



Regional Economic Benefits of Sebastian Inlet



Document Information

Prepared for: The Sebastian Inlet District
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Date: July 20, 2013
Status: Final Document

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Executive Summary

The Sebastian Inlet region is one of the premier saltwater recreation areas on Florida's east coast. Every year, hundreds of thousands local residents and tourists boat, fish, swim and surf the waters of the Indian River Lagoon and the Atlantic Ocean in the area. The Sebastian Inlet itself is vital in supporting these activities, particularly fishing and surfing. Not only does the inlet provide direct access to popular offshore fishing spots, but it also helps support healthy aquatic ecosystems and fisheries in the lagoon by allowing saltwater to flow into the lagoon and mix with freshwater from inland springs, streams and rivers. Without the inlet, boaters in the area could not access the ocean, and the ecosystem of the lagoon near the inlet could not support marine fisheries in the area to the extent that they do today. As a result, fishing and other recreational activities that are important to the regional economy would likely decline.

The Sebastian Inlet District, which is responsible for ensuring that the inlet remains navigable for boaters, recently sponsored a study to measure the regional economic impacts of maintaining the inlet. The study estimated how recreational boating and other activities dependent upon the inlet support the economies of local communities within the political boundaries of the Sebastian Inlet District. Other parts of the study measured the increase in costs for regional boaters and fishermen to access offshore waters via other inlets if the Sebastian Inlet were not navigable, and how the presence of the inlet influences local property values. Lastly, the analysis estimated the economic value of key natural resources sustained by the presence of the inlet. In particular, the inlet is vital for nearby seagrass ecosystems ("marine prairies") that support numerous species of fish, crab, shrimp, sea turtles, and other marine wildlife.

The study conducted by Florida based natural resource economists with the firm Cardno ENTRIX estimates that today the presence of the inlet:

- generates \$93 million in business revenues per year for regional businesses;
- creates \$48 million worth of annual income for regional businesses and residents;
- supports an estimated 970 local jobs, and
- generates about \$8 million per year in state and local tax and fee revenues.

If the inlet were not navigable, recreational boaters who reside in the region who boat primarily due to the presence of the inlet would have to travel north or south to alternate launch sites (Cape Canaveral or Fort Pierce Inlet) at a total annual cost of \$6.4 million per year. On average, a typical boater residing in the region would pay an additional \$700 per year to access the Atlantic Ocean. The inlet also has a notable effect on property values— about \$1.8 billion for waterfront homes within about 15 miles north and south of the inlet. Lastly, the inlet directly supports seagrass colonies that generate an estimated \$19 million per year in economic value related to fisheries in the lagoon."

1 Introduction

1.1 Background

Created in 1919 by special act of the Legislature of the State of Florida, the Sebastian Inlet District (referred to herein as the District) is responsible for maintaining the navigational channel between the Atlantic Ocean and the Indian River. The Sebastian Inlet area is a premier surfing, fishing, boating and recreational area on the east coast of Florida. Situated between Brevard and Indian River Counties, the Sebastian Inlet (referred to herein as the Inlet) supports a rich and diverse ecological environment. The inlet is vital not only for the ecological health of the Indian River Lagoon, but it is also an important economic engine for local communities in the region. The Inlet is one of only five navigable channels that connect the Indian River Lagoon to the Atlantic Ocean. Other inlets include the Ponce de Leon Inlet, Cape Canaveral Inlet and Fort Pierce and Jupiter inlets.

If the District did not adequately maintain the Inlet, boaters that currently use the Inlet and the businesses servicing those boaters, would be negatively affected. Regional boaters currently using the Inlet would have to travel to Canaveral Inlet (approximately 42 miles north), or to Fort Pierce Inlet (approximately 30 miles south) to access offshore waters. Faced with these choices, boaters would either have to expend the fuel and time to travel to the nearest inlet to access offshore waters, reduce the number of offshore trips that they take, or permanently relocate their vessel closer to the nearest navigable inlet. All three choices would negatively affect the area's economy by requiring boaters to spend more time and money to access offshore waters, or reducing spending at area businesses due to fewer boating and fishing trips or fewer vessels remaining within the local economy.

Some of the affected businesses are obvious and include enterprises such as marinas, charter boat services, and marine repair facilities located on waterways near the Inlet. Other affected businesses are less obvious, but identifiable; and include tackle shops and marine supply stores that are not located on the waterways, but directly benefit from selling goods and services to businesses servicing boaters using the Inlet. Impact to other business activities is less obvious. These businesses supply goods and services to the businesses that supply businesses directly benefitting from the Inlet. Also affected are businesses whose operations are not directly related to the Inlet, but are impacted through the sale of household goods and services such as food, clothing, shelter, and fuel to employees of businesses dependent on the Inlet or businesses servicing firms that benefit from the Inlet. All of these business activities are related to or linked to boaters that rely on the Inlet to access offshore waters and contribute to local economies by generating business sales, employment, personal income, and tax revenues. Additionally, the Inlet runs through the middle of the Sebastian Inlet State Park, which is the second most visited park

in Florida with approximately 500,000 to 750,000 visitors annually, and the Inlet is the main attraction for park visitors.

1.2 Study Objective and Authors

Given the importance of the Inlet to the regional economy, the objective of this study is to identify and quantify the regional economic impacts including business activity, income, employment, and tax revenue generated within the portions of Brevard and Indian River counties as a result of adequately maintaining navigation on the Inlet. In addition, the study estimates other economic benefits associated with the Inlet including: 1) potential increases in costs and time for regional boaters to access alternate inlets if the Sebastian Inlet were not navigable; 2) how the Inlet affects regional property values; and 3) the value of natural resources sustained by the presence of the Inlet.

Cardno ENTRIX completed this study with funding from the Sebastian Inlet Commission. Cardno ENTRIX is a professional environmental consulting company specializing in Water Resources Management, Natural Resources Management, Permitting & Compliance, Environmental & Natural Resource Liability Management, Economics and Decision Sciences, and Health Sciences. With over 25 full time economists who hold doctoral, masters or M.B.A. degrees, the firm has one of the largest private sector groups of natural resource economists in the nation. Economics expertise integrates across all business lines, particularly water resources, land use management, and environmental litigation support.

1.3 Organization of Remainder of Report

The remainder of this report has four sections. Section 2 summarizes results of the literature review. Section 3 presents key results of the recreational boating and marine related business surveys, both of which are integral to Section 4, that in turn presents the methods and results of the economic impact analysis. Section 5 covers additional benefits associated with the Inlet as described above. Appendices of the report contain copies of survey instruments and statistical summaries of survey responses.

2 Literature Review

Task 1 involved conducting a literature review of relevant studies that attempt to measure how access to the ocean, lagoons and estuaries affect regional economies in Florida with an emphasis on impacts to Brevard and Indian River counties.

One of the most relevant studies, conducted in 1995 and updated in 2007, estimated the economic value of the Indian River Lagoon to adjacent counties (Volusia, Brevard, Indian River, St. Lucie, and Martin counties).¹ The study concluded that in total the five counties received \$3.7 billion in benefits in 2007 directly attributed to the Indian River Lagoon (Table 1). Recreational expenditures associated with activities such as boating, nature watching, and shoreline visitation totaled \$1.3 billion, and the income generated for these activities was nearly \$630 million. The lagoon's impact to waterfront real estate value totaled \$934 million for all five counties. On a county level, the presence of the lagoon generated an estimated \$215 million in recreation related business revenues for Brevard County, and nearly \$90 million for Indian River County that resulted in \$143 million worth of income for businesses and workers in both counties. In both counties, the lagoon's impact to real estate values (annualized) was substantial - \$407 million in Brevard County and \$117 million in Indian River County.

Another study conducted in 2001 and updated in 2010 for the Florida Inland Navigation District estimated the economic benefits of maintaining the navigability of the Atlantic Intracoastal Waterway in Indian River and Brevard counties.² The analysis estimated the total economic impacts of the waterway including those associated with marine and non-marine related expenditures by recreational boaters. Impacts were estimated assuming the waterway was maintained at current depths, and assuming a three-foot draft restriction and a twelve-foot draft restriction, which is greater than the status quo depth. For Indian River County, updated impacts at current channel depths (2010 dollars) totaled \$44.1 million in business revenues, \$10.1 million in income, and supported 943 jobs (Table 3). For Brevard County, estimated impacts were higher - \$580 million in business revenues, \$122 million in income, and 3,652 jobs. In both counties, figures decline assuming a three-foot draft restriction. Study authors noted that the impacts were estimated during the economic recession of 2007 through 2009, and would have been significantly higher in the absence of the recession.

¹ Hazen and Sawyer Environmental Engineers & Scientists. "Indian River Lagoon Economic Assessment and Analysis Update." Prepared in conjunction with the St. Johns River Water Management District for the Indian River Lagoon National Estuary Program. August 2008.

² Gulf Engineers & Consultants. "Final Report on the Update of the Economic Benefits of the District's Waterways in Florida – Appendix I." Prepared for: Florida Inland Navigation District, December 2011.

Table 1: Estimated Annual Economic Value of the Indian River Lagoon in its Existing Environmental Condition (2007, \$millions)

Recreational Expenditures	\$1,302.0
Recreational Use Value	\$762.0
Real Estate Value (annualized)	\$934.0
Income Generated in Indian River Lagoon Counties	\$629.7
Restoration, Research and Education Expenditures	\$91.0
Commercial Fishing Dockside Value	\$3.8

Source: Hazen and Sawyer Environmental Engineers & Scientists. Indian River Lagoon Economic Assessment and Analysis Update. Prepared for the Indian River Lagoon National Estuary Program, Aug 18 2008.

Table 2: Estimated Annual Values of the Indian River Lagoon to Residents and Visitors by Indian River Lagoon Counties (millions, 2007 dollars)

	Volusia	Brevard	Indian River	St. Lucie	Martin
Recreational expenditures	\$234.8	\$301.1	\$128.4	\$78.0	\$60.8
Real estate value (annualized)	\$39.0	\$407.0	\$117.0	\$244.0	\$127.0
Business revenue from recreation	\$167.7	\$215.1	\$89.9	\$52.7	\$38.6
Income from recreation	\$76.9	\$99.9	\$42.9	\$20.0	\$17.7
Employment from recreation	2,383	3,112	1,232	759	571
Tax revenues from recreation	10.5	\$4.0	\$1.4	\$1.4	\$1.1

Source: Hazen and Sawyer Environmental Engineers & Scientists. Indian River Lagoon Economic Assessment and Analysis Update. Prepared for the Indian River Lagoon National Estuary Program, Aug 18 2008.

Table 3: Total Economic Benefits of the Waterways in Indian River County (millions, 2010 dollars)			
Indian River County			
	Business revenue	Income	Employment
Current impacts	\$44.1	\$10.1	242
Three-foot draft restriction impacts	\$29.7	\$6.9	165
Twelve-foot draft restriction impacts	\$45.3	\$10.5	254
Brevard County			
	Business revenues	Income	Employment
Current impacts	\$580.2	\$122.3	3,652
Three-foot draft restriction impacts	\$176.9	\$42.9	1,234
Twelve-foot draft restriction impacts	\$601.6	\$127.2	3,813
Source: Gulf Engineers & Consultants. "Final Report on the Update of the Economic Benefits of the District's Waterways in Florida – Appendix I." Prepared for: Florida Inland Navigation District, December 2011.			

The National Ocean Economics Program (NOEP) manages Ocean Economy data that the public can query on the organization's website.³ Data include benefits accruing from ocean related activities and industries such as construction, minerals industries, ship and boat building, tourism and recreation, and transportation. NOEP estimates that all sectors and industries combined contributed \$23.5 billion to Florida's Gross Domestic Product (GDP) in 2010 including with \$10.3 billion in wages and 405,676 full and part-time jobs. In Brevard County, ocean related activities and industries contributed \$1.19 billion to the state's GDP, \$522 million in wages, and 19,154 jobs. In Indian River County, ocean related activities and industries contributed \$157 million in GDP, \$75.2 million in wages, and 3,889 new jobs to local economies.

Several studies analyzed impacts of marine related activity in other counties and at the state level. For example, the Marine Industries Association of South Florida estimated the value of the marine and boating industry for all of Florida, and in Broward, Dade, and Palm Beach counties ("Tri-county"). Economic impacts for the Tri-county marine industry in 2010 totaled \$8.9 billion in business revenues;

³ Source: National Ocean Economics Program. 2010. Ocean Economy Data. Access date: 01/31/2013.
<http://oceanomics.org/Market/ocean/oceanEcon.asp>.

\$3.06 billion in wages and earnings; and 107,234 jobs. According to the study, the three counties accounted for about one half of all marine related sales in Florida.⁴

A recent study completed for the Florida Fish and Wildlife Conservation Commission reported the state level economic benefits associated with fish and wildlife recreation, the seafood industry, and boating.⁵ In total, the study estimated that fish and wildlife recreation directly and indirectly generated a total \$14.9 billion in sales revenues for Florida businesses and supported 141,373 jobs. The boating industry generated \$16.8 billion in business revenues and supported 202,743 jobs; and sales revenues associated with the seafood industry totaled \$5.7 billion with a total of 108,695 jobs supported statewide.

Since artificial reefs are of interest to the District, we also reviewed several studies that estimated the economic impacts of offshore artificial reefs in Florida. A 2011 Florida Sea Grant study quantified impacts generated by artificial reefs in Pinellas, Hillsborough, Manatee, Sarasota, Charlotte, and Lee counties in Southwest Florida.⁶ Of the more than 2,500 artificial reefs in Florida's coastal waters, roughly one-third lie off the coast of the six counties that compose the study area. The study estimated that visitors to the reefs generate \$226.9 million worth of sales revenues for regional businesses, and \$121.7 million in income for regional businesses and residents. Activity associated with reefs also generated \$16.6 million in local and state business tax revenues, and supported an estimated 2,595 full and part time jobs. Another research project estimated the economic benefits of natural and artificial reefs of Martin County on the Atlantic coast of Florida near our study area. The total economic contribution of both artificial and natural reefs, for both residents and visitors, was estimated to be \$13.1 million in business revenues, \$5.8 million in income, \$0.09 million in state and local taxes, and 182 jobs. Artificial reefs represented a slightly larger proportion of the overall benefits.⁷

⁴ Thomas J. Murray & Associates, Inc. "*Economic Impact of the Recreational Marine Industry – Broward, Dade, and Palm Counties, Florida.*" Prepared for the Marine Industries Association of South Florida, November 2010.

⁵ Florida Fish and Wildlife Conservation Commission. "*Economics of Fish and Wildlife Recreation, Seafood Industry, and Boating in Florida.*" 2011.

⁶ Swett, R. A. et. al. "*Economic Impacts of Artificial Reefs for Six Southwest Florida Counties – Pinellas, Hillsborough, Manatee, Sarasota, Charlotte, and Lee.*" Prepared for the Florida Sea Grant, July 2011.

