

The Economic Impact of TWRA Operations and Outdoor Recreation Supported by TWRA in Tennessee

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Prepared by

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Introduction

Tennessee is home to a wide range of natural resources and diverse wildlife. The state supports over 300 fish species and 400 bird species, with distinct ecosystems across its regions. Traveling from west to east, visitors encounter varied landscapes and wildlife. The Mississippi River Basin in West Tennessee serves as a migration route for mallards and other waterfowl, while the region's flatlands host whitetail deer and popular fish species like bass and crappie. Middle Tennessee features rolling hills with northern cardinals, wild turkeys, and red foxes. In East Tennessee, the mountains offer opportunities for trout fishing and black bear sightings. The state's natural beauty and biodiversity provide ample opportunities for outdoor recreation on both public and private lands.

The Tennessee Wildlife Resources Agency (TWRA) plays a pivotal role in preserving these natural assets. Established in 1949, TWRA employs approximately 700 staff members who manage over 100 Wildlife Management Areas (WMAs) spanning 1.6 million acres. Their mission goes beyond land management; as summarized by a Tennessee Historical Society publication, "TWRA enforces hunting, fishing, and boating laws; manages habitats for game and non-game species; provides education on hunting and boating safety; and works on wetland conservation efforts. The agency's mission is the preservation, conservation, and enhancement of Tennessee's fish and wildlife resources for the enjoyment of residents and visitors alike."¹ The agency's efforts support a wide range of outdoor activities such as hunting, fishing, trapping, boating, target shooting, off-highway vehicle (OHV) riding, and wildlife viewing.

While these activities are popular for recreation, their economic contributions are often overlooked. Recreational activities generate substantial economic benefits for local communities and the state at large through direct spending on equipment, travel, lodging, permits, and other associated costs. However, quantifying these benefits can be challenging due to their dispersed nature. This report focuses on assessing the economic impact of recreational activities in Tennessee by analyzing data from residents and visitors.

To evaluate these contributions, an online survey was conducted among all resident and non-resident TWRA license holders to understand their spending behavior while participating in various outdoor recreation activities in Tennessee. Respondents provided information about their participation over the past year, including trip frequency, travel distance, expenditures, and demographic details like age and education level.

Outdoor recreation in Tennessee is not only a source of enjoyment but also a significant driver of economic activity that supports local businesses and communities across the state. By quantifying these impacts, this study aims to highlight the value of investing in conservation efforts that sustain these activities for future generations. The findings will provide policymakers with actionable insights to balance ecological stewardship with economic development priorities—ensuring that Tennessee's natural resources continue to benefit both its residents and visitors alike.

¹ Tennessee Wildlife Resources Agency and Commission. (October 2017). *Tennessee Encyclopedia*. Retrieved January 15, 2026, from <http://tennesseencyclopedia.net/entries/tennessee-wildlife-resources-agency-and-commission/>

In this report, we examine the economic impact of TWRA’s operations as well as outdoor recreation activities supported by TWRA, more broadly, on the Tennessee economy. Using detailed TWRA spending data from the 2023-24 fiscal year, as well as outdoor recreational activity spending gathered through a TWRA survey, we estimate the overall impact in terms of the amount of income, the number of jobs, and the tax revenue generated from their operations. **Table 1** presents a summary of the economic benefits. We estimate that spending associated with outdoor recreation in combination with TWRA operations is responsible for nearly \$5.8 billion in income, 214,442 jobs, and nearly \$1.8 billion in state and local tax revenues. A more detailed breakdown of these estimates can be found in the sections that follow.

Table 1: Summary of Economic Benefits Generated by TWRA Operations and Outdoor Recreation

Income Generated	\$5,802,449,013
Tax Revenue Generated	\$1,772,772,650
Employment Generated	214,442

Methodology and Survey Results

To estimate the impact of outdoor recreation participation, an online survey was sent to a sample of 34,665 Tennessee residents and non-residents in the TWRA license database during the fall of 2025. In total, the online survey had 3,792 responses (i.e., response rate of 10.9%) with 2,538 respondents completing the entire survey.

