Visitor Needs Assessment and Economic Analysis at South Carolina Beaches

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Executive Summary

The purpose of this study was to assist the office of Ocean and Coastal Resource Management (OCRM), South Carolina Department of Health & Environment Control (SCDHEC) to better understand visitor information by conducting economic impact and valuation studies and visitors' needs assessment in terms of public beach access and associated facilities and analysis of current and projected visitor trends. The report was written to help develop management strategies and priorities for improving such public access — including feasible alternative funding sources and strategies to acquire beachfront property and the long-term funding sources needed to develop and maintain the facilities in local and regional parks.

The report includes several specific objectives. First, the report is provides an overview of South Carolina beach destination visitors' trip characteristics, satisfaction and demographics. Second, the report projects current and future user recreational needs using various time-series secondary data sets to determine demand for beach access and facilities. The report also includes potential financing options to acquire and maintain access properties. An input-output model estimates the extent direct, indirect and induced economic impact. The report identifies beach visitors' economic benefits of the development and maintenance of additional beach access points with parking spaces and other preferred facilities. Finally, the report determines the extent of the visitor (or user) needs to define demands for recreational use in beach access and facilities.

This study included a convenience sample of South Carolina beach visitors to Charleston, Hilton Head and Myrtle Beach during the months of March and April 2006. Names and addresses were collected from 495 visitors intercepted on the beach and mailed a follow-up questionnaire during April and May 2006 using a modified Dillman Total Design Survey Method (1978). A total of 493 questionnaires were mailed, 43 returned as undeliverable and 200 completed questionnaires returned for a gross response rate of 40.6%. After deleting non-deliverable addresses the effective response rate is 44.4%. Two responses were not included in the analysis because one respondent was under 18 years of age and the other a local resident. Therefore, results are based on a sample size of 198.

Demographics:

- The majority of respondents (84.4%) were relatively equally distributed between the age intervals of 18-29 (23.8%), 30-39 (18.7%), 40-49 (20.7%) and 50-59 (21.2%) with a mean age of 43.4.
- 53.9% of respondents were female and 46.1% male.
- Over half (52.6%) of respondents have a college or post graduate education and over one-fourth (27.8%) reported an annual household income over $100,000.
- Fifty percent of respondents reported their state of origin as North Carolina (27.3%) or South Carolina (22.7%) while other top origin states included Georgia (7.1%), Tennessee (6.1%), Virginia (6.1%) and Ohio (5.6%).

Trip Characteristics:

- The majority (82.7%) of respondents reported their most recent trip to a South Carolina beach was not their first.
- Charleston (41.1%) was the most recently visited beach by respondents, followed by Myrtle Beach (35.7%) and Hilton Head Island (20.0%).
- 65.7% of respondents reported visiting a South Carolina beach two or more times in the last 12 months with the average person visiting 2.61 (adjusted average) times in the last 12 months.
- Nearly 87.0% of visitors stayed overnight, including 30.4% who stayed four or more nights at the destination and an adjusted average length of stay of 3.40 nights.
- Over half (60.0%) of respondents stayed in Hotel/Motel/Resort, 23.6% stayed in a Rental Home/Villa/Condo and 12.1% with Friends or Relatives.
- On average, visitors to the South Carolina beaches traveled with 4.26 people and were financially responsible for 2.25 people in the party.
- More than half (60.5%) of respondents traveled with family, 24.6% with friends and 11.8% with family and friends together.
- More than three-fourths (79.8%) of respondents indicated their main trip purpose was recreation/pleasure, followed by family/relatives reunion (11.9%).
- The majority (95.4%) of respondents reported not traveling with a pet on their most recent trip to a South Carolina beach.
- Visitors to South Carolina beaches were most satisfied with the following aspects of the visit (average satisfaction based on 1=Not at all Satisfied to 5=Extremely Satisfied): natural beauty of the area (4.13), accessibility of the beach (4.11), number of visitors on the beach (3.98) and accommodations (3.95). Visitors to South Carolina beaches were least satisfied with availability of lifeguards (3.25) and traffic (3.33). Generally, visitors to South Carolina beaches were very satisfied (4.03) with their overall experience at the destination.
- Half (50.8%) of respondents reported the location was the major factor in deciding to visit a South Carolina beach and one-fourth (24.6%) said a prior visit was the major decision factor.
- If respondents were not satisfied with the most recent trip to a South Carolina beach, 78.4% indicated they would visit the same or different South Carolina beach and 17.4% said they would go to another beach destination not in South Carolina.

Visitor Opinions about Beach and Environmental Issues:

- Based on average ratings of a scale 1=Not at all Important to 5=Extremely Important respondents reported relaxation (4.44) and to be close to the water (4.38) as most important reasons for visiting the beach. The least important reasons for visiting the beach were to experience adventure and excitement (3.56) and escaping the demands of other people (3.86).
- Based on average ratings of a scale 1=Not at all Important to 5=Extremely Important respondents reported cleanliness of restrooms (4.38) and cleanliness of grounds (4.36) as most important features of the beach access location on their

most recent trip to a South Carolina Beach. The least important feature of the beach access location was the number of recreational activities available (2.77).

- Based on average ratings of a scale 1=Strongly Disagree to 5=Strongly Agree the top items respondents agree with based on their most recent trip to a South Carolina beach were "this beach is well maintained" (4.14) and "the beach is safe" (4.13). Respondents agreed least with "the beach is too crowded" (2.29) and "I would visit the beach more if it had more activities" (2.54).
- Based on average ratings of a scale 1=Strongly Disagree to 5=Strongly Agree respondents most agreed with "this beach means a lot to me" (3.04) and "I go to this beach because it is close by" (2.88).
- Based on average ratings of a scale 1=Rarely to 5=Usually of views on environmental issues respondents indicated they were more likely to recycle glass bottles, jars, or aluminum cans (3.51) and recycle newspaper (3.43). Respondents were least likely to join a community clean effort (1.85).

Forecasting Future Tourism Demand:

- In tourism, forecasting future demand for products and services provides destinations with essential information about necessary changes needed in transportation and accommodation infrastructure, skilled labor, recreation and entertainment facilities and retail establishments.
- Short- and mid-term forecast results suggest that accommodation taxes, state park revenue (of coastal county parks), and tourism related employment in coastal counties will steadily increase over the next several years.
- Results concerning long-term forecast of future visitation to South Carolina beaches reveal the number of people that come to South Carolina to visit a beach will continue to increase over the next 25 years.
- Results suggest that a steady increase in beach visitation will require coastal agencies to implement management programs and services in order to maintain the current quality and standard of South Carolina beaches.

Financing Options:

- One of the Coastal Zone Management Act's primary purposes was "to provide public access to the coast for recreational purposes" (Pogue & Lee, 1999, p. 220). While the Coastal Zone Management Act (CZMA) declares public access a national policy, it is the individual coastal states' responsibility to implement and manage the policy. The South Carolina Constitution provides "open and forever free" (p. 12) access to waterways for the public, but not required of developers and landowners (South Carolina Public Beach & Coastal Access Guide, 1988). Pogue and Lee (1999) recognize coastal counties as "among the most densely populated and rapidly growing counties in the nation" (p. 220). Inherently, with dense population and growth comes development that either intentionally or unintentionally inhibits public access to the coast.
- A literature review was conducted to provide office of Ocean and Coastal Resource Management (OCRM), South Carolina Department of Health & Environment Control (SCDHEC) with options to provide increased beach access and amenities. Prior to committing to providing increased beach access and

amenities a cost-benefit analysis will help SCDHEC identify the most effective means of acquiring and maintaining land and property to provide beach access. If land and property are to be acquired a few possible approaches SCDHEC might consider. Fee-simple approaches to acquiring land and property include outright purchase or receiving an outright donation. Less-than-fee-simple approaches such as easements also provide opportunities for SCDHEC to acquire land. Finally, another approach SCDHEC might consider is acquiring land and property via eminent domain.

- The literature also revealed a few methods to acquire funding needed for beach improvement projects. Methods used for other beach improvement projects such as nourishment include user/access fees, parking fees, renter's tax, accommodations tax and property taxes. When considering assessing fees for beach improvement projects Black, Donnelley and Settle's (1990) 'target effectiveness' approach is recommended. The target effectiveness approach the tax or fee paid for a good is proportionate to the benefit received. However, the target effectiveness approach is complex considering beaches are utilized by residents and nonresidents. Therefore, a combination of acquiring funding may be required.

Estimated Economic Impact Assessment:

- Based on information gathered from mail questionnaire, results from forecasting future tourism demand and in-depth review of related literature, 2006 scenarios for state and county level impacts were developed.
- Two alternative scenarios were developed projecting 2010 impacts at the state and county level.
- State level direct impact in 2006 is estimated to be $1,254,465,052.
- State level direct impact in 2010 is estimated to be $1,639,373,587.
- County level direct impact in 2006 is estimated to be $1,626,344,324.
- County level direct impact in 2010 is estimated to be $2,069,168,354.
- State level total output impact in 2006 is estimated to be $1,972,715,823.
- State level total output impact in 2010 is estimated to be $2,578,005,926.
- County level total output impact in 2006 is estimated to be $2,402,326,511**.**
- County level total output impact in 2010 is estimated to be $3,056,436,342.
- State level employment impact in 2006 is estimated to be 32,575 new jobs.
- State level employment impact in 2010 is estimated to be 42,570 new jobs.
- County level employment impact in 2006 is estimated to be 39,294 new jobs.
- County level employment impact in 2010 is estimated to be 49,993 new jobs.

Economic Valuation of Beach Access Results:

- Intensified concerns about beach access and amenity requirements for an increasing number of visitors require management consideration of how to provide adequate and sufficient access and amenities for each beach destination.
- A contingent valuation method is utilized because it is a useful method to provide monetary values for recreational services like beach access points not traded in the typical marketplace.

- Each beach visitor is willing to pay approximately $9.10.
- Applied to 2006 forecast of visitors to South Carolina beaches, approximately $63 million in consumer surplus.
- Applied to 2010 forecast of visitors to South Carolina beaches, approximately $71 million in consumer surplus.
- Results suggest consumer surplus to continually increase over next 25 years.

Visitors' Preferences Assessment:

- The aim of this section of the report is to provide a better understanding of beach visitors' preferences for various management attributes upon determining their beach destinations, inclusive of their willingness to make tradeoffs among those attributes and their willingness to pay for various combinations of choice attributes.
- The results generally corresponded with our prior expectations as visitors show a higher preference for more beach access points and less crowding and noise level on the beach.
- On average, beach visitors preferred "moderately developed" destinations and "medium restrictions" on rules and regulations.
- Beach visitors preferred additional provision and maintenance of beach access points, although, they were less favorable to higher parking fees.
- Beach visitors are willing to pay between $8-$11 for additional access points.
- Beach visitors require compensation of $6-$12 to accept high levels of crowding and noise.
- Beach visitors are willing to pay $2 to acquire options of "medium restrictions" on rules and regulations.
- Beach visitors were willing to sacrifice certain unappealing attributes to some extent to acquire the options of favorable management attributes for their utility maximization.

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Introduction

As the population of South Carolina, and particularly the coastal zone counties, continues to increase at one of the fastest rates in the country, there are intensifying pressures to retain and provide more public access to coastal resources. The availability of public and commercial outdoor recreational opportunities, lands, activities, and facilities must be addressed now to adequately accommodate the needs of state residents in the future. Additionally, the burden on public agencies to provide an adequate level of recreational opportunities for the area is heightened by the expected increase in tourists' demands.

Providing and improving public access to coastal resources has been a fundamental goal of the Coastal Zone Management Act and a priority for individual state programs (Pogue & Lee, 1999). Despite this need, maintenance and provision of public access is not an easy task due to the limited capacity of coastal lands and conflicting interests with private property owners (NOAA OCRM report, 1999). Therefore, diverse concerns for public beach access should be taken into account upon the development of comprehensive management plans. Pogue and Lee (1999) indicate that recreational needs assessment is essential to determining how to meet the growing demand for public beach access. However, in South Carolina there have been no follow-up studies since an inventory of facilities and beach access on a state level in 1992 (Personal communication, E. von Kolnitz, 2005).

Maintenance and additional provision of public access to coastal resources are imperative given the steady increase of the population and visitors in South Carolina coastal regions. For better management, it is necessary to fill the information void on visitor trends and economic benefits of beach use. Resource managers must be provided holistic information about visitors' choices and preferences for beach trip products, current and projected visitation rates and economic benefits being generated by the coastal areas. Because in-state and out-of-state visitation to coastal areas have a substantial effect on the economy of gateway communities, the projected trends of future use becomes useful in estimating potential impact. Accurate forecasts of the number of visitors to be served, the time of year of their visits, and their service needs are essential for planning future infrastructure and superstructure, accommodations, transportation,

attractions, promotion, and other important services (Oh & Morzuch, 2005; Uysal & Crompton, 1985). Accurate and timely forecasts of visitor demand can assist resource management agencies with policy decisions and help the private sector with decisions relating to sizing, location selection, and operations.

Economic information mainly consists of two different parts: economic impact and economic valuation. Because visitors who spend money generate additional jobs and income in the host community, they are considered important economic engines. This is called economic impact, defined as 'the economic activity generated by recreational use of resources' (Loomis & Walsh, 1997, p. 241). In addition, estimating the economic value of benefits is important to making reasonable comparisons between costs and benefits in the policy evaluation process. Economic net value, often referred to as willingness-to-pay or consumer surplus, is defined as the value of the total experience minus total trip expenditures, indicating recreationists' benefits from visiting parks and protected areas. Accordingly, accurate information on economic contributions is useful to diverse entities of private businesses, public agencies, and host communities in the region for better business and policy decision-making.

In order to assist the management agency in implementing the tasks effectively for increase in public beach access and protection requirements for public beaches, the agency should take into account the anticipated demand for future use of these facilities and areas as well as the various recreation concerns and needs for the management (Coastal Zone Management Act, 1972). Accordingly, a stated preference choice approach is utilized to identify the extent of visitors' concern about current beach management programs and support for prospective management actions. A stated preference choice approach is based on the assumption that visitors make trip decisions on multi-attributes of the services of interest. Considered arrays of management attributes can generate a number of different trip choices that visitors can select (Adamowicz, Boxall, Louviere, Swait & Williams, 2000). Because this stated preference choice method enables researchers to identify the relative importance of decision attributes and levels included, it is seen as a major improvement for understanding preferences (Boxall et al., 1996; Louviere et al., 2000; Oh & Ditton, 2006). Consequently, the approach is useful for

understanding how visitors make trade-offs among various management attributes and, ultimately, providing management implications in evaluating the effectiveness of various management proposals.

Study Purpose

The purpose of this study was to assist the office of Ocean and Coastal Resource Management (OCRM), South Carolina Department of Health & Environment Control (SCDHEC) to better understand visitor information by conducting economic impact and valuation studies and visitors' needs assessment in terms of public beach access and associated facilities and analysis of current and projected visitor trends. The report was written to help develop management strategies and priorities for improving such public access — including feasible alternative funding sources and strategies to acquire beachfront property and the long-term funding sources needed to develop and maintain the facilities in local and regional parks.

The specific objectives of the report were to:

1) Provide an overview of South Carolina beach destination visitors' trip characteristics, satisfaction and demographic information;

2) Project current and future user recreational needs using various time-series secondary data sets to determine demand for beach access and facilities;

3) Provide the feasibility of financing options available to the state to acquire and maintain access properties;

4) Estimate the extent of direct, indirect and induced economic impact of beach use using an input-output model;

5) Identify the beach visitors' economic benefits of the development and maintenance of additional beach access points with parking spaces and other preferred facilities;

6) Determine the extent of the visitor (or user) needs to define demands for recreational use in beach access and facilities.

The report will proceed with the following sections: 1) methods, 2) descriptive statistics, 3) forecasts of future tourism demand, 4) financing options, 5) economic impact analysis, 6) economic valuation of beach access, 7) visitors' preferences assessment, 8) discussion and 9) limitations. Each section will include an introduction, methods for analysis, results of analysis and discussion except for sections one and two.

Methods

Sampling Frame

The sampling frame for this study included South Carolina beach visitors. Because it was impossible to identify the population of South Carolina beach visitors, a convenience sampling strategy was used by intercepting beach visitors on site. During a two month period, (March – April 2006), multiple trips to popular South Carolina beach destinations, consisting of one trip each to Myrtle Beach and Hilton Head and two trips to Charleston to collect names and addresses for a follow up mail survey. The intercept procedures intentionally excluded local residents. To increase participation in the mail survey beach visitors were informed the project was for academic research and their names and addresses would remain confidential and be destroyed upon completion of the project. A flyer including appropriate university contact information was offered to add further credibility to the project and ensure confidentiality. The four trips resulted in 495 visitors' names and addresses. In addition, 23 visitors' names and addresses from Canada were collected but not included in the sampling frame. The names and addresses were cleaned to ensure complete addresses were obtained, resulting in two incomplete addresses. The final sampling frame included 493 South Carolina beach visitors.

In the months of April and May 2006, a mail questionnaire was sent to the beach visitors asking about diverse aspects of their beach trips. All mail questionnaires were sent by first-class mail using a modified Dillman Total Design Survey Method (1978). The initial mailing (April 12, 2006) included a cover letter, survey and postage paid business reply envelope. A second mailing (April 19, 2006) included a postcard reminder. To increase the response rate the third (May 1, 2006) and fourth (May 24, 2006) mailing was sent only to those who had not yet responded and included another cover letter, survey and postage paid business reply envelope (A copy of the cover letters and postcard can be found in Appendix A).

Questionnaire

The 11 page mail questionnaire was developed and shared with the South Carolina Department of Health and Environment Control for feedback (Copy of

questionnaire available in Appendix B and the information flyer that accompanied the questionnaire is available in Appendix C). In addition, the research team shared the questionnaire with faculty and graduate students in Clemson University's Department of Parks, Recreation and Tourism Management (PRTM) for further refinement. Several sections of the questionnaire were pre-tested in a graduate seminar class in PRTM to ensure questions were understandable and increase reliability and validity. The final questionnaire consisted of six sections.

The first section of the questionnaire included questions concerning respondents' beach experiences and trip characteristics during their most recent visit to a South Carolina beach. Specifically, questions included which beach they most recently visited, if it was their first trip to a South Carolina beach, number of times they visited a South Carolina beach in the past 12 months, number of nights for their most recent trip and type(s) of accommodations. In addition, the first section included questions related to respondents' primary reason for visiting a South Carolina beach, how many people were in the travel party and how many the respondent was financially responsible for, type of group and if they brought a pet on their trip. Section one also included a Likert type scale question including 17 beach and destination attributes.

Travel party spending was included in the second section of the questionnaire. Spending categories included hotel/motel/other lodging, grocery and retail stores, restaurants and drinking places, recreational activities (fishing, golf, etc.), entertainment (movies, mini golf, music, etc.), automobile transportation (gas, service, rental), other transportation (airplane, shuttles, limos) and any other spending during the most recent trip to a South Carolina beach. The spending question included spending inside and outside of the destination county.

Section three of the questionnaire included a stated preference choice model consisting of six hypothetical beach comparisons. Respondents were asked to choose which beach trip they preferred or if they would not take either trip. Each beach trip included five management characteristics: main beach access points, parking fees (per vehicle/per day), crowding and noise, commercial development and rules/regulations. For each comparison the two beach trips varied in at least one way requiring respondents to consider the attributes of each beach and choose which they preferred.

The fourth section of the survey included questions related to beach and environmental issues. One question asked respondents to rate the importance of features of the beach access location of their most recent South Carolina beach trip (e.g., cleanliness of grounds, condition of facilities). Two questions asked respondents to rate their agreement with various statements based on their most recent trip to a South Carolina beach (e.g., this beach is well maintained, the beach is safe, no other beach can compare to this one, I feel this beach is a part of me). Another question asked about respondents' views on environmental issues (e.g., I tried to find out what I can do to help environment; I talked with others about environmental issues). Section four also included a question related to reasons people go to the beach. Respondents were asked to indicate the importance of 10 reasons they might go to the beach (e.g., to be outdoors, for family recreation). Respondents were also asked to indicate what they would do if they were not satisfied with their most recent trip to a South Carolina beach and provided five options ranging from returning to the same beach destination to not taking a trip to any destination. Section four also asked respondents to indicate the major factor in their decision to visit a South Carolina beach (e.g., price, location, prior visit, referral, advertising). The final question in section four asked respondents about overall satisfaction with their most recent trip to a South Carolina beach.

Section five of the questionnaire presented a scenario indicating South Carolina state and local beach management programs were considering improving the current access situations by adding additional beach access points. Furthermore, the scenario portrayed a lack of parking and facilities (i.e., restrooms and showers) at less developed beach access points. Respondents were asked their willingness-to-pay additional parking fees if the revenue was used to increase beach access from one central location with parking to two locations. If responding "No" to bid amounts, respondents were asked to indicate the most important reason which included placing a zero value on the proposed increase in beach access points, not able to afford higher trip costs, government should pay without an increase in fees and not thinking the plan would work as described.

The sixth and final section of the questionnaire included demographic questions. Specific questions include state of residence, age, gender, household income and highest level of education completed. Another question asked if the survey was completed by the

person to whom it was addressed. The final questions of section six required respondents to indicate if they were of Spanish/Hispanic origin and to indicate one or more races they consider themselves to be.

Response Rate

A total of 200 replies were received for a gross response rate of 40.6%. Of the overall number of responses, 43 questionnaires were returned as non-deliverable addresses. After deleting non-deliverable addresses, the effective response rate was 44.4%. One of the factors of the low response rate, lower than initial expectations, can be attributed to early cut-off date for further collection of questionnaire returns as well as not conducting the survey during the summer when there is greater propensity for individuals to participate in numerous outdoor recreation activities, including visiting the beach. Two respondents were deleted because one indicated they were under 18 years of age and another a local resident. Therefore, results are based on a sample size of 198.

Descriptive Statistics

Visitors to South Carolina beaches are attracted because of the beautiful scenery and the larger number of options. Visitors' opinions are vital to public and private businesses and organizations in order to provide the appropriate quantity and quality of tourism related programs and services. The survey of visitors to South Carolina beaches had many objectives including economic impact analysis, economic valuation of beach access and visitors' preferences. An additional purpose of the study was to develop a profile of visitors in terms of demographics, trip characteristics and preferences. This section presents the results of the demographics, trip characteristics and preference results.

Demographics

The majority (84.4%) of respondents were relatively equally distributed between the age intervals of 18-29 (23.8%), 30-39 (18.7%), 40-49 (20.7%) and 50-59 (21.2%) with a mean age of 43.4 (Table 1). Out of these respondents 53.9% were female and 46.1% were male (Table 2). Over half (52.6%) of visitors to South Carolina beaches have a college or post graduate education while 28.6% had some college or technical school education (Table 3), and over one-fourth (27.8%) indicated a household income above $100,000 (Table 4). Fifty percent of respondents reported their state of origin as North Carolina (27.3%) or South Carolina (22.7%) while other top origin states included Georgia (7.1%), Tennessee (6.1%), Virginia (6.1%) and Ohio (5.6%) (Table 5).

Table 1. Frequency Distribution of South Carolina Beach Visitors by Age Categories.

	Beach Visitors	
AGE	**Absolute Frequency**	**Percent**
18-29	46	23.8
30-39	36	18.7
40-49	40	20.7
50-59	41	21.2
60-69	17	8.8
70-79	9	4.7
80+	4	2.1
No response	5	--
TOTAL	198	100.0
Mean (S.D.)	43.38 (15.75)	--
Median	42.00	--

S.D. - standard deviation

Table 2. Frequency Distribution of South Carolina Beach Visitors by Gender.

	Beach Visitors	
GENDER	**Absolute Frequency**	**Percent**
Female	103	53.9
Male	88	46.1
No response	7	--
TOTAL	198	100.0

Table 3. Frequency Distribution of South Carolina Beach Visitors by Highest Level of Education Completed.

	Beach Visitors	
EDUCATION	**Absolute Frequency**	**Percent**
Some high school or less	4	2.1
High school graduate	32	16.7
Some college/technical school	55	28.6
College graduate	57	29.7
Post graduate school	44	22.9
No response	6	--
TOTAL	198	100.0

Table 4. Frequency Distribution of South Carolina Beach Visitors by Household Income.

	Beach Visitors	
HH INCOME	**Absolute Frequency**	**Percent**
<$10,000	12	6.7
$10,000 – 19,999	7	3.9
$20,000 – 29,999	8	4.4
$30,000 – 39,999	20	11.1
$40,000 – 49,999	9	5.0
$50,000 – 59,999	22	12.2
$60,000 – 69,999*	14	7.8
$70,000 – 79,999	18	10.0
$80,000 – 89,999	11	6.1
$90,000 – 99,999	9	5.0
$100,000 and Above	50	27.8
No response	18	--
TOTAL	198	100.0

* Indicates median category

Table 5. Frequency Distribution of South Carolina Beach Visitors by State of Residence.

