8-2011

EVALUATING NATURE OF EXPENDITURES AND ECONOMIC IMPACT OF TOURISM SPENDING ON NATURE-BASED ACTIVITIES IN SOUTH CAROLINA COASTAL ECONOMIES

Alexis Imler
Clemson University, alexis.imler@gmail.com

EVALUATING NATURE OF EXPENDITURES AND ECONOMIC IMPACT OF TOURISM SPENDING ON NATURE-BASED ACTIVITIES IN SOUTH CAROLINA COASTAL ECONOMIES

A Thesis
Presented to
the Graduate School of
Clemson University

In Partial Fulfillment
of the Requirements for the Degree
Master of Science
Applied Economics and Statistics

---

by
Alexis Noelle Imler
August 2011

Accepted by:
Dr. Carlos Carpio, Committee Chair
Dr. Kathryn Boys
Dr. David Hughes

ABSTRACT

The general goal of this study is to better understand South Carolina coastal tourism. The region of study includes the coastal counties of Horry, Charleston, and Beaufort (and Georgetown, Berkeley, Dorchester, and Jasper counties for the economic impact analysis). This study includes two types of analyses: a regression analysis of visitors' expenditures and an economic impact analysis of tourist spending.

The empirical visitors' expenditure models are specified using economic consumer demand theory. The regression analysis of the model is conducted using data from a tourist survey of 818 South Carolina visitors (conduced in fall 2008 and summer 2009). The activity participation data from the survey was used as explanatory dummy variables in the regression analysis, mapped with IMPLAN sectors, and used in proportional estimates of tourism spending in the economic impact analysis. The economic impact analysis uses the survey data on activity participation and overall tourism estimates by region from the U.S. Travel Association (2009) to estimate the impacts of tourism spending on industries in the Horry (Horry and Georgetown counties), Charleston (Charleston, Berkeley, and Dorchester counties) and Beaufort (Beaufort and Jasper counties) regions.

The regression results show number of people, number of nights, and coastal activities are the most determinant of visitors' expenditures in all regions. The economic impact analysis shows that a 10% increase in visitors' expenditure shock results in a 2%

increase in employment in the Horry region, 0.6% in the Charleston region, and 1.1% in the Beaufort region. The substitution shock examines the effects of an increase outdoor activity spending and a decrease in entertainment activity spending. This shock generated negative total employment impacts for all industry sectors, with the exception of the agriculture and trade sectors. Additionally, the overall Horry regional economy sees a net loss in economic impacts as a result of the shock.

ACKNOWLEDGEMENTS

I would like to express my thanks to my thesis advisor Dr. Carlos Carpio for his help and guidance during this process. I would also like to acknowledge the members of my committee Dr. Kathryn Boys and Dr. David Hughes for their important suggestions.

My work on this thesis would not have been accomplished without the support and encouragement of my family. I want to express my gratitude to my parents, sister, and grandmother. Special thanks to David for his love during this process.

TABLE OF CONTENTS

Page

Table of Contents (Continued)

Page

LIST OF TABLES

Table Page

List of Tables (Continued)

Table Page

List of Tables (Continued)

Table Page

LIST OF FIGURES

Figure Page

CHAPTER 1

INTRODUCTION

The United Nations and the World Trade Organization define tourism as, "the activities of persons traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes," (UNWTO, 1995, p.1). The tourism industry encompasses numerous sectors, from accommodations to travel, eating to shopping, and visiting attractions. Employment in the tourism industry is twofold, either through employment in the aforementioned sectors or through the production of goods and services bought by tourists. The U.S. Travel Association notes that one in nine of the non-farm jobs in the United States are related to tourism (U.S. Travel Association, 2011). In 2009, direct expenditures by domestic and international travelers in the United States reached $704 billion (U.S. Travel Association, 2011).

South Carolina has a strong stake in the industry with miles of coastline dedicated to providing beach getaways. Travelers to South Carolina's coasts can also participate in many historical and local activities, golfing and other outdoor recreation, in addition to enjoying traditional coastal amenities such as sunbathing and water sports. In 2008, domestic tourism spending accounted for $9.9 billion of South Carolina's economy and 113.8 thousand jobs (U.S. Travel Association, 2009). In terms of the overall South Carolina economy, domestic (visitors from within the United States) tourism spending accounts for 6.2% of GDP and 4.4% of total employment, (U.S. Bureau of Economic

Analysis, 2011). Canadians represent a large portion of international visitors, with 897,400 visiting South Carolina in 2009, while the United Kingdom and Germany had 15,204 and 13,261, respectively (South Carolina Department of Parks, Recreation and Tourism, 2010).

Since the revenues in the tourism industry account for a large part of South Carolina's economy, stakeholders are continuing to look for ways to increase revenues and attract more people to the state. However, additional concerns over sustainability also have these stakeholders seeking to find a balance between tourism and preservation of the natural coastal environment. Additionally, local residents of coastline communities rely on the business from tourists to the area.

General Objectives

The general goal of the paper is to better understand South Carolina coastal tourism, its impact on local communities and to make recommendations to local governments and businesses on how to increase tourism in coastal counties.

Specific Objectives

The Specific objectives of this paper are two-fold:

1. To assess, quantify and analyze tourists' spending on the South Carolina coastal counties of Horry, Charleston and Beaufort.
2. To analyze the economic impact of the tourism industry in the coastal counties of Horry, Charleston and Beaufort.

The second chapter of this paper examines previous literature relating to the objectives of this paper, including analysis of visitors' expenditures, segmentation of tourism and economic impact analysis of tourism. Chapter three focuses on the data and methods used in the regression and economic impact analyses. Specifically, chapter three includes background information on the theory of consumer demand, regression analysis, and economic impact analysis is included. Additionally, the chapter includes a section explaining the specification of empirical demand models used in the demand analysis, the methods used to translate survey data into IMPLAN values, and the shocks used in the economic impact analysis. Chapter four presents the results of the regression and economic impact analyses. Finally, Chapter five includes conclusions, implications and suggestions for future research.

CHAPTER TWO

LITERATURE REVIEW

Since the objectives of this thesis include analyzing tourists' spending and overall impact of tourism sectors on coastal communities, the review of literature will focus on research methods used to analyze these issues. The first section in this chapter focuses on visitor expenditures and estimation of the number of tourists to South Carolina. The second section will concentrate on segmentation of tourist groups. The last section will focus on the economic impact analysis of tourism.

Visitors' Expenditures and Tourism Numbers

This section focuses on studies analyzing visitors' expenditures at nature-based tourism destinations and in the state of South Carolina and estimating tourism numbers at South Carolina destinations. For the majority of the studies, the methods of data collection and analysis are discussed.

Fredman (2008) notes that the goal of the overall tourism industry is to maximize profit, while individual businesses hope tourists will buy their products, and the communities of tourist destinations hope to increase economic development. Fredman studies expenditures at mountain resorts in Sweden. He focuses on what factors determine how and where tourists spend their money. He examines spending levels against duration of stay and party size, and finds that the longer the stay and the larger the

party, the higher the expenditures by visitors (Fredman, 2008). Additionally, he observes differences in spending at the tourist destination and during travel to the destination.

Data for this analysis was collected by a telephone screening method and an additional mail survey. Participants were separated into four groups, 323 downhill skiers, 93 backpackers, 66 snowmobilers and 241 other visitors for a total of 723 participants. A log-linear regression analysis is used to test differences in types of visitors and other factors affecting expenditures (Fredman, 2008). Fredman concludes, that "individuals who considered the main leisure activity undertaken at the destination 'very important' for the total experience did spend more money to get to the mountains" (Fredman, 2008, p. 307). He introduces willingness to pay as a way to capture non-market values, such as the value of being in nature (Fredman, 2008).

Taylor et al. (1993) focus on visitors' expenditures on trips to historical sites in counties near Bighorn National Forest in Wyoming. The researchers use a previous survey by the Big Horn Mountain Coalition from the summer of 1990. Visitors were then separated into historical site visitors and all other types of visitors. Chi-square and t-tests were used to test for differences among variables. Some of the most important results show non-locals (residents outside the four counties near Bighorn National Forest) spent more money per person per day. Most of the demographic and trip characteristics were not statistically significant; however, there were statistical differences in spending between tourists traveling for historical and non-historical purposes. Between these groups, number of nights, participation in recreational activities, and expenditures at the

destination were significantly different. In order to better understand factors affecting visitors' expenditures (Taylor et al., 1993) also conduct a regression analysis using the following equation:

$$Y_j = b_0 + b_1 x_{1j} + b_2 x_{2j} + b_3 x_{3j} + b_4 z_{1j} + ... + b_{15} z_{nj} + b_{16} u_{1j} + ... + b_{30} u_{mj} + e_j \quad (1)$$

where: Y_j is the average daily per-person expenditure of nonresident visitors, b_j's are the regression coefficients, x_{1j} is household income ($10,000 intervals), $x_{2j}$is the number of person in traveling party, x_{3j} is the number of nights in Wyoming, $z_{1j}...z_{nj}$ are dummy variables for recreation activity participated in, $u_{1j}...u_{mj}$ are dummy variables for sources of travel information used, and e_j is a random error term.

They find average daily per-person expenditures are higher for visitors to historical sites than for visitors traveling for other recreational purposes. Additionally, they find that the "other recreational purposes" traveler group rank historical attractions as very important when asked in a survey, although the purpose of their trip was not to visit a historical site (Taylor et al., 1993).

While most studies on visitor expenditures focus on tourism outside South Carolina, some research is devoted directly to South Carolina tourism. Every tourism market is different and South Carolina provides Atlantic coastal destinations and a warm climate. As such, previous research by the South Carolina Department of Park, Recreation and Tourism and the Clemson University Department of Parks, Recreation and Tourism Management provide helpful insight for this study.

The South Carolina Department of Parks, Recreation and Tourism Management conducts yearly reports on the state of tourism across multiple categories. They provide some overall information about domestic travel including the types of tourists visiting the state, party size, nights at destination and expenditures. According to a 2009 report, 79% of visitors' trips to South Carolina were for pleasure, recreation, entertainment or visiting relatives, while 18% of trips were for business or non-recreation purposes (South Carolina Department of Parks, Recreation and Tourism, 2009). Additionally, the average visitor stay is 2 nights, the median party size is 2 people and the average expenditure per party is $634 (South Carolina Department of Parks, Recreation and Tourism, 2009). When broken down into tourists visiting friends and relatives, the average stay is 2.5 nights, the median party size is 2 people and the average expenditure per party is $396 (South Carolina Department of Parks, Recreation and Tourism, 2009). It follows that those visiting residents of the area spend less money, as accommodations are likely provided by friends or relatives.

Oh et al. (2006) conduct a survey similar to the one used in this study, but use forecasting methods to predict future demand for South Carolina beaches. The survey was conducted during March and April of 2006 at popular coastal destinations, including Myrtle Beach, Charleston and Hilton Head. Visitors were asked to participate in the study at the destinations and sent a questionnaire at a later date (April and May 2006). The survey was developed in conjunction with the South Carolina Department of Health and Environmental Control and was comprised of six parts: questions about trip, beach characteristics, characteristics of the travel party, perceptions about environmental issues

and participant demographics. Additionally, respondents were presented with stated preference choice questions related to environmental issues and beach management programs. The researchers received 198 useable surveys, for a response rate of 44.4%. The study found respondents' mean age was 43.4, with more females than males responding. Over one-quarter of the respondents reported an annual income over $100,000 and 22.7% said their primary residence is in South Carolina.

The focus of Oh et al.'s study was on visits to South Carolina beaches only. Forecast models and data from the U.S. Department of Transportation Bureau of Transportation Statistics American Travel Survey, the South Carolina Department of Parks, Recreation and Tourism, the United States Department of Agriculture Forest Service National Survey of Recreation and the Environment, and the U.S. Census Bureau were used in the paper to estimate the number of tourists visiting South Carolina beaches in the month of July over time. Using this information, these researchers estimated that about 7.5 million tourists (over sixteen years of age) will visit South Carolina beaches in July 2010. They also forecast that 28.8% of those visitors will be from the Northeast, 13.1% from the Midwest, 35.2% from the South, 31.9% from the West and 63.4% from South Carolina.

Segmentation of Tourism Markets

Segmentation of tourism markets is important to many stakeholders, from owners of local businesses, governments to marketing organizations. Each of these groups function with a goal of increasing visitation numbers to increase business and profits. Many stakeholders with nature-based activities also want to maintain and preserve the local environment. Mehmetoglu (2007, p. 200) explains the goals of nature stakeholders as "a two-fold paradoxical task; preserving the resources that attract the tourists in the first place, and providing a quality travel experience." In the following section, types of tourism market segmentation are discussed from marketing and statistical perspectives.

Using the marketing perspective, Kotler (1988) defines four specific attributes that should hold for a variable to be used to define market segments. The variable used for segmentation should include measurable, accessible, substantiable, and actionable attributes. Many studies use expenditure variables to segment as they easily meet these criteria (Spotts and Mahoney, 1991; Pizam and Reichel, 1979). For example, in a study of tourism in Guam, Mok and Iverson (2000) use Kotler's principles to characterize Taiwanese tourists through expenditure segmentation. Their goal is to segment tourists into spending groups, from heavy to light spenders, where heavy spenders spent more than $1,206 and light spenders spent less than $879 on the total trip (Mok and Iverson, 2000). They also find heavy spenders account for 50% of tourism spending in Guam. Additional results show income is not significant in regard to expenditure, although length of stay, party size, trip purpose and travel mode are significantly different (Mok

and Iverson, 2000).

A study by Tkaczynski et al. (2009) uses additional marketing principles suggested by Kotler- segmentation by tourism base (a base is a grouping of individuals by a certain characteristic). Kotler defines four segmentation bases: geographic, demographic, psychographic and behavioural (Kotler, 1980). The authors examine numerous tourism studies and find most studies use at least two of Kotler's bases. They note an ongoing debate of using a demographic base to measure visitor expenditures, as demographics may not capture actual consumer behavior. They conclude, however, that this base meets Kotler's attributes for segmentation, so they include it in their study of tourism in Queensland, Australia (Tkaczynski, et al., 2009).

The goal of the authors was to understand how each stakeholder group segments tourists for their business needs (e.g. marketing). They use Kotler's (1980) theoretical segments to develop survey questions. Rather than interviewing visitors for data, they conduct interviews with tourism stakeholders in the region, from regional tourism marketers to business owners. Questions were asked about how each organization segmented tourists. Through segmentation questions, three common variables among each stakeholder group- age, location and activities sought were identified (Tkaczynski, et al., 2009).

Another study by Manthiou et al. (2011) also uses activities to segment international tourists visiting Shanghai, China. In conjunction with The Shanghai Municipal Tourism Administrative Commission, in person interviews were conducted at top visitor destinations from September 2009 through January 2010. Participants were

asked about trip characteristics, experiences at the destination, activities participated in and demographic information. The researchers collected 5,976 surveys.

Manthiou et al.'s (2011) study takes the marketing perspective of segmentation an additional step further, adding a statistical perspective. These authors use explanatory factor analysis[1] to find activity preferences between business and leisure travelers. Using this method, they group multiple activities into categories and find four groups to segment tourists- traditional tourist activities, local life, special tourism and entertainment.

Mehmetoglu (2007) also uses explanatory factor analysis in his study of nature tourists in Norway. The researcher explains: "it is generally believed that nature-based tourists are more interested in nature, travel more frequently and longer distances, and stay longer at a destination…are well educated, possess high levels of both individual and household income and, last but not least, are willing to spend more" (Mehmetoglu, 2007, p. 201). Thus, it is Mehmetoglu's goal to test this theory.

Surveys were conducted at two wilderness centers in northern Norway in August 2004. Participants were asked in person for basic demographic characteristics as well as questions about trip characteristics, purposes and activities. A total of 162 surveys were deemed useable for the analysis. Using explanatory factor analysis, the author was able to condense the variables into six groups of travel motivations and four groups of travel activities.

[1] Explanatory factor analysis is a statistical analysis using a two-step approach. The goal of the analysis is to segment activity groups within a large set of variables.

In the second part of this study, Mehmetoglu uses daily per person expenditures as the dependent variable in a logistic regression of the probability of being a "heavy spending" visitor. Explanatory factor analysis yields six travel motives groups- nature, physical activities, novelty/learning, mundane every day, social contact and ego/status enhancement and four activity groups- no nature, low activity, pleasure and nature based for use as independent variables (Mehmetoglu, 2007). He also uses dummy variables for other geo- and sociodemographic variables. Mehmetoglu finds that the more important tourists considered nature-based activities, the more money they spent. Thus, he concludes tourism activities are a consistent method of measuring tourism spending.

Economic Impact Analysis of Tourism

Economic impact analysis allows stakeholders to identify industrial sectors that have the largest influence on a region's expenditures, payroll income and employment. These results can be considered in decision-making and policy decisions for businesses and governments. The first part of this section presents economic impact analysis studies from a tourism or nature-based perspective. The next section debates the common mistakes made in economic impact studies. Finally, two studies specifically related to South Carolina tourism are examined.

Frechtling and Horváth (1999) clarify the process of conducting an economic impact analysis of tourism using a study of visitors to Washington, D.C. They explain that an economic impact analysis of tourism needs two types of data: 1) visitor spending broken down into sectors and 2) multipliers needed to make conclusions about the

analysis. The data can then be used to find estimates of direct and indirect spending, employment and payroll impacts. These authors find tourism multipliers are higher than those for most other industries, suggesting that tourism linkages are strong (Frechtling and Horváth, 1999).

It is important to mention that most of the economic impact studies of tourism are conducted using Input-Output (I-O) and multiplier analysis. Tooman's (1997) notes that the tourism industry has many attributes that, in some cases, could make it an attractive industry, as an alternative to a declining manufacturing industries in a region, given its ease of entry and high need for labor. He explains, "the goal of multiplier analysis is to determine the impact generated in a tourist destination for every dollar that is spent on the tourist product itself" (Tooman, 1997, p. 920). That is, multipliers measure the ripple effect of spending throughout the economy, from the initial industry receiving the spending dollars, to the backward-linked industries the initial industry purchases inputs from. Households are also included in some multipliers, as they receive wages from direct or indirect association with the initial industry. A Type I multiplier gives the direct and indirect effects, while Type II multipliers gives the direct, indirect and induced effects. Induced effects are the inclusion of local households into the multiplier.

Saayman and Saayman (2006) use economic impact analysis to analyze the impact of nature tourism at the Kruger National Park in South Africa. An important part of economic impact analysis involves the definition of the region of study. These authors detail their region by explaining the attributes of the park itself, as well as the economy of the province of Mpumalanga where the park is located. The goal of their study is to detail

why the park benefits the local community through sustainable development. They find the Kruger National Park accounts for 0.37% of the Mpumalanga economy, using an output multiplier of 1.15 and direct income from visitor expenditures (Saayman and Saayman, 2006). While it seems the park has a small impact on the overall regional economy, the authors discuss the induced value of the park through the carcass model (Saayman 2002). In this model, a product is the carcass and the product draws other animals (or additional products) to the area, thus the Kruger National Park draws other development that would not occur without the Park (Saayman, 2002). In order to maintain sustainable development, the authors recommend minimizing leakages and strengthening linkages in the region (Saayman and Saayman, 2006).

A study by Wood et al. (2000) looks at tourism in Montpelier, Vermont, finding an overall tourism impact of $21.9 million. Furthermore, they find an output multiplier of 1.55 and that for every million dollars of tourism spending, 43 jobs are created. The researchers also examined a shock in visitor spending on tourism. Using the multipliers in IMPLAN (IMpact Analysis for PLANing), they observe the effect of a 30% increase in tourism spending. This shock would bring an additional $7.18 million in total output annually into the Montpelier area (Wood et al., 2000).

Wiersma et al. (2004) conduct a similar analysis for tourism in New Hampshire. The authors note that Type II multipliers, which include spending effects of households in IMPLAN are the most commonly used technique for impact analysis of tourism. These authors also bring up some important points regarding multipliers and tourism sectors commonly overlooked in economic impact studies. First, tourism is not a single sector in

IMPLAN. Therefore, multiple sectors relating to tourism must be combined to get an accurate picture of the overall tourism industry. The authors use Chang's (2001) definition of a tourism sector (a weighted average of hotels and lodging, eating and drinking, recreation and amusement and retail trade) in their study (Wiersma et al., 2004).

Second, the authors note that regional impact studies often use state level multipliers. As regional impacts may be overestimated if state level multipliers are used, these authors generate regional level multipliers in their analysis. In order to produce state and regional level multipliers, the authors use tourism expenditure data from the New Hampshire Fiscal Year 2002 Tourism Satellite Account. They proportion these expenditures by state and region and across tourism sectors including, lodging, eating and drinking, recreation, retail, and transportation and services. The final tourism multiplier is calculated by multiplying the IMPLAN multiplier by the expenditure proportion (by state and region) for the sector. Their results show "tourism output multipliers seem to be positively correlated with population and the number of industries in a given region and employment multipliers appear to be negatively correlated to population size and the strength of economic bases" (Wiersma et al., 2004, p. 106).

Although not related to tourism, a study by Hughes et al. (2008) is one of the few studies that examine substitution effects on a regional economy. The researchers conduct an analysis of the economic impact of spending at farmer's markets in West Virginia using an opportunity cost and expenditure shock. The opportunity cost shock examines the economic impact of substitution between consumer spending on traditional food

marketing systems and farmers' markets (Hughes et al., 2008). The objective in study by Hughes et al. is similar to the analysis of visitors' spending substitution in the economic impact analysis section of this thesis, thus it is included in the literature review. One of their hypotheses was to test that farmer's markets provide a net economic gain to the West Virginia economy. They find that increases in consumers' expenditures at farmer's markets, although reduced compared to the initial scenario provides a net economic gain of 42.8 jobs (Hughes et al., 2008). Their study also provides the economic sectors that win and lose due to the substitution shock. Sector winners include the fruit farming, vegetable and melon farming, greenhouse and nursery production, other animal production, and poultry and egg production sectors. Sector losers include food and beverage stores, building material and garden supply stores, and wholesale trade (Hughes et al., 2008).

Economic impact analysis can also be conducted using SAM (Social Accounting Matrix) and CGE (Computer Generated Equilibrium) models, which are usually used on a national scale. While the I-O model focuses on firms and relationships with other firms, a SAM adds non-market flows (such as government-based transfer payments) explicitly into the model (Shaffer, et al., 2004). Like the I-O model, SAM models are demand driven, thus it is assumed that if demand increases, the region can accommodate additional production without changes in relative prices. The SAM has a much more explicit picture of capital and government flows, showing where dollars to sectors are coming from, thus the SAM has larger data requirements (Shaffer, et al., 2004). SAM multipliers are often higher than I-O multipliers, as they account for more spending. CGE

models generally use the data from SAM models to define relationships. Typically, CGE model uses supply and demand functions for households, governments, and firms across production and commodities markets (Shaffer, et al., 2004). The CGE model is defined in three parts: "*endogenous* variables predicted by the model, *exogenous* variables, including policy instruments that are determined outside the model, *structural parameters* of the model that determine the magnitude and direction of linkages, thus specifying causation" (Shaffer, et al., 2004, p. 304).

This study will use an input-output model for economic impact analysis. The goal of the paper is to better understand the economic impact of tourism in coastal counties. SAM and CGE models are more complex than needed to define the relationships between tourism spending and industries in the regions. Additionally, the data requirements needed for SAM and CGE models are above what is needed for this research. The impact effects found in I-O models are sufficient for explanation of linkages and leakages in the regional economy.

Wagner (1997) conducts an economic impact analysis of tourism in Guaraqueçaba, an agricultural region in Brazil. This author argues that "the structure of a regional economy can be described by its productions, income distribution, consumption of goods/services, savings and investment, and trade." Wagner discusses I-O and SAM models and his decision for using a SAM. He chooses the SAM model for its ability to show linkages, consistency and use of multipliers (Wagner, 1997). The tourism impact is conducted assuming average spending of $15 per day for 100 tourists in the region. This author finds a Type I output impact of $1,563, a Type II output impact of $2,097, and a

SAM output impact of $3,261 (Wagner, 1997). He concludes that tourists spend the most on services (with low wage employees) and commercial sectors (where tourists purchased imported goods) and farmers spend money among each other, thus tourism does little to create linkages between farmers and other industry sectors, (Wagner, 1997).

