

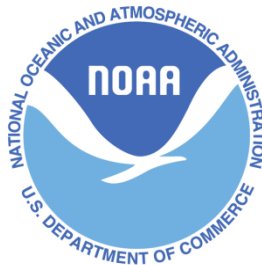
**Linking the Economy and the Environment of Florida
Keys/Key West**

**ECONOMIC CONTRIBUTION OF
RECREATING VISITORS TO THE
FLORIDA KEYS/KEY WEST 2007-08**

July 2010

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Office of National Marine Sanctuaries
National Ocean Service
National Oceanic and Atmospheric Administration
U.S. Department of Commerce



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Funding Partners:

NOAA/NOS

- Office of National Marine Sanctuaries (ONMS) HQ and Florida Keys National Marine Sanctuary
- National Centers for Coastal Ocean Science
- Coral Reef Conservation Program

The Nature Conservancy's Florida Keys Program

Working Partners:

The Monroe County Tourist Development Council (TDC)

ONMS/TSPD

- Project Leadership
- Develop survey sample design/questionnaires
- Provide estimation of visitation
- Provide economic analysis
- Provide Report

Bicentennial Volunteers, Inc.

- Recruit volunteers for winter tourist interviews

Local Chamber of Commerce/TDC

- Provide list of sample sites for customer survey
- Enlist business support to survey at sites

University of Massachusetts-Amherst, Human Dimensions of Marine and Coastal Ecosystems Program

- Manage tourist survey efforts
 - o Data collection
 - o Database construction
 - o Quality analysis/quality control of data
 - o Provide data analysis
 - o Produce reports

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Introduction

This is the third report in a series on visitors to the Florida Keys/Key West as part of the project entitled "Linking the Economy and Environment of the Florida Keys/Key West 2007-08." The first report, "Visitor Profiles: Florida Keys/Key West 2007-08," provides detailed profiles of visitors in terms of the number of visitors by mode of access (auto, air, cruise ship and ferry), activity participation by district (Key Largo, Islamorada, Marathon, Lower Keys and Key West), intensity of activity (days), demographic profiles (age, race/ethnicity, sex, household income, household type, party size, party type, education, employment status, and disabilities), and spending patterns (per person per day and per person per trip). This report is referenced under Leeworthy, Loomis and Paterson (2010).

The second report in the series, "Importance and Satisfaction Ratings by Recreating Visitors to the Florida Keys/Key West 2007-08," provides estimates of visitors ratings of the importance of and satisfaction with 25 natural resources, facilities, and services. This report is referenced under Leeworthy and Ehler (2010).

In addition, since this study is a 12-year replication of the study done in 1995-96, separate reports will summarize comparisons over the 1995-96 to 2007-08 period. The results of these comparisons will be posted on the following url: <http://sanctuaries.noaa.gov/science/socioeconomic/FloridaKeys/recreation/96-08>.

This report includes estimates of the economic contribution by recreating visitors to both Monroe County and the three-county South Florida area of Monroe, Miami-Dade and Broward counties. Economic Contribution is measured in visitor expenditures and the associated economic impacts on total sales/output, income and employment.

Mailback Survey. The information reported here was obtained from the mail back portion of the Auto, Air Cruise Ship and Ferry Surveys conducted during December 2007 to November 2008. Over 2,800 on-site interviews were conducted during this twelve-month sampling period on the highway (U.S. 1), the Key West airport, at the cruise ship docks in Key West, and at the ferry terminal in Key West. There were 437 respondents to the mail back portion of the survey out of 2,854 total on-site interviews, for a response rate of 15.31 percent (18.34 percent during the summer and 13.56 percent during the winter). Response rates varied by mode of access (auto, air, cruise ship, and ferry), age, and race/ethnicity. Generally, response rates were higher for older visitors and visitors that were White Not Hispanic. An analysis on possible non-response bias was conducted and it was found that although there were significant differences in response rates by the socioeconomic factors cited above, these factors were not generally significant and did not have high explanatory power for most responses. It was concluded that there was the possibility of some non-response bias, but that sample weighting might adjust for the problem, making it insignificant. For details on

the sampling methods, methods of estimating, and sample weighting, see Leeworthy (2010).

Economic Impact Analysis.

Economