resident and Nonresident Hunters and Anglers, North Dakota 2023-24

Activity	Resident		Nonresident		Total	
	Total	Percentage	Total	Percentage	Total	Percentage
	-000s \$-	----- % -----	-000s \$ -	---- % ----	-000s \$ -	---- % ----
Hunting						
Deer^a	89,874	39	7,552	7	97,426	28
Archery	40,666	18	7,190	6	47,856	14
Firearm	39,062	17	362	0	39,425	11
Gratis	9,514	4	na		9,514	3
Muzzleloader	632	0	na		632	0
Special Big Game	2,285	1	na		2,285	1
Pronghorn	340	0	na		340	0
Furbearer	30,940	14	3,877	3	34,817	10
Small Game^b	102,759	45	103,133	90	205,892	60
Upland	39,936	17	na		39,936	12
Waterfowl	62,823	27	na		62,823	18
Turkey^c	3,980	2	na		3,980	1
Fall	1,343	1	na		1,343	0
Spring	2,637	1	na		2,637	1
Total Hunting	230,177		114,562		344,739	
Fishing^d	691,265		107,468		798,733	
Open Water	628,015	91	na		628,015	
Ice	63,250	9	na		63,250	
Total Fishing	691,265	100	107,468		798,733	
Total Hunting & Fishing	921,442		222,030		1,142,472	

Note: Percentages and totals may not total due to rounding. Zero percent value don't represent actual zero due to rounding. Na = not applicable.

^a Includes deer archery, deer firearm, deer muzzleloader and deer gratis hunter expenditures for resident hunters. Nonresident includes deer archery and deer firearm.

^b Resident small game includes upland and waterfowl hunters and were surveyed separately. Nonresident upland and waterfowl were surveyed as one group. The split in spending between resident upland game and waterfowl hunting was based on a survey question requesting the percentage of total expenses attributable to each game type.

^c Includes regular turkey (fall and spring) hunters and gratis turkey (fall and spring) hunter expenditures for resident hunters.

^d Resident open water fishing, and ice fishing activities were surveyed separately. Nonresident anglers were surveyed as one group.

Total Economic Effects

The IMPLAN modeling platform was utilized to estimate secondary economic effects, direct and secondary employment, and state-level tax revenues. Direct expenditures related to hunting and fishing activities were assigned to appropriate economic sectors in the model (see Table 3). Direct and secondary effects are measures of gross business volume.

During the 2023-24 season, total direct expenditures for hunting and fishing activities in North Dakota were \$1.1 billion. These expenditures generated \$328.1 million in secondary business volume resulting in total gross business volume (direct and secondary effects) of \$1.5 billion. Economic activity from hunter and angler expenditures supported 6,959 jobs (Table 23).

Resident and nonresident hunters spent \$344.7 million on hunting activities in 2023-24 in North Dakota which generated secondary economic effects of \$125.5 million. Total (direct plus secondary effects) economic effects or total gross business volume from hunting activities was estimated at \$470.3 million (Table 23).

Resident and nonresident anglers spent \$789.7 million on fishing activities in 2023-24 in North Dakota which produced \$202.5 million in secondary economic effects. Total (direct plus secondary) economic effects or total gross business volume from fishing activities was estimated at \$1.0 billion. Fishing activities contributed \$206.3 million in statewide personal income (Table 23).

Resident hunters and anglers spent \$921.4 million on hunting and fishing activities in 2023-24 in North Dakota which produced secondary economic effects of \$241.1 million. Total (direct plus secondary effects) economic effects or total gross business volume from hunting and fishing activities were estimated at \$1.2 billion. Hunting and fishing activities generated \$236.7 million in personal income across the state (Table 23).

Nonresident hunters and anglers spent \$222.0 million on hunting and fishing activities in 2023-24 in North Dakota which resulted \$87.0 million in secondary economic effects. Total (direct plus secondary) economic effects or total gross business volume from hunting and fishing

activities were estimated at \$309.1 million (Table 23). Hunting and fishing activities contributed \$81.6 million in statewide personal income.

Resident and nonresident hunter and angler expenditures during the 2023-24 season generated state-level tax revenue of \$48.7 million, and \$14.0 million, respectively (Table 23). Hunting activities generated \$19.9 million in state tax revenues and fishing activities generated \$42.8 million in state tax revenues. The total state tax collections from resident and non-resident hunters and anglers were \$62.7 million.

Table 23. Total Direct Expenditure (excluding license purchase), by Hunting and Fishing Activity, Residents and Nonresidents Hunter and Anglers, North Dakota 2023-24

Activity	Resident	Nonresident	Total
	----- 000s \$ -----		
<i>Hunting</i>			
Direct Expenditures	230,177	114,562	344,739
Secondary Effects	79,811	45,708	125,519
Gross Business Volume (direct and secondary effects)	309,988	160,270	470,258
Labor Income	70,082	41,997	112,079
Direct and Secondary Employment ^a	1,675	1,021	2,696
State tax collections	13,030	6,894	19,925
<i>Fishing</i>			
Direct Expenditures	691,265	107,468	798,733
Secondary Effects	161,292	41,252	202,544
Gross Business Volume	852,557	148,814	1,001,371
Labor Income	166,646	39,614	206,260
Direct and Secondary Employment ^a	3,273	989	4,262
State tax collections	35,692	7,068	42,760
<i>Total</i>			
Direct Expenditures	921,442	222,030	1,143,472
Secondary Effects	241,103	86,960	328,063
Gross Business Volume	1,162,545	309,084	1,471,630
Labor Income	236,727	81,611	318,338
Direct and Secondary Employment ^a	4,949	2,010	6,959
State tax collections	48,722	13,963	62,685

^a Values are numbers and not currency. The currency sign does not impact this value.

Expenditures in Rural Areas

To analyze the spending patterns of hunters and anglers within the state, individuals were asked to estimate the share of expenditures made in rural areas. The percentage of total expenditure made in rural areas was then applied to average seasonal spending data for various categories to estimate total rural spending for the 2023-24 period.

Rural Participants

Rural resident hunters' expenditures in rural areas ranged from 38 percent to 57 percent of total expenditures for the various hunting activities (Table 24). Nonresident rural hunters made 39 percent to 55 percent of average season expenditures in rural areas of North Dakota.

Rural resident open water anglers had the highest average per person per season average expenditures in rural North Dakota of \$2,629 followed by rural resident special big game hunters with average per person spending in rural North Dakota of \$1,431. Rural resident fall turkey hunters reported the lowest amount of per person spending in rural areas (\$167.8) while deer firearm hunters recorded the lowest per person spending among nonresidents (\$532).

Resident and nonresident rural hunters and anglers' expenditures in rural North Dakota were estimated at \$223.6 million. Open water anglers accounted for a little over 50 percent (\$115.1 million) of the total season rural expenditure by rural participants.

Table 24. Hunter and Angler Expenditures in Rural Areas by Rural Participants, North Dakota, 2023-24

Activity	Average Season Spending ^a	Rural Participants for Each Activity ^b		Average Rural Spending per Season per Person		Total Season Expenditures in Rural Areas
Resident	\$	%	total	%	\$	\$
<i>Deer</i>						
Archery	2,078.51	42	8,290	49	1,018.47	8,442,710
Firearm	1,085.62	38	13,687	57	618.80	8,469,822
Gratis	984.72	69	6,704	56	551.44	3,697,096
Muzzleloader	709.18	47	420	42	300.69	126,188
Special Big Game	2,805.18	53	428	51	1,430.64	612,632
Pronghorn	950.55	52	187	38	361.21	67,508
Furbearer	1,654.00	56	10,462	44	727.76	7,614,041
<i>Small Game</i>						
Upland	1,135.73	34	12,089	49	556.51	6,727,730
Waterfowl	3,517.36	44	7,880	38	1,336.60	10,532,630
<i>Turkey</i>						
Fall	470.94	38	1,090	46	216.63	236,090
Spring	409.24	38	2,416	41	167.79	405,456
<i>Fishing</i>						
Open Water	5,976.32	42	43,788	44	2,629.58	115,145,293
Ice	1,523.23	52	21,638	55	837.78	18,127,666
Non-Resident						
<i>Deer</i>						
Archery	2,330.70	52	1,614	39	908.97	1,466,831
Firearm	1,023.76	34	120	52	532.36	63,835
Small Game	2,092.64	40	19,807	41	857.98	16,994,097
Furbearer	2,134.68	52	938	55	1,174.07	1,101,842
Fishing	1,969.92	44	24,108	50	984.96	23,745,155
Total, all groups		46	175,667	47		223,576,621

^a Average season expenditures for all participants (rural and urban).

^b Percentage and number of rural participants.

Urban Participants

Urban resident hunters' expenditures in rural areas ranged from 21 percent to 37 percent of total expenditures for the various hunting activities (Table 25). Nonresident urban hunters'

expenditures in rural North Dakota ranged from 28 percent to 47 percent of total expenditures for the various hunting categories.

Urban resident open water anglers had the highest average per person spending in rural areas of North Dakota in 2023-24 season (\$1,434) followed by urban nonresident furbearer hunters with average per person spending of \$1,003. Resident spring turkey hunters reported the lowest per person spending in rural areas of North Dakota in 2023-24 season (\$85.9) while resident deer firearm hunters recorded the lowest among nonresidents.

Rural resident and nonresident open water anglers accounted for almost 50 percent (\$87.9 million) of the total season rural expenditure (\$178.8 million). Urban nonresident small games hunters followed with expenditures of \$24.1 million in rural North Dakota.

Table 25. Hunter and Angler Expenditures in Rural Areas by Urban Participants, North Dakota, 2023-24

Activity	Average Season Spending ^a	Breakout of Urban Participants for Each Activity ^b		Average Rural Spending per Season per Person		Total Season Expenditures in Rural Areas
		%	total	%	\$	
Resident	\$	%	total	%	\$	\$
<i>Deer</i>						
Archery	2,078.51	58	11,275	30	623.55	7,030,678
Firearm	1,085.62	62	22,294	30	325.69	7,260,919
Gratis	984.72	31	2,958	37	364.35	1,077,559
Muzzleloader	709.18	53	472	25	176.59	83,265
Special Big Game	2,805.18	47	386	32	897.66	346,674
Pronghorn	950.55	48	171	32	304.18	51,870
Furbearer	1,654.00	44	8,244	34	562.36	4,635,960
<i>Small Game</i>						
Upland	1,135.73	66	23,074	23	261.22	6,027,409
Waterfowl	3,517.36	56	9,981	22	773.82	7,723,192
<i>Turkey</i>						
Fall	470.94	62	1,761	32	150.70	265,365
Spring	409.24	63	4,027	21	85.94	346,121
<i>Fishing</i>						
Open Water	5,976.32	58	61,295	24	1,434.32	87,917,075
Ice	1,523.23	48	19,886	23	350.34	6,966,759
Non-Resident						
<i>Deer</i>						
Archery	2,330.70	48	1,471	37	862.36	1,268,702
Firearm	1,023.76	66	234	28	286.65	67,022
Small Game	2,092.64	60	29,476	39	816.13	24,056,622
Furbearer	2,134.68	48	878	47	1,003.30	880,710
Fishing	1,969.92	56	30,447	38	748.57	22,791,695
Total, all groups			215,465			178,797,594

^a Average season expenditures for all participants (rural and urban).

^b Percentage and number of urban participants.

All Participants

Hunter and angler expenditures in rural North Dakota totaled \$402.2 million, of which, participants living in rural areas spent \$223.5 million and participants living in urban areas spent \$178.7 million. Rural resident hunters and anglers spent a greater percentage of total expenditures in rural North Dakota compared to urban participants, 58 percent to 42 percent, respectively. However, nonresident urban hunters spent a greater percentage of total

expenditures in rural North Dakota than nonresident rural hunters, 53 percent compared to 47 percent respectively. Regardless of participants residency or if they were from rural or urban communities, roughly half of all hunter and angler expenditures were made in rural North Dakota.