	Beach Visitors	
STATE	**Absolute Frequency**	**Percent**
NC	54	27.3
SC	45	22.7
GA	14	7.1
TN	12	6.1
VA	12	6.1
OH	11	5.6
All other states	50	25.1
No response	0	--
TOTAL	198	100.0

The majority (96.4%) of visitors to South Carolina beaches indicated their race as Caucasian, followed by African American (2.1%) (Table 6). Additionally, respondents who completed the survey (92.2%) were the person to whom it was addressed (Table 7).

Table 6. Frequency Distribution of South Carolina Beach Visitors by Race.

	Beach Visitors	
RACE	**Absolute Frequency**	**Percent**
White	186	96.4
Black or African American	4	2.1
Mexican, Chicano or other Spanish Hispanic	3	1.6
American Indian or Alaskan native	1	0.5
Asian or Pacific Islander	1	0.5
Other race	1	0.5
No response	5	--
TOTAL	198	101.6*

* Some respondents indicated multiple races.

Table 7. Frequency Distribution of South Carolina Beach Visitors whereby the Survey was Completed by the Person to Whom it was Addressed.

	Beach Visitors	
RESPONDENT WAS PERSON TO WHOM IT WAS ADDRESSED	**Absolute Frequency**	**Percent**
Yes	177	92.2
No	15	7.8
No response	6	--
TOTAL	198	100.0

Trip Characteristics

The majority (82.7%) of respondents reported their most recent trip to a South Carolina beach was not their first visit (Table 8). Charleston (41.1%) was the most recently visited beach by respondents, followed by Myrtle Beach (35.7%) and Hilton Head Island (20.0%) (Table 9). Out of these respondents 65.7 % reported visiting a South Carolina beach two or more times in the last twelve months with the average person visiting 2.61 times (Table 10). Nearly 87% of visitors to South Carolina beaches stayed overnight, including 30.4% who stayed four or more nights at the destination. On average, respondents stayed 3.4 nights at beach destinations in South

Carolina (Table 11). Table 12 shows visitors typically stayed at a Hotel/Resort (60%), Rental home/Condo (23.6%) or Friends/Relatives (12.1%) during a visit to South Carolina beaches.

Table 8. Frequency Distribution of South Carolina Beach Visitors by First Visit.

	Beach Visitors	
FIRST VISIT	**Absolute Frequency**	**Percent**
Yes	34	17.3
No	162	82.7
No response	2	--
TOTAL	198	100.0

Table 9. Frequency Distribution of South Carolina Beach Visitors by Most Recent Destination Visited.

	Beach Visitors	
DESTINATION	**Absolute Frequency**	**Percent**
Charleston	76	41.1
Myrtle Beach	66	35.7
Hilton Head	37	20.0
Other	6	3.2
No response	13	--
TOTAL	198	100.0

Table 10. Frequency Distribution of South Carolina Beach Visitors by Number of Visits to a South Carolina Beach in Past Twelve Months.

	Beach Visitors	
# OF VISITS IN PAST 12 Months	**Absolute Frequency**	**Percent**
1	65	34.3
2	51	26.8
3	22	11.6
4	10	5.3
5	17	8.9
6	4	2.1
7	2	1.1
8	3	1.6
9	0	0.0
10	2	1.1
11	0	0.0
12	2	1.1
13 and above	12	6.3
No response	8	--
TOTAL	198	100.0
Adjusted Mean (S.D.)	2.61 (2.08)	--

S.D. – Standard Deviation
Adjusted mean and S.D. exclude 13 and above # of trips in past 12 months.

Table 11. Frequency Distribution of South Carolina Beach Visitors by Number of Nights Spent on Most Recent Trip.

	Beach Visitors	
# OF NIGHTS SPENT ON MOST RECENT TRIP	**Absolute Frequency**	**Percent**
Day Trip	25	13.1
1	21	11.0
2	51	26.7
3	36	18.8
4	16	8.4
5	9	4.7
6	10	5.2
7	10	5.2
8	2	1.0
9	0	0.0
10	0	0.0
11	0	0.0
12	1	0.5
13	0	0.0
14	3	1.6
15 and above	7	3.7
No response	7	--
TOTAL	198	100.0
Adjusted Mean (S.D.)	3.40 (2.39)	--
Median	3.00	--

S.D. – Standard Deviation
Adjusted mean and S.D. excludes day trips and 15 and above # of nights.

Table 12. Frequency Distribution of South Carolina Beach Visitors by Accommodations.

	Beach Visitors	
ACCOMMODATIONS	**Absolute Frequency**	**Percent**
Hotel/Motel/Resort	99	60
Rental Home/Villa/Condo	39	23.6
Friends or Relatives	20	12.1
I own a beach house or have time share	7	4.2
Campground/RV park	2	1.2
Other	1	0.6
No response	1	--
TOTAL	166	101.8*

* A few respondents indicated multiple accommodations.

On average, visitors to South Carolina beaches traveled with 4.26 people (Table 13) and were financially responsible for 2.25 people (Table 14) in the travel party. Table 15 displays the composition of travel parties to South Carolina beaches, which are largely composed of family and friends. The primary reason respondents visited a beach in South Carolina was for recreation or pleasure, followed by visiting family and friends (Table 16). Additionally, the majority (95.4%) of respondents reported not traveling with a pet on their most recent trip to the beach (Table 17).

Table 13. Frequency Distribution of South Carolina Beach Visitors by Number of People in Travel Party.

	Beach Visitors	
# OF PEOPLE IN TRAVEL PARTY	**Absolute Frequency**	**Percent**
1	4	2.1
2	79	40.9
3	25	13.0
4	29	15.0
5	21	10.9
6	16	8.3
7	6	3.1
8	3	1.6
9	2	1.0
10	2	1.0
11	1	0.5
12	0	0.0
13	1	0.5
18	1	0.5
32	1	0.5
40	1	0.5
50	1	0.5
No response	5	--
TOTAL	198	100.0
Mean (S.D.)	4.26 (5.20)	--
Median	3.00	--

S.D. – Standard Deviation

Table 14. Frequency Distribution of South Carolina Beach Visitors by Number of People Respondent was Financially Responsible for.

	Beach Visitors	
# OF PEOPLE FINANCIALLY RESPONSIBLE FOR	**Absolute Frequency**	**Percent**
1	54	28.0
2	85	44.0
3	27	14.0
4	13	6.7
5	6	3.1
6	5	2.6
7	2	1.0
8	0	0.0
9	1	0.5
No response	5	--
TOTAL	198	100.0
Mean (S.D.)	2.25 (1.39)	--
Median	2.00	--

S.D. – Standard Deviation

Table 15. Frequency Distribution of South Carolina Beach Visitors by Type of Group.

	Beach Visitors	
TYPE OF GROUP	**Absolute Frequency**	**Percent**
By Yourself	6	3.1
Family	118	60.5
Friends	48	24.6
Family and Friends Together	23	11.8
Club	6	3.1
Other	10	5.1
No response	3	--
TOTAL	198	108.2

* Some respondents indicated multiple types of groups.

Table 16. Frequency Distribution of South Carolina Beach Visitors Primary Reason for Visiting South Carolina.

	Beach Visitors	
PRIMARY REASON	**Absolute Frequency**	**Percent**
Recreation/pleasure	154	79.8
Family/relatives reunion	23	11.9
Seminar/convention/meeting	7	3.6
Business	3	1.6
Other	19	9.8
No response	5	--
TOTAL	198	106.7*

* Some respondents indicated multiple reasons.

Table 17. Frequency Distribution of South Carolina Beach Visitors by Bringing Pet on Most Recent Trip.

	Beach Visitors	
PET	**Absolute Frequency**	**Percent**
Yes	9	4.6
No	185	95.4
No response	4	--
TOTAL	198	100.0

Visitors to South Carolina beaches were most satisfied with the following aspects of their visit: 1) natural beauty of the area (4.13/5), 2) accessibility of the beach (4.11/5), 3) number of visitors on the beach (3.98/5) and accommodations (3.95/5). Overall visitors were least satisfied with availability of lifeguards (3.25/5) and traffic (3.33/5) (Table 18). Generally, visitors to South Carolina beaches were very satisfied (4.03/5) with their overall experience at the destination (Table 19).

Table 18. Frequency Distribution of South Carolina Beach Visitors by Satisfaction of the South Carolina Beach Destination (1=Not at all Satisfied to 5=Extremely Satisfied, and N/A=Not Applicable).

			Values given are Percentages					
	n	Mean (S.D.)	1	2	3	4	5	N/A
Accommodations	191	3.95 (0.97)	2.1	5.2	15.2	37.7	27.2	12.6
Natural beauty of the Area	191	4.13 (0.75)	0.0	2.6	14.7	49.2	33.0	0.5
Food at Destination	191	3.91 (0.92)	1.0	4.7	21.5	35.1	26.2	11.5
Traffic	191	3.33 (1.03)	5.8	12.0	37.2	32.5	12.0	0.5
Accessibility of Beach	189	4.11 (0.91)	1.6	4.8	12.2	42.9	37.6	1.1
Water Quality of Ocean	190	3.84 (0.88)	1.1	5.3	20.5	42.1	20.0	11.1
Quality of Sand on Beach	190	3.93 (0.90)	0.5	6.3	20.5	42.1	27.9	2.6
Signage Relating to Water Hazards	188	3.74 (0.81)	0.5	3.7	20.7	35.1	11.2	28.7
Availability of Lifeguards	187	3.25 (1.20)	5.9	8.0	16.0	16.6	8.6	44.9
Beach Access Locations	189	3.81 (0.98)	2.6	7.9	15.9	45.5	21.7	6.3
Beach Access Quality	189	3.87 (0.92)	2.1	4.8	20.1	43.9	23.8	5.3
Parking	190	3.55 (1.13)	4.7	12.1	21.1	32.6	18.9	10.5
Family Activities	186	3.71 (0.91)	1.6	5.4	15.6	34.9	11.3	31.2
Destination Nightlife	187	3.81 (0.93)	1.1	3.7	17.6	26.7	16.0	34.8
Water-Based Activities	188	3.68 (1.02)	2.1	6.4	13.3	27.7	12.8	37.8
Shopping	187	3.89 (0.94)	2.7	4.8	13.9	44.9	21.9	11.8
Number of Visitors on the Beach	181	3.98 (0.81)	0.6	2.8	20.4	47.0	26.0	3.3

S.D. – Standard deviation

Table 19. Frequency Distribution of South Carolina Beach Visitors by Overall Satisfaction (1= Not at all Satisfied to 5=Extremely Satisfied).

			Values given are Percentages				
	n	Mean (S.D.)	1	2	3	4	5
Satisfaction with beach	188	4.03 (0.73)	1.1	1.1	15.4	58.5	23.9

S.D. – Standard deviation

Visitor Opinions about Beach and Environmental Issues

Visitors to South Carolina beaches were questioned about their reasons for visiting, agreement and importance of several beach characteristics as well as their environmental views. When respondents were questioned about the major factor in their decision to visit a South Carolina beach, half (50.8%) reported the location was the main determinant while approximately one-fourth (24.6%) said a prior visit had influenced their decision (Table 20). Out of these respondents 78.4% reported they would visit the same or different South Carolina beach destination if they were dissatisfied with their most recent trip, while only 17.4% said they would visit a beach destination not in South Carolina (Table 21).

Table 20. Frequency Distribution of South Carolina Beach Visitors by Major Factor for Visitation.

	Beach Visitors	
Major factor in decision	**Absolute Frequency**	**Percent**
Price	13	6.8
Location	97	50.8
Prior Visit	47	24.6
Referral	11	5.8
Advertising	2	1.0
Other	33	17.3
No response	7	--
TOTAL	198	106.3

* Some respondents indicated multiple factors.

Table 21. Frequency Distribution of South Carolina Beach Visitors by Action in Response to what Respondent Would do if Dissatisfied with Most Recent Trip to a South Carolina Beach.

	Beach Visitors	
What would you do?	**Absolute Frequency**	**Percent**
I would come back to the same beach destination regardless of the most recent experience	68	40.7
I would go to another beach destination in South Carolina	63	37.7
I would go to another beach destination not in South Carolina	29	17.4
I would go to another destination that does not have a beach	4	2.4
I would not take a trip to any destination	3	1.8
No response	31	--
TOTAL	198	100.0

Table 22 displays how important different reasons are for visitors to South Carolina beaches in the decision to visit a beach. Not surprising, respondents reported relaxation (4.44/5) and to be close to the water (4.38/5) as the most important reasons for visiting the beach. In contrast, the least important reasons to visit the beach were to experience adventure and excitement (3.56/5) as well as escaping the demands of other people (3.86/5).

Table 22. Frequency Distribution of South Carolina Beach Visitors by Reasons for Visiting Beach (1=Not at all Important to 5=Extremely Important).

			Values given are Percentages				
	n	Mean (S.D.)	1	2	3	4	5
To be outdoors	193	4.28 (0.76)	1.0	0.5	10.4	45.1	43.0
For family recreation	192	3.93 (1.05)	5.2	4.7	13.0	45.8	31.3
For relaxation	194	4.44 (0.72)	0.5	1.5	5.7	37.6	54.6
To be close to the water	193	4.38 (0.74)	0.5	1.0	8.8	38.9	50.8
To get away from the demands of other people	192	3.86 (1.11)	4.2	8.3	19.3	33.3	34.9
To be with friends and family	193	4.37 (0.83)	0.5	3.6	8.3	33.7	53.9
To get away from regular routine	193	4.35 (0.81)	1.6	0.5	10.4	36.8	50.8
To experience a new and different environment	191	4.00 (1.03)	3.7	5.2	15.2	39.3	36.6
To experience natural surroundings	194	4.01 (0.98)	2.1	5.7	18.0	38.1	36.1
To experience adventure and excitement	190	3.56 (1.18)	6.3	11.6	27.4	28.9	25.8

S.D. – Standard deviation

Visitors to South Carolina beaches were asked to indicate how important different attributes of the beach access utilized in their most recent trip are to them. Table 23 lists the 10 attributes with their mean response. As expected, respondents reported cleanliness of restrooms (4.38/5) and grounds (4.36/5) were the most important, followed by safety and security, condition of facilities, and easy access. The number of recreational activities available at the access location was the least important to visitors (2.77/5).

Table 23. Frequency Distribution of South Carolina Beach Visitors by Features of the Beach Access Location (1=Not at all Important to 5=Extremely Important).

			Values given are Percentages				
	n	Mean (S.D.)	1	2	3	4	5
Cleanliness of grounds	194	4.36 (0.66)	0.0	0.5	8.2	45.9	45.4
Condition of Facilities	193	4.27 (0.68)	0.0	0.5	11.4	48.7	39.4
Cleanliness of Restrooms	190	4.38 (0.71)	0.0	0.5	11.6	36.8	51.1
Number of recreational activities	190	2.77 (1.11)	12.6	30.0	32.1	17.9	7.4
Noise Control	193	3.43 (1.09)	5.2	13.0	34.2	29.0	18.7
Pet Control	191	3.40 (1.26)	9.4	14.7	27.2	24.1	24.6
Accessibility for persons with disabilities	190	3.13 (1.34)	15.8	16.8	25.3	22.6	19.5
Safety and security	192	4.33 (0.81)	0.0	3.1	12.0	33.3	51.6
Easy access	192	4.10 (0.77)	0.0	1.0	21.9	43.2	33.9
Value for the parking fee (meters/lots)	190	3.78 (1.07)	3.7	7.9	24.7	34.2	29.5

S.D. – Standard deviation

Table 24 displays the average responses of visitors to South Carolina beaches considering their agreement or disagreement with several characteristics of the beach they visited. Respondents had the highest agreement with the statements that the "beach is well maintained" (4.14/5) and "the beach is safe" (4.13/5). Additionally, respondents considered the water quality of the beach visited on their most recent trip to be "good enough" for swimming. Interesting to note, respondents disagreed the most with the statements "the beach was too crowded" (2.29/5) and "I would visit the beach more if it had more activities" (2.54/5).

Table 24. Frequency Distribution of South Carolina Beach Visitors by Rating an Agreement of Quality (1= Strongly Disagree to 5=Strongly Agree).

			Values given are Percentages				
	n	Mean (S.D.)	1	2	3	4	5
This beach is well maintained	193	4.14 (0.65)	0.5	2.1	5.7	66.3	25.4
The beach is safe	193	4.13 (0.67)	0.5	1.0	10.4	60.6	27.5
This beach has good facilities (restrooms, parking)	191	3.52 (0.98)	3.7	10.5	30.4	41.4	14.1
Water quality is good enough for swimming	192	3.93 (0.80)	1.6	1.6	21.9	52.6	22.4
I would visit the beach more if it was better maintained	191	2.77 (1.02)	8.9	33.0	36.6	15.2	6.3
I would visit the beach more if it had more activities	190	2.54 (0.97)	13.7	35.8	37.4	9.5	3.7
I would visit the beach more if it had better facilities	192	2.75 (1.01)	10.4	30.7	36.5	18.2	4.2
I would visit the beach if I felt safer	192	2.61 (0.96)	12.0	33.3	39.6	11.5	3.6
The beach was too crowded	189	2.29 (0.92)	18.5	45.0	27.5	6.9	2.1
I visit this beach because it has nearby natural areas	186	2.67 (0.96)	13.4	25.3	43.5	16.1	1.6

S.D. – Standard deviation

In order to understand the attachment that visitors have to the South Carolina beach they visited on their most recent trip, respondents were asked to rate their agreement with several statements. On average, respondents were “neutral” or “disagreed” with most statements. Table 25 displays the average responses to the eight statements.

Table 25. Frequency Distribution of South Carolina Beach Visitors by Rating an Agreement of Meaning (1=Strongly Disagree to 5=Strongly Agree).

			Values given are Percentages				
	n	Mean (S.D.)	1	2	3	4	5
No other beach can compare to this one	192	2.67 (1.00)	12.5	29.2	41.7	12.0	4.7
I feel this beach is a part of me	190	2.74 (1.11)	15.3	24.7	37.4	15.8	6.8
I go to this beach because it is close by	190	2.88 (1.21)	13.7	30.0	20.0	27.4	8.9
This beach means a lot to me	192	3.04 (1.18)	10.9	22.9	29.2	25.5	11.5
I wouldn't substitute another beach for this one	190	2.54 (1.08)	14.7	40.5	27.4	10.5	6.8
I am more satisfied visiting this beach than any other	190	2.68 (1.13)	14.7	33.2	28.9	15.8	7.4
Visiting this beach says a lot about who I am	191	2.69 (1.13)	16.2	27.7	34.0	14.7	7.3
I am very attached to this beach	190	2.82 (1.17)	14.7	25.8	31.6	18.9	8.9

S.D. – Standard deviation

Finally, visitors to South Carolina beaches were questioned about their views on environmental issues. Table 26 shows the average response to the eleven statements pertaining to the frequency of their participation in environmental issues. The highest response of participation (3.51/5) in environmental issues is "recycling glass bottles, jars, or aluminum cans." Visitors to South Carolina beaches participate more frequently in recycling issues due to their responses on other recycling statements. However, respondents reported the lowest participation in "a community clean effort" (1.85/5), followed by "donating money to or being a member of conservation group" (2.09/5).

Table 26. Frequency Distribution of South Carolina Beach Visitors by Environmental Views (1=Rarely to 5=Usually).

			Values given are Percentages				
	n	Mean (S.D.)	1	2	3	4	5
I tried to find out what I can do to help environment	191	2.66 (1.16)	19.9	23.0	34.6	15.7	6.8
I talked to others about environmental issues	190	2.48 (1.13)	26.8	19.5	35.3	15.8	2.6
I watched T.V. programs about environmental issues	190	2.61 (1.13)	21.6	21.6	36.3	15.8	2.6
I read articles about current environmental issues	189	2.66 (1.14)	19.0	24.9	33.3	16.9	5.8
I donated money/member of conservation group	188	2.09 (1.11)	41.0	22.9	25.0	8.5	2.7
I joined a community clean effort	189	1.85 (1.07)	52.4	21.7	17.5	5.8	2.6
I switched to environmentally safe brand items	190	2.36 (1.11)	26.3	30.5	27.9	11.1	4.2
I read labels to see if items are environmentally safe	190	2.47 (1.22)	26.8	27.4	23.2	16.8	5.8
I separated out recycle items from trash	190	3.39 (1.58)	21.6	8.9	16.3	14.7	38.4
I recycled newspaper	190	3.43 (1.55)	20.0	8.9	17.4	15.8	37.9
I recycled glass bottles, jars, or aluminum cans	190	3.51 (1.56)	19.5	8.4	15.3	15.3	41.6

S.D. – Standard deviation

Forecasting Future Tourism Demand

One of the major reasons individuals travel to South Carolina is to visit one of the states many beautiful beaches. To maintain the quality of South Carolina beaches, policy-makers must make significant decisions and plans about future services, policies and resources. These decisions should ensure South Carolina's beaches possess facilities, services and programs required to meet future needs of visitors as well as anticipate future changes in these needs. An important variable required to make these decisions is an estimation of future tourism demand for South Carolina's beaches.

A tool utilized by policy-makers to aid in decisions about future tourism demand is forecasting. Forecasting is a technique in which historical information about an event or fact is gathered and organized in a way to predict the future (Frechtling, 2001). In tourism, forecasting future demand for products and services provides destinations with essential information about necessary changes needed in transportation and accommodation infrastructure, skilled labor, recreation and entertainment facilities and retail establishments (Tideswell, Mules & Faulkner, 2001). The time involved in development and construction of new infrastructure for tourism markets requires proactive thinking about future policy and planning decisions. Failure to plan for future demand may lead to traffic congestion, poor customer service, lack of amenities, missed opportunities and a reduction in visitors.

Although forecasting is important for all industries, predicting future demand in tourism is vital for the success of this industry because of the perishability of tourism products and services (Song & Witt, 1995; Witt & Witt, 1995). Anticipating the future tourism demand is important to avoid excess "inventory" and unfulfilled demand.

Forecasting future tourism demand is also important because visitors are part of the production-consumption process (Frechtling, 2001). In tourism, the production of the product or service occurs simultaneously as its consumption. Tourists to a destination interact with employees of the tourism product, such as hotel staff, flight attendants and waiters/waitresses. This requires tourism related businesses to provide an appropriate supply of well-trained, quality staff when and where they are needed.

Another important reason for forecasting future tourism demand is the time required for development of tourism supplies (Faulkner & Valerio, 1995). Significant time is required for the development and construction of tourism infrastructure, programs and services. For example, a new beach resort may take eight to ten years for all the planning and construction as well obtaining the necessary approvals. Forecasting future demand is necessary for tourism suppliers in order to prevent financial losses related to excess capacity and unfulfilled demand.

Additionally, policy-makers and planners utilized tourism demand forecasts to predict economic, social, cultural and environmental consequences of visitors to the area (Witt, Song & Louvieris, 2003). Forecasts provide local officials with essential information required to preserve the quality of resources supplied by the destination. Although tourism demand forecasts are very useful and important, there are difficulties in the calculations of these projections mainly due to the lack of data availability and unpredictable nature of tourism.

The tourism industry presents problems for forecasters that do not affect them in other industries. Forecasting methods involve the use of historical data on specific variables related to tourism demand. However, few cities or destinations collect and compile information on important tourism variables. Further, information that is collected by destinations is usually out-of-date or very costly to acquire.

An additional challenge facing tourism demand forecasters is the volatile nature of tourism. The volume of visitors to destinations has significant fluctuations depending on the seasons as well as tourists' motivations and attitudes. This volatility in tourist demand complicates the estimation of future demand due to unforeseen natural disasters and catastrophic events (Frechtling, 2001).

Although many challenges face tourism forecasters, accurate forecasts of future demand can be accomplished with appropriate forecasting methods. Accordingly, the purpose of this section is to provide short-, mid- and long-term forecasts of beach visitation demand using various tourism-related time-series variables.

Methods

Forecasting future tourism demand is accomplished by one of two methods: 1) quantitative or 2) qualitative approaches. Utilizing qualitative methods to forecast future demand requires the collection of information from experienced experts on the phenomenon in order to project the probable outcome of events (Uysal & Crompton, 1985). Many times forecasters conduct qualitative studies because data available is insufficient or unsuitable for quantitative analysis. The reliability of these results depends upon the expertise and experience of the panel experts on the subject area.