Some Problems and Solutions of Economic Impact Analysis for Tourism

Crompton's (2006) discussion of economic impact analysis of tourism summarizes numerous caveats and debates whether the true winners of this type of analysis are politicians. While he finds eleven different problems, three stand out as more controversial: addition of local residents, abuse of multipliers and time-switchers and casuals. Time-switchers are visitors who restructure a trip based on a particular activity, while casuals are visitors already touring the area who decide to attend a particular event. Crompton argues that many economic impact analyses frequently include local residents rather than tourists. This creates problems, because local residents are simply recycling dollars into the local economy, rather than implanting dollars (Crompton, 2006). Crompton also argues that political motives are behind this tactic. Lee and Taylor argue that surveys can be used to minimize the inclusion of local residents. Their survey of the World Cup in South Korea was conducted in airports and respondents were asked if they were tourists (Lee and Taylor, 2005). Gelan's study of the British Open also provides some measures for eliminating local residents. By asking respondents at the event for home addresses, the author was able to minimize this effect (Gelan, 2003).

Crompton (2006) argues the abuse of multipliers distorts true economic impacts, as the multiplier should represent new money injected into the local economy. He explains how other researchers use sales, rather than output multipliers and employment multipliers that include full-time, part-time and seasonal workers and assumes all workers are fully employed (Crompton, 2006). Hughes (2003) offers some suggestions to minimize this limitation. First, an I-O labor market or industry allocation table can be included in the study to show how new jobs are obtained. Additionally, he suggests profitability analysis can help minimize distortions in all types of multipliers (Hughes, 2003).

Lastly, Crompton (2006) argues that time-switchers and casuals should not be included in economic impact analyses, as these visitors are either in the area regardless of an event or just happen to be in the community at the time of the event (Crompton, 2006). Lee and Taylor's study asked respondents for the purpose of their visit, thus finding those specifically in South Korea for the World Cup (Lee and Taylor, 2005). While ignoring Crompton's caveats may distort economic impact studies, it is important to minimize distortions through additional methods. Doing so provides more legitimacy to economic impact analyses.

Economic Impact of Tourism in South Carolina

The last part of this section focuses on South Carolina tourism economic impact studies. Here, two studies are presented, one conducted by the U.S. Travel Association and another by Oh et al. (2006). The main difference between these studies is the

calculation of spending values used in IMPLAN. Using previous research specifically relating to this thesis's goals provides a basis of comparison of results in this study.

According to the economic impact analysis by the U.S. Travel Association (2009), tourists to South Carolina spent $9.9 billion in 2008, a 1.7% increase from 2007. The sectors identified as the highest recipients of tourists' expenditures are foodservice ($2.8 billion), automotive ($2.4 billion) and lodging ($2.1 billion). The study uses the Travel Economic Impact Model (TEIM), thus travel expenditures include spending in 19 NAICS (North American Industry Classification System) categories aggregated into the following sectors: accommodations, auto transportation, entertainment and recreation, food, public transportation, retail, and travel arrangement. The economic impact analysis results show that Horry County has the highest tourism impact among all South Carolina counties with direct travel expenditures of $3.1 billion. Charleston and Beaufort counties followed with the next highest direct travel expenditures, with $1.6 billion and $1 billion, respectively (U.S. Travel Association, 2009). From an employment perspective, Horry County direct tourism expenditures generated 38.6 thousand jobs, Charleston County generated 20.5 thousand jobs and Beaufort County generated 12.8 thousand jobs (U.S. Travel Association, 2009).

Oh et al. (2006) conduct an economic impact analysis of visitors to South Carolina beaches using a visitor's survey similar to the one used in this paper and IMPLAN. The study includes state level economic impacts as well as regional level economic impacts. The counties used in Oh et al.'s study are similar to the ones used in

this study. However, Oh et al. combine all seven counties into one overall region, while this study breaks up the counties into three regions. The counties used in the Oh et al.'s regional analysis are Beaufort, Berkley, Charleston, Colleton, Georgetown, Horry, and Jasper counties. The regional analyses find three sectors that have the highest per person daily expenditures, hotel/motel/lodging, grocery and retail stores and restaurants and drinking places. The 2006 regional impact of visitors includes $1.97 billion in total industry output and $1.25 billion in direct industry impacts. Forecasted 2010 regional direct industry output impacts are $1.62 billion and total industry impacts are $2.58 billion.

Summary

This chapter presented research that relates to this study including studies of visitors' expenditures and estimation of tourism numbers, segmentation of tourists and economic impact analysis. The first part of the chapter presented studies that use different types of survey methods to collect visitors' data. In most of the studies, analysis of expenditure data is carried out using regression analysis. These studies identify important variables affecting visitor expenditures including party size, place of origin, number of nights, participation in activities and trip purpose. The literature review suggests a paucity of studies analyzing visitors' expenditures to the South Carolina coast. The methods used in these studies helped identify important variables for the specification of the visitors' expenditures models.

The second section discussed segmentation of tourists through the marketing and statistical perspectives. Researchers find that activity participation, tourists' expenditures, and other demographic characteristics can be used for segmentation of tourists. This study uses activity participation and place of origin of the tourists to segment South Carolina coastal visitors.

The final section of this chapter focuses on economic impact analysis. Researchers use this type of analysis to better understand the economic impact of tourism at specific destinations or across regions. The research resulted in differing conclusions on the economic impact of tourism with some studies finding the tourism industry creates strong linkages with other sectors in the economy and another finding the opposite. A discussion on problems associated with impact analysis and solutions was presented. Finally, studies relating to the economic impact of tourism in South Carolina were introduced. The studies found lodging and food and drinking places as the highest recipients of tourism expenditures. Results of the South Carolina studies will be used for comparison with the economic impact analysis in this thesis.

CHAPTER 3

DATA AND METHODS

This chapter focuses on the data and methodology used in this study. The first sections discuss the survey used, including survey objectives, design and implantation. The next sections focus on theoretical and empirical models of consumer demand and statistical methods used to estimate the models. The final sections focus on economic impact analysis, including background information, the computer program used, definition of regions, how survey data was translated into IMPLAN values and the shocks assumed in the analysis.

Survey Design

The "South Carolina Coastal Tourism Preferences" survey (Appendix A) was conducted by a group of researchers from Clemson University (Jodice et al., 2010) as part of a project funded by The South Carolina Sea Grant Consortium. The project's goal was to "examine the sustainability of traditional coastal-dependent businesses from a tourism-focused perspective" (Jodice et al., 2010). Two focus groups were conducted with potential and existing coastal tourists in May 2008 to develop and test the survey.

The survey instrument was divided into five parts. The first section of the survey asks respondents about their last trip to South Carolina, specifically the primary destination for the trip, the reason for traveling, number of people and type of group the

respondent traveled with. This section of the survey also collects information about accommodations and overall spending at and outside the county of destination. The second section of the survey focuses on tourists' activity participation and their support for alternative development strategies. The third section includes a series of questions where respondents are asked to choose between alternative trips that vary in levels of their attributes (cost, characteristics of the destination, availability and characteristics of activities at destination, and restaurant characteristics). Section four presents respondents with a willingness to pay question for a hypothetical tourism program that links tourism spending with traditional coastal activities. Lastly, section five focuses on demographics, including gender, income, education and race questions.

The survey was conducted at three coastal tourism destinations in South Carolina, Myrtle Beach, Charleston and Beaufort/Hilton Head. Tourists (those residing outside the county of destination) were intercepted at several locations, including beaches, visitor centers, state parks and downtown areas. If the tourist agreed to receive a mail survey, she was asked for her mailing address. Researchers collected 1,682 valid addresses during fall 2008 and summer 2009. The majority of the responses were collected during the summer (70%). Based on Dillman (2000), three mailings of the questionnaire and one postcard were mailed to them. Of the 1,682 addresses collected, researchers received 818 completed surveys, for a response rate of 48.6%.

Methodology

These sections include information about economic concepts, regression analysis and the economic impact analysis approach used in this study. The first section presents an overview of economic concepts relevant to this study, specifically economic demand models. The second section focuses on regression analyses, including regression model specification, hypothesis testing and dummy variables construction and interpretation. The final section explores economic impact analysis, including IMPLAN, regional analysis, the methods used to link the survey data with IMPLAN, and the shocks used in the analysis.

Theory of Consumer Demand

Microeconomics theory of consumer behavior focuses on maximizing utility in a world of scarce resources. Consumers want to maximize utility (or happiness) through consumption, based on their preferences and budget constraints. For example, for two goods, utility is defined in the following function:

$$U(X,Y:[Z]) \tag{2}$$

where: U is utility, X is good 1 (the main good of interest). Y is good 2 (it can be thought of as the composite of all other goods), and Z is a vector of characteristics of the individuals that reflect their tastes and preferences. This function helps describe a consumer's preferences. Economists use this utility function to help define how consumers make choices, but must also base the choices on budget constraints; they can

only spend as much money as their income *I* provides, ignoring borrowing in a given time period. The budget constraint can be defined as:

$$p_x X + p_y Y = I \tag{3}$$

where: *I* is income, p_x is the price of good *X*, *X* is the quality of good 1, p_y is the price of good *Y* and *Y* is the quality of good 2. The optimal solution for the consumer problems results in demand equations for *X* and *Y*, which are functions of p_x, p_y, *I* and *Z*:

$$X = X(p_y, p_x, I, Z) \tag{4}$$

$$Y = Y(p_y, p_x, I, Z) \tag{5}$$

However, with cross sectional data, prices can be assumed to constant across consumers or a function of characteristics *(C)* of the good itself (i.e., which is likely the case for the good "vacation trip," which is a composite of multiple activities) across consumers. In addition, rather than quantities as the variable of interest, demand models can be expressed in terms of expenditures in the goods ($E_x = p_x X$ and $E_y = p_y Y$). Hence, with these two additional assumptions, the demand models for the goods of interest can be written as:

$$E_x = X(I, Z, C) \tag{6}$$

$$E_y = Y(I, Z, C) \tag{7}$$

In this study, equations analogous to equations 7 and 8 are used in the empirical analysis of the demand for tourism on the South Carolina coast.

Statistical Analysis of Consumer Demand

This section focuses on the regression analysis of the demand models. Variables are defined and the procedure for the regression analysis is explained. Regression analysis is a statistical method of modeling a dependent variable against independent variables to identify relationships. More formally, regression analysis can be used to test hypotheses about the effect of independent variables (*x's*) on the dependent variable (*y*) (Mendenhall and Sincich, 2003). The dependent variable, *y,* is the variable to be modeled. In equation form, the model of interest is:

$$y = \beta_0 + \beta_1 x_1 + ... + \beta_j x_i + \varepsilon \tag{8}$$

The predicted value of y for certain values of the x_i's is :

$$\hat{y} = \hat{\beta}_0 + \hat{\beta}_1 x_1 + ... + \hat{\beta}_j x_i \tag{9}$$

where: $\hat{y}$ is the predicted value of *y,* and $\hat{\beta}_j$'s are the estimated parameters. We can interpret each of these $\hat{\beta}$'s in terms of the overall model: a 1 unit change in x_i changes the predicted value $\hat{y}$ by $\hat{\beta}_j$.

Each independent variable in this study has an implicit hypothesis that is tested. This hypothesis is as follows:

$$H_0 : \beta_i = 0$$

$$H_a : \beta_i \neq 0$$

In words, the hypothesis states that the marginal effect of the variable x_i is zero or that the explanatory variable corresponding to β_j does not have an effect on *y*. The test statistic or p-value is then used to reject or fail to reject the null hypothesis. The overall fit of the model is measured using the R^2 statistic. The statistic is a value between 0 and 1, where 0 is a complete lack of fit and 1 is a perfect fit.

In the regression analysis in this study, the dependent variable *y* is the overall per person per day expenditures by tourists in the county of destination. Independent variables include quantitative and qualitative variables. The quantitative variables are the number of nights spent at the destination, the number of people in the party, income and age. The qualitative variables are location and activities (by groups).

Dummy coding is used for the categorical qualitative variables. For example, gender x_i is coded as follows:

$$x_i = \{1 \text{ if female, } 0 \text{ otherwise}\}$$

Any values coded as 0 are left out of the variable and implicitly included in the intercept, β_0. The interpretation of the betas corresponding to dummy variables is slightly different than the betas corresponding to continuous variables in simple linear regression. The betas represent the change in the predicted value of *y* when the value of the variable

changes from 0 to 1. Following with the gender example, relative to females, the predicted value of *y* for males is $\hat{\beta}_j$ units higher (or lower).

Empirical Models

This section describes the demand regression models estimated in this study. Model specification was based on the theoretical and statistical models presented in the previous two sections. Since "activity participation" and "place of origin of the visitors" variables are the main focus of the research, the procedures used to construct these variables are presented first.

Activity Selection

The "South Carolina Coastal Visitors' Preferences" survey used in this study asked respondents about their participation in twenty-five activities. To facilitate estimation of the demand models these activities were combined into four groups (Table 3.1). The tourism segmentation studies detailed in Chapter Two were used as the basis for the definition of the groupings used in Table 3.1 (Mehmetoglu 2007; Manthiou et al., 2011). The activities were grouped based on the type of activity and whether the activity needs a specific location. This study focuses on coastal tourism; thus coastal activities were aggregated into a separate group. Activities involving travel were grouped together (also include the "other" categories) in a group called "Leisure". The group "Coastal Activities" included activities that require water or a coastal location. Traditional vacation activities that visitors can participate in regardless of location were grouped in "Vacation Activities". Finally, food and shopping activities were grouped together in

"Food and Shopping," as the survey findings indicate large participation for these activities. The activity groups were defined as dummy variables, so if a given respondent participated in the activity group, the variable was assigned a 1 and otherwise assigned a zero.

Table 3.1 Activity Dummy Groups for Demand Models

Variable Name	Specific Activities included
Leisure Activities	Walking for pleasure/Hiking, Pleasure driving, other
Coastal Activities	Beach swimming/sunbathing, Boating/jet skiing, Saltwater fishing (charter), Saltwater fishing (personal), Canoeing/kayaking, Sail boarding/windsurfing/sailing, Visiting seafood docks/fishing operations
Vacation Activities	Horseback riding, Watching wildlife, Golfing, Attending a festival, Visiting an aquarium, Visiting a museum, Visiting local historical/cultural sites, Guided nature tour, Guided historical tour, Picnicking
Food and Shopping	Purchasing local arts/crafts, Visiting a farmer's market, Eating local foods, Shopping for fun

Place of Origin of Visitors

The survey asked respondents for information about their state of residence for domestic visitors or country of residence for international visitors. To facilitate estimation of the demand models, states were combined into regions as described in Table 3.2. Two groups of regions of origin were used in this research: one that included twelve regions (column 2, Table 3.2) and another with only six regions (column 1, Table 3.2). Based on the preliminary regression analysis, it was decided to use the six-region aggregation grouping in this analysis.

Table 3.2 Place of Origin of South Carolina Coastal Visitors

Combined Location Groups	Preliminary Location Groups	States
New England	New England, Mid-Atlantic	ME, NH, VT, MA, RI, CT, NY, PA, NJ
East Central	East North Central, East South Central	WI, MI, IL, IN, OH, KY, TN, MS, AL
South Atlantic	South Atlantic	DE, MD, DC, WV, VA, NC, SC, GA, FL
West	Mountain, Pacific, West North Central, West South Central	ND, SD, MN, NE, IA, KS, MO, OK, AR, TX, LA, MT, ID, WY, CO, NV, UT, AZ, NM, WA, OR, CA, AK, HI
Local	South Carolina	South Carolina
International	International	Foreign travelers

Source: "South Carolina Coastal Tourism Preferences" survey, Appendix A.

Empirical Demand Models

The dependent variable used in all regressions was per person per day expenditures.[2] Since the analysis of activity participation on visitors' expenditures is one of the main purposes of this study, the initial regression demand models only include the explanatory variables for activity participation. In equation form, this model is:

$$Y = \beta_0 + \beta_1 a_1 + \beta_2 a_2 + \beta_3 a_3 + \varepsilon \quad (10)$$

where: Y is the per person per day expenditures of visitors, the β_i's are the regression coefficients, a_j's are dummy variables for activity groups (coded 1 if participated in activity group j as defined in Table 3.1, 0 otherwise), and ε is the random error term. The second regression considered uses per person per day expenditures as the dependent variable and place of origin of the tourists as explanatory variables:

$$Y = \beta_0 + \beta_1 l_1 + ... + \beta_5 l_5 + \varepsilon \quad (11)$$

where: Y is per person per day expenditures for visitors, β_i's are the regression coefficients and the l_j's are dummy variables for regions of origin (1 if reside in region j as defined in Table 3.2, 0 otherwise).

A third regression, which is more in line with the theoretical model presented previously, includes in addition to activity participation and place of origin of the tourists,

[2] Preliminary regression using total group trip expenditures as dependent variable suggested that much of the variation on the dependent variable was due to party size and number of nights at the destination. Hence, to better isolate the effect of other variables on group expenditures, per person per day expenditures is the dependent variable.

additional explanatory variables related to the characteristics of the trip and the tourist groups. The equation for this model is:

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 l_1 + ... + \beta_{10} l_5 + \beta_{11} a_1 + ... + \beta_{13} a_3 + \varepsilon \quad (12)$$

where: Y is the per person per day expenditures of visitors, β_i's are the regression coefficients, x_1 is household income in $10,000 increments, x_2 is the number of people in the visiting party, x_3 is the number of nights at the destination, x_4 is the respondent age, the l_j are tourists' origin dummy variables, the a_j are the dummy variables indicating tourists' participation in the activity groups, and ε is the random error term.

The regression models presented in equations (10) to (12) were estimated for the entire region covered in the survey as well as for the three main coastal destination regions where the survey took place. The statistical computer-modeling program used in the regression analysis is SAS 9.2.

Background on Economic Impact Analysis

In this study, the economic impact analysis intends to measure the effects of an increase in visitor expenditures (more visitors with the same average expenditures, or the same number of visitors with a uniform increase in expenditures) on all sectors of a regional economy. When a visitor travels to a region, they bring "new" money, or money earned outside of the region, into the region of interest. This money circulates through the regional economy to product direct, indirect and induced effects. Visitors spend this money on local goods and services, resulting in a direct impact of "new" money in the

economy. In fact, economic impact analysis refers to these effects as direct impacts. After the dollars are spent, they circulate into other sectors of a local economy generating indirect and induced effects. Thus, indirect effects measure how dollars injected into the economy affect industries backward-linked to the original industry in which dollars were spent. On the other hand, induced effects measure how original spending results in changes to household income from direct or indirect employment (Stynes, 1999).

A regional input-output model represents flows of goods between different industries in an economy, factors of production by industries and sales from industries to sectors. The central element of the input-output model is the regional transactions table (see Figure 3.1). The values in this table show the flow of dollars within a region through production relationships, household demand, income and non-market transfers. In the processing sector of Figure 3.1, the inter-industry sales within the regional economy are shown. The goods produced from sales within this sector will be resold to other sectors of the economy in a given period (Shaffer, et al., 2004). In the final demand section, output at the final stage is shown. That is, these users will consume the goods and there is no further distribution through the regional economy. Users in this section include households, sales for regional investment, and sales to local governments (Shaffer et al., 2004). Sales for regional investment and to local governments are considered final sales, because these users with not resell the goods back into the regional economy. The payments sector shows the final payments or inputs received from primary supplies to industries. The payments can be in the form of “wages, salaries, proprietor income, property income, and other sources of personal income” (Shaffer et al., 2004, p. 285).

Figure 3.1 Hypothetical Regional Transactions Table

		Processing Sector						*Final Demand*					
	Outputs[1] → / Inputs[2] ↓	(1) A	(2) B	(3) C	(4) D	(5) E	(6) F	(7) Gross inventory accumulation (+)	(8) Exports to foreign countries	(9) Government purchases	(10) Gross private capital formation	(11) Households	(12) Total Gross Output
Industry Producing Processing Sector	(1) Industry A	10	15	1	2	5	6	2	5	1	3	14	64
	(2) Industry B	5	4	7	1	3	8	1	6	3	4	17	59
	(3) Industry C	7	2	8	1	5	3	2	3	1	3	5	40
	(4) Industry D	11	1	2	8	6	4	0	0	1	2	4	39
	(5) Industry E	4	0	1	14	3	2	1	2	1	3	9	40
	(6) Industry F	2	6	7	6	2	6	2	4	2	1	8	46
Payments Sector	(7) Gross inventory depletion (−)	1	2	1	0	2	1	0	1	0	0	0	8
	(8) Imports	2	1	3	0	3	2	0	0	0	0	2	13
	(9) Payments to government	2	3	2	2	1	2	3	2	1	2	12	32
	(10) Depreciation allowances	1	2	1	0	1	0	0	0	0	0	0	5
	(11) Households	19	23	7	5	9	12	1	0	8	0	1	85
	(12) Total Gross Outlays	64	59	40	39	40	46	12	23	18	18	72	431

[1]Sales to industries and sectors along the top of the table from the industry listed in each row at the left of the table.
[2]Purchases from industries and sectors at the left of the table by the industry listed at the top of each column.

Source: Miernyk (1965).

Of the money generated by the industries in the regional transactions table, not all remains in the local economy. Linkages and leakages tell the story of the flow of dollars within (or out of) a region. Internal linkages refer to retaining dollars injected into a regional economy. These are strengthened when people work and live in the same area. Leakages refer to dollars leaving the regional economy. For example, a person may work in a region and live outside the region, thus their wages are generally spent outside the regional economy. Imports, tax dollars and savings are also leakages from the region. In retail sectors, leakages can be high. When a consumer purchases a good, some of the money immediately leaves the region due to production, advertising and marketing costs. Federal and state governments collect tax dollars and this money by and large is not re-spent in the regional economy. Savings remain in the hands of consumers or governments who choose not to spend certain dollars in the economy.

Multipliers are "a quantitative expression of the extent to which some 'exogenous' force or change is expected to generate additional effects through interdependencies associated with some assumed and/or empirically established 'endogenous' linkage system" (Krumme, 2000, Input-Output Tools). The size of the multiplier indicates the strength of internal linkages. As linkages increase, multipliers increase and leakages decrease. Multipliers are affected by many different factors. For example, increases in the size of the region can increase the multiplier, because buying sectors usually have more within region buying options. Additionally, if a region is geographically isolated, transport costs are high, which also increases the comparative advantage of local buying; thus increasing multiplier size. The multiplier also reflects the

amounts of imports and exports to the region. The more goods a region must import, the more dollars leaving the economy to pay for those goods. The economic structure of a region also affects the size of the multiplier. For example, a large comparative advantage in an export sector decreases the size of the multiplier, while a low comparative advantage in an export sector increases the size of the multiplier, Additionally, the demographic structure of the region leads to different purchasing patterns, thus affecting the size of the multiplier (Krumme, 2005).

IMPLAN

IMPLAN (**IM**pact Analysis for **PLAN**ing) is a regional economic impact modeling software developed by the United States Department of Agriculture Forest Service and is currently maintained by MIG, Inc. The software was originally developed for the USDA Forest Service to analyze the economic impact of land management strategies. IMPLAN provides economic data sets based on the North American Industry Classification System (NAICS). IMPLAN for 2008 is used in this study to conduct the economic impact analysis for tourism in South Carolina coastal regions (Minnesota IMPLAN Group, Inc., 1997).

Economic analysis in IMPLAN allows the user to generate reports for the study area including output, value added and employment components. Different types of commodity demand can also be reported to find the final demand for an industry's product by households, governments and exports. Another important component of economic analysis is multipliers. IMPLAN gives reports Type I and Type II (or SAM)

multipliers in different categories, including output, employment and value added multipliers (Minnesota IMPLAN Group, Inc., 1997).

Finally, IMPLAN can be used to conduct an impact analysis for any industry sector. That is, the user can choose the industry to shock, choose the amount of the shock and find the impact of that spending change on other sectors of the economy in a given region (Minnesota IMPLAN Group, Inc., 1997).

Defining Regions for Analysis

Local Employment Dynamics (LED) is a product of the United States Census Bureau, which provides information about labor markets. The LED OnTheMap application provides a web-based method of finding travel patterns and characteristics of local workforces. It can also provide information on NAICS industries in a given area. The application is an important tool in identifying regions for economic impact analysis, which is relevant to the study since we intend to examine the effects of tourism on a regional economy (South Carolina coastal including Beaufort, Charleston and Horry). However, it is often the case that those employed in these counties live elsewhere. To capture the indirect and induced effects of tourism spending, it is important to find information about where individuals live and work to define a region that captures these effects. This study uses LED OnTheMap analysis to define the regions used in the subsequent economic impact analysis.

Table 3.3 shows the results from the LED OnTheMap analysis for Horry, Charleston and Beaufort counties. These primary counties were defined as the

employment counties. The table shows the percentage of workers living in these and the surrounding counties, but working in the primary counties. Based on this analysis, three regions are defined. The Horry region includes Horry and Georgetown counties, the Charleston region includes Charleston, Berkeley and Dorchester counties and the Beaufort region includes Beaufort and Jasper counties. Adding Georgetown, Berkeley, Dorchester and Jasper counties captures the workers working in Horry, Charleston and Beaufort counties, but living in these counties.