⁷ Hazen and Sawyer Environmental Engineers & Scientists. "*Socioeconomic Study of Reefs in Martin County, Florida.*" Prepared for Martin County, Florida. July 2004.

3 Surveys

A key element of this study involved conducting surveys and interviews with regional boaters and marine related businesses. Data collected as part of both surveys formed the basis for estimating the regional economic impacts of the Inlet. Section 3 describes survey methods and summarizes selected results.

3.1 Boating Survey

The survey of regional boaters is based on a sample of registered boaters in the study area drawn from databases purchased from the Florida Department of Motor Vehicles. There are currently about 30,000 recorded registrations in Brevard and Indian River counties; however, this figure includes expired registrations, which are not included in the survey sample. In the study area, we identified 9,198 boaters with current registrations and selected at random 700 individuals. Each individual was mailed a survey/questionnaire soliciting information on vessel characteristics, vessel operation, boating expenditures and other related factors. In addition to the mail survey, Cardno ENTRIX posted the questionnaire online on the District's website. In total, 520 people responded (6 percent of regional boaters with active registrations) to the survey and 440 (5 percent) provided complete questionnaires. Key survey results are discussed below. Appendix A of this report contains the survey instrument, and Appendix C provides summary statistics for responses.

3.1.1 Vessel and Trip Characteristics

Table 4 summarizes reported vessel characteristics (size and propulsion type). Not surprisingly, 80 percent of respondents operate a vessel with an outboard motor. Fourteen percent reported inboard motors, and four percent operate a sailboat with either an inboard or outboard motor. On average, vessels are 22 feet in length and the largest reported vessel is 52 feet. Table 5 displays primary activity reported in the survey, and by far, fishing is the most popular pursuit followed by day cruising or sailing. Scuba diving and other watersports were the primary activity for about six percent of respondents.

Table 4: Vessel Characteristics Reported in Boating Survey				
Vessel Type	Total	Frequency		
Motor outboard	325	80.0%		
Motor inboard	56	14.0%		
No motor or sail	10	2.0%		
Sail inboard	10	2.0%		
Sail outboard	7	2.0%		
Sail no motor	0	0.0%		
	Mean	Standard Deviation	Maximum	Minimum
Boat Length (feet)	22	6	52	10
Source: Recreational Boating Survey Sponsored by the Sebastian Inlet District				

Table 5: Distribution of Boating Activities Reported in Boating Survey	
Activity	Frequency
Fishing	75.6%
Day cruising or sailing	16.2%
Scuba diving or snorkeling	3.3%
Watersports	3.1%
Overnight cruising	1.8%
Total	100.0%
Source: Recreational Boating Survey Sponsored by the Sebastian Inlet District	

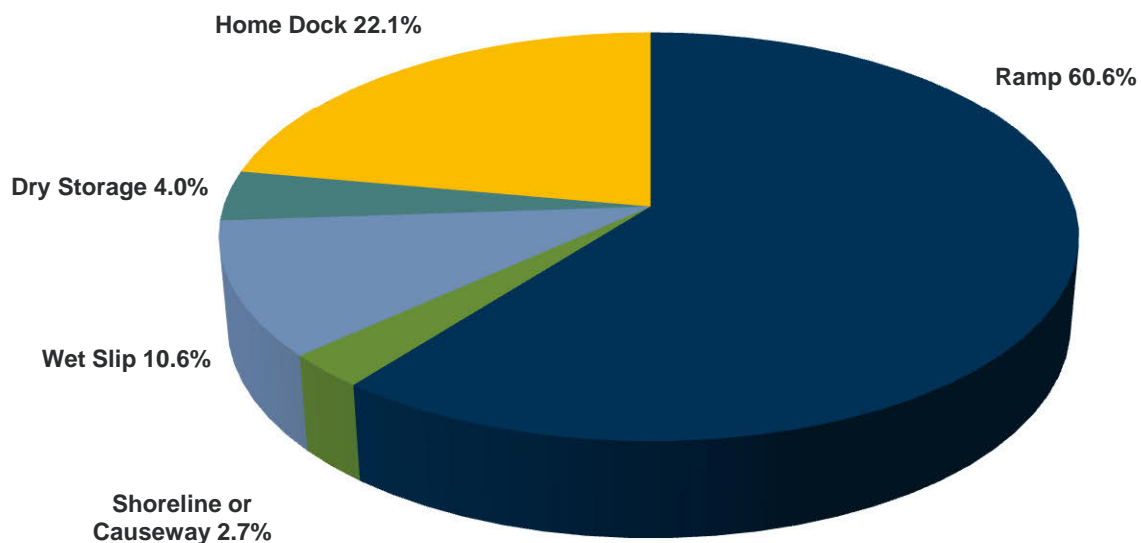
Table 6 shows data regarding the frequency of boat launches (referred to as boat “trips” in this report).⁸ In 2012, respondents reported a total of 20,616 trips with average value of 47 per boater; and unlike other more temperate parts of the nation, the number of trips are more evenly distributed throughout the year. For example, 40 percent of reported trips took place in the winter and fall. Nearly one half of all boat trips involved navigating the Inlet (an average of 34 times per year per boater), and about 20 percent of trips involved visits to the Sebastian Inlet State Park. Only five percent visited offshore artificial reefs (see Table 7). However, 82 percent of boaters stated they would be more likely to visit reefs if the structures were closer to shore (5 miles versus 10 miles or more for existing reefs). The most common departure site reported were public boat ramps (60 percent of trips) followed by home dock departures (22 percent), wet slips (11 percent), dry storage (4 percent) and shoreline or causeway launches (3 percent).

Table 6: Number and Characteristics of Boat Launches Reported in Boating Survey					
Trips by season	Total	Frequency			
Winter	3,591	17.4%			
Spring	5,360	26.0%			
Summer	7,007	34.0%			
Fall	4,658	22.6%			
Total trips for 2012	20,616	100.0%			
	Total	Mean	Standard Deviation	Maximum	Minimum
Total trips	20,616	47	15	270	0
No. of trips that involved navigating Sebastian Inlet	9,483	25	34	240	0
No. of trips visiting Sebastian Inlet State Park	3,959	10	22	240	0
No. of trips visiting existing offshore artificial reefs	1,664	4	17	200	0
Typical no. of persons per trip	na	2.7	0.8	4.0	1.0
Typical no. of miles traveled on trip (on water)	na	3.8	2.5	9.0	1.0
“na” = not applicable. Source: Boating Survey Sponsored by the Sebastian Inlet District					

⁸ Throughout the report we reference both “boating trips” and in some cases “person trips.” A boating trip refers to a boat launch regardless of the number of people on a boat. Person trips include the number people on a boat.

Table 7: Activity at Existing Artificial Reefs and Potential Demand for Reefs Closer to Shore	
Activity while visiting reefs	
Activity	Frequency
Fishing	78%
Snorkeling or Diving	23%
Total	100%
Likelihood of visiting new reefs if built closer to shore (5 miles versus 10 miles)	
Response	Frequency
Yes	82%
No	18%
Total	100%
Source: Boating Survey Sponsored by the Sebastian Inlet District	

Figure 1: Departure Site Reported by Boaters in the Sebastian Inlet Area



3.1.2 Boating Expenditures

In addition to boat trip frequency and patterns, expenditures by boaters in the regional economy are critical to estimating the broader economic impacts of the Inlet. As shown in Table 8, boaters spend an average of \$160 per trip on items such as boat fuel and sundries. Boat fuel is typically the largest expense (\$80 on average). Groceries, ice, bait and other sundry goods account for \$34. Note that the range of reported values is very large. This is likely due to the fact that charter boat or commercial fishing operations responded to the boating survey as opposed to the marine related business survey. Figures in Table 8 account for spending on a given boating trip. In contrast, Table 9 shows statistics for the annual costs of owning and operating a boat such as maintenance and repair. The largest expenditures were those for boat accessories and equipment such as fishing gear and electronics followed by boat maintenance and repair, and vessel insurance and registration. Table 10 displays data regarding potential purchases of new boats by respondents. Almost one half of boaters stated that their boat was at least 10 years old, and 25 percent indicated that they would likely replace it within 3 years. However, less than 20 percent reported that they would purchase a new vessel from dealers within the study area.

Table 8: Expenditures per Recreational Boating Trip Reported in Boating

Expense Category	Mean	Standard Deviation	Maximum	Minimum
Boat fuel	\$80	\$94	\$550	\$0
Driving expenses	\$17	\$27	\$550	\$0
Launch fees, docking or mooring	\$8	\$27	\$212	\$0
Groceries, ice, bait etc.	\$34	\$37	\$300	\$0
Restaurants or taverns	\$21	\$34	\$200	\$0
Total	\$160	\$220	\$1,812	\$0
Source: Boating Survey Sponsored by the Sebastian Inlet District				

Table 9: Average Annual Boating Related Expenditures Reported in the Boating Survey

Expense Category	Mean	Standard Deviation	Maximum	Minimum
Boat accessories and equipment	\$1,604	\$7,001	\$90,000	\$0
Maintenance and repair	\$928	\$1,553	\$14,500	\$0
Dry storage	\$747	\$1,529	\$10,000	\$0
Insurance and registration	\$609	\$939	\$10,000	\$0
Lodging	\$306	\$955	\$10,000	\$0
Park and or campground fees	\$113	\$167	\$2,000	\$0
Total	\$4,307	\$12,144	\$136,500	\$0

Source: Boating Survey Sponsored by the Sebastian Inlet District

Table 10: Vessel Purchase Data Reported in the Boating Survey

Age of primary vessel	Frequency
Less than 5 years	17.7%
5-10 years	33.7%
More than 10 years	48.6%
Total	100.0%
Likely time frame until replacing current vessel	Frequency
Within 3 years	25.0%
Within 4-5 years	27.0%
Within 6-10 years	17.4%
More than 10 years	30.5%
Total	100.0%
Likelihood of purchasing new boat in study area	Frequency
Yes	17.7%
No	33.7%
Not sure	48.6%
Total	100.0%

Source: Boating Survey Sponsored by the Sebastian Inlet District

3.2 Marine Related Business Survey

To conduct the marine business survey, Cardno ENTRIX identified 77 businesses in the study area that included marinas and hotels, charter boat operations, boat service centers, boat dealers and other businesses such as bait and tackle shops. Subsequently, we developed an online survey and emailed the survey to identified business⁹. In addition, the District posted the survey on its website, and solicited participation through regional media outlets. The survey was tailored for each type of business, and asked for information regarding regional boating activities as they relate to the Inlet, and sales revenues and other proprietary data. The overall response was excellent – 17 businesses provided information (a response rate of 23 percent). Few businesses reported proprietary data; however, most responded to questions that are vital to the economic impact analysis including estimates of Inlet dependent boating activity and expected declines in revenues if the Inlet were not navigable.

As shown in Table 11, on average marinas reported that 75 percent of fishing trips and 20 percent of non-fishing trips from their facilities navigate the Inlet. Charter operations stated that on average 61 percent of trips navigated the Inlet. Boat sales and service centers reported that 85 percent of their sales were from customers who use the Inlet and hotel and restaurants estimated that 37 percent of sales came from customers who use the Inlet. Figures are comparable to results of the boating survey where respondents reported that about 50 percent of trips navigated the Inlet.

Table 11: Estimated Inlet Dependent Activities Reported by Regional Businesses				
Marinas	Mean	Standard Deviation	Maximum	Minimum
Percentage of fishing departures that navigate the inlet	75%	19%	100%	60%
Percentage of non-fishing departures that navigate the inlet	20%	8%	30%	10%
Charter Operations				
Percent of trips that navigate the inlet	61%	10%	75%	50%
Boat Sales and Services				
Percent of sales from customers who navigate inlet	85%	9%	90%	75%
Hotel and Restaurants				
Percent of sales from customers who navigate inlet	37%	12%	50%	29%
Source: Marine Related Business Survey Sponsored by the Sebastian Inlet District				

⁹ Appendix B of this report contains the survey instrument.

As part of the marine business survey, respondents were asked to estimate how boating activity and business revenues would decline if the Inlet were not navigable. Businesses reported that offshore fishing and near shore fishing would decline significantly (95 to 50 percent). The estimated decline for non-fishing boating in the lagoon is lower but substantial (20 to 50 percent). All business expected that revenues would decrease if the Inlet were not navigable. Marinas reported a decline of 80 percent, charter operations and marine trades reported a decline of 40 percent, and hotels and restaurants reported that Inlet dependent traffic accounts for about 20 percent of their total annual revenues.

Table 12: Expected in Declines in Boating Activity in the Study Area Reported by Businesses

	Marinas	Charter operators	Marine trades	Hotels and food and beverage	Composite value
Recreational fishing in lagoon	50%	80%	80%	45%	68%
Near shore fishing	50%	90%	90%	67%	76%
Offshore fishing	50%	95%	95%	90%	81%
Non fishing recreational boating Lagoon	50%	50%	50%	20%	47%
Offshore recreational boating	50%	95%	95%	90%	81%
Revenues	80%	40%	40%	20%	50%
Source: Marine Related Business Survey Sponsored by the Sebastian Inlet District					

4 Economic Impact Analysis

The primary regional economic activity that can reasonably be attributed to presence of the Inlet and is tractable is expenditures generated by Inlet dependent boating and visitation to the Sebastian Inlet State Park (SISP). The economic impact analysis component of the study measures these impacts. Basically, the approach involved:

1. Estimating total annual boating trips based on survey data and secondary data sets from other sources;
2. Applying average trip and annual expenditures values to estimate total annual expenditures in the study area by boaters;
3. Estimating annual SISP visitation expenditures net of activity already estimated;
4. Based on results of marine business survey and discussions with SISP officials estimate inlet dependent expenditures; and
5. Construct regional level macroeconomic models of the economy of the area and estimate regional impacts of inlet dependent expenditures

Following a brief overview of economic impact models and analysis, Section 4 discusses the approach and results.

4.1 Overview of Economic Impact Analysis

Economic impact analysis measures how policies, programs, projects, or other activity affect the economy of a given area. The area can range from a neighborhood to the entire globe. For example, a major business may decide to build a new manufacturing plant in a community, and constructing and operating the facility would generate new local jobs and income that impact the entire local economy.

Economic impacts were estimated using a model known as IMPLAN PRO™ (Impact for Planning Analysis). IMPLAN was originally developed by the U.S. government in the late 1970s based on work of the Nobel Prize winning economist Wassily Leontief. It is probably the most widely used economic impact model. IMPLAN comes with databases containing the most recently available economic data from a

variety of sources.¹⁰ IMPLAN allows one to create a model that is an accounting framework for a specified area that traces spending and consumption between different economic sectors such as businesses, farms, households, government and external economies in the form of exports and imports.

To understand how an input-output model works, assume that demand for milk exported and sold outside of a county increases and annual sales for local dairies grow by \$1 million. The dairies spend \$280,000 on alfalfa to feed their cows; \$190,000 goes to households who provide labor at the dairies, and \$310,000 goes to other businesses to buy items such as machinery, fuel, transportation, and veterinary services. Nearly \$220,000 is paid out as profits (i.e., returns to dairy owners) and taxes or fees to local, state and federal government. The value of the initial \$1 million of revenue in the dairy sector is referred as the **direct effect**.