Table 26. Hunter and Angler Expenditure in Rural Areas, All Participants, North Dakota, 2023-24

Group	Rural Spending			Share of All Participants
	Rural Participants	Urban Participants	All Participants	
Resident	----- 000s \$ -----			----- % -----
Hunters	46,932	34,849	81,781	20
Percent	57	43		
Anglers	133,273	94,884	228,157	57
Percent	58	42		
Total	180,205	129,733	309,938	77
Percent	58	42		
Nonresident				
Hunters	19,627	26,273	45,900	11
Percent	42	57		
Anglers	23,745	22,792	46,537	12
Percent	51	49		
Total	43,372	49,065	92,437	23
Percent	47	53		
Total, all groups	223,493	178,736	402,229	100
Percent	56	44		

Comparison of Spending in 2018 and 2024

Average seasonal expenditures for hunting and fishing survey groups, along with statewide economic effects of hunter and angler spending in 2017-18 were compared to those in 2023-24. To account for inflation, 2018 expenditures were adjusted to 2023-dollar equivalents using the Consumer Price Index (CPI) (U.S. Department of Labor, 2023).

Total direct expenditures, represents the combined spending of hunters and anglers, and depends on both the number of participants and average seasonal spending. Changes in either factor influence total direct expenditures. When evaluating expenditures across periods, both participation and average seasonal spending were compared.

Average Season Expenditures

All resident hunting and fishing categories had increased inflation-adjusted total expenditures from 2017-18 to 2023-24, except for resident ice fishing which had a 2 percent decrease (Table 27). Resident waterfowl hunters had the largest percentage change in total expenditures (136 percent) of all hunting and fishing categories. Resident deer gratis hunters had the second largest percentage increase (89 percent) from spending levels observed in 2017-18. Resident open water fishing had the smallest increase in expenditures, a 13 percent increase in average season expenditures from the 2017-18 to 2023-24 seasons.

Among nonresidents, furbearer hunters had the largest percentage change (77 percent) in average seasonal expenditures between the 2017-18 and 2023-24 seasons. Nonresident deer firearm hunter expenditures were the only nonresident hunting activity that had a decline in spending - a 21 percent decrease in average seasonal expenditures.

Table 27. Comparison of Average Variable, Fixed, and Total Season Expenditures, by Activity, North Dakota, 2017-18 and 2023-24

Resident/Activity	2017-2018 Average Season Expenditure ^a			2023-24 Average Season Expenditure			Change in Total
	Variable	Fixed	Total	Variable	Fixed	Total	
Resident	----- 2023 \$-----						%
<i>Deer</i>							
Archery	569.43	607.72	1,177.15	765.56	1,312.95	2,078.51	77
Firearm	528.44	269.68	798.11	569.88	515.74	1,085.62	36
Gratis	327.64	193.03	520.67	453.52	531.20	984.72	89
Muzzleloader	334.15	182.59	516.74	306.31	402.87	709.18	37
Special Big Game	1,545.53	503.38	2,048.91	1,814.40	990.78	2,805.18	37
Pronghorn	590.08	227.04	817.12	556.33	394.22	950.55	16
Furbearer	567.64	621.32	1,188.97	754.44	899.56	1,654.00	39
<i>Small Game</i>							
Upland	566.39	400.25	966.65	728.41	407.32	1,135.73	17
Waterfowl	756.24	732.46	1,488.71	1,740.73	1,776.63	3,517.36	136
<i>Turkey</i>							
Fall	202.03	147.48	349.52	232.02	238.92	470.94	35
Spring	168.13	134.73	302.86	202.72	206.52	409.24	35
<i>Fishing</i>							
Open Water	1,615.13	3,661.18	5,276.43	1,980.45	3,995.87	5,976.32	13
Ice	636.36	909.29	1,545.65	563.77	959.46	1,523.23	-1
Non-Resident							
<i>Deer</i>							
Archery	1,295.55	321.82	1,617.37	1,228.76	1,101.94	2,330.70	44
Firearm	1,146.15	150.80	1,296.95	748.43	275.33	1,023.76	-21
Small Game	1,356.65	158.94	1,515.59	1,513.17	579.47	2,092.64	38
Furbearer	868.60	337.01	1,205.61	1,022.21	1,112.47	2,134.68	77
Fishing	1,219.03	286.45	1,505.48	1,244.15	725.77	1,969.92	31

^a Adjusted for inflation to reflect 2023 dollars using the Consumer Price Index (U.S. Department of Labor 2023)

Hunter and Angler Participation

The number of participants for each activity was compared to the previous study as another means to gauge changes in statewide spending. A decrease in participants is not necessarily indicative of a lack of interest in hunting, but is correlated to wildlife populations and hunting and fishing opportunities. For example, the issuance of fewer deer firearm licenses due to lower deer populations reduces the number of deer hunters.

Among resident hunting activities, resident gratis deer hunting had the largest percentage decline (9 percent) in license sales between the 2017-18 and 2023-24 seasons (Table 28). Resident spring turkey had the highest increase in license sales of 44 percent among resident hunting activities. Correspondingly, resident spring turkey had the largest increase in the number of participants (46 percent) while resident furbearer hunters had the largest decrease (36 percent) in resident participants.

Among nonresident hunting activities, nonresident firearm deer licenses increased 87 percent from 2017-18 season with a 102 percent increase in participants, although the total number of participants compared to other hunting and fishing activities remains quite low. Nonresident furbearer hunting had a 17 percent decline in license sales and 24 percent decrease in participants from the 2017-18 season.

Sales of fishing licenses and the number of participants for both resident and nonresident fishing decreased from the 2017-18 to the 2023-24 season. Both resident and nonresident fishing had a 7 percent decrease in license sales. Resident ice fishing reported the highest decrease (36 percent) in participants from the 2017-18 to the 2023-24 season.

While most activities had consistent changes in both license sales and participation from the 2017-18 to the 2023-24 season, a few activities had increases in license sales but reductions in participants. For instance, small game license sales increased by 5 percent for residents but overall upland game participation decreased by 12 percent. These observations can be influenced by the licensing structure required for many resident hunting activities (i.e., small game licenses are often required for participation in non-small game hunting).

Table 28. Comparison of License Sales and Active Participants, by Activity, North Dakota, 2017-18 and 2023-24

Activity	2017-18 Season		2023-24 Season		Percentage Change 2017-18 to 2023-24	
	License Sales	Participants	License Sales	Participants	License Sales	Participants
Resident					%	
Deer						
Archery	26,114	21,042	24,395	19,565	-7	-7
Firearm	40,904	37,306	40,293	35,982	-2	-4
Gratis	13,402	11,426	12,184	9,662	-9	-15
Muzzleloader	1,025	910	1,022	891		-2
Special Big Game	653	620	860	814	32	31
Pronghorn	410	370	420	357	2	-3
Furbearer	66,675	29,253	67,653	18,706	2	-36
Small Game						
Upland	71,197	39,732	74,420	35,163	5	-12
Waterfowl	71,197	17,016	74,420	17,861	5	5
Turkey						
Fall	3,524	2,200	4,217	2,851	20	30
Spring	5,662	4,401	8,126	6,444	44	46
Fishing						
Open Water	151,913	144,317	141,718	105,084	-7	-27
Ice	151,913	65,323	141,718	41,523	-7	-36
Non-Resident						
Deer						
Archery	2,367	2,220	3,355	3,085	42	39
Firearm	198	175	370	354	87	102
Small Game	40,025	37,486	51,337	49,284	28	32
Furbearer	3,131	2,397	2,591	1,816	-17	-24
Fishing	62,958	60,755	58,661	54,555	-7	-10

Note: Zero percent value don't represent actual zero due to rounding.

Total Direct Expenditures

Inflation-adjusted total direct spending by resident and nonresident hunters and anglers in North Dakota declined by \$40.1 million (3 percent) between the 2017-18 and 2023-24 seasons (Table 29). The overall decrease in total spending was due to declines in spending for fishing. Across all residences and hunting and fishing activities, spending on nondurable goods decreased by 30 percent, while spending on durable goods increased by 16 percent.

In 2023-24, direct expenditures by resident hunters and anglers fell by \$107.2 million, reflecting a 10 percent decline compared to 2017-18. Nonresident hunters and anglers' expenditures increased by \$67.1 million (43 percent) over the same period.

While hunting-related expenditures (for both residents and nonresidents) rose by \$118.1 million from 2017-18 to 2023-24, fishing expenditures declined by \$158.2 million (-17 percent) (Table 29).

Table 29. Comparison of Total Direct Expenditures, by Residence and Activity, North Dakota, 2017-18 and 2023-24

Category	Total Direct Expenditures		Change from	
			2017-18 to 2023-24	
	2017-18	2023-24	Dollars	Percent
All Activities	----- 000s 2023 \$ -----			
Variable Expenses	496,316	346,122	-150,193	-30
Fixed Expenses	687,251	797,350	110,099	16
Total	1,183,568	1,143,472	-40,095	-3
All Activities by Resident				
Residents	1,028,610	921,442	-107,169	-10
Nonresidents	154,957	222,030	67,073	43
All Hunting	226,649	344,739	118,090	52
Residents	163,157	230,177	67,020	41
Nonresidents	63,491	114,562	51,071	80
All Fishing	956,919	798,733	-158,186	-17
Residents	865,453	691,265	-174,188	-20
Nonresidents	91,466	107,468	16,002	18

Note: Totals may not add due to rounding

The proportion of total direct expenditures attributable to different hunting and fishing activities was analyzed for both the 2017-18 and 2023-24 seasons (Table 30). In 2017-18, hunting accounted for 19 percent of all direct spending. Expenditure related to hunting activities increased to 30 percent of total direct expenditure in 2023-24. Resident hunter expenditures accounted for 14 percent of total direct expenditures in 2017-18, compared to 20 percent in 2023-24. Nonresident hunters' expenditures as a percentage of total direct expenditures also increased, from 5 percent in 2017-18 to 10 percent in 2023-24.

In contrast, the contribution to total direct expenditures from fishing declined substantially. In 2017-18, resident and nonresident anglers accounted for 81 percent of all direct

spending, which decreased to 70 percent of all spending in 2023-24. Resident anglers' share had the largest decrease in direct expenditures from 73 percent in 2017-18 to 60 percent in 2023-24. Nonresident anglers had a slight increase from 8 percent to 9 percent of direct expenditures over the same period (Table 30).

Spending by resident hunters and anglers consistently accounted for the majority of total direct expenditures, comprising 87 percent in 2017-18 to 80.6 percent in 2023-24. Nonresident spending was 13 percent of total expenditures in 2017-18 and increased to 19 percent in 2023-24 (Table 30).

Table 30. Resident and Nonresident Expenditures as a Percentage of Total Direct Expenditures and Percentage of Activity, North Dakota, 2017-18 and 2023-24

Category	Percentage of All Direct Expenditures	
	2017-18	2023-24
<i>Hunting</i>	19	30
Resident	14	20
Nonresident	5	10
<i>Fishing</i>	81	70
Resident	73	60
Nonresident	8	9
<i>All Resident Expenditures</i>	87	81
<i>All Nonresident Expenditures</i>	13	19
	Percentage of Category Residence	
<i>Hunting</i>		
Resident	72	66
Nonresident	28	33
<i>Fishing</i>		
Resident	90	87
Nonresident	10	14

From 2017-18 to 2023-24, changes in total direct spending varied across different hunter and angler groups (Table 31). Nonresident archery hunters had a 102 percent increase in total direct spending, followed by resident spring turkey hunters (98 percent). Resident ice fishing had the largest decrease in total direct spending, declining 37 percent.

Among the 18 survey groups, 15 activities reported higher total direct spending in inflation adjusted dollars in 2023-24 compared to 2017-18. Notable increases in statewide spending were observed in all resident deer hunting categories, as well as resident special big

game, pronghorn, small game, and turkey hunters. For nonresidents, all hunting and angler activities showed increased spending.

The largest decline in total spending was observed for resident open water anglers, which declined by \$133.4 million compared to 2017-18.