Quantitative time series approaches typically make use of either single (i.e., univariate) or multiple time-series variables (i.e., multivariate). Multivariate time series approaches (i.e., casual methods) apply complex regression analysis or econometric models in order to determine the relationship between tourism demand and the variables that affect it (Chen, Bloomfield & Fu, 2003). Determining the variables that affect the forecasting variable is the difficulty in utilizing casual methods (Witt & Witt, 1995). The quality of these determinants affects the reliability of the final forecasts using casual methods. Consequently, a univariate approach has been adopted most often due to the ease of modeling involved and limited data availability for using a multivariate approach (Enders, 1995).

Univariate time series approaches utilize statistical tools to isolate the regular patterns in historical data and extrapolate the variations of its own movement for forecasting future observations (Diebold, 1998; Ender, 1995). Accordingly, univariate approaches care little for the causes of uninteresting variations in the data, only for the effects of a certain event on series behavior.

In addition, quantitative methods using time series approaches are classified as basic, intermediate and advanced extrapolative methods. Basic time series models use current values of a specific variable and multiply the value by some anticipated participation or growth rate for that variable. Intermediate and advanced time series approaches incorporate historical values of specified factors into statistical models in order to estimate future demand. Basic (Naïve 1 and Single Moving Average) and advanced (ARIMA – Auto Regressive Integrated Moving Average) extrapolative methods are used in this analysis of future tourism demand in South Carolina.

Accuracy of the results produced from the three different extrapolative methods has been evaluated in several studies (e.g., Chen, Bloomfield & Fu, 2003; Witt, Song & Louvieris, 2003; Tideswell, Mules & Faulkner, 2001; Witt & Witt, 1995; Cummings & Busser, 1994). Witt and Witt (1992) discovered that basic time series methods performed equal to or better than other time series forecasting models utilized to estimate future demand. Additionally, Turner, Kulendran & Fernando (1997) determined that simple forecasting models tended to provide more accurate estimates than complex time series models. However, depending upon the performance measure utilized to evaluate the accuracy of the different models, Witt, Song and Louvieris (2003) concluded that advanced extrapolative models out-perform basic and econometric models. The results provided by these studies support the use of basic and advanced time series models in the forecasting of future tourism demand.

Naïve 1 and *Single Moving Average*

Naïve 1 and Single Moving Average (SMA) are basic extrapolative models utilized to estimate the number of individuals that travel to South Carolina to visit a beach. The Naïve 1 model employs a "no change" participation rate for beach visitation and multiplies the rate by the estimated number of visitors to South Carolina in a specified time period (Tideswell, Mules & Faulkner, 2001). In the Naïve 1 model, the last published estimate of the percentage of the population for each U.S. region and South Carolina to visit a beach is utilized in the analysis (no change). South Carolina was excluded from the South region estimate to avoid double counting. Witt and Witt (1995) found that the "no change" model often performs as well or better than more complex and sophisticated models. Equation 1 illustrates the Naïve 1 model utilized in the analysis:

$$F_t = \mathrm{E}_t * \mathrm{P}_{t-1}$$

where:

F_t = Forecast visitation at time t,

E_t = Estimated population of regions and South Carolina at time t,

P_{t-1} = Estimated participation rate of population that visit a beach at time $t-1$.

In order to provide an alternate scenario of beach visitation, a SMA model was also utilized to estimate the number of individuals that travel to South Carolina to visit a beach. Estimation of visitors to South Carolina to visit a beach using the SMA model were calculated by multiplying the estimated number of visitors to South Carolina in a specified time period by a single moving average participation rate. The single moving average participation rate was calculated by adding previous observations together and dividing by the number of observations. Subsequent rates are determined by using the resulting average as the next observation in the three year average. Chen, Bloomfield and Fu (2003) found the SMA procedure provided reliable projections of future visitation. Equation 2 displays the Single Moving Average model employed in the analysis:

$$F_t = E_t * \Gamma\left[\left(P_{t-1} + P_{t-2} + P_{t-3} + ... + P_{t-n}\right)/n\right]$$

where:

F_t = Forecast visitation at time t,
E_t = Estimated population at time t,
Γ = Estimated moving average participation rate of population that visit beach,
P_{t-i} = Participation rate for previous years,
n = Number of observations.

ARIMA Models

The model developed by Box and Jenkins (1976) called ARIMA (AutoRegressive Integrated Moving Average) model, well known to yield accurate forecasts for a time-series variable of interest, is employed. The general principle of Box-Jenkins ARIMA modeling involves the following steps: model identification, estimation and diagnostic checking (Ender, 1995; Johnston & DiNardo, 1997). In the identification stage, the data are initially transformed to make them stationary. More specifically, differencing is performed to remove trend, and seasonal differencing is performed to remove seasonality.

A tentative model is then determined by examining the autocorrelation function (ACF), which is a computation of the correlation of the observed series with consecutive lags of that series and partial autocorrelation function (PACF), a computation of the partial correlation of the observed series with consecutive lags of that series. Using the graphical inspection of ACF and PACF of the pre-intervention time series, a tentative model can consist of autoregressive (AR) or moving average (MA) components only, or both AR and MA components together. The parameters of AR and MA indicate weights attached to successive lags of the current and preceding observations and of random shocks, respectively.

After the specification of the tentative model with parameter estimation (i.e., calculation of the coefficients) has been derived, diagnostic checks of the model are performed to ensure that all coefficients are significant and within the bounds of stationarity for the AR coefficients or invertibility for MA coefficients, and that the residuals do not differ from white noise. White noise indicates that each value in the sequence has a mean of zero, a constant variance, and is serially uncorrelated (Enders, 1995). Finally, to test the goodness of fit of the model to the data, we used two different model-selection criteria: Akaike's Information Criterion (AIC) and Schwartz's Bayesian Criterion (SBC). The two criteria are popularly used with relatively sophisticated forecasting models in that they impose a penalty on estimating additional parameters that are subject to having a number of estimated parameters (Diebold, 1998). Ideally, the model with smaller values for AIC and SBC as well as with fewer parameters is preferred (Newbold & Bos, 1994).

Data

For ARIMA modeling, three different time-series secondary data sets with coverage of relevant variables were acquired from various state agencies such as South Carolina Department of Parks, Recreation and Tourism (SCPRT), South Carolina Employment Security Commission (SCESC) and South Carolina State Park Service (SCSPS). The variables of accommodation taxes and state park revenue were used for the short-term forecasting of the beach visitation demand. Data for accommodation taxes, provided by SCPRT were aggregated from seven coastal counties with the coastal waters

and the adjacent shore-lands for the period starting July 1986 to June 2004. Seven coastal counties include Beaufort, Berkeley, Charleston, Colleton, Georgetown, Horry, and Jasper Counties. Data for state park revenue were provided by SCSPS from January 2001 to May 2006. State park revenue from four different coastal state parks (Edisto Beach Sate Park, Hunting Island State Park, Huntington Beach State Park, and Myrtle Beach State Park) was aggregated for further analysis. These time series variables were adjusted for inflation using data from the south urban consumer price index (U.S. Bureau of Labor Statistics, 2006) and were expressed in natural logarithms. The log transformation is beneficial in that it is easier to manage a log transformed variable when the variance was proportional to change in the series (i.e., variable) level (McCleary & Hay, 1980). Finally, for the mid-term forecasting of the beach use, data for the average number of yearly employment in five coastal counties were provided by SCESC from 1980 to 2005. Two counties of Colleton and Jasper were intentionally excluded due to insufficient information in the data provided. Three tourism-related SIC code categories were utilized in the analysis which included the average number of employment in eating and drinking places, hotels and motels, and miscellaneous amusement and recreation services.

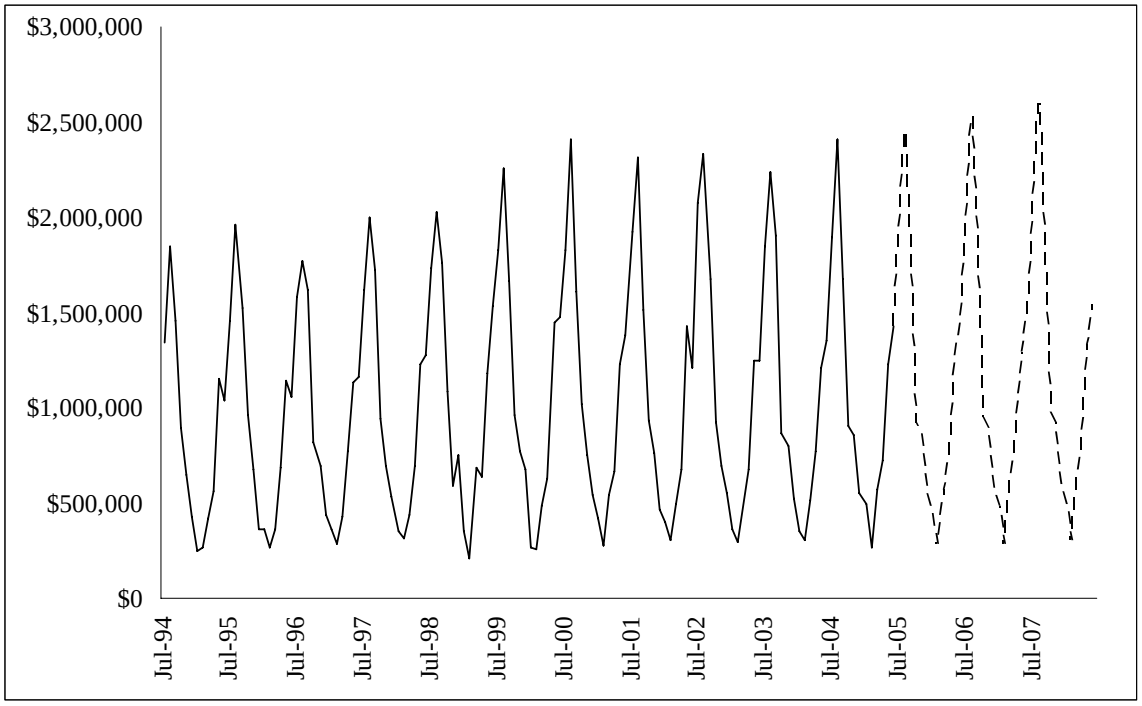
Data used in the long-term projections of future beach visitation to South Carolina were obtained from the United States Census Bureau, USDA Forest Service National Survey of Recreation and the Environment (NSRE), SCPRT and U.S. Department of Transportation Bureau of Transportation Statistics American Travel Survey. Population projections of the U.S. regions and South Carolina from 2010 to 2030 were obtained from the U.S. Census Bureau.

Data utilized in the calculation of beach visitation participation rates of citizens from the U.S. regions were obtained from Leeworthy and Wiley (2001) and Cordell and et al. (2004), which used data collected by the USDA Forest Service NSRE (2000). Beach visitation participation rates for South Carolina's citizens were obtained from the 2005 South Carolina Recreation Participation and Preference Study conducted by the Institute for Public Service and Policy Research, University of South Carolina. The Bureau of Transportation Statistics American Travel Survey provided data necessary in the calculation of visitors to South Carolina from other U.S. states.

Results

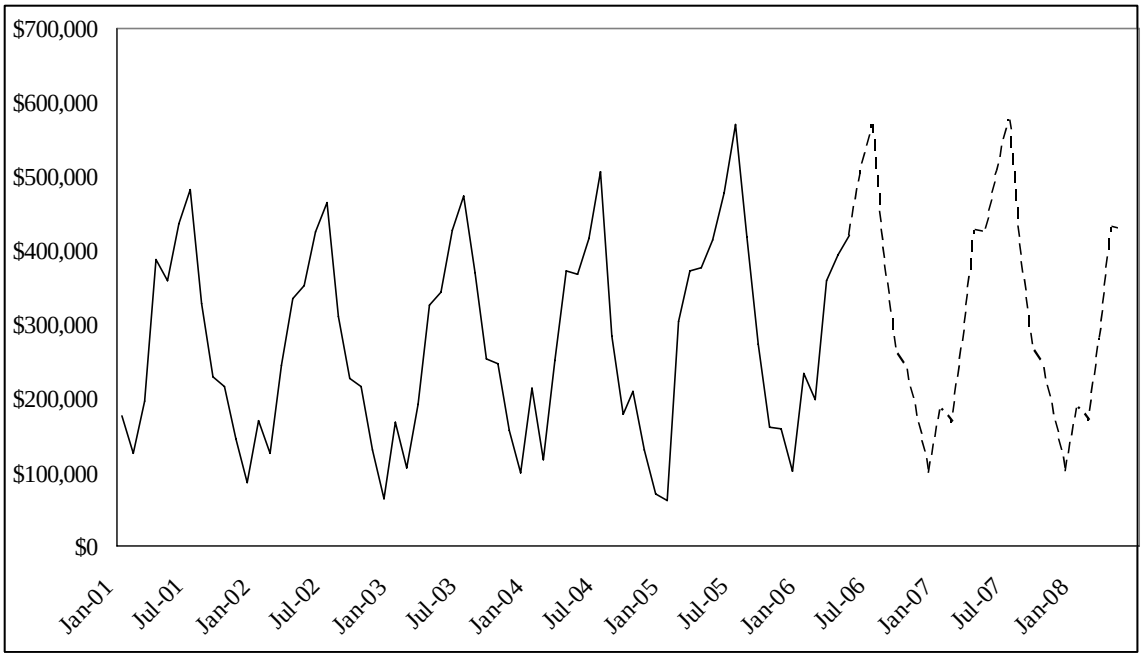
The ARIMA method described above was used to construct the best fitting short- and mid-term forecasting models using different time series variables. The data were first plotted to scrutinize any regular and/or seasonal variations or patterns of the variables (Figure 1 through 3). While the strong seasonal patterns clearly dominate the movement in the variables of accommodation taxes and state park revenue, it is not appropriate to assume each variable is stationary. According to Enders (1995), nonstationary time series (i.e., integration) means that past shocks which remain undiluted affects the realizations of the series forever and a series has theoretically infinite variance and a time dependent mean (Enders, 1995; Lee, Oh, & O'Leary, 2005). Accordingly, to check stationarity of each time series, both augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests were used. Although detailed results were not reported here, the results generally indicated that non-stationarity was present before differencing each time series variable and became stationary after the first differenced series of the variables. Significant AR and MA factors were utilized further to support that the residuals were white noise as well as seasonal differencing with the seasonal fluctuations.

Figure 1: Time Plot of Accommodation Taxes in Seven Coastal Counties.



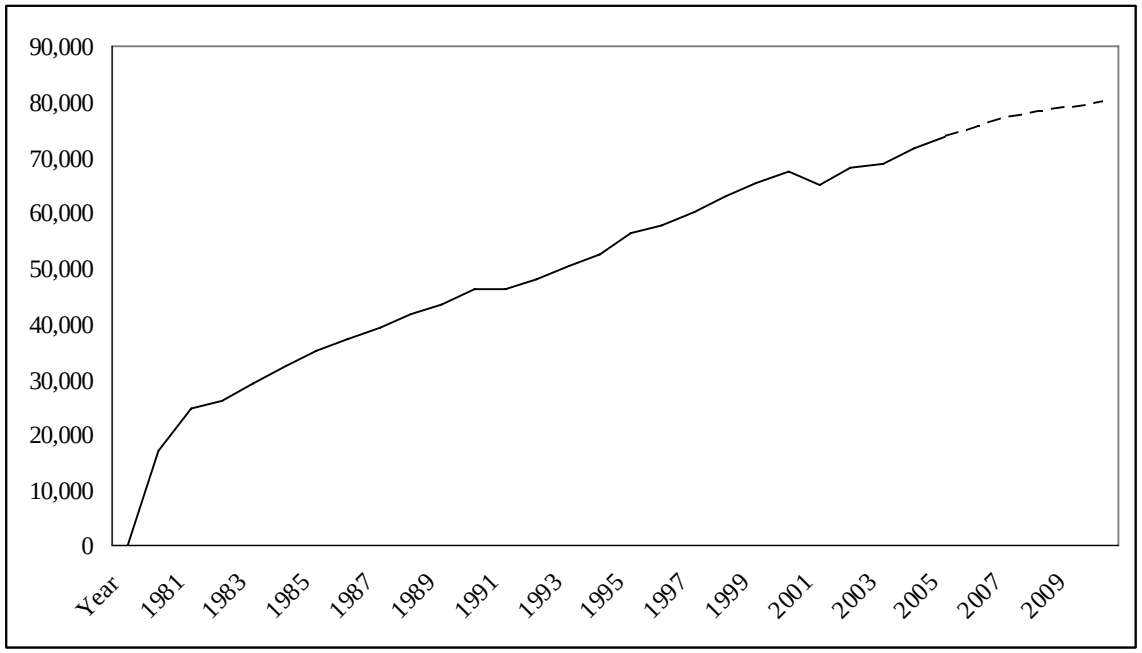
Note: The solid line indicates the actual change in accommodation taxes.
The dashed line indicates the predicted change in accommodation taxes.

Figure 2: Time Plot of Park Revenue in Four South Carolina Coastal Parks.



Note: The solid line indicates the actual change in park revenue.
The dashed line indicates the predicted change in park revenue.

Figure 3: Time Plot of Employment in Four Coastal Counties.



Note: The solid line indicates the actual change in accommodation taxes.
The dashed line indicates the predicted change in accommodation taxes.

Accommodation taxes

For accommodation taxes, observations for the period of July 1994 to December 2003, inclusive, were used to construct the best ARIMA forecast models. Using various statistical criteria, ARIMA $(1,1,1)(1,1,0)_{12}$ was specified as the best model. Subsequently, this model was used to generate 18-month forecasts for the post-sample period of January 2004 and June 2005. The mean absolute percentage error (MAPE), which is a unit-free measure of forecasting error, was used to compare the accuracy of forecasts between the predicted values and actual values based on its popularity in forecasting literature (Oh & Morzuch, 2005; Song & Witt, 2000). MAPE is defined as

$$\frac{\sum_{t=1}^{n} \frac{|e_t|}{Y_t}}{n}$$

where e_t and Y_t are the forecasting error and actual value of a time series variable, respectively. To examine the performance of the proposed ARIMA model above, the

MAPE of forecasts was computed to be approximately 1%. This indicates the overall ability of the forecasting model is remarkable and generates very accurate predicted values.

Models were re-estimated using the entire data including the period of January 2004 and June 2005. Table 27 provides parameter estimates and diagnostic statistics for accommodation taxes. All parameters were statistically significant and acceptable. Diagnostic checks with Q statistics at different lags also suggested that we do not have evidence to reject the null hypothesis that the model's residuals are white noise.
An *ex ante* forecast is generated from July 2005 to June 2008. The forecasts of accommodation taxes, shown in Figure 1, captured the overall trend of an upward increase despite its weak substantiation and the seasonal fluctuations regularly occurred in the ex post data. The predicted values, reported in Table 28, also support the same pattern identified above.

Table 27. ARIMA Model Estimation Results of Accommodation Taxes.

ARIMA (1,1,1) $(1,1,0)_{12}$		
Variable	**Coefficient Estimate (Standard Error)**	**p-value**
AR lag 1	-0.402	<0.001
	(0.095)	
AR Seasonal lag 12	-0.336	<0.001
	(0.094)	
MA lag 1	-0.886	<0.001
	(0.048)	
AIC	59.6	
SBC	67.6	
Ljung-Box Q		
lag 16		0.139
lag 24		0.077
lag 32		0.144

Table 28. Forecasts of Accommodation Taxes between July 2005 and June 2008.

Year and Month	Forecast	Year and Month	Forecast
2005 July	$1,918,074.2	***2007*** January	$484,722.6
August	2,454,278.3	February	289,712.6
September	1,813,999.4	March	592,210.2
October	926,955.1	April	784,397.7
November	870,534.3	May	1,299,555.6
December	565,241.7	June	1,504,024.6
2006 January	454,562.4	July	2,036,616.1
February	287,895.8	August	2,600,801.5
March	571,443.0	September	1,898,026.0
April	770,172.7	October	981,812.1
May	1,265,226.6	November	923,966.2
June	1,457,693.4	December	598,675.8
July	1,984,035.4	***2008*** January	492,503.3
August	2,531,113.3	February	300,155.4
September	1,835,316.3	March	607,519.5
October	955,266.3	April	809,396.0
November	899,929.3	May	1,337,158.0
December	582,480.9	June	1,545,193.9

State Park Revenue

Table 29 presents parameter estimates and diagnostic statistics for state park revenue. Based on various model search processes, ARIMA $(0,1,1)(0,1,1)_{12}$ was the best model. Using this model with observations until December 2004, 16 *ex post* forecasts of the period between January 2005 and April 2006 were generated to test the accuracy of the forecasting model proposed. The MAPE of 3.4% represents that the proposed model produces excellent forecasts for the short-term forecasting.

Using the entire data including the period of January 2005 and April 2006, 25 *ex ante* forecasts, produced from July 2005 to June 2008, are reported in Table 30. While the overall trend is also shown in Figure 2, the projected values of state park revenue represent a slightly upward increase. For example, compared to the predicted revenue of $420,504 in May 2006, the forecasts in May 2007 and 2008 were $424,838 and $429,216, respectively.

Table 29. ARIMA Model Estimation Results.

ARIMA (0,1,1) $(0,1,1)_{12}$		
	Coefficient	
Variable	**Estimate (Standard Error)**	**p-value**
MA lag 1	-0.897 (0.076)	<0.001
MA Seasonal lag 12	-0.843 (0.156)	<0.001
AIC	71.7	
SBC	75.5	
Ljung-Box Q		
lag 8		0.475
lag 12		0.692
lag 16		0.734

Table 30. Forecasts of Coastal State Park Revenues between May 2006 and June 2008.

Year and Month	**Forecast**	**Year and Month**	**Forecast**
2006 May	$420,504	June	$508,734
June	503,545	July	576,624
July	570,743	August	392,221
August	388,220	September	267,643
September	264,913	October	242,631
October	240,156	November	168,653
November	166,933	December	98,618
December	97,612	***2008*** January	186,349
2007 January	184,448	February	169,963
February	168,230	March	281,315
March	278,445	April	430,610
April	426,218	May	429,216
May	424,838	June	513,977

Tourism-related Employment

Parameter estimates and diagnostic statistics for the average number of tourism-related employment in coastal counties are presented in Table 31. ARIMA(||2||,1,0) was specified as the best model. The inserted AR coefficient was significant at 0.05 level and

within the bounds of the coefficients. Also, Ljung-Box Q statistics showed that the residuals do not differ from white noise. To examine the forecasting accuracy, observations for the period of 1980 to 2002, inclusive, were used to re-estimate our proposed ARIMA(||2||,1,0) model. Accordingly, 3 *ex post* forecasts between 2003 and 2005 were compared to the actual values, yielding the MAPE of 5.6%. This means that the average percentage error of each predicted value is approximately 6% and typically, forecast errors less than 10% are considered highly accurate (Chu, 2001; Lewis, 1982).

Consequently, using the proposed model with the entire data, we generated 5 *ex ante* forecasts from 2006 to 2010 for the mid-term forecast and the results are reported in Table 32. As the time series is evolving with time (i.e., a long-term upward trend) in Figure 3, the projected numbers of the average employment represent a 5.6% increase from 75,564 in 2006 to 79,800 in 2010 without a major structural shift in the economy.

Table 31. ARIMA Model Estimation Results.

ARIMA (||2||,1,0)		
Variable	**Coefficient Estimate (Standard Error)**	**p-value**
AR lag 2	0.654 (0.117)	<0.001
AIC	411.7	
SBC	412.8	
Ljung-Box Q		
lag 8		0.286
lag 12		0.292
lag 16		0.217

Table 32. Forecasts of Tourism Related Employment in Coastal Counties between 2006 and 2010.

Year and Month	Forecast
2006	75,564
2007	76,980
2008	78,125
2009	79,051
2010	79,800

The long-term forecast of the number of visitors to South Carolina was calculated by multiplying the estimated population visiting and living in South Carolina beach by the percent of population estimated to visit a beach. The first step involved the projection of the population for the United States, the four U.S. regions and South Carolina from 2010 to 2030. Regions of the U.S. are divided into four categories by the U.S. Census Bureau: 1) Northeast – Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania; 2) Midwest – Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas; 3) South – Delaware, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, Texas; 4) West – Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California, Alaska, Hawaii. These projections were obtained from the U.S. Census Bureau which utilized the cohort-component method in the calculation. The following cohort-component equation employs demographic information to project future population.

$$P_1 = P_0 + B - M + N$$

where:

P_0 = Population at beginning of period,
P_1 = Population at end of period,
B = Births during the period,
M = Deaths during the period,
N = Net migration (Number entering – number leaving),

Population projections from the Census Bureau are utilized in several studies (Cordell et. al., 2004; Leeworthy & Wiley, 2001; Leeworthy, 2001; Murdock et. al., 1990) predicting future recreation demand. The prevalent employment of these population projections supports the utilization of these estimates in the analysis of future demand of South Carolina beaches. Table 33 displays the projected population of the United States, U.S. regions and South Carolina.