In the survey, questions were asked about the types of recreational activities that they participated in over the last 12 months (e.g., hunting, fishing, boating, etc.), the number of trips made, how far they traveled, how much money they spent on these trips, as well as how much money was spent on equipment and other expenses. Data from the survey were used to calculate the average number of trips, average trip spending across the various activities for both day trippers and overnights,² and average annual spending on equipment and other items.

Total participation rates for each activity were estimated from a number of sources. For Tennessee residents participating in hunting, fishing, motorized boating, and wildlife viewing, we used participation rate estimates from a 2022 U.S. Fish and Wildlife Service survey.³ This study did not provide state-specific estimates, but did report estimates by Census region, so we used participation rates for the East South Central Census region. For in-state residents participating in non-motorized boating, we used

² Day trippers were defined as those who travelled 180 miles or less one-way, and overnights were those who traveled more than 180 miles.
³ U.S. Department of the Interior, & U.S. Fish and Wildlife Service. (2023). 2022 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation.

national estimates from a USDA Forest Service report.⁴ In-state participation estimates for trapping and off-highway vehicle (OHV) riding were taken from two previous TWRA surveys.^{5,6} Non-resident OHV participation was determined using the ratio of non-residents in the aforementioned outdoor recreation survey. The Tennessee residential participation rate for target shooting was gathered from the survey outlined above and limited to only those who were shooting on TWRA-managed public shooting ranges. In addition, we estimated non-resident participation in hunting and trapping using TWRA license sale data. Non-resident participation in fishing and non-motorized boating was sourced from a 2025 TWRA fishing survey and a 2024 TWRA paddlecraft survey, respectively using estimates of resident numbers and a resident/non-resident ratio.^{7,8} Finally, non-resident motorized boating estimates were based on the number of non-resident motor boat registrations in the TWRA database.

Table 2 reports statewide estimates for the total number of annual participants by recreational activity, as well as summary statistics on trip-related spending, including: the average number of trips, mean spending, and total annual spending, as estimated using the online survey response data. Next, **Table 3** reports total annual spending in Tennessee by recreational activity. Total spending includes the trip-related expenditures from Table 2, as well as dollars spent on equipment, such as fishing rods, bait, guns, ammunition, boats, etc., and any other spending, such as on annual licenses, membership dues, or land.

⁴ Cordell, H.K. 2012. Outdoor recreation trends and futures: A technical document supporting the Forest Service 210 RPA Assessment. USDA Forest Service Gen. Tech. Rep. (GTR) SRS-150, Southern Research Station, Asheville, NC.

⁵ Poudyal, N.C., Cavazos, K., Davan, K. 2023. Tennessee small game hunters and trappers survey 2019-2022, A Technical report submitted to the Tennessee Wildlife Resources Agency, Nashville, Tennessee.

⁶ Poudyal, N., C., McKinney, E., Johnson, B., Muse, N., Bostic, A., (2024). North Cumberland Wildlife Management Area OHV Trail User Survey 2024. A Technical Report Submitted to the Tennessee Wildlife Resources Agency, Nashville, Tennessee.

⁷ Tennessee Wildlife Resources Agency, (2025). Tennessee Statewide Creel Survey. Report No. 25-04. A report prepared by the Tennessee Wildlife Resources Agency, Nashville, Tennessee.

⁸ Tennessee Wildlife Resources Agency, (2024). Tennessee Paddlesports Survey 2024. A report prepared by the Tennessee Wildlife Resources Agency, Nashville, Tennessee.