Table 31. Comparison of Total Direct Hunter and Angler Expenditures, by Hunting and Fishing Activity North Dakota, 2017-18 and 2023-24

Activity	Total Direct Expenditures		Change from 2017-18 to 2023-24		Percentage of Total Direct Expenditures	
	2017-18	2023-24	Dollars	Percentage	2017-18	2023-24
Resident	----- 000s 2023 \$ -----			%		
Deer						
Archery	24,769	40,666	15,896	64	3	4
Firearm	29,775	39,062	9,288	31	3	4
Gratis	5,949	9,514	3,565	60	1	1
Muzzleloader	470	632	162	34	0	0
Special Big Game	1,271	2,285	1,014	80	0	0
Pronghorn	302	340	37	12	0	0
Furbearer	34,780	30,940	-3,841	-11	4	3
Small Game						
Upland	38,407	39,936	1,529	4	4	4
Waterfowl	25,332	48,525	37,491	148	3	6
Turkey						
Fall	769	1,343	574	75	0	0
Spring	1,332	2,637	1,305	98	0	0
Fishing						
Open Water	761,460	628,015	-133,445	-18	85	64
Ice	100,967	63,250	-37,717	-37	11	6
Non-Resident						
Deer						
Archery	3,561	7,190	3,629	102	0	1
Firearm	227	362	135	59	0	0
Small Game	56,813	103,133	46,320	82	6	10
Furbearer	2,890	3,877	988	34	0	0
Fishing	91,466	107,468	16,002	17	10	11

Note: Zero percent value don't represent actual zero due to rounding.

Total Economic Effects

The gross business volume (the sum of direct and secondary effects across all economic sectors in the state's economy), direct and secondary employment, and state tax collections were estimated by applying spending to various economic sectors in the IMPLAN modeling platform (see Table 3).

From 2017-18 to 2023-24, after adjusting for inflation, the overall economic effects of hunting and fishing in North Dakota declined slightly. Total direct and secondary effects (gross business volume) declined by 3 percent. Direct spending declined by 3 percent and secondary effects declined by 1 percent (Table 32).

During the 2023-24 season, resident and nonresident hunting and fishing activities generated \$1.1 million in direct effects and \$328.1 million in secondary economic effects. Total economic effects as a result of resident and nonresident hunters and anglers during 2023-24 contributed approximately \$1.5 billion in economic activity across North Dakota (Table 34).

Total direct and secondary economic effects (gross business volume) from hunting activities increased by 49 percent (\$154.4 million) from 2017-18 and 2023-24. However, total direct and secondary economic effects (gross business volume) associated with fishing declined by 16 percent (\$193.2 million) over the same period.

Personal income which represents secondary wages, salaries, and earnings associated with hunter and angler expenditures grew by \$3.0 million between 2017-18 and 2023-24. State tax collections generated as a result of hunter and angler expenditures declined by \$1.0 million over this period (Table 32).

Table 32. Comparison of Total Economic Contribution of Resident and Nonresident Hunting and Fishing

Category	2017-18 Season	2023-24 Season	Change 2017-18 to 2023-24	
Hunting	----- 000s 2023 \$ -----			%
Direct Expenditures	226,649	344,739	118,090	52
Secondary Effects	89,148	125,519	36,372	41
Gross Business Volume	315,845	470,258	154,413	49
Labor Income	74,845	112,079	37,233	50
Direct and Secondary Employment ^a	1,481	2,696	1,215	82
State tax collections	13,386	19,925	6,538	49
Fishing				
Direct Expenditures	956,919	798,827	-158,186	-17
Secondary Effects	241,686	202,543	-39,142	-16
Gross Business Volume	1,194,562	1,001,371	-193,191	-16
Labor Income	240,531	206,260	-34,271	-14
Direct and Secondary Employment ^a	4,034	4,262	229	6
State tax collections	50,343	42,760	-7,582	-15
Total Hunting and Fishing				
Direct Expenditures	1,183,568	1,143,566	-40,096	-3
Secondary Effects	330,833	328,063	-2,770	-1
Gross Business Volume	1,510,407	1,471,630	-38,778	-3
Labor Income	315,376	318,338	2,962	1
Direct and Secondary Employment ^a	5,515	6,959	1,444	26
State tax collections	63,729	62,685	-1,044	-2

^a Values are numbers and not currency. The currency sign at the top does not impact this value.

Summary

This study builds on a series of previous analyses examining the socio-economic effects associated with hunting and fishing in North Dakota. Study objectives were to assess the characteristics, spending patterns, and economic effects of hunters and anglers during the 2023-24 season. Current findings were compared to previous study finding.

To gather information on expenditures, the North Dakota Game and Fish Department conducted an online survey of 25,236 resident hunters and anglers and 12,354 nonresident participants. The survey collected data for activities related to 18 distinct hunting and fishing categories based on license type (resident, nonresident, gratis), game type (e.g., special big game, deer, furbearers, pronghorn, turkey, upland game, waterfowl, and fish), and device type when applicable (archery, firearm, muzzleloader). A total of 8,835 individuals responded, resulting in an overall response rate of 24 percent.

The survey solicited information about expenditures associated with hunting or fishing activities during 2023-24. The survey also collected demographic information, including residence, age, and income. Expenditures were categorized into **variable (nondurable)** goods and services and **fixed (durable)** goods. Average per-person spending on variable, fixed, and total expenditures was estimated for each survey group.

To estimate total statewide spending during the 2023-24 season, average expenditures were multiplied by the number of active participants. These total direct expenditures were applied to the IMPLAN modeling platform to estimate secondary economic effects, gross business volume, direct and secondary employment, and state tax revenue.

Key participant characteristics, average spending, total economic effects of hunting and fishing activities, and comparisons of important economic measures between 2017-18 and 2023-24 are summarized below.

Hunter and Angler Characteristics

- Among all hunting activities, deer gratis hunter had most respondents over 34 years old – 92 percent, hunted an average of 7 days during the 2023-24 season in North Dakota, lived in rural communities – 69 percent, and had a gross household income of at least \$75,000 – 79 percent.
- Resident open water angler respondents were on average 53 years old and fished an average of 24 days per year. Almost 60 percent of resident open water anglers resided in an urban community. Resident ice fishing respondents were on average 45 years old and fished 11 days per year. A little over 50 percent of resident ice fish anglers resided in a rural community. Seventy-six percent and 68 percent of resident open water anglers and ice fish anglers respectively reported gross household income of at least \$75,000.
- Among all hunting activities, deer firearm hunter had most respondents over 34 years old – 86 percent, hunted an average of 6 during the 2023-24 season in North Dakota, lived in a community with a population over 2,500 – 66 percent, and had a gross household income of at least \$75,000 – 94 percent.
- Average age of nonresident angler was 57 years old, resided in an urban community (56 percent), had household income of at least \$75,000 (73 percent) and fished for 8 days in North Dakota.

Average Season Expenditure

Average spending for the various hunting and fishing activities varied considerable depending on the activity.

- Resident open water anglers reported the highest average per-person per season spending of \$5,976.
- Resident spring turkey hunters reported the lowest average per-person per season spending of \$409.
- Among resident hunters, resident waterfowl hunters reported the highest average total seasonal expenditures; \$3,517 per season.
- Among non-resident hunters, nonresident archery deer hunters reported the highest total seasonal expenditures; \$2,331 per season.

Average Daily Expenditures

Average daily spending was calculated by dividing the total expenditures by the number of participation days for each activity. This metric helps compare spending across activities, accounting for variation in season length, harvest opportunities, and the unique attributes of different hunting and fishing activities.

- Nonresident small game hunters had the highest average daily expenditures among all resident and nonresident hunting categories; \$317 per day.
- Resident pronghorn hunters had the second highest average daily expenditures among all resident and nonresident hunting categories; \$288 per day.
- Resident furbearer hunters and fall turkey hunters reported the lowest average daily expenditures among hunting activities; \$92 and \$42 per day, respectively.
- Among resident and nonresident anglers, nonresident anglers had the highest average daily expenditure at \$259 followed by resident open water fishing at \$252.

Total Direct Expenditures

Total spending by hunters and anglers in North Dakota is a function of the number of participants and average spending. To estimate total expenditures, the number of participants in each hunting and fishing activity was multiplied by average seasonal spending for each hunting and fishing activity.

- Total direct expenditures by hunters and anglers during the 2023-24 season in North Dakota were estimated at \$1.1 billion
 - Resident hunters and anglers' direct expenditures were \$921.4 million.
 - Nonresident hunters and anglers' direct expenditures were \$222.0 million.
- Hunters (resident and nonresident) direct expenditures were estimated to be 344.7 million.
 - Resident hunters' direct expenditures were \$230.2 million.
 - Nonresident hunters' direct expenditures were \$114.6 million.
- Anglers (resident and nonresident) direct expenditures were estimated to be \$798.7 million.
 - Resident anglers' direct expenditures were \$691.3 million.
 - Nonresident anglers' direct expenditures were \$107.5 million.

- Resident waterfowl hunters' direct expenditures were \$62.8 million – the highest among all resident hunting activities.
- Nonresident small games hunters' direct expenditures were recorded \$103.1 million – the highest among all nonresident hunting activities.

Total Economic Effects

The secondary effects of hunting and fishing expenditures in North Dakota were estimated using the IMPLAN modeling platform. Secondary effects represent additional economic activity generated by the re-spending of hunter and angler expenditures. Effects are expressed as a combination of direct and secondary effects for business volume, employment and state and local tax revenues.

Spending by resident hunters supported:

- \$310.0 million gross business volume (total direct and secondary effects)
- 1,675 jobs
- \$13.0 million in state tax revenues

Spending by resident anglers supported:

- \$852.6 million gross business volume (total direct and secondary effects)
- 3,273 jobs
- \$35.7 million in state tax revenues

Spending by nonresident hunters supported:

- \$160.3 million gross business volume (total direct and secondary effects)
- 1,021 jobs
- \$6.9 million in state tax revenues

Spending by nonresident anglers supported:

- \$148.8 million gross business volume (total direct and secondary effects)
- 989 jobs

- \$7.1 million in state tax revenues

Hunting-related expenditures (resident and nonresident) supported:

- \$470.3 million in gross business volume (total direct and secondary effects)
- 2,696 jobs
- \$19.9 million in state tax collections

Fishing-related expenditures (resident and nonresident) supported:

- \$1.0 billion in gross business volume (total direct and secondary effects)
- 4,262 jobs
- \$42.8 million in state tax revenues

All hunting and fishing activities (resident and nonresident) in North Dakota during the 2023-24 season generated:

- \$1.5 billion in gross business volume (total direct and secondary effects)
- 6,959 jobs
- \$62.7 million in state tax collections

Spending in Rural Areas

To gain insight into how hunters and anglers distribute their spending across the state, participants were asked to report the proportion of expenditures made in rural North Dakota. These percentages were then applied to the average seasonal spending for both resident and nonresident participants in urban and rural regions, creating an estimate of total rural expenditures during the 2023-24 season.

- Direct expenditures by resident and nonresident hunters and anglers in rural areas of North Dakota in 2023-24 was \$402.2 million.
 - Residents - \$309.9 million.
 - Hunters and anglers from urban areas - \$129.7 million
 - Hunters and anglers from rural areas - \$180.2 million.
 - Nonresident - \$92.4 million.

- Hunters and anglers from urban areas - \$49.1 million.
- Hunters and anglers- \$43.4 million.

Comparison of Spending in 2017-18 and 2023-24

Average seasonal spending in 2023-24 was compared to average seasonal spending in 2017-18 across hunting and fishing activities. Expenditures for 2017-18 were adjusted to 2023-dollar equivalents using the Consumer Price Index.

- Among all resident hunting and fishing activities, each activity had at least a 13 percent increase in total average seasonal expenditures from 2017-18 to 2023-24, except for resident ice fishing which had a 2 percent decrease.
 - Among resident hunters and anglers, resident waterfowl hunters reported the largest increase in spending; 136 percent.
 - Among nonresident hunters and anglers, nonresident furbearer hunters reported the largest increase in spending; 77 percent
- License sales
 - Among resident hunter and anglers, resident turkey spring hunters had the largest increase in license sales; 44 percent.
 - Among nonresident hunters and anglers, nonresident deer firearm hunters license sales had the largest increase in license sales; 87 percent.
- Participation
 - Among resident hunters and anglers, spring turkey hunters had the largest increase in participation rates; (46 percent), while furbearer hunters and ice anglers had the largest decline in participation rates (36 percent).
 - Among nonresident hunters and anglers, deer firearm hunters had the largest increase in participation rates (102 percent) while furbearer hunters had the largest decline in participation rates (24 percent).
- Spending
 - Inflation-adjusted total direct spending by resident and nonresident hunters and anglers in North Dakota decreased by \$40.1 million (3 percent).

