

Impact of Hunting and Fishing on Mississippi Counties
Andrew Whittington*, Greg Parkhurst, Darren Hudson, Virginia Buller

*Selected Paper prepared for presentation at the
Southern Agricultural Economics Association Annual Meetings
Little Rock, Arkansas, February 5-9, 2005*

Abstract

Mississippi is largely agricultural with access to many watersheds, the combination of which makes the state attractive to hunters and fishermen. This paper investigates the impact of hunting/fishing on the sales tax revenue in the counties of Mississippi. Our results indicate that a 1% increase in the non-resident hunting/fishing license sold increases tax revenue by \$14,535.65 per county on average.

Introduction

Mississippi is one of the largest agricultural areas in the United States. It is adjacent to the Mississippi River and has many rivers and tributaries that flow into the Mississippi. This combination of thousands of acres of crop land and water bodies generates excellent habitat for wildlife and waterfowl. As a result of the abundant wildlife, Mississippi enjoys the benefits of recreational dollars spent by hunters and fishermen (LMRCC). In 2002, total revenues from tourism and recreation in Mississippi were \$6.1 billion and these activities employed 92,700 workers (EIR). In 2001, according to U.S. Fish and Wildlife Service National Survey of Fishing, Hunting and Wildlife-Associated Recreation and State License Data in Mississippi,

* Andrew Whittington, Graduate Student, D. Hudson, Professor, G. Parkhurst, Professor and V. Buller, Graduate Student

Copyright © 2005 by Andrew Whittington, Greg Parkhurst, Darren Hudson and Virginia Buller. All rights reserved. Readers may take verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.

This research was funded by the Wildlife Economic Enterprises grant program through the United States Department of Wildlife and Fisheries.

2,228,000 freshwater fishing trips and 2,232,000 hunting trips were undertaken in Mississippi, with expenditures totaling \$360 million. Approximately \$132 million, or 37% of total expenditures, was spent on food, lodging and transportation. Hunting and fishing equipment expenditures totaled \$166 million, or 46% of total expenditures. The other 17%, or \$62 million, was spent on magazines, membership dues, leases, licenses and permits.

The revenue generated from these industries is important to the economy in Mississippi, and specifically the counties in Mississippi. State, Local, and County governments rely on the sales tax revenue generated from such activities to fund public services. In order to fully recognize the potential benefits from these activities, it is important to analyze what impact hunting and fishing have on the counties in Mississippi. The analysis should be beneficial to owners and operators of fee based enterprises in making marketing decisions, private landowners looking for additional revenue from recreational leases, and the State in determining if programs attracting new outdoorsman need to be implemented.

Sales tax revenue can be used to determine the impact of these activities on economic development in the counties of Mississippi. Bangsund (1999) stated that in an era of reduced federal funding, revenue shortfalls, and public demand on governments to balance their budgets, tax collections are an important factor in assessing economic impacts. In addition to being an indicator of the government's access to money, it also can be used as a measure of consumer expenditures. Hawkins (2000) states that if demand follows prices, income, and household characteristics, then taxable spending also follows these variables.

Our objective in this paper is to study the impact of hunting and fishing on sales tax revenue. Hunters and fishermen can be divided into two categories, resident and non-resident. Results indicate that non-resident hunters/fishermen have a significant impact on the economies

of the counties in Mississippi. Non-resident hunters/fishermen will require food and lodging away from home; therefore, we would expect their contribution to be greater. The remainder of this paper is as follows. Section 2 is the Data and Model. In section 3 we discuss the results, and the last section concludes.

Data and Model

Following Hawkins (2004), our model for analyzing the effect of hunting and fishing on sales tax revenue is:

$$\log T_i = \beta_0 + \beta_1 \log R_i + \beta_2 \log NR_i + \beta_3 \log POP_i + \beta_4 \log I_i + u_i \quad (1)$$

where, the dependant variable (T_i) is the sales tax revenue per tax paying business in county i . The number of resident hunting license sold (R_i) and the number of non-resident license sold (NR_i) in county i will serve as proxies for the number of resident and non-resident individuals hunting or fishing in each county.

Population (POP_i) in county i controls for the direct impact of population size on the sales tax per business. Counties with larger populations are expected to have larger sales tax revenues, and also have more tourism, transient travel and shopping than do rural counties. Spending by visitors and tourists will depend on the county's amount of amenities and attractions and commuter spending will depend on the transportation network. Our assumption is that access to these goods is correlated with county population. Therefore, population is used to control for taxable spending by visitors and tourist (Hawkins 2004). The income variable (I) also taken from the 2000 Census serves as a proxy for 2002 per capita income in each county.