Table 3.3 Local Employment Dynamics (LED) OnTheMap Analysis of Regional Employment

Selection Area (where workers live)	Total Employment in Selection Area (# of jobs)	Job Counts by Counties Where Workers Are Employed (# of jobs)		Share of Job Counts (%)
Georgetown	22,392	Horry	4,711	21.0
Berkeley	62,789	Charleston	28,586	45.5
Dorchester	49,731	Charleston	22,001	44.2
Jasper	5,593	Beaufort	1,750	31.3

Source: U.S. Census Bureau. 2001. “LED OnTheMap.” http://lehdmap.did.census.gov

LED OnTheMap analysis helps define regions for the economic impact analysis, but it is also important to understand geographic and demographic characteristics of these regions. IMPLAN provides these characteristics for defined regional models (2008 data). Table 4 shows the population, per capita income and land area for each of the three regions. The Horry region has a total population of 318,111, total employment of 195,075, average household income of $59,586, and a total land area of 1,949 square miles. The Charleston region has a population of 644,506, total employment of 398,686, average household income of $87,746, and a land area of 2,592 square miles. The Beaufort region has a population of 172,745, total employment of 115,389, average household income of $93,798, and a land area of 1,241 square miles. It follows that Charleston has the largest land area and population of all regions, given that it includes three counties. It also has the second highest average household income, as well as the highest level of employment of all regions.

Table 3.4 Characteristics of the IMPLAN Study Areas

Region	Horry	Charleston	Beaufort
Population	318,111	649,506	172,745
Annual Income/Household ($)	59,986	87,746	93,798
Employment (# of jobs)	195,075	398,686	115,389
Land area (square miles)	1,949	2,592	1,241

Note: The Horry region includes the counties of Horry and Georgetown; the Charleston region includes the counties of Charleston, Berkeley, and Dorchester; and the Beaufort region includes the counties of Beaufort and Jasper.

Source: Minnesota IMPLAN Group, Inc. 1997. IMPLAN professional: Social Accounting and Impact Analysis Software. Minnesota IMPLAN Group, Inc, Minneapolis.

Translating Survey Data into IMPLAN Values

A five-step procedure was carried out to link visitor survey data with IMPLAN:

1. Activities from the survey question regarding activity participation are matched with a related IMPLAN sector (Survey question 17, Appendix A).

2. These activities are then grouped into aggregated categories matching the survey question on overall trip expenditures by party (Survey question 13, Appendix A).

3. Additional IMPLAN sectors were included to match the aggregated trip categories not relating to activity questions.

4. Using the total per person per day expenditures across all visitors' surveyed, proportions of spending were calculated for all aggregated trip categories and further proportioned across activities for each of the three regions.

5. Using the proportional estimates of trip categories and activities and tourism expenditure estimates by region from the U.S. Travel Association (2009), initial total spending estimates were calculated for each of the IMPLAN sectors.

Step One

To link the survey data with the impact analysis, all the activity variables from the South Carolina Coastal Tourism Preferences survey (Question 17, Appendix A) are mapped into related IMPLAN sectors. Some activities map directly to an IMPLAN sector. For the activities that do not map directly with an IMPLAN sector, some

assumptions are needed. Some survey activities are essentially free, but tourists spend dollars on goods related to participating in the activity. For these activities, the expenditures reported in the survey ware assumed to be on retail purchases and placed into retail sectors of IMPLAN. The survey activity "purchasing local arts and crafts" was classified into the IMPLAN 15 (Forest nurseries, forest products and timber tract products) sector, as local goods from this activity are often made from forest products. For example, baskets locally made in Charleston frequently use sweetgrass. This activity also includes IMPLAN sector 6 (Greenhouse, nursery and floriculture products).

Participation in horseback riding, golfing and water sports often requires money spent on rentals or guides. Therefore, these activities are classified in the IMPLAN 410 sector, which is defined as "other amusement and recreation industries." Visiting a farmer's market is classified into the IMPLAN 3 (vegetable and melon farming) commodity sector. Participating in fishing (personal or charter) and visiting seafood docks and fishing operations are classified in the IMPLAN 17 (commercial fishing) commodity sector. Museums, historical sites, zoos and parks covers the survey activities attending a festival, visiting an aquarium, visiting a museum, visiting a historical/cultural site, and guided historical and nature tours and are classified into the IMPLAN 406 (Museums, historical sites, zoos and parks) sector.

Using the information about the region of destination, all respondents are separated by region (Question 1, Appendix A). Then, the average per person per day

expenditures are calculated for each region. Table 3.5 lists the average per person per day expenditures for each activity by region and the translation into IMPLAN codes.

Table 3.5 Visitors' Survey Activities Mapped into IMPLAN Codes (using NAICS) and Average Per Person Per Day Expenditures by Activity and Region

Activity	IMPLAN Code	IMPLAN Description	Average Visitors' Expenditures ($ per person per day)		
			Horry	Charleston	Beaufort
Walking for pleasure, Hiking	328	Retail-sporting goods, hobby, book and music	0.75	1.11	0.84
Horseback riding	410	Other amusement and recreation industries	0.00	0.01	0.00
Watching wildlife	328	Retail-sporting goods, hobby, book and music	0.36	0.27	0.47
Golfing	410	Other amusement and recreation industries	0.31	0.19	1.83
Purchasing local arts, crafts	15	Forest nurseries, forest products and timber tract products	0.15	0.43	0.78
Visiting a farmer's market	3	Vegetable and melon farming	0.08	0.20	0.07
Pleasure driving	326	Retail-Gasoline stations	0.36	0.79	0.33
Eating local foods	413	Food services and drinking places	1.05	1.31	0.91
Shopping for fun	329	Retail-General merchandise	1.66	0.91	0.94
Beach swimming, sunbathing	327	Retail-Clothing and clothing accessories	2.68	1.22	3.12
Boating, jet skiing	410	Other amusement and recreation industries	0.10	0.08	0.12

Saltwater fishing (charter)	17	Fishing	0.04	0.02	0.08
Saltwater fishing (personal)	17	Fishing	0.16	0.06	0.18
Canoeing, kayaking	410	Other amusement and recreation industries	0.06	0.02	0.05
Sail boarding, windsurfing, sailing	410	Other amusement and recreation industries	0.03	0.06	0.02
Visiting fishing docks, seafood operations	17	Fishing	0.08	0.04	0.08
Picnicking	324	Retail-food and beverage	0.11	0.04	0.12
Attending a festival	406	Museums, historical sites, zoos and parks	0.16	0.21	0.15
Visiting an aquarium	406	Museums, historical sites, zoos and parks	0.07	0.10	0.01
Visiting a museum	406	Museums, historical sites, zoos and parks	0.03	0.16	0.04
Visiting local historical, cultural sites	406	Museums, historical sites, zoos and parks	0.16	0.57	0.18
Guided nature tour	338	Scenic and sightseeing transportation and support activities for transportation	0.07	0.04	0.03
Guided historical tour	338	Scenic and sightseeing transportation and support activities for transportation	0.03	0.20	0.06
Other		Proportioned across other activities	2.16	2.40	2.31
Other		Proportioned across other activities	3.03	1.44	1.88

Note: The Horry region includes the counties of Horry and Georgetown; the Charleston region includes the counties of Charleston, Berkeley, and Dorchester; and the Beaufort region includes the counties of Beaufort and Jasper.

Step Two

Additional sectors that reflect visitor spending on goods and services other than activities shown in Table 3.5 are also included in the analysis. For this purpose, the survey Question 13 (see Appendix A), which asked respondents to detail their expenditures for aggregate categories of goods and services, was used.[3] Table 3.6 shows the activities from the survey question 17 mapped into aggregate categories by region matching the format of Question 13 and total average per person per day expenditures (white cells). The table also includes the total spending by all participants in the survey for each aggregate category by region (gray cells). It is important to note the difference in values between total spending by category and total per person per day spending by activity. The total per person per day activities are significantly smaller than total expenditures. Survey participants could have misinterpreted the question or were unable to provide such detail, regarding spending on each activity. However, the economic impact analysis will only use proportions of these values in terms of overall spending, thus this discrepancy is not an issue.

[3] Question 13 states, "During this trip, how much did you (and your party) *SPEND* in the following categories?" and the following categories are listed: Hotel/motel/other lodging, grocery and retail stores, restaurants and drinking places, outdoor recreational activities, entertainment, automobile transportation, other transportation, and anything else.

Table 3.6 Expenditures Across All Surveyed Visitors by Spending Categories and Regions-Survey Results [a]

Category	Horry	Charleston	Beaufort
	($)		
Lodging	128,645	139,238	196,156
Retail	57,433	34,913	64,124
Restaurants	70,286	62,308	81,635
Outdoor	16,646	10,779	18,556
Entertainment	13,725	7,118	8,514
Car Transportation	31,990	26,366	27,174
Other Transportation	11,626	28,134	18,332
Anything Else	9,259	8,656	4,180

[a] The dollars in the rows are total trip expenditures across surveyed visitors.

Note: The Horry region includes the counties of Horry and Georgetown; the Charleston region includes the counties of Charleston, Berkeley, and Dorchester; and the Beaufort region includes the counties of Beaufort and Jasper.

Step Three

The activities from step one fall into the retail, outdoor, entertainment, and car transportation categories. Thus, additional IMPLAN sectors must be mapped with the lodging, restaurants, other transportation and anything else categories from Question 13 to obtain an overall picture of tourism spending in the regions. Tourists spend a large amount of expenditures on accommodations, so all IMPLAN sectors for accommodations, including hotels and motels (411) and other accommodations (412) are included. These sectors complete the profile of the lodging category.

Spending in the restaurant category from Question 13 and also the "eating local foods" activity from Question 17 were initially mapped to several IMPLAN sectors, relating to food and drinks, including a) Food services and drinking places (413) sector (directly relates to the restaurants category); and b) vegetable and melon farming (3), poultry and egg production (13), animal production (14), breweries (71), and wineries (72) sectors (as they relate to the activity of eating local foods). To further refine the mapping, sectors poultry and egg production (13), animal production (14), breweries (71), and wineries (72) are examined in IMPLAN's Industry Output, Employment and Value Added reports. These reports clarify how much these industries are contributing to the region. Table 3.7 shows the industry output and employment for the given sectors by region. Among the sectors presented, breweries and wineries are excluded from the analysis, due to the small output and employment. Thus, only poultry and egg production (13) and animal production (14) are included.

Table 3.7 IMPLAN Report on Industry Output and Employment of Industries Related with Visitors' Expenditures on Restaurants and Local Foods (by Region)

Industry	Industry Output ($ millions)			Employment (# of people)		
	Horry	Charleston	Beaufort	Horry	Charleston	Beaufort
13- Poultry and egg production	27.366	66.459	8.796	52	172	27
14- Animal production	9.611	7.442	1.454	322	374	49
71- Breweries	0	1.903	0	0	1	0
72- Wineries	4.62	0	0	10	0	0

Note: The Horry region includes the counties of Horry and Georgetown; the Charleston region includes the counties of Charleston, Berkeley, and Dorchester; and the Beaufort region includes the counties of Beaufort and Jasper.

Step Four

At this point, all categories from Question 13 (Appendix A) of the survey are mapped with IMPLAN sectors. From Table 3.6, each of the categories (and activities within the categories) is transformed into proportions of the overall spending by visitors by region. The "anything else" category is removed from the table and the expenditures in the category distributed across other categories. For the additional IMPLAN sectors that were included within categories, IMPLAN Industry Output tables were used to find proportions.

Lodging proportions are calculated slightly differently than the other categories. The accommodation survey question (Question 11, Appendix A) asks respondents where they stayed during their trip. From these responses, the proportion of those staying in hotels and other accommodations was calculated. The proportion of the visitors staying in hotels and motels in the Horry region was 29.7%, with the rest staying in other types of accommodations. In the Charleston region, the proportion of visitors staying in hotels and motels was 58.2%, with the rest staying in other types of accommodations. The proportion of visitors staying in hotels and motels in the Beaufort region was 20%, with the rest staying in other accommodations. The proportions obtained from the survey were compared with the proportions obtained from the IMPLAN Industry Output report, which shows the industry output of the hotels and motels (411) and other accommodations (412) sectors (it is assumed that industry output proportions equal the proportion of visitors staying in hotels and motels and other accommodations). Thus, based on the IMPLAN

Industry Output report, the Horry region has 84% of visitors staying in hotels and motels, with the rest staying in other accommodations. The Charleston region has 88% of visitors staying in hotels and motels, with the rest staying in other accommodations. The Beaufort region has 94% of visitors staying in hotels and motels, with the rest staying in other accommodations. Given the difference of the results using the two methods, the average of these two calculations was used as the final proportion. Hence, the average proportion of visitors staying in hotels and motels was 57% in the Horry region, 73% in the Charleston region and 57% in the Beaufort region, with the rest of the visitors from the percentages staying in other accommodations.

Table 3.8 shows the proportional breakdown by region of destination. The proportions in gray rows represent the percentages of total trip expenditures in each category. The white rows show the proportions of average per person per day expenditures across all surveyed visitors in each activity relative to total expenditures in each aggregate category.

Table 3.8 Percentage of Visitors' Expenditures by Spending Categories, Activities, and Regions [a]

Activity Category	Horry	Charleston	Beaufort
	%		
Lodging	0.3894	0.4508	0.4732
Hotels and motels	0.5687	0.7309	0.5694
Other accommodations	0.4314	0.2692	0.4306
Retail	0.1739	0.1130	0.1547
Purchasing local arts/crafts	0.0847	0.3230	0.4521
Greenhouse, nursery and floriculture products	0.6729	0.5419	0.2754
Forestry, forestry products	0.3271	0.4581	0.7246
Shopping for fun	0.9153	0.6770	0.5479
Restaurants	0.2128	0.2017	0.1970
Poultry and egg production	0.0189	0.0396	0.0142
Animal production	0.0066	0.0044	0.0024
Commercial fishing	0.0014	0.0035	0.0023
Eating and drinking places	0.9730	0.9525	0.9811
Outdoor	0.0504	0.0349	0.0448
Walking for pleasure/Hiking	0.1560	0.3238	0.1181
Horseback riding	0.0003	0.0035	0.0005
Watching wildlife	0.0752	0.0818	0.0682
Golfing	0.0643	0.0557	0.2623
Visiting a farmer's market	0.0161	0.0608	0.0102
Beach swimming/sunbathing	0.5537	0.3644	0.4435
Boating/jet skiing	0.0211	0.0253	0.0169
Saltwater fishing (charter)	0.0079	0.0066	0.0113
Saltwater fishing (personal)	0.0341	0.0173	0.0264
Canoeing, kayaking	0.0120	0.0064	0.0071
Sail boarding/windsurfing/sailing	0.0058	0.0183	0.0026
Visiting fishing docks/seafood operations	0.0170	0.0108	0.0122
Picnicking	0.0223	0.0119	0.0169
Guided nature tour	0.0143	0.0136	0.0039
Entertainment	0.0415	0.0230	0.0205
Attending a festival	0.3517	0.1704	0.3373
Visiting an aquarium	0.1485	0.0836	0.0256
Visiting a museum	0.0721	0.1274	0.0937
Visiting local historical/cultural sites	0.3583	0.4576	0.4089
Guided historical tour	0.0694	0.1610	0.1345
Car transportation	0.0968	0.0854	0.0656
Pleasure driving			

Retail-Gasoline stations	1.0000	1.0000	1.0000
Other transportation	0.0352	0.0911	0.0442

[a]The values in gray rows are proportions of total trip spending from the aggregate categories using survey Question 13 (Appendix A). The proportion values of expenditures across categories were also calculated using per person per day expenditures and the results were similar to those calculated using total expenditures across all the surveyed visitors. The values in white rows are IMPLAN-mapped activities and additional IMPLAN groups relating to aggregate categories and proportions of average per person per day expenditures across surveyed visitors.

Note: The Horry region includes the counties of Horry and Georgetown; the Charleston region includes the counties of Charleston, Berkeley, and Dorchester; and the Beaufort region includes the counties of Beaufort and Jasper.

Step Five

Finally, the proportions are turned into estimates of total visitor expenditures across categories and regions. This is needed because data is not available on the actual number of tourists visiting South Carolina by region of destination. The U.S. Travel Association (2009) conducted an economic impact analysis on tourism in South Carolina counties in 2008 and provided an estimate of the overall tourism expenditures by county. These expenditures are combined to match the regions used in this survey and used as estimates for the categories and regions in this study. The total tourism regional expenditures are $3,384,650,000 for the Horry region, $1,785,550,000 for the Charleston region and $1,067,450,000 for the Beaufort region. Using the proportions from Table 3.8 and these expenditure estimates, the expenditure values for categories and regions are calculated for use in the impact analysis and presented in Table 3.9.

Table 3.9 Estimated Aggregated Visitors' Expenditures by Spending Categories, Activities, and Regions [a]

Category/Activity	Horry	Charleston	Beaufort
Lodging	1,318,047,468	804,958,981	505,165,908
Hotels and motels	749,507,693	588,304,271	287,641,468
Other accommodations	568,539,776	216,654,710	217,524,440
Retail	588,436,552	201,838,097	165,140,290
Purchasing local arts/crafts	49,848,093	65,184,615	74,654,521
Greenhouse, nursery and floriculture products	33,543,617	35,322,813	20,561,506
Forestry, forestry products	16,304,476	29,861,802	54,093,015
Shopping for fun	538,588,459	136,653,482	90,485,768
Restaurants	720,123,474	360,213,334	210,236,847
Poultry and egg production	13,615,745	14,247,796	2,995,061
Animal production	4,781,880	1,595,451	495,091
Commercial fishing	1,037,376	1,275,804	491,005
Eating and drinking places	700,688,473	343,094,283	206,255,690
Outdoor	170,548,550	62,315,265	47,787,774
Walking for pleasure/Hiking	26,600,157	20,175,268	5,644,409
Horseback riding	42,678	219,986	25,743
Watching wildlife	12,824,152	5,095,027	3,257,073
Golfing	10,969,590	3,469,292	12,533,664
Visiting a farmer's market	2,748,217	3,786,649	485,742
Beach swimming/sunbathing	94,427,455	22,706,192	21,194,880

Boating/jet skiing	3,606,954	1,573,804	807,526
Saltwater fishing (charter)	1,343,717	411,843	538,759
Saltwater fishing (personal)	5,810,701	1,079,736	1,259,557
Canoeing, kayaking	2,047,260	396,697	340,172
Sail boarding/windsurfing/sailing	982,892	1,138,159	124,117
Visiting fishing docks/seafood operations	2,893,065	674,384	580,745
Picnicking	3,809,999	740,741	809,978
Guided nature tour	2,441,710	847,488	185,409
Entertainment	140,621,101	41,150,390	21,926,337
Attending a festival	49,460,994	7,012,300	7,396,570
Visiting an aquarium	20,888,758	3,439,828	562,157
Visiting a museum	10,136,368	5,242,007	2,053,865
Visiting local historical/cultural sites	50,379,427	18,830,410	8,965,740
Guided historical tour	9,755,554	6,625,845	2,948,005
Car transportation	327,757,305	152,426,410	69,981,945
Pleasure driving			
Retail-Gasoline stations	327,757,305	152,426,410	69,981,945
Other transportation	119,115,550	162,647,524	47,210,901

[a]Aggregated expenditures were estimated using proportions from consumer survey data and regional estimates of overall tourism spending from the U.S. Travel Association (2009).

Note: The Horry region includes the counties of Horry and Georgetown; the Charleston region includes the counties of Charleston, Berkeley, and Dorchester; and the Beaufort region includes the counties of Beaufort and Jasper.

Before conducting the impact analysis, it is necessary to "margin" certain tourism expenditures to account for leakages to the region. Specifically, margining translates consumer prices into producer prices and is usually used for purchases at the retail and wholesale sector levels. That is, margining allocates spending across the production chain and includes only the local margins for goods purchased from local businesses (Stynes, 1999). As argued by Stynes (1999, p.7): "In an I-O model, retail margins accrue to the retail trade sector, wholesale margins to wholesale trade, transportation margins to transportation sectors (trucking, rail, air etc.) and the producer prices of goods are assigned to the sector that produces the good." Therefore, the dollar values obtained in the retail sectors of Table 3.9 should be margined. IMPLAN allows the researcher to choose which sectors to margin.

Impact Shocks

This economic impact analysis will include multiple shocks in order to better understand how sectors from different regions are affected. First, a basic percentage proportional growth (10% increase in visitor expenditures) shock is applied to each of the three regions. Second, a substitution shock to one region (Horry) will be examined.

A percentage growth shock shows the impact of a change in the number of visitors to a region on each of the tourism sectors. In this analysis, it is assumed each region receives a 10% increase in visitor expenditures across categories. This shock assumes the supply for tourism sectors is able to meet the increase in spending and will not increase the relative price of goods and services. In reality, each county has a limited

supply of products (the amount of hotel rooms, for example). However, the I-O model framework assumes that a sectors supply of goods/services is not at capacity thus, is able to meet a 10% increase in demand without a relative price increase.

Of all the activity groupings in the regression analysis, coastal activities are the common significant variable in each county. Therefore, it is of interest to examine how a participation change in coastal activities impacts other tourism sectors. Each consumer has a budget constraint and must choose how to spend that money on goods and services during their trip. Thus, it is assumed that if a consumer chooses to increase spending in one activity group, they must decrease spending in another group. Thus, a substitution shock is needed to accurately depict a consumer with a set budget. The substitution shock is only carried out for the Horry, since according to the survey the visitors to this region has the lowest average household income as compared to the other regions (Table 3.4).

Although consumers have a fixed budget constraint, they are unlikely to substitute more coastal activity participation for less spending in lodging and restaurants in a significant way. Spending in these categories is relatively fixed, as all consumers must pay for accommodations and need to eat. While some substitution is possible, it is more likely substitution will occur between the “outdoor activities” and “entertainment” sectors, as spending in this category is more flexible. All coastal activities lie in the “outdoor” category of Table 3.9, while most traditional vacation activities fall into the “entertainment” category. A dollar-to-dollar substitution shock is applied between the two categories. The proportional distribution of spending in the categories remains the

same, thus the increase (or decrease) in spending uses the same proportions as Table 3.8. Table 3.10 shows changes in proportions for the two categories and the changes in dollar values for the sectors within the category for the Horry region. The expenditure changes are then input into IMPLAN to obtain results for the substitution shock.

Table 3.10 Substitution Shock Proportions and Total Visitors' Expenditures in the Horry Region [a]

Activity	Original Proportion	Original Dollar Value	Shock Proportion	Shock Dollar Values
Outdoor	0.0504	170,548,550	0.0756	255,822,824
Walking for pleasure/Hiking	0.1560	26,600,157	0.1560	39,900,236
Horseback riding	0.0003	42,678	0.0003	64,017
Watching wildlife	0.0752	12,824,152	0.0752	19,236,228
Golfing	0.0643	10,969,590	0.0643	16,454,386
Visiting a farmer's market	0.0161	2,748,217	0.0161	4,122,326
Beach swimming, sunbathing	0.5537	94,427,455	0.5537	141,641,183
Boating/jet skiing	0.0211	3,606,954	0.0211	5,410,432
Saltwater fishing (charter)	0.0079	1,343,717	0.0079	2,015,575
Saltwater fishing (personal)	0.0341	5,810,701	0.0341	8,716,052
Canoeing, kayaking	0.0120	2,047,260	0.0120	3,070,890
Sail boarding, windsurfing, sailing	0.0058	982,892	0.0058	1,474,338
Visiting fishing docks, seafood operations	0.0170	2,893,065	0.0170	4,339,597
Picnicking	0.0223	3,809,999	0.0223	5,714,999
Guided nature tour	0.0143	2,441,710	0.0143	3,662,565
Entertainment	0.0415	140,621,101	0.0164	55,384,636
Attending a festival	0.3517	49,460,994	0.3517	19,480,570
Visiting an aquarium	0.1485	20,888,758	0.1485	8,227,188
Visiting a museum	0.0721	10,136,368	0.0721	3,992,282
Visiting local historical/cultural sites	0.3583	50,379,427	0.3583	19,842,301
Guided historical tour	0.0694	9,755,554	0.0694	3,842,295

[a]The values in gray shaded cells are proportions of total trip spending values calculated from survey Question 13 (Appendix A). The values in white cells are the per person per day expenditures of IMPLAN-mapped activities and additional IMPLAN groups. The original and shock dollar values are calculated from survey question 13 (Appendix A) and regional estimates of overall tourism spending from the U.S. Travel Association (2009).

Note: The Horry region includes the counties of Horry and Georgetown; the Charleston region includes the counties of Charleston, Berkeley, and Dorchester; and the Beaufort region includes the counties of Beaufort and Jasper.

Summary

This chapter provided detailed information on the data and methods used in this thesis. The first two sections of the chapter described in detail the survey used in the demand and impact analysis. The economic theory of consumer demand theory and the concepts related to regression analysis were presented next as the basis for the specification, estimation and interpretation of the empirical demand models.