- Total direct expenditures for all hunting activities increased by \$118.1 million, a 52 percent increase between the two periods (2017-18 and 2023-24).
- Total direct expenditures for all fishing activities decrease by \$158.2 million, a 17 percent decrease.
- Spending on nondurable goods by resident and nonresident hunters and anglers decreased by 30 percent, while spending on durable goods rose 16 percent.
- Resident and nonresident hunters accounted for 30 percent of total direct expenditure; An 11- percentage point increased from 2017-18.
- Nonresident hunters and anglers accounted for 19 percent of total direct expenditure; a 6 - percentage point increased from 2017-18.

Conclusion

Hunting and fishing activities are deeply engrained in the culture of North Dakota. Not only are hunting and fishing cherished pastimes in North Dakota; expenditures associated with those activities generate substantial economic activity, especially in rural North Dakota. Despite changing conditions that have contributed to declining participation rates for some hunting and fishing activities, these activities continue to contribute substantial economic activity.

While the popularity of hunting remains strong, the number of people participating in some hunting and fishing activities has declined affecting total economic effects. However, this decline has not resulted in commensurate reductions in overall spending because per person spending has increased substantially over the period. Hunters and anglers contributed \$1.5 billion in gross business volume (total direct and secondary effects) during the most recent study period (2023-24).

Over the past few decades, studies of hunter and angler expenditures have provided invaluable insights into the characteristics and expenditure pattern of hunters and anglers in North Dakota. Consistency in data collection and methodology ensures that the trends observed are accurate reflections of evolving behaviors and economic effects. Activities associated with hunting and fishing continues to generate substantial levels of economic activity in North Dakota.

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Appendices

Appendix A: Representative Expenditure Questionnaire



2023 Deer Bow Hunter Expenditure Questionnaire

1. Did you attempt to hunt during the 2023 deer bow season?
☐ Yes ☐ No

Hidden unless: #1 Question "Did you attempt to hunt during the 2023 deer bow season?" is one of the following answers ("Yes")

We are interested in your hunting-related expenses from the most recent bow hunting season. You will be presented with a series of spending categories containing common items purchased while hunting. Please restrict your answers to purchases made specifically to bow hunt in North Dakota.

2. **PREPARATION & ACCESS** - Below are a series of general categories associated with preparing for an upcoming hunting season. Please select the categories in which you spent money while bow hunting in North Dakota during last year's season.
- ☐ Guiding fees ☐ Land access fees ☐ Mobile app subscriptions (e.g., OnX, Navionics)
☐ Food plots, bait, feeders ☐ NA - I did not spend money on any of these categories
3. **TRAVEL & LODGING** - Below are a series of categories associated with preparing travel and lodging. Please select the categories in which you spent money while bow hunting in North Dakota during last year's season.
- ☐ Driving costs (e.g., gas, vehicle maintenance, and/or repairs) ☐ Meals, food, and beverages
☐ Lodging (e.g., hotel, campground fees) ☐ Camping tent, wall tent
☐ NA - I did not spend money on any of these categories
4. **VEHICLES** - Below are a series of categories associated with major vehicle expenditures. Please select the categories in which you made purchases used for bow hunting in North Dakota during last year's season.
- ☐ Vehicles used for hunting (e.g., pickup, SUV, side-by-side) ☐ Trailers for hauling hunting gear
☐ RV, camper for hunting ☐ NA - I did not spend money on any of these categories
5. **HUNTING EQUIPMENT** - Below are a series of categories associated with hunting equipment expenditures. Please select the categories in which you made purchases used for bow hunting in North Dakota during last year's season.
- ☐ Hunting blind, stands ☐ Decoys, calls ☐ Hunting bows
☐ Archery equipment (e.g., arrows and broadheads, rests, releases) ☐ NA - I did not spend money on any of these categories ☐
Optics and/or accessories (e.g., binoculars, spotting scopes, range finders, tripods)
6. **HUNTING GEAR** - Below are a series of categories associated with hunting gear expenditures. Please select the categories in which you made purchases used for bow hunting in North Dakota during last year's season.
- ☐ Outerwear (e.g., jackets, hats) ☐ Clothing (e.g., baselayers, hunting pants) ☐ Footwear (e.g., hunting boots, waders)
☐ Trail cameras, batteries, data plan ☐ Photography and/or videography (e.g., GoPro's, cameras, lenses) ☐ Hunting packs, harnesses, vests
☐ Hunting electronics (e.g., game ears, GPS) ☐ Attractants, lures, and/or scents
☐ Field dressing (e.g., knives, game bags, saws) ☐ NA - I did not spend money on any of these categories
7. **POST-HUNT EXPENDITURES** - Below are a series of categories associated with post-hunting expenditures. Please select the categories in which you made purchases used for bow hunting in North Dakota during last year's season.
- ☐ Meat processors, butchers ☐ Game processing equipment (e.g., grinders, stuffers, vacuum sealers)
☐ Taxidermy ☐ NA - I did not spend money on any of these categories

Page entry logic: This page will show when: (#1 Question "Did you attempt to hunt during the 2023 deer bow season?" is one of the following answers ("Yes") AND #2 Question "Below are a series of general categories associated with preparing for an upcoming hunting season. Please select the categories in which you spent money while bow hunting in North Dakota during last year's season." is not one of the following answers ("NA - I did not spend money on any of these categories"))

8. **Expenses - PREPARATION & ACCESS** - Please enter how much you spent on each of the expenditures below. (If you're not sure exactly how much you spent, please use your best estimate.)

Rental fees for boat and/or motor:: _____ Rental fees for ice fishing house:: _____
Guiding fees:: _____ Land access fees:: _____
Mobile app subscriptions (e.g., OnX, Navionics):: _____ Food plots, bait, feeders:: _____
Equipment maintenance and/or repair:: _____

9. What percentage of the expenses above were spent in rural areas of North Dakota (communities under 2,500 in population)? _____
10. **Expenses - TRAVEL & LODGING** - Please enter how much you spent on each of the travel and lodging expenditures below. Remember to restrict your expenditures to your time in North Dakota only. (If you're not sure exactly how much you spent, please use your best estimate.)
- Driving costs (e.g., gas, vehicle maintenance, and/or repairs):: _____ Meals, food, and beverages:: _____
Lodging (e.g., hotel, campground fees):: _____ Camping tent, wall tent, and associated accessories:: _____
Total miles driven for all trips:: _____ About how many days did you hunt?: _____
11. What percentage of the expenses above were spent in rural areas of North Dakota (communities under 2,500 in population)? _____

12. Expenses – VEHICLES - Please enter how much you spent on each of the major vehicles below. (If you're not sure exactly how much you spent, please use your best estimate.) As a reminder, please restrict your answers to vehicles used specifically for bow hunting.

Vehicles use for fishing (e.g., pickup, SUV, side-by-side):: _____ Fishing boats and trailers, motors:: _____
Vehicles used for ice fishing (e.g., pickup, ATV, snowmobile, side-by-side):: _____ Small fishing boats (e.g., kayak, canoe):: _____
RV, camper, or towable ice house (e.g., Ice Castle) for fishing and/or ice fishing:: _____ Trailers for hauling fishing gear: : _____
Vehicles use for hunting (e.g., pickup, SUV, side-by-side):: _____ Trailers for hauling hunting gear:: _____
RV, camper for hunting:: _____

13. What percentage of the expenses above were spent in rural areas of North Dakota (communities under 2,500 in population)? _____

14. Expenses - HUNTING EQUIPMENT - Please enter how much you spent on each of the hunting equipment purchases below. (If you're not sure exactly how much you spent, please use your best estimate.)

Hunting blind, stands:: _____ Decoys, calls:: _____
Firearms (rifles, muzzleloaders, handguns):: _____ Hunting bows:: _____
Firearms accessories (e.g., scopes, slings, bipods, shooting sticks, gun cleaning, cases):: _____ Shotguns:: _____
Shotgun accessories (e.g., choke tubes, gun cleaning):: _____ Ammunition and/or reloading equipment:: _____
Archery equipment (e.g., arrows and broadheads, rests, releases):: _____ Calls, lures, and scents for hunting predators:: _____
Optics and/or accessories (e.g., binoculars, spotting scopes, range finders, tripods):: _____
Furbearer trapping and snaring equipment:: _____ Small boats for waterfowl hunting (e.g., duck boats, canoes, kayaks):: _____
Equipment for night hunting of predators (e.g., night vision, thermal vision, or infrared scopes):: _____

15. What percentage of the expenses above were purchased online? _____

16. What percentage of the expenses above were spent in rural areas of North Dakota (communities under 2,500 in population)? _____

17. Expenses - HUNTING GEAR - Please enter how much you spent on each of the hunting gear purchases below. (If you're not sure exactly how much you spent, please use your best estimate.)

Outerwear (e.g., jackets, hats):: _____ Clothing (e.g., baselayers, hunting pants):: _____
Footwear (e.g., hunting boots, waders):: _____ Trail cameras, batteries, data plans:: _____
Photography and/or videography (e.g., GoPro's, cameras, lenses):: _____ Hunting packs, harnesses, vests:: _____
Hunting electronics (e.g., game ears, GPS):: _____ Attractants, lures, and/or scents:: _____
Field dressing (e.g., knives, game bags, saws):: _____

18. What percentage of the expenses above were purchased online? _____

19. What percentage of the expenses above were spent in rural areas of North Dakota (communities under 2,500 in population)? _____

20. Expenses - POST-HUNT EXPENDITURES - Please enter how much you spent on each post-hunting expenditure below. (If you're not sure exactly how much you spent, please use your best estimate.)

Meat processors, butchers:: _____ Game processing equipment (e.g., grinders, stuffers):: _____
Taxidermy:: _____ Furbearer skinning equipment (e.g., stretchers, knives):: _____

21. What percentage of the expenses above were purchased online? _____

22. What percentage of the expenses above were spent in rural areas of North Dakota (communities under 2,500 in population)? _____

23. OTHER - Were there any "other" purchases you made specifically for bow hunting that were not reported earlier in the survey?

() Yes () No

24. Please enter information about these "other" purchases.

Describe the "other" purchases:: _____
Please enter the money you spent on "other" purchases:: _____

25. What percentage of the expenses above were purchased online? _____

26. What percentage of the expenses above were spent in rural areas of North Dakota (communities under 2,500 in population)? _____

27. VALUE OF DAY OF HUNTING - If you could put a dollar value on a typical day of bow hunting in North Dakota, what would that dollar amount be? _____

28. CITY SIZE - Please describe the size of your primary residence.

() City over 50,000 population () City between 2,500 and 50,000 population () Community under 2,500 population
() Rural non-farm () Farm or ranch

29. HOUSEHOLD INCOME - What is your approximate annual household income (before taxes and deductions)?

() \$150,000 or more () \$125,000 - \$149,999 () \$100,000 - \$124,999 () \$75,000 - \$99,999
() \$50,000 - \$74,999 () \$25,000 - \$49,999 () \$10,000 - \$24,999 () Under \$10,000

Thank You! Thank you for taking our survey. Your response is very important to us.

Appendix B: Procedure for Estimating Vehicle Expenses

The questionnaire distributed to hunters and anglers collected data on the costs of vehicles and campers purchased during the season in which they were used. However, it did not include additional information regarding the purpose of the purchase - such as whether the vehicles were used exclusively for hunting and fishing or for other activities not addressed in the questionnaire. For example, a respondent who completed an upland game survey and reported a vehicle purchase could also have used the vehicle for waterfowl, turkey, deer, and pronghorn hunting, as well as for summer and winter fishing. Due to these limitations, a method was developed to allocate a portion of vehicle purchases to specific hunting and fishing.