Table 33. Estimated Population for United States, U.S. Regions and South Carolina, 2000 to 2030.

	Census April 1, 2000	Projections July 1, 2010	Projections July 1, 2015	Projections July 1, 2020	Projections July 1, 2025	Projections July 1, 2030
United States	281,421,906	308,935,581	322,365,787	335,804,546	349,439,199	363,584,435
Northeast	53,594,378	55,785,179	56,565,669	57,135,437	57,470,313	57,671,068
Midwest	64,392,776	67,391,433	68,569,609	69,455,175	70,041,457	70,497,298
South	100,236,820	113,583,614	120,440,208	127,570,819	135,160,886	143,269,337
West	63,197,932	72,175,355	76,790,301	81,643,115	86,766,543	92,146,732
South Carolina	4,012,012	4,446,704	4,642,137	4,822,577	4,989,550	5,148,569

Source: U.S. Census Bureau, Population Division, Interim State Population Projections, 2005.

Step two involved the determination of participation rates of the population for the United State, U.S. regions and South Carolina that visit a beach. Two different participation rates were employed in the forecast model of future visitors to South Carolina to specifically visit a beach. The first model (Naïve 1) utilized a "no change" participation rate. In the Naïve 1 model, the last published estimate of the percentage of the population for each U.S. region and South Carolina that visit a beach is utilized in the analysis (no change). South Carolina was excluded from the South region estimate to avoid double counting. Table 34 displays the participation rates used in the Naïve 1 model.

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Table 34. Estimated Percent of Population that will Visit a Beach – Naïve 1 Model.

	2000-2001	2005
United States		29.85%
Northeast	34.30%	
Midwest	14.30%	
South	31.40%	
West	35.90%	
South Carolina		62.50%

Note: Participation rates for the U.S. regions in 2005 were not available to researchers.

The second forecasting model employed a participation rate that was calculated using a single moving average (SMA). In order to determine the SMA participation rate for South Carolina, previous observations were obtained from the SC Recreation Participation and Preference Study (2005). Participation rates from the years of 1999, 2000 and 2005 were utilized in the calculation of the SMA rate. Previous observations of participation rates for the U.S. regions were obtained from studies conducted by Cordell et al (2004) and Leeworthy and Wiley (2001) utilizing information collected from NSRE. SMA participation rates were calculated using observations from 1999 and 2000 since no other rates could be obtained. Table 35 illustrates the participation rates used in the SMA model.

Table 35. Estimated Percent of Population that will Visit a Beach – SMA Model.

	2010	2015	2020	2025	2030
Northeast	28.77%	28.77%	30.61%	29.38%	29.59%
Midwest	13.10%	13.10%	13.50%	13.23%	13.28%
South	35.19%	35.19%	33.92%	34.76%	34.62%
West	30.90%	30.90%	32.56%	31.45%	31.64%
South Carolina	63.37%	63.46%	63.11%	63.31%	63.29%

After the population projections and participation rates were calculated, the estimated number of visitors to South Carolina from other U.S. states needed to be determined. Information obtained from the 1995 American Travel Survey (Bureau of Transportation Statistics) provided an estimated percent of each states population that visited South Carolina on a leisure trip. The 1995 American Travel Survey provided an estimated number of residents that visit other States in the U.S. This estimated number of residents was divided by the total population of the each state in 1995 (U.S. Census Bureau, 2006) to estimate the percentage of each state's population to visit South Carolina. The estimation of visitors to South Carolina was important in determining the total number of visitors to South Carolina beaches.

Estimated Number of U.S. Population to Visit a Beach

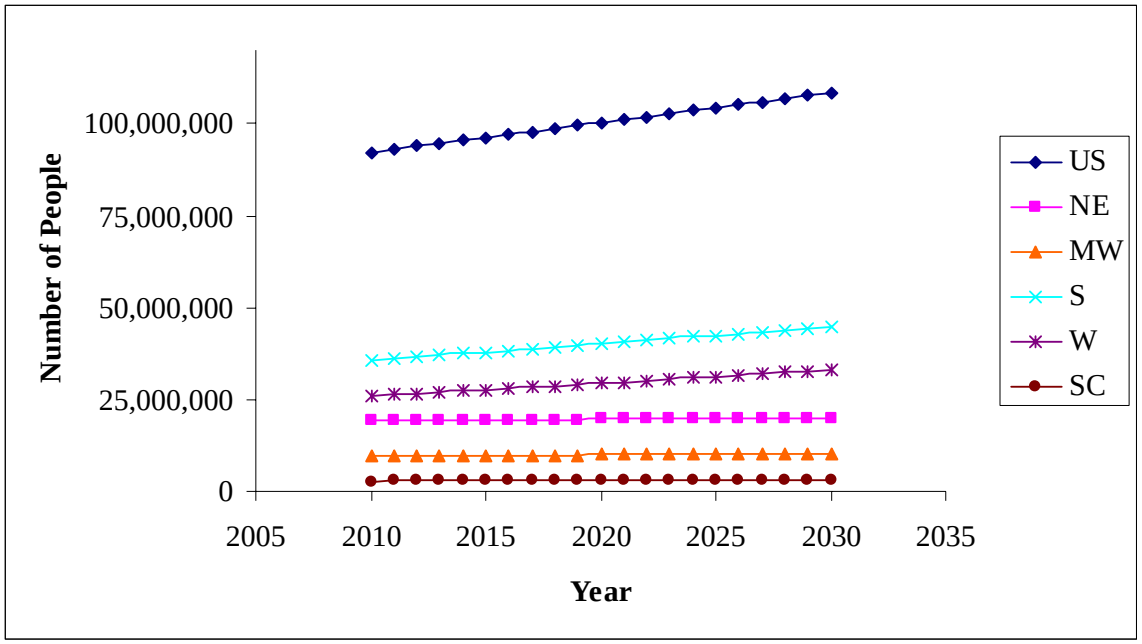
An estimated number of the United States, regions and South Carolina's population to visit a beach was calculated to provide a point of reference. In order to estimate the number of individuals to visit a beach, the projected population was multiplied by the estimated percent of the population that will participate in the outdoor activity (visit a beach) (Tideswell, Mules & Faulkner, 2001). Table 36 displays estimates of the number of U.S., region, and state residents that are expected to visit a beach while figure 4 provides a graphical representation of the results.

Table 36. Estimated U.S. Population 16 years and older to Visit a Beach.

	Projections July 1, 2010	**Projections July 1, 2015**	**Projections July 1, 2020**	**Projections July 1, 2025**	**Projections July 1, 2030**
United States	92,217,271	96,226,187	100,237,657	104,307,601	108,529,954
Northeast	19,134,316	19,402,024	19,597,455	19,712,317	19,781,176
Midwest	9,636,975	9,805,454	9,932,090	10,015,928	10,081,114
South	35,665,255	37,818,225	40,057,237	42,440,518	44,986,572
West	25,910,952	27,567,718	29,309,878	31,149,189	33,080,677
South Carolina	2,779,190	2,901,336	3,014,111	3,118,469	3,217,856

Note: The Naïve 1 or "no change" participation rate was utilized in the estimation of visitors.

Figure 4. Estimated U.S. Population 16 years and older to Visit a Beach.



Estimated Number of Individuals to Visit a Beach in South Carolina

Two separate estimations for the number of individuals to visit a beach in South Carolina are provided. The first estimate employs the Naïve 1 model participation rate for beach visitation while the second estimate utilizes the SMA participation rate. These two estimations are utilized in order to provide decision-makers with two scenarios of future beach visitation. The calculation of the estimated number of individuals to visit a beach in South Carolina proceeded in three steps.

The first step involved the multiplication of South Carolina's projected population from 2010 to 2030 by the percent of residents that are estimated to visit a beach. These projections provide the number of South Carolina residents 16 years of age or older that are expected to visit a beach in a given year. This estimation does not account for the number of visitor days, trips or visits.

In step two, the projected population for each state in the different regions was multiplied by the percent of the population estimated to visit a beach. This estimate was then multiplied by the percent of each states population estimated to visit South Carolina. The resulting value provided an estimate of the number of individuals from each U.S. region expected to visit a beach in South Carolina.

The final step involved the summation of steps one and two. The estimated number of South Carolina's residents to visit a beach was added to the estimated number of residents from each region to visit a beach in South Carolina. Combining these numbers provides an estimation of the number of individuals in the U.S. to visit a beach in South Carolina. This is not an estimation of visitor days, trips or visits, but the number of individuals 16 years and older expected to visit a beach in South Carolina. Table 37 displays the Naïve 1 estimates of the number of citizens 16 years of age or older from each U.S. region, South Carolina and total number that is expected to visit a beach. Figure 5 provides a graphical representation of the total number of visitors to South Carolina while figure 6 illustrates the total number of visitors from each U.S. region and South Carolina estimated to visit a beach.

Table 37. Estimated Number of Citizens 16 Years of Age or Older to Visit a Beach in South Carolina – Naïve 1 Model.

	Projections July 1, 2010	**Projections July 1, 2015**	**Projections July 1, 2020**	**Projections July 1, 2025**	**Projections July 1, 2030**
Northeast	630,483	640,165	647,464	652,225	655,729
Midwest	253,233	256,365	258,391	259,344	259,884
South	3,626,097	3,856,748	4,092,138	4,335,472	4,587,712
West	79,218	84,428	89,956	95,861	102,114
South Carolina	2,779,190	2,901,336	3,014,111	3,118,469	3,217,856
Total	7,368,221	7,739,042	8,102,059	8,461,370	8,823,294

Figure 5. Estimated Number of Citizens from all U.S. Regions and South Carolina 16 Years of Age or Older to Visit a Beach in South Carolina – Naïve 1 Model.

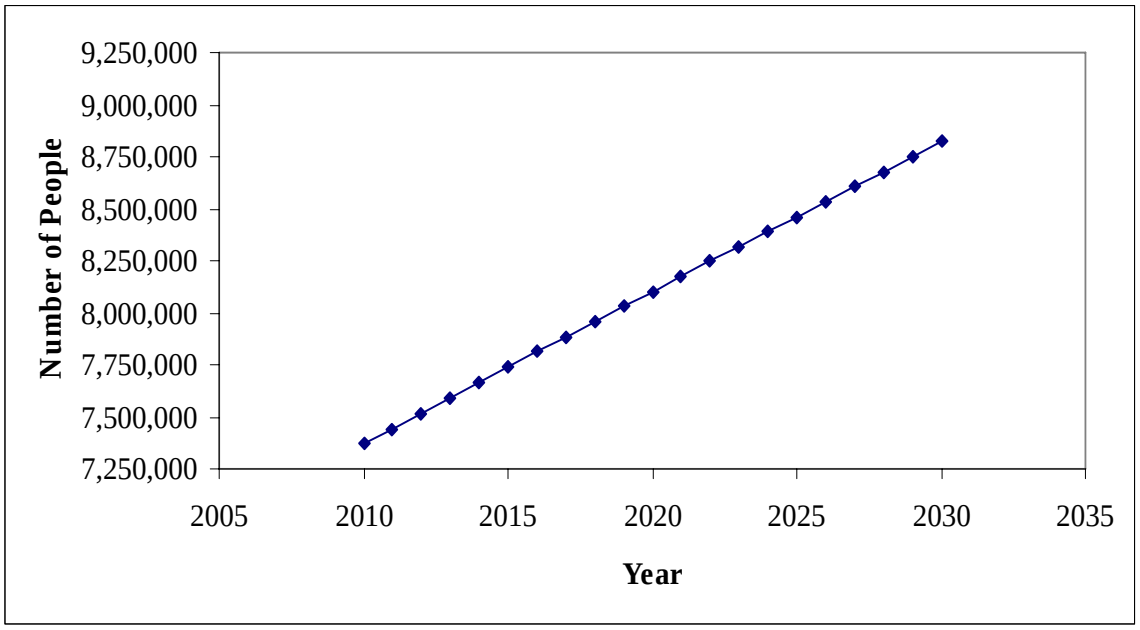
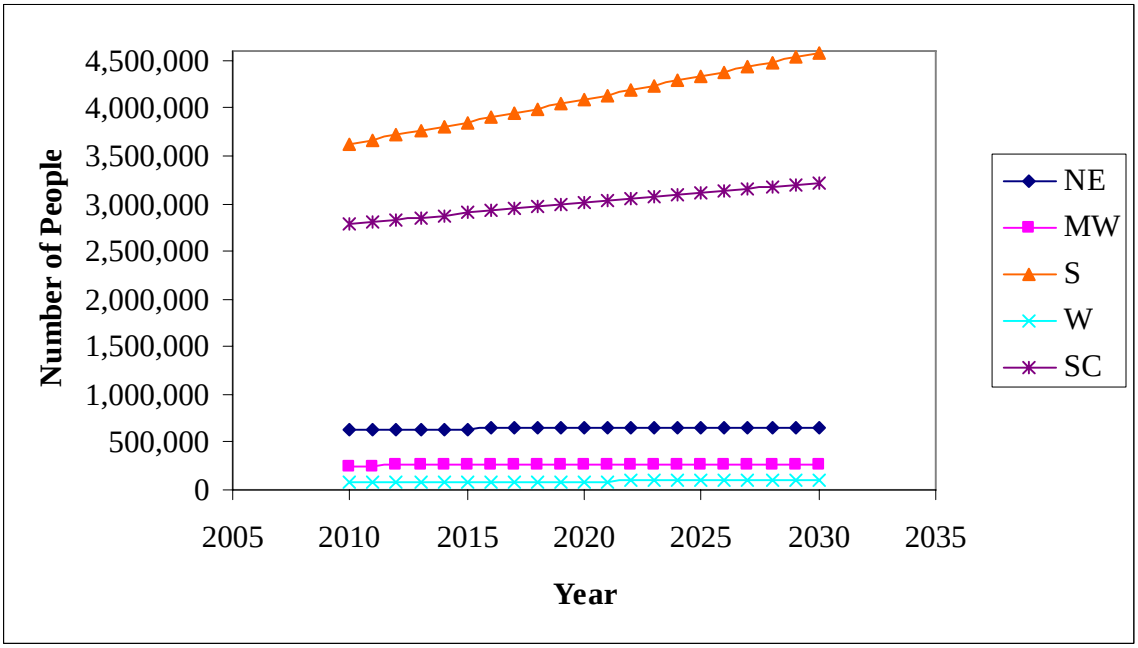


Figure 6. Estimated Number of Citizens from each U.S. Region and South Carolina 16 Years of Age or Older to Visit a Beach in South Carolina – Naïve 1 Model.



An alternate scenario of the estimated number of individuals in the U.S. to visit a beach in South Carolina was conducted using a SMA model. These projections are not an estimation of the number of visitor days, trips or visits, but the number of citizens 16 years and older expected to visit a beach in South Carolina. Table 38 displays the SMA model estimates of the number of citizens 16 years of age or older from each U.S. region, South Carolina and total number that is expected to visit a beach. Figure 7 provides a graphical representation of the total number of visitors to South Carolina while figure 8 illustrates the total number of visitors from each U.S. region and South Carolina estimated to visit a beach.

Table 38. Estimated Number of Citizens 16 Years of Age or Older to Visit a Beach in South Carolina – SMA Model.

	Projections July 1, 2010	**Projections July 1, 2015**	**Projections July 1, 2020**	**Projections July 1, 2025**	**Projections July 1, 2030**
Northeast	530,844	538,970	579,892	560,779	567,701
Midwest	231,983	234,852	243,935	239,999	241,306
South	4,063,191	4,321,646	4,420,986	4,800,009	5,058,794
West	68,174	72,658	81,595	83,981	89,987
South Carolina	2,819,210	2,947,757	3,043,046	3,158,385	3,259,044
Total	7,713,402	8,115,882	8,369,455	8,843,153	9,216,832

Figure 7. Estimated Number of Citizens from all U.S. Regions and South Carolina 16 Years of Age or Older to Visit a Beach in South Carolina – SMA Model.

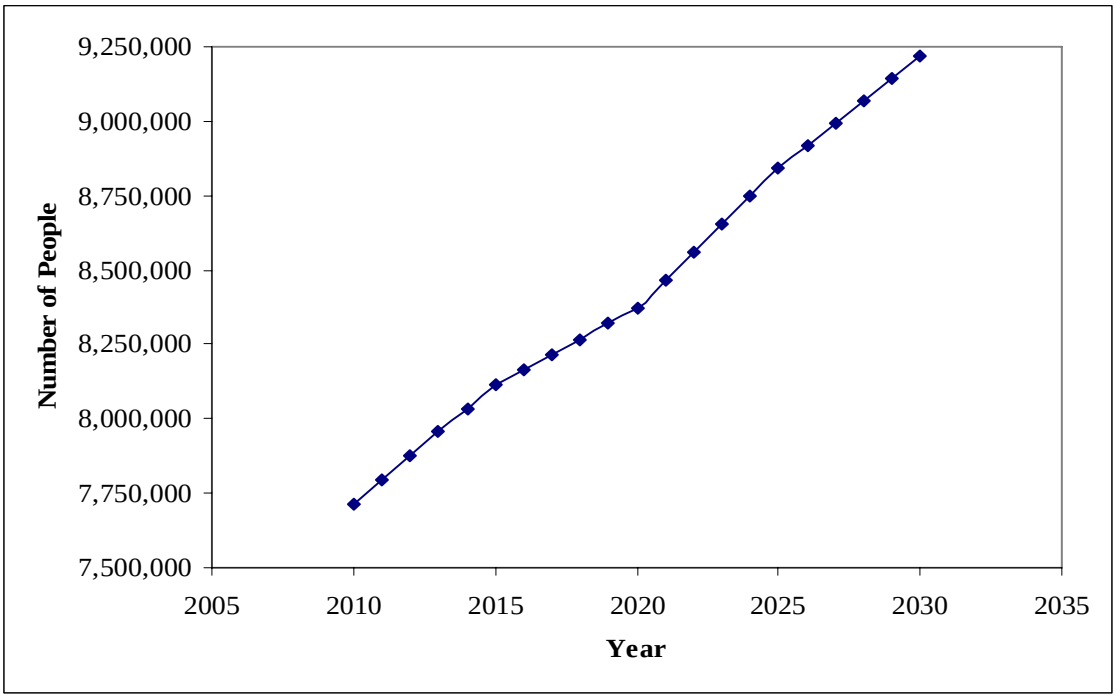
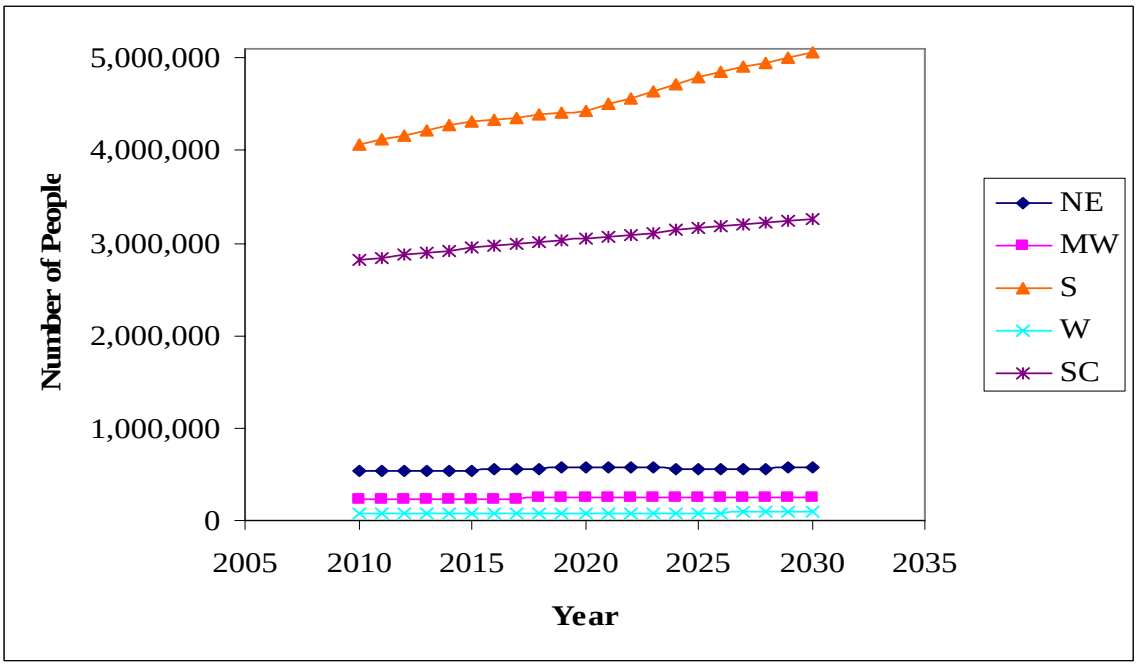


Figure 8. Estimated Number of Citizens from each U.S. Region and South Carolina 16 Years of Age or Older to Visit a Beach in South Carolina – SMA Model.



Discussion

Short- and mid-term forecast results suggest that accommodation taxes, state park revenue (of coastal county parks), and tourism related employment in coastal counties will steadily increase over the next several years. Similarly, long-term forecast results reveal the number of people that come to South Carolina to visit a beach will continue to increase over the next 25 years. The results of each forecast procedure suggest visitation to and demand of South Carolina's beaches will continue to increase in the coming years.

State and local decision-makers should utilize this information in future policy and planning decisions. A steady increase in beach visitation will require the development and construction of tourism related infrastructure to support future demand. A failure to plan for the future will lead to insufficient capacity, traffic congestion, poor customer service and a possible reduction in visitors.

Other aspects to consider are the environmental and social impacts that an increase in beach visitation will create in the local communities. Decision-makers can implement programs to reduce the impacts on the environment caused by an increase in visitation. Additionally, services can be created that reduce the tension between tourists and residents of the beach communities caused by an increase in visitation.

Results can also be utilized by public and private organizations in designing their marketing plans and strategies. Beach visitation projections are provided for South Carolina and the U.S. regions. Recognizing the origins of visitors to beaches in South Carolina allows businesses to focus their marketing efforts on the appropriate U.S. regions. These marketing efforts can enhance participation from individuals in the regions already visiting South Carolina beaches as well as attracting additional visitors to the area.

Financing Options

One of the Coastal Zone Management Act's primary purposes was "to provide public access to the coast for recreational purposes" (Pogue & Lee, 1999, p. 220). While the Coastal Zone Management Act (CZMA) declares public access a national policy, it is the individual coastal states' responsibility to implement and manage the policy. The South Carolina Constitution provides "open and forever free" (p. 12) access to waterways for the public, but not required of developers and landowners (South Carolina Public Beach & Coastal Access Guide, 1988). Pogue and Lee (1999) recognize coastal counties as "among the most densely populated and rapidly growing counties in the nation" (p. 220). Inherently, with dense population and growth comes development that either intentionally or unintentionally inhibits public access to the coast. Fortunately, the 1988 Beachfront Management Act in South Carolina "increases the state's power to prevent unwise development of beach areas" (Lennon, Neal, Bush, Pilkey, Stutz & Bullock, 1996, p. 6). In addition to the use of beaches by residents of coastal counties, tourists frequently travel to the coast and fuel an important and growing economic sector of coastal communities (Kriesel, Landry & Keeler, 2005; Pogue & Lee, 1999).

It is indisputable that there is the intensifying burden on public agencies to provide an adequate level of recreational opportunities for the area is heightened by the expected increase in residents' and tourists' demands. Nevertheless, beach access and amenity requirements for residents and nonresident visitors to the coast differ, requiring consideration of how to provide adequate and sufficient access and amenities for each. Brower (1978) suggests providing beach access for local tax paying residents is fairly simple and inexpensive while the access needs of non-residents, who do not pay local taxes, might require additional "public and private support activities, such as camping and picnic areas, bath houses, as well as restaurants, motels and other commercial activity" (p. 37). Because of the differences in resident versus non-resident beach users, Brower (1978) suggests the interest of the local government is more likely to be acquisition of right-of-ways to the beach and state government is providing resources and

amenities required by residents who visit the beach but do not live near the beach. Inherently, these resources and amenities would also serve out-of-state and international visitors.

This section of the report provides a review of literature covering topics related to acquiring and financing beach access projects. First, there is an overview of literature related to approaches to acquiring land and resources in order to provide public recreation opportunities. This section includes a brief overview of the role of cost-benefit analysis as a main principle of management decision making. Second, the literature revealed several ways that revenue might be generated to help finance the acquisition of land to provide public beach access. An explanation of the role of Black, Donnelley and Settle's (1990) 'target effectiveness' strategy to consider when assessing fees for beach improvement projects is also included. While Black et al. (1990) use the strategy for nourishment projects, similar considerations are applicable for other beach improvement projects. Finally, there is a discussion of the acquisition and financial options discovered during the literature review, including implications and limitations.