Direct effects are only part of the story. In the example above, alfalfa farmers must grow \$180,000 worth of alfalfa to supply the increased demand for their product. To do so, they purchase their own inputs; and thus, they spend part of the original \$180,000 to support their own operations. For example, they might spend \$40,000 on fertilizers and other chemicals needed to grow alfalfa. The fertilizer industry in turn would take the \$40,000 and spend it on inputs in its production process and so on. The sum of all re-spending is referred to as an **indirect effect**.

While direct and indirect impacts capture how industries respond to a change, induced impacts measure spending patterns of the labor force. As demand for production increases, employees in base industries and supporting industries earn more. As employment and incomes increase, household spending rises. Thus, seemingly unrelated businesses such as supermarkets, restaurants, and gas stations also benefit. The impacts of consumer spending associated with the increase in business activity is an **induced effect**.

Collectively, indirect and induced effects are referred to as **secondary impacts**. In their entirety, all of the above changes (direct and secondary) are referred to as **total economic impacts**. By nature, total impacts are greater than initial changes because of secondary effects. The magnitude of the increase is what is popularly termed a multiplier effect. Input-output models generate numerical multipliers that estimate secondary impacts.

- **Sales Revenues** (referred to in IMPLAN as “output”) is the dollar volume of goods or services produced.

¹⁰ The IMPLAN database consists of national level technology matrices based on benchmark input-output accounts generated by the U.S. Bureau of Economic Analysis and estimates of final demand, final payments, industry output and employment for various economic sectors. IMPLAN regional data (i.e. states, a counties or groups of counties within a state) are divided into two basic categories: 1) data on an industry basis including value-added, output and employment, and 2) data on a commodity basis including final demands and institutional sales. State-level data are balanced to national totals using a matrix ratio allocation system and county data are balanced to state totals.

- **Employment** is the number of jobs required to produce a given volume of sales/production and includes both full and part-time positions.
- **Labor Income** consists of total payroll for hired labor including benefits and social security contributions, and income for self-employed individuals.
- **Other Income** refers to profits, royalties, rental and interest payments, and dividends to investors.
- **Business Taxes** consist of state and local taxes and fees generated by economic activity in the region.

An economic impact is not the same as economic value. Impacts refer to fiscal changes in an economy such as increases in business sales or changes in tax revenues. Economic value, on the other hand, is the amount of worth that people place on things usually measured as a willingness to pay for something. Many things are valuable to people, but may have relatively small – if any - impacts on a region's economy. For example, a homeowner might have a beautiful 100-year old oak tree in their yard, and they derive a great deal of aesthetic pleasure from the tree. Since they value the tree so highly, the owners would likely be willing to pay a large amount to preserve the tree. But other than potentially increasing property value and thus property taxes, the tree's presence does little to stimulate the local economy. In other words, its presence does not generate income, jobs or business revenues. This analysis does quantify some economic values (i.e., the influence of the Inlet on property values and the economic value natural resources directly influenced by the Inlet), but these are not economic impacts.

Another factor to consider since this study deals in large part with recreational boating is the concept of “new money” versus “existing money.” In the parlance of regional economic analysis, new money is capital that comes from outside a region. On the other hand, existing money is spending that originates within a region. In some cases, economists do not consider existing money as a benefit to a region's economy because if the money was not spent on the activity in question, then it may be spent somewhere else in the region and thus is simply a redistribution of economic activity.

The extent to which money spent by boaters who live in the District is “new money” and not simply a diversion of money destined for other local purchases is not known and cannot be determined within the scope of this study. One can argue that if regional boaters decided not to go out because the Inlet was no longer navigable and there was not access to the ocean, they would spend the money on other local goods and services. On the other hand, one could argue that in the absence of the Inlet, local boaters would travel outside the region (e.g., south to Fort Pierce Inlet) to enjoy access to the ocean. For this analysis, we acknowledge the validity of both of these arguments, but report both non local and local

impacts. Non local Inlet dependent expenditures and associated economic impacts are clearly regional economic benefits. Local inlet dependent expenditures are likely benefits because the region would probably lose a substantial portion of these expenditures if boaters traveled south or north to outer inlets.

4.2 Definition of Study Area

Defining the geographic area for analysis in an economic impact study is important. The types of industries, characteristics of households, and the extent and size of government in a region determines how a local economy responds to change. A study area defines the boundaries of what is included in the calculation of local impacts. Purchases of products or labor that fall outside a study area are imports. Inputs are imported from outside the boundaries of a study area when local sources of production are not available or inadequate, and economic impact models can no longer track the continued circulation of these funds. For example, if a primary local supplier for a construction project is just across the highway, and that highway lies in another ZIP code or county, the primary supplier's production is treated as imports, if that ZIP code or county is not included in the study area. This means that all indirect effects of the primary supplier's production are not included in the results. The dollars used to purchase inputs outside of a study area have effectively "leaked" through geographic boundaries of the model.

In this analysis, the study approximates the political boundaries of the District, which encompass most of Indian River County, and a portion of Brevard County. The southern boundary extends to near State Highway 60 in Vero Beach, and the northern boundary encompasses the Atlantic shoreline to Indian Harbor Beach and slightly further up the mainland to near Rockledge. Using IMPLAN Pro software and data, we constructed a model that captures economic activity with an area that approximates the District's boundaries. IMPLAN allows economists to build models of a regional economy using aggregations of macroeconomic data by U.S. Postal Code (i.e., ZIP codes). Although, ZIP codes do not match the boundaries precisely, they do allow for a close approximation of the region's economy. For Brevard County, the model includes the following ZIP codes:

- 32901 through 32912
- 32919
- 32934 through 32936
- 32940
- 32949
- 32950
- 32951
- 32976

All ZIP codes for Indian River County are included except 32962, 32968 and 32965.

4.3 Annual Recreational Boating Trips and Expenditures in Study Area

Estimated total annual boat trips in the study area are based on the survey sample and one of the most comprehensive recent studies of Florida recreational boating infrastructure and traffic for public boat ramps in the state (referred to herein as the FBAFI study).¹¹ Table 13 shows the number of launches from public boat ramps in the study area as reported by the FBAFI. These figures include local and non-local boat launches from public ramps, but do not include launches from other departure sites such as wet slips, dry storage or home dock. Table 13 also show the number of person trips per ramp, which are the number of boat launches multiplied by the average number of people per boat trip as identified in this study's boating survey (2.7 persons). The FBAIF figure provides the annual number of boat trips from public ramps in the study area, and the number of launches from other sites is based on this study's boating survey (Table 14).

Table 13: Estimated Annual Number of Boat Launches (Trips) for Public Boat Ramps in Study Area

County	Name`	Ramp ID	Total Boat Launches	Total Person Trips
Brevard	Front St. Boat Ramp	1001524	35,928	97,005
Brevard	Honest John's Fish Camp	1001945	8,084	21,827
Brevard	Ballard Park	1001950	41,382	111,731
Brevard	Eau Gallie Causeway	1200904	14,564	39,323
Brevard	Pineda Landing	1200914	20,690	55,863
Brevard	6th Ave Ramp	1200921	2,288	6,179
Brevard	Pineda Causeway Ramp	1200922	11,385	30,740
Brevard	Pollack Park	9050070	16,242	43,854
Brevard	Inlet Waters/ Sebastian Inlet State Park	9050080	37,801	102,062
Brevard	John Jorgensen Landing	9050090	9,076	24,505
Indian River	Sebastian Inlet State Park (South Entrance)	1001966	12,102	32,675
Indian River	Roseland Riverfront Park	1001968	4,725	12,759
Indian River	Wabasso Causeway Park	1001973	9,361	25,275
Indian River	Donald MacDonald Park	9300010	7,192	19,418
Indian River	Main Street	9300020	21,991	59,375
Indian River	MacWilliams Park	9300030	161,196	435,230
Total Trips			414,007	1,117,820
Cardno ENTRIX estimated total person trips based on the average number of persons per boat launch reported in the boating survey sponsored by the Sebastian Inlet District. Total estimated boat launches by ramp are taken from: "Florida Boating Access Facilities Inventory and Economic Study Including a Pilot study for Lee County" Prepared for: the Florida Fish and Wildlife Conservation District. August, 2009.				

¹¹ See, "Florida Boating Access Facilities Inventory and Economic Study Including a Pilot study for Lee County" Prepared for: the Florida Fish and Wildlife Conservation District. August, 2009.

Based on survey data, we estimate that there were roughly 150,200 launches from home docks, and the remainder originates from marinas (wet slip or dry storage) and shoreline or causeway access points. In total for 2012, we estimate that there were nearly 681,700 (an average of 1,730 per day) launches carrying 1.84 million people (an average of 5,041 per day). Estimates show that 56 percent of trips were made up of people coming from outside of the study area and 44 percent were local trips.

As shown in Table 15, there were 515,670 launches (1.4 million people) where the primary activity was fishing (76 percent). As a benchmark, we compared our estimated fishing trips to figures from the Marine Recreational Information Program of the National Oceanic and Atmospheric Administration (MRIP) that conducts annual surveys and publishes estimates of fishing trips for states (Figure 2). MRIP estimated that 9.4 million people went on fishing trips on Florida's East Coast in 2012 (excluding the Florida Keys). Thus, fishing trips in the study area account for 15 percent of the total number of angling trips along the state's eastern shore.

The next step in the economic impact analysis was to determine how many boating trips in the area are Inlet dependent meaning that if the Inlet were not navigable, these trips would not have occurred and boaters would likely travel to alternate sites to access Atlantic waters. The proportion of Inlet dependent trips broken out by activity (non-fishing and fishing) is based on business survey data (see Table 12 in Section 3). On average, respondents indicated that non fishing boating in the area would decline by 54 percent, and fishing boating would fall by 73 percent (Figure 3).

The number of Inlet depend trips to the SISP were estimated and included in the economic impact analysis as well. The Inlet is straddled by the SISP, which is one of the most visited state parks in Florida with hundreds of thousands of visitors per year. The park is a prime fishing destination for both pier and shoreline fishing and boat fishing for anglers catching Snook, Redfish, Bluefish, and Spanish mackerel. A number of other nature-related activities are available at the park, such as surfing, hiking, nature-watching, swimming, snorkeling, scuba diving, shelling, canoeing, and picnicking. Surfing is particular popular at the Inlet and is considered by many to be one of the best surfing spots on the East Coast of Florida if not the entire southeastern United States.

Table 14: Total Annual Estimated Number of Boat Launches (Trips) in Study Area

Launch location	Boat trips	Person trips	Frequency	Percent Non Local	Percent Local
Ramp	414,007	1,117,820	61%	72%	28%
Shoreline or Causeway	18,476	49,884	3%	72%	28%
Wet Slip	72,165	194,845	11%	70%	30%
Dry Storage	26,866	72,538	4%	70%	30%
Home Dock	150,220	405,594	22%	0%	100%
Total	681,734	1,840,681	100%	56%	44%

Source: Based on data from the boating survey conducted as part of this study and data published in "Florida Boating Access Facilities Inventory and Economic Study Including a Pilot study for Lee County" Prepared for: the Florida Fish and Wildlife Conservation District. August, 2009.

Table15: Total Estimated Number of Boat Launches (Trips) by Primary Activity in Study Area

Activity	Boat trips	Person trips	Frequency	Percent Non Local	Percent Local
Fishing	515,670	1,392,309	76%	42%	33%
Watersports	20,976	56,635	3%	2%	1%
Scuba diving or snorkeling	22,724	61,355	3%	2%	1%
Day cruising or sailing	110,126	297,340	16%	9%	7%
Overnight cruising	12,236	33,037	2%	1%	1%
Total	681,734	1,840,682	100%	56%	44%

Source: Based on data from the marine related business survey sponsored by the Sebastian Inlet District and data published in "Florida Boating Access Facilities Inventory and Economic Study Including a Pilot study for Lee County" Prepared for: the Florida Fish and Wildlife Conservation District. August, 2009.

Figure 2: Estimated Number of Fishing Trips (persons per year) for Florida's East Coast and the Sebastian Inlet Study Area (2012)

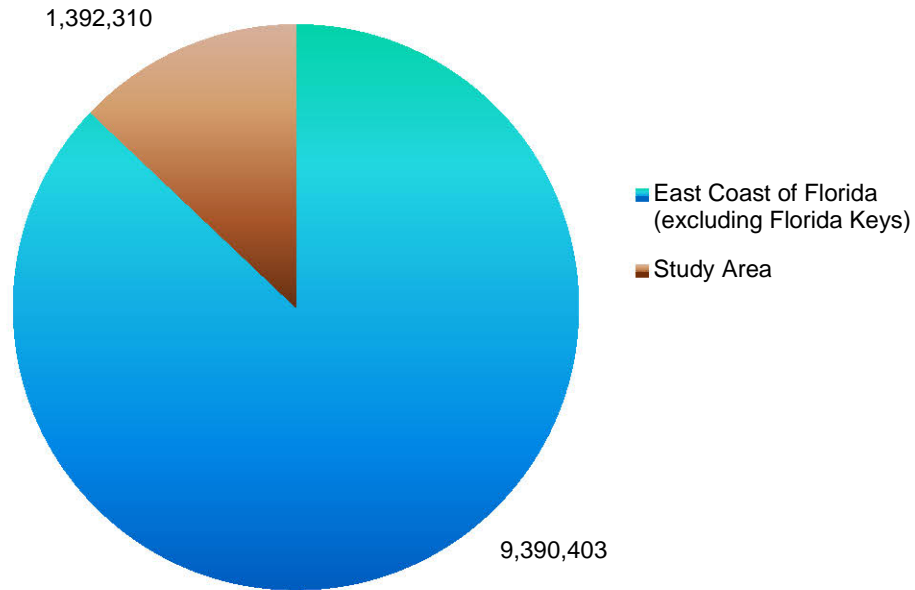


Figure 3 Estimated Number of Boat Trips With and Without Sebastian Inlet

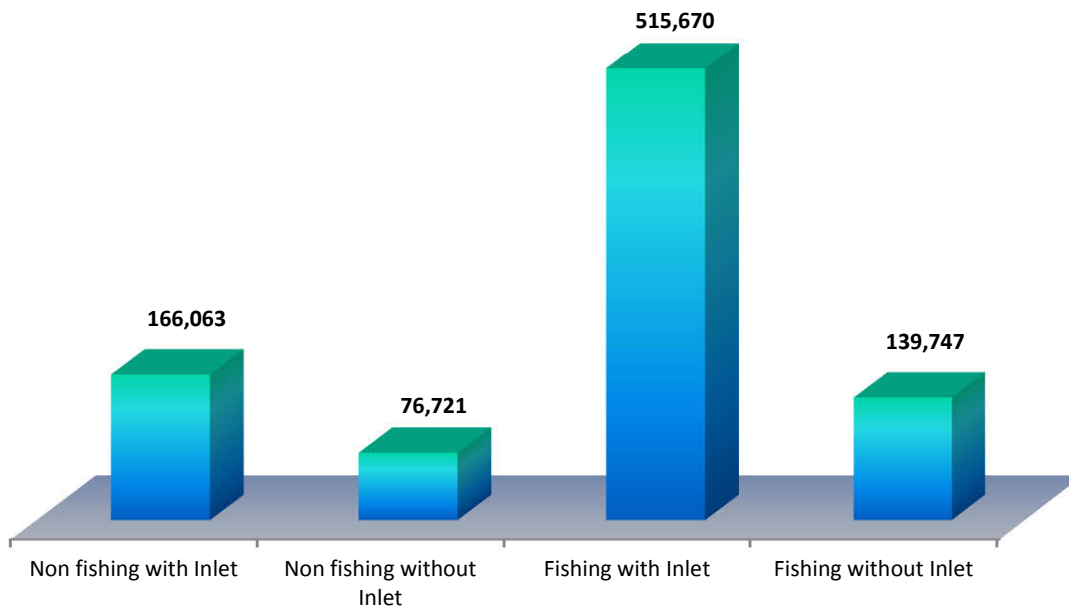


Table 17 shows estimates of Inlet dependent visitation (based on 2011 through 2012 figures). Total local and non-local visitation are based on Florida Department of Environmental Protection (FDEP) figures.¹² To avoid double counting, net visitation subtracts estimated boat launches (person trips) from this study at the SISP. Inlet dependent net visitation is based on interviews and discussions with SISP administrative staff who estimate that 75 percent of park visitation is dependent upon the presence of the Inlet, particularly for fishing and surfing. Total Inlet dependent expenditures are based FDEP estimates of expenditures per day per visitor.