Relatively few individuals purchase vehicles each year compared to those purchasing other hunting and fishing-related gear. To address the challenge of having a limited number of observations (i.e., survey respondents reporting vehicle purchases), the analysis averaged vehicle purchases across larger groups. These groups included all resident hunters, resident anglers, resident gratis hunters, nonresident hunters, and nonresident anglers. The average vehicle expense in each group was then distributed among individual hunting or fishing categories within that group. For instance, for resident hunters, the estimated average vehicle purchase attributable to hunting was allocated to individual categories, such as turkey, upland game, waterfowl, deer, big game, pronghorn, and furbearers.

The allocation process also considered the number of days spent participating in hunting or fishing activities. The total purchase value (i.e., the sum of all vehicle purchases) for each group was calculated (Appendix Table B1) and divided by the number of respondents who reported a vehicle purchase. The average vehicle purchase costs for resident hunters, resident anglers, resident gratis hunters, nonresident hunters, and nonresident anglers were \$16,453.7, \$10,764.3, \$18,500.0, \$22,830.9, and \$15,940.0, respectively (Appendix Table B1).

The average purchase cost per group was then divided by the total number of respondents in each group to estimate the average purchase value per respondent. The results were \$545.6, \$1,084.2, \$502.7, \$615.2, and \$669.7 respectively for resident hunters, resident anglers, resident gratis hunters, nonresident hunters, and nonresident anglers.

Next, the total number of participation days for each group was calculated. These totals respectively for resident hunters, resident anglers, resident gratis hunters, nonresident hunters, and nonresident anglers were 26,650; 5,268; 1,103; 14,201 and 1,647 days.

To estimate the percentage of time vehicles were used for hunting and fishing, the total number of respondent-days per year was calculated by multiplying 365 (days in a year) by the number of respondents who reported vehicle purchases. The total participation days were then divided by the total respondent-days to determine the average percentage of time vehicles were used for hunting and fishing activities. This percentage was doubled to account for multiple uses (e.g., for both hunting and fishing) and for the fact that hunting and fishing activities are typically more demanding on vehicles than other uses. The adjusted percentage was then multiplied by the average vehicle purchase value per respondent to calculate an allocated expense per person for each group. The resulting average vehicle purchase costs attributable to hunting and fishing were: \$24.7, \$112.6, \$16.5, \$23.46, \$25.4 respectively for resident hunters, resident anglers, resident gratis hunters, nonresident hunters, and nonresident anglers.

Appendix Table B1. Vehicle Expense Estimates for Resident Hunters, Resident Anglers, Gratis Hunters, Nonresident Hunters, and Nonresident Anglers, North Dakota, 2023-24

Resident			Non-Resident		ID	Formula	Description
Gratis	Hunting	Fishing	Hunting	Fishing			
233	3,755	342	2,361	292	a	count	Total survey respondent in each group
5	107	28	55	10	b	count	Survey respondents with positive vehicle expense
184	3,227	278	2,041	238	c	count	Survey respondents that answered vehicle purchase portion of questionnaire
\$92,500	\$1,760,550	\$301,400	\$1,255,700	\$159,400	d	sum of "b"	Total values of vehicles purchase
3%	3%	10%	3%	4%	e	b/c	Percentage of total survey respondent that made a vehicle purchase
\$18,500.0	\$16,453.7	\$10,764.3	\$22,830.9	\$15,940.0	f	d/b	Average purchase values
\$502.7	\$545.6	\$1,084.2	\$615.2	\$669.7	g	d/c	Average spent on vehicle purchases
1,103.0	26,650.0	5,268.0	14,201.0	1,647.0	h	sum of "c"	Total days participated in hunting/fishing activities
67,160.0	1,177,855.0	101,470.0	744,965.0	86,870.0	I	c*365	Total person-year days of participation
2%	2%	5%	2%	2%	j	h/I	Percentage of total yearly vehicle ownership time that the vehicle was used for hunting and fishing
\$16.51	\$24.69	\$112.57	\$23.46	\$25.40	k	2*j*g	Allocated vehicle expense per hunter and angler in each respective group

Note: Percent values are rounded to the nearest whole number

Appendix C: Expenditure Listings for Hunting and Fishing Survey Groups

Quantifying the amount and types of recreational expenditures related to hunting and fishing activities within North Dakota was a primary objective of the study. Questionnaires for each survey group (e.g., archery deer, pronghorn, ice fishing) were designed to gather detailed expenditure information specific to the activity in question. For instance, participants in the open water fishing survey were not asked questions about ammunition or firearm purchases. Each questionnaire was carefully tailored to collect data only on purchases that were 1) made within North Dakota and 2) directly associated with the specific activity and season outlined in the survey.

Durable goods, which typically refer to items with long lifespans that can be used across multiple seasons or numerous times before requiring replacement, were an important category of expenditures considered. Examples of durable goods for hunting and fishing include items such as optics, device types, fishing rods, clothing, boats, knives, decoys, and ice augers. These goods are often classified as fixed expenses, meaning their cost does not depend on the level of activity (e.g., the cost of a knife remains the same whether an individual hunts for two days or 20 days).

Nondurable goods, on the other hand, represent items or services consumed in proportion to activity levels. Examples of nondurable goods include bait, ammunition, fuel, food, and guide services. These goods are classified as variable expenses because their cost is dependent on activity levels (e.g., fuel expenses increase with the number of miles traveled).

To estimate average seasonal (total) variable expenditures for each survey group, the study summed the average of individual expenditure categories for all variable expense items. For example, expenses for gas, food, lodging, and similar items were individually summed and then divided by the number of observations to determine the average expenditure for each category. These averages were then combined to calculate the total average seasonal variable expenses. It is important to note that the dataset included observations with zero spending, and these were incorporated into the averages. This method of calculating average seasonal variable expenses mirrored the approaches used in earlier studies by Lewis et al. (1998) and Bangsund and Leistritz (2003). Additionally, the methods developed by Bangsund and Leistritz (2003) for calculating average vehicle costs, average seasonal fixed expenses, and average seasonal total

expenditures were also applied in this study. For further details, refer to the *Estimation of Average Expenditures* section.

Average daily variable and fixed expenses were calculated by dividing each respondent's total variable and total fixed expenses by the number of days they participated in the activity. These individual averages were then combined to determine the average daily variable and fixed expenses for each survey group. Total average daily expenditures were calculated by summing the average daily variable and fixed expenses. However, it is important to note that the daily spending estimates presented in the following tables may not align with seasonal expenses (variable, fixed, and total) divided by the average number of days participated for the group. This discrepancy arises due to differences in the number of observations within the dataset that included both expenditure information and data on days participated. Average days participated was calculated for the entire survey group, which may differ from the average days participated for only those respondents who provided data on variable, fixed, or both types of expenditures.

Appendix Table C1. Resident Special Big Game Hunter Expenditures, 2023-24

Expenditure Category	Average per Hunter
Variable Expenses	\$
Rental (Boat/Motor)	0
Guide	0
Access Fee	3.18
Mobile Subscription	85.2
Transportation	498.44
Food and Beverages	203.88
Lodging	151.2
Ammunition	79.46
Meat Processing	336.05
Taxidermy	454.58
Other	2.41
Total Season Variable	1814.40
Daily Season Variable	168.00
Fixed Expenses	
Food plots, bait, feeders	6.36
Camping Equipment	12.36
Vehicles (Hunting)	24.69
Trailers for hauling hunting gear	127.67
RV/ Camper (Hunting)	2.5
Hunting Blind Stands	2.83
Decoys	17.69
Firearms	192.21
Firearm accessories	103.86
Hunting bows	21.21
Archery equipment	24.56
Optics and/or accessories	158.55
Outerwear	62.19
Clothing	48.74
Footwear	50.77
Trail cameras, batteries, data plans	20.16
Photography and/or videography	10.73
Hunting packs, harnesses, vests	34.73
Hunting electronics	3.79
Field dressing	14.21
Game processing equipment	50.97
Total Season Fixed	990.78
Daily Season Variable	91.74
Total season Expenses	2805.18
Daily Season Total	259.74
Amount of Internet purchase	532.98
Share of expense spent in rural	0.42
Average expenses in rural areas	1178.18
Average days participated	10.8

Table C2. Resident Archery Deer Hunter Expenditures, 2023-24

Expenditure Category	Average per Hunter
Variable Expenses	\$
Guide	0.43
Access Fee	19.88
Mobile Subscription	65.89
Transportation	372.18
Food and Beverages	136.62
Lodging	38.82
Attractants, lures, and/or scents	13.07
Meat Processing	39.06
Taxidermy	77.07
Other	2.54
Total Season Variable	765.56
Daily Season Variable	48.76
Fixed Expenses	
Food plots, bait, feeders	96.98
Camping Equipment	31.93
Vehicles (Hunting)	24.69
Trailers for hauling hunting gear	137.17
RV/ Camper (Hunting)	2.5
Hunting Blind Stands	113.64
Decoys	9.76
Hunting bows	240.92
Archery equipment	106.13
Optics and/or accessories	102.21
Outerwear	119.34
Clothing	82.97
Footwear	71.77
Trail cameras, batteries, data plans	49.1
Photography and/or videography	11.11
Hunting packs, harnesses, vests	37.31
Hunting electronics	5.97
Field dressing	17.69
Game processing equipment	51.76
Total Season Fixed	1312.95
Daily Season Variable	83.63
Total season Expenses	2078.51
Daily Season Total	132.39
<i>Amount of Internet purchase</i>	<i>457.27</i>
<i>Share of expense spent in rural</i>	<i>0.38</i>
<i>Average expenses in rural areas</i>	<i>789.83</i>
<i>Average days participated</i>	<i>15.7</i>

Appendix Table C3. Resident Firearm Deer Hunter Expenditures, 2023-24

Expenditure Category	Average per Hunter
Variable Expenses	\$
Guide	0
Access Fee	0.42
Mobile Subscription	31.6
Transportation	219.5
Food and Beverages	106.01
Lodging	33.9
Ammunition	70.64
Meat Processing	63.62
Taxidermy	41.61
Other	2.58
Total Season Variable	569.88
Daily Season Variable	86.35
Fixed Expenses	
Food plots, bait, feeders	35.46
Camping Equipment	0.67
Vehicles (Hunting)	24.69
Trailers for hauling hunting gear	37.17
RV/ Camper (Hunting)	2.5
Hunting Blind Stands	54.95
Firearms	70.8
Firearm accessories	22.87
Optics and/or accessories	58.36
Outerwear	43.81
Clothing	40.35
Footwear	47.53
Trail cameras, batteries, data plans	21.07
Photography and/or videography	0.28
Hunting packs, harnesses, vests	10.47
Hunting electronics	3.1
Field dressing	6.6
Game processing equipment	35.06
Total Season Fixed	515.74
Daily Season Variable	78.14
Total season Expenses	1085.62
Daily Season Total	164.49
<i>Amount of Internet purchase</i>	206.27
<i>Share of expense spent in rural</i>	0.40
<i>Average expenses in rural areas</i>	434.25
<i>Average days participated</i>	6.6

Appendix Table C4. Resident Gratis Deer Hunter Expenditures, 2023-24

Expenditure Category	Average per Hunter
Variable Expenses	\$
Guide	0
Access Fee	0
Mobile Subscription	16.85
Transportation	177.42
Food and Beverages	72.91
Lodging	14.78
Ammunition	60.07
Meat Processing	57.41
Taxidermy	52.23
Other	1.85
Total Season Variable	453.52
Daily Season Variable	69.77
Fixed Expenses	
Food plots, bait, feeders	40.32
Camping Equipment	0
Vehicles (Hunting)	16.51
Trailers for hauling hunting gear	28.76
RV/ Camper (Hunting)	0
Hunting Blind Stands	62.45
Firearms	106.01
Firearm accessories	39.18
Optics and/or accessories	51.82
Outerwear	47.33
Clothing	32.2
Footwear	45.34
Trail cameras, batteries, data plans	20.69
Photography and/or videography	0
Hunting packs, harnesses, vests	8.86
Hunting electronics	2.21
Field dressing	7.14
Game processing equipment	22.38
Total Season Fixed	531.20
Daily Season Variable	81.72
Total season Expenses	984.72
Daily Season Total	151.50
<i>Amount of Internet purchase</i>	<i>187.10</i>
<i>Share of expense spent in rural</i>	<i>0.50</i>
<i>Average expenses in rural areas</i>	<i>492.36</i>
<i>Average days participated</i>	<i>6.5</i>