Acquisition of Land/Resources

In order to provide increased beach access and amenities, it may be necessary to acquire land and property. A few approaches to acquiring land and property include fee-simple approaches and less-than-fee-simple. Acquiring and maintaining land and property for beach improvement projects requires consideration of costs and benefits accrued. Loomis and Walsh (1997) suggest cost-benefit analysis to make better decisions regarding the optimal program size and most productive of available alternatives. Cost-benefit analysis for projects concerning publicly owned land should take into account more than solely the cost to the agency and the net benefits. Additionally, it is important to consider and recognize that the fees assessed for a recreation area usually are less than the benefits realized by citizens and visitors and the financial costs may not include other real costs imposed on society (Loomis & Walsh, 1997). Loomis and Walsh (1997) suggest maximization of net benefits is achieved when marginal social benefits and marginal social costs are equal. A cost-benefit analysis can help identify the most effective means of acquiring and maintaining land and property to provide beach access.

While various available options are addressed below, it could be one means to choose an option that lead to net benefit maximization. However, other management considerations should be taken into account besides the principle depending on the management agency's goals.

Fee-Simple Acquisition Approaches

One fee-simple approach to acquiring undeveloped land, outright purchase, provides full rights, but also carries practical issues such as "the cost and means of financing acquisitions" (Beatley, Brower & Schwab, 1994, p. 166). In addition, the fee-simple approach requires strategic development of policy and priorities, including consideration of parking and other amenities (Brower & Dreyfoos, 1979). While the outright purchase approach provides flexibility (Brower & Dreyfoos, 1979), the approach is identified as an expensive acquisition option (Brower & Dreyfoos, 1979; Beatley, Brower & Schwab, 1994; Crompton, 1999) because it requires the availability of a willing seller and additional potential buyers that may compete to purchase the land (Brower, 1978).

Another fee-simple type of land acquisition that is relatively simple is outright donation (Brower, 1978) or dedication (Brower & Dreyfoos, 1979). Donations might be provided from individuals without family to pass land and property to or wish to do something good like contribute land for public recreation services (Crompton, 1999). In addition, donations include potential tax breaks for the donor that may provide an incentive to the donor (Crompton, 1999). The local government would maintain the donated land through "comparatively low-cost activities as placing signs, marking public accessways, providing trash cans, and conducting periodic policing of the accessways and beach" (Brower & Dreyfoos, 1979, p. 72). Brower (1978) suggests at times it might not be feasible for donation of land and an alternative would be to explore a bargain sale where the land is sold to the government for less than fair market value.

Less-Than-Fee-Simple Acquisition Approach - Easement

A potentially less expensive option to acquiring rights to property might be found through purchase of easements. If full proprietary rights are not required and/or

monetarily feasible purchasing easements provides some rights, such as right to pass over the land (Beatley, Brower & Schwab, 1994) or "use someone else's land in some specifically designated manner" (Brower, 1978, p. 76). While the purchase of easements may be less expensive than fee-simple acquisition, additional considerations to warrant effectiveness include the location and proximity to parking and other necessary facilities as well as the seller's willingness to sell an access easement (Brower & Dreyfoos, 1979).

Brower (1978) describes two types of easements, prescriptive and conservation. Prescriptive easements allow an individual to use the property owner's land in a specified way while the title to the land remains with the original owner (Brower, 1978). In conservation easements the owner retains the title to the land, but some type of preservation of the land (Brower, 1978). Brower (1978) suggests conservation easements could be an important strategy for beach access because they "constitute the donation of proprietary rights to the public" (p. 85) and some uses of the land are forbidden.

Other Acquisition Approach – Eminent Domain

When a willing seller is not available, land may be acquired through the government's practice of eminent domain. Eminent domain does not require a willing seller, but enables the government to acquire land at the appraised value (Crompton, 1999). Brower and Dreyfoos (1979) suggest eminent domain is most applicable in purchasing easements, especially "to acquire an easement in an area that the public is already using, with permission of the owner" (p. 72). Eminent domain might be considered a last resort due to the potential opposition and anger that may result from government exercising such power (Crompton, 1999).

Financial/Funding Possibilities

When considering beach improvement projects several questions arise. Black, Donnelley and Settle (1990) suggest three key considerations: 1) is the project worthwhile?, 2) if yes, who should pay? and 3) how should they pay? Black et al. (1990) suggest benefit-cost analysis will answer question one while "rules of thumb" answer the second two questions.

Black et al. (1990) recommend a 'target effectiveness' strategy in seeking funds for beach nourishment that might be considered in assessing increased beach access or improvements. In such a strategy, the tax or fee paid for a good is proportionate to the benefit received. This becomes more complex when considering beaches are utilized by residents and nonresidents. Nonresidents, especially day visitors, will require additional services such as parking (Brower & Dreyfoos, 1979).

User/Access Fee

User or access fees are common revenue streams for parks and recreation venues. However, considering access to the coast is considered a Public Trust Doctrine there may be several barriers to instituting an access fee, in addition to the commonly held understanding that beach access is held in Public Trust. Black et al. (1990) suggest:

> local communities may decide against beach access fees for several reasons: (1) local business or governmental opposition, arising from concerns that access charges will drive away too many tourists; (2) relatively high collection costs that make access charges impractical; or (3) the communities are already using access charges to raise revenue for other purposes (p. 204).

Inherently, initiating a fee at a beach that currently does not assess one will require additional resources and planning. While Black et al. (1990) suggest user or access fees are highly target effective they are more feasible and practical when increasing an existing access fee to finance and perform a beach improvement project. User or access fees for public recreation areas may be viewed by some, especially locals, as a duplicate tax (Winter, Palucki & Burkhardt, 1999). When considering assessing a beach access fee Black et al (1990) recommend considering offering weekly and seasonal passes for frequent beach users to help minimize administrative and political ramifications. Several beach destinations in the state of New Jersey assess user fees ranging from daily to seasonal passes (Jersey Shore Guide of Beach Fees Info, http://www.ourtownrentals.com/index.php?a=28&b=143).

Parking Fees

Another type of user fee, parking fees through the use of public pay lots and/or metered parking, provides another potential means of collecting revenue for beach improvement projects. While parking fees are target effective for day users who drive to the beach, parking fees in general lack target effectiveness when considering beach users who reach the beach other than in vehicles or are dropped off at the beach (Black et al., 1990). In addition, a parking fee per vehicle does not evenly distribute the fee among all beach users and a parking fee may be assessed to individuals accessing other venues in proximity to the beach, but not actually accessing or using the beach (Black et al., 1990). The parking fee approach is relevant and target effective for day users of the beach that are not within walking distance, but some target effectiveness is lacking for other beach users. Kriesel, Keeler and Landry (2004) identify parking fees as a fee collected at many beach destinations and suggest identifying the usage level and fee required to raise the revenue needed for a beach improvement project as an initial step to assessing the feasibility of a project.

Renter's Tax and Accommodations Tax

Beach destination visitors will also stay overnight at the destination. Accommodations serving visitors who spend the night(s) might include hotel/motel, campground, rental house/condominium or timeshare properties. Visitors staying in hotels, rental homes/condos, campgrounds, etc that are beachfront or in walking distance to the beach may avoid parking fees because of the proximity of their accommodation to the beach. Therefore, an option to reach potential beach visitors staying in rental properties would include a renter's tax on rental properties and an accommodations tax assessed on hotel/motel properties (Black et al., 1990). Bonham, Fujii, Im and Mak (1992) suggest tourist destinations regularly assess taxes that target tourists, such as accommodation taxes, but Black et al (1990) suggest a countywide accommodation tax is weak in terms of target effectiveness resulting from not reaching the majority of beach users. However, Black et al. (1990) recognize the potential of a special district accommodation tax for beach area accommodations as more likely to target visitors using the beach.

The city of Galveston, Texas implemented a three percent hotel/motel tax used to provide tourist services (Gunter, Ditton & Olson, 1987). The revenue generated is "divided equally among tourist information services, lifeguard and emergency rescue services, and beach cleaning" (Gunter et al., 1987, p. 253).

Property Taxes

Black et al. (1990) suggests taxing property owners of beachfront property for such improvements as nourishment is highly target effective because property owners benefit the most. However, with beach improvement projects such as beach access, assessing a property tax would be much less target effective since beachfront property owners likely have their own access and, as already mentioned, require much less in terms of access and amenities than non-resident beach users (Brower, 1978).

Discussion

Public access to the coast as a public good well documented. For example, providing public access to the shore for the purpose of recreation was a primary goal of the Coastal Zone Management Act (Pogue & Lee, 1999). A continuous challenge to providing access to the beach is created by the rapid growth of population in coastal counties (Pogue & Lee, 1999) that inherently drives increased development and threatens sufficient public access to the beach for nonresidents and residents who do not live on the shore. While South Carolina's 1988 Beachfront Management Act prevents ill-advised development (Lennon et al., 1996), sustaining current and future access to the beach requires careful consideration of alternatives available to acquire land. With less dependency on state and federal funding (Kriesel, Landry & Keeler, 2005), providing beach access requires strategic 'target effective' revenue generation (Black et al., 1990).

The uncertain dependency on state and federal funding for beach improvement projects requires consideration of other alternative financial strategies to fund beach improvement projects (Kriesel, Landry & Keeler, 2005). In terms of beach access, it has been suggested the role of local government is to fulfill the needs of local tax payers and state government fulfill the needs of other state residents and out-of-state visitors (Brower, 1978). The 'target effectiveness' strategy of Black et al. (1990) provides an important

consideration for management seeking financing for beach access projects. The 'target effectiveness' strategy (Black et al., 1990) suggests the most viable option is a user/access fee, followed by a possible combination of parking, renter's tax and special district accommodations tax that target visitors to the area that are likely to use the beach for recreational purposes.

Table 39. List of Acquisition and Finance/Funding Possibilities.

Acquisition	**Finance/Funding**
Fee Simple	User/Access Fees
Outright Purchase	Parking Fees
Outright Donation	Renter's Tax and Accommodations Tax
Bargain Sale	Property Tax
Less-Than-Fee-Simple	
Easements	
Prescriptive	
Conservation	

Economic Impact Analysis

A major tool use by state and local officials in policy and planning decisions is economic impact analysis. Economic impact analysis provides important information to decision-makers about the increase in state and local income and employment due to the phenomenon in question. State and local government officials use these results to justify the spending of public funds on infrastructure, programs and services needed to support the specific industry or sector.

The conceptual framework for conducting an economic impact analysis begins when state or local residents pay taxes to the government. After the government receives these payments, they determine the appropriate programs or facilities in which to invest these public funds. State and local decision-makers anticipate the new programs or facilities to attract non-local visitors to the area. These non-local visitors inject new money into the state and local economy through expenditures on trip related activities and services. The new money injected into the economy by visitors produces an increase in income and jobs for residents. An increase in income and jobs is the return on investment of the public funds invested by governments (Crompton, Lee & Shuster, 2001).

In order to estimate the economic impacts of visitors to South Carolina beaches, expenditure patterns of visitors must be determined. The expenditures of these visitors are the direct economic impact because they occur as a direct consequence of the travel and tourism activity (or event) in the community and state. Visitors' expenditures inject "new" money into the state and local economy producing secondary effects (i.e., indirect and induced impacts). Indirect impacts emerge when this new money is spent in the state and local community, and recipients of the direct impact expenditures use part of the receipts on the purchase of trip-related products and services from local suppliers. Furthermore, induced impacts are created by the circulation of wages and salaries paid by employers of related industries to state and local residents. The aggregated economic impact, also known as total output, is the summation of direct, indirect, and induced impacts (Fleming & Toepper, 1990).

The reasons economic impact analyses are conducted vary depending on the objectives of the funding agency. Administrators of state and regional tourism organizations utilize economic impact studies to evaluate the impacts of the communities' tourism resources on income, jobs, and taxes. Additionally, these studies educated legislators, economic development officials, and the general public about the benefits generated by tourism and other activities (Vaughan, Farr, & Slee, 2000).

Economic impact analyses are an essential policy and planning tool utilized by private and public tourism organizations in determining goals and objectives for various programs (Fleming & Toepper, 1990). Managers of these organizations can evaluate the effectiveness of their programs by comparing the economic impact estimation to actual performance of the programs. The information provided by the economic impact analysis allows managers to identify over- and under-performing characteristics of their programs. Once these characteristics have been identified, decision-makers can adjust their programs in order to deliver a quality experience to consumers. In addition to being a policy and planning tool, economic impact analyses assist governments and tourism developers in determining the feasibility of different types of programs and facilities (Hudson, 2001). The results provided by the economic impact analysis allow decision-makers to determine whether the estimated impact is sufficient enough to undertake the proposed project.

Another important use of economic impact analyses is their utilization as a forecasting tool in determining future travel trends, behaviors, and impacts (Fleming & Toepper, 1990). Researchers can use the results generated by the economic impact analysis as an additional variable in their forecasting models. These forecasting models predict future travel trends, behaviors, and impacts based on past trends and economic impact information.

The most widely used method in determining the economic impacts of tourism related products is an Input-Output (I-O) analysis (Steinback, 1999). I-O analysis utilized diverse multipliers relating to total output, indirect business tax, valued added, and employment (Fletcher, 1989). Total output is used to estimate the degree of the interdependence of sectors; the larger the output multiplier, the greater the interdependence of the sector on the rest of the regional economy. Indirect business tax

measures sales, excise, and other taxes paid during normal operation of industry but does not take account for taxes paid based on net income. Value added implies the direct and secondary impacts generated from the production of output and is equivalent to the value of total output minus input purchases. This includes employee compensation, proprietary income, other property type income, and indirect business taxes. Employment indicates the number of full-time and part-time jobs generated from the additional production (Minnesota IMPLAN User's Manual, 1997).

For this study, application of input-output models is employed using a computer software package named IMPLAN. IMPLAN (Impact Analysis for Planning) was originally developed by the United States Department of Agriculture - Forest Service in conjunction with the Federal Emergency Management Agency and the United States Department of Interior - Bureau of Land Management to support the Forest Service in policy and planning issues to land and resource management (Minnesota IMPLAN User's Manual, 1999). With the timely refinement, the software performs all necessary calculations based on the characteristics of the study area as well as information collected by researchers on expenditure and visitation patterns of visitors.

Methods

Data

Of the overall number of responses (N=198), 29 were additionally deleted due to their lack of response to survey questions used in the analysis. This left 171 usable surveys for the economic impact analysis.

Analysis

Economic impacts of visitors to South Carolina beaches were estimated at the state and coastal county level for 2006 and 2010. The key input used in economic impact analyses is the amount of expenditures by non-local visitors to the state and local counties (e.g., state level - visitors residing outside South Carolina; county level – visitors residing outside Beaufort, Berkeley, Charleston, Colleton, Georgetown, Horry and Jasper counties). Only the expenditures from non-local visitors were included in the analysis because they represent "new" money being injected into the local economy. In order to

provide the most accurate estimates of non-local expenditures, researchers utilized information collected from the mail surveys mentioned earlier in this report. Survey respondents answered economic impact questions pertaining to their length of stay, party size, residency, and trip expenditures.

Expenditures utilized in the state level economic impact analysis were obtained from out-of-state respondents to the mail survey, and expenditures used in the county level analysis included out-of state visitors and all non-residents of the seven coastal counties. Only out-of-state respondents were utilized in the state level analysis because they represent "new" money being injected into the state economy. All non-local residents of the seven coastal counties including out-of-state visitors were included in the county level analysis due to the fact their expenditures represent "new" money being injected into the local county economies. In the state level analysis, state residents' expenditures are excluded due to the fact that their spending would only be transferred from one sector to another in the state economy. In the county level analysis, all residents of the seven coastal counties were excluded because their expenditures within the county only transfer money from one sector to another. If the resource (beach) did not exist in the state or county, residents would consume other goods and services in the local economy (Edwards, 1991; Thailing & Ditton, 2000).

For the state level analysis, South Carolina residents and non-response observations were excluded leaving the final number of observations utilized in estimating out-of-state expenditures at N=129. Respondents were asked to estimate their total trip expenditures and separate them into eight categories: lodging, grocery and retail, restaurants and drinking places, recreational activities, entertainment, automobile transportation, other transportation, and anything else. Estimated total trip expenditures were computed and disaggregated into per person daily expenditures.

Per person daily expenditures were calculated by dividing the estimated total trip expenditures by the average length of stay of out-of-state visitors. This value was equivalent to daily spending per party. Achieving per person daily expenditure required the daily expenditures to be divided by the number of people in their party for which they were financially responsible. This final value provided the estimate of per person daily expenditures of out-of-state visitors used in the state level analysis.

For the county level analysis, all non-residents of the seven coastal counties were utilized in estimating the expenditures for this analysis (N=171). Similar to the state level analysis, respondents reported their total trip expenditures which were disaggregated into per person daily spending. The value obtained provided the estimate of per person daily expenditures of non-local residents of the seven coastal counties utilized in the county level analysis.

The estimated expenditures calculated for the state and county level analysis were for 2006. Because forecasts of economic impacts are valuable in the decision-making process by various businesses and organizations, the economic impact analysis for 2010 was conducted in conjunction with the 2005 analysis. Obtaining the 2010 expenditures for the state and county level analysis required researcher to account for inflation over the five year period. Currently, the inflation rate is approximately 3% (U.S. Bureau of Labor Statistics, 2006). To estimate the 2010 estimate expenditures for the state and county level, researchers multiplied the 2006 expenditures by five years of inflation (1.159).

Expenditures are only one component utilized in the estimation of economic impacts. The number of individuals visiting South Carolina to visit a beach and the number of nights they spend in the local area must be obtained. In order to conduct an appropriate economic impact analysis, only non-local visitors attending the local community or state specifically for attraction should be included in the analysis (Crompton, 1999). Visitor numbers used in both analyses were obtained from the SMA long-term forecasting estimates provided in this report. State level analysis utilized the projected number of citizens 16 years of age and older from the four U.S. regions that come to South Carolina to visit a beach (see forecasting section). County level analysis used the estimated total number of citizens 16 years of age and older that visit South Carolina beaches which is composed of out-of-state and in-state visitors (see forecasting section).

After the appropriate number of visitors to South Carolina beaches was obtained, the number of nights visitors spent in the state and local area had to be determined. For the state level analysis, all South Carolina residents were excluded from the analysis (N= 129). In the county level analysis, all local residents of the seven coastal counties were

excluded from the analysis (N= 171). A statistical program (SPSS) was used to determine the average number of nights each group spent in the state and local area.

In order to estimate the state and county level economic impacts, total expenditures of visitors for each analysis are required. Estimating the total expenditures of visitors to South Carolina beaches involves multiplying the average per person daily expenditures by average number of visitors by the average number of nights spent in the state or local area (Crompton, 1999). The value obtained from this calculation is equivalent to the total direct economic impact (total expenditures). These total expenditures were then disaggregated into spending for each type of sector (lodging, grocery and retail, restaurants and drinking places, recreational activities, entertainment, automobile transportation, other transportation, and anything else). The percentages used to disaggregate the total direct impact into specific sectors were calculated by using total trip expenditure in each sector for the state and county level visitors used in each analysis divided by the total trip expenditures for state and county level analysis visitors.

The total expenditures separated by sector were inserted into IMPLAN software. The software calculated the economic impacts of visitors to South Carolina beaches, and provided estimates for value-added, indirect business tax, total output, and employment impacts.

Results

State Level

State level economic impact analysis utilized only out-of-state visitors to South Carolina beaches. Estimated per person daily expenditures of out-of-state visitors to South Carolina to visit a beach in 2006 is approximately $80.96 (Table 40). The majority of visitors' expenditures are spent on lodging followed by food/beverages, retail, and auto, respectively.

Table 40. Estimated Expenditures of Visitors to South Carolina' Beaches in 2006 – State Level.

Sector	Average Daily Spending Per Person
Hotel/Motel/lodging	$29.78
Grocery and retail stores	13.27
Restaurants and drinking places	18.45
Recreational activities	4.86
Entertainment	2.02
Automobile transportation	9.33
Other transportation	2.08
Other	1.16
Total	**$80.96**

Total expenditures of out-of-state visitors to South Carolina beaches in 2006 are approximately $1,254,465,052 (Table 41). Table 42 reports the local economic impact of visitors to South Carolina beaches separated into direct, indirect business tax, value added, total output, and employment. Out-of-State visitors are estimated to provide a direct impact of $1,254,465,052, indirect business tax impact of $165,801,357, value added impact of $1,221,608,882, total output impact of $1,972,715,823, and employment impact of 32,575 jobs.

Table 41. Estimated Total Expenditures of Out-of-State Visitors to South Carolina Beaches in 2006 – State Level.

Sector	Average Daily Spending Per Person	Number of Out-of-State Visitors	Average Number of Days	Total
Hotel/Motel/lodging	$29.78	4,340,553	3.57	$461,418,412
Grocery and retail stores	13.27	4,340,553	3.57	205,683,008
Restaurants/Bars	18.45	4,340,553	3.57	285,940,997
Recreational activities	4.86	4,340,553	3.57	75,338,696
Entertainment	2.02	4,340,553	3.57	31,370,391
Automobile transportation	9.33	4,340,553	3.57	144,615,917
Other transportation	2.08	4,340,553	3.57	32,173,310
Other	1.16	4,340,553	3.57	17,924,322
Total	**$80.96**			**$1,254,465,052**

Table 42. Estimated Impacts of Out-of-State Visitors to South Carolina Beaches in 2006 State Level.

Variable	Economic Impact
Direct Impact	$1,254,465,052
Indirect Business Tax	$165,801,357
Value Added	$1,221,608,882
Total Output	$1,972,715,823
Employment	32,575

To provide state officials with an estimation of future economic impacts, a scenario was developed to represent the state level impacts in 2010. Estimated per person daily expenditures of out-of-state visitors to South Carolina to visit a beach in 2010 is approximately $93.83 (Table 43). The majority of visitors' expenditures are spent on lodging followed by food/beverages, retail, and auto, respectively.

Table 43. Estimated Expenditures of Visitors to South Carolina' Beaches in 2010 – State Level.

Sector	Average Daily Spending Per Person
Hotel/Motel/lodging	$34.51
Grocery and retail stores	15.38
Restaurants and drinking places	21.39
Recreational activities	5.63
Entertainment	2.35
Automobile transportation	10.82
Other transportation	2.41
Other	1.34
Total	**$93.83**

Total expenditures of out-of-state visitors to South Carolina beaches in 2010 are approximately $1,639,373,587 (Table 44). Table 45 reports the local economic impact of visitors to South Carolina beaches separated into direct, indirect business tax, value added, total output, and employment. Out-of-State visitors are estimated to provide a direct impact of $1,639,373,587, indirect business tax impact of $216,674,330, value added impact of $1,596,436,095, total output impact of $2,578,005,926, and employment impact of 42,570 jobs.

Table 44. Estimated Total Expenditures of Out-of-State Visitors to South Carolina Beaches in 2010 – State Level.

Sector	Average Daily Spending Per Person	Number of Out-of-State Visitors	Average Number of Days	Total
Hotel/Motel/lodging	$34.51	4,894,192	3.57	$602,995,800
Grocery and retail stores	15.38	4,894,192	3.57	268,792,893
Restaurants/Bars	21.39	4,894,192	3.57	373,676,506
Recreational activities	5.63	4,894,192	3.57	98,454,929
Entertainment	2.35	4,894,192	3.57	40,995,793
Automobile transportation	10.82	4,894,192	3.57	188,988,537
Other transportation	2.41	4,894,192	3.57	42,045,073
Other	1.34	4,894,192	3.57	23,424,056
Total	**$93.83**			**$1,639,373,587**

Table 45. Estimated Impacts of Out-of-State Visitors to South Carolina Beaches in 2010 – State Level.

Variable	Economic Impact
Direct Impact	$1,639,373,587
Indirect Business Tax	$216,674,330
Value Added	$1,596,436,095
Total Output	$2,578,005,926
Employment	42,570

County Level

County level economic impact analysis of visitors to South Carolina beaches utilized out-of-state visitors and in-state visitors whose residency is not in any of the seven coastal counties. Estimated per person daily expenditures of visitors to South Carolina to visit a beach in 2006 is approximately $68.06 (Table 46). The majority of

visitors' expenditures are spent on lodging followed by food/beverages, retail, and auto, respectively.

Table 46. Estimated Expenditures of Visitors to South Carolina Beaches in 2006 – County Level.