Table 17: Estimated Number of Inlet Dependents Visits to the Sebastian Inlet State Park (2012)				
	Total Visitation	Net Visitation	Inlet dependent net visitation	Total Inlet dependent expenditures (\$millions)
Non Local	439,699	322,741	242,055	\$14.17
Local	154,489	96,710	72,532	\$2.18
Total	594,188	419,451	314,588	\$16.35
Source: Based on study survey data, discussions with SISP administrators and figures published in: <i>Fiscal Year 2011-2012 Economic Impact Assessment for the Florida State Park System.</i> Memorandum published by the Florida Department of Environmental Protection, Office of Park Planning. October 15, 2012.				

The last step in preparing estimates of the regional economic impacts of the Inlet was to calculate expenditures for non SISP boating activity (Table 17). These estimates are based solely on study survey data. Average expenditures per trip and average annual expenditures are multiplied by the total and Inlet dependent number of boat trips; however, we do not assume that all boating expenditures take place in the study area, particularly annual costs for non-local boaters. Local purchase coefficients were developed based on survey data and professional judgment. For trip expenditures, we assume that 90 percent of local expenditures and 70 percent of non-local expenditures take place in the study area. For annual expenditures, the following coefficients were applied to different expenditure categories:

- Boat accessories and equipment (67 percent local and 20 percent non local)
- Boat maintenance and service (71 percent local and 20 percent non local)
- Dry storage or wet slip (100 percent local and 100 percent non local)
- Insurance (63 percent local and 0 percent non local)

¹² "Fiscal Year 2011-2012 Economic Impact Assessment for the Florida State Park System." Memorandum published by the Florida Department of Environmental Protection, Office of Park Planning. October 15, 2012.

- Lodging (100 percent for both local and non-local)

In addition, annual registration expenses are not included since these funds go directly to the state and do not circulate in the study area economy, and Inlet dependent lodging sales are calculated separately based on survey responses from hotel operators who reported that about 20 percent of annual sales are dependent on customers who visit the area due to the Inlet.

Table 17: Estimated Expenditures by Recreational Boaters and Visitors to Sebastian Inlet State Park (2012)				
Expenditure Category	Total expenditures in study area	Inlet dependent expenditures in study area	Percent non-local	Percent local
General retail (food, fuel, bait and tackle etc.)	\$74.80	\$52.20	60%	39%
Marinas and boat service centers	\$24.80	\$17.00	46%	54%
Lodging	\$25.10	\$17.80	88%	12%
Restaurants and Taverns	\$14.90	\$10.50	62%	38%
Retail boat accessories and equipment	\$13.60	\$9.30	27%	73%
Insurance	\$2.90	\$2.00	0%	100%
Total	\$156.20	\$108.80	59%	41%
Source: Cardno ENTRIX				

4.4 Estimated Annual Regional Economics of the Sebastian Inlet

The final step in estimating the regional economic impacts of Inlet dependent boating and visitation to the SISP involved using IMPLAN to construct a model of the region's economy. Again, the model is based on zip code level IMPLAN data. Once constructed, Inlet dependent expenditures were allocated to IMPLAN industry and commodity groups (Table 18) and model results were computed. For retail sectors, margins were applied and default IMPLAN Regional Purchase Coefficients were applied. As shown in Table 19, models results show that based on current conditions the Sebastian Inlet:

- Generates \$93.2 million in business revenues per year for regional businesses;
- Creates \$47.8 million worth of annual income for regional businesses and residents;
- Supports an estimated 970 local jobs;
- Generates about \$8.0 million in state and local tax and fee revenues; and

- Produces \$55.3 million in regional Gross Domestic Product (taxes plus income).

Spending by visitors to the region generates about 60 percent of this activity, and regional residents generate 40 percent

Table 18: Estimated Expenditures by Recreational Boaters and Visitors to Sebastian Inlet State Park Allocated by IMPLAN Sector (2012 \$millions)	
IMPLAN Sector	Inlet dependent expenditures in study area
3326 and 3329 "Retail services – fuel and general merchandise"	\$52.22
3413 "Restaurant, bar, and drinking place services"	\$10.49
410 "Other amusement and recreation services (for marinas and boat service centers)"	\$16.95
411 "Hotels and motels"	\$17.88
3328 "Retail services – sporting goods"	\$9.28
335 "Insurance"	\$2.01
Total	\$108.80
Source: Cardno ENTRIX	

Table 20: Estimated Annual Economic Impacts of Sebastian Inlet Dependent Recreational Boating and Sebastian Inlet State Visitation (2012, monetary values in \$millions)				
	Direct	Indirect	Induced	Total
Business Revenues	\$66.90	\$12.67	\$13.62	\$93.19
Labor Income	\$22.93	\$3.42	\$4.41	\$30.76
Other Income	\$10.61	\$2.76	\$3.70	\$17.07
Total Income	\$33.54	\$6.18	\$8.11	\$47.83
Employment	710	140	110	960
Taxes	\$6.33	\$0.63	\$0.94	\$7.90
Source: Cardno ENTRIX analysis of data collected as part of study surveys and MIG Inc.				

5 Other Estimated Values and Impacts

5.1 Natural Resource Value of Sebastian Inlet

The Inlet plays a critical role in maintaining the ecological health of the Indian River Lagoon. The hydrology of the lagoon depends upon the relationship between saltwater that enters through inlets and freshwater discharges to the lagoon from inland streams, canals, and rivers, and the actual shape of the lagoon in terms of depth and width.¹³ The influx of saltwater is vital for the lagoon's biodiversity.

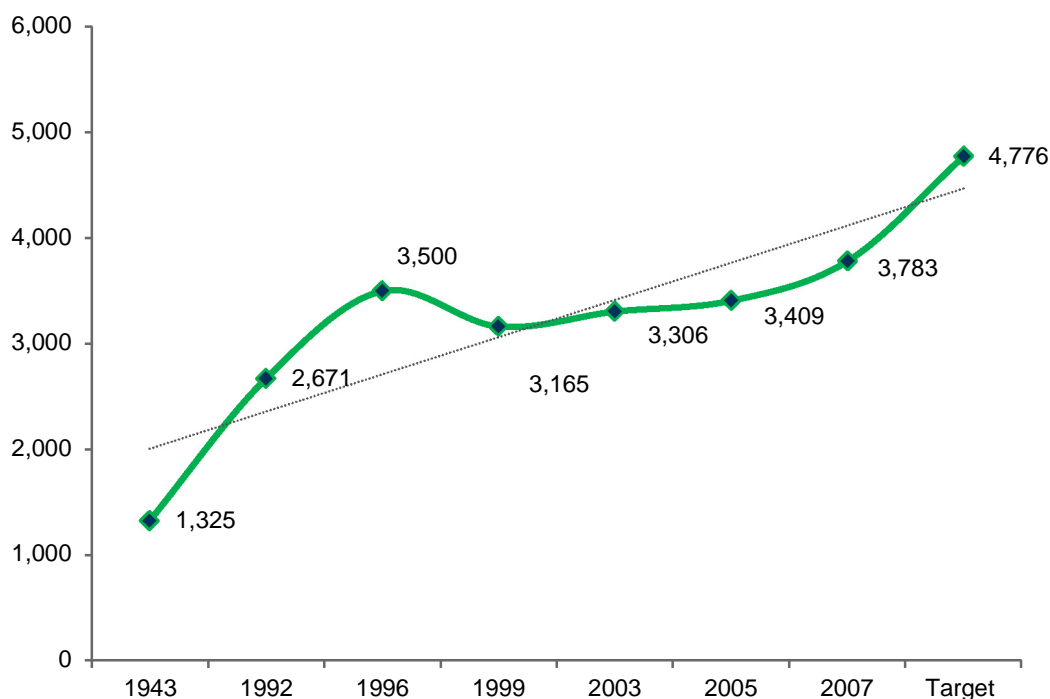
Although the Inlet is critical for maintaining salinity regimes in the Indian River Lagoon, the primary and most tractable natural resource that the Inlet directly supports is seagrass acreage. These so called "marine prairies" support numerous species of fish, crab, shrimp, sea turtles, and other marine wildlife. Thus, seagrass is vital in supporting fisheries in the lagoon. According to the most recent seagrass inventory and mapping survey conducted by the St. Johns Water Management District and published by the Florida Fish and Wildlife Conservation District (FFWC), there were 3,783 acres in the Northern Indian River Lagoon Sebastian Segment. As the FFWC noted, "*seagrass acreage in the Sebastian segment has almost tripled since 1943, primarily a consequence of the permanent opening at Sebastian Inlet, which has been maintained since 1948*" (Figure 3).¹⁴

Placing a monetary value on a natural resource such as a seagrass is difficult because there is not market where people purchase or trade seagrass. Where markets for a resource or service exist, valuation of the resource is relatively straightforward. In these cases, economists have data on the number and value of transactions and quantity of products changing hands. A good example would be the revenues generated by agricultural products. However, when market data are not available, as is often the case with ecosystem services, valuation requires nonmarket techniques. The most widely recognized nonmarket techniques include: 1) travel cost models, 2) hedonic pricing, 3) contingent valuation, 4) conjoint analysis (a form of expert elicitation), and 5) the replacement or avoided cost method.

¹³ See, "*The Indian River Lagoon: An Introduction to a National Treasure*." Published by the St. Johns River Water Management District and the Indian River Lagoon National Estuary Program. 2007.

¹⁴ Florida Fish and Wildlife District, "*Seagrass Integrated Mapping and Monitoring for the State of Florida Mapping and Monitoring Report No. 1*." March 2011.

**Figure 4: Historical Seagrass Acreage in the Northern Indian River Lagoon
Sebastian Segment (acres, 1943 through 2007 and Area Target)**



For seagrass valuation, Cardno ENTRIX determined that the replacement cost approach was most feasible. This approach estimates values of natural resources and benefits based on either the costs of avoiding damages due to lost services, or the cost of providing substitute services. The replacement cost method does not provide strict theoretical measures of economic values, which most economists believe are based on peoples' willingness to pay for a product or service. Instead, they assume that the costs of avoiding damages or replacing ecosystems and their services provide useful estimates of the value of these ecosystems or services. This is based on the assumption that, if people incur costs to avoid damages caused by lost ecosystem services, or to replace the services of ecosystems, then those services must be worth at least what people paid to replace them.

Cardno ENTRIX examined published literature sources and information from state and federal grant-making agencies to identify costs for seagrass restoration projects. Several sources were identified but only one provided enough detail (i.e., an itemization of costs). Restoration costs selected are based on a Natural Resource Damage Assessment (NRDA) case (U.S. versus Melvin A Fisher et al.) and are valued at \$227,000 per acre, which includes expenses associated with establishment (collecting, preparing and

planting seagrass plugs) and monitoring and maintenance costs.¹⁵ After adjusting for inflation, multiplying by the most recent recorded value for seagrass acreage (2007) and capitalizing over a 30-year period at a 2.5 percent real discount rate the total value of seagrass in the vicinity of the Inlet is about \$395 million. Annualized the total value is approximately \$19 million per year and the value per acre is \$5,100.¹⁶ The authors recognize that the 2007 figure for seagrass acreage is higher the amount present in recent years as the extent of seagrass acreage near the Inlet varies through time due to natural and anthropogenic factors. Nevertheless, we consider it reasonable value that represents a long-term proxy for actual acreage in a given year and an associated economic value.

5.2 Impact of Sebastian Inlet on Local Property Values

Properties and homes are composed of many features for which consumers may be willing to pay more to obtain. Clearly, most consumers have preferences for attributes that are specific to the home itself, such as size, age, or the number and types of rooms in the home. Consumers' willingness to pay for these features is determined by their individual desire for these features, but is obviously constrained by the cost of obtaining these features and consumers' own ability to pay for these features. Just as consumers have preferences for the features of the home itself, they may also have preferences for local amenities of the home. Some of these features may include school districts, access to employment and commercial centers, and emergency services. By extension, consumers also have preferences for particular recreation and environmental amenities. Proximity to the Sebastian Inlet is a substantial home amenity and a valuable feature of the local property market in south Brevard and Indian River counties. As noted previously, the Inlet is the primary means for ocean access in the area (one of only five inlets that connect the Indian River Lagoon to the Atlantic Ocean).

Our analysis focused on soliciting expert opinion about the role of the Inlet in local real estate markets and its contribution to home property values. We developed a survey questionnaire to explore the role of the Inlet as a real estate amenity and contacted twelve real estate professionals in south Brevard and Indian River counties from Melbourne to Vero Beach and received feedback from seven experts in the area. The resounding take-away indicated that the Inlet is a fundamental component of local property values. Experts were asked to estimate the percent decrease in property values they would expect if the Inlet were not maintained to provide navigable access to offshore water. Responses indicated an

¹⁵ Julius, B. "U.S. vs. MELVIN A. FISHER et al. A Report of Brain F. Julius." National Oceanic and Atmospheric Administration Damage Assessment Center, January 29, 1997. See also, Fonseca, M.S., Julius, B.E., and Kenworthy, W.J. "Integrating biology and economics in seagrass restoration: How much is enough and why?" *Ecological Engineering*. Vol. 15. pp.227-237 (2000).