Table 2: Estimated Annual Spending by Recreational Activity

Activity	Total Participants	Trip Type	Total Participants by Trip Type	Average Number of Trips	Average Spending per Person	Total Spending
Hunting	535,643	Day	454,922	11.5	\$117.1	\$614,356,032
		Overnight	80,721	5.5	\$524.3	\$232,774,091
Fishing	1,443,008	Day	1,329,443	12.3	\$90.0	\$1,466,229,780
		Overnight	113,565	6.3	\$395.7	\$283,130,741
Trapping	15,927	Day	15,408	7.5	\$41.0	\$4,744,122
		Overnight	519	1.7	\$58.7	\$50,768
Non-Motor Boating	1,074,960	Day	1,029,059	4.9	\$61.0	\$310,359,191
		Overnight	45,901	3.5	\$191.1	\$30,410,125
Motor Boating	1,084,504	Day	1,012,276	9.0	\$80.0	\$725,538,996
		Overnight	72,228	6.7	\$267.4	\$128,883,348
Off-Highway Vehicle (OHV) Riding	183,247	Day	130,307	7.2	\$119.0	\$111,407,088
		Overnight	52,940	3.0	\$591.1	\$92,546,661
Target Shooting	45,734	Day	44,604	5.9	\$70.7	\$18,691,886
		Overnight	1,130	7.0	\$73.4	\$580,497
Wildlife Viewing	1,744,596	Day	1,572,579	8.3	\$51.9	\$678,582,114
		Overnight	172,017	7.0	\$146.1	\$175,314,596

Table 3: Total Estimated Annual Spending by Recreational Activity

Activity	Total Spending
Hunting	
Trip Spending	\$847,130,123
Equipment Spending	\$1,219,828,569
Other Spending	\$774,546,968
Total Spending	\$2,841,505,660
Fishing	
Trip Spending	\$1,749,360,522
Equipment Spending	\$2,044,954,082
Other Spending	\$105,210,359
Total Spending	\$3,899,524,963
Trapping	
Trip Spending	\$4,794,890
Equipment Spending	\$5,358,123
Other Spending	\$5,574,450
Total Spending	\$15,727,463
Non-Motor Boating	
Trip Spending	\$340,769,316
Equipment Spending	\$193,492,800
Other Spending	\$53,748,000
Total Spending	\$588,010,116
Motor Boating	
Trip Spending	\$854,422,344
Equipment Spending	\$1,897,809,074
Other Spending	\$54,225,200
Total Spending	\$2,806,456,618
Off-Highway Vehicle (OHV) Riding	
Trip Spending	\$203,953,749
Equipment Spending	\$1,178,337,641
Other Spending	\$34,308,150
Total Spending	\$1,416,599,541
Target Shooting	
Trip Spending	\$19,272,383
Equipment Spending	\$25,670,923
Other Spending	\$6,860,100
Total Spending	\$51,803,406
Wildlife Viewing	
Trip Spending	\$853,896,710
Equipment Spending	\$605,915,637
Other Spending	\$104,675,760
Total Spending	\$1,564,488,107
Total Spending Across All Activities	\$13,184,115,874

Economic Impact

Income Effects

TWRA generates income for Tennesseans through a number of channels. First, there are direct benefits created through payroll spending, as TWRA pays its workers. Second, there is an indirect economic benefit through non-payroll spending, as TWRA purchases goods and services from Tennessee vendors to maintain its operations. Third, economic benefits are accrued as Tennessee residents and non-residents participate in outdoor recreational activities facilitated by TWRA's operations. Finally, additional economic activity is created through the multiplier effect, whereby money is spent and re-spent elsewhere in the Tennessee economy such that each dollar of TWRA-related spending can generate more than one dollar of economic activity for the state. For example, when an angler buys fishing equipment or bait from a local vendor, the local vendor then uses a portion of those dollars to pay its employees, who in turn may use their income to buy groceries or go out to dinner, which then creates income for these businesses, and so on.