Appendix Table C5. Resident Furbearer Expenditures, 2023-24

Expenditure Category	Average per Hunter
Variable Expenses	\$
Guide	0
Access Fee	1.68
Mobile Subscription	22.19
Repairs	197.35
Transportation	278.69
Food and Beverages	72.73
Lodging	23.74
Ammunition	127.69
Taxidermy	5.7
Veterinary	22.82
Other	1.85
Total Season Variable	754.44
Daily Season Variable	41.91
Fixed Expenses	
Food plots, bait, feeders	0
Camping Equipment	0
Vehicles (Hunting)	24.69
Trailers for hauling hunting gear	80.6
RV/ Camper (Hunting)	2.5
Firearms	51.01
Firearm accessories	18.29
Optics and/or accessories	149.16
Calls, lures, and scents for hunting predators	64.06
Furbearer trapping and snaring equipment	5.47
Equipment for night hunting of predators	305.7
Outerwear	50.94
Clothing	33.01
Footwear	44.96
Trail cameras, batteries, data plans	24.8
Photography and/or videography	0.57
Hunting packs, harnesses, vests	11.01
Hunting electronics	16.11
Furbearer skinning equipment	4.93
Hunting dogs	6.38
Dog Supplies	4.7
Dog training and boarding	0.67
Total Season Fixed	899.56
Daily Season Variable	49.98
Total season Expenses	1654.00
Daily Season Total	91.89
<i>Amount of Internet purchase</i>	<i>413.50</i>
<i>Share of expense spent in rural</i>	<i>0.41</i>
<i>Average expenses in rural areas</i>	<i>678.14</i>
<i>Average days participated</i>	<i>18</i>

Appendix Table C6. Resident Open Water Fishing Expenditures, 2023-24

Expenditure Category	Average per Hunter
Variable Expenses	\$
Rental (Boat/Motor)	0.4
Guide	13.83
Mobile Subscription	18.47
Repairs	692.63
Transportation	523.68
Food and Beverages	248.62
Lodging	135.7
Gas, Fuel and/or Batteries	259.37
Bait (Fishing)	76.77
Taxidermy	7.11
Other	3.87
Total Season Variable	1980.45
Daily Season Variable	83.56
Fixed Expenses	
Camping Equipment	8.17
Vehicle (Fishing)	112.57
Fishing boats and trailers, motors	3094.86
Small fishing boats	21.38
RV, camper, or towable ice house	224.44
Trailers for hauling fishing gear	22.13
Fishing electronics	40.32
Fishing rods and reels	171.32
Fishing Tackle	152.35
Outerwear	42.7
Clothing	54.31
Footwear	25.59
Photography and/or videography	0.83
Fish Cleaning	24.9
Total Season Fixed	3995.87
Daily Season Variable	168.60
Total season Expenses	5976.32
Daily Season Total	252.17
Amount of Internet purchase	657.40
Share of expense spent in rural	0.32
Average expenses in rural areas	1912.42
Average days participated	23.7

Appendix Table C7. Resident Ice Fishing Expenditures 2023-24

Expenditure Category	Average per Hunter
Variable Expenses	\$
Rental (Ice fishing house)	3.09
Guide	10.34
Mobile Subscription	13.6
Repairs	82.25
Transportation	212.02
Food and Beverages	137.92
Lodging	14.04
Bait (Ice Fishing)	32.69
Gas, Fuel and/or Batteries	57.6
Taxidermy	0
Other	0.22
Total Season Variable	563.77
Daily Season Variable	49.45
Fixed Expenses	
Vehicle (Ice Fishing)	112.57
RV, camper, or towable ice house	279.22
Trailers for hauling fishing gear	105
Portable ice house and/or ice sleds	68.54
Ice house heaters	17.53
Ice auger and/or ice drill	52.25
Ice fishing electronics	48.31
Ice fishing rods, reels and tip ups	47.64
Ice fishing tackle	52.11
Fishing electronics	83.71
Outerwear	52.52
Clothing	16.74
Footwear	14.89
Photography and/or videography	0
Fish Cleaning	8.43
Total Season Fixed	959.46
Daily Season Variable	84.16
Total season Expenses	1523.23
Daily Season Total	133.62
<i>Amount of Internet purchase</i>	<i>472.20</i>
<i>Share of expense spent in rural</i>	<i>0.38</i>
<i>Average expenses in rural areas</i>	<i>578.83</i>
<i>Average days participated</i>	<i>11.4</i>

Appendix Table C8. Resident Fall Turkey Hunter Expenditures, 2023-24

Expenditure Category	Average per Hunter
Variable Expenses	\$
Guide	0
Access Fee	0.03
Mobile Subscription	24.06
Transportation	118.87
Food and Beverages	49.15
Lodging	18.18
Ammunition	21.38
Taxidermy	0.35
Other	0
Total Season Variable	232.02
Daily Season Variable	53.96
Fixed Expenses	
Food plots, bait, feeders	5.35
Vehicles (Hunting)	24.69
RV/ Camper (Hunting)	0
Hunting Blind Stands	2.5
Decoys	17.41
Shotguns	7.09
Shotgun accessories	42.34
Hunting bows	5.13
Archery equipment	14.23
Optics and/or accessories	4.71
Outerwear	24.72
Clothing	25.94
Footwear	20.45
Trail cameras, batteries, data plans	21.18
Photography and/or videography	8.83
Hunting packs, harnesses, vests	6.29
Hunting electronics	1.04
Game processing equipment	7.02
Total Season Fixed	238.92
Daily Season Variable	55.56
Total season Expenses	470.94
Daily Season Total	109.52
<i>Amount of Internet purchase</i>	<i>131.86</i>
<i>Share of expense spent in rural</i>	<i>0.38</i>
<i>Average expenses in rural areas</i>	<i>178.96</i>
<i>Average days participated</i>	<i>4.3</i>

Appendix Table C9. Resident Spring Turkey Hunter Expenditures, 2023-24

Expenditure Category	Average per Hunter
Variable Expenses	\$
Guide	0
Access Fee	0
Mobile Subscription	25.39
Transportation	106.44
Food and Beverages	41.71
Lodging	7.03
Ammunition	18.51
Taxidermy	2.91
Other	0.73
Total Season Variable	202.72
Daily Season Variable	54.79
Fixed Expenses	
Food plots, bait, feeders	2.01
Vehicles (Hunting)	24.69
RV/ Camper (Hunting)	2.5
Hunting Blind Stands	17.71
Decoys	13.8
Shotguns	31.12
Shotgun accessories	3.46
Hunting bows	12.27
Archery equipment	4.55
Optics and/or accessories	10.13
Outerwear	24.52
Clothing	19.73
Footwear	24.11
Trail cameras, batteries, data plans	2.66
Photography and/or videography	0.51
Hunting packs, harnesses, vests	8.46
Hunting electronics	1.36
Game processing equipment	2.93
Total Season Fixed	206.52
Daily Season Variable	55.82
Total season Expenses	409.24
Daily Season Total	110.61
<i>Amount of Internet purchase</i>	<i>102.31</i>
<i>Share of expense spent in rural</i>	<i>0.27</i>
<i>Average expenses in rural areas</i>	<i>110.49</i>
<i>Average days participated</i>	<i>3.7</i>

Appendix Table C10. Resident Upland Game Hunter Expenditures, 2023-24

Expenditure Category	Average per Hunter
Variable Expenses	\$
Guide	0
Access Fee	1.55
Mobile Subscription	27.38
Repairs	78.96
Transportation	295.21
Food and Beverages	114.74
Lodging	40.61
Ammunition	96.39
Taxidermy	3.34
Veterinary	70.23
Other	0
Total Season Variable	728.41
Daily Season Variable	65.62
Fixed Expenses	
Food plots, bait, feeders	14.08
Camping Equipment	2.7
Vehicles (Hunting)	24.69
Trailers for hauling hunting gear	11.34
RV/ Camper (Hunting)	2.5
Shotguns	101.6
Shotgun accessories	10.57
Optics and/or accessories	38.03
Outerwear	34.72
Clothing	29.34
Footwear	47.3
Photography and/or videography	1.15
Hunting packs, harnesses, vests	11.4
Hunting electronics	5.45
Game processing equipment	12.73
Hunting dogs	29.19
Dog Supplies	25.56
Dog training and boarding	4.97
Total Season Fixed	407.32
Daily Season Variable	36.70
Total season Expenses	1135.73
Daily Season Total	102.32
<i>Amount of Internet purchase</i>	<i>124.93</i>
<i>Share of expense spent in rural</i>	<i>0.34</i>
<i>Average expenses in rural areas</i>	<i>386.15</i>
<i>Average days participated</i>	<i>11.1</i>

Appendix Table C11. Resident Waterfowl Hunter Expenditures, 2023-24

Expenditure Category	Average per Hunter
Variable Expenses	\$
Guide	5.64
Access Fee	8.09
Mobile Subscription	38.75
Repairs	310.65
Transportation	642.48
Food and Beverages	206.86
Lodging	61.67
Ammunition	212.9
Meat Processing	36.64
Taxidermy	64.88
Veterinary	151.64
Other	0.53
Total Season Variable	1740.73
Daily Season Variable	111.59
Fixed Expenses	
Camping Equipment	1.23
Vehicles (Hunting)	24.69
Trailers for hauling hunting gear	599.26
RV/ Camper (Hunting)	2.5
Hunting Blind Stands	57.16
Decoys	179.25
Shotguns	207.01
Shotgun accessories	15.76
Optics and/or accessories	64.75
Small boats for waterfowl hunting	20.59
Outerwear	133.73
Clothing	79.71
Footwear	78.23
Photography and/or videography	6.86
Hunting packs, harnesses, vests	14.78
Hunting electronics	6.96
Game processing equipment	27.55
Hunting dogs	35.78
Dog Supplies	55.39
Dog training and boarding	165.44
Total Season Fixed	1776.63
Daily Season Variable	113.89
Total season Expenses	3517.36
Daily Season Total	225.47
<i>Amount of Internet purchase</i>	879.34
<i>Share of expense spent in rural</i>	0.28
<i>Average expenses in rural areas</i>	984.86
<i>Average days participated</i>	15.6

Appendix Table C12. Nonresident Archery Deer Hunter Expenditures, 2023-24

Expenditure Category	Average per Hunter
Variable Expenses	\$
Guide	22.2
Access Fee	106.98
Mobile Subscription	81.66
Transportation	456.91
Food and Beverages	236.54
Lodging	215.65
Attractants, lures, and/or scents	6.77
Meat Processing	23
Taxidermy	68.74
Other	10.31
Total Season Variable	1228.76
Daily Season Variable	142.88
Fixed Expenses	
Food plots, bait, feeders	54.28
Camping Equipment	31.5
Vehicles (Hunting)	24.69
Trailers for hauling hunting gear	280.99
RV/ Camper (Hunting)	2.36
Hunting Blind Stands	59.24
Decoys	8.56
Hunting bows	211.06
Archery equipment	42.94
Optics and/or accessories	50.2
Outerwear	87.92
Clothing	60.63
Footwear	71.3
Trail cameras, batteries, data plans	31.72
Photography and/or videography	10.55
Hunting packs, harnesses, vests	26.88
Hunting electronics	6.27
Field dressing	9.47
Game processing equipment	31.38
Total Season Fixed	1101.94
Daily Season Variable	128.13
Total season Expenses	2330.70
Daily Season Total	271.01
<i>Amount of Internet purchase</i>	792.44
<i>Share of expense spent in rural</i>	0.38
<i>Average expenses in rural areas</i>	885.67
<i>Average days participated</i>	8.6