This chapter also presents background information on economic impact analysis and the procedure used to define the regions of analysis. Next, the methods for conducting the impact analysis were explained including the mapping of survey data into IMPLAN sectors. The estimates of tourists' expenditures across categories are regions were calculated and the rationale and size of the shocks used in the analysis were explained. The next chapter of this paper will present the results of the regression and economic impact analyses.

CHAPTER FOUR

RESULTS

This section presents results of the demand and economic impact analyses. The first section of the chapter presents some summary statistics of the characteristics of the surveyed visitors. The second section focuses on the results of the demand regression analysis. Finally, the third section presents the results of the economic impact analysis.

Summary Statistics Results From The Demand Regression Analysis

About 97% of survey respondents were from The United States and the rest were international visitors. Visitors from South Carolina made up about 16% of the total sample. Samples from the individual destination included about 13% of state visitors in Myrtle Beach, 23% in Charleston and about 12% in Beaufort/Hilton Head. On average, surveyed respondents spend 6 nights at the destination and the average number of people in their party was 5. The average length of stay for visitors to Myrtle Beach was 7 nights and the average party size was 5 people. Visitors to Charleston stayed, on average, 4 nights at the destination and traveled with 4 other people. Beaufort/Hilton Head visitors spent 7 nights and had a trip group size of 7 people. The average income of surveyed visitors to Myrtle Beach, Charleston and Beaufort/Hilton Head was $85,515, $104,449 and $106,434, respectively.

Additionally, according to the summary statistics presented in Table 4.2, the percentage of visitors in the Beaufort region participating in coastal activities is higher than the percentage of visitors participating in this type of activity in the Charleston (60%) and Horry (56%) regions. The percentage of visitors in the Charleston region participating in vacation activities is higher than the percentage of visitors participating in this type of activity in the Horry (59%) and Beaufort (60%) regions. The percentage of visitors in the Horry region participating in food and shopping activities is higher than the percentage of visitors participating in this type of activity in the Charleston (86%) and Beaufort (88%) regions. The highest average per person per day expenditures among activities and regions were beach swimming, sunbathing, and shopping for fun. More information summarizing other characteristics of the respondents and their trips are provided in Tables 4.1 and 4.2.

Table 4.1 Summary Statistics of Key Survey Variables (All Regions)

Variable (units)	Mean	Standard Deviation	Minimum Value	Maximum Value
Expenditure ($ per person day)	120.97	295.59	0	5225.00
Income ($10,000)	9.85	5.96	1	32.00
Number of people	5.18	6.65	1	99.00
Number of nights	5.74	5.21	0	60.00
Age (years)	50.11	13.21	18	83.00
New England (1=Yes, 0=No)	0.09	0.29	0	1.00
East Central (1=Yes, 0=No)	0.24	0.43	0	1.00
South Atlantic (1=Yes, 0=No)	0.41	0.49	0	1.00
West (1=Yes, 0=No)	0.07	0.26	0	1.00
International (1=Yes, 0=No)	0.02	0.15	0	1.00
Local (1=Yes, 0=No)	0.16	0.37	0	1.00
Coastal Activity Participation (1=Yes, 0=No)	0.64	0.48	0	1.00
Vacation Activity Participation (1=Yes, 0=No)	0.64	0.48	0	1.00
Food and Shopping Activity Participation (1=Yes, 0=No)	0.88	0.33	0	1.00
Walking for pleasure/Hiking ($ per person per day)	0.90	1.52	0	20.00
Horseback riding ($ per person per day)	0.01	0.08	0	2.00
Watching wildlife ($ per person per day)	0.36	1.07	0	15.00
Golfing ($ per person per day)	0.71	12.97	0	357.14
Purchasing local arts, crafts ($ per person per day)	0.43	4.69	0	128.57
Visiting a farmer's market ($ per person per day)	0.12	0.38	0	6.86
Pleasure driving ($ per person per day)	0.50	1.64	0	28.33
Eating local foods ($ per person per day)	1.10	1.86	0	33.33
Shopping for fun ($ per person per day)	1.19	7.60	0	133.33
Beach swimming, sunbathing ($ per person per day)	2.31	3.59	0	35.71
Boating, jet skiing ($ per person per day)	0.10	0.94	0	21.05
Saltwater fishing (charter) ($ per person per day)	0.04	0.35	0	6.00
Saltwater fishing (personal) ($ per person per day)	0.13	0.81	0	11.43
Canoeing, kayaking ($ per person per day)	0.04	0.40	0	10.00
Sail boarding, windsurfing, sailing ($ per person per day)	0.04	0.50	0	13.33
Visiting fishing docks, seafood operations ($ per person per day)	0.07	0.26	0	3.33
Picnicking ($ per person per day)	0.09	0.66	0	16.67
Attending a festival ($ per person per day)	0.17	0.65	0	5.00
Visiting an aquarium($ per person per day)	0.06	0.29	0	4.00
Visiting a museum ($ per person per day)	0.08	0.30	0	3.00
Visiting local historical, cultural sites ($ per person per day)	0.31	0.66	0	4.50
Guided nature tour ($ per person per day)	0.05	0.53	0	14.29
Guided historical tour ($ per person per day)	0.10	0.31	0	4.00
Other ($ per person per day)	2.25	3.19	0	21.82
Other ($ per person per day)	2.09	3.39	0	13.14

Table 4.2 Summary Statistics of Key Survey Variables by Region of Destination

	Horry				Charleston				Beaufort			
Variable (units)	Mean	Std. Dev.	Min.	Max.	Mean	Std. Dev.	Min.	Max.	Mean	Std. Dev.	Min.	Max.
Expenditure ($ per person per day)	76.79	187.66	0.00	2075.00	214.45	444.04	0.00	5225.00	70.73	122.90	0.00	795.00
Income ($10,000)	8.55	4.96	1.00	31.55	10.55	6.73	1.00	32.00	10.64	5.86	1.00	31.73
Number of people	5.11	5.14	1.00	40.00	3.94	5.39	1.00	78.00	6.79	8.99	1.00	99.00
Number of nights	6.80	6.29	0.00	60.00	3.93	3.72	0.00	38.00	6.57	4.68	0.00	45.00
Age (years)	52.99	11.83	20.00	83.00	48.51	14.56	18.00	80.00	48.48	12.55	20.00	76.00
New England (1=Yes, 0=No)	0.10	0.31	0.00	1.00	0.06	0.23	0.00	1.00	0.12	0.33	0.00	1.00
East Central (1=Yes, 0=No)	0.19	0.39	0.00	1.00	0.21	0.41	0.00	1.00	0.34	0.47	0.00	1.00
South Atlantic (1=Yes, 0=No)	0.50	0.50	0.00	1.00	0.36	0.48	0.00	1.00	0.34	0.48	0.00	1.00
West (1=Yes, 0=No)	0.05	0.21	0.00	1.00	0.11	0.31	0.00	1.00	0.07	0.26	0.00	1.00
International (1=Yes, 0=No)	0.02	0.14	0.00	1.00	0.04	0.19	0.00	1.00	0.01	0.09	0.00	1.00
Local (1=Yes, 0=No)	0.13	0.34	0.00	1.00	0.23	0.42	0.00	1.00	0.12	0.33	0.00	1.00
Coastal Activity Participation (1=Yes, 0=No)	0.60	0.49	0.00	1.00	0.56	0.50	0.00	1.00	0.79	0.41	0.00	1.00
Vacation Activity Participation (1=Yes, 0=No)	0.59	0.49	0.00	1.00	0.71	0.45	0.00	1.00	0.60	0.49	0.00	1.00
Food and Shopping Activity Participation (1=Yes, 0=No)	0.89	0.31	0.00	1.00	0.86	0.34	0.00	1.00	0.88	0.33	0.00	1.00
Walking for pleasure/Hiking ($ per person per day)	0.75	1.06	0.00	10.00	1.11	1.68	0.00	14.00	0.84	1.78	0.00	20.00
Horseback riding ($ per person per day)	0.00	0.02	0.00	0.33	0.01	0.14	0.00	2.00	0.00	0.04	0.00	0.50
Watching wildlife ($ per person per day)	0.36	1.00	0.00	10.00	0.27	0.77	0.00	6.00	0.47	1.42	0.00	15.00
Golfing ($ per person per day)	0.31	0.90	0.00	8.00	0.19	0.89	0.00	12.00	1.83	23.86	0.00	357.14
Purchasing local arts, crafts ($ per person per day)	0.15	0.37	0.00	2.67	0.43	0.74	0.00	5.00	0.78	8.62	0.00	128.57
Visiting a farmer's market ($	0.08	0.44	0.00	6.86	0.20	0.40	0.00	3.00	0.07	0.24	0.00	2.00

per person per day)												
Pleasure driving ($ per person per day)	0.36	0.87	0.00	8.00	0.79	2.52	0.00	28.33	0.33	0.83	0.17	6.67
Eating local foods ($ per person per day)	1.05	2.62	0.00	33.33	1.31	1.20	0.00	6.00	0.91	1.24	0.00	10.00
Shopping for fun ($ per person per day)	1.66	10.63	0.00	133.33	0.91	3.31	0.00	50.00	0.94	6.68	0.00	100.00
Beach swimming, sunbathing ($ per person per day)	2.68	3.43	0.00	35.00	1.22	2.68	0.00	28.57	3.12	4.32	0.00	35.71
Boating, jet skiing ($ per person per day)	0.10	1.28	0.00	21.05	0.08	0.68	0.00	10.00	0.12	0.64	0.00	6.00
Saltwater fishing (charter) ($ per person per day)	0.04	0.33	0.00	5.00	0.02	0.20	0.00	2.67	0.08	0.48	0.00	6.00
Saltwater fishing (personal) ($ per person per day)	0.16	0.95	0.00	11.43	0.06	0.43	0.00	5.00	0.18	0.93	0.00	8.89
Canoeing, kayaking ($ per person per day)	0.06	0.62	0.00	10.00	0.02	0.16	0.00	2.00	0.05	0.22	0.00	2.00
Sail boarding, windsurfing, sailing ($ per person per day)	0.03	0.21	0.00	2.86	0.06	0.82	0.00	13.33	0.02	0.13	0.00	1.50
Visiting fishing docks, seafood operations ($ per person per day)	0.08	0.33	0.00	3.33	0.04	0.15	0.00	1.25	0.08	0.28	0.00	2.00
Picnicking ($ per person per day)	0.11	0.41	0.00	5.00	0.04	0.18	0.00	1.50	0.12	1.12	0.00	16.67
Attending a festival ($ per person per day)	0.16	0.65	0.00	5.00	0.21	0.68	0.00	5.00	0.15	0.60	0.00	5.00
Visiting an aquarium($ per person per day)	0.07	0.29	0.00	3.00	0.10	0.37	0.00	4.00	0.01	0.08	0.00	1.00
Visiting a museum ($ per person per day)	0.03	0.16	0.00	2.00	0.16	0.43	0.00	3.00	0.04	0.20	0.00	2.00
Visiting local historical, cultural sites ($ per person per day)	0.16	0.45	0.00	3.00	0.57	0.86	0.00	4.50	0.18	0.49	0.00	4.00
Guided nature tour ($ per person per day)	0.07	0.86	0.00	14.29	0.04	0.19	0.00	1.50	0.03	0.13	0.00	1.00
Guided historical tour ($ per person per day)	0.03	0.25	0.00	4.00	0.20	0.40	0.00	2.00	0.06	0.20	0.00	1.14

Other ($ per person per day)	2.16	2.24	0.00	6.75	2.40	1.48	0.50	4.00	2.31	5.09	0.00	21.82
Other ($ per person per day)	3.03	5.67	0.00	13.14	1.44	1.26	0.33	3.20	1.88	2.74	0.00	9.09

Regression Results

The first regression results correspond to the model (Equation 10) that only includes activity participation as the independent variables (see Table 4.3). Four activity groups are considered: leisure activities, coastal activities, food and shopping and general vacation activities, but one of the groups (leisure activities) is not included to avoid perfect collinearity. The only statistically significant parameter is the one corresponding to the participation in coastal activities. Hence, relative to tourists participating in leisure activities, tourists participating in coastal activities spend about $52 more per person per day. The R^2 value is low (0.0093), suggesting that a very low variation in the dependent variable is explained by the explanatory variable. This is common in regression analysis using cross-sectional data, because the model is comparing variation across people at a specific point in time. Thus, the variables explain less than data on one person over a period of time. The low R^2 values in the regressions are consistent across all regression results.

While the food and shopping variable is not significant, it is important to understand why this occurs, as it was believed that these variables may be significant as well. The food and shopping variable includes purchasing local arts and crafts, visiting a farmer's market, eating local foods and shopping for fun. Mostly, these activities relate to spending money at business selling local goods. It is possible that respondents misinterpreted this question as eating at local "non-chain" restaurants, not the actual consumption of local food. Additionally, consumers may be unable to recognize the

businesses provide locals goods. It is possible that consumers chose not to eat and shop in businesses that provide local goods, as these places may be more expensive than other options.

Table 4.3 Results of Regression of Visitors' Expenditures (Per Visitor Per Day) on Activities

Variable	Coefficient	Standard Error
Intercept	62.24**	19.51
Coastal Activities	51.70**	19.30
Vacation Activities	7.32	26.78
Food and Shopping Activities	24.08	23.76
R^2=0.0093		observations=729

Notes: Single, double and triple asterisks (*) denote statistical significance at the 10%, 5% and 1% levels, respectively. Reported standard errors are heteroskedastic consistent.

The second regression results correspond to the model (Equation 11) that only includes place of residence of the tourists as independent variables and per person per day expenditures as the dependent variable (Table 4.4). Three locations of residence were considered: in-state, out-of-state U.S. tourists (baseline group dropped from the model) and international visitors. Results of the regression indicate that relative to out-of-state U.S. visitors, state visitors spend about $57 more per day per trip. The parameter corresponding to the international visitors' dummy variable was not statistically significant, suggesting that international visitors' expenditures are not different than out-of-state U.S. visitors. These results are somewhat surprising, as it was expected that those traveling longer distances would spend more money at the destination. However, travelers from other domestic regions and international locations consider the trip a vacation and probably spend multiple nights at the destination (which reduces the cost per person per day), while in-state visitors may take only a day trip or spend only one night. In any case, this result suggests that state visitors should not be discarded as potential customers.

Part of the opportunity cost to South Carolinians visiting these coastal destinations is not visiting other destinations in the state. To the state government, the opportunity cost is probably irrelevant, as the state collects tax dollars regardless of where the consumer visits (assuming they spend the same amount in each state destination). To the local governments, however, this opportunity cost does matter. If a consumer is visiting a coastal county, they may not be choosing to visit other counties in the state. Thus, local governments need to rely on out-of-state visitors, other types of

spending and savings. Thus, local governments should consider marketing to in-state potential visitors.

Table 4.4 Results of Regression of Visitors' Expenditures (Per Visitor Per Day) on Tourists' Place of Origin

Variable	Coefficient	Standard Error
Intercept	110.89***	11.58
Local	57.03*	34.71
International	88.06	86.50
R^2=0.0062		observations=729

Notes: Single, double and triple asterisks (*) denote statistical significance at the 10%, 5% and 1% levels, respectively. Reported standard errors are heteroskedastic consistent.

The results of the regression model including activity participation, origin of the tourists, income, number of nights, number of people and age are presented in Table 4.5. After controlling for additional variables, participation in coastal activities is still significant and the estimated coefficient is similar to that presented in Table 4.3. On the other hand, the parameters corresponding to location of residence of the visitors become not significant. This result was robust even after combining place of origin of the tourists to increase degrees of freedom. However, number of nights and number of people are significant. In the survey, respondents were asked only for the number of nights spent at the destination.[4] For each additional night at the destination, consumers spend about $13 less per person per day. For each additional person in the party, consumers spend about $6 less per person per day. These results follow the logic that the longer the stay and the more people in the party, the lower the per person per day costs.

[4] It was important to include number of nights rather than number of days, as the number of nights accounts for spending on accommodation and daily activities.

Table 4.5 Results of Regression of Visitors' Expenditures (Per Visitor Per Day) (All Regions)

Variable	Coefficient	Standard Error
Intercept	197.03***	49.37
Income	0.70	1.82
Number of people	-6.24***	1.66
Number of nights	-12.60***	2.50
Age	0.08	0.59
New England	-44.35	38.57
East Central	-48.34	35.65
South Atlantic	-38.20	36.23
West	-54.93	91.63
International	78.22	21.01
Coastal Activities	68.03***	27.06
Vacation Activities	-0.56	23.56
Food and Shopping Activities	15.31	36.37
R^2=0.0823		observations=699

Notes: Single, double and triple asterisks (*) denote statistical significance at the 10%, 5% and 1% levels, respectively. Reported standard errors are heteroskedastic consistent.

The preliminary regression made no distinction between coastal destinations. It was thought there might be significant differences between results by county of destination. Thus, using the same independent variables, separate demand models for each coastal county were estimated. The county level regressions included location, activity participation, as well as characteristics of the trip and visitors (Equation 12). The results are presented in Table 4.6. The Horry County demand model has the most significant variables of all models. The number of people and number of nights are significant and negative. Each additional member in the visiting party decreases per person per day expenditures by about $6. Each additional day spent at the destination decreases per person per day expenditures by $6. This follows the logic that the more people in the party and the longer they stay at the destination, the less money spent per person per day.

Similarly to the Charleston County model, the coastal activity dummy is significant in the Horry County model, suggesting that participation in coastal activities in Horry County affects visitor expenditures. Unlike the other county demand model results, New England, East Central and South Atlantic variables are significant. Thus, relative to local visitors, consumers traveling from New England, East Central and South Atlantic locations, consumers spend $95, $95 and $85 less per person per day, respectively.

In the Horry County demand model, income was also significant (0.10 level). However, the sign of the parameter is negative, suggesting that increased income

negatively affects expenditures. The parameter estimate suggests that for every $10,000 increase in income, per person per day expenditures decrease by about $4. Horry County is the only destination where income is significant. It is possible that visitors with higher income own property in the county; thus reported expenditures might not reflect the true cost of visiting the region.

In the Charleston County demand model, the parameters corresponding to the number of people and number of nights are also significant and negative. The parameter suggests that each additional member of the party or each additional night, per person per day expenditures decrease by $10 and $24, respectively. Coastal activities is significant (0.05 level) for Charleston County visitors, suggesting that relative to leisure activities, participation in coastal activities in Charleston County increases visitors' per person per day expenditures by about $160. These results follow the results from the regression in Table 4.5.

In the Beaufort County demand model, number of people in the party and number of nights at the destination are also significant and negative. Thus, for each additional member of the party and each additional night, visitors spend about $3 and $9 less per person per day, respectively. Again, the results are similar to the results in Table 4.5. Additionally, activity groups are not significant, suggesting that participation in these activities in Beaufort County do not affect visitor expenditures. It was also thought that age may be a factor in tourists' expenditures in all demand models, but especially in the Beaufort County model, as it is believed that many older people travel to this destination.

However, the summary statistics (Table 4.2) shows little difference between the mean age of respondents in each county. The mean age in Horry County is 52.9, in Charleston County 48.5, and in Beaufort County 48.5. The results in all demand models show that age is not significant.

Table 4.6 Results of Regression of Visitors' Expenditures (Per Visitor Per Day) by Region of Destination

Variable	Horry		Charleston		Beaufort	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
Intercept	203.04***	98.93	141.22	94.86	139.37***	56.63
Income ($10,000)	-4.31**	2.25	1.93	3.40	1.09	1.58
Number of people	-6.01***	1.73	-10.27**	5.24	-2.93***	0.87
Number of nights	-5.89***	1.80	-23.74***	7.71	-8.92***	2.66
Age (years)	0.76	0.67	1.68	1.54	-0.52	0.63
New England	-94.46**	64.81	-11.43	90.67	1.62	44.47
East Central	-95.17**	67.21	22.21	70.42	-25.05	33.49
South Atlantic	-84.91**	67.10	15.79	72.21	1.73	35.82
West	-88.67	69.42	-68.04	60.45	9.67	50.23
International	-14.56	76.19	152.77	149.70	-43.47	45.83
Coastal Activities	45.84**	19.53	159.85**	58.99	27.08	15.22
Vacation Activities	16.95	23.62	-45.56	98.00	-21.95	17.02
Food and Shopping Activities	-21.11	27.47	53.82	68.56	27.43	16.41
	R^2=0.1357	obs=256	R^2=0.0898	obs=234	R^2=0.1629	obs=209

Note: Single, double and triple asterisks (*) denote statistical significance at the 10%, 5% and 1% levels, respectively. Reported standard errors are heteroskedastic consistent.

In the cases of Charleston and Beaufort counties' demand models, visitors' regions of origin were not significant. Hence, to increase the number of degrees of freedom, the out-of-state U.S. visitors' region of origin were combined and used as the baseline dummy (in addition to in-state and international dummies). Results from these regressions are provided in Table 4.7. The most interesting result is that the coastal activities variable becomes significant in all models at either the 0.01 or 0.10 levels.

Table 4.7 Results of Regression of Visitors' Expenditures (Per Visitor Per Day) by Region of Destination

Variable (units)	Horry		Charleston		Beaufort	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
Intercept	114.02*	58.19	164.94	79.43	126.10***	48.90
Income ($10,000)	-4.23***	2.24	1.23	3.24	0.95	1.51
Number of people	-6.16***	1.75	-10.14**	5.25	-2.85***	0.86
Number of nights	-5.94***	1.80	-24.06***	8.07	-9.41***	2.72
Age (years)	0.78	0.67	1.57	1.57	-0.44	0.61
Locals	94.40***	69.90	-7.68	55.58	6.60	34.19
International	73.61	59.96	148.18	137.80	-31.63	34.71
Coastal Activities	44.12*	18.60	158.03***	57.23	30.91*	15.43
Vacation Activities	18.01	23.19	-47.64	100.50	-20.20	17.25
Food and Shopping Activities	-21.03	27.42	51.34	68.37	28.73	15.42
	R^2=0.1321	obs=256	R^2=0.0866	obs=234	R^2=0.1523	obs=209

Note: Single, double and triple asterisks (*) denote statistical significance at the 10%, 5% and 1% levels, respectively. Reported standard errors are heteroskedastic consistent.

All models were checked for multicollinearity and heteroskedasticity. Multicollinearity occurs when the predictor variables may be highly correlated. To explore the potential effect of this problem, each of the dummy groups (activities and place of origin of visitors) were subject to separate regressions, in order to compare their effects with those including the full set of explanatory variables. Heteroskedasticity was accounted for using heteroskedastic consistent standard errors procedures (using SAS proc model). Statistical results using the heteroskedastic consistent covariance matrix were similar to those using the regular standard errors.

Economic Impact Analysis Results

Before examining the impacts of the shocks on South Carolina coastal regions, it was important to gather impacts of initial tourism spending to gain a better picture of each regional economy. Table 4.8 shows the regional total impacts for industry output, employment, value-added and labor income, using the total estimated visitors' expenditures by spending category, activity, and region as reported in Table 3.9. Total assumed tourism spending (initial spending) in the Horry region results in total impacts of $3.6 billion in industry output, 43,355 in employment, $2.1 billion in value added and $1.2 billion in labor income. In the Charleston region, initial tourism spending results in total impacts of $2 billion in industry output, 23,913 in employment, $1.1 billion in value added and $651 million in labor income. The initial tourism spending in the Beaufort region results in total impacts of $1.2 billion in industry output, 12,998 in employment, $686 million in value added and $379 million in labor income. Using the total regional

employment in all industries (Table 3.4), the employment impact of initial tourism spending was 22% of total regional employment in the Horry region, 6% in the Charleston region, and 11% in the Beaufort region.

Table 4.8 Initial Total Tourism Spending Impact Effects Totals by Region of Destination

Region	Industry Output Total ($ billion)	Employment Total (# of people)	Value Added Total ($ billion)	Labor Income Total ($ billion)
Horry	3.565	43,355	2.049	1.170
Charleston	1.999	23,913	1.141	0.651
Beaufort	1.205	12,998	0.686	0.379

Note: The Horry region includes the counties of Horry and Georgetown; the Charleston region includes the counties of Charleston, Berkeley, and Dorchester; and the Beaufort region includes the counties of Beaufort and Jasper.

To provide an easier interpretation of sector impacts, a table was formed by aggregating IMPLAN sectors into larger overall sectors. Table 4.9 gives provides the descriptions of the IMPLAN sectors within each aggregated sector and the IMPLAN codes. The gross total regional impacts of initial spending on the aggregated sectors are presented in Table 4.10.