¹⁶ It should be noted that actual seagrass acreage near the Inlet varies through time due to natural and anthropogenic factors such as weather and stormwater discharges. Thus, the reader should consider the value reported in this study as an upper bound based on historical conditions.

expected decrease of up to 20 percent for properties on the water. Experts reported that homes located on barrier islands or with frontage on the Indian River Lagoon were the primary types of properties to which the Inlet contributes value. For homes on the mainland, the distance to the Inlet was seen as having a lesser effect on property values. Experts reported that within the mainland market segment, proximity to the Indian River would have a greater effect on property values than the Inlet. Nonetheless, the role of the Inlet is important.

All of the real estate experts we spoke with that had listed homes in the two waterfront market segments advertise proximity to the inlet in their notes and comments on the listings. Within these market segments of waterfront homes, the value of distance from the home to the Inlet was viewed in terms of a threshold. For example, homes within 10 minutes to the Inlet clearly command a premium in the south Brevard and Indian River county real estate markets. Experts reported that upon reaching a threshold of approximately 15 minutes from the Inlet, the effect was muted by the presence of alternative inlets (i.e., Melbourne/Cape Canaveral Inlet to the north and Fort Pierce Inlet to the south). Within each of these two separate waterfront market segments, experts indicated the likely presence, all else equal, of a market premium on distance to the Inlet with a 10 to 15 minute threshold on the order of five percent per property for each mile decrease in distance between a property and the Inlet.

Based on these results and an analysis of property values from the Florida Department of, we estimate that the capitalized value of the Inlet with respect to property values is \$1.8 billion assuming a 30-year period and a discount rate of 3.0 percent. The annualized value over the same period is \$60.2 million per year. For the portion of the area in Brevard County, the capitalized value is about 1.5 percent of total assessed property value in the county in 2012, and 7.0 percent in Indian River County.

5.3 Time and Expense to Regional Boaters to Access Alternate Inlets

If the Inlet were not navigable, boaters in the area would have to travel to alternate sites north or south – either Cape Canaveral Inlet or Ft. Pierce Inlet. The final task of this study involved estimating the increase in costs and time for regional boaters to access these inlets. The method is fairly straightforward. We assume that regional boaters would have to drive to alternate launches near other inlets. Boaters were grouped in nodes based on ZIP code, and the analysis assumes that those in the southern portion of study area would drive south to Ft. Pierce Inlet and those in the northern areas would go to Cape Canaveral Inlet. The distance from each node to alternate inlets was measured using GIS applications, and the additional miles driven were calculated. The cost per mile was applied to the additional miles, and is the standard Internal Revenue Service (IRS) mileage rate for business is based on an annual study of the fixed and variable costs of operating an automobile including depreciation. The total additional cost per year assuming boaters in the region traveled north or south to other inlets is \$6.4 million (an average

of about \$700 per active boater annually). This would require 414,500 hours of travel time (an average of 45 hours per active boater per year).

Regional Economic Impacts of the
Sebastian Inlet

APPENDIX

A

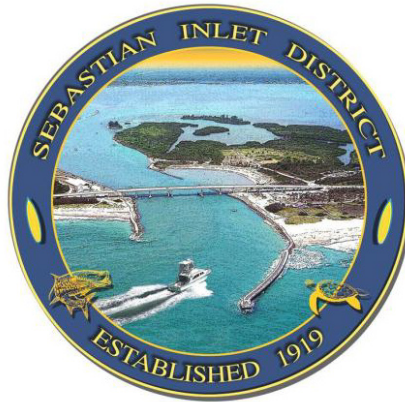
SURVEY INSTRUMENT FOR
RECREATIONAL BOATING SURVEY

Appendix A

Sebastian Inlet Boater Survey

SURVEY NO: ____

01/15/13



Sebastian Inlet Boater Survey

The Sebastian Inlet District (District) maintains the navigational channel between the Atlantic Ocean and the Indian River, which allows boaters and fisherman to access offshore waters at the Brevard and Indian River County line.

Recognizing the importance of boating and sports fishing to our local economy, the District is sponsoring a survey of local boaters. This survey is part of larger study that will estimate the economic impact of the Sebastian Inlet to our region's economy. Since you are a boater in the region, we ask that you participate in the survey regarding your boating activities and how they relate to Sebastian Inlet. With the information you provide, we will be able to estimate the economic impact generated by boating in the region as it relates to the Sebastian Inlet. This information is critical in helping to demonstrate the importance of maintaining the inlet to regional communities and policy makers.

Please note that each of your answers is important and any information provided will be held strictly CONFIDENTIAL. Surveys are anonymous and information from individual respondents will not be distributed to any individual or entity.

The attached link will take you to the questionnaire, or the link is available on our website at <http://www.sebastianinletdistrict.com/>. If you know of other businesses who would like to take the survey, please forward this link to them.

Thank you in advance for your cooperation, and if you have any general questions about the study, please contact me at 321.724.5175 or msmithson@sitd.us. If you have questions specific to the survey itself, please contact Mr. Stuart Norvell at 813.257.0021 or stuart.norvell@cardno.com.

Sincerely,

Martin Smithson
Executive Director
Sebastian Inlet District

SURVEY NO: _____

12 01 2012

Sebastian Inlet Recreational Boating Survey

1) What is your home zip code (if you are a seasonal resident, please report your Florida zip code)? _____

2) What type of boat do you own? If you own more than one boat only consider the boat you use the most (please check one).

- ☐ No motor or sail (e.g., row boat, kayak or canoe)
- ☐ Sail with no motor
- ☐ Sail with inboard motor
- ☐ Sail with outboard motor
- ☐ Motorized inboard
- ☐ Motorized outboard

2 (a) What type of fuel does your boat use (please check one)?

- ☐ Diesel
- ☐ Gasoline
- ☐ Electric
- ☐ Other

3) What is the length of your boat (feet)? _____

4) Is your boat used most often in fresh water, saltwater or a combination of fresh and salt water (please check one)?

- ☐ Fresh water
- ☐ Salt water
- ☐ Combination of fresh and salt water

5) What do you use your boat for most often (please check one)?

- ☐ Fishing
- ☐ Watersports (e.g., skiing, wakeboarding)
- ☐ Scuba diving or snorkeling
- ☐ Day cruising or sailing
- ☐ Overnight cruising
- ☐ Other (please specify) _____

6) From December 1, 2011 through December 1, 2012 (12 months) approximately how many days did you go boating in each of the following periods?

Period (12 weeks each)	Number of days
Winter (December through February)	
Spring (March through May)	
Summer (June through August)	
Fall (September through November)	

6a) Of total number of days reported in question 6, about how many included boating in the Indian River Lagoon or in offshore waters adjacent to Indian River County or Brevard County? Number of days_____

6b) Of the total number of days reported in question 6, about how many involved navigating the Sebastian Inlet? Number of days _____

6c) Of the total number of days reported in question 6, how many involved a visit to Sebastian Inlet State Park? Number of days_____

6d) The District is interested in demand for offshore artificial reefs, and would like know how if and how often you visit the reefs currently in place in Indian River and Brevard County? Of the total number of days you went boating last year, how many times did you visit a reef?

Number of days_____

6e) If you did visit an artificial reef what your primary activity?

- ☐ Fishing
- ☐ Snorkeling or Scuba Diving

6f) Existing reefs are generally at least 10 miles offshore; if reefs were closer to shore (5 miles or less) would you be more likely to visit the reefs?

- ☐ Yes
- ☐ No

6g) Please provide any comments you have about the current or potential new artificial reefs in Indian River or Brevard County

7) In the table below, list the total number of boating days reported in question 6 according to where you launch and name the sites you most frequently depart from and how long it takes you to drive to each site from your home.

Departure site	Number of days	Names of most frequently used boat launch sites (list in descending order by frequency of use)	Diving time in minutes to site from home
Boat ramp		1) 2) 3)	1) 2) 3)
Shoreline or causeway		1) 2) 3)	1) 2) 3)
Marina wet slip		1) 2) 3)	1) 2) 3)
Marina dry storage		1) 2) 3)	1) 2) 3)
Home or condo dock		Not applicable	

8) From a launch site, about how many miles do you usually travel when boating (please check one)?

- ☐ 0-5
- ☐ 5-10
- ☐ 10-15
- ☐ 15-20
- ☐ 20-25
- ☐ 25-30
- ☐ 30-35
- ☐ 35-40
- ☐ 40 or more

9) How many people usually go boating with you (please check one box)?

- ☐ none
- ☐ 1-2
- ☐ 2-3
- ☐ 3 or more

10) On average, how much do you spend per day when boating on each of the following items?

	\$Amount
Fuel and oil for boat	
Travel expenses for car (gas and tolls etc.)	
Fees for docking, mooring, launching, access etc.	
Retail items (e.g., groceries, ice, sundries, bait, hardware and clothing)	
Purchases at restaurants or taverns	
Other (please specify)	
Other (please specify)	

11) What is your best estimate of the total amount you spend in a year for each of the following expenses associated with owning and operating your boat, and please estimate what percent of the money is spent at businesses located in Indian River County or Brevard County?

	\$Amount	% Spent at businesses in Indian River or Brevard counties (please check one)
Expenses for new boat accessories or equipment (e.g., paddles, life jackets, fishing equipment and sporting gear)		<input type="checkbox"/> Less than 20% <input type="checkbox"/> 20% to 40% <input type="checkbox"/> 40% to 60% <input type="checkbox"/> 60% to 80% <input type="checkbox"/> Greater than 80%
Boat repair or maintenance		<input type="checkbox"/> Less than 20% <input type="checkbox"/> 20% to 40% <input type="checkbox"/> 40% to 60% <input type="checkbox"/> 60% to 80% <input type="checkbox"/> Greater than 80%
Storage (dry dock or wet slip rentals)		<input type="checkbox"/> Less than 20% <input type="checkbox"/> 20% to 40% <input type="checkbox"/> 40% to 60% <input type="checkbox"/> 60% to 80% <input type="checkbox"/> Greater than 80%
Insurance and registration		<input type="checkbox"/> Less than 20% <input type="checkbox"/> 20% to 40% <input type="checkbox"/> 40% to 60% <input type="checkbox"/> 60% to 80% <input type="checkbox"/> Greater than 80%
Hotels, motels or other lodging (e.g., private campgrounds or RV parks)		<input type="radio"/> Less than 20% <input type="radio"/> 20% to 40% <input type="radio"/> 40% to 60% <input type="radio"/> 60% to 80% <input type="radio"/> Greater than 80%
State, federal or local agencies, licenses, fees, permits for state parks or public campgrounds		<input type="radio"/> Less than 20% <input type="radio"/> 20% to 40% <input type="radio"/> 40% to 60% <input type="radio"/> 60% to 80% <input type="radio"/> Greater than 80%
Other (please specify)		<input type="radio"/> Less than 20% <input type="radio"/> 20% to 40% <input type="radio"/> 40% to 60% <input type="radio"/> 60% to 80% <input type="radio"/> Greater than 80%

12) What is the age of your boat in years (please check one)?

- ☐ Less than 5 years
- ☐ 5-10 years
- ☐ More than 10 years

13) Do you expect to replace your boat (please check one)?

- ☐ Within 3 years
- ☐ Within 4-5 years
- ☐ Within 6-10 years
- ☐ More than 10 years

14) If and when you replace your boat, do you expect that you would purchase a new boat from a boat dealer in Indian River or Brevard counties (please check one)?

- ☐ Yes
- ☐ No
- ☐ Not sure

15) Is there anything else you would like to tell us about boating in the Sebastian Inlet area?

THANK YOU FOR YOUR PARTICIPATION!

If returning survey via email please, please send to:

stuart.norvell@cardno.com

If returning the survey via mail, please send to:

Stuart Norvell
Cardno ENTRIX
3905 Crescent Park Drive
Riverview, FL 33578

Regional Economic Impacts of the
Sebastian Inlet

APPENDIX

B

SURVEY INSTRUMENT FOR MARINE
RELATED BUSINESS

Appendix B

Sebastian Inlet Marine Related Business Survey

SURVEY NO: ____

01/15/13



Sebastian Inlet Marine Related Business Survey

The Sebastian Inlet District (District) maintains the navigational channel between the Atlantic Ocean and the Indian River, which allows boaters and fisherman to access offshore waters at the Brevard and Indian River County line. Recognizing the importance of marine related businesses to our local economy, the District is sponsoring a survey of local marine related businesses such as marinas, charter fishing and boating operations, waterfront lodging and dining establishments, boater dealers and service providers, and bait and tackle stores.

This survey is part of larger study that will estimate the economic impact of the Sebastian Inlet to our region's economy. Since you are a marine related business in the region, we ask that you participate in the survey regarding your business operations and how they relate to Sebastian Inlet. With the information you and other businesses provide, we will be able to estimate the economic impact generated by marine related businesses in the region as it relates to the Sebastian Inlet. This information is critical in helping to demonstrate the importance of maintaining the inlet to regional communities and policy makers.

Please note that each of your answers is important and any information provided will be held strictly CONFIDENTIAL. Surveys are anonymous and information from individual respondents will not be distributed to any individual or entity.

The attached link will take you to the questionnaire, or the link is available on our website at <http://www.sebastianinletdistrict.com/>. If you know of other businesses who would like to take the survey, please forward this link to them.

Thank you in advance for your cooperation, and if you have any general questions about the study, please contact me at 321.724.5175 or msmithson@sitd.us. If you have questions specific to the survey itself, please contact Mr. Stuart Norvell at 813.257.0021 or stuart.norvell@cardno.com.

Sincerely,

Martin Smithson
Executive Director
Sebastian Inlet District

Introduction

1) What is the zip code of your business enterprise? _____

2) What primary type of service does your business provide (for marinas that provide all of these services, please select “marina”)?

- ☐ Marina
- ☐ Charter Fishing or Charter Boating
- ☐ Boat Sales and or Service Center
- ☐ Hotel or Restaurant
- ☐ Bait, Tackle and Boating Supply Retail

Marina Survey

Section 1 Facility Information

3) In addition to wet slips, what services does your marina provide?

- ☐ Dry Storage and Service Area
- ☐ Charter Fishing
- ☐ Boat Ramp
- ☐ Boat Rentals
- ☐ Boat Sales
- ☐ Hotel
- ☐ Restaurant
- ☐ Convenience Store
- ☐ Fuel
- ☐ Bait, Tackle and Boating Accessories
- ☐ Dive Shop

4) Please list the number of wet slips and dry storage according to maximum boat length at your marina

Dry storage spaces: _____

Wet slips: _____

Section 1 Business Activity

5) From January 1 2012 through Dec 31 2012, please estimate the average number of recreational boating departures from your marina on typical weekday and weekend day during each season.

Period (12 weeks each)	Number of departures
Winter (December through February)	
Weekday	
Weekend day	
Spring (March through May)	
Weekday	
Weekend day	
Summer (June through August)	
Weekday	
Weekend day	
Fall (September through November)	
Weekday	
Weekend day	

6) Would you say that 2012 was a typical year for you ?