Sector	Average Daily Spending Per Person
Hotel/Motel/lodging	$26.25
Grocery and retail stores	11.78
Restaurants and drinking places	16.61
Recreational activities	3.79
Entertainment	1.53
Automobile transportation	6.37
Other transportation	0.80
Other	0.92
Total	**$68.06**

Total expenditures of visitors to South Carolina beaches in 2006 in the county level analysis are approximately $1,626,344,324 (Table 47). Table 48 reports the local economic impact of visitors to South Carolina beaches separated into direct, indirect business tax, value added, total output, and employment. Visitors are estimated to provide a direct impact of $1,626,344,324, indirect business tax impact of $209,238,194, value added impact of $1,520,017,022, total output impact of $2,402,326,511, and employment impact of 39,294 jobs.

Table 47. Estimated Total Expenditures of Visitors to South Carolina Beaches in 2006 – County Level.

Sector	Average Daily Spending Per Person	Number of Out-of-State Visitors	Average Number of Days	Total
Hotel/Motel/lodging	$26.25	7,028,275	3.4	$627,370,866
Grocery and retail stores	11.78	7,028,275	3.4	281,581,146
Restaurants/Bars	16.61	7,028,275	3.4	396,901,494
Recreational activities	3.79	7,028,275	3.4	90,592,528
Entertainment	1.53	7,028,275	3.4	36,454,022
Automobile transportation	6.37	7,028,275	3.4	152,193,163
Other transportation	0.80	7,028,275	3.4	19,207,367
Other	0.92	7,028,275	3.4	22,043,738
Total	**$68.06**			**$1,626,344,324**

Table 48. Estimated Impacts of Visitors to South Carolina Beaches in 2006 – County Level.

Variable	Economic Impact
Direct Impact	$1,626,344,324
Indirect Business Tax	$209,238,194
Value Added	$1,520,017,022
Total Output	$2,402,326,511
Employment	39,294

To provide county officials with an estimation of future economic impacts, a scenario was developed to represent the county level impacts in 2010. Estimated per person daily expenditures of visitors to South Carolina to visit a beach in 2010 is $78.90 (Table 49). The majority of visitors' expenditures are spent on lodging followed by food/beverages, retail, and auto, respectively.

Table 49. Estimated Expenditures of Visitors to South Carolina Beaches in 2010 – County Level.

Sector	Average Daily Spending Per Person
Hotel/Motel/lodging	$30.44
Grocery and retail stores	13.66
Restaurants and drinking places	19.25
Recreational activities	4.39
Entertainment	1.77
Automobile transportation	7.38
Other transportation	0.93
Other	1.07
Total	**$78.90**

Total expenditures of visitors to South Carolina beaches in 2010 in the county level analysis are approximately $2,069,168,354 (Table 50). Table 51 reports the local economic impact of visitors to South Carolina beaches separated into direct, indirect business tax, value added, total output, and employment. Visitors are estimated to provide a direct impact of $2,069,168,354, indirect business tax impact of $266,209,951, value added impact of $1,933,890,062, total output impact of $3,056,436,342, and employment impact of 49,993 jobs.

Table 50. Estimated Total Expenditures of Visitors to South Carolina Beaches in 2010 – County Level.

Sector	Average Daily Spending Per Person	Number of Out-of-State Visitors	Average Number of Days	Total
Hotel/Motel/lodging	$30.44	7,713,402	3.4	$798,192,561
Grocery and retail stores	13.66	7,713,402	3.4	358,250,580
Restaurants/Bars	19.25	7,713,402	3.4	504,970,564
Recreational activities	4.39	7,713,402	3.4	115,259,229
Entertainment	1.77	7,713,402	3.4	46,379,790
Automobile transportation	7.38	7,713,402	3.4	193,632,598
Other transportation	0.93	7,713,402	3.4	24,437,185
Other	1.07	7,713,402	3.4	28,045,847
Total	**$78.90**			**$2,069,168,354**

Table 51. Estimated Impacts of Visitors to South Carolina Beaches in 2010 – County Level.

Variable	Economic Impact
Direct Impact	$2,069,168,354
Indirect Business Tax	$266,209,951
Value Added	$1,933,890,062
Total Output	$3,056,436,342
Employment	49,993

Discussion

In estimating the economic impact of visitors to South Carolina beaches, calculations of the impacts for the state only consider out-of-state visitors to the beach while county level impacts consider all visitors to South Carolina beaches that are not residents of any of the seven coastal counties. These expenditures function as "new" money injected into the state and local economies. Spending from these visitors stimulates both economic activities and fiscal revenues (Borden, Fletcher, & Harris, 1996). This assumption excludes the spending from state residents or local visitors due to the fact that their expenditures would only be transferred from one sector to another. If the resources were not available in the local community, local residents would consume other available resources in the local economy (Edwards, 1991; Thailing & Ditton, 2000).

When considering the 2006 state level scenario, estimated economic impacts of visitors to South Carolina beaches produce $1,221,608,882 value added, $165,801,357 indirect business tax, $1,972,715,823 total output, and 32,575 jobs. Visitors to the seven coastal counties (County level) to visit a beach in 2006 produce an estimated $1,520,017,022 value added, $209,238,194 indirect business tax, $2,402,326,511 total output, and 39,294 jobs. The value added impact implies the direct and secondary impacts generated from the production of output while the indirect business tax accounts for excise and sales taxes paid by individuals to businesses. Total output estimates the

value of all sales by all industries in the state, and employment considers the increase in all full-time and part-time jobs.

As expected, the 2010 scenarios for the state and county level analysis produce larger economic impacts than the 2006 scenarios. This is due to the projected increase in population for the United States and South Carolina. As the population continues to increase, visitation to South Carolina beaches is expected to increase. An increase in visitation will inject more "new" money into the state and local economies.

When comparing the state and county level economic impacts, county level impacts are marginally higher than state level. The reason for this difference is only out-of-state residents are included in the analysis. Out-of-state residents inject "new" money into the state economy while state resident spending transfers money from one state sector to another. County level economic impacts are larger because out-of-state and in-state visitors to South Carolina beaches are included. Only visitors residing in any of the seven coastal counties are excluded in the analysis for the same reason in-state visitors are excluded from the state level analysis.

Results from the economic impact analysis indicate the importance of beach visitation to South Carolina's economy as well as the economies of coastal counties. The impacts generated by visitors to the beach provide a significant injection of dollars into South Carolina. These dollars are the impetus to higher income and more jobs for residents of South Carolina. These results provide vital information to public agencies and private business in which they can utilize to set goals and objectives for more effective management programs.

Economic Valuation of Beach Access

Over the past several decades, the United States as well as South Carolina has seen an increase in population and per capita income. The increase in income has provided families with more opportunities to participate in outdoor recreation activities. An increase in demand for outdoor recreation resources has burden public agencies with the task of providing sufficient access to the resources. In order for public agencies to provide sufficient access to outdoor recreation resources, the value of the resource must be determined for decisions about future policies.

Approaches utilizing non-market valuation models are useful for approximating market-equivalent values for goods and services like beach access (and related facilities and services) not customarily traded in the marketplace (Loomis & Walsh, 1997). These valuations are essential for comparisons between policies in the evaluation process. Normally, an economic value is estimated for the resource or service that provides information on likely increases in overall utility. Supplying decision-makers with an economic value allows more realistic comparisons between policies in the evaluation process. Methods utilized in valuing goods and services include: 1) markets, 2) market-inferences, and 3) contingent behavior.

Methods utilizing market valuation allocate values to differences in the quantity and quality of the variable in question using available market information such as prices (Freeman, 2003). Market inference approaches assign values to different factors not traded in the marketplace, such as recreational experiences, based on decisions made in the market (Ward and Beal 2000; Freeman 2003). Contingent behavior methods utilize hypothetical situations to obtain an answer contingent upon the hypothetical situation becoming reality (Freeman, 2003). Contingent valuation method (CVM) is extensively used in estimating the value of environmental public resources not traded in the marketplace (Johnson, Groothuis & Whitehead, 2001).

Utilizing CVM, respondents are questioned about their willingness to pay (WTP) for the hypothetical situation to become reality. Measuring WTP using contingent valuation method normally consists of use and option values. *Use values* measure the benefits generated from direct use of the resources, and *option values* indicate the value

of benefits received in the future from future utilization of the resources (Tietenberg, 2000). The focus of this report is use values derived from beach access.

Even though CVM is widely used in estimating the value of non-market goods and services, results produced by this method are contested by some critics. However, the prevalent utilization of CVM has significantly increased the credibility of the results produced by this method increasing their use in the policy evaluation process (Johnson, Groothuis & Whitehead, 2001; Mitchell & Carson, 1989).

Freeman (1995) identifies an inadequate amount of studies providing estimates of the value of access to beach resources. Providing decision-makers with estimates of the value of access to beach resources is essential for long-term policy and planning decisions about the future impact of management programs. In order to justify the utilization of public resources on beach access, estimations of the value placed on beach access by the public must be determined. This section uses CVM to provide estimates of the value visitors to the beaches of South Carolina place on beach access.

Methods

Data

Of the 200 replies, two respondents were deleted because they indicated they were under 18 years old or local residents. Furthermore, 67 were additionally deleted due to their lack of response to survey questions used in the analyses.

The mail questionnaire included various questions such as visitors' trip experiences at the beach, satisfactions about their previous beach trips, attitudes toward and preferences for beach management, and previous trip expenditures. To estimate beach visitors' economic value (or consumer surplus) from consuming non-tradable services of additional provision of beach access points, a contingent valuation method (CVM) component was incorporated into the questionnaire. Closed-ended CVM questions were utilized to discover the amount visitors were willing to pay per day in excess of their actual trip costs associated with their beach experience. A closed-ended contingent valuation format was beneficial based on its simplicity that visitors were asked to reveal their preference by answering "Yes" or "No" to each question. The question was addressed as follows: "SC state and local management programs are considering

improving the current access situations by adding additional beach access points. The current plan is directed towards less developed destinations. Typically, the less developed destinations lack adequate beach access points and parking, along with facilities such as restrooms and showers. Usually, less developed destinations have only a central beach access point with a limited number of parking spaces located in the vicinity of the beach. Development and maintenance of additional beach access points with parking spaces and other preferred facilities requires funds. If the number of public beach access points increased from one central location with inadequate parking to two locations with sufficient parking in less developed destinations, would you be willing to pay $ _____ more in addition to your typical parking fees per day for the additional beach access point and parking?" Ten bid values ranging from $1 to $40 were pre-selected based on a review of related literature as well as pretests. Bid values were randomly assigned to questionnaires mailed to potential respondents (inserted into the blank in the previous question prior to mailing).

Analysis

Using an indirect utility framework, utility consisting of a systematic (i.e., the effect of observed influences on the utility) and a random component (i.e., the effect of unobserved influences on the utility) can be represented as:

$$U = V(D, M, S) + \varepsilon$$

where V is the deterministic component of utility, ε is unobservable error component of utility, M is income, and S represents individual socioeconomic characteristics. Also, D represents two states of nature, where 1 is a condition when the CVM program is implemented and 0 is a status quo condition. A visitor will pay the suggested amount A (i.e., answer YES) only if the utility with the CVM program implemented is greater than the status quo utility. In other words,

$$V(1, M - A; S) + \varepsilon_1 \geq V(0, M; S) + \varepsilon_0 .$$

However, because the random component is unobservable to the researcher, only WTP probability statements about "Yes" or "No" can possibly be accomplished. Assuming the error terms are independently and identically distributed with mean zero and variance

$\pi^2/3$ (i.e., standard logistic distribution), the probability that a respondent answers "Yes" is specified as:

$$\Pr(yes = 1) = \frac{1}{1 + e^{-(\alpha + \beta A + \gamma M + \theta S)}}$$

where α, β, γ, and θ are coefficients to be estimated.

Once the equation is estimated typically using maximum likelihood estimation, an expected value of WTP can be calculated as follows:

$$E(WTP) = \int_0^{MAX_A} F_\eta(dV(A))dA$$

$$= \int_0^{MAX_A} \left(\frac{1}{1 + e^{-dv(A)}} \right) dA = \int_0^{MAX_A} \left(\frac{1}{1 + e^{-(\alpha + \beta A + \gamma M + \theta S)}} \right) dA$$

where $E(WTP)$ is the mean WTP and MAX_A is the maximum bid amount, \$40. While there are various ways to compute the measures of WTP from the estimated model, the truncated mean WTP with the truncation points set at 0 and the maximum bid has been popularly used (Hanemann, 1984; Sellar et al., 1986; Cameron & James, 1987) and this method was also adopted in this study.

In the probability functions, a set of explanatory variables of individual characteristics should be taken into account to "gain information on the validity and reliability of the contingent valuation method, and to extrapolate sample responses to more general populations" (Haab and McConnell, 2003: p.23). Consequently, in the multivariate logit regression models, several explanatory variables were included: proposed bid amount (BID), annual household income (INCOME), level of education (EDU), a visitor's age (AGE), importance of the value for the parking fee (VPARK), and level of preference for beach management (INTENT). The variable of INTENT was computed by summing scores for three Likert-scaled items. Table 52 provides the detailed definitions of the variables used in models.

Table 52. Variable Names and Definitions of Variables Used in the Analysis.

Variable Names	Description
BID	Proposed bid amount in dollars (-)
INCOME	Income level (coded 1 to 11: 1 = Under $10,000, 11 = $100,000 and above) (+)
EDU	The highest level of education (coded 1 to 5: 1 = Some high school or less, 5 = Post graduate school) (+)
AGE	Visitor's age (+)
VPARK	Importance of the value for the parking fee (meters/lots, coded 1 to 5: 1 = not at all important, 5 = extremely important) (-)
INTENT	Level of agreement with intention to revisit the beach more if it was better maintained (coded 1 to 5: 1 = not at all satisfied, 5 = extremely satisfied) (+)
	Level of agreement with intention to revisit the beach more if it had more activities (coded 1 to 5: 1 = not at all satisfied, 5 = extremely satisfied) (+)
	Level of agreement with intention to revisit the beach more if it had better facilities (coded 1 to 5: 1 = not at all satisfied, 5 = extremely satisfied) (+)

Note: The (+) and (-) signs indicate the hypothesized direction of each independent variable on WTP.

According to economic theory, the higher its price, the less likely a visitor is to purchase a service provided with all other factors remaining the same. Thus, the higher the bid amount, the less likely a visitor pay for the services for beach trips. Also, a visitor's socio-economic characteristics such as income, age and education are expected to have an impact on accepting the bid amount. In general, older visitors who earn a higher household income and are more educated are more likely to be willing bear higher trip costs. Likewise, different attitudinal and behavioral components should be related to visitors' willingness to bear higher trip costs. When visitors place more importance on the value for trip costs such as the parking fee, the less the probability the respondent will accept the bid amount. In other words, this type of the visitor group is very likely to be a price-sensitive consumer. Visitors who want to visit the beach sites with better maintenance and facilities and more beach activities are more willing to pay additional costs of development and maintenance of beach access points.

Results

Descriptive Statistics

Table 53 summarizes descriptive statistics for the variables used in the model estimation. Most beach visitors (82%) had attended some college or technical school and approximately 60% of the respondents had a household income of $60,000 and over. In addition, when asked to rate the importance of the value for the parking fee, visitors rated this item as moderately important and above. Finally, more than a half of visitors agreed that they would visit the beach more with better maintenance and facilities of the beach destination.

Table 53. Descriptive Statistics for Beach Visitors.

	Respondents
Variable	**Mean**
INCOME	7.10 (3.27)
EDU	3.53 (1.10)
AGE	43.81 (15.84)
VPARK	3.74 (1.10)
INTENT	7.89 (2.69)

Parenthesis indicates standard deviation.

Logistic Regression

As indicated, logistic regression was used to estimate the consumer surplus (or net WTP). The results of the logistic regression analysis are presented in Table 54 with both forms of linear and log-linear forms of the function. While estimation results were made using both functional forms, however, further interpretation and analysis were based on the results of the log-linear functional approach. This mainly results from the fact that a log-linear specification is known to be superior because the nature of a downward sloping demand curve as restrictions of consumer theory can be met by introducing curvature to the utility function (Seller et al., 1985; Bowker & Stoll, 1988). Also, it has been empirically demonstrated that a log-linear specification results in lower values of WTP and outperforms its linear counterpart in terms of magnitude of goodness-of-fit statistics (Park et al., 1991). Accordingly, the monetary variables of the bid amount and income were transformed in natural logarithms in the analysis.

The explanatory power of both models were fairly high with a goodness-of-fit measure (McFadden's $\rho^2 = 0.37$ for the linear model and $\rho^2 = 0.33$ for the log-linear model, which is similar to the R^2 in a conventional regression model) (Greene, 2000). All of the explanatory variables beside AGE had expected signs although some coefficient estimates were not significant. Nevertheless, these non-significant variables were included to maintain theoretical consistency (i.e., the internal validity of the WTP estimation). As expected, the highly significant and negative coefficient of the BID variable indicates that visitors were less willing to pay (i.e., to respond "YES") as the proposed bid amount increased (Table 54). In addition, the significant positive coefficients on INCOME and INTENT mean that visitors who earned higher household income and who wanted to visit the beach sites with better maintenance and facilities and more beach activities were more likely to respond "YES" to the contingent valuation question. While the visitors' education (EDU) was also positively related to the probability of a favorable response to the CVM question, it was not significant in the analysis. Likewise, the negative coefficient of VPARK represent that visitors were less willing to respond "YES" as they place more importance on the value for the parking fees. Finally, while an old visitor was expected to prefer additional beach access points and parking, visitor's age was negatively correlated to the CVM question despite its non-significance.

Table 54. Results of Logistic Regression Model.

Variable	Linear Model		Variable	Log-Linear Model	
	Coefficient[a]	Std. Err		Coefficient[a]	Std. Err
Intercept	1.1005	1.417	Intercept	1.9963	1.463
Bid	-0.1909**	0.038	Ln(Bid)	-1.4466**	0.276
INCOME	0.1484*	0.085	Ln(INCOME)	0.8134*	0.436
EDU	0.0487	0.236	EDU	0.0112	0.220
AGE	-0.0207	0.018	AGE	-0.0233	0.018
VPARK	-0.5064**	0.219	VPARK	-0.5421**	0.213
INTENT	0.2526**	0.094	INTENT	0.2478**	0.090
McFadden ρ^2	0.3667		McFadden ρ^2	0.3263	

[a] Significance level of .10, .05 are represented by *, and **, respectively.

To compute the values of WTP, we numerically approximated the estimated equations over a range between zero and the maximum bid amount. Estimated net WTP (or consumer surplus) over trip expenditures is $9.1.for the log-linear model. Thus, when the values are understood as net benefits accrued from their beach experiences, in general, average visitors are willing to pay $9.10 (i.e., benefit gain worth $9.1). Using total number of out-of-county visitors estimated above, total net WTP at the population level was calculated. Multiplied by net WTP of $9.1, total out-of-county visitors of 7,028,275 gained the economic benefits of $63,957,303. Additionally, when the inflation rate is assumed to be approximately 3% (U.S. Bureau of Labor Statistics, 2006), 7,713,402 out-of-county visitors are likely to gain the economic benefits of $71,251,174 from development and maintenance of additional beach access points with parking spaces and other preferred facilities.

Discussion

Pogue and Lee (1999) recognize coastal counties as “among the most densely populated and rapidly growing counties in the nation” (p. 220). With dense population and growth comes development that inhibits public access to the coast. Accordingly, the

problem of shrinking beach and ocean recreation opportunities derive from the opportunity for the public to access the beaches rather than the beaches themselves (Herstine, 2000). Intensified concerns about beach access and amenity requirements for an increasing number of visitors require management consideration of how to provide adequate and sufficient access and amenities for each beach destination. Nevertheless, to the researchers' knowledge, no previous work examined WTP reported by beach visitors revealing their preferences for provision of additional beach access points and other beach facilities. A contingent valuation method used here, as one of the non-market valuation tools, is a useful means to provide monetary values for recreational services like beach access points not traded in the typical marketplace

Using a contingent valuation method, results supported that each beach visitor was willing to pay a sizeable monetary amount (i.e., $9.1). When individual WTP is applied into the population level, approximately 7 million visitors likely gained the consumer surplus of $63 million assuming without any abrupt structural shifts in the economy. In 2010, about 7.8 million visitors are likely to gain the economic benefits of $71 million from development and maintenance of additional beach access points. Further, based on the projected population trend from the forecasting section, this figure likely continues to increase over the next 25 years under the same assumption.

The coastal zone management program for each coastal state, accordingly, should include a comprehensive planning process for public access to beaches (Brower & Dreyfoos, 1979). As suggested in the section of financial options, economic efficiency in assessing increased beach access or improvements should be used as one of the main management principles. As Loomis and Walsh (1997) indicated, cost-benefit analysis is a valuable means to make better decisions regarding the optimal program size and most productive of available alternatives. Supplying decision-makers with an economic value allows more realistic comparisons between policies in the evaluation process. In particular, as the new acquisition of beach access points is high-priced, the precise estimation of visitors' benefits accrued from provision of beach access points is indispensable to more effective management decision. Because the costs of acquiring and maintaining land and property for beach improvement projects are comparatively easier based on the agency's direct monetary expenditures, cost estimation was not conducted in this study. From a

management perspective, this study demonstrates that the beach visitors are willing to pay a sizeable amount to obtain improved services of beach access points with parking spaces and other facilities. Thus, the integration effort of use value estimated can provide a baseline for evaluating future policies or management options, such as to what extent beach access points and amenity requirements should be provided.

Visitors' Preferences Assessment

To make viable management decisions that maximize visitor satisfaction within the boundary of limited financial availability, managers should have comprehensive knowledge of the extent to which visitors prefer more or less proposed management options. Providing management agencies with this information increases the likelihood of effective implementation of programs relating to an increase in public beach access and protection requirements for public beaches. The agency should consider the anticipated demand for future use of these facilities and resources hinging upon the various recreation concerns and requirement of management (Coastal Zone Management Act, 1972).

A state preference choice preference approach is utilized to identifying the extent of visitors' concern about current beach management programs and support for prospective management actions. A stated preference choice approach is mainly based on the realistic assumption that visitors make trip decisions on multi-attributes of the services of interest. Considered arrays of management attributes generate a number of different trip choices that visitors can select (Adamowicz, Boxall, Louviere, Swait, Williams, 2000). As this stated preference choice method enables researchers to identify the relative importance of decision attributes and levels included, it is seen as a major improvement for understanding preferences (Boxall, Adamowicz, Swait, Williams, & Louviere, 1996; Louviere, Swait, & Hensher, 2000; Oh & Ditton, 2006). Because of its recent methodological development in transportation and marketing research (Oh & Ditton, 2005), however, this approach has not been used previously to understand visitor preferences for a variety of multi-attribute recreational products and services in public beach management.

Consequently, the approach is useful for understanding how visitors make trade-offs among various management attributes and, ultimately, providing management implications in evaluating the effectiveness of various management proposals. Thus, this section intends to determine the extent of the visitor needs and preferences for various management actions to define demands for recreational use in beach access and facilities.

Methods

There are four primary steps using a stated preference choice method: 1) identifying the important management attributes and appropriate levels to each attribute; 2) generating a manageable number of choice sets with identified attributes and levels; 3) presenting scenarios and acquiring responses from target samples; and, 4) analyzing the preferences for and trade-offs among various management measures with an appropriate model. In the following sections, detailed descriptions for each step are provided to implement a stated preference choice model (SPCM).

Identification of Attributes and Levels

The initial step of a SPCM starts with identification of important attributes and their subsequent levels. Attributes and levels used in the study were developed based in conjunction with SCDHEC, OCRM staff and an extensive literature review of previous research. To minimize a concern about respondents' cognitive fatigue, the most important five characteristics or attributes were included: (1) the number of beach access points available (Beach Access), (2) cost of parking fees (Parking Fees), (3) the crowding and noise level that a visitor experience on the beach (Crowding and Noise), (4) level of commercial development (Commercial Development), and (5) level of restrictions on the beach use (Rules and Regulations). Table 54 presents a detailed description for the levels of each attribute. Three levels were assigned to each attribute based on their popularity and effectiveness to secure sufficient variations in the attributes considered (e.g., Blamey, Gordon, & Chapman, 1999; Hearne & Salinas, 2001). Revisions of levels and attributes were made as a result of a series of pretests with people who have previously visited a South Carolina beach.

Table 55. Proposed Attributes and Levels Used for the Choice Experiments.