The impact of initial tourism spending is highest in the aggregated trade, banking, insurance, real estate, rental, and businesses and other services sector. It is logical that these sectors are particularly high, as they are closely related to tourism. The aggregated trade sector includes all retail sectors, which includes gasoline stations. Chapter Three discussed the methods of mapping survey activities with IMPLAN sectors, specifically for activities that may not require dollars to participate, although consumers may buy related products from retail stores. For example, hiking is essentially free, but consumers may purchase gear and snacks from retail stores. This helps explain the large total impacts in the aggregate trade sector.

Banking, insurance, real estate and rental are indirectly related to tourism spending. When tourists spend money on food, lodging and activities, the businesses receiving these dollars spend money in the banking, insurance, real estate and rental sectors to maintain operations and daily business activities.

The businesses and other services aggregate sector can be directly and indirectly related to tourism spending. A few of the survey activities were mapped with the IMPLAN museums, historical sites, zoos and parks (406) sector, which is part of the

businesses and other services sector. The hotels and motels (411) and other accommodations (412) IMPLAN sectors are also included in the businesses and other services sector. Hence, tourism spending produces direct and indirect effects in the businesses and other services sector. For example, a museum requires investigation and security services (an indirect effect), which is included in this aggregate sector.

The U.S. Travel Association (2009) performs an economic impact analysis of tourism spending in South Carolina. The impacts from their study are by county, but can be combined to match the regional definitions used in this analysis. Total assumed tourism spending results in total impacts of about 41.7 thousand for employment in Horry and Georgetown counties, 22.1 thousand in Charleston, Berkeley, and Dorchester counties, and 13.5 for Beaufort and Jasper counties. The impacts numbers are very similar to the employment impacts reported in Table 4.8.

Oh et al. (2006) conduct a similar analysis of the economic impact of tourism, with a two significant differences. First Oh et al.'s study finds expenditures (IMPLAN input values) using forecasted tourism numbers and their survey expenditure data. Additionally, international visitors (specifically, Canadians) are not included in their estimates. This study uses actual spending data from the U.S. Travel Association and proportional spending estimates from the survey. Second, and most importantly, Oh et al.'s study analyzes the economic impact of tourism spending by beach visitors only, whereas this study analyzes the economic impact of visitors to various tourist destinations, including beaches. Hence, Oh el al.'s total industry output and employment

impacts of tourists visiting South Carolina beaches in 2010 ($3.1 billion and 49,993, respectively) are significantly lower than those estimates in this study ($6.8 billion in total industry output and 80,246 in employment).

Table 4.9 Aggregation of IMPLAN Sectors-Description and Codes

Aggregated Sector	IMPLAN Sectors Included in Aggregated Sectors	IMPLAN Codes Included in Aggregated Sectors
Agriculture	Oilseed farming, Grain farming, Vegetable and melon farming, Fruit farming, Tree nut farming, Greenhouse, nursery and floriculture production, Tobacco farming, Cotton farming, Sugarcane and sugar beet farming, All other crop farming, Cattle ranching and farming, Dairy cattle and milk production, Poultry and egg production, Animal production, except cattle and poultry and eggs, Forest nurseries, forest products, and timber tracts, Logging, Fishing, Hunting and trapping, Support activities for agriculture and forestry	1-19
Mining, Utilities, Construction	Oil and gas extraction, Coal mining, Iron ore mining, Copper, nickel, lead, and zinc mining, Gold, silver, and other metal ore mining, Stone mining and quarrying, Sand, gravel, clay, and ceramic and refractory minerals mining and quarrying, Other nonmetallic mineral mining and quarrying, Drilling oil and gas wells, Support activities for oil and gas operations, Support activities for other mining, Electric power generation, transmission, and distribution, Natural gas distribution, Water, sewage and other systems, Construction of new nonresidential commercial and health care structures, Construction of new nonresidential manufacturing structures, Construction of other new nonresidential structures, Construction of new residential permanent site single- and multi-family structures, Construction of other new residential structures, Maintenance and repair construction of nonresidential maintenance and repair, Maintenance and repair construction of residential structures	20-40
Manufacturing	Dog and cat food manufacturing, Other animal food manufacturing, Flour milling and malt manufacturing, Wet corn milling, Soybean and other oilseed processing, Fats and oils refining and blending, Breakfast cereal manufacturing, Sugar cane mills and refining, Beet sugar manufacturing, Chocolate and confectionery manufacturing from cacao beans, Confectionery manufacturing from purchased chocolate, Nonchocolate confectionery manufacturing, Frozen food manufacturing, Fruit and vegetable canning, pickling, and drying, Fluid milk and butter manufacturing, Cheese manufacturing, Dry, condensed, and evaporated dairy product manufacturing, Ice cream and frozen dessert manufacturing, Animal (except poultry) slaughtering, rendering, and processing, Poultry processing, Seafood product preparation and packaging, Bread and bakery product manufacturing, Cookie, cracker, and pasta manufacturing, Tortilla manufacturing, Snack food manufacturing, Coffee and tea manufacturing, Flavoring syrup and concentrate manufacturing, Seasoning and dressing manufacturing, All other food manufacturing,	41-318

	Soft drink and ice manufacturing, Breweries, Wineries, Distilleries, Tobacco product manufacturing, Fiber, yarn, and thread mills, Broadwoven fabric mills, Narrow fabric mills and schiffli machine embroidery, Nonwoven fabric mills, Knit fabric mills, Textile and fabric finishing mills, Fabric coating mills, Carpet and rug mills, Curtain and linen mills, Textile bag and canvas mills, All other textile product mills, Apparel knitting mills, Cut and sew apparel contractors, Men's and boys' cut and sew apparel manufacturing, Women's and girls' cut and sew apparel manufacturing, Other cut and sew apparel manufacturing, Apparel accessories and other apparel manufacturing, Leather and hide tanning and finishing, Footwear manufacturing, Other leather and allied product manufacturing, Sawmills and wood preservation, Veneer and plywood manufacturing, Engineered wood member and truss manufacturing, Reconstituted wood product manufacturing, Wood windows and doors and millwork, Wood container and pallet manufacturing, Manufactured home (mobile home) manufacturing, Prefabricated wood building manufacturing, All other miscellaneous wood product manufacturing, Pulp mills, Paper mills, Paperboard Mills, Paperboard container manufacturing, Coated and laminated paper, packaging paper and plastics film manufacturing, All other paper bag and coated and treated paper manufacturing, Stationery product manufacturing, Sanitary paper product manufacturing, All other converted paper product manufacturing, Printing, Support activities for printing, Petroleum refineries, Asphalt paving mixture and block manufacturing, Asphalt shingle and coating materials manufacturing, Petroleum lubricating oil and grease manufacturing, All other petroleum and coal products manufacturing, Petrochemical manufacturing, Industrial gas manufacturing, Synthetic dye and pigment manufacturing, Alkalies and chlorine manufacturing, Carbon black manufacturing, All other basic inorganic chemical manufacturing, Other basic organic chemical manufacturing, Plastics material and resin manufacturing, Synthetic rubber manufacturing, Artificial and synthetic fibers and filaments manufacturing, Fertilizer manufacturing, Pesticide and other agricultural chemical manufacturing, Medicinal and botanical manufacturing, Pharmaceutical preparation manufacturing, In-vitro diagnostic substance manufacturing, Biological product (except diagnostic) manufacturing, Paint and coating manufacturing, Adhesive manufacturing, Soap and cleaning compound manufacturing, Toilet preparation manufacturing, Printing ink manufacturing, All other chemical product and preparation manufacturing, Plastics packaging materials and unlaminated film and sheet manufacturing, Unlaminated plastics profile shape manufacturing, Plastics pipe and pipe fitting manufacturing, Laminated plastics plate, sheet (except packaging), and shape manufacturing, Polystyrene foam product manufacturing, Urethane and other foam product (except polystyrene) manufacturing, Plastics bottle manufacturing, Other plastics product manufacturing, Tire manufacturing, Rubber and plastics hoses and belting manufacturing, Other rubber product manufacturing, Pottery, ceramics, and plumbing fixture manufacturing, Brick, tile, and other structural clay product manufacturing, Clay and nonclay refractory manufacturing, Flat glass manufacturing, Other pressed and blown glass and glassware

manufacturing, Glass container manufacturing, Glass product manufacturing made of purchased glass, Cement manufacturing, Ready-mix concrete manufacturing, Concrete pipe, brick, and block manufacturing, Other concrete product manufacturing, Lime and gypsum product manufacturing, Abrasive product manufacturing, Cut stone and stone product manufacturing, Ground or treated mineral and earth manufacturing, Mineral wool manufacturing, Miscellaneous nonmetallic mineral products, Iron and steel mills and ferroalloy manufacturing, Steel product manufacturing from purchased steel, Alumina refining and primary aluminum production, Secondary smelting and alloying of aluminum, Aluminum product manufacturing from purchased aluminum, Primary smelting and refining of copper, Primary smelting and refining of nonferrous metal (except copper and aluminum), Copper rolling, drawing, extruding and alloying, Nonferrous metal (except copper and aluminum) rolling, drawing, extruding and alloying, Ferrous metal foundries, Nonferrous metal foundries, All other forging, stamping, and sintering, Custom roll forming, Crown and closure manufacturing and metal stamping, Cutlery, utensil, pot, and pan manufacturing, Handtool manufacturing, Plate work and fabricated structural product manufacturing, Ornamental and architectural metal products manufacturing, Power boiler and heat exchanger manufacturing, Metal tank (heavy gauge) manufacturing, Metal can, box, and other metal container (light gauge) manufacturing, Ammunition manufacturing, Arms, ordnance, and accessories manufacturing, Hardware manufacturing, Spring and wire product manufacturing, Machine shops, Turned product and screw, nut, and bolt manufacturing, Coating, engraving, heat treating and allied activities, Valve and fittings other than plumbing, Plumbing fixture fitting and trim manufacturing, Ball and roller bearing manufacturing, Fabricated pipe and pipe fitting manufacturing, Other fabricated metal manufacturing, Farm machinery and equipment manufacturing, Lawn and garden equipment manufacturing, Construction machinery manufacturing, Mining and oil and gas field machinery manufacturing, Other industrial machinery manufacturing, Plastics and rubber industry machinery manufacturing, Semiconductor machinery manufacturing, Vending, commercial, industrial, and office machinery manufacturing, Optical instrument and lens manufacturing, Photographic and photocopying equipment manufacturing, Other commercial and service industry machinery manufacturing, Air purification and ventilation equipment manufacturing, Heating equipment (except warm air furnaces) manufacturing, Air conditioning, refrigeration, and warm air heating equipment manufacturing, Industrial mold manufacturing, Metal cutting and forming machine tool manufacturing, Special tool, die, jig, and fixture manufacturing, Cutting tool and machine tool accessory manufacturing, Rolling mill and other metalworking machinery manufacturing, Turbine and turbine generator set units manufacturing, Speed changer, industrial high-speed drive, and gear manufacturing, Mechanical power transmission equipment manufacturing, Other engine equipment manufacturing, Pump and pumping equipment manufacturing, Air and gas compressor manufacturing, Material handling equipment manufacturing, Power-driven handtool manufacturing, Other general purpose machinery manufacturing,

Packaging machinery manufacturing, Industrial process furnace and oven manufacturing, Fluid power process machinery, Electronic computer manufacturing, Computer storage device manufacturing, Computer terminals and other computer peripheral equipment manufacturing, Telephone apparatus manufacturing, Broadcast and wireless communications equipment, Other communications equipment manufacturing, Audio and video equipment manufacturing, Electron tube manufacturing, Bare printed circuit board manufacturing, Semiconductor and related device manufacturing, Electronic capacitor, resistor, coil, transformer, and other inductor manufacturing, Electronic connector manufacturing, Printed circuit assembly (electronic assembly) manufacturing, Other electronic component manufacturing, Electromedical and electrotherapeutic apparatus manufacturing, Search, detection, and navigation instruments manufacturing, Automatic environmental control manufacturing, Industrial process variable instruments manufacturing, Totalizing fluid meters and counting devices manufacturing, Electricity and signal testing instruments manufacturing, Analytical laboratory instrument manufacturing, Irradiation apparatus manufacturing, Watch, clock, and other measuring and controlling device manufacturing, Software, audio, and video media reproducing, Magnetic and optical recording media manufacturing, Electric lamp bulb and part manufacturing, Lighting fixture manufacturing, Small electrical appliance manufacturing, Household cooking appliance manufacturing, Household laundry equipment manufacturing, Other major household appliance manufacturing, Power, distribution, and specialty transformer manufacturing, Motor and generator manufacturing, Switchgear and switchboard apparatus manufacturing, Relay and industrial control manufacturing, Storage battery manufacturing, Primary battery manufacturing, Communication and energy wire and cable manufacturing, Wiring device manufacturing, Carbon and graphite product manufacturing, All other miscellaneous electrical equipment and component manufacturing, Automobile manufacturing, Light truck and utility vehicle manufacturing, Heavy duty truck manufacturing, Motor vehicle body manufacturing, Truck trailer manufacturing, Motor home manufacturing, Travel trailer and camper manufacturing, Motor vehicle parts manufacturing, Aircraft manufacturing, Aircraft engine and engine parts manufacturing, Other aircraft parts and auxiliary equipment manufacturing, Guided missile and space vehicle manufacturing, Propulsion units and parts for space vehicles and guided missiles, Railroad rolling stock manufacturing, Ship building and repairing, Boat building, Motorcycle, bicycle, and parts manufacturing, Military armored vehicle, tank, and tank component manufacturing, All other transportation equipment manufacturing, Wood kitchen cabinet and countertop manufacturing, Upholstered household furniture manufacturing, Nonupholstered wood household furniture manufacturing, Metal and other household furniture (except wood) manufacturing, Institutional furniture manufacturing, Wood television, radio, and sewing machine cabinet manufacturing, Office furniture and custom architectural woodwork and millwork manufacturing, Showcase, partition, shelving, and locker manufacturing, Mattress manufacturing, Blind and shade manufacturing, Surgical and medical instrument manufacturing,

	Surgical appliance and supplies manufacturing, Dental equipment and supplies manufacturing, Ophthalmic goods manufacturing, Dental laboratories, Jewelry and silverware manufacturing, Sporting and athletic goods manufacturing, Doll, toy, and game manufacturing, Office supplies (except paper) manufacturing, Sign manufacturing, Gasket, packing, and sealing device manufacturing, Musical instrument manufacturing, All other miscellaneous manufacturing, Broom, brush, and mop manufacturing	
Trade	Wholesale trade, Retail - Motor vehicle and parts, Retail - Furniture and home furnishings, Retail - Electronics and appliances, Retail - Building material and garden supply, Retail - Food and beverage, Retail - Health and personal care, Retail - Gasoline stations, Retail - Clothing and clothing accessories, Retail - Sporting goods, hobby, book and music, Retail - General merchandise, Retail – Miscellaneous, Retail - Nonstore	319-331
Transport and Information	Air transportation, Rail transportation, Water transportation, Truck transportation, Transit and ground passenger transportation, Pipeline transportation, Scenic and sightseeing transportation and support activities for transportation, Couriers and messengers, Warehousing and storage, Newspaper publishers, Periodical publishers, Book publishers, Directory, mailing list, and other publishers, Software publishers, Motion picture and video industries, Sound recording industries, Radio and television broadcasting, Cable and other subscription programming, Internet publishing and broadcasting, Telecommunications, Data processing, hosting, and related services, Other information services	332-353
Banking, Insurance, Real Estate, Rental	Monetary authorities and depository credit intermediation, Nondepository credit intermediation and related activities, Securities, commodity contracts, investments, and related activities, Insurance carriers, Insurance agencies, brokerages, and related activities, Funds, trusts, and other financial vehicles, Real estate, Imputed rental value for owner-occupied dwellings, Automotive equipment rental and leasing, General and consumer goods rental except video tapes and discs, Video tape and disc rental, Commercial and industrial machinery and equipment rental and leasing, Lessors of nonfinancial intangible assets	354-366
Business, Other Services	Legal services, Accounting, tax preparation, bookkeeping, and payroll services, Architectural, engineering, and related services, Specialized design services, Custom computer programming services, Computer systems design services, Other computer related services, including facilities management, Management, scientific, and technical consulting services, Environmental and other technical consulting services, Scientific research and development services, Advertising and related services, Photographic services, Veterinary services, All other miscellaneous professional, scientific, and technical services, Management of companies and enterprises, Employment services, Travel arrangement and reservation services, Office administrative services, Facilities support services, Business support services, Investigation and security services, Services to buildings and dwellings, Other support services, Waste management and	367-413

	remediation services, Elementary and secondary schools, Junior colleges, colleges, universities, and professional schools, Other educational services, Offices of physicians, dentists, and other health practitioners, Home health care services, Medical and diagnostic labs and outpatient and other ambulatory care services, Hospitals, Nursing and residential care facilities, Child day care services, Individual and family services, Community food, housing, and other relief services, including rehabilitation services, Performing arts companies, Spectator sports, Promoters of performing arts and sports and agents for public figures, Independent artists, writers, and performers, Museums, historical sites, zoos, and parks, Fitness and recreational sports centers, Bowling centers, Amusement parks, arcades, and gambling industries, Other amusement and recreation industries, Hotels and motels, including casino hotels, Other accommodations, Food services and drinking places	
Personal Services, Government, Other	Automotive repair and maintenance, except car washes, Car washes, Electronic and precision equipment repair and maintenance, Commercial and industrial machinery and equipment repair and maintenance, Personal and household goods repair and maintenance, Personal care services, Death care services, Dry-cleaning and laundry services, Other personal services, Religious organizations, Grantmaking, giving, and social advocacy organizations, Civic, social, professional, and similar organizations, Private households, Postal service, Federal electric utilities, Other Federal Government enterprises, State and local government passenger transit, State and local government electric utilities, Other state and local government enterprises	414-432

Table 4.10 Initial Tourism Spending Impact Effect Totals by Region of Destination and Aggregate Sectors [a]

Industry	Horry				Charleston				Beaufort			
	Industry Output Total ($ billions)	Employment Total (# of jobs)	Value Added Total ($ billions)	Labor Income Total ($ billions)	Industry Output Total ($ billions)	Employment Total (# of jobs)	Value Added Total ($ billions)	Labor Income Total ($ billions)	Industry Output Total ($ billions)	Employment Total (# of jobs)	Value Added Total ($ billions)	Labor Income Total ($ billions)
Agriculture	0.092	1,034	0.040	0.017	0.103	1,447	0.045	0.025	0.089	662	0.034	0.015
Vegetable and melon farming	0.003	17	0.002	0.001	0.004	31	0.002	0.001	0.001	4	0.000	0.000
Greenhouse, nursery and floriculture products	0.036	302	0.025	0.009	0.037	580	0.026	0.013	0.022	268	0.015	0.004
Poultry and egg production	0.016	30	0.003	0.002	0.016	43	0.003	0.001	0.004	13	0.001	0.000
Animal production- except cattle and poultry	0.006	207	0.003	0.001	0.002	109	0.001	0.000	0.001	26	0.000	0.000
Forestry, forest products and timber tract products	0.016	35	0.004	0.001	0.030	68	0.006	0.002	0.054	119	0.012	0.004
Commercial Fishing	0.001	3	0.000	0.000	0.000	0	0.000	0.000	0.000	0	0.000	0.000
Other agriculture	0.014	442	0.003	0.003	0.013	617	0.006	0.008	0.008	233	0.005	0.006
Mining, Utilities, Construction	0.060	390	0.034	0.019	0.034	198	0.023	0.011	0.028	136	0.018	0.008
Manufacturing	0.029	115	0.008	0.005	0.034	82	0.008	0.005	0.011	37	0.003	0.003
Trade	0.399	6,015	0.264	0.156	0.161	2,263	0.108	0.063	0.089	1,295	0.059	0.035
Retail Stores - Food and beverage	0.015	240	0.010	0.006	0.009	124	0.006	0.004	0.005	71	0.003	0.002
Retail Stores - Gasoline stations	0.060	653	0.042	0.018	0.029	337	0.020	0.009	0.014	125	0.009	0.004
Retail Stores - Clothing and clothing accessories	0.054	971	0.035	0.017	0.016	252	0.010	0.005	0.013	213	0.009	0.004
Retail Stores - Sporting goods, hobby, book and music	0.019	371	0.012	0.007	0.012	237	0.008	0.005	0.004	98	0.003	0.002
Retail Stores - General merchandise	0.160	2,783	0.105	0.070	0.045	749	0.029	0.020	0.029	507	0.019	0.013
Other Retail	0.090	997	0.060	0.037	0.052	564	0.035	0.022	0.025	281	0.017	0.010
Transport and Information	0.093	747	0.045	0.030	0.063	485	0.033	0.023	0.024	158	0.012	0.008
Scenic and	0.016	254	0.014	0.011	0.011	158	0.010	0.007	0.004	62	0.004	0.003

sightseeing transportation and support activities for transportation												
Other Transport	0.077	493	0.031	0.019	0.052	327	0.023	0.015	0.020	96	0.008	0.005
Banking, Insurance, Real Estate, Rental	0.277	1,424	0.191	0.036	0.155	778	0.104	0.022	0.085	414	0.059	0.011
Business, Other Services	2.496	32,247	1.411	0.864	1.383	17,946	0.788	0.478	0.843	9,894	0.481	0.285
Museums, historical sites, zoos and parks	0.131	1,267	0.085	0.074	0.035	462	0.023	0.019	0.019	29	0.012	0.011
Other amusement and recreation industries	0.021	185	0.007	0.004	0.009	76	0.003	0.002	0.015	119	0.006	0.003
Accommodations	1.330	13,785	0.790	0.411	0.811	8,688	0.486	0.259	0.509	5,110	0.300	0.156
Food services and drinking places	0.770	13,817	0.390	0.262	0.383	7,015	0.191	0.129	0.230	3,838	0.121	0.082
Other Business	0.243	3,194	0.138	0.113	0.144	1,706	0.084	0.069	0.070	799	0.041	0.034
Personal Services, Government, Other	0.119	1,383	0.057	0.042	0.066	715	0.033	0.026	0.037	403	0.019	0.015

[a]The industries in the gray shaded cells represent the aggregated sectors detailed in Table 4.9. The values in the white cells are key industries within the aggregated sectors that provide important results for the economic impact analysis.

Note: The Horry region includes the counties of Horry and Georgetown; the Charleston region includes the counties of Charleston, Berkeley, and Dorchester; and the Beaufort region includes the counties of Beaufort and Jasper.

Growth Shocks

As described in Chapter 3, it is of interest to see the impact of a 10% increase in visitors' expenditures in all regions. The total effects of this shock in expenditures by region of destination are presented in Table 4.11. In the Horry region, the shock is estimated to provide impacts of $357 million in industry output, 4,335 in employment, $205 million in value added, and $117 million in labor income. In the Charleston region, the shock is estimated to provide impacts of $200 million in industry output, 2,423 in employment, $114 million in value added, and $65 million in labor income. In the Beaufort region, the shock is estimated to provide impacts of $121 million in industry output, 1,300 in employment, $69 million in value added, and $38 million in labor income.

Table 4.11 Tourism Impact Effect Totals of 10% Shock on Visitor Expenditures by Region of Destination

Region	Industry Output Total ($ millions)	Employment Total (# of jobs)	Value Added Total ($ millions)	Labor Income Total ($ million)
Horry	356.5	4,335	204.9	117.0
Charleston	199.9	2,391	114.1	65.1
Beaufort	120.5	1,300	68.6	37.9

Note: The Horry region includes the counties of Horry and Georgetown; the Charleston region includes the counties of Charleston, Berkeley, and Dorchester; and the Beaufort region includes the counties of Beaufort and Jasper.

The increase in employment due to the shock in the Horry region corresponds to a 2% increase in regional employment (using the total regional employment value in Table 3.4). The results of the shock on visitor expenditures by aggregate sector and region are provided in Table 4.12. The agricultural sector employment impact comprises about 0.05% of total regional employment, the trade sector about 0.3% of total regional employment, the banking, insurance, real estate and insurance sector about 0.07% of total regional employment, and the businesses and other services sector about 2% of total regional employment.

In the Charleston region, the shock increases overall employment by about 0.6% (using the total regional employment value in Table 3.4). The agricultural sector employment impact comprises about 0.04% of total regional employment, the trade sector about 0.06% of total regional employment, the banking, insurance, real estate and rental sector about 0.02% of total regional employment, and the businesses and other services sector about 0.5% of total regional employment (Table 4.12).

In the Beaufort region, an increase in initial expenditures due to the shock corresponds to a 1.1% increase in employment in the region (using the total regional employment value in Table 3.4). The agricultural sector employment impact comprises about 0.06% of total regional employment, the trade sector about 0.1% of total regional employment, the banking, insurance, real estate and rental sector about 0.04% of total regional employment, and the businesses and other services sector about 0.9% of total regional employment (Table 4.12).