- ☐ Yes
☐ No

7) If no to question 6, would you say that 2012 was:

- ☐ Lower than previous years
☐ Higher than previous years
☐ Describe recent trends in activity_____

8) Based on your professional judgment, what is the primary activity for boaters who visit your marina?

Activity	Percent of departures engaging in these activities
Recreational Fishing	
Non fishing recreation (e.g., pleasure boating, water sports or nature watching)	
Commercial fishing	

9) For each of the above activities, what percent do you estimate navigate the Sebastian Inlet when they depart the marina?

Activity	Percent
Fishing	
Non fishing activities (e.g., pleasure boating, water sports or nature watching)	
Commercial fishing	

10) About what percentage of visitors and boaters to your marina live outside of the Sebastian Inlet area defined as South Brevard County (Melbourne south to county line) and Indian River County?

- ☐ 20% or less
☐ 40%
☐ 60 %
☐ 80% or more

11) In your best estimate, what percent of departures from your marina visit artificial reefs offshore the Sebastian Inlet area; defined as South Brevard county (Melbourne south to county line) and Indian River County? _____

12) Existing reefs are generally at least 10 miles offshore; if reefs were closer to shore (5 miles or less) do you think people would be more likely to visit the reefs?

- ☐ Yes
☐ No

13) What were your total annual sales in 2012 (this question is critical in estimating the economic impacts of the Sebastian Inlet)?

14) How many full and part time employees do you have including yourself?

Section 4: Fishing Tournament Related Questions:

15) Are any fishing tournaments run out of your facility? (if no skip to Section 4)

- ☐ Yes
☐ No

16) If yes, please provide your best estimate of the following:

16a. Number of tournaments per year:

16b. Length of tournament(s) (days):

16c. Number of vessels in tournament:

16d. Number of visitors per tournament:

16e: Number of visitors that come from outside Sebastian Inlet area defined as South Brevard County (Melbourne south to county line) and Indian River County:

16f. Percentage of tournament vessels that navigate Sebastian Inlet:

Section 4: Inlet Navigability

17) If the Sebastian Inlet were not maintained and became unnavigable for boating and did not provide access to Atlantic waters, would it reduce your total annual sales? (if no skip to question 16)

- ☐ Yes
- ☐ No

18) If yes to Question 17, how much do you think your revenues would decline?

- ☐ 20% or less
- ☐ 20 to 30%
- ☐ 30 to 40%
- ☐ 40 to 50%
- ☐ 50 to 60%
- ☐ 60 to 70%
- ☐ 70 to 80%
- ☐ 80% or more

19) In what other ways, if any, would your business change if Sebastian Inlet were not navigable?

20) In your professional opinion, if the Sebastian Inlet were not maintained and became unnavigable for recreational boaters and did not provide access to Atlantic waters how would it impact recreational boating in South Brevard County (Melbourne south to county line) and Indian River counties?

21a) Fishing within the Indian River Lagoon

- ☐ No impact
- ☐ 20% or less
- ☐ 40% decline
- ☐ 60 % decline
- ☐ 80% or more

21b) Near shore Fishing (Atlantic waters within 3 miles of shore)

- ☐ No impact
- ☐ 20% or less
- ☐ 40% decline
- ☐ 60 % decline
- ☐ 80% or more

21c) Offshore Fishing (Atlantic waters 3 miles or more from shore)

- ☐ No impact
- ☐ 20% or less
- ☐ 40% decline
- ☐ 60 % decline
- ☐ 80% or more

21d) Non fishing recreational boating within the Indian River Lagoon

- ☐ No impact
- ☐ 20% or less
- ☐ 40% decline
- ☐ 60 % decline
- ☐ 80% or more

21e) Non fishing recreational boating on Atlantic Ocean

- ☐ No impact

- ☐ 20% or less
- ☐ 40% decline
- ☐ 60 % decline
- ☐ 80% or more

22) Is there anything else you would like to tell us about boating in the Sebastian Inlet area or maintenance of the Sebastian Inlet?

Charter Fishing and Charter Boating

Section 1 Boat and Trip Activity

- 3) Which marina(s) do you typically sail from?
- 4) What are the primary recreational services you provide?
- ☐ Fishing
 - ☐ Sightseeing, cruising or nature watching
 - ☐ Other _____

5) What is your boat's length?

6) What is your boat's draft?

7) From January 1 2012 through Dec 31 2012, about how many saltwater trips did your vessel take with paying passengers in each period below?

Period (12 weeks each)	Number of trips
Winter (December through February)	
Spring (March through May)	
Summer (June through August)	
Fall (September through November)	

8) For the trips reported in Question 7, about what percent navigated the Sebastian Inlet?

Period (12 weeks each)	Number of trips
Winter (December through February)	
Spring (March through May)	
Summer (June through August)	
Fall (September through November)	

9) For the trips reported in Question 7, please specify the percent that operated in the following areas:

Activity	Percent of trips
Fishing or boating in the Indian River Lagoon	
Near shore boating or fishing (Atlantic waters within 3 miles of shore)	
Offshore boating or fishing (Atlantic waters 3 miles or more from shore)	

10) Would you say that 2012 was a typical year?

- ☐ Yes
☐ No

11) If no to Question 10, would you say that 2012 was:

- ☐ Lower than previous years
☐ Higher than previous years
☐ Describe recent trends in activity_____

12) For the trips reported in Question 7, please specify the percent that visited offshore artificial reefs.

13) Existing reefs are generally at least 10 miles offshore; if reefs were closer to shore (5 miles or less) do you think people would be more likely to visit the reefs?

- ☐ Yes
☐ No

Section 2: Trip Cost and Revenue Information

14) About what percent of your customers live outside of the Sebastian Inlet area defined as South Brevard County (Melbourne south to county line) and Indian River County?

15) What percent of trips chartered paid:

- 15a) One price to charter entire vessel (typical charter) _____
15b) On a per-person basis (head boat)_____

16) What percent of trips were half day and full day?

- ☐ Half day _____
☐ Full day _____

17) Please estimate the following averages for a typical half day trip and typical full day trip. For dollar value estimates, write "0" (zero) if no expense. Write "NA" if the field is not applicable.

Typical half day trip

Length of trip (hours)	Hours per trip
Distance traveled (round trip in statute miles)	Miles per trip
Vessel fuel consumed (total gallons)	Gallons per trip
Average number of passengers	No. per trip
Number of deck hands	No. per trip
Average charter fee (total from all passengers, surcharges included)	\$per trip
Average price per passenger (for head boasts)	\$per trip
Fuel and oil expenses	\$per trip
Bait related expenses	\$per trip
Ice expenses	\$per trip
Terminal tackle (lost hooks, lure, etc.)	\$per trip
Labor compensation (Captain)	\$per trip

Typical full day trip

Length of trip (hours)	Hours per trip
Distance traveled (round trip in statute miles)	Miles per trip
Vessel fuel consumed (total gallons)	Gallons per trip
Average number of passengers	No. per trip
Number of deck hands	No. per trip
Average charter fee (total from all passengers, surcharges included)	\$per trip
Average price per passenger (for head boasts)	\$per trip
Fuel and oil expenses	\$per trip
Bait related expenses	\$per trip
Ice expenses	\$per trip
Terminal tackle (lost hooks, lure, etc.)	\$per trip
Labor compensation (Captain)	\$per trip

18) About what percent of your trip related expenses do you purchase from local business defined as business in South Brevard County (county area south of Melbourne) or Indian River County?

- ☐ 20% or less
- ☐ 40% decline
- ☐ 60 % decline
- ☐ 80% or more

19) What amounts of expenditures have you made on your primary vessel since it was acquired and in 2012 only?

Expenditures	In 2012 only	Prior to 2012
Engine upgrades or replacements	\$	\$
Electronics expenditures	\$	\$
Hull and deck upgrades or additions	\$	\$
Regular maintenance	\$	\$
Other (please specify)	\$	\$

20) About what percent of your vessel related expenses from question 14 were purchased from local business defined as business in South Brevard County (county area south of Melbourne) or Indian River County?

- ☐ 20% or less
- ☐ 40% decline
- ☐ 60 % decline
- ☐ 80% or more

Section 3: Inlet Navigability

21) If the Sebastian Inlet were not maintained and became unnavigable for boating and did not provide access to Atlantic waters, would it affect your revenues?

- ☐ Yes
- ☐ No

22) If yes to question 11, how much do you think your revenues would decline?

- ☐ 20% or less
- ☐ 20 to 30%
- ☐ 30 to 40%
- ☐ 40 to 50%
- ☐ 50 to 60%
- ☐ 60 to 70%
- ☐ 70 to 80%
- ☐ 80% or more

23) If the Sebastian Inlet were not maintained and became unnavigable for boating and did not provide access to Atlantic waters, would you likely relocate your business outside of the Sebastian Inlet area defined as South Brevard County (Melbourne south to county line) and Indian River County?

24) In what other ways, if any, would your business change if the Sebastian Inlet were not navigable?

25) In your professional opinion, if the Sebastian Inlet were not maintained and became unnavigable for recreational boaters and did not provide access to Atlantic waters how would it impact recreational boating in South Brevard County (Melbourne south to county line) and Indian River County be affected?

25a) Fishing within the Indian River Lagoon

- ☐ No impact
- ☐ 20% or less
- ☐ 40% decline
- ☐ 60 % decline
- ☐ 80% or more

25b) Near shore Fishing (Atlantic waters within 3 miles of shore)

- ☐ No impact
- ☐ 20% or less
- ☐ 40% decline
- ☐ 60 % decline
- ☐ 80% or more

25c) Offshore Fishing (Atlantic waters 3 miles or more from shore)

- ☐ No impact
- ☐ 20% or less
- ☐ 40% decline
- ☐ 60 % decline
- ☐ 80% or more

25d) Non fishing recreational boating (e.g., pleasure boating, water sports or nature watching) on the Indian River Lagoon

- ☐ No impact
- ☐ 20% or less
- ☐ 40% decline
- ☐ 60 % decline
- ☐ 80% or more

25e) Non fishing recreational boating (e.g., pleasure boating, water sports or nature watching) on Atlantic Ocean:

- ☐ No impact
- ☐ 20% or less
- ☐ 40% decline
- ☐ 60 % decline
- ☐ 80% or more

26) Is there anything else you would like to tell us about boating in the Sebastian Inlet area or maintenance of the Sebastian Inlet?

Boat Sales and or Service Centers, Hotels and Restaurants, and Bait and Tackle Shops

3) What type of products or service do you provide?

4) How many full and part time employees did you have in 2012?

5) What were your total sales revenues in 2012?

6) What percentage of your expenditures on supplies and materials is come from businesses in the Sebastian Inlet area defined as South Brevard County (Melbourne south to county line) and Indian River County?

- ☐ 20% or less
- ☐ 40% decline
- ☐ 60 % decline
- ☐ 80% or more

7) In 2012, about what percentage of your sales came from customers living outside of the Sebastian Inlet area Sebastian Inlet area; defined as South Brevard County (Melbourne south to county line) and Indian River County?

8) Would you say that 2012 was a typical year?

- ☐ Yes
- ☐ No

9) If no to Question 8, would you say that 2012 was:

- ☐ Lower than previous years
- ☐ Higher than previous years
- ☐ Describe recent trends in activity_____

10) In 2012, about what percentage of your sales do you estimate involved vessels using the Sebastian Inlet on a regular basis (if not applicable enter "NA" or unsure enter "?")? _____

11) If the Sebastian Inlet were not maintained and did not provide access to Atlantic waters, would your annual sales increase, decrease, or not change?

- ☐ Decrease
- ☐ Increase
- ☐ No change

12) If you revenues would change, by how much would your annual revenues increase or decrease:

- ☐ 20% or less
- ☐ 40%
- ☐ 60 %
- ☐ 80%
- ☐ Greater than 80% decline

13) In what other ways, if any, would your business change if Sebastian Inlet were not navigable?

14) In your professional opinion, if the Sebastian Inlet were not maintained and became unnavigable for recreational boaters and did not provide access to Atlantic waters how would it impact recreational boating in South Brevard County (Melbourne south to county line) and Indian River County?

14a) Fishing within the Indian River Lagoon

- ☐ No impact
- ☐ 20% or less decline
- ☐ 40% decline
- ☐ 60 % decline
- ☐ Greater than 80% decline
- ☐ Not sure

14b) Near shore Fishing (Atlantic waters within 3 miles of shore)

- ☐ No impact
- ☐ 20% or less decline
- ☐ 40% decline
- ☐ 60 % decline
- ☐ Greater than 80% decline
- ☐ Not sure

14c) Offshore Fishing (Atlantic waters 3 miles or more from shore)

- ☐ No impact
- ☐ 20% or less decline
- ☐ 40% decline
- ☐ 60 % decline
- ☐ Greater than 80% decline
- ☐ Not sure

14d) Non fishing recreational boating (e.g., pleasure boating, water sports or nature watching) on the Indian River Lagoon

- ☐ No impact
- ☐ 20% or less decline
- ☐ 40% decline
- ☐ 60 % decline
- ☐ Greater than 80% decline
- ☐ Not sure

14e) Non fishing recreational boating (e.g., pleasure boating, water sports or nature watching) on Atlantic Ocean

- ☐ No impact
- ☐ 20% or less decline
- ☐ 40% decline
- ☐ 60 % decline
- ☐ Greater than 80% decline
- ☐ Not sure

15) Is there anything else you would like to tell us about boating in the Sebastian Inlet area or maintenance of the Sebastian Inlet?