Attribute	Description	Levels
Access Points	The number of beach access points available	1. No main beach access points 2. 1 main beach access point 3. main beach access points
Parking Fees	Cost of user/parking fees (assessed per vehicle/per day)	1. $5 2. $10 3. $15 4. $20
Crowding and Noise Levels	The crowding and noise level that a visitors experience on the beach	1. Sparsely crowded and quiet 2. Moderately crowded and somewhat noisy 3. Highly crowded and very noisy
Development	Level of commercial development (hotels, restaurants, shopping and attractions) along the beach.	1. Not developed 2. Moderately developed 3. Highly developed
Rules/Regulations	Level of restrictions on the beach use (e.g., pets, alcohol, vehicle and fishing restrictions)	1. No restrictions (e.g., pets, alcohol, vehicles and fishing allowed on beach) 2. Medium restrictions (e.g., No vehicles and no fishing, but pets allowed on leashes, alcohol allowed (no glass)) 3. High restrictions (e.g., no pets, no alcohol, no vehicles and no fishing allowed on the beach)

Model

Since the stated preference choice model was originally developed in transportation choice research, it has been widely used in various fields such as marketing, transportation, and environmental studies (Hensher 1994; Louviere, 1988; Louviere, Hensher, & Swait, 2000). However, in the leisure and tourism fields, it is a recent phenomenon to use the SPCM to understand consumer preferences for various aspects of leisure and tourism products and services.

The SPCM is derived based on two well-ground theories of utility maximization and random utility theory (Louviere, 2000, 2001). While utility maximization theory indicates that individuals make choices that lead to the highest utility (i.e., satisfaction),

utilities, according to random utility theory, are comprised of a deterministic component (i.e., the measurable section of the utility) and a random error component (i.e., the effect of unobserved influences) due to uncertainty factors (Louviere, 1988; Louviere, Hensher, & Swait, 2000). However, because of this random error component, utility, that is not observed directly, can only be estimated using the indirect utility function. A deterministic component can be estimated to represent the vector of coefficients of levels and attributes to obtain the part-worth utilities for the attributes. Subsequently, this can identify a significant influence on attributes and ultimately the proposed choice evaluation. The indirect utility function of a representative individual on a choice of beach trip j can represented as

$$U_j = V_j(A) + \varepsilon_j$$

$$= \mu A'\beta + \varepsilon_j$$

where U_j is the utility of an alternative beach trip j, V_j is the deterministic component of utility to be estimated, and ε_j is unobservable error component of utility. μ, a scale parameter is normally assumed to be 1. However, because utility can not be observed directly, the probability of choice results should be used and the probability of choosing alternative i over j is

$$P(i \mid i \in M) = P(V_i(A) - V_j(A) > \varepsilon_j - \varepsilon_j)$$

where M is all choice sets considered in the study. Assuming the error terms of $(\varepsilon_j - \varepsilon_i)$ are independently and identically distributed (so called, IID) and a type I extreme-value distribution (i.e., Gumbel-distributed), the probability specification can result in the condition logit model with the following equation (Ben-Akiva & Lerman, 1985; McFadden, 1974)

$$P(i \mid i \in M) = \frac{\exp(V_i)}{\sum_{j=M} \exp(V_j)}$$

where M is all choice sets considered in the study.

Once the model has been estimated, willingness-to-pay values (WTP) can be used to evaluate the effectiveness of the proposals on the basis of diverse changes in attributes that reflect propose policies. WTP can be measured using

$$\frac{1}{\beta_{trip\,cost}}(V_0 - V_1)$$

where V_0 indicates the utility acquired from the current condition of a fishing trip and V_1 is the utility from the new scenario with altered levels of attributes (Hanemann, 1984). Because the coefficient of trip cost is equivalent to the marginal utility of income (Kaoru, 1995), the coefficient of trip cost in this study was used as an alternative. In addition, marginal values between a coefficient of a non-marketed attribute (β_i) and the coefficient of trip cost can be calculated with $\frac{\beta_i}{\beta_{trip\,cost}}$, leading to marginal willingness-to-pay or implicit prices for an increase in a non-marketed attribute (Bennett & Adamowicz, 2001; Hanley et al., 2001). A comparison of the implicit prices of attributes is important in that there are further policy implications by examining different composition of alternative resource allocations (Bennett & Adamowicz, 2001).

Figure 9. Example of a Choice Set for the Beach Trip Participation.

Suppose that you could only choose from the two beach trips below. Which would you prefer?

TRIP A	ATTRIBUTES	TRIP B
1 main beach access point	**Main Beach Access Points**	2 main beach access points
$20	**Parking Fees (Per Vehicle/Per Day)**	$10
Sparsely crowded and quiet	**Crowding and Noise**	Sparsely crowded and quiet
Highly developed	**Commercial Development**	Moderately developed
Medium restrictions	**Rules/Regulations**	No restrictions

I prefer…(check **one** box below)

❑ TRIP A	❑ I WOULD NOT TAKE EITHER TRIP	❑ TRIP B

Experimental Design

A choice set is a combination of randomly selected levels of the attributes. A paired choice set, which is actually presented to a respondent, consists of two or more

choice sets about which the respondent is making a trip decision. Although a full factorial design provide a complete estimation of each attribute's effect independently of one another, it is not feasible to observe at least one observation of all different attribute combinations (Louviere, 1988; Louviere, Hensher, & Swait, 2000). Alternatively, fractional factorial designs are employed to generate an economical number of paired choice sets, 30 paired choice sets in this study. The paired choice sets were then divided into five blocks of six paired choice sets to reduce the cognitive burden on each respondent (Bennett & Adamowicz, 2001). An example of a paired choice set is provided in Figure 9. To simulate real market choice behavior, each choice set included the option to opt out and not take either trip (Bennett & Adamowicz, 2001).

Results

Of the 200 respondents, 11 respondents were removed from the analysis because of their fallacious responses for the paired-choice sets (i.e., entirely choose Trip A, B, or no trip regardless of the variations in the levels). After deleting additional paired choice sets with insufficient answers, the final data set included 189 total responses, yielding 1,134 observations of the paired choice sets.

Conditional Logit Results

The parameter estimates of the conditional logit models are presented (Table 55). An alternative specific constant (ASC) was added to measure the utility shift of "no trip" to the basic alternative of a trip to a South Carolina beach destination (Bennett & Adamowicz, 2001). In addition, individual specific variables such as age, income and education level can be incorporated by interacting with the ASC to enhance the understanding of heterogeneous preferences of beach visitors. Accordingly, two different models were estimated using the data: the first was the basic model with specified main attributes only; and, the second model took into account the heterogeneous preferences of beach visitors by interacting with individual alternative-specific attributes to capture individual factors. While both effect and dummy codes were examined besides those included in Table 55, based on the good estimation results, dummy codes were used for the qualitative attributes of Access Points, Crowding and Noise, Commercial

Development, and Rules and Regulations. Thus, for instance, the attribute of Access Points with three levels (i.e., no main beach access points, 1 main beach access point, and 2 main beach access points) was coded with two dummy-coded variables (i.e., Access 1 for 1 beach access point and Access 2 for 2 main beach access points) and the impact of the attribute is represented by β_1 and β_2. Although the coefficient of the other level was not estimated, it was used as a base option to measure the visitors' preference level on a comparative basis. For example, the positive signs of the first two variables (β_1 and β_2) indicate the visitors' preference for those two options are more preferred to the base option.

All effects of the primary attributes besides one option of Commercial Development were statistically significant ($p < 0.10$) in Table 55. In general, most attributes had the expected signs except for the option of "Moderately Developed" (Commercial Development) and the option of "Medium Restrictions" (Rules and Regulations). The positive value for ASC indicates that visitors were more favorable toward taking the beach trip than the alternative option of not taking the beach trip under current conditions of beach access and facilities. The positive signs of the two variables (Access 1 and 2) dealing with Access Points jointly indicate the provision of additional main beach access points were likely to lead to considerable increases in beach trip participation in that destination. The negative coefficient of Parking Fees implies that visitors with higher expenditures for parking were less likely to participate in a beach trip, coinciding with consumer demand theory. In addition, the negative signs of "Moderately crowded and somewhat noisy" and "Highly crowded and very noisy" for the attribute of Crowding and Noise suggest that crowing and noise in a beach destination were likely to be detrimental to beach visitation. Contrary to our expectation, the coefficient of the option, "Moderately developed" for Commercial Development shows a positive sign, indicating that visitors were in favor of moderate development with several high rise hotels, restaurants and stores along the beach. Likewise, the positive sign of the option, "Medium Restriction" for Rules and Regulations indicates that the probability of beach trip participation increases with the additional restrictions imposed by the management agency. However, the negative coefficients of the options, "Highly Developed" and

"High Restrictions", coincided with our prior expectation, indicating that visitors were not likely in favor of choosing their beach destinations with these features.

In model 2, three socioeconomic (age, household income, education level) variables were introduced in addition to the estimation of the main attributes shown previously in Table 55. The likelihood ratio test demonstrates that the model with individual specific variables was superior to that with main effects only ($\chi^2 = 108.49$, $p < 0.001$). Given that the signs of the interaction variables were expected *a priori*, younger recreationists were more likely to participate in beach trips compared to older recreationists. Additionally, visitors with higher household incomes and with higher education were more likely to take beach trips. Likewise, as the inserted interaction variable between Income and Parking Fees (Income*fee) provide further insight, visitors with higher household income were more likely to be more interested in taking beach trips. In other words, visitors with higher household income are more likely to take beach trips and are more willing to pay higher parking fees.

Table 56. The Result from Conditional Logit Models.

	Model 1			Model 2		
	Coefficient	**Z value**	**Implicit Prices**	**Coefficient**	**Z value**	**Implicit Prices**
ASC	1.2631**	5.991		2.1694**	4.490	
Access						
Access1	0.8056**	5.939	12.73	0.7979**	5.540	7.74
Access2	1.1733**	8.650	18.54	1.1455**	7.972	11.11
Parking Fees	-0.0633**	-6.578		-0.1031**	-4.387	
Crowding and Noise						
Moderately Crowded	-0.6631**	-5.199	-10.48	-0.6582**	-4.861	-6.38
Highly Crowded	-1.9146**	-13.880	-30.25	-1.1935**	-13.304	-11.58
Commercial Development						
Moderately Developed	0.3571**	2.784	5.64	0.3974**	2.911	3.85
Highly Developed	-0.1801	-1.498	-2.85	-0.1773	-1.393	-1.72
Rules/Regulations						
Medium Restrictions	0.2266*	1.894	3.58	0.2217*	1.761	2.15
High Restrictions	-0.3580**	-3.041	-5.66	-0.5010**	-4.002	-4.86
age*asc				-0.0220**	-4.047	
income*asc				0.0465	-1.351	
edu*asc				0.1789**	2.253	
Income*fee				0.0054*	1.907	
Log Likelihood	-990.23			-881.74		
McFadden ρ^2	0.170			0.192		

** indicates statistical significant at the 0.05 level.
* indicates statistical significance at the 0.1 level.
The alternative specific constant is coded 1 for Trip A and Trip B in the choice sets and 0 for No Trip.

Assessing the Management Options

The SPCM provides assistance in evaluating the feasible combinations of management options and helps in the selection of an optimized design of the management programs for aggregate utility maximization. Based on the likelihood ratio test, which indicates the revised models improved the explained variance (0.17 of Model 1 vs. 0.19 of Model 2), further analyses were accomplished using the estimation result of model 2

with the interaction variables. Average visitors were assumed for the socioeconomic variables (i.e., 47 year-old college graduates with an average household income of $73,000).

In both models, to convert the utility gain or loss to monetary values, the implicit prices of the marginal rate of substitution were obtained by implicit differentiation (Roe, Boyle, & Teisl, 1996). Using the equation above, whereby a coefficient of an attribute is divided by a coefficient of parking fees (Kaoru, 1995; Roe, Boyle, & Teisl, 1996), the computed implicit prices are reported in Table 56. Under the main assumption with all other attributes remaining the same (i.e., *ceteris paribus*), visitors were willing to pay $8 and $11 to acquire one more main beach access point and two more main access points (Access 1 and 2), respectively, in their beach destination. Additionally, visitors would require compensation of $7 when considering a moderately crowded beach (Moderately Crowded). Likewise, compensation of $12 will be required before visitors accept highly crowded beach sites (Highly Crowded).

For a more thorough investigation of utility gain or loss as a result of changes in the level of each attribute, 24 potential management scenarios are presented in Table 56. A larger and positive willingness-to-pay (WTP) implies that visitors were more likely to prefer that particular management regime. The WTP amounts estimated from the proposed management scenarios are analogous to implicit prices in Table 55, which indicate the marginal rate of substitution between an attribute in question and the marginal utility of income, comparable to parking fees in this study. The full scenario analysis is advantageous in that each single change in the level of an attribute is readily assessable.

Table 57. WTP Changes for All Management Scenario Profiles.

	Beach Access Points	Parking Fees ($)	Crowing and Noise	Development	Rules/Regulations	Conditional logit WTP ($)
S.1	No access points	0	Sparsely crowded	Not developed	No restrictions	0
S.2	One access point	0	Sparsely crowded	Not developed	No restrictions	7.74
S.3	No access points	0	Moderately crowded	Not developed	No restrictions	-6.38
S.4	No access points	5	Sparsely crowded	Not developed	No restrictions	-3.04
S.5	No access points	0	Sparsely crowded	Moderately developed	No restrictions	3.85
S.6	No access points	0	Sparsely crowded	Highly developed	No restrictions	-1.72
S.7	No access points	0	Sparsely crowded	Not developed	Medium restrictions	2.15
S.8	No access points	0	Sparsely crowded	Not developed	High restrictions	-4.86
S.9	One access point	5	Moderately crowded	Moderately developed	No restrictions	2.17
S.10	One access point	5	Moderately crowded	Not developed	Medium restrictions	0.47
S.11	One access point	5	Moderately crowded	Not developed	High restrictions	-6.54
S.12	One access point	5	Moderately crowded	Moderately developed	Medium restrictions	4.32
S.13	One access point	5	Moderately crowded	Moderately developed	High restrictions	-2.69
S.14	One access point	5	Moderately crowded	Highly developed	Medium restrictions	-1.25
S.15	One access point	5	Moderately crowded	Highly developed	High restrictions	-8.26
S.16	Two access points	5	Moderately crowded	Moderately developed	Medium restrictions	7.70
S.17	Two access points	5	Moderately crowded	Moderately developed	High restrictions	0.69
S.18	Two access points	10	Moderately crowded	Moderately developed	Medium restrictions	4.66
S.19	Two access points	10	Moderately crowded	Moderately developed	High restrictions	-2.35
S.20	Two access points	10	Moderately crowded	Highly developed	Medium restrictions	-0.91
S.21	Two access points	10	Moderately crowded	Highly developed	High restrictions	-7.92
S.22	Two access points	10	Highly crowded	Moderately developed	Medium restrictions	-0.53
S.23	Two access points	10	Highly crowded	Moderately developed	High restrictions	-7.54
S.24	Two access points	10	Highly crowded	Highly developed	High restrictions	-13.12

Results indicated that Scenario 2 was most preferred with the highest WTP of $7.7. The amount of $7.7 was also the same as the implicit prices of provision of one more main beach access point of $7.7, assuming no changes in other attributes in Table 56. Scenario 24 was the least preferred with the lowest WTP of $-13.1. While visitors highly preferred provision of two more main access points, however, they were likely to lose their utility substantially from having negative options such as highly developed (Commercial Development) and crowded beach sites (Crowding and Noise) with high rules and regulations (Rules/Regulations).

For an easy illustration, a set of five scenarios for beach trips were further extracted from the full set of management scenarios in Table 57. The proposed scenarios were selected as follows. First, three practicable scenarios were selected: Scenario 1 as the base option (i.e., status quo) with currently beach settings and Scenarios 3 and 4 (Scenarios 12 and 16 in Table 56) as viable management options that introduces additional provision of main beach access points and accrued commercial development. It is rational to expect that these two latter scenarios as a result of site development accrue a certain extent of crowding and noise as well as the introduction of management rules and regulations. The remaining scenarios were added to provide additional management insights to changes in the various levels of each attribute.

Table 58. The Predicted Probabilities and WTP of Five Main Proposed Scenarios.

	Main Beach Access Points	Parking Fees	Crowing and Noise	Commercial Development	Rules/Regulations	Conditional logit Prob. (%)	Conditional logit WTP ($)
S.1	No access points	0	Sparsely crowded	Not developed	No restrictions	12.7	0
S.2	One access point	5	Moderately crowded	Moderately developed	No restrictions	19.6	2.17
S.3	One access point	5	Moderately crowded	Moderately developed	Medium restrictions	24.5	4.32
S.4	Two access points	5	Moderately crowded	Moderately developed	Medium restrictions	34.7	7.70
S.5	Two access points	10	Moderately crowded	Highly Developed	High restrictions	8.5	-7.92

Results indicate that visitors most preferred Scenario 4 including two additional provisions of main beach access points and moderate crowding and noise and a medium level of commercial development at a site as well as medium restrictions of rules and regulations with a predicted probability of 34.7% and a WTP of $7.7. Scenario 5 was least preferred with the predicted probability of 8.5% and a WTP of -$7.9. Although two additional main access points were highly favorable, negative features such as $10 parking fees, high commercial development along the beach and high restrictions of rules and regulations were likely detrimental to beach visitors. While Scenario 1 with no site development (i.e., status quo) was relatively preferred with a predicted probability of 12.7%, in general, management scenarios with certain degrees of site development and management interventions were generally more favored than the status quo situation.

Beach Visitors' Management Decision-Making Support System

The Beach Visitors' Management Decision-Making Support Tool (VMDMS) is provided for more effective management decision making. The CD, developed using the condition logit model estimated above (i.e., Model 2), includes five key management scenarios in Table 4. Thus, in the VMDMS, each scenario is the same as shown in Table 57. In the last two columns, predicted probabilities for each scenario are shown in order to evaluate the degree of visitors' preferences. Because the VMDMS is an interactive tool that allows users to modify the levels of all of the attributes used, ultimately, users can test and compare the outcome of up to 324 different management scenarios (this number results from 3 options*4 options *3 options *3 options *3 options of the attributes in Table 54).

Discussion

As these beach management actions are applied promptly to affect visitors' choice behavior, a better understanding of the multidimensional aspects of beach trip demand is critical. The aim of this section of the report is to provide a better understanding of beach visitors' preferences for various management attributes upon determining their beach destinations, inclusive of their willingness to make tradeoffs among those attributes and their willingness to pay for various combinations of choice attributes.

The analysis results indicated that most attributes had the expected signs except for the option of "Moderately Developed" in Commercial Development and the option of "Medium Restrictions" in Rules and Regulations. While beach visitors preferred additional provision and maintenance of beach access points, they were less favorable to higher parking fees. Likewise, with highly negative coefficients of the options in Crowding and Noise, visitors are unfavorable to a beach site with higher crowding and noise level. However, "Moderately developed" beach sites are likely to attract additional visitors based on their preference for development with high rise hotels, restaurants and stores along the beach. Likewise, visitors are more likely to favor additional restrictions imposed by the management agency such as no fishing on the beach (Medium Restrictions). This was further supported by the results of the implicit prices. While visitors were likely to pay between $8 and $11 to acquire additional beach access points, they would require the compensation of between $6 and $12 to accept distasteful options of Crowding and Noise. Visitors were also willing to pay $2 to acquire the option of "Medium restrictions" on the beach.

The results generally corresponded with our prior expectations as visitors show a higher preference for more beach access points and less crowding and noise level on the beach. Nevertheless, visitors were also willing to support certain management actions such as the introduction of some management rules and regulations on beach use. In general, it is plausible that recreationists do not support management interventions. It is also known, however, that recreationists are willing to accept management rules and regulations when there is the likelihood of substantial conflict among participants (Manning, 1999). Based on a key concept that recreation is freedom of choice and behavior (Mannell & Kleiber, 1997, Sorice, Oh, & Ditton, 2005), recreationists actively seek to avoid conflict (i.e., interference to human behavior) such as changing their trip destination to a less crowded and noisy beach site. However, when a destination that fulfills their needs is not attainable, recreationists are more likely to support increased management interventions to the extent which restricts other participants' behaviors.

This idea was also supported by the scenario analysis. Beach visitors most preferred Scenario 4, consisting of two additional beach access points and moderate crowding and noise and a medium level of commercial development at a site as well as

medium restrictions of rules and regulations. Although beach visitors were not favorable to management actions such as parking fees, a moderate level of crowding and noise and management restrictions in the management scenario, they were willing to take into account trade-offs among the management attributes being considered. Thus, visitors were willing to sacrifice certain unappealing attributes to some extent to acquire the options of favorable management attributes for their utility (i.e., satisfaction) maximization.

Conclusion

The purpose of this study is to provide an analysis of visitor information to the office of Ocean and Coastal Resource Management (OCRM), South Carolina Department of Health & Environment Control (SCDHEC) to assist in the development of management programs and policies. Decision-makers require this information to determine the feasibility of land acquisition for public beach access as well as sustaining the current conditions of locations. Additionally, information provided by this study includes forecasts of future tourism demand, an economic impact analysis of beach visitors, an economic evaluation of beach access, and an analysis of beach visitors' preferences.

Agencies responsible for decisions pertaining to management of coastal resources are financially challenged by the continual increase in demand. In order to provide adequate public beach access, decision-makers should consider strategic 'target effective' revenue generation programs (Black et al., 1990). In terms of beach access, it has been suggested the role of local government is to fulfill the needs of local tax payers and state government fulfill the needs of other state residents and out-of-state visitors (Brower, 1978). The 'target effectiveness' strategy of Black et al. (1990) provides an important consideration for management seeking financing for beach access projects. The 'target effectiveness' strategy (Black et al., 1990) suggests the most viable option is a user/access fee, followed by a possible combination of parking, renter's tax and special district accommodations tax that target visitors to the area that are likely to use the beach for recreational purposes.

Providing adequate programs and services to visitors of South Carolina beaches requires decision-makers to utilize forecasts of future tourism demand. Results suggest short- and mid-term forecast of accommodation taxes, state park revenue (of coastal county parks), and tourism related employment in coastal counties will steadily increase over the next several years. Similarly, long-term forecast results reveal the number of people that travel to South Carolina to visit a beach will continue to increase over the next 25 years. The results of each forecast procedure suggest visitation to and demand of South Carolina's beaches will continue to increase in the coming years.

The forecast of an increase in demand suggests an opportunity for economic development in the South Carolina coastal region. An economic impact analysis provides important information to decision-makers about the increase in state and local income and employment due to the increase in beach visitation. State and local government officials use these results to justify the spending of public funds on infrastructure, programs and services needed to support the specific industry or sector.

When considering the 2005 state level scenario, estimated economic impacts of visitors to South Carolina beaches produce $1,221,608,882 value added, $165,801,357 indirect business tax, $1,972,715,823 total output, and 32,575 jobs. Visitors to the seven coastal counties (County level) to visit a beach in 2005 produce an estimated $1,520,017,022 value added, $209,238,194 indirect business tax, $2,402,326,511 total output, and 39,294 jobs. The value added impact implies the direct and secondary impacts generated from the production of output while the indirect business tax accounts for excise and sales taxes paid by individuals to businesses. Total output estimates the value of all sales by all industries in the state, and employment considers the increase in all full-time and part-time jobs.

An increase in economic activity due to an increase in beach visitation generates potential additional revenue available to public agencies. The potential additional revenue generated by economic development is normally insufficient when compared to the increase in demand for public beach access. In order for public agencies to provide sufficient access to outdoor recreation resources, the value of the resource must be determined for decisions about future policies. Contingent valuation method (CVM) is used in estimating the value of environmental public resources not traded in the marketplace (Johnson, Groothuis & Whitehead, 2001). Utilizing CVM, respondents are questioned about their willingness to pay (WTP) for a hypothetical situation to become reality.

Results suggest that each beach visitor is willing to pay a sizeable monetary amount (i.e., $9.1). When individual WTP is applied into the population level, approximately 7 million visitors likely gained the consumer surplus of $63 million assuming without any abrupt structural shifts in the economy. In 2010, about 7.8 million

visitors are likely to gain the economic benefits of $71 million from development and maintenance of additional beach access points.

Supplying decision-makers with an economic value allows more realistic comparisons between policies in the evaluation process. In particular, as the new acquisition of beach access points is high-priced, the precise estimation of visitors' benefits accrued from provision of beach access points is indispensable to more effective management decision-making.

Additionally, making effective management decisions requires a comprehensive understanding of the extent to which visitors prefer more or less proposed management options. Information pertaining to visitors' preferences increases the likelihood of effective implementation of programs and services relating to an increase in public beach access and protection requirements for public beaches. A stated preference choice method (SPCM) was utilized to identify the extent of visitors' concern about current beach management programs and support for prospective management actions.