Table 4.12 Tourism Impact Effect Totals of 10% Shock on Visitor Expenditures by Region of Destination and Aggregate Sectors [a]

Industry	Horry				Charleston				Beaufort			
	Industry Output Total ($ millions)	Employment Total (# of jobs)	Value Added Total ($ millions)	Labor Income Total ($ millions)	Industry Output Total ($ millions)	Employment Total (# of jobs)	Value Added Total ($ millions)	Labor Income Total ($ millions)	Industry Output Total ($ millions)	Employment Total (# of jobs)	Value Added Total ($ millions)	Labor Income Total ($ millions)
Agriculture	9.155	103	3.988	1.658	10.302	145	4.479	2.451	8.938	66	3.385	1.477
Vegetable and melon farming	0.290	2	0.161	0.070	0.435	3	0.241	0.059	0.066	0	0.036	0.009
Greenhouse, nursery and floriculture products	3.588	30	2.496	0.873	3.701	58	2.574	1.272	2.186	27	1.520	0.441
Poultry and egg production	1.567	3	0.290	0.186	1.646	4	0.304	0.110	0.408	1	0.075	0.015
Animal production- except cattle and poultry	0.616	21	0.321	0.083	0.216	11	0.113	0.013	0.078	3	0.041	0.002
Forestry, forest products and timber tract products	1.631	4	0.388	0.119	2.986	7	0.613	0.197	5.409	12	1.231	0.388
Commercial Fishing	0.064	0	0.020	0.012	0.002	0	0.001	0.000	0.005	0	0.001	0.001
Other agriculture	1.399	44	0.312	0.314	1.314	62	0.632	0.799	0.786	23	0.479	0.621
Mining, Utilities, Construction	5.972	39	3.372	1.887	3.403	20	2.259	1.107	2.761	14	1.846	0.794
Manufacturing	2.935	12	0.817	0.521	3.369	7	0.751	0.495	1.101	3	0.339	0.272
Trade	39.870	601	26.355	15.632	16.146	226	10.775	6.340	8.929	129	5.935	3.503
Retail Stores - Food and beverage	1.535	24	0.990	0.645	0.852	12	0.556	0.362	0.486	7	0.317	0.207
Retail Stores - Gasoline stations	6.024	65	4.157	1.814	2.868	34	1.979	0.861	1.354	12	0.934	0.411
Retail Stores - Clothing and clothing accessories	5.404	97	3.545	1.726	1.593	25	1.045	0.510	1.299	21	0.852	0.414
Retail Stores - Sporting goods, hobby, book and music	1.891	37	1.207	0.730	1.189	24	0.757	0.459	0.445	10	0.280	0.170
Retail Stores - General	16.018	278	10.460	7.023	4.469	75	2.939	1.974	2.881	51	1.876	1.261

merchandise												
Other Retail	8.998	100	5.996	3.694	5.174	56	3.498	2.173	2.465	28	1.676	1.040
Transport and Information	9.335	75	4.526	3.035	6.300	48	3.271	2.273	2.370	16	1.220	0.764
Scenic and sightseeing transportation and support activities for transportation	1.602	25	1.427	1.098	1.068	16	0.951	0.742	0.419	6	0.373	0.287
Other Transport	7.734	49	3.099	1.937	5.232	33	2.319	1.531	1.951	9	0.847	0.478
Banking, Insurance, Real Estate, Rental	27.689	142	19.134	3.637	15.529	78	10.434	2.158	8.457	41	5.896	1.133
Business, Other Services	249.590	3,225	141.086	86.410	138.281	1,795	78.773	47.752	84.263	989	48.061	28.530
Museums, historical sites, zoos and parks	13.144	127	8.529	7.384	3.483	46	2.260	1.947	1.916	3	1.244	1.086
Other amusement and recreation industries	2.138	19	0.740	0.422	0.893	8	0.316	0.179	1.502	12	0.580	0.330
Accommodations	133.010	1,379	79.018	41.068	81.147	869	48.627	25.884	50.878	511	29.973	15.611
Food services and drinking places	76.995	1,382	38.952	26.202	38.316	702	19.134	12.872	22.957	384	12.122	8.151
Other Business	24.303	319	13.847	11.334	14.442	170	8.436	6.870	7.010	79	4.143	3.352
Personal Services, Government, Other	11.921	138	5.685	4.243	6.574	71	3.308	2.561	3.714	41	1.893	1.470

[a]The industries in the gray shaded cells represent the aggregated sectors detailed in Table 4.9. The values in the white cells are key industries within the aggregated sectors.

Note: The Horry region includes the counties of Horry and Georgetown; the Charleston region includes the counties of Charleston, Berkeley, and Dorchester; and the Beaufort region includes the counties of Beaufort and Jasper.

Leakage rates identify dollars leaving the region and multipliers can show leakages among industry sectors. It is of interest to discuss the multipliers across the regions to distinguish how tourism spending affects industries in each region. A full list of Type II employment multipliers is available in Appendix B.

The Type II multipliers in agricultural sectors are similar across regions, with the exception of the poultry and egg production (13) and forestry, forest nurseries, forest products and timber tracts (15) sectors. In the Horry region, the poultry and egg production employment multiplier is 2.07, in the Charleston region 1.98 and in the Beaufort region 1.39 (Appendix B). Thus, in the Beaufort region, the impact of initial tourism spending in this sector has more leakage than in the other regions. Of the retail industries included, employment multipliers are similar across regions. For example, in the retail- sporting goods, hobby, book and music (328) sector, the employment multiplier in the Horry region is 1.21, in the Charleston region 1.23 and the Beaufort region 1.16. This suggests that all regions are experiencing similar leakages in this sector. In the hotels and motels (411) and other accommodations (412) sectors, the employment multipliers are again similar across regions. In the Horry region, the employment multipliers are 1.34 and 1.50, respectively. In the Charleston region, the employment multipliers are 1.38 and 1.44, respectively. In the Beaufort region, the employment multipliers are 1.34 and 1.35, respectively. Again, this suggests the regions are experiencing similar leakage rates in for these sectors.

Substitution Shock

The purpose of the substitution shock was to evaluate the effect of an increase in outdoor activity spending (where most coastal activities fall into). More specifically, the substitution shock shows the economic impacts of an increase in spending on outdoor activities by spending less on traditional vacation activities, using the "outdoor activities" and "entertainment" categories (see Table 3.10). The substitution shock is carried out using a dollar-to-dollar substitution (e.g. total visitors' spending did not change). The net impacts (for industry output, employment, value-added and labor income) of the shock are calculated as the difference between the shock results and the initial spending impacts for the Horry region.

The total net impacts due to the substitution shock are presented in Table 4.13. Compared to the initial spending impacts for Horry region, the shock results in a 9% decreases in industry output impacts, a 12% decrease in employment impacts, a 2% decrease in value-added impacts, and a 4% decrease in labor income impacts. The net impacts from the substitution shocks are primarily due to indirect and induced impacts in each aggregate category. Table 4.14 presents the indirect and induced employment impacts by aggregate sector for the Horry region. For example, the indirect and induced employment impacts of the substitution shock in the businesses and other services are -18 and -92.2 jobs, respectively. The banking, insurance, real estate, and rental sector also sees large indirect and induced impacts of -40 and -20.8 jobs, respectively. These results suggest strong backward linkages between tourism spending and these industries.

Table 4.13 Tourism Impact Effect Totals of Dollar-to-Dollar Substitution Shock (Between the Outdoor and Entertainment Survey Categories) on Visitor Expenditures In Horry County

Region	Industry Output Total ($ millions)	Employment Total (# of jobs)	Value Added Total ($ millions)	Labor Income Total ($ million)
Horry	-66.0	-508	-48.5	-42.7

Note: The Horry region includes the counties of Horry and Georgetown; the Charleston region includes the counties of Charleston, Berkeley, and Dorchester; and the Beaufort region includes the counties of Beaufort and Jasper.

Table 4.14 Tourism Indirect and Induced Employment Effects of Dollar-to-Dollar Substitution Shock (Between the Outdoor and Entertainment Survey Categories) on Visitor Expenditures in Horry County

Industry	Indirect Employment Impact	Induced Employment Impact
	(# of jobs)	(# of jobs)
Agriculture	2	-0.8
Vegetable and melon farming	0	0
Greenhouse- nursery- and floriculture product	0	-0.2
Poultry and egg production	0	0
Animal production- except cattle and poultry	0	-0.5
Forestry- forest products- and timber tract products	0	0
Commercial Fishing	0	0
Other agriculture	1	-0.1
Mining, Utilities, Construction	-5	-3.9
Manufacturing	0	-1.7
Trade	5	-59.3
Retail Stores - Food and beverage	0	-8.5
Retail Stores - Gasoline stations	0	-2.6
Retail Stores - Clothing and clothing accessories	2	-6
Retail Stores - Sporting goods- hobby- book a	1	-2.4
Retail Stores - General merchandise	0	-8.5

Other Retail	3	-31.3
Transport and Information	-7	-5.9
Scenic and sightseeing transportation and support activities for transportation	-3	-0.5
Other Transport	-3	-5.4
Banking, Insurance, Real Estate, Rental	-40	-20.8
Business, Other Services	-18	-92.2
Museums- historical sites- zoos- and parks	0	-0.2
Other amusement and recreation industries	0	-1.1
Accommodations	-1	-2.9
Food services and drinking places	2	-24.3
Other Business	-19	-63.7
Personal Services, Government, Other	-3	-27.3

Note: The Horry region includes the counties of Horry and Georgetown; the Charleston region includes the counties of Charleston, Berkeley, and Dorchester; and the Beaufort region includes the counties of Beaufort and Jasper.

An important conclusion to make about these results is who are the economic sectors that win and lose due to the substitution shock. Specifically, which sectors gain or lose by increasing spending in the outdoor category and decreasing spending in the entertainment category (Table 4.15). Mining, Utilities, Construction, Manufacturing, Banking, Insurance, Real Estate, Rental, Businesses, Other Services, and Personal Services, Government, and Other sectors have a 2% decrease in total employment from an increase in spending in the outdoor category. The Transportation and Information sector sees a 12% decrease in total employment from the substitution shock.

Agriculture and Trade sectors see a net increase in total employment from an increase in coastal activity spending (Table 4.15). The aggregated agriculture sector receives a 16% increase in total employment, while the aggregated trade sector receives a 9% increase in total employment. All retail activities are aggregated into the trade sector and some of these retail activities were mapped with coastal activities. For example, going to the beach/sunbathing falls into the IMPLAN Retail- Clothing and clothing accessories (327) sector. Retail- Sporting Goods (328) is also included in this activity, as beachgoers often bring footballs, volleyballs and sporting games to the beach. As the participation in going to the beach increases, so does the need for additional clothing (swimsuits) and sporting goods.

While an increase in costal activity participation has a few winners, there are more losers in the economy as a whole. The substitution shock causes an overall net employment loss of 508 jobs, which is a decrease of 1% relative to the initial impacts of

tourism spending in the Horry region. This is due to the large negative impacts in the businesses and other services sector, as well as in the banking, insurance, real estate and rental sectors. These results are indicative of the changes in economic activity that could occur if there was substitution between outdoor activities and entertainment spending.

Table 4.15 Tourism Impact Effect Totals of Dollar-to-Dollar Substitution Shock on Visitor Expenditures by Aggregate Sector in Horry Region[a]

Industry	Industry Output Totals ($)	Employment Totals (# of jobs)	Value Added Totals ($)	Labor Income Totals ($)
Agriculture	6,390,345	168	1,527,259	1,045,238
Vegetable and melon farming	1,372,210	8	761,258	331,349
Greenhouse, nursery and floriculture products	-2,404	0	-1,670	-584
Poultry and egg production	-16,060	0	-2,968	-1,903
Animal production- except cattle and poultry	-7,593	0	-3,959	-1,029
Forestry, forest products and timber tract products	3	3	1	1
Commercial Fishing	5,023,524	159	794	477
Other agriculture	20,665	-2	773,803	716,927
Mining, Utilities, Construction	-1,194,416	-8	-692,235	-380,382
Manufacturing	-402,291	-2	-125,417	-79,092
Trade	27,299,831	515	17,701,411	8,940,087
Retail Stores - Food and beverage	14,594	0	9,417	6,133
Retail Stores - Gasoline stations	-239,060	-3	-164,988	-71,998
Retail Stores - Clothing and clothing accessories	22,369,216	402	14,671,940	7,146,402
Retail Stores - Sporting goods- hobby- book a	7,753,958	152	4,949,829	2,991,238

Retail Stores - General merchandise	-487,152	-9	-318,096	-213,592
Other Retail	-2,111,725	-29	-1,446,691	-918,096
Transport and Information	-6,255,949	-87	-4,948,053	-3,725,398
Scenic and sightseeing transportation and support activities for transportation	-4,934,762	-78	-4,396,109	-3,382,510
Other Transport	-1,321,187	-9	-551,944	-342,888
Banking, Insurance, Real Estate, Rental	-10,910,706	-60	-7,858,880	-1,295,346
Business, Other Services	-78,553,518	-799	-53,022,862	-46,485,863
Museums- historical sites- zoos- and parks	-79,346,304	-765	-51,488,880	-44,577,180
Other amusement and recreation industries	-291,127	-2	3,010,574	1,714,991
Accommodations	-329,728	-4	-200,384	-107,920
Food services and drinking places	-1,262,336	-23	-638,592	-429,568
Other Business	2,675,977	-6	-3,705,580	-3,086,186
Personal Services, Government, Other	-2,389,384	-30	-1,056,001	-744,853

[a]The industries in the gray shaded cells represent the aggregated sectors detailed in Table 19. The values in the white cells are key industries within the aggregated sectors that provide important results for the economic impact analysis.

Note: The Horry region includes the counties of Horry and Georgetown; the Charleston region includes the counties of Charleston, Berkeley, and Dorchester; and the Beaufort region includes the counties of Beaufort and Jasper.

Summary

In this chapter, the results from the demand regression and economic impact analysis were presented. The regression results suggest number of people, number of nights, and participation in coastal activities are the most important determinants of visitors' expenditures. The regression results also indicated that state visitors' expenditures are higher or at least not different than expenditures from out of state visitors.

The next section presented the results from the economic impact analysis. The impact of a 10% increase in visitors' expenditures resulted in an increase in total employment (compared to total regional employment) of 2% in the Horry region, 0.6% in the Charleston region, and 1.1% in the Beaufort region. The substitution shock examined the impacts of a dollar-to-dollar increase in spending in the outdoor and entertainment categories in the Horry region, and thus provided winners and losers among industries. All aggregated sectors, with the exception of the agriculture and trade sectors saw a net economic loss from an increase in outdoor activity spending. The overall economy saw a net employment loss of 1% compared to employment impacts from initial tourism spending. The results presented in this chapter help form conclusions and future recommendations, to be discussed in the next chapter.

CHAPTER FIVE

SUMMARY AND CONCLUSIONS

The general goal of this study is to better understand South Carolina coastal tourism. The region of study includes the coastal counties of Horry, Charleston, and Beaufort (and Georgetown, Berkeley, Dorchester, and Jasper counties for the economic impact analysis). This study includes two types of analyses: a regression analysis of visitors' expenditures and an economic impact analysis of tourist spending. The empirical visitors' expenditure models are specified using economic consumer demand theory.

The regression analysis of the model is conducted using data from a tourist survey of 818 South Carolina visitors (conduced in fall 2008 and summer 2009). The economic impact analysis uses the survey data on activity participation and overall tourism estimates by region from the U.S. Travel Association (2009) to estimate the impacts of tourism spending on industries in the Horry, Charleston and Beaufort regions.

The regression analysis examines the effect of per person per day visitors' expenditures on a group of explanatory variables, including activity participation, place of origin of visitors and trip characteristics. The results show number of people, number of nights, and coastal activities are the most important factors affecting visitors' expenditures in all regions. The regression results also suggest that state visitors'

expenditures are higher or at least not different than expenditures from out of state visitors.

The economic impact analysis includes an analysis of the total tourists' current spending for industry output, employment, value added and labor income. In terms of the overall employment in all industries in the region, the impact of current tourism spending on regional employment is 22% of total regional employment in the Horry region, 6% in the Charleston region, and 11% in the Beaufort region.

The economic impact analysis also includes four shocks, three visitor expenditure growth shocks (10% increase in visitors' spending in each region), and a substitution shock (an increase in outdoor activities and a decrease in entertainment activities). The 10% increase in visitors' expenditure shock resulted in a 2% increase in employment in the Horry region, a 0.6% increase in the Charleston region, and a 1.1% increase in the Beaufort region.

The substitution shock examined the effects of an increase outdoor activity spending that was equal to a decrease in entertainment activity spending. Since the focus of the study is on coastal activity spending in the region, the outdoor activity received the shock, as it includes all coastal activities included in the survey. The substitution was for entertainment category spending, because visitors are most likely to substitute spending between these categories than for other "necessity type" categories such as lodging, where spending is relatively fixed. The substitution shock generated negative total employment impacts for all industry sectors, with the exception of the agriculture and

trade sectors. Additionally, the overall Horry regional economy sees a net loss in economic activity as a result of the shock.

The results in this study provide local governments and businesses with more information to make marketing decisions for visitors to coastal counties. For example, the demand model regression results show that in-state tourists per person per day expenditures are higher (or at least no lower) than tourists' expenditures from other regions, suggesting it may be of interest to examine the in-state visitor market further. It may of interest to further examine the use of advertising dollars on state and regional marketing campaigns.

The results from the economic impact analysis can also help local governments make important policy decisions regarding coastal dependent businesses. The results from the current tourism spending and growth shock impacts show that the businesses and other services sector comprise the largest portion of the regional economy. However, the substitution shock in the Horry region suggests that promoting more spending on coastal activities to the possible detriment of other types of activities may result in a net loss in economic activity. It needs to be understood that tourists travel to South Carolina for what the coastal areas offer. Thus, alternative strategies to promote coastal activities that strengthen the linkages between coastal activity and businesses and other services sectors should be further examined. Additionally, comparing the results of the economic impact analysis using the approach in this study versus the using tourism numbers and expenditures from visitors' surveys is of interest for future research.

The study has several limitations. First, data on the number of tourists by county of destination was not available. It would be of interest to compare the impacts of tourism spending across the regions using the method presented in this study and using the number of tourist estimates. Second, the analysis of tourists' expenditures could explore the effect of other explanatory variables, such as sources of information used for the trip and the main purpose of the trip (e.g., business versus pleasure). Another area of further research is the analysis of other visitors' spending substitution shocks. As shown in this study, this type of analysis sheds light on the type of activities that could be "championed" in a region in order to generate higher economic impacts. This study is also silent regarding the distribution of the economic effects across households of different income groups.

APPENDICES

Appendix A: "South Carolina Coastal Visitors' Preferences Survey" (Jodice et al., 2010).

2008 SOUTH CAROLINA COASTAL VISITOR SURVEY..... PAGE 1

Section 1. For questions 1 - 15, consider your experiences at the South Carolina coast.

1. What was your primary destination on your most recent trip to the South Carolina Coast?

_____

2. Was this trip your first visit to the South Carolina coast?

❑ YES **(*skip to question 6*)** ❑ NO

3. How many years have you been visiting your primary destination? _____ YEARS

4. Besides this visit, how many times have you visited your primary destination in:

A) The last 12 months? _____ TIMES and **B)** The last 5 years? _____ TIMES

5. What other destinations in the South Carolina coast have you visited during the LAST 5 YEARS?

A)_____ **B)** _____ **C)**_____

6. What was the **main purpose** of your most recent trip to the South Carolina coast? ***(please check just one)***

❑ Recreation/pleasure ❑ Family/relatives reunion ❑ Seminar/convention/meeting
❑ Business ❑ Other _____ ***(please specify)***

7. Considering the previous question, what is the main reason why you chose to visit the South Carolina coast? ***(Please check just one)***

❑ Drive distance ❑ Recreational opportunities ❑ Cost of trip
❑ Previous enjoyable experiences ❑ Scenic views ❑ Quiet
❑ Wildlife ❑ Other _____ ***(please specify)***

8. Including yourself, how many people were there in your group?

_____ Number of People

9. What type of group did you travel with on your most recent trip to a SC beach? ***(please check just one)***

- ❑ By yourself
- ❑ Family
- ❑ Friends
- ❑ Family and friends together
- ❑ Club
- ❑ Co-workers
- ❑ Other _____ ***(please specify)***

10. When planning this trip, which of the following information sources did you use? ***(please check all that apply)***

- ❑ My past experience
- ❑ Friends or relatives
- ❑ Travel agent
- ❑ Tourist office or Visitor Center
- ❑ Advertisement (TV, radio, print)
- ❑ E-mail offers
- ❑ Travel book, guide or Brochure
- ❑ Newspaper travel article
- ❑ Internet
- ❑ Other _____ ***(please specify)***

2008 SOUTH CAROLINA COASTAL VISITOR SURVEY..... PAGE 2

11. What type of accommodations did you use on your most recent trip to the South Carolina Coast?

(please check all that apply)

- ❑ Hotel/Motel/Resort
- ❑ Campground/RV park
- ❑ Rental Home/Villa/Condo
- ❑ Friends or Relatives
- ❑ I own a beach house or have time share
- ❑ Bed and Breakfast
- ❑ Other _____ ***(please specify)***

12. How many nights did you spend on your most recent trip to the South Carolina coast?

_____ Total nights on the coast (***If you took a day trip, enter ZERO***)

13. This section refers to your spending on your most recent trip to the beach. During this trip, how much did you (and your party) *SPEND* in the following categories?

	Destination	**Outside of Destination**
a) Hotel/motel/other lodging	$ _____	$ _____

b) Grocery and retail stores	$ _____	$ _____
c) Restaurants and drinking places	$ _____	$ _____
d) Outdoor recreational activities (fishing, golf, etc.)	$ _____	$ _____
e) Entertainment (movies, mini golf, music, etc.)	$ _____	$ _____
f) Automobile transportation (gas, service, rental)	$ _____	$ _____
g) Other transportation (airplane, shuttles, limos)	$ _____	$ _____
j) Anything else for this trip (***please specify*** **_____)**	$ _____	$ _____
k) TOTAL COST FOR THIS ENTIRE TRIP	$	$

14. Overall, how **SATISFIED** are you with this visit to the South Carolina Coast?

15. If you were **NOT** satisfied with your most recent trip to the South Carolina coast, what would you do? Please read all five options below and then choose the one that best describes what you would do.

- ❑ I would come back to the same South Carolina destination regardless of the most recent experience
- ❑ I would go to another destination on South Carolina's coast
- ❑ I would go to another destination on the coast but ***not*** in South Carolina
- ❑ I would go to another destination in South Carolina that is not on the coast
- ❑ I would not take a trip to any destination

Section 2. In questions 16 through 19, you will be asked questions about specific activities in which you participated.

16. Please rate the importance of each of the following activities on your most recent visit to South Carolina coast.

	Not at all Important	Slightly Important	Moderately Important	Very Important	Extremely Important
Walking for pleasure/Hiking	1	2	3	4	5
Horseback riding	1	2	3	4	5
Watching wildlife	1	2	3	4	5
Golfing	1	2	3	4	5
Purchasing local arts/crafts	1	2	3	4	5
Visiting a farmer's market	1	2	3	4	5
Pleasure driving	1	2	3	4	5
Eating local foods	1	2	3	4	5
Shopping for fun	1	2	3	4	5
Beach swimming/sunbathing	1	2	3	4	5
Boating/jet skiing/sailing	1	2	3	4	5
Saltwater fishing (charter)	1	2	3	4	5
Saltwater fishing (personal)	1	2	3	4	5
Canoeing, kayaking	1	2	3	4	5
Surfing /windsurfing/sail boarding	1	2	3	4	5
Visiting fishing docks/seafood operations	1	2	3	4	5
Picnicking	1	2	3	4	5
Attending a festival	1	2	3	4	5
Visiting an aquarium	1	2	3	4	5
Visiting a museum	1	2	3	4	5
Visiting historical/cultural sites	1	2	3	4	5

Guided nature/historical tour	1	2	3	4	5
Guided historical tour	1	2	3	4	5
Other *(Please specify)* _____	1	2	3	4	5
Other (Please specify) _____	1	2	3	4	5

2008 SOUTH CAROLINA COASTAL VISITOR SURVEY ..... PAGE 4

17. Among the activities you participated in on your most recent trip to the South Carolina coast, please estimate how much time was spent on each activity and how much money was spent on each activity. If you did not participate in a particular activity, please leave it blank.