Regional Economic Impacts of the
Sebastian Inlet

APPENDIX

C

SUMMARY STATISTICS FOR
RECREATIONAL BOATER SURVEY

Summary Statistics for the Recreational Boater Survey (“SD” = Standard Deviation)

Type of vessel of vessel owned and operated	Variable	Count	Frequency	Mean	SD	Max	Min
	No motor or sail	10	2.5%	-	-	-	-
	Sail no motor	0	0.0%	-	-	-	-
	Sail inboard	10	2.5%	-	-	-	-
	Sail outboard	7	1.7%	-	-	-	-
	Motor inboard	56	13.7%	-	-	-	-
	Motor outboard	325	79.7%	-	-	-	-
	Total	408	100.0%	-	-	-	-
Type of propulsion	Variable	Count	Frequency	Mean	SD	Max	Min
	Diesel	30	7.6%	-	-	-	-
	Gasoline	365	91.9%	-	-	-	-
	Electric	1	0.3%	-	-	-	-
	Other	1	0.3%	-	-	-	-
	Total	397	100.0%	-	-	-	-
Length of vessel (feet)	Variable	No. of responses	Frequency	Mean	SD	Max	Min
	Length in Feet	399	-	22	6	52	10
Fresh or saltwater boating	Variable	Count	Frequency	Mean	SD	Max	Min
	Fresh	11	2.7%	-	-	-	-
	Salt	301	74.5%	-	-	-	-
	Combination	92	22.8%	-	-	-	-
	Total	404	100.0%	-	-	-	-
Primary activity while boating	Variable	Count	Frequency	Mean	SD	Max	Min
	Fishing	295	75.6%	-	-	-	-
	Watersports	12	3.1%	-	-	-	-
	Scuba diving or snorkeling	13	3.3%	-	-	-	-
	Day cruising or sailing	63	16.2%	-	-	-	-
	Overnight cruising	7	1.8%	-	-	-	-
	Total	390	100.0%	-	-	-	-
Total number of boating trips in 2012	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
		20,216	-	47	15	270	0

Trips according to season	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
	Winter	3,511	17.4%	-	-	-	-
	Spring	5,280	26.1%	-	-	-	-
	Summer	6,837	33.8%	-	-	-	-
	Fall	4,588	22.7%	-	-	-	-
	Total	20,216	100.0%	-	-	-	-
Number of trips spent boating in Indian River Lagoon	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
	No. of trips	16,529	-	43	41	240	0
Number of trips navigating the Sebastian Inlet	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
	No. of trips	9,483	-	25	34	240	0
Number of trips involving a visit to the Sebastian Inlet State Park	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
	No. of trips	3,959	-	10	22	240	0
Number of trips to existing artificial reefs in area	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
	No. of trips	1,664	-	4	17	200	0
Primary activity at reefs	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
	Fishing	186	77.5%	-	-	-	-
	Snorkeling or Diving	54	22.5%	-	-	-	-
	Total	240	100.0%				
Likely to visit new reefs constructed closer to shore	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
	Yes	301	81.6%	-	-	-	-
	No	68	18.4%	-	-	-	-
	Total	369	100.0%				
Number of trips departing from boat ramps	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
	No. of trips	9,702	-	41	39	235	0
Driving time to most frequently used ramp	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
	Minutes	4,579	-	22	18	150	0
Driving time to secondary ramp	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
	Minutes	3,653	-	25	21	150	0
Driving time to tertiary ramp	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
	Minutes	2,389	-	29	27	180	2

No. of trips launched from shoreline or causeway	Variable No. trips	Count or Sum 436	Frequency -	Mean 12	SD 15	Max 50	Min 0
Driving to most frequently used shoreline or causeway	Variable Minutes	Count or Sum 485	Frequency -	Mean 29	SD 22	Max 75	Min 0
Driving to secondary shoreline or causeway	Variable Minutes	Count or Sum 32	Frequency -	Mean 8	SD 4	Max 12	Min 5
Driving to tertiary shoreline or causeway	Variable Minutes	Count or Sum 0	Frequency -	Mean 0	SD 0	Max 0	Min 0
No. of trips from a wet slip	Variable No. of trips	Count or Sum 1,703	Frequency -	Mean 34	SD 42	Max 169	Min 0
Driving time to primary wet slip	Variable Minutes	Count or Sum 495	Frequency -	Mean 18	SD 17	Max 60	Min 0
Driving time to secondary wet slip	Variable Minutes	Count or Sum 55	Frequency -	Mean 28	SD 25	Max 45	Min 10
Driving to tertiary wet slip	Variable Minutes	Count or Sum 10	Frequency -	Mean 10	SD 0	Max 10	Min 10
No. of trips from a dry storage site	Variable No. of trips	Count or Sum 634	Frequency -	Mean 24	SD 32	Max 98	Min 0
Driving to primary dry storage site	Variable Minutes	Count or Sum 282	Frequency -	Mean 24	SD 16	Max 60	Min 2
Driving to secondary dry storage site	Variable Minutes	Count or Sum 0	Frequency -	Mean 0	SD 0	Max 0	Min 0
Driving to tertiary dry storage site	Variable Minutes	Count or Sum 0	Frequency -	Mean 0	SD 0	Max 0	Min 0
No. of trips from home dock	Variable	Count or Sum 3,545	Frequency -	Mean 28	SD 33	Max 300	Min 1
Typical or average distance traveled on water	Variable	Count or Sum 1,323	Frequency -	Mean 3.8	SD 2.5	Max 9.0	Min 1.0
Typical no. of persons per trip	Variable	Count or Sum	Frequency	Mean	SD	Max	Min

		942	-	2.7	0.8	4.0	1.0
Expenditures per Trip (boat fuel)	Variable	No. of responses	Frequency	Mean	SD	Max	Min
	Dollars	349	-	\$80	\$94	\$550	\$0
Expenditures per trip (automobile expenses)	Variable	No. of responses	Frequency	Mean	SD	Max	Min
	Dollars	333	-	\$17	\$27	\$550	\$0
Expenditures per trip (launch fees, docking, mooring etc.)	Variable	No. of responses	Frequency	Mean	SD	Max	Min
		297	-	\$8	\$27	\$212	\$0
Expenditures per trip (groceries, bait, ice, food etc.)	Variable	No. of responses	Frequency	Mean	SD	Max	Min
		344	-	\$34	\$37	\$300	\$0
Expenditures per trip (rest. or taverns)	Variable	No. of responses	Frequency	Mean	SD	Max	Min
		304	-	\$21	\$34	\$200	\$0
Expenditures per trip (other misc.)	Variable	No. of responses	Frequency	Mean	SD	Max	Min
		210	-	\$1	\$7	\$65	\$0
Annual expenditures (boat accessories, equipment etc.)	Variable	No. of responses	Frequency	Mean	SD	Max	Min
		270	-	\$1,604	\$7,001	\$90,000	\$0
Percent spent in study area	Variable	No. of responses	Frequency	Mean	SD	Max	Min
	Less than 20%	29	9.7%	-	-	-	-
	20 to 40%	21	7.0%	-	-	-	-
	40 to 60%	31	10.3%	-	-	-	-
	60 to 80%	115	38.3%	-	-	-	-
	80% or more	104	34.7%	-	-	-	-
	Total	300	100.0%	-	-	-	-
Annual expenditures (maintenance and repair)	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
		270	-	\$928	\$1,553	\$14,500	\$0
Percent spent in study area	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
	Less than 20%	26	8.9%	-	-	-	-
	20 to 40%	14	4.8%	-	-	-	-
	40 to 60%	13	4.4%	-	-	-	-
	60 to 80%	118	40.3%	-	-	-	-
	80% or more	122	41.6%	-	-	-	-
	Total	293	100.0%	-	-	-	-
Annual expenditures (dry storage or wet slip)	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
		187	-	\$747	\$1,529	\$10,000	\$0
Percent spent in study area	Variable	Count or Sum	Frequency	Mean	SD	Max	Min

	Less than 20%	36	31.9%	-	-	-	-
	20 to 40%	3	2.7%	-	-	-	-
	40 to 60%	2	1.8%	-	-	-	-
	60 to 80%	28	24.8%				
	80% or more	44	38.9%	-	-	-	-
	Total	113	100.0%	-	-	-	-
Annual expenditures (insurance and registration)	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
	Dollars	268	-	\$609	\$939	\$10,000	\$0
Percent spent in study area	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
	Less than 20%	59	20.8%	-	-	-	-
	20 to 40%	19	6.7%	-	-	-	-
	40 to 60%	4	1.4%	-	-	-	-
	60 to 80%	99	34.9%				
	80% or more	103	36.3%	-	-	-	-
	Total	284	100.0%	-	-	-	-
Annual expenditures (lodging)	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
		186	-	\$306	\$955	\$10,000	\$0
Percent spent in study area	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
	Less than 20%	54	45.8%	-	-	-	-
	20 to 40%	7	5.9%	-	-	-	-
	40 to 60%	9	7.6%	-	-	-	-
	60 to 80%	20	16.9%				
	80% or more	28	23.7%	-	-	-	-
	Total	118	100.0%	-	-	-	-
Annual expenditures (camp-ground or state park fees)	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
		239	-	\$113	\$167	\$2,000	\$0
Percent spent in study area	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
	Less than 20%	39	17.2%	-	-	-	-
	20 to 40%	9	4.0%	-	-	-	-
	40 to 60%	10	4.4%	-	-	-	-
	60 to 80%	77	33.9%				
	80% or more	92	40.5%	-	-	-	-
	Total	227	100.0%	-	-	-	-
Age of primary vessel	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
	Less than 5 years	62	17.7%	-	-	-	-
	5-10 years	118	33.7%	-	-	-	-
	More than 10 years	170	48.6%	-	-	-	-

	Total	350	100.0%	-	-	-	-
Likely time frame until replacing current vessel	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
	Within 3 years	86	25.0%	-	-	-	-
	Within 4-5 years	93	27.0%	-	-	-	-
	Within 6-10 years	60	17.4%	-	-	-	-
	More than 10 years	105	30.5%	-	-	-	-
	Total	344	100.0%	-	-	-	-
Likelihood of purchasing new boat in study area	Variable	Count or Sum	Frequency	Mean	SD	Max	Min
	Yes	62	17.7%	-	-	-	-
	No	118	33.7%	-	-	-	-
	Not sure	170	48.6%	-	-	-	-
	Total	350	100.0%	-	-	-	-

Regional Economic Impacts of the
Sebastian Inlet

APPENDIX

D

SUMMARY STATISTICS FOR MARINE
BUSINESS SURVEY

Summary Statistics for Marine Related Business Survey (“SD” = Standard Deviation)

Responses by Marinas (5 respondents)						
Variable: Type of Services offered by marina						
Service	No. of responses	Frequency	Mean	SD	Max	Min
Dry Storage	2	40%	-	-	-	-
Service Area	1	20%	-	-	-	-
Charter Fishing	1	20%	-	-	-	-
Boat Ramp	0	0%	-	-	-	-
Boat Rentals	3	60%	-	-	-	-
Boat Sales	2	40%	-	-	-	-
Hotel	1	20%	-	-	-	-
Restaurant	3	60%	-	-	-	-
Convenience Store	1	20%	-	-	-	-
Fuel	1	20%	-	-	-	-
Bait, Tackle and Boating Accessories	3	60%	-	-	-	-
Dive Shop	0	0%	-	-	-	-
Variable: Number of wet slips and dry storage slots (5 marinas reported data)						
	Total number reported	Frequency	Mean	SD	Max	Min
Number of wet slips	199	-	33	23	72	9
Number of dry storage slots	285	-	48	107	265	0
Variable: Typical Number of departures from marina in 2012 (5 marinas reported data)						
	Total number reported	Frequency	Mean	SD	Max	Min
Winter Weekday	215	-	54	64	148	2
Winter Weekend	416	-	104	184	380	1
Spring Weekday	215	-	54	64	148	2
Spring Weekend	750	-	188	334	688	2
Summer Weekday	565	-	141	177	400	5
Summer Weekend	807	-	202	336	704	3
Fall Weekday	404	-	101	139	307	2
Fall Weekend	699	-	175	312	643	1

Variable: Percentage of departures engaged primarily in recreational fishing (5 marinas reported data)

Total number reported	Frequency	Mean	SD	Max	Min
-	-	64	18	80	40

Variable: (Percentage of departures engaged primarily in non-recreational fishing (5 marinas reported data)

Total number reported	Frequency	Mean	SD	Max	Min
-	-	36	18	60	20

Variable: (Percentage of departures engaged primarily in commercial fishing (5 marinas reported data)

Total number reported	Frequency	Mean	SD	Max	Min
-	-	0	0	0	0

Variable: Percentage of fishing departures that navigate the Inlet (5 marinas reported data)

Total number reported	Frequency	Mean	SD	Max	Min
-	-	75	19	100	60

Variable: Percentage of non-fishing departures that navigate the Inlet (5 marinas reported data)

Total number reported	Frequency	Mean	SD	Max	Min
-	-	20	8	30	10

Variable: Percentage of commercial fishing departures that navigate the Inlet (5 marinas reported data)

Total number reported	Frequency	Mean	SD	Max	Min
-	-	0	0	0	0

Variable: Percentage of boaters from outside of study area (2 marinas reported data)

Total number reported	Frequency	Mean	SD	Max	Min
-	-	60	14	70	50

Variable: Percentage of boaters who visit artificial reefs in study area from outside of study area (0 marinas reported data)

	Total number reported	Frequency	Mean	SD	Max	Min
	-	-	-	-	-	-

Variable: Gross revenues for facility in 2012 (0 marinas reported data)

	Total number reported	Frequency	Mean	SD	Max	Min
	-	-	-	-	-	-

Variable: Number of full and part time employees (1 marinas reported data)

	Total number reported	Frequency	Mean	SD	Max	Min
	-	-	7	0	7	7

Variable: Number of fishing tournaments operated out of facility (1 marinas reported data)

	Total number reported	Frequency	Mean	SD	Max	Min
	-	-	6	0	6	6

Variable: Typical length of tournaments in days (1 marinas reported data)

	Total number reported	Frequency	Mean	SD	Max	Min
	-	-	2	0	2	2

Variable: Average number of vessels in tournaments in days (0 marinas reported data)

	Total number reported	Frequency	Mean	SD	Max	Min
	-	-	-	-	-	-

Variable: Average number of participants in tournaments in days (0 marinas reported data)

	Total number reported	Frequency	Mean	SD	Max	Min
	-	-	-	-	-	-

Variable: Percent of tournaments from outside the study area (1 marinas reported data)

	Total number reported	Frequency	Mean	SD	Max	Min
	-	-	-	-	-	-

-	-	70	0	70	70
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Variable: Percent of tournament vessels navigating inlet (1 marinas reported data)

Total number reported	Frequency	Mean	SD	Max	Min
-	-	100	0	100	100

Variable: Percent decline in annual revenues if inlet not navigable (1 marinas reported data)

Total number reported	Frequency	Mean	SD	Max	Min
-	-	50	0	50	50

Variable: In what other ways would a non-navigable inlet affect your business (comment field)

No comments reported

Variable: Percent decline in recreational fishing in Indian River Lagoon if Inlet not navigable in study area (1 marinas reported data)

Total number reported	Frequency	Mean	SD	Max	Min
-	-	50	0	50	50

Variable: Percent decline in near shore fishing in study area if Inlet were not navigable (1 marinas reported data)

Total number reported	Frequency	Mean	SD	Max	Min
-	-	50	0	50	50

Variable: Percent decline in offshore fishing in study area if Inlet were not navigable (1 marinas reported data)

Total number reported	Frequency	Mean	SD	Max	Min
-	-	50	0	50	50

Variable: Percent decline in non-fishing recreational boating in Indian River Lagoon if Inlet were not navigable (1 marinas reported data)

Total number reported	Frequency	Mean	SD	Max	Min
-	-	50	0	50	50

Percent decline in non-fishing recreational boating in Indian River Lagoon if Inlet were not navigable (1 marinas reported data)

Total number reported	Frequency	Mean	SD	Max	Min
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- - 50 0 50 50

Variable: Percent decline in non-fishing recreational boating in Atlantic Ocean were not navigable (1 marinas reported data)

Total number reported	Frequency	Mean	SD	Max	Min
-	-	50	0	50	50

Responses by Charter Boat Operations

Variable: What is the primary type of service you provide (5 responses)