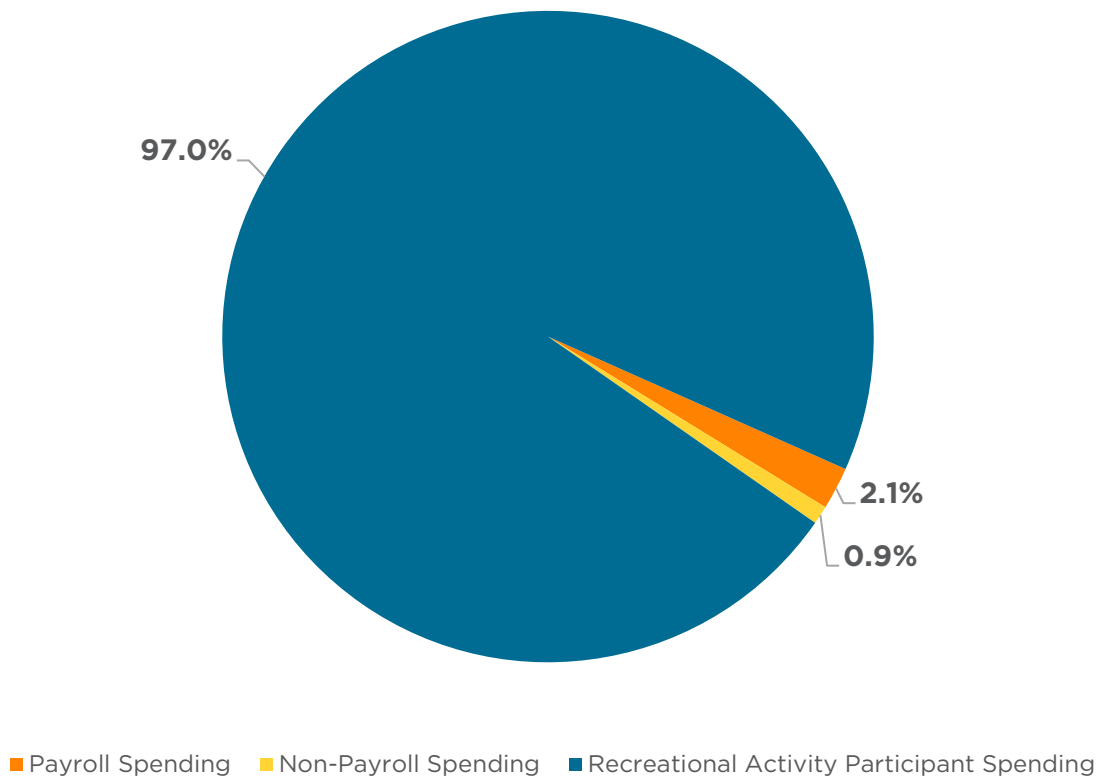
Table 4 presents a summary of the economic benefits from the three main sources –payroll spending, non-payroll spending, and spending on recreational activities. In total, we estimate that outdoor recreation and support through TWRA's operations generates nearly \$5.8 billion in income for Tennesseans each year, from which, \$175.5 million comes from TWRA operational spending. Specifically, \$122.5 million is generated through TWRA payroll spending on employee wages, salaries, and benefits, and \$52.9 million is generated through TWRA non-payroll spending as the organization purchases goods and services from Tennessee vendors. The main economic contribution comes from spending on outdoor recreational activities, which we estimate generates a total of \$5.6 billion in income for Tennesseans each year, from which \$2.1 billion is generated through trip expenditures, \$3.1 billion from equipment spending, and \$486.2 million from other spending. A breakdown of income effects by recreational activity can be found in **Appendix Table A1**.

The economic contributions of the three components are illustrated in **Figure 1**. As is already evident from Table 4, the bulk of the economic impact (97 percent) comes from the dollars spent by those participating in outdoor recreational activities such as hunting, fishing, etc. In comparison, only 3 percent is generated by the dollars spent directly by the TWRA. Importantly, this balance directly aligns with TWRA's mission and illustrates the agency's efficiency in supporting the wide range of outdoor activities that Tennesseans participate in throughout the year.