Appendix Table C13. Nonresident Firearm Deer Hunter Expenditures, 2023-24

Expenditure Category	Average per Hunter
Variable Expenses	\$
Guide	0
Access Fee	0
Mobile Subscription	25.73
Transportation	280.00
Food and Beverages	212.59
Lodging	60.43
Ammunition	77.26
Meat Processing	48.21
Taxidermy	44.21
Other	0
Total Season Variable	748.43
Daily Season Variable	133.65
Fixed Expenses	
Food plots, bait, feeders	9.64
Camping Equipment	0
Vehicles (Hunting)	24.69
Trailers for hauling hunting gear	9.29
RV/ Camper (Hunting)	2.36
Hunting Blind Stands	15.73
Firearms	12.14
Firearm accessories	15.71
Optics and/or accessories	15.71
Outerwear	38.34
Clothing	35.04
Footwear	48.36
Trail cameras, batteries, data plans	15.57
Hunting packs, harnesses, vests	4.29
Hunting electronics	2.57
Field dressing	6.96
Game processing equipment	18.93
Total Season Fixed	275.33
Daily Season Variable	49.17
Total season Expenses	1023.76
Daily Season Total	182.81
<i>Amount of Internet purchase</i>	429.98
<i>Share of expense spent in rural</i>	0.37
<i>Average expenses in rural areas</i>	378.79
<i>Average days participated</i>	5.6

Appendix Table C14. Nonresident Angler Expenditures, 2023-24

Expenditure Category	Average per Hunter
Variable Expenses	\$
Rental (Boat/Motor)	0
Rental (Ice fishing house)	20.38
Guide	130.6
Mobile Subscription	15.06
Repairs	166.8
Transportation	315.74
Food and Beverages	194.81
Lodging	307.62
Bait (Ice Fishing)	9.33
Gas, Fuel and/or Batteries	46.53
Bait (Fishing)	24.47
Taxidermy	9.67
Other	3.14
Total Season Variable	1244.15
Daily Season Variable	163.70
Fixed Expenses	
Camping Equipment	2.62
Vehicle	25.4
Fishing boats and trailers, motors	224.66
Small fishing boats	0
RV, camper, or towable ice house	2.14
Trailers for hauling fishing gear	78.08
Portable ice house and/or ice sleds	8.73
Ice house heaters	2.14
Ice auger and/or ice drill	5.92
Ice fishing electronics	70.07
Ice fishing rods, reels and tip ups	21.66
Ice fishing tackle	15.38
Fishing electronics	80.38
Fishing rods and reels	40.7
Fishing Tackle	38.29
Outerwear	49.97
Clothing	27.98
Footwear	18.44
Photography and/or videography	3.00
Fish Cleaning	10.21
Total Season Fixed	725.77
Daily Season Variable	95.50
Total season Expenses	1969.92
Daily Season Total	259.20
Amount of Internet purchase	512.18
Share of expense spent in rural	0.42
Average expenses in rural areas	827.37
Average days participated	7.6

Appendix Table C15. Nonresident Small Game Hunter Expenditures, 2023-24

Expenditure Category	Average per Hunter
Variable Expenses	\$
Guide	78.84
Access Fee	43.45
Mobile Subscription	44.74
Repairs	100.72
Transportation	369.7
Food and Beverages	256.16
Lodging	353.5
Ammunition	129.13
Meat Processing	5.75
Taxidermy	26.19
Veterinary	96.26
Other	8.73
Total Season Variable	1513.17
Daily Season Variable	229.27
Fixed Expenses	
Food plots, bait, feeders	0.06
Camping Equipment	0.08
Vehicles (Hunting)	24.69
Trailers for hauling hunting gear	163.24
RV/ Camper (Hunting)	2.36
Hunting Blind Stands	17.74
Decoys	24.66
Shotguns	29.21
Shotgun accessories	2.39
Optics and/or accessories	4.84
Small boats for waterfowl hunting	4.78
Outerwear	70.71
Clothing	44.29
Footwear	61.87
Photography and/or videography	5.73
Hunting packs, harnesses, vests	7.49
Hunting electronics	17.61
Game processing equipment	9.48
Hunting dogs	62.26
Dog Supplies	13.96
Dog training and boarding	12.02
Total Season Fixed	579.47
Daily Season Variable	87.80
Total season Expenses	2092.64
Daily Season Total	317.07
<i>Amount of Internet purchase</i>	627.79
<i>Share of expense spent in rural</i>	0.40
<i>Average expenses in rural areas</i>	837.06

Appendix Table C16. Resident Muzzleloader Deer Hunter Expenditures, 2023-24

Expenditure Category	Average per Hunter
Variable Expenses	\$
Guide	0
Access Fee	0
Mobile Subscription	23.52
Transportation	160.59
Food and Beverages	48.07
Lodging	5.82
Ammunition	37.49
Meat Processing	20.94
Taxidermy	9.88
Other	0
Total Season Variable	306.31
Daily Season Variable	51.92
Fixed Expenses	
Food plots, bait, feeders	38.42
Camping Equipment	0.00
Vehicles (Hunting)	24.69
Trailers for hauling hunting gear	16.71
RV/ Camper (Hunting)	2.50
Hunting Blind Stands	43.32
Firearms	62.47
Firearm accessories	19.83
Optics and/or accessories	63.64
Outerwear	31.29
Clothing	21.66
Footwear	25.85
Trail cameras, batteries, data plans	15.25
Photography and/or videography	0.00
Hunting packs, harnesses, vests	10.64
Hunting electronics	1.40
Field dressing	4.83
Game processing equipment	20.37
Total Season Fixed	402.87
Daily Season Variable	68.28
Total season Expenses	709.18
Daily Season Total	120.20
<i>Amount of Internet purchase</i>	226.94
<i>Share of expense spent in rural</i>	0.33
<i>Average expenses in rural areas</i>	234.03
<i>Average days participated</i>	5.9

Appendix Table C17. Nonresident Furbearer Expenditures, 2023-24

Expenditure Category	Average per Hunter
Variable Expenses	\$
Guide	0
Access Fee	1.72
Mobile Subscription	40.34
Repairs	178.93
Transportation	372.33
Food and Beverages	180.37
Lodging	104.54
Ammunition	110.46
Taxidermy	9.54
Veterinary	289.71
Other	8.29
Total Season Variable	1296.23
Daily Season Variable	152.50
Fixed Expenses	
Camping Equipment	1.97
Vehicles (Hunting)	24.69
Trailers for hauling hunting gear	94.05
RV/ Camper (Hunting)	2.36
Firearms	83.52
Firearm accessories	61.2
Optics and/or accessories	70.4
Calls, lures, and scents for hunting predators	37.89
Furbearer trapping and snaring equipment	3.38
Equipment for night hunting of predators	495.29
Outerwear	68.26
Clothing	41.35
Footwear	59.89
Trail cameras, batteries, data plans	9.38
Photography and/or videography	4.81
Hunting packs, harnesses, vests	13.57
Hunting electronics	24.21
Furbearer skinning equipment	8.89
Hunting dogs	5.86
Dog Supplies	1.5
Total Season Fixed	1112.47
Daily Season Variable	130.88
Total season Expenses	2408.70
Daily Season Total	283.38
Amount of Internet purchase	555.02
Share of expense spent in rural	0.52
Average expenses in rural areas	1252.52
Average days participated	8.5

Appendix Table C18. Resident Pronghorn Expenditures, 2023-24

Expenditure Category	Average per Hunter
Variable Expenses	\$
Guide	0
Access Fee	0.85
Mobile Subscription	31
Transportation	197.74
Food and Beverages	90.21
Lodging	59.96
Ammunition	46.02
Meat Processing	25.55
Taxidermy	105
Other	0
Total Season Variable	556.33
Daily Season Variable	168.58
Fixed Expenses	
Camping Equipment	2.12
Vehicles (Hunting)	24.69
Trailers for hauling hunting gear	4.24
RV/ Camper (Hunting)	2.5
Hunting Blind Stands	1.69
Decoys	5.85
Firearms	69.92
Firearm accessories	38.64
Hunting bows	29.66
Archery equipment	13.9
Optics and/or accessories	68.22
Outerwear	34.07
Clothing	21.78
Footwear	29.34
Trail cameras, batteries, data plans	0
Photography and/or videography	0
Hunting packs, harnesses, vests	25.42
Hunting electronics	0.85
Field dressing	5.21
Game processing equipment	16.12
Total Season Fixed	394.22
Daily Season Variable	119.46
Total season Expenses	950.55
Daily Season Total	288.05
<i>Amount of Internet purchase</i>	<i>370.71</i>
<i>Share of expense spent in rural</i>	<i>0.33</i>
<i>Average expenses in rural areas</i>	<i>313.68</i>
<i>Average days participated</i>	<i>3.3</i>

Appendix D: Clarification of Average Spending by Nonresident Small Game Hunters

Small game hunting in North Dakota consists of upland game, waterfowl, and other migratory birds, such as doves. Both resident and nonresident small game license holders were surveyed to gather information on their upland game and waterfowl hunting activities and expenditures. However, the two groups were surveyed using different methodologies. For resident small game license holders, two separate survey samples were used. One sample received a questionnaire focused specifically on upland game hunting activities and expenditures, while the other sample received a questionnaire focused exclusively on waterfowl hunting activities and expenditures. To estimate total direct expenditures, the average upland game hunting expenses were applied to the estimated number of resident upland game hunters, while the average waterfowl hunting expenses were applied to the estimated number of waterfowl hunters. This approach provides a reasonable estimate of total spending by resident small game hunters. However, because many resident small game hunters participate in both upland game and waterfowl hunting, this method does not yield an overall average per-person spending estimate that accounts for participation in both types of hunting activities.

In contrast, nonresident small game hunters were surveyed as a single group (i.e., one survey sample) and were asked to report all expenses related to both upland game and waterfowl hunting. Some nonresident hunters reported expenses solely for upland game hunting if they did not hunt waterfowl, while others reported expenses solely for waterfowl hunting if they did not hunt upland game. However, as is the case with resident small game hunters, many nonresident small game hunters pursue both upland game and waterfowl during their time in North Dakota. For those who hunted both game types, the expenses they reported reflect their combined spending on both upland game and waterfowl hunting. A similar combined spending estimate was not collected for resident small game hunters, as they were only asked to report expenses for one of the two hunting activities.

To clarify, the average spending per nonresident small game hunter, which is reported in the main document, represents a composite average. This average includes spending from nonresidents who hunted only upland game, only waterfowl, and those who hunted both. Therefore, the per-person spending estimates for nonresident small game hunters cannot be

directly compared to the two separate averages calculated for resident upland game and waterfowl hunters. Below, we provide tables for the separate average expenditures for nonresidents who hunted only upland game, only waterfowl, and those who hunted both.

As noted above, the data collected in this study do not allow for the calculation of an overall average spending per resident small game hunter that accounts for both upland game and waterfowl hunting activities.