	Time Spent (Hrs)	Money Spent
Walking for pleasure/Hiking	_____	$ _____
Horseback riding	_____	$ _____
Watching wildlife	_____	$ _____
Golfing	_____	$ _____
Purchasing local arts/crafts	_____	$ _____
Visiting a farmer's market	_____	$ _____
Pleasure driving	_____	$ _____
Eating local foods	_____	$ _____
Shopping for fun	_____	$ _____
Beach swimming/sunbathing	_____	$ _____
Boating/jet skiing/sailing	_____	$ _____
Saltwater fishing (charter)	_____	$ _____
Saltwater fishing (personal)	_____	$ _____

Canoeing, kayaking	_____	$ _____

	Very Low Priority	Low Priority	Moderate Priority	High Priority	Very High Priority
Surfing /windsurfing/sail boarding	_____	$ _____			
Visiting fishing docks/seafood operations	_____	$ _____			
Picnicking	_____	$ _____			
Attending a festival	_____	$ _____			
Visiting an aquarium	_____	$ _____			
Visiting a museum	_____	$ _____			
Visiting local historical/cultural sites	_____	$ _____			
Guided nature tour	_____	$ _____			
Guided historical tour	_____	$ _____			
Other ***(Please specify)***_____	_____	$ _____			
Other ***(Please specify)***_____	_____	$ _____			

2008 SOUTH CAROLINA COASTAL VISITOR SURVEY..... PAGE 5

18. As a tourist, please indicate the level of priority that South Carolina should place on the following tourism development strategies for the coast.

Encourage more local businesses to open	1	2	3	4	5
Promote the unique shopping opportunities for local products	1	2	3	4	5
Build more golf courses	1	2	3	4	5

Protect access to natural resources	1	2	3	4	5
Build resort property	1	2	3	4	5
Encourage more bed & breakfasts to open	1	2	3	4	5
Attract more fine dining restaurants	1	2	3	4	5
Promote more locally owned restaurants	1	2	3	4	5
Promote local arts/crafts	1	2	3	4	5
Promote local seafood purchasing opportunities	1	2	3	4	5
Protect historical sites	1	2	3	4	5
Promote/retain local heritage/culture	1	2	3	4	5
Protect parks and open space	1	2	3	4	5
Encourage sustainable use of local natural resources	1	2	3	4	5
Promote the local nature based attractions	1	2	3	4	5
Create more outdoor recreation programs	1	2	3	4	5

19. Please rate your agreement with the following statements based on your most recent trip a SC coast.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I would visit the destination more if it had better facilities	1	2	3	4	5
I would visit the destination more if it was better maintained	1	2	3	4	5
I would visit the destination more if it had more activities	1	2	3	4	5
I would visit the destination more if it was less crowded	1	2	3	4	5

Section 3. In questions 20 through 26 you will be presented a series of tables involving two alternative trips that might be available to you.

Think about **your typical trip to a coastal destination in South Carolina**. Although those trips may look similar, trip descriptions in each table differ from each other in at least one way. Please read each description carefully. After reading the descriptions of the two trips, please check the trip you would prefer to take. If you do not like either trip description, please check "I would not take either trip."

Please note the following definitions before completing the section (All scenarios deal with your coastal trips in South Carolina). If other trip factors are not listed, please assume they would be the same in each trip description. Thus, consider only the differences between the trips and attributes presented. Note finally, that there are no right or wrong answers to these questions. We are simply interested in your personal preferences.

- **Destination** - Degree of destination development
  - **Urban area -** a major setting (e.g. Charleston, Myrtle Beach)
  - **Small town -** (e.g. Georgetown, Beaufort)
  - **Resort setting** (e.g. Hilton head, Kiawah)
  - **State Park/wilderness setting -** (e.g. Huntington State Park)
- **Availability of activities** - Activities available at or near the destination chosen
  - **Low** - beach activities, walking/sightseeing, historical sites
  - **Medium -** beach activities, walking/sightseeing, shopping, guided historical tours, charter fishing boats, some nightlife
  - **High** - beach activities, walking/sightseeing, historical tours, charter fishing boats, immersion experiences (e.g., visiting fishing docks), amusement parks, lots of nightlife
- **Activities' emphasis on regional character** – Degree to which the activities possess the unique qualities of the SC coast
  - **None** - The region's history, culture, and ecology are not reflected in the activities
  - **Some emphasis** - Activities occasionally showcase the region's history, culture, and ecology
  - **High emphasis** - Activities are based around the region's history, culture, and ecology
- **Restaurant quality** - Quality of the food at the restaurants where you eat
  - **Low** -The food is generally mediocre
  - **Medium** - The food is generally good
  - **High** - The food is generally exceptional
- **Restaurant Ownership** - Types of Restaurant ownership

- **Local** - Restaurants are predominately locally owned and are unique to the area, much of the food is locally harvested, and prepared in a regional style
- **Mix -** A mix of locally owned businesses unique to the area and national chains
- **National** - Restaurants are predominately national chains that you are familiar with, they do not emphasize local food or cooking techniques

- **Trip Cost** – Total cost of this hypothetical coastal trip
  - **20% less** than your last trip cost
  - **The same** as your last trip cost
  - **20% more** than your last trip cost

If there is a factor not mentioned (i.e., accommodation quality), please assume it would be the same in each beach trip description and only consider the differences between the choices and attributes listed. Once again, there are no right or wrong answers, we want to know what destination characteristics you like or dislike.

20.

TRIP A	ATTRIBUTES	TRIP B
Small town	DESTINATION	Small town
Low	AVAILABILITY OF ACTIVITIES	High
High emphasis	ACTIVITIES' EMPHASIS ON REGIONAL CHARACTER	Some emphasis
Medium	RESTAURANT QUALITY	Low
Local	RESTAURANT OWNERSHIP	Mix
20% more than	TRIP COST	20% more than

Given these choices, I would choose… *(CHECK ONLY ONE)*

❑ **TRIP A** ❑ **I WOULD NOT CHOOSE EITHER TRIP** ❑ **TRIP B**

21.

TRIP A	ATTRIBUTES	TRIP B
State park/wilderness	**DESTINATION**	Resort setting
High	**AVAILABILITY OF ACTIVITIES**	Medium
None	**ACTIVITIES' EMPHASIS ON REGIONAL CHARACTER**	Some Emphasis
Medium	**RESTAURANT QUALITY**	High
Mix	**RESTAURANT OWNERSHIP**	Local
20% more than	**TRIP COST**	20% less than

Given these choices, I would choose… *(CHECK ONLY ONE)*

❑ **TRIP A** ❑ **I WOULD NOT CHOOSE EITHER TRIP** ❑ **TRIP B**

2008 SOUTH CAROLINA COASTAL VISITOR SURVEY..... PAGE 8

If there is a factor not mentioned (i.e., accommodation quality), please assume it would be the same in each beach trip description and only consider the differences between the choices and attributes listed. Once again, there are no right or wrong answers, we want to know what beach characteristics you like or dislike.

22.

TRIP A	ATTRIBUTES	TRIP B
Urban area	**DESTINATION**	State park/wilderness setting
Low	**AVAILABILITY OF ACTIVITIES**	Medium
Some emphasis	**ACTIVITIES' EMPHASIS ON REGIONAL CHARACTER**	Some emphasis
Low	**RESTAURANT QUALITY**	High
Local	**RESTAURANT OWNERSHIP**	National

20% less than	**TRIP COST**	20% more than

Given these choices, I would choose… ***(CHECK ONLY ONE)***

❑ **TRIP A** ❑ **I WOULD NOT CHOOSE EITHER TRIP** ❑ **TRIP B**

23.

TRIP A	**ATTRIBUTES**	**TRIP B**
Resort Setting	**DESTINATION**	Urban area
Low	**AVAILABILITY OF ACTIVITIES**	Low
Some emphasis	**ACTIVITIES' EMPHASIS ON REGIONAL CHARACTER**	High emphasis
Medium	**RESTAURANT QUALITY**	Medium
National	**RESTAURANT OWNERSHIP**	Local
The same as	**TRIP COST**	20% more than

Given these choices, I would choose… ***(CHECK ONLY ONE)***

❑ **TRIP A** ❑ **I WOULD NOT CHOOSE EITHER TRIP** ❑ **TRIP B**

2008 SOUTH CAROLINA COASTAL VISITOR SURVEY..... PAGE 9

24.

TRIP A	**ATTRIBUTES**	**TRIP B**
Urban area	**DESTINATION**	State park/wilderness
High	**AVAILABILITY OF ACTIVITIES**	Low
No emphasis	**ACTIVITIES' EMPHASIS ON REGIONAL CHARACTER**	None
High	**RESTAURANT QUALITY**	Medium

National	**RESTAURANT OWNERSHIP**	Mix
20% more than	**TRIP COST**	The same as

Given these choices, I would choose… *(CHECK ONLY ONE)*

❑ **TRIP A** ❑ **I WOULD NOT CHOOSE EITHER TRIP** ❑ **TRIP B**

25.

TRIP A	**ATTRIBUTES**	**TRIP B**
Small town	**DESTINATION**	Small town
Medium	**AVAILABILITY OF ACTIVITIES**	Low
No emphasis	**ACTIVITIES' EMPHASIS ON REGIONAL CHARACTER**	High emphasis
High	**RESTAURANT QUALITY**	Medium
Mix	**RESTAURANT OWNERSHIP**	National
20% less than	**TRIP COST**	20% less than

Given these choices, I would choose… *(CHECK ONLY ONE)*

❑ **TRIP A** ❑ **I WOULD NOT CHOOSE EITHER TRIP** ❑ **TRIP B**

---

26. Please identify the attribute(s) that you consider when you make your trip choices (***Please check all that apply***)

❑ Destination character ❑ Availability of activities ❑ Activities' emphasis on regional
❑ Restaurant quality ❑ Restaurant ownership ❑ Trip cost

Section 4. Please carefully read and consider the following scenario. This scenario is hypothetical but your responses will be valuable to guide future policies.

While the tourism industry is a key economic sector on the South Carolina coast, there are increasing concerns about the apparent decline in SC's traditional coastal economic activities (e.g., shrimp fishing, sales of local seafood, sweetgrass basket-making and other local crafts, water-based recreation businesses). The probable causes for this decline include loss of waterfront access due to real estate development, decline in access to and availability of coastal natural resources, and increased competition with imported products. These encroachments may lead to a decline in local employment and erase the unique personality of the coastal environment.

As a result, SC coastal officials are considering identifying new strategies to link tourism spending to these traditional industries and providing programs such as marketing and small-business training to local businesses. These programs will hopefully ensure that more tourism money remains in the coastal community and that traditional industries continue to add to the character of the SC coast, and provide tourists with a more authentic experience. However, these programs cost money and the cost will have to be supported by tourists (e.g. through hotel taxes). Fund revenues will be used only for the program described.

27. If the program is implemented, considering the benefits that might accrue, would you be willing to pay $\$\_\_\_$ more per night as an accommodation fee which would support the program?

- ❑ YES
- ❑ NO

28. If that program was implemented and the fee in **Question 27** was charged, would you change your annual number of trips to South Carolina coastal destinations?

- ❑ YES, I would take **MORE** trips. How many more trips? _____
- ❑ YES, I would take **FEWER** trips. How many fewer trips? _____
- ❑ NO, I would take the **SAME** number of trips

29. Why did you answer **NO to Question 27**? Please choose the most important reason listed below. (***please check just one. If your answer is YES to Question 27, skip this question***)

- ❑ The amount you are asking us to pay is too high.

- ❑ The proposed plan is not important to us.
- ❑ There are many other areas to visit besides this destination.
- ❑ We cannot afford higher trip costs at this time.
- ❑ The government should pay for this without an increase in fees.
- ❑ We do not trust the government to implement this properly.
- ❑ Some other reason ***(please specify)*** _____

Section 5. The following questions will help us know more about coastal visitors.

30. What is your age? _____

31. Are you: ❑ Female ❑ Male

32. What is your approximate annual household income before taxes?

- ❒ < $20,000
- ❒ $20,000 – 39,999
- ❒ $40,000 – 59,999
- ❒ $60,000 – 79,999
- ❒ $80,000 – 99,999
- ❒ $100,000 – 199,999
- ❒ $200,000 – 299,999
- ❒ $300,000 and Above

33. Are you currently employed?

❑ YES ***(go to question 34)*** ❑ NO ***(go to question 36)***

34. How many hours per week do you work on average? _____HOURS

35. How many days of paid vacation do you receive every year? _____ DAYS

36. Which of the following best describes the highest level of education you have completed?

❒ Some high school or less ❒ High school graduate ❒ Some college/technical school

❒ College graduate ❒ Post graduate school

37. Was this survey completed by the person to whom it was addressed?

❑ YES ❑ NO - What is your relationship to the addressee? _____

38. What is your race? Please indicate one or more races for what you consider yourself to be.

❑ White ❑ Black or African American

❑ Spanish/Hispanic ❑ Asian or Pacific Islander

❑ American Indian or Alaskan native ❑ Other race (***please specify)***_____

39. Is there anything else you would like to share with us?

Appendix B: Type II Employment Multipliers for All IMPLAN Sectors by Region of Destination

IMPLAN Code	IMPLAN Decsription	Type II Employment Multipler		
		Horry	Charleston	Beaufort
1	Oilseed farming	1.136864	1.076248	1.111456
2	Grain farming	1.104708	1.15601	1.060022
3	Vegetable and melon farming	1.549015	1.706769	1.4049
4	Fruit farming	1.388535	1.480799	1.263379
5	Tree nut farming	1.318951	1.572044	0
6	Greenhouse, nursery, and floriculture production	1.31582	1.288145	1.184279
7	Tobacco farming	1.136768	0	0
8	Cotton farming	1.313755	1.454331	0
9	Sugarcane and sugar beet farming	0	0	0
10	All other crop farming	1.43674	1.813726	0
11	Cattle ranching and farming	1.341059	1.282666	1.163225
12	Dairy cattle and milk production	1.234068	1.167665	0
13	Poultry and egg production	2.068062	1.982393	1.389537
14	Animal production, except cattle and poultry and eggs	1.108076	1.081509	1.05128
15	Forest nurseries, forest products, and timber tracts	3.55309	8.848755	3.058787
16	Logging	1.854826	1.754632	1.709539
17	Fishing	1.062502	1.090688	1.090001
18	Hunting and trapping	1.269588	1.370653	1.329407
19	Support activities for agriculture and forestry	1.146304	1.110853	1.155358
20	Oil and gas extraction	2.59582	2.376967	2.230933
21	Coal mining	0	0	1.776223
22	Iron ore mining	0	0	0
23	Copper, nickel, lead, and zinc mining	0	0	0
24	Gold, silver, and other metal ore mining	0	0	0
25	Stone mining and quarrying	1.642402	1.682029	1.469797
26	Sand, gravel, clay, and ceramic and refractory minerals mining and quarrying	1.60137	1.598102	0
27	Other nonmetallic mineral mining and quarrying	1.367962	1.703574	0
28	Drilling oil and gas wells	2.66042	2.340379	2.530075
29	Support activities for oil and gas operations	0	2.329166	0
30	Support activities for other mining	0	0	0
31	Electric power generation, transmission,	1.966605	1.766761	1.758519

	and distribution			
32	Natural gas distribution	3.000514	1.671017	0
33	Water, sewage and other systems	1.582414	1.509198	1.330057
34	Construction of new nonresidential commercial and health care structures	1.492602	1.590489	1.376059
35	Construction of new nonresidential manufacturing structures	1.454689	1.512974	1.338803
36	Construction of other new nonresidential structures	1.499818	1.591705	1.387842
37	Construction of new residential permanent site single- and multi-family structures	1.624846	1.691861	1.516484
38	Construction of other new residential structures	1.617577	1.669751	1.51567
39	Maintenance and repair construction of nonresidential maintenance and repair	1.435606	1.504225	1.344208
40	Maintenance and repair construction of residential structures	1.285764	1.335367	1.243889
41	Dog and cat food manufacturing	0	0	0
42	Other animal food manufacturing	0	0	0
43	Flour milling and malt manufacturing	0	0	0
44	Wet corn milling	0	6.042513	0
45	Soybean and other oilseed processing	0	0	0
46	Fats and oils refining and blending	0	2.741672	0
47	Breakfast cereal manufacturing	0	0	0
48	Sugar cane mills and refining	0	0	0
49	Beet sugar manufacturing	0	0	0
50	Chocolate and confectionery manufacturing from cacao beans	0	0	0
51	Confectionery manufacturing from purchased chocolate	1.586935	1.597373	0
52	Nonchocolate confectionery manufacturing	0	0	0
53	Frozen food manufacturing	0	0	0
54	Fruit and vegetable canning, pickling, and drying	0	2.428154	0
55	Fluid milk and butter manufacturing	0	2.966272	0
56	Cheese manufacturing	0	0	0
57	Dry, condensed, and evaporated dairy product manufacturing	0	0	0
58	Ice cream and frozen dessert manufacturing	0	2.356694	0
59	Animal (except poultry) slaughtering, rendering, and processing	3.616727	3.794245	2.521363
60	Poultry processing	0	0	2.218234
61	Seafood product preparation and packaging	2.617528	2.996967	0
62	Bread and bakery product manufacturing	1.436701	1.444662	1.362954
63	Cookie, cracker, and pasta manufacturing	1.805245	1.841976	1.620239

64	Tortilla manufacturing	0	0	0
65	Snack food manufacturing	2.361467	0	0
66	Coffee and tea manufacturing	0	3.397836	0
67	Flavoring syrup and concentrate manufacturing	0	0	0
68	Seasoning and dressing manufacturing	0	2.256427	1.889563
69	All other food manufacturing	2.026936	0	0
70	Soft drink and ice manufacturing	2.134679	2.580802	1.975319
71	Breweries	0	3.483245	0
72	Wineries	2.210434	0	0
73	Distilleries	0	2.566365	0
74	Tobacco product manufacturing	0	0	0
75	Fiber, yarn, and thread mills	0	0	0
76	Broadwoven fabric mills	0	1.695536	0
77	Narrow fabric mills and schiffli machine embroidery	0	1.48402	0
78	Nonwoven fabric mills	0	1.836355	0
79	Knit fabric mills	0	0	0
80	Textile and fabric finishing mills	1.587649	1.761623	1.735311
81	Fabric coating mills	0	0	0
82	Carpet and rug mills	0	1.464926	0
83	Curtain and linen mills	1.137003	1.39408	1.527043
84	Textile bag and canvas mills	1.379316	1.580648	1.796934
85	All other textile product mills	1.676213	1.46438	1.636995
86	Apparel knitting mills	1.391971	1.700963	1.398278
87	Cut and sew apparel contractors	1.225257	1.270973	0
88	Men's and boys' cut and sew apparel manufacturing	0	1.576156	1.443939
89	Women's and girls' cut and sew apparel manufacturing	1.921493	0	2.112817
90	Other cut and sew apparel manufacturing	0	1.515569	0
91	Apparel accessories and other apparel manufacturing	0	0	1.23545
92	Leather and hide tanning and finishing	0	0	0
93	Footwear manufacturing	1.309081	0	0
94	Other leather and allied product manufacturing	1.401409	0	0
95	Sawmills and wood preservation	2.364811	1.757844	0
96	Veneer and plywood manufacturing	0	1.650602	1.816084
97	Engineered wood member and truss manufacturing	1.68077	0	1.368027
98	Reconstituted wood product manufacturing	0	1.881628	0
99	Wood windows and doors and millwork	1.676923	1.582637	1.372437
100	Wood container and pallet manufacturing	1.495078	1.378339	1.250637
101	Manufactured home (mobile home)	0	0	0

	manufacturing			
102	Prefabricated wood building manufacturing	0	1.619023	1.412811
103	All other miscellaneous wood product manufacturing	0	1.573053	0
104	Pulp mills	0	0	0
105	Paper mills	0	0	0
106	Paperboard Mills	3.780999	3.187901	0
107	Paperboard container manufacturing	1.9415	1.946333	2.126677
108	Coated and laminated paper, packaging paper and plastics film manufacturing	0	1.919983	0
109	All other paper bag and coated and treated paper manufacturing	0	0	0
110	Stationery product manufacturing	0	0	0
111	Sanitary paper product manufacturing	0	0	0
112	All other converted paper product manufacturing	0	1.941392	0
113	Printing	1.504804	1.521309	1.381024
114	Support activities for printing	0	1.349332	0
115	Petroleum refineries	0	3.612054	0
116	Asphalt paving mixture and block manufacturing	1.832057	2.165917	0
117	Asphalt shingle and coating materials manufacturing	1.794662	0	1.646746
118	Petroleum lubricating oil and grease manufacturing	0	2.249586	0
119	All other petroleum and coal products manufacturing	0	0	0
120	Petrochemical manufacturing	0	8.71184	0
121	Industrial gas manufacturing	3.662689	3.45786	0
122	Synthetic dye and pigment manufacturing	0	2.804642	2.341472
123	Alkalies and chlorine manufacturing	0	0	0
124	Carbon black manufacturing	0	2.437094	0
125	All other basic inorganic chemical manufacturing	0	3.206751	6.708116
126	Other basic organic chemical manufacturing	4.536101	5.38678	0
127	Plastics material and resin manufacturing	0	3.098004	0
128	Synthetic rubber manufacturing	0	0	0
129	Artificial and synthetic fibers and filaments manufacturing	0	2.320367	0
130	Fertilizer manufacturing	0	3.569924	0
131	Pesticide and other agricultural chemical manufacturing	0	4.427207	3.011267
132	Medicinal and botanical manufacturing	0	0	0
133	Pharmaceutical preparation manufacturing	3.791737	4.106427	0
134	In-vitro diagnostic substance	0	0	0

	manufacturing			
135	Biological product (except diagnostic) manufacturing	0	4.012234	0
136	Paint and coating manufacturing	0	2.422311	0
137	Adhesive manufacturing	0	0	0
138	Soap and cleaning compound manufacturing	4.554598	3.474624	0
139	Toilet preparation manufacturing	0	3.008866	0
140	Printing ink manufacturing	0	2.173061	0
141	All other chemical product and preparation manufacturing	2.157084	2.431124	2.740014
142	Plastics packaging materials and unlaminated film and sheet manufacturing	1.719108	0	0
143	Unlaminated plastics profile shape manufacturing	0	0	0
144	Plastics pipe and pipe fitting manufacturing	0	0	0
145	Laminated plastics plate, sheet (except packaging), and shape manufacturing	0	0	0
146	Polystyrene foam product manufacturing	0	1.547118	0
147	Urethane and other foam product (except polystyrene) manufacturing	0	0	0
148	Plastics bottle manufacturing	0	1.701343	0
149	Other plastics product manufacturing	1.515885	1.612401	1.406119
150	Tire manufacturing	0	2.170034	0
151	Rubber and plastics hoses and belting manufacturing	0	1.701327	0
152	Other rubber product manufacturing	0	1.758099	1.486215
153	Pottery, ceramics, and plumbing fixture manufacturing	1.578692	1.466223	0
154	Brick, tile, and other structural clay product manufacturing	0	1.309785	0
155	Clay and nonclay refractory manufacturing	1.610301	2.054204	0
156	Flat glass manufacturing	0	0	0
157	Other pressed and blown glass and glassware manufacturing	0	1.755422	0
158	Glass container manufacturing	0	0	0
159	Glass product manufacturing made of purchased glass	1.597315	1.915669	1.562941
160	Cement manufacturing	0	2.801433	0
161	Ready-mix concrete manufacturing	1.960379	2.307633	1.714535
162	Concrete pipe, brick, and block manufacturing	1.8553	1.915647	1.639014
163	Other concrete product manufacturing	1.64767	1.694942	0
164	Lime and gypsum product manufacturing	2.301685	2.36267	0
165	Abrasive product manufacturing	0	3.995066	1.4679
166	Cut stone and stone product manufacturing	1.399299	1.468454	1.368573

167	Ground or treated mineral and earth manufacturing	0	0	0
168	Mineral wool manufacturing	0	0	0
169	Miscellaneous nonmetallic mineral products	1.813964	2.009344	0
170	Iron and steel mills and ferroalloy manufacturing	3.828063	4.233028	4.535175
171	Steel product manufacturing from purchased steel	2.670839	2.930213	0
172	Alumina refining and primary aluminum production	2.940336	3.173682	0
173	Secondary smelting and alloying of aluminum	0	0	0
174	Aluminum product manufacturing from purchased aluminum	0	2.333788	0
175	Primary smelting and refining of copper	0	0	0
176	Primary smelting and refining of nonferrous metal (except copper and aluminum)	0	0	0
177	Copper rolling, drawing, extruding and alloying	2.541479	0	0
178	Nonferrous metal (except copper and aluminum) rolling, drawing, extruding and alloying	0	0	0
179	Ferrous metal foundries	0	1.773111	1.497802
180	Nonferrous metal foundries	1.708988	1.584778	0
181	All other forging, stamping, and sintering	2.018612	0	1.798775
182	Custom roll forming	1.942683	0	0
183	Crown and closure manufacturing and metal stamping	1.505171	0	0
184	Cutlery, utensil, pot, and pan manufacturing	0	1.763148	0
185	Handtool manufacturing	0	1.774553	0
186	Plate work and fabricated structural product manufacturing	1.873006	1.967782	1.569112
187	Ornamental and architectural metal products manufacturing	1.554294	1.705313	1.474814
188	Power boiler and heat exchanger manufacturing	0	0	0
189	Metal tank (heavy gauge) manufacturing	0	1.816584	0
190	Metal can, box, and other metal container (light gauge) manufacturing	0	2.094078	0
191	Ammunition manufacturing	0	0	0
192	Arms, ordnance, and accessories manufacturing	0	0	1.687782
193	Hardware manufacturing	1.687526	1.793771	0