Table 4: Summary of Income Effects by Source

Payroll Spending	\$122,545,962
Non-Payroll Spending	\$52,922,396
Recreational Activity Participant Spending	
Trip Spending	\$2,080,052,496
Equipment Spending	\$3,060,739,371
Other Spending	\$486,188,788
Total Income Benefit	\$5,802,449,013

Figure 1: TWRA Income Effects by Source



Employment Effects

New jobs are also created as a result of TWRA's operations. We estimate that an additional 2,151 jobs were created in Tennessee as a result of TWRA-related spending and the associated multiplier effect, from which 1,107 came from TWRA payroll spending and 1,044 from TWRA non-payroll spending. More importantly, 212,291 jobs were generated through recreational activity-related spending and its associated multiplier effect, as outdoor enthusiasts purchase equipment, boats or OHVs, spend money on lodging for overnight excursion, and buy food and beverages during their trips. A summary of employment effects by recreational activity can be found in **Appendix Table A1**. Combined, TWRA was responsible for a total of 214,442 jobs in the state. This represents 6.3 percent of nonfarm employment in the state.⁹ **Table 5** reports the employment impacts for FY23-24.

Table 5: Summary of Employment Effects by Source

Payroll Spending	1,107 jobs
Non-Payroll Spending	1,044 jobs
Recreational Activity Participant Spending	
Trip Spending	78,475 jobs
Equipment Spending	115,473 jobs
Other Spending	18,343 jobs
Total Income Benefit	214,442 jobs

Tax Effects

State and local tax revenues result from the spending and incomes associated with TWRA operations and outdoor recreation activities, including spending from recreational participants on food, equipment, and lodging, etc., as well as spending made by TWRA employees when they spend a portion of their income to purchase goods and services (e.g. groceries, entertainment, etc.). In total, we estimate that TWRA operations and supported recreational activities generated nearly \$1.8 billion in tax revenues in FY23-24 (see **Table 6**). From which, \$1.5 billion came in the form of sales tax revenues, and \$264.0 million came from other tax revenue sources, such as the hotel tax and gasoline tax.

Table 6: State and Local Tax Revenues Generated by TWRA Operations and Outdoor Recreation

Sales Tax Revenue	\$1,508,761,220
Other Tax Revenue	\$264,011,430
Total State & Local Tax Revenue Generated	\$1,772,772,650

⁹ Nonfarm employment is one of the main jobs metrics tracked by the Bureau of Labor Statistics (BLS) on a month-to-month basis. It primarily covers employment that moves closely in line with the overall economy.



Conclusion

Spending associated with TWRA's operations and support of these outdoor recreational activities has a significant economic impact on the Tennessee economy. The economic impacts are generated through a number of channels, including through TWRA's direct spending on payroll and non-payroll activities, and spending made by outdoor enthusiasts when participating in recreational activities. In addition, economic activity is generated through the multiplier effect, whereby one dollar of spending can generate more than one dollar of economic activity as money is spent and then re-spent throughout the state economy.

Taking all of these sources into account, we estimate that TWRA's operations and support of recreational activities generate nearly \$5.8 billion of income for Tennesseans each year. These earnings are associated with 214,442 permanent full-time equivalent jobs in the Tennessee economy –equivalent to 6.3 percent of total nonfarm employment in the state, and \$1.8 billion in annual state and local tax revenues.

Appendix

Table A1: Economic Impact by Recreational Activity

Activity	Total Income Effects	Total Employment Effects
Hunting	\$1,212,754,616	45,754
Fishing	\$1,664,317,254	62,790
Trapping	\$6,712,481	253
Non-Motor Boating	\$250,962,717	9,468
Motor Boating	\$1,197,795,685	45,190
Off-Highway Vehicle (OHV) Riding	\$604,604,684	22,810
Target Shooting	\$22,109,694	834
Wildlife Viewing	\$667,723,524	25,191
Total	\$5,626,980,655	212,291