Appendix Table D1. Nonresident Small Game Hunter Expenditures, 2023-24

Variable Expenses	Non-Resident Small Game Categories in Survey		
	Both	Waterfowl	Upland
	----- \$ -----		
Guiding fees	71.78	90.51	77.55
Land access fees	34.65	30.92	59.18
Mobile app subscriptions (e.g., OnX, Navionics)	56.26	37.76	39.12
Equipment maintenance and/or repair	115.72	154.25	53.32
Driving costs (e.g., gas, vehicle maintenance, and/or repairs)	409.07	382.29	327.14
Meals, food, and beverages	275.47	254.25	240.45
Lodging (e.g., hotel, campground fees)	395.74	353.79	316.30
Ammunition and/or reloading equipment	168.94	131.63	92.64
Meat processors, butchers	5.00	12.19	2.29
Taxidermy	36.88	42.66	6.29
Veterinary costs	102.96	67.32	108.91
Others	8.63	6.63	10.17
Total Season Variable	1,681.10	1,564.20	1,333.36
Fixed Expenses			
Food plots, bait, feeders	-	0.07	0.11
Camping tent, wall tent	0.17	-	0.04
Vehicles used for hunting (e.g., pickup, SUV, side-by-side)	29.24	20.78	6.45
Trailers for hauling hunting gear	259.84	148.10	88.29
RV, camper for hunting	6.56	53.05	29.09
Hunting blind, stands	26.55	33.39	-
Decoys, calls	40.67	40.34	0.61
Shotguns	27.48	23.39	34.45
Shotgun accessories (e.g., choke tubes, gun cleaning)	2.82	1.71	2.45
Optics and/or accessories (e.g., binoculars, spotting scopes, range finders, tripods)	9.41	2.44	2.39
Small boats for waterfowl hunting (e.g., duck boats, canoes, kayaks)	5.82	10.85	-
Outerwear (e.g., jackets, hats)	90.57	86.41	43.26
Clothing (e.g., baselayers, hunting pants)	49.81	43.02	40.26
Footwear (e.g., hunting boots, waders)	68.06	57.38	59.31
Photography and/or videography (e.g., GoPro's, cameras, lenses)	6.97	8.44	2.92
Hunting packs, harnesses, vests	6.83	7.51	8.06
Hunting electronics (e.g., game ears, GPS)	14.34	13.65	23.00
Game processing equipment (e.g., grinders, stuffers, vacuum sealers)	9.42	17.66	4.31
Hunting dogs (e.g., puppy, started dog)	64.23	63.39	59.82
Dog supplies (e.g., kennels, food, e-collars)	21.41	3.49	14.13
Dog training and boarding	9.90	5.22	18.22
Total Fixed Expense	750.10	640.29	437.17
All Expenses	2,431.20	2,204.49	1,770.53

Appendix E: Total Spending by Expenditure Type for Hunting and Fishing Groups

Appendix Table E1. Spending by Expenditure Type, Resident and Nonresident Hunting, North Dakota, 2023-24

	Resident	Nonresident	Total
	----- \$ -----		
Variable Expenditures	107,523,427	53,686,184	161,209,611
Rental (Boat/Motor)	0	0	0
Guide	86,222	2,557,642	2,643,864
Access Fee	604,578	1,704,964	2,309,542
Mobile Subscription	4,835,032	1,746,828	6,581,860
Repairs	10,753,867	3,504,946	14,258,813
Transportation	42,995,729	13,857,096	56,852,825
Food and Beverages	16,090,802	9,220,058	25,310,860
Lodging	5,091,838	12,037,306	17,129,144
Ammunition	12,132,077	4,304,881	16,436,959
Attractants, lures, and/or scents	255,712	20,885	276,597
Meat Processing	4,415,008	269,547	4,684,554
Taxidermy	5,065,153	1,070,211	6,135,364
Veterinary	4,988,424	3,072,783	8,061,207
Other	208,987	319,037	528,024
Fixed Expenses	105,886,548	23,433,035	129,319,582
Food plots, bait, feeders	4,125,595	172,754	4,298,349
Camping Equipment	771,546	103,279	874,825
Vehicles (Hunting)	3,482,041	909,263	4,391,304
Trailers for hauling hunting gear	14,593,241	6,194,796	20,788,037
RV/ Camper (Hunting)	336,424	86,912	423,336
Hunting Blind Stands	5,797,766	748,407	6,546,173
Decoys	2,789,517	804,979	3,594,496
Firearms	4,763,159	155,991	4,919,149
Firearm accessories	1,659,656	116,714	1,776,370
Shotguns	6,749,745	922,226	7,671,971
Shotgun accessories	626,022	75,458	701,480
Hunting bows	4,861,056	651,104	5,512,160
Archery equipment	2,144,128	132,467	2,276,595
Optics and/or accessories	9,967,008	441,097	10,408,104
Calls, lures, and scents for hunting predators	1,198,310	68,819	1,267,129
Furbearer trapping and snaring equipment	102,322	6,139	108,461
Equipment for night hunting of predators	5,718,441	899,591	6,618,032
Small boats for waterfowl hunting	284,059	150,915	434,975
Outerwear	8,709,877	2,641,242	11,351,119
Clothing	6,387,341	1,672,872	8,060,213
Footwear	7,426,571	2,299,214	9,725,785
Trail cameras, batteries, data plans	2,454,901	120,398	2,575,299
Photography and/or videography	385,206	222,191	607,397
Hunting packs, harnesses, vests	2,122,315	345,563	2,467,879
Hunting electronics	855,080	620,211	1,475,291
Field dressing	670,306	31,676	701,982
Game processing equipment	3,422,452	402,806	3,825,258
Hunting dogs	92,221	16,147	108,368
Dog Supplies	1,639,386	1,976,332	3,615,718
Dog training and boarding	1,750,856	443,473	2,194,329

Appendix Table E2. Spending by Expenditure Type, Resident and Nonresident Fishing, North Dakota, 2023-24

	Resident	Nonresident	Total
	----- \$ -----		
Variable Expenditures	231,523,036	67,874,267	299,397,304
Rental (Boat/Motor)	42,034	0	42,034
Rental (Ice fishing house)	128,307	1,111,825	1,240,133
Guide	1,882,662	7,124,848	9,007,510
Access Fee	0	0	0
Mobile Subscription	2,505,617	821,594	3,327,212
Repairs	76,199,557	9,099,729	85,299,286
Transportation	63,834,121	17,225,110	81,059,231
Food and Beverages	31,852,862	10,627,807	42,480,669
Lodging	14,842,873	16,782,126	31,624,999
Bait (Ice Fishing)	1,357,399	508,996	1,866,395
Gas, Fuel and/or Batteries	29,647,357	2,538,432	32,185,788
Bait (Fishing)	8,067,291	1,334,954	9,402,245
Attractants, lures, and/or scents	0	0	0
Taxidermy	747,147	527,544	1,274,691
Other	415,810	171,302	587,112
Fixed Expenses	415,630,267	35,217,806	450,848,073
Food plots, bait, feeders	0	0	0
Camping Equipment	858,535	142,933	1,001,469
Vehicle (Fishing)	11,829,294	1,385,690	13,214,984
Vehicle (Ice Fishing)	4,674,286	0	4,674,286
Fishing boats and trailers, motors	325,219,949	12,256,266	337,476,215
Portable ice house and/or ice sleds	2,846,012	476,263	3,322,275
Ice house heaters	727,905	116,747	844,652
Ice auger and/or ice drill	2,169,596	322,964	2,492,560
Ice fishing electronics	2,005,994	3,822,650	5,828,644
Ice fishing rods, reels and tip ups	1,978,174	1,181,655	3,159,829
Ice fishing tackle	2,163,783	839,052	3,002,835
Fishing electronics	7,712,904	4,385,109	12,098,014
Fishing rods and reels	18,002,973	2,220,378	20,223,351
Fishing Tackle	16,009,532	2,088,901	18,098,432
Outerwear	6,667,890	2,726,100	9,393,990
Clothing	6,402,208	1,526,441	7,928,649
Footwear	3,307,380	1,005,989	4,313,369
Photography and/or videography	87,220	163,664	250,884
Fish Cleaning	2,966,631	557,004	3,523,635

Appendix Table E3. Spending by Expenditure Type, Resident and Nonresident, All Activities, North Dakota, 2023-24

	Resident	Nonresident	Total
	----- \$ -----		
Variable Expenditures	339,046,464	121,560,451	460,606,915
Rental (Boat/Motor)	42,034	-	42,034
Rental (Ice fishing house)	128,307	1,111,825	1,240,133
Guide	1,968,884	9,682,490	11,651,374
Access Fee	604,578	1,704,964	2,309,542
Mobile Subscription	7,340,650	2,568,422	9,909,072
Repairs	86,953,424	12,604,675	99,558,099
Transportation	106,829,850	31,082,206	137,912,056
Food and Beverages	47,943,664	19,847,865	67,791,529
Lodging	19,934,711	28,819,432	48,754,143
Ammunition	12,132,077	4,304,881	16,436,959
Bait (Ice Fishing)	1,357,399	508,996	1,866,395
Gas, Fuel and/or Batteries	29,647,357	2,538,432	32,185,788
Bait (Fishing)	8,067,291	1,334,954	9,402,245
Attractants, lures, and/or scents	255,712	20,885	276,597
Meat Processing	4,415,008	269,547	4,684,554
Taxidermy	5,812,299	1,597,755	7,410,055
Veterinary	4,988,424	3,072,783	8,061,207
Other	624,796	490,339	1,115,136
Fixed Expenses	537,766,528	53,557,377	591,323,905
Food plots, bait, feeders	4,125,595	172,754	4,298,349
Camping tent, wall tent	1,630,081	246,212	1,876,294
Vehicles used for fishing	11,829,294	1,385,690	13,214,984
Vehicles used for ice fishing	4,674,286	-	4,674,286
Fishing boats and trailers, motors	325,219,949	12,256,266	337,476,215
Small fishing boats	2,246,694	-	2,246,694
RV, camper, or towable ice house (e.g., Ice Castle) for fishing and/or ice fishing	35,179,186	116,747	35,295,933
Trailers for hauling fishing gear	6,685,461	4,259,633	10,945,094
Vehicles used for hunting (e.g., pickup, SUV, side-by-side)	3,482,041	909,263	4,391,304
Trailers for hauling hunting gear	14,593,241	6,194,796	20,788,037
RV, camper for hunting	336,424	86,912	423,336
Hunting blind, stands	5,797,766	748,407	6,546,173
Decoys, calls	2,789,517	804,979	3,594,496
Firearms (rifles, muzzleloaders, handguns)	4,763,159	155,991	4,919,149
Firearm accessories (e.g., scopes, slings, bipods, shooting sticks, gun cleaning, cases)	1,659,656	116,714	1,776,370
Shotguns	6,749,745	922,226	7,671,971
Shotgun accessories (e.g., choke tubes, gun cleaning)	626,022	75,458	701,480
Hunting bows	4,861,056	651,104	5,512,160
Archery equipment (e.g., arrows and broadheads, rests, releases)	2,144,128	132,467	2,276,595
Optics and/or accessories (e.g., binoculars, spotting scopes, range finders, tripods)	9,967,008	441,097	10,408,104

Appendix Table E4. Spending by Expenditure Type, Resident and Nonresident, All Activities, North Dakota, 2023-24 – cont'd

	Resident	Nonresident	Total
	----- \$ -----		
Fixed Expenses			
Ice fishing tackle (e.g., lures, jigs and tackle boxes)	2,163,783	839,052	3,002,835
Fishing electronics (e.g., fish finder, sonar, GPS, underwater camera)	7,712,904	4,385,109	12,098,014
Fishing rods and reels	18,002,973	2,220,378	20,223,351
Fishing tackle (e.g., lures, tackle boxes)	16,009,532	2,088,901	18,098,432
Outerwear (e.g., jackets, hats)	8,709,877	2,641,242	11,351,119
Clothing (e.g., baselayers, hunting pants)	6,387,341	1,672,872	8,060,213
Footwear (e.g., hunting boots, waders)	7,426,571	2,299,214	9,725,785
Trail cameras, batteries, data plans	2,454,901	120,398	2,575,299
Photography and/or videography (e.g., GoPro's, cameras, lenses)	385,206	222,191	607,397
Hunting packs, harnesses, vests	2,122,315	345,563	2,467,879
Hunting electronics (e.g., game ears, GPS)	855,080	620,211	1,475,291
Field dressing (e.g., knives, game bags, saws)	670,306	31,676	701,982
Outerwear (e.g., jackets, hats, sunglasses)	6,667,890	2,726,100	9,393,990
Clothing	6,402,208	1,526,441	7,928,649
Footwear (e.g., boots, waders)	3,307,380	1,005,989	4,313,369
Photography and/or videography (e.g., GoPro's, cameras, lenses)	87,220	163,664	250,884
Fish cleaning (e.g., knives)	2,966,631	557,004	3,523,635
Game processing equipment (e.g., grinders, stuffers, vacuum sealers)	3,422,452	402,806	3,825,258
Furbearer skinning equipment (e.g., stretchers, knives)	92,221	16,147	108,368
Hunting dogs (e.g., puppy, started dog)	1,639,386	1,976,332	3,615,718
Dog supplies (e.g., kennels, food, e-collars)	1,750,856	443,473	2,194,329
Dog training and boarding	2,469,702	379,499	2,849,201