194	Spring and wire product manufacturing	1.531685	1.770187	1.466824
195	Machine shops	1.551609	1.625593	1.41543
196	Turned product and screw, nut, and bolt manufacturing	1.650666	1.826771	0
197	Coating, engraving, heat treating and allied activities	1.589804	1.59186	1.43676
198	Valve and fittings other than plumbing	1.756246	1.857499	1.549785
199	Plumbing fixture fitting and trim manufacturing	1.841843	0	0
200	Ball and roller bearing manufacturing	0	0	0
201	Fabricated pipe and pipe fitting manufacturing	0	0	0
202	Other fabricated metal manufacturing	1.508711	1.703528	1.428764
203	Farm machinery and equipment manufacturing	2.31374	0	1.935675
204	Lawn and garden equipment manufacturing	0	0	0
205	Construction machinery manufacturing	0	3.107174	0
206	Mining and oil and gas field machinery manufacturing	0	0	0
207	Other industrial machinery manufacturing	1.845008	1.817894	0
208	Plastics and rubber industry machinery manufacturing	0	0	0
209	Semiconductor machinery manufacturing	0	0	0
210	Vending, commercial, industrial, and office machinery manufacturing	1.969676	0	0
211	Optical instrument and lens manufacturing	0	0	0
212	Photographic and photocopying equipment manufacturing	0	0	0
213	Other commercial and service industry machinery manufacturing	1.721806	1.78264	1.518719
214	Air purification and ventilation equipment manufacturing	0	0	0
215	Heating equipment (except warm air furnaces) manufacturing	1.756027	0	0
216	Air conditioning, refrigeration, and warm air heating equipment manufacturing	1.746358	1.928418	0
217	Industrial mold manufacturing	0	1.641964	0
218	Metal cutting and forming machine tool manufacturing	0	2.074145	1.650559
219	Special tool, die, jig, and fixture manufacturing	0	1.587363	0
220	Cutting tool and machine tool accessory manufacturing	1.493299	1.561688	0
221	Rolling mill and other metalworking machinery manufacturing	0	0	0
222	Turbine and turbine generator set units	0	3.304421	0

	manufacturing			
223	Speed changer, industrial high-speed drive, and gear manufacturing	0	2.17283	0
224	Mechanical power transmission equipment manufacturing	0	2.089427	0
225	Other engine equipment manufacturing	0	3.111444	0
226	Pump and pumping equipment manufacturing	0	2.216428	0
227	Air and gas compressor manufacturing	0	0	0
228	Material handling equipment manufacturing	0	2.013646	1.559713
229	Power-driven handtool manufacturing	0	0	0
230	Other general purpose machinery manufacturing	1.937747	1.985941	0
231	Packaging machinery manufacturing	0	1.958428	0
232	Industrial process furnace and oven manufacturing	0	0	0
233	Fluid power process machinery	1.875541	0	0
234	Electronic computer manufacturing	0	0	0
235	Computer storage device manufacturing	0	0	0
236	Computer terminals and other computer peripheral equipment manufacturing	0	2.412792	0
237	Telephone apparatus manufacturing	3.111063	0	0
238	Broadcast and wireless communications equipment	2.53516	2.557172	2.069566
239	Other communications equipment manufacturing	0	0	0
240	Audio and video equipment manufacturing	2.958219	2.66354	2.254467
241	Electron tube manufacturing	0	0	0
242	Bare printed circuit board manufacturing	0	0	0
243	Semiconductor and related device manufacturing	0	0	2.870597
244	Electronic capacitor, resistor, coil, transformer, and other inductor manufacturing	1.758406	0	0
245	Electronic connector manufacturing	0	0	0
246	Printed circuit assembly (electronic assembly) manufacturing	1.885442	1.898347	1.74552
247	Other electronic component manufacturing	0	2.020942	0
248	Electromedical and electrotherapeutic apparatus manufacturing	0	0	0
249	Search, detection, and navigation instruments manufacturing	0	0	0
250	Automatic environmental control manufacturing	1.841549	1.976671	1.655811
251	Industrial process variable instruments	2.070212	0	0

	manufacturing			
252	Totalizing fluid meters and counting devices manufacturing	0	0	0
253	Electricity and signal testing instruments manufacturing	0	2.00127	0
254	Analytical laboratory instrument manufacturing	0	0	0
255	Irradiation apparatus manufacturing	0	0	0
256	Watch, clock, and other measuring and controlling device manufacturing	1.936144	2.109284	0
257	Software, audio, and video media reproducing	0	2.2299	1.947717
258	Magnetic and optical recording media manufacturing	0	0	0
259	Electric lamp bulb and part manufacturing	0	0	0
260	Lighting fixture manufacturing	0	1.814704	0
261	Small electrical appliance manufacturing	0	0	0
262	Household cooking appliance manufacturing	1.60599	0	0
263	Household refrigerator and home freezer manufacturing	0	0	0
264	Household laundry equipment manufacturing	0	0	0
265	Other major household appliance manufacturing	0	0	0
266	Power, distribution, and specialty transformer manufacturing	0	0	0
267	Motor and generator manufacturing	0	1.875633	0
268	Switchgear and switchboard apparatus manufacturing	0	0	0
269	Relay and industrial control manufacturing	0	1.966585	1.686799
270	Storage battery manufacturing	0	0	0
271	Primary battery manufacturing	0	0	0
272	Communication and energy wire and cable manufacturing	0	0	0
273	Wiring device manufacturing	1.576405	0	0
274	Carbon and graphite product manufacturing	0	2.195431	0
275	All other miscellaneous electrical equipment and component manufacturing	2.016411	0	0
276	Automobile manufacturing	0	4.605271	0
277	Light truck and utility vehicle manufacturing	0	0	2.007698
278	Heavy duty truck manufacturing	0	3.309563	0
279	Motor vehicle body manufacturing	0	2.143104	0
280	Truck trailer manufacturing	1.480582	0	0

281	Motor home manufacturing	0	0	0
282	Travel trailer and camper manufacturing	0	2.037314	0
283	Motor vehicle parts manufacturing	1.792375	2.146497	0
284	Aircraft manufacturing	0	4.237752	0
285	Aircraft engine and engine parts manufacturing	0	3.112409	0
286	Other aircraft parts and auxiliary equipment manufacturing	0	2.60646	0
287	Guided missile and space vehicle manufacturing	0	0	0
288	Propulsion units and parts for space vehicles and guided missiles	0	0	0
289	Railroad rolling stock manufacturing	0	0	0
290	Ship building and repairing	0	2.14495	0
291	Boat building	1.840743	2.104672	1.660348
292	Motorcycle, bicycle, and parts manufacturing	1.92062	0	0
293	Military armored vehicle, tank, and tank component manufacturing	0	3.855462	0
294	All other transportation equipment manufacturing	2.797726	0	0
295	Wood kitchen cabinet and countertop manufacturing	1.554476	1.624324	1.418321
296	Upholstered household furniture manufacturing	1.402273	0	0
297	Nonupholstered wood household furniture manufacturing	1.350924	1.393261	1.290243
298	Metal and other household furniture (except wood) manufacturing[1]	1.489284	1.551097	0
299	Institutional furniture manufacturing	0	1.903421	1.498167
300	Wood television, radio, and sewing machine cabinet manufacturing[1]	0	0	0
301	Office furniture and custom architectural woodwork and millwork manufacturing[1]	1.55071	1.665783	1.421289
302	Showcase, partition, shelving, and locker manufacturing	1.437965	1.576945	0
303	Mattress manufacturing	0	1.762663	0
304	Blind and shade manufacturing	1.501625	1.481478	0
305	Surgical and medical instrument manufacturing	0	2.191809	0
306	Surgical appliance and supplies manufacturing	1.679979	1.986359	1.536322
307	Dental equipment and supplies manufacturing	0	0	0
308	Ophthalmic goods manufacturing	1.618633	2.068996	0
309	Dental laboratories	1.196256	1.397564	1.231672

310	Jewelry and silverware manufacturing	1.534569	1.587538	0
311	Sporting and athletic goods manufacturing	1.606222	1.80539	1.482166
312	Doll, toy, and game manufacturing	0	0	0
313	Office supplies (except paper) manufacturing	0	0	0
314	Sign manufacturing	1.460566	1.515953	1.356343
315	Gasket, packing, and sealing device manufacturing	0	1.707669	0
316	Musical instrument manufacturing	0	1.700164	0
317	All other miscellaneous manufacturing	1.585081	1.59561	0
318	Broom, brush, and mop manufacturing	0	0	0
319	Wholesale trade	1.577583	1.738247	1.542183
320	Retail - Motor vehicle and parts	1.328143	1.378086	1.297774
321	Retail - Furniture and home furnishings	1.342888	1.359384	1.294332
322	Retail - Electronics and appliances	1.25353	1.450653	1.257075
323	Retail - Building material and garden supply	1.332764	1.395238	1.312234
324	Retail - Food and beverage	1.273398	1.323031	1.239017
325	Retail - Health and personal care	1.320886	1.290805	1.270286
326	Retail - Gasoline stations	1.316048	1.319371	1.305407
327	Retail - Clothing and clothing accessories	1.205504	1.258214	1.184335
328	Retail - Sporting goods, hobby, book and music	1.211862	1.230611	1.157199
329	Retail - General merchandise	1.248352	1.283853	1.202837
330	Retail - Miscellaneous	1.163452	1.170306	1.117516
331	Retail - Nonstore	1.14994	1.11515	1.104902
332	Air transportation	1.746518	2.074514	2.145378
333	Rail transportation	2.246657	2.303822	1.978639
334	Water transportation	2.863899	3.404117	2.602527
335	Truck transportation	1.504455	1.62625	1.37914
336	Transit and ground passenger transportation	1.157766	1.238942	1.143926
337	Pipeline transportation	0	0	0
338	Scenic and sightseeing transportation and support activities for transportation	1.286345	1.330076	1.249766
339	Couriers and messengers	1.239806	1.255157	1.214358
340	Warehousing and storage	1.193605	1.276139	1.122553
341	Newspaper publishers	1.331612	1.501268	1.159156
342	Periodical publishers	1.872505	2.030522	1.746913
343	Book publishers	0	2.174325	1.86518
344	Directory, mailing list, and other publishers	1.871897	2.016278	1.804049
345	Software publishers	2.463828	2.598158	2.075624
346	Motion picture and video industries	1.550964	1.543754	1.465437
347	Sound recording industries	3.872661	5.382234	0
348	Radio and television broadcasting	1.959975	1.916526	1.831599

349	Cable and other subscription programming	6.729033	0	3.510147
350	Internet publishing and broadcasting	2.233734	2.424166	0
351	Telecommunications	2.45327	2.476308	2.202056
352	Data processing, hosting, and related services	1.765386	1.923068	1.656878
353	Other information services	2.328909	2.402225	2.142081
354	Monetary authorities and depository credit intermediation	1.626696	1.812313	1.630932
355	Nondepository credit intermediation and related activities	1.486099	1.663252	1.568643
356	Securities, commodity contracts, investments, and related activities	1.770268	1.796078	1.893779
357	Insurance carriers	2.018694	2.115257	1.972633
358	Insurance agencies, brokerages, and related activities	1.756286	1.738406	1.514992
359	Funds, trusts, and other financial vehicles	2.617974	3.395696	2.715407
360	Real estate	1.255509	1.258446	1.207561
361	Imputed rental value for owner-occupied dwellings	0	0	0
362	Automotive equipment rental and leasing	1.649753	1.685149	1.790464
363	General and consumer goods rental except video tapes and discs	1.285344	1.426609	1.162406
364	Video tape and disc rental	1.217927	1.250374	1.147135
365	Commercial and industrial machinery and equipment rental and leasing	2.528889	2.481503	2.085037
366	Lessors of nonfinancial intangible assets	2.007936	2.250463	57.580971
367	Legal services	1.593893	1.646828	1.416237
368	Accounting, tax preparation, bookkeeping, and payroll services	1.405945	1.452576	1.380702
369	Architectural, engineering, and related services	1.597303	1.70441	1.467323
370	Specialized design services	1.492572	1.5933	1.46629
371	Custom computer programming services	1.469018	1.685145	1.429706
372	Computer systems design services	1.436592	1.497721	1.275236
373	Other computer related services, including facilities management	2.211998	2.131026	1.490485
374	Management, scientific, and technical consulting services	1.631709	1.753073	1.811378
375	Environmental and other technical consulting services	1.987509	1.870874	1.510044
376	Scientific research and development services	1.540936	1.83455	1.508592
377	Advertising and related services	1.485798	1.432395	1.492395
378	Photographic services	1.409507	1.434562	1.381169
379	Veterinary services	1.352654	1.359542	1.276956

380	All other miscellaneous professional, scientific, and technical services	3.31992	3.053533	1.941298
381	Management of companies and enterprises	1.63864	1.849716	1.576489
382	Employment services	1.138667	1.21205	1.197638
383	Travel arrangement and reservation services	1.515042	1.455535	1.41487
384	Office administrative services	1.435766	1.579228	1.35412
385	Facilities support services	1.407745	1.30237	1.289677
386	Business support services	1.266166	1.337308	1.269513
387	Investigation and security services	1.240797	1.25129	1.234752
388	Services to buildings and dwellings	1.179476	1.196905	1.175056
389	Other support services	1.37346	1.320027	1.444698
390	Waste management and remediation services	1.703262	1.82679	1.611987
391	Elementary and secondary schools	1.145401	1.214989	1.127283
392	Junior colleges, colleges, universities, and professional schools	1.252905	1.301769	1.206219
393	Other educational services	1.246804	1.358668	1.198124
394	Offices of physicians, dentists, and other health practitioners	1.560723	1.632622	1.405818
395	Home health care services	1.270724	1.303884	1.205634
396	Medical and diagnostic labs and outpatient and other ambulatory care services	1.450221	1.567158	1.510716
397	Hospitals	1.560436	1.583036	1.474857
398	Nursing and residential care facilities	1.21246	1.221395	1.194056
399	Child day care services	1.145559	1.203187	1.17263
400	Individual and family services	1.162756	1.227457	1.153779
401	Community food, housing, and other relief services, including rehabilitation services	1.183628	1.205552	1.182112
402	Performing arts companies	1.133367	1.168397	1.163322
403	Spectator sports	1.27551	1.251216	1.15801
404	Promoters of performing arts and sports and agents for public figures	1.267239	1.248819	1.419957
405	Independent artists, writers, and performers	1.304648	1.411529	1.150269
406	Museums, historical sites, zoos, and parks	1.566936	1.423449	4.08397
407	Fitness and recreational sports centers	1.218504	1.17413	1.22293
408	Bowling centers	1.238205	1.223124	1.15068
409	Amusement parks, arcades, and gambling industries	1.564258	1.564466	1.495887
410	Other amusement and recreation industries	1.565244	1.589438	1.475959
411	Hotels and motels, including casino hotels	1.344221	1.381876	1.341029
412	Other accommodations	1.498916	1.440146	1.34818
413	Food services and drinking places	1.219154	1.224432	1.193875
414	Automotive repair and maintenance, except car washes	1.325764	1.449162	1.307354

415	Car washes	1.128896	1.174266	1.166773
416	Electronic and precision equipment repair and maintenance	1.392776	1.538608	1.373348
417	Commercial and industrial machinery and equipment repair and maintenance	1.333233	1.586012	1.292778
418	Personal and household goods repair and maintenance	1.364817	1.476484	1.366889
419	Personal care services	1.253465	1.316442	1.308899
420	Death care services	1.281277	1.346013	1.229828
421	Dry-cleaning and laundry services	1.15842	1.211976	1.153646
422	Other personal services	1.552824	1.575148	1.462812
423	Religious organizations	1.598518	1.783452	1.618673
424	Grantmaking, giving, and social advocacy organizations	1.290094	1.387689	1.296443
425	Civic, social, professional, and similar organizations	1.303639	1.331142	1.304115
426	Private households	1.02824	1.028668	1.026818
427	Postal service	1.53293	1.606133	1.46313
428	Federal electric utilities	0	0	0
429	Other Federal Government enterprises	1.443519	1.680917	1.243312
430	State and local government passenger transit	1.253018	1.304955	1.188639
431	State and local government electric utilities	2.038576	1.771417	1.684977
432	Other state and local government enterprises	2.159741	2.200324	1.902261
433	*Not an industry (Used and secondhand goods)	0	0	0
434	*Not an industry (Scrap)	0	0	0
435	*Not an industry (Rest of the world adjustment)	0	0	0
436	*Not an industry (Noncomparable imports)	0	0	0
437	Employment and payroll for SL Government Non-Education	1.25524	1.260121	1.215122
438	Employment and payroll for SL Government Education	1.295445	1.315816	1.247833
439	Employment and payroll for Federal Non-Military	1.403083	1.6143	1.37902
440	Employment and payroll for Federal Military	1.218756	1.538152	1.353305

REFERENCES

Butler, R.W. 1980. "The Concept of a Tourist Area Cycle of Evolution: Implications for Management of Resources." *Canadian Geographer* 24(1):5-12.

Chang, W.H. 2001. "Variations in Economic Multipliers for Tourism, Parks, and Recreation." PhD dissertation, Michigan State University.

Crompton, J.L. 2006. "Economic Impact Studies: Instruments for Political Shenanigans?" *Journal of Travel Research* 45(1):67-82.

Dillman, D.A. 2000. *Mail and Internet Surveys: The Tailored Design Method*. New York: Wiley.

Frechtling, D.C. and E. Horváth. 1999. "Estimating the Multiplier Effects of Tourism Expenditures on a Local Economy through a Regional Input-Output Model." *Journal of Travel Research* 37(4):324-332.

Fredman, P. 2008. "Determinants of Visitor Expenditures in Mountain Tourism." *Tourism Economics* 14(2):297-311.

Gelan, A. 2003. "Local Economic Impacts: The British Open." *Annals of Tourism Research* 30(2):406-425.

Hughes, D.W., C. Brown, S. Miller and T. McConnell. 2008. "Estimating the Economic Impact of Farmers' Markets Using an Opportunity Cost Framework." *Journal of Agricultural and Applied Economics* 40(1):253-265.

Hughes, D.W. 2003. "Policy Uses of Economic Multiplier and Impact Analysis." *Choices*, 2nd Quarter, pp. 25-30.

Jodice, L., W.C. Norman, C. Carpio, G. Lacher and C. Oh. 2010. "Assessing Tourist Demand for Traditional Coastal Dependent Businesses on the South Carolina Coast." Paper presented at the 22nd International Conference of The Coastal Society, Wilmington NC, 13-16 June.

Kotler, P. 1988. *Marketing Management: Analysis, Planning, Implementation, and Control*. New York: Prentics-Hall.

---. 1980. *Principles of Marketing*. Englewood Cliffs NJ: Prentice-Hall.

Krumme, Gunter. 2000. “Analysis of Interdependence Structures.” Retrieved from http://faculty.washington.edu/krumme/207/inputoutput.html#io

Krumme, Gunter. 2005. “Economic Base Concepts and Analysis.” Retrieved from http://faculty.washington.edu/krumme/350/econbase.html

Lee, C. and T. Taylor. 2005. “Critical Reflections on the Economic Impact Assessment of a Mega-Event: The Case of the 2002 FIFA World Cup.” *Tourism Management* 26(4):595-603.

Manthiou, A., L. Tang, A. Morrison and J. Shin. 2011. “Segmenting International Travelers in Shanghai by Activity Preference.” Paper presented at 16th Annual Graduate Students Research Conference, University of Massachusetts Amherst, 1 June.

Mehmetoglu, M. 2007. “Nature-Based Tourists: The Relationship Between Their Trip Expenditures and Activities.” *Journal of Sustainable Tourism* 15(2):200-215.

Mendenhall, W. and T. Sincich. 2003. *A Second Course in Statistics: Regression Analysis*, 6th ed. Upper Saddle River NJ: Pearson Education, Inc.

Miernyk, W.H. 1965. “The Elements of Input-Output Analysis.” New York: Random House. *Table* [Table 2.1] Retrieved from http://rri.wvu.edu/WebBook/Miernykweb/new/chaptertwo.htm

Minnesota IMPLAN Group, Inc. 1997. IMPLAN professional: Social Accounting and Impact Analysis Software. Minnesota IMPLAN Group, Inc, Minneapolis.

Mok, C. and T.J. Iverson. 2000. “Expenditure-based Segmentation: Taiwanese Tourists to Guam.” *Tourism Management* 21(3):299-305.

Oh, C., A. Dixon, J. Draper. 2006. “Visitor Needs Assessment and Economic Analysis at South Carolina Beaches.” *Clemson International Institute for Tourism Research & Development*. http://www.hehd.clemson.edu/prtm/trmcenter/currresrch.htm#beach

Pizam, A. and A. Reichel. 1979. “Big Spenders and Little Spenders in US Tourism.” *Journal of Travel Research* 18(2):42-43

Saayman, M. 2002. “An Analysis of Tourism Development from a Provincial Point of View.” Paper presented at the annual Tourism Legotla, Mafikeng South Africa, 21 February.

Saayman, M. and A. Saayman. 2006. “Estimating the Economic Contribution of Visitor Spending in the Kruger National Park to the Regional Economy.” *Journal of Sustainable Tourism* 14(1):67-81.

SAS Institute Inc. 2008. SAS: Version 9.2 Software. SAS Institute Inc, Cary NC.

Schaffer, R., S. Deller and D. Marcoullier. 2004. *Community Economic Linking Theory and Practice*, 2nd ed. Ames, IA: Blackwell Publishing, Ltd.

South Carolina Department of Parks, Recreation and Tourism. 2009. “Domestic Travel in South Carolina to Visit Friends and Relatives (VFR).” http://www.scprt.com/files/Research/VFR%20Visitors%202008.pdf

---. 2010. “International Visitation to South Carolina.” http://www.scprt.com/files/Research/International%20Visitation%20to%20South%20Carolina%202009.pdf

---. 2009. “Total Domestic Travel to South Carolina.” http://www.scprt.com/files/Research/Total%20Visitors2008.pdf

Spotts, D. M., and E.M. Mahoney. 1991. “Segmenting Visitors to a Destination Region Based on the Volume of Their Expenditure. *Journal of Travel Research*. 29(4):24-31.

Stynes, D. 1999. “Economic Impacts of Tourism.” [Course Notes]. Retrieved from https://www.msu.edu/course/prr/840/econimpact/pdf/ecimpvol1.pdf

Taylor, D.T., R.R. Fletcher, T. Clabaugh. 1993. “A Comparison of Characteristics, Regional Expenditures, and Economic Impact of Visitors to Historical Sites with Other Recreational Visitors.” *Journal of Travel Research* 32(1):30-35.

Tkaczynski, A., S.R. Rundle-Thiele and N. Beaumont. 2009. “Segmentation: A Tourism Stakeholder View.” *Tourism Management* 30(2):169-175.

Tooman, L.A. 1997. “Multipliers and Life Cycles: A Comparison of Methods for Evaluating Tourism and Its Impacts.” *Journal of Economic Issues* 31(4):917-932.

United Nations (UN) Department of Economic and Social Information and Policy Analysis and World Tourism Organization (WTO). 1995. *Collection of Tourism Expenditure Statistics Technical Manual No.2*. UNWTO.

U.S. Bureau of Economic Analysis, U.S. Department of Commerce. 2011. http://www.bea.gov/itable/

U.S. Census Bureau. 2001. “LED OnTheMap.” http://lehdmap.did.census.gov/

U.S. Travel Association. 2011. *Economic Impact of Travel and Tourism.* http://www.ustravel.org/government-affairs/travel-industry-economic-impact

---. 2009. “The Economic Impact of Travel on South Carolina Counties 2008.” A Study Prepared for the South Carolina Department of Parks, Recreation & Tourism. http://www.scprt.com/files/Research/Economic%20Impact%20of%20Travel%20on%20SC%20Counties%202008.pdf

Wagner, J.E. 1997. “Estimating the Economic Impacts of Tourism.” *Annals of Tourism Research* 24(3):592-608.

Wiersma, J., D. Morris and R. Robertson. 2004. “Variations in Economic Multipliers of the Tourism Sector in New Hampshire.” Paper presented at the 2004 Northeastern Recreation Research Symposium, Bolton Landing New York, 28-30 March.

Wood, N., C. Halbrendt and C. Liang. 2000. “The Role of Tourism in a Small Economy of Montpelier, Vermont.” Paper presented at the ICSB World Conference, Australia, 7-10 June.