Descriptive statistics on the data used in this analysis are shown in Table 1. The sales tax revenue per tax paying business data comes from the Mississippi State tax Commission. The average tax revenue per business is \$23,926.04. 6,419 resident hunting/fishing licenses were sold per county. The average number of non- resident license sold per county was 1,061.18. These data were collected from the Mississippi Department of Wildlife, Fisheries and Parks 2002 County Analysis Report. Population data collected from the 2000 Census shows a mean population of 34,690.95. Income data was also gathered from the 2000 Census and shows a mean per capita income of \$14,232.91.

A cross sectional double log linear regression model was estimated using ordinary least squares. The double log model generates a unique sales tax revenue elasticity for each independent variable. Because most resident hunters and fishermen buy their license in their county of residence and most non-resident hunters and fishermen buy their license in the county in which they will participate in these activities, hunting license sales were used to proxy for the number of hunters/fishermen in the county (LMRCC).

Results

Regression results are shown in Table 2. Non- resident hunters/fishermen have a significant impact on the tax revenue in Mississippi counties. Results suggest that a 1% increase in non- resident license sold there will be a .07% increase in sales tax revenue. To illustrate, an increase of 10.61 non- resident licenses (an increase of 1%) will result in a \$16.75 (an .07% increase) increase in sales tax revenue per tax paying business. This is consistent with *a priori* expectations.

From Table 2 we see resident hunting/fishing license have little or no significant effect on sales tax revenue per tax paying business. Resident hunters/fishermen participate in activities

closer to home, and thus are not likely to have a significant impact on tax revenue relative to resident non-hunters. As expected, the coefficient on population is positive and statistically significant.

Conclusions

This paper investigated what effect, if any, hunting and fishing activities have had on sales tax revenue in the counties of Mississippi. From this, we can determine if it is feasible and beneficial for governments and operators of fee based enterprises to attract more non-resident outdoorsmen. It is evident that non-resident hunters/fishermen contribute more than resident outdoorsmen. Non-resident hunters/fishermen purchase goods and services in the state while they are here to participate in hunting and fishing activities. As shown earlier, a 1% increase in the number of non-resident licenses sold will yield a \$16.75 increase in tax revenue per business. In aggregate, this translates to an increase of \$14,535.65 in the average county's sales tax revenue. At the State level, revenue would increase by \$1,191,923.30 if non-resident hunting/fishing licenses increased by 1% statewide. The pursuit of non-resident hunters/fishermen to visit the state of Mississippi will not only benefit the local governments and the owners of fee based recreational enterprises, but also hotel/motel, food services and gas and transportation owners as well.

References

- Bangsund, D., Leistriz, F. *Economic Contribution of the Soybean Industry in North Dakota*. Agricultural Economics Report Number 416-S. June 1999.
- Hawkins, Richard R. *Price Elasticities in Consumer Sales Tax Revenue*. Public Finance Review, Volume 28, Number 2, March, 2000, 171-184.
- Hawkins R., Murray, M. *Explaining Interjurisdictional Variations in Local Sales Tax Yield*. Public Finance Review, Volume 31, Number 1, January, 2004, 82-104.
- Black, R., Hutchison, S. Warsaw, C.; *Economic Profile of the Lower Mississippi River Region*. Industrial Economics, Incorporated. Cambridge, MA; January 2004.
- Mississippi Development Authority. *Fiscal Year 2002 Economic Impact for Tourism and Recreation in Mississippi*. Division of Tourism Development Research Unit; Jackson MS; January 2003.
- Mississippi State Tax Commission. *Sales and Tax Industry Group*; <http://www.mstc.state.ms.us/info/annualreport/fy2002/Sales%20Tax/Counties02edited.pdf>; retrieved October 20, 2004; Fiscal Year 2002.
- U. S. Census Bureau. *State and County Quickfacts*; <http://quickfacts.census.gov/qfd/states/28000.html>; retrieved October 26, 2004; The 2000 U.S. Census.
- U.S. Fish and Wildlife Service. *County Analysis Sales Report*; July 01, 2001 thru June 30, 2002.

Table 1. Descriptive Statistics and Data Sources.

Variable	Mean Value (Std. Dev.)	Source
T	23926.04 (27731.91)	Mississippi State Tax Commission
R	6419.28 (19281.8)	MS Dept of Wildlife and Fisheries
NR	1016.18 (1651.59)	MS Dept of Wildlife and Fisheries
POP	34690.95 (38538.4)	2000 Census
I	14232.91 (2453.13)	2000 Census

Table 2. Results for double log linear regression model

Variable	Estimates
Constant	6.717** (3.190)
LnR	-0.037 (0.080)
LnNR	0.070* (0.041)
LnPOP	0.383*** (0.124)
LnInc	-0.086 (0.375)

*** significant at 1% level, ** 5% level, * 10% level.
Standard errors are in parentheses.