Results of the SPCM revealed that visitors prefer additional provisions and maintenance of beach access points without an increase in parking fees. Additionally, respondents prefer lower levels of crowding and noise when considering beach destinations. However, "Moderately developed" beach sites are likely to attract additional visitors based on their preference for development with high rise hotels, restaurants and stores along the beach. Likewise, visitors are more likely to favor additional restrictions imposed by the management agency such as no fishing on the beach (Medium Restrictions).

The results generally corresponded with prior expectations as visitors show a higher preference for more beach access points and less crowding and noise level on the beach. Nevertheless, visitors were also willing to support certain management actions such as the introduction of some management rules and regulations on beach use.

Limitations

Several study limitations are worth noting. First, convenience samples of beach visitors intercepted at the sites were used for the study. In particular, an on-site sampling strategy during a specific time period can possibly lead to the limited generalizability of the results to other settings. Survey participants were approached during the off-season (March-April) for beach visitation which might question the validity of results when comparing to summer visitors.

Second, local visitors were omitted in the analysis. Due to concerns about crowding and congestion, it is recognized that local residents are less interested in development and maintenance of beach access and other management measures (Brower & Dreyfoos, 1979). Consequently, heterogeneous preferences for beach management between local residents and non-local visitors should be taken into account to avoid potential conflict.

Third, because of the hypothetical nature of the stated preference choice method to predict visitors' future behavior, it is not certain whether visitors' projected behavior will match their actual behavior (Blamey & Bennett, 2001; Hanley, Wright, & Adamowicz, 1998). While previous studies indicate high validity and reliability of the method (Adamowicz, Swait, Boxall, Louviere, & Williams, 1997; Oh & Ditton, 2006), this criticism on the stated preference method warrants future studies.

Fourth, a fair amount of literature exists for beach improvement projects. However, much of the existing literature is related to financing beach nourishment projects (Black et al., 1990; Kriesel, Keeler & Landry, 2004; Kriesel, Landry & Keeler, 2005). The existing beach access literature tends to focus on techniques for access points (Brower, 1978; Brower & Dreyfoos, 1979) but not on financing acquisition. To overcome the limitation of existing literature addressing acquisition and financing beach access projects, the financing options used to address beach nourishment projects were considered.

Finally, when considering the economic impact analysis, the number of visitors utilized in the analysis was obtained from the forecast section. This means the estimates provided by the economic impact analysis are only as good as the estimated provided in the forecasting section. Finally, researchers were challenged in the collection of data for analysis because departments within the state had insufficient and/or inadequate records.

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Appendices

Appendix A

Mailing Letters and Reminder Postcard

ID # «Verson»«ID»

April 12, 2006

«First_Name» «Last_Name»
«Address»
«City» «State» «Zip»

Dear Michael:

To better understand visitor preferences for conditions at South Carolina beach access locations, we are conducting a survey involving visitors to various South Carolina beaches. We want to develop an inventory of existing beach facilities and access information gathered from users at current beach access locations. This is the first attempt made to gather data in order to improve user conditions at beach access locations in South Carolina. You will be asked questions regarding your most recent trip to a South Carolina beach destination and to make choices about different conditions at beach access locations so we may find a balanced plan for various statewide beach access locations.

You are one of 500 people who agreed to participate in this study. Your answers to the survey questions are very important to us. The amount of time required to complete the questionnaire is about 15-20 minutes. There are no known risks associated with this research. Your participation in this research study is voluntary. You may choose not to participate and you may withdraw your consent to participate at any time. You will not be penalized in any way should you decide not to participate or to withdraw from this study.

You may be assured of complete confidentiality. The questionnaire has an identification number for mailing purposes only. This is so that we may check your name off the mailing list when your questionnaire is returned. Your name will never be placed on the questionnaire itself, and all names and addresses will be destroyed as soon as the data collection is complete.

If you have any questions or concerns about this study or if any problems arise, please contact Dr. Chi Ok Oh at Clemson University at 864.656.2005. If you have any questions or concerns about your rights as a research participant, please contact the Clemson University Office of Research Compliance at 864.656.6460.

Finally, we appreciate your willingness to consider our request and we thank you in advance for your help in understanding visitor needs and preferences at South Carolina beach locations.

Sincerely,

Chi-Ok Oh
Project Director

Oh, Chi-ok

Postcard

Recently, we mailed you a questionnaire regarding South Carolina beaches. If you have already completed and returned the questionnaire to Clemson University, please accept our thanks. If not, please complete and return the questionnaire in the self addressed and stamped envelope provided at your earliest convenience.

Since you are only one of 493 participants selected, it is extremely important that you return your completed survey so that South Carolina beach visitor preferences like yours are accurately represented.

If by chance you did not receive the questionnaire, or perhaps misplaced it, please call Dr. Chi-Ok Oh at (864) 656-2005 and we will get another one in the mail to you today.

Thank you for your assistance.

Chi-Ok Oh
Project Director

ID # «Verson»«ID»

May 3, 2006

«First_Name» «Last_Name»
«Address»
«City» «State» «Zip»

Dear «First_Name»:

About three weeks ago, we sent you a survey about your preferences for conditions at South Carolina beaches. As of today, we have not yet received your completed questionnaire. We are writing you again because of the significance each questionnaire has to the usefulness to this study. **This survey is designed to tell us about YOUR preferences when visiting South Carolina beaches. Your and other respondents preferences will help find a balanced plan for various statewide beach access locations.**

The success and accuracy of this study depends on you and the others who have not yet responded. You are one of only 493 South Carolina beach visitors selected to give your opinion. For results truly representative of the thoughts of beach visitors, like yourself, it is important that each questionnaire be completed and returned. The amount of time required to complete the questionnaire is about 15-20 minutes.

You may be assured of complete confidentiality. The questionnaire has an identification number for mailing purposes only. This is so that we may check your name off the mailing list when your questionnaire is returned. Your name will never be placed on the questionnaire itself, and all names and addresses will be destroyed as soon as the data collection is complete. Your prompt response is appreciated and will save us cost of mailing additional surveys. For questions or clarifications about the survey, please call Dr. Chi-Ok Oh with the Department of Parks, Recreation and Tourism Management at Clemson University at (864) 656-2005. **After you complete the questionnaire, please return it in the postage-paid business reply envelope provided as soon as possible.**

Thank your very much for your assistance.

Sincerely,

Dr. Chi-Ok Oh
Project Director

ID #: «contactID»

May 24, 2006

«First_Name» «Last_Name»
«Address»
«City» «State» «Zip»

Dear «First_Name»:

During the last two months we have sent you several mailings about your preferences for conditions at South Carolina beaches. Your and other respondents preferences will help find a balanced plan for various statewide beach access locations.

The study is drawing to a close, and this is the last contact that we will make with South Carolina beach visitors who expressed an interest in participating. You are one of only 493 participants selected to give your opinion on these matters. For results to truly represent the thinking of South Carolina beach visitors it is important that you complete and return your questionnaire in the self addressed and stamped envelope.

You may be assured of complete confidentiality. The questionnaire has an identification number for mailing purposes only. This is so that we can check your name off the mailing list when your questionnaire is returned. Your name will never be placed on the questionnaire itself and all names and addresses will be destroyed as soon as the data collection is complete.

You are free to refuse to answer any of the questions that may make you uncomfortable. This survey will take about 15 minutes to complete. For questions or clarifications about the survey, please call Dr. Chi-Ok Oh with the Department of Parks, Recreation and Tourism Management, Clemson University at (864) 656-2005.

Finally, we appreciate your willingness to consider our request as we conclude this effort to better understand your preferences for visiting South Carolina beaches.

Sincerely,

Oh, Chi-ok

Dr. Chi-Ok Oh
Project Director

Appendix B

Copy of Questionnaire

South Carolina Beach Visitors' Preferences

Department of Parks, Recreation, & Tourism Management
Clemson University
Clemson, South Carolina 29634

2006

Section 1. For questions 1 - 11, consider your experiences at the beach on your most recent visit to the South Carolina coast.

1. What beach did you visit on your most recent trip to the South Carolina Coast?
_____

2. Was this trip your first visit to a South Carolina beach?

   ❑ YES
   ❑ NO

3. Including your most recent visit, how many times have you visited a South Carolina beach in the last twelve months? _____

4. How many nights did you spend on your most recent trip to a South Carolina Beach?

   _____ TOTAL NIGHTS (If you took a day trip, enter **ZERO** and **SKIP to Question 6**)

5. Where did you stay while you were visiting the beach?

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

6. What was your primary reason for visiting a South Carolina beach?

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

7. Including yourself, how many people were there in your party? _____

8. Including yourself, how many people were you financially responsible for? _____

9. What type of group did you travel with on your most recent trip to a SC beach?

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

10. Did you bring a pet with you on your most recent trip to a SC beach?

- ❑ YES
- ❑ NO

11. During your most recent trip, how satisfied were you with the following attributes of the South Carolina Beach destination? ***(Please circle one)***

	Not at all Satisfied	Slightly Satisfied	Moderately Satisfied	Very Satisfied	Extremely Satisfied
Accommodations	1	2	3	4	5
Natural Beauty of the Area	1	2	3	4	5
Food at Destination	1	2	3	4	5
Traffic	1	2	3	4	5
Accessibility of Beach	1	2	3	4	5
Water Quality of Ocean	1	2	3	4	5
Quality of Sand on Beach	1	2	3	4	5
Signage Relating to Water Hazards	1	2	3	4	5
Availability of Lifeguards	1	2	3	4	5
Beach Access Locations	1	2	3	4	5
Beach Access Quality	1	2	3	4	5
Parking	1	2	3	4	5
Family Activities	1	2	3	4	5
Destination Nightlife	1	2	3	4	5
Water-based Activities	1	2	3	4	5
Shopping	1	2	3	4	5
Number of Visitors on the Beach	1	2	3	4	5

Section 2. 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?

12.	**County of Destination**	**Outside County of Destination**
a) Hotel/motel/other lodging	$ _____	$ _____
b) Grocery and retail stores	$ _____	$ _____
c) Restaurants and drinking places	$ _____	$ _____
d) 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*** _____**)**	$ _____	$ _____

Section 3. Think about your visit to a less developed beach destination in South Carolina during a peak season of June or July. The following six tables each offer two different beach trips that differ from each other in at least one way. Please read each beach description carefully. After reading each description, please check the beach trip you would prefer to visit. If you do not like either trip description, please check "I would not take either trip." There are no right or wrong answers; only your personal preferences. Some descriptions may look better to you than others; we want to know what you think.

Please note the following definitions before reviewing the example provided below (All scenarios deal with YOUR BEACH TRIPS in SOUTH CAROLINA).

If there is a factor not mentioned (i.e., weather or quality of sand), 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.

- **Access Points -** The main area(s) of access to the beach, typically including parking and restroom facilities. No main beach access point means parking on the side of the road and a small dirt path leading to the beach.
- **Parking Fees -** Amount paid (per vehicle/per day) for beach management and maintenance
- **Crowding and Noise Level** – The crowding and noise level that visitors experience on the beach (e.g., distance between groups, radio volume) and in the water (e.g., surfers', jet skiers' and swimmers' proximities to each other). Noise does NOT include nature (waves crashing on the shore, birds, etc).
- **Commercial Development** - Level of commercial development (hotels, restaurants, shopping and attractions) along the beach
  - Not developed – No hotels, no restaurants, no retail shopping
  - Moderately developed – A few low rise hotels, restaurants and stores well spaced along the beach
  - Highly developed – Several high rise hotels, restaurants, shopping and recreation facilities
- **Rules/Regulations** - Restrictions on beach use (e.g., pets, alcohol, vehicles and fishing)
  - No Restrictions – Pets, alcohol (no glass), vehicles and fishing allowed on beach
  - Medium Restrictions – No vehicles and no fishing, but pets allowed on leashes and alcohol allowed (no glass)
  - High Restrictions – No pets, no alcohol, no vehicles and no fishing allowed on beach

EXAMPLE. Suppose that you could only choose from the beach trips below (Trip A, Trip B or neither trip). Which would you prefer?

Suppose that you could only choose from the two beach trips below. Which would you prefer?

TRIP A	ATTRIBUTES	TRIP B
2 main beach access points	**Main Beach Access Points**	1 main beach access point
$15	**Parking Fees (Per Vehicle/Per Day)**	$10
Highly crowded and very noisy	**Crowding and Noise**	Sparsely crowded and quiet
Highly developed	**Commercial Development**	Moderately developed
Medium restrictions	**Rules/Regulations**	No restrictions

I prefer…(check **one** box below)

☑ TRIP A	❑ I WOULD NOT TAKE EITHER TRIP	❑ TRIP B

Think about your visit to a less developed beach destination in South Carolina during a peak season of June or July. After reading each description, please check the beach trip you would prefer to visit. If you do not like either trip description, please check "I would not take either trip."

If there is a factor not mentioned (i.e., weather or quality of sand), 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.

13. Suppose that you could only choose from the two beach trips below. Which would you prefer?

TRIP A	ATTRIBUTES	TRIP B
2 main beach access points	**Main Beach Access Points**	2 main beach access points
$20	**Parking Fees (Per Vehicle/Per Day)**	$15
Moderately crowded and somewhat noisy	**Crowding and Noise**	Moderately crowded and somewhat noisy
Highly developed	**Commercial Development**	Not developed
High restrictions	**Rules/Regulations**	No restrictions

I prefer…(check **one** box below)

❑ TRIP A	❑ I WOULD NOT TAKE EITHER TRIP	❑ TRIP B

14. Suppose that you could only choose from the two beach trips below. Which would you prefer?

TRIP A	ATTRIBUTES	TRIP B
1 main beach access point	**Main Beach Access Points**	1 main beach access point
$20	**Parking Fees (Per Vehicle/Per Day)**	$5
Sparsely crowded and quiet	**Crowding and Noise**	Moderately crowded and somewhat noisy
Not developed	**Commercial Development**	Highly developed
No restrictions	**Rules/Regulations**	High restrictions

I prefer…(check **one** box below)

❑ TRIP A	❑ I WOULD NOT TAKE EITHER TRIP	❑ TRIP B

Think about your visit to a less developed beach destination in South Carolina during a peak season of June and July. After reading each description, please check the beach trip you would prefer to visit. If you do not like either trip description, please check "I would not take either trip."

If there is a factor not mentioned (i.e., weather or quality of sand), 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.

15. Suppose that you could only choose from the two beach trips below. Which would you prefer?

TRIP A	ATTRIBUTES	TRIP B
2 main beach access points	**Main Beach Access Points**	2 main beach access points
$15	**Parking Fees (Per Vehicle/Per Day)**	$10
Sparsely crowded and quiet	**Crowding and Noise**	Highly crowded and very noisy
Not developed	**Commercial Development**	Moderately developed
No restrictions	**Rules/Regulations**	Medium restrictions

I prefer…(check **one** box below)

❑ TRIP A	❑ I WOULD NOT TAKE EITHER TRIP	❑ TRIP B

16. Suppose that you could only choose from the two beach trips below. Which would you prefer?

TRIP A	ATTRIBUTES	TRIP B
No main beach access point	**Main Beach Access Points**	No main beach access point
$10	**Parking Fees (Per Vehicle/Per Day)**	$5
Highly crowded and very noisy	**Crowding and Noise**	Moderately crowded and somewhat noisy
Moderately developed	**Commercial Development**	Moderately developed
Medium restrictions	**Rules/Regulations**	Medium restrictions

I prefer…(check **one** box below)

❑ TRIP A	❑ I WOULD NOT TAKE EITHER TRIP	❑ TRIP B

Think about your visit to a less developed beach destination in South Carolina during a peak season of June and July. After reading each description, please check the beach trip you would prefer to visit. If you do not like either trip description, please check "I would not take either trip."

If there is a factor not mentioned (i.e., weather or quality of sand), 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.

17. Suppose that you could only choose from the two beach trips below. Which would you prefer?

TRIP A	ATTRIBUTES	TRIP B
2 main beach access points	**Main Beach Access Points**	1 main beach access point
$10	**Parking Fees (Per Vehicle/Per Day)**	$5
Sparsely crowded and quiet	**Crowding and Noise**	Sparsely crowded and quiet
Moderately developed	**Commercial Development**	Highly developed
High restrictions	**Rules/Regulations**	No restrictions

I prefer…(check **one** box below)

❑ TRIP A	❑ I WOULD NOT TAKE EITHER TRIP	❑ TRIP B

18. Suppose that you could only choose from the two beach trips below. Which would you prefer?

TRIP A	ATTRIBUTES	TRIP B
1 main beach access point	**Main Beach Access Points**	No main beach access point
$5	**Parking Fees (Per Vehicle/Per Day)**	$20
Highly crowded and very noisy	**Crowding and Noise**	Sparsely crowded and quiet
Highly developed	**Commercial Development**	Moderately developed
No restrictions	**Rules/Regulations**	High restrictions

I prefer…(check **one** box below)

❑ TRIP A	❑ I WOULD NOT TAKE EITHER TRIP	❑ TRIP B

Section 4. For question 19 – 26, please circle the number corresponding to your opinion about the following statements.

19. Please rate the importance of the following features of the beach access location on your most recent trip to a SC beach.

	Not at all Important	Slightly Important	Moderately Important	Very Important	Extremely Important
Cleanliness of grounds	1	2	3	4	5
Condition of facilities	1	2	3	4	5
Cleanliness of restrooms	1	2	3	4	5
Number of recreational activities	1	2	3	4	5
Noise control	1	2	3	4	5
Pet control	1	2	3	4	5
Accessibility for persons with disabilities	1	2	3	4	5
Safety and security	1	2	3	4	5
Easy access	1	2	3	4	5
Value for the parking fee (meters/lots)	1	2	3	4	5

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

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
This beach is well maintained	1	2	3	4	5
The beach is safe	1	2	3	4	5
This beach has good facilities (restrooms, parking)	1	2	3	4	5
Water quality is good enough for swimming	1	2	3	4	5
I would visit the beach more if it was better maintained	1	2	3	4	5
I would visit the beach more if it had more activities	1	2	3	4	5
I would visit the beach more if it had better facilities	1	2	3	4	5
I would visit the beach more if I felt safer	1	2	3	4	5
The beach was to crowded	1	2	3	4	5
I visit this beach because it has nearby natural areas	1	2	3	4	5

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

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
No other beach can compare to this one	1	2	3	4	5
I feel this beach is a part of me	1	2	3	4	5
I go to this beach because it is close by	1	2	3	4	5
This beach means a lot to me	1	2	3	4	5
I wouldn't substitute another beach for this one	1	2	3	4	5
I am more satisfied visiting this beach than any other	1	2	3	4	5
Visiting this beach says a lot about who I am	1	2	3	4	5
I am very attached to this beach	1	2	3	4	5

22. Please rate these questions pertaining to your view on environmental issues.

	Rarely	Occasionally	Sometimes	Frequently	Usually
I tried to find out what I can do to help environment	1	2	3	4	5
I talked to others about environmental issues	1	2	3	4	5
I watched TV programs about environmental issues	1	2	3	4	5
I read articles about current environmental issues	1	2	3	4	5
I donated money/member of conservation group	1	2	3	4	5
I joined a community clean effort	1	2	3	4	5
I switched to environmentally safe brand items	1	2	3	4	5
I read labels to see if items are environmentally safe	1	2	3	4	5
I separated out recycle items from trash	1	2	3	4	5
I recycled newspaper	1	2	3	4	5
I recycled glass bottles, jars, or aluminum cans	1	2	3	4	5

23. Below is a list of reasons why people go to the beach. Please circle the number that indicates how important
each item is to you as a reason for going to the beach.

	Not at all Important	Slightly Important	Moderately Important	Very Important	Extremely Important
To be outdoors	1	2	3	4	5
For family recreation	1	2	3	4	5
For relaxation	1	2	3	4	5
To be close to the water	1	2	3	4	5
To get away from the demands of other people	1	2	3	4	5
To be with friends and family	1	2	3	4	5
To get away from regular routine	1	2	3	4	5
To experience a new and different environment	1	2	3	4	5
To experience natural surroundings	1	2	3	4	5
To experience adventure and excitement	1	2	3	4	5

24. If you were not satisfied with your most recent trip to a South Carolina beach, **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 beach destination regardless of the most recent experience
- ❑ I would go to another beach destination in South Carolina
- ❑ I would go to another beach destination ***not*** in South Carolina
- ❑ I would go to another destination that does not have a beach
- ❑ I would not take a trip to any destination

25. What was the major factor in deciding to visit a South Carolina beach? ***(Please check just one)***

- ❑ Price
- ❑ Location
- ❑ Prior visit
- ❑ Referral
- ❑ Advertising
- ❑ Other: _____ (Please specify)

26. Overall, how satisfied are you with your most recent trip to a South Carolina beach? ***(Please circle one)***

Not at all Satisfied	Slightly Satisfied	Moderately Satisfied	Very Satisfied	Extremely Satisfied
1	2	3	4	5

Section 5. For questions 27-30, please read and consider the following scenario. SC state and local management programs are considering improving the current access situations by adding additional beach access points. The current plan is directed towards less developed destinations. Typically, the less developed destinations lack adequate beach access points and parking, along with facilities such as restrooms and showers. Usually, less developed destinations have only a central beach access point with a limited number of parking spaces located in the vicinity of the beach. Development and maintenance of additional beach access points with parking spaces and other preferred facilities requires funds.

27. If the number of public beach access points increased from one central location with inadequate parking to two locations with sufficient parking in less developed destinations, would you be willing to pay $ _____ more in addition to your typical parking fees per day for the additional beach access point and parking?

a) YES (**Go to question 28**)
b) NO (**Go to question 29**)

28. (If yes) If the number of public beach access points increased from one central location with inadequate parking to two locations with sufficient parking in less developed destinations, would you be willing to pay $ _____ more in addition to your typical parking fees per day for the additional beach access point and parking?

a) YES (**Skip to question 31**)
b) NO (**Skip to question 31**)

29. (If no) If the number of public beach access points increased from one central location with inadequate parking to two locations with sufficient parking in less developed destinations, would you be willing to pay $ _____ more in addition to your typical parking fees per day for the additional beach access point and parking?

a) YES (**Skip to question 31**)
b) NO (**Please answer question 30**)

30. Why did you answer **NO** to **question 29**? Please choose the most important reason listed below.

- ❑ I place a zero value on the proposed increase in beach access points.
- ❑ I cannot afford higher trip costs at this time.
- ❑ The government should pay for this without an increase in fees.
- ❑ I do not think the plan would work as described
- ❑ Other (**Please describe**) _____

Section 6. The following questions will help us know more about beach visitors.

31. In what state do you reside? _____

32. What is your age? _____

33. Are you:

- ❑ FEMALE
- ❑ MALE

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

- ❒ < $10,000
- ❒ $10,000 – 19,999
- ❒ $20,000 – 29,999
- ❒ $30,000 – 39,999
- ❒ $40,000 – 49,999
- ❒ $50,000 – 59,999
- ❒ $60,000 – 69,999
- ❒ $70,000 – 79,999
- ❒ $80,000 – 89,999
- ❒ $90,000 – 99,999
- ❒ $100,000 and Above

35. 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

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

- ❑ YES
- ❑ NO

37. Are you of Spanish/Hispanic origin?

- ❑ No, not Spanish Hispanic
- ❑ Yes, Mexican, Mexican American, Chicano
- ❑ Yes, other Spanish Hispanic group (***please specify group***_____)

38. What is your race? Please indicate one or more races for what you consider yourself to be.
- ❑ White
- ❑ Black or African American
- ❑ American Indian or Alaskan native
- ❑ Asian or Pacific Islander
- ❑ Other race (***please specify***_____)

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

Your contribution of time to this study is greatly appreciated. Please return your completed questionnaire in the pre-paid reply envelope provided as soon as possible. Thank You.

Clemson University
Department of Parks, Recreation & Tourism Management
Clemson, SC 29634

Appendix C

Informational Flyer

Beach Access Preferences: Visitor Survey

The Department of Parks, Recreation, & Tourism Management at Clemson University is conducting a study of beach access visitors in South Carolina to better understand their preferences for various management measures that may be necessary to sustain or improve conditions at locations in the future. It is crucial to identify trade-offs among preferences, and to learn which management measures have the most overall support for recreational users of beach access locations.

Your cooperation and participation in this survey is essential to our study effort. First, you can help us by giving your name and mailing address to us today and become a part of our study sample. Second, you will receive a mail questionnaire from Clemson University in April.

The mail questionnaire will take no more than twenty minutes to complete and all of the information you provide will be held in strict confidence. Your name will never be associated with your responses.

The information you and others provide will be used to better understand the deliver improved management at South Carolina beach access locations.

Please feel free to contact us at the below address if you have any further questions about your participation in this study. Thank you in advance for your cooperation.

If you have any questions regarding your rights as a research participant, you may contact the Clemson University Office of Research Compliance at 864-656-6460.

We will be in touch!

For further information about the project, please contact:

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