Variable	Total number reported	Frequency	Mean	SD	Max	Min
Fishing	5	100%	-	-	-	-
Sightseeing	0	0%	-	-	-	-
Other	0	0%	-	-	-	-
	5	100%				

Variable: What is the length of your primary vessel in feet (5 responses)

Variable	Total number reported	Frequency	Mean	SD	Max	Min
Length	5	-	23	6	32	18

What is the draft of your primary vessel in feet (5 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Feet	5	-	2	1	3	1

Number of Saltwater Trips in Winter of 2012 (Dec - Feb)

Variable	Number	Frequency	Mean	SD	Max	Min
Trips	5	-	28	16	50	12

Percent of saltwater trips in winter of 2012 that navigated inlet (5 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent of Trips	5	-	58	8	70	50

Number of saltwater trips in Spring of 2012 (Mar - May) (5 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Trips	5	-	40	17	70	30

Percent of saltwater trips in Spring of 2012 that navigated inlet (5 response)

Variable	Number	Frequency	Mean	SD	Max	Min
	5	-	56	9	70	50

Number of Saltwater Trips in Summer of 2012 (June - Aug) (5 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Trips	5	-	24	10	40	15

Percent of Saltwater Trips in Summer of 2012 that Navigated Inlet

Variable	Number	Frequency	Mean	SD	Max	Min
	5	-	68	15	90	50

Number of Saltwater Trips in Fall of 2012 (Sep - Nov) (5 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Trips	5	-	16	6	20	7

Percent of Saltwater Trips in Fall of 2012 that Navigated Inlet (5 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
	5	-	60	10	70	50

Percent of Saltwater Trips Operating in Indian River Lagoon (5 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
	5	-	83	12	100	70

Percent of Saltwater Trips Operating Near-shore (within 3 miles of coast) (5 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Trips	5	-	32	12	50	20

Percent of Saltwater Trips Operating Offshore (greater than 3 miles from shore) (5 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
	5	-	18	16	40	0

What 2012 a Typical Year for Your Business (5 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Yes	4	80%	-	-	-	-
No	1	20%	-	-	-	-

If 2012 Was Not a Typical Year Was it Higher or Lower than Previous Years (1 response)

Variable	Number	Frequency	Mean	SD	Max	Min
Lower	1	-	-	-	-	-
Higher	-	-	-	-	-	-

Percentage of trips that visited offshore reefs (5 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent of Trips	5	-	6	9	20	0

If reefs were closer to shore would be there greater demand for them (5 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Yes	4	80%	-	-	-	-
No	1	20%	-	-	-	-

Percent of customers who live outside of study area (5 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
	5	-	92	8	100	80

Percent of trips where customers pay one time charter fee for entire vessel (5 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
	5	-	100	0	100	100

Percent of Trips where customers pay on per head basis (head boat) (5 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
	5	-	0	0	0	0

Percent of charters that were half day voyages (5 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
	5	-	78	8	90	70

Percent of charters that were full day voyages (5 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
	5	-	22	8	30	10

Half day trip Characteristics time and expense (2 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Trip length (hours)	2	-	5	1	5	4
Distance traveled (round trip in miles)	2	-	9	1	10	8
Fuel consumed (gallons)	2	-	5	1	5	4
Average number of passengers	2	-	2	0	2	2
Number of deck hands	2	-	0	0	0	0
Average charter fee	2	-	288	18	300	275
Average price head (head boats)	2	-	0	0	0	0
Fuel and oil expenses	2	-	33	11	40	25
Bait related expenses	2	-	18	4	20	15
Terminal tackle	2	-	20	0	20	20
Labor compensation	2	-	238	53	275	200

Full day trip characteristics time and expensive (2 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Trip length (hours)	2	-	8	0	8	8
Distance traveled (round trip in miles)	2	-	19	2	20	18
Fuel consumed (gallons)	2	-	10	0	10	10
Average number of passengers	2	-	2	0	2	2
Number of deck hands	2	-	0	0	0	0
Average charter fee	2	-	400	0	400	400
Average price head (head boats)	2	-	0	0	0	0
Fuel and oil expenses	2	-	50	0	50	50
Bait related expenses	2	-	5	7	10	0
Terminal tackle	2	-	10	0	10	10
Labor compensation	2	-	350	71	400	300

Percent of trip related expenses purchased in study area (2 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
	2	-	80	14	90	70

Annual vessel expenditures (2 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Engine upgrades or replacements (2012)	2	-	0	0	0	0
Engine upgrades or replacements (prior to 2012)	2	-	12,500	17,678	25,000	0
Electronics expenditures (2012)	2	-	650	495	1,000	300
Electronics expenditures (prior to 2012)	2	-	500	707	1,000	0
Hull and deck upgrades or additions (2012)	2	-	150	212	300	0
Hull and deck upgrades or additions (prior to 2012)	2	-	2,000	2,828	4,000	0
Regular maintenance (2012)	2	-	2,650	3,323	5,000	300
Regular maintenance (prior to 2012)	2	-	5,500	3,536	8,000	3,000
Other in 2012 (please specify)	2	-	0	0	0	0
Other prior to 2012 (please specify)	2	-	0	0	0	0

Percentage of vessel expenditures purchased in study area (2 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
	2	-	80	14	90	70

Percent decline in business revenues if Inlet were not navigable (2 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
	2	-	40	14	50	30

In what other ways would a non-navigable inlet affect your business (comment field)

"Inshore fishing that we have would decline rapidly which would generate less people wanting to fish the waters."

"The lagoon would become a cesspool and all fishing would be negatively affected."

If Inlet were not navigable, would you relocate your operation outside of the study area (2 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Yes	1	50%	-	-	-	-
No	1	50%	-	-	-	-

If Inlet were not navigable, how much would recreational boating decline within the Indian River Lagoon (2 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent decline	2	-	50	28	70	30

If Inlet were not navigable, how much would recreational boat fishing decline within the Indian River Lagoon (2 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent decline	2	-	80	28	100	60

If Inlet were not navigable, how much would near shore recreational fishing (i.e., within 3 miles of coast) decline in the study area (2 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent decline	2	-	90	14	100	80

If Inlet were not navigable, how much would offshore recreational fishing (i.e., greater than 3 miles of coast) in the study area (2 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent decline	2	-	95	7	100	90

If Inlet were not navigable, how much would non fishing recreational boating decline in the Indian River Lagoon within the study area (2 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent decline	2	-	40	14	50	30

If Inlet were not navigable, how much would non fishing recreational boating decline in Atlantic waters within the study area (2 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent decline	2	-	95	7	100	90

Responses by Marine Trades Businesses

What type of products or service do you provide? (3 responses)

Variable (comment field)

Boats, gear, instruction for boating and fishing
Boat sales, service and repair
Boat repair and service

Annual revenues in 2012 (2 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Dollars	\$270,000	-	\$135,000	\$162,635	\$250,000	\$162,635

Number of full and part time employees (3 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Employees	-	-	4	2.65	6	1

Percent of revenues from outside of study area (3 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
-	-	-	35	15	50	20

Percent of sales from non-local customers (3 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent	-	-	38	37	80	10

Was 2012 a typical business year? (3 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Yes	3	100%	-	-	-	-
No	0	0%	-	-	-	-

Percent of sales from customers who use the inlet (3 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent	-	-	85	9	90	75

Percent of sales from customers who use the inlet (3 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent	-	-	85	9	90	75

If inlet were not navigable would it affect your business? (3 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Yes	2	67%	-	-	-	-
No	0	0%	-	-	-	-
Unsure	1	33%	-	-	-	-

If inlet were not navigable would much would your revenues? (2 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent	-	-	60	0	60	60

In what other ways would a non-navigable inlet affect your business (comment field)

"Would consider relocating further south to Ft. Pierce or Stuart. I am in this area because of the inlet. No inlet to the Ocean, I'm gone south."

"Would not change much"

"Not sure how much boating would decline but it definitely would not be a good thing for businesses in the area"

If Inlet were not navigable, how much would recreational boating decline within the Indian River Lagoon (2 responses)

Key	Variable	Number	Frequency	Mean	SD	Max	Min
	Percent decline	2	-	45	49	80	10

If Inlet were not navigable, how much would recreational boat fishing decline within the Indian River Lagoon (2 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent decline	2	-	40	42	70	10

If Inlet were not navigable, how much would near shore recreational fishing (i.e., within 3 miles of coast) decline in the study area (2 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent decline	2	-	90	0	90	90

If Inlet were not navigable, how much would offshore recreational fishing (i.e., greater than 3 miles of coast) in the study area (2 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent decline	2	-	95	7	100	90

If Inlet were not navigable, how much would non fishing recreational boating decline in the Indian River Lagoon within the study area (2 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent decline	2	-	45	49	80	10

If Inlet were not navigable, how much would non fishing recreational boating decline in Atlantic waters within the study area (2 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent decline	2	-	95	7	100	90

Responses by Hotels and Restaurants

What type of products or service do you provide? '(comment field)

Vacation Accommodations

Motel rooms and lodging

Restaurant

Annual revenues in 2012 (3 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Revenues	\$2,110,000	-	\$703,333	\$1,036,645	\$1,900,000	\$80,000

Number of full and part time employees (3 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
No. of employees	53	-	18	28	50	1

Percentage of operating expenditures from study area (3 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent	-	-	70	44	100	20

Percentage of operating revenues from non-local customers (3 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent	-	-	83	29	100	50

Percentage of sales from customers who navigate the Sebastian Inlet (3 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent	-	-	37	12	50	29

In what other ways would a non-navigable inlet affect your business (comment field)

"Since we are dependent on tourism, the total economic environment would take a hit. It may not be obvious the first year but recreational boating and charter fishing would go away. This would impact the number of people coming to the area and the hotel industry would lose that segment of the market."

"The inlet puts us on the map... It's an attraction - not just for fishing or boating."

If Inlet were not navigable, how much would recreational boating decline within the Indian River Lagoon (3 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent decline		-	47	21	70	30

If Inlet were not navigable, how much would recreational boat fishing decline within the Indian River Lagoon (3 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent decline		-	23	32	60	0

If Inlet were not navigable, how much would near shore recreational fishing (i.e., within 3 miles of coast) decline in the study area (3 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent decline			67	32	90	30

If Inlet were not navigable, how much would offshore recreational fishing (i.e., greater than 3 miles of coast) in the study area (3 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent decline			90	10	100	80

If Inlet were not navigable, how much would non fishing recreational boating decline in the Indian River Lagoon within the study area (3 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent decline			13	15	30	0

If Inlet were not navigable, how much would non fishing recreational boating decline in Atlantic waters within the study area (3 responses)

Variable	Number	Frequency	Mean	SD	Max	Min
Percent decline			90	10	100	80

Regional Economic Impacts of the
Sebastian Inlet

APPENDIX

E

CITED REFERENCES AND
GLOSSARY OF TERMS

References

(Listed in the order that they appear in the report)

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Glossary of Economic Terms Referenced in Study

Capitalized and Annualized Values – The capitalized value of an asset is the total value or benefits one expects to receive both and today and in the future. In contrast, an annualized value is the value that one would expect to reap in one year of owning the asset. For example, a home's price selling price is the capitalized value because a buyer expects to have rights to the benefits generated by the home well into the future. In contrast, if someone leased the same house for one year, they would pay an annualized value.

Economic Impact Analysis – Economic impact analysis is the area of economics that deals with how policies, projects or other variables affect an economy. Generally, variables measured address macroeconomic fiscal effects such as changes in sales revenues, income, taxes and employment.

Economic Impact Analysis (IMPLAN) - IMPLAN PRO™ (Impact for Planning Analysis) is a system used by economists to develop regional economic impact models. IMPLAN was originally developed by the U.S. government in the late 1970s based on work of the Nobel Prize winning economist Wassily Leontief. It is probably the most widely used economic impact model. IMPLAN comes with databases containing the most recently available economic data from a variety of sources. IMPLAN allows one to create a model that is an accounting framework for a specified area that traces spending and consumption between different economic sectors such as businesses, farms, households, government and external economies in the form of exports and imports. This allows economists to estimate economic multipliers that capture the broader economic effects of a change to a region's economy.

Economic Impact Analysis (Indirect Economic Impacts) – Changes in inter-industry transactions as supplying industries respond to increased (or decreased) demands from a directly affected industry. These are estimated with multipliers generated with an input output model such as IMPLAN.

Economic Impact Analysis (Induced Economic Impacts) – Impacts that reflect changes in local spending that result from income changes in the directly and indirectly affected industry sectors. These are estimated with multipliers generated with an input output model such as IMPLAN.

Economic Valuation – Area of economics that deals with estimating the economic value of something usually expressed as an individual's willingness to pay. An economic value is distinct from an economic impact.

Hedonic Pricing – Hedonic pricing is a method of estimating value that decomposes the item being researched into its constituent characteristics, and obtains estimates of the contributory value of each characteristic. This requires that the composite good being valued can be reduced to its constituent parts and that the market values those constituent parts. Hedonic models are most commonly estimated using regression analysis, although more generalized models, such as sales adjustment grids, are special cases of hedonic models. These models are often used to estimate how certain attributes affect real estate value such as being close to the Sebastian Inlet.

Nonmarket Valuation – The value of many goods and services that ecosystems provide to society are difficult to quantify because there are no conventional markets on which they can be traded such as seagrass supported by the presence of the Sebastian Inlet.

Nonmarket Valuation (Travel Cost Models) – Travel cost models are a method used to estimate nonmarket values. The basic premise of the travel cost method is that the time and travel cost expenses that people incur to visit a site represent the "price" of access to the site. Thus, peoples' willingness to pay to visit the site can be estimated based on the number of trips that they make at different travel costs. This is analogous to estimating peoples' willingness to pay for a marketed good based on the quantity demanded at different prices.

Nonmarket Valuation (Contingent Valuation) – Contingent valuation is a survey-based economic technique for the valuation of non-market resources, such as environmental preservation or the impact of contamination. While these resources do give people utility, certain aspects of them do not have a market price as they are not directly sold – for example, people receive benefit from a beautiful view of a mountain, but it would be tough to value using price-based models. Contingent valuation surveys are one technique which is used to measure these aspects. Contingent valuation is often referred to as a *stated preference* model, in contrast to a price-based *revealed preference* model. Both models are utility-based. Typically the survey asks how much money people would be willing to pay (or willing to accept) to maintain the existence of (or be compensated for the loss of) an environmental feature.

Nonmarket Valuation (Con-joint Analysis) – Conjoint analysis, also called multi-attribute compositional models or stated preference analysis, is a statistical technique that originated in mathematical psychology. Today it is used in many of the social sciences and applied sciences including economics in the valuation of nonmarket goods.

Nonmarket Valuation (Replacement or Avoided Cost Method) – The damage cost avoided, replacement cost, and substitute cost methods are related methods that estimate values of nonmarket goods based on either the costs of avoiding damages due to lost services, the cost of replacing ecosystem services, or the cost of providing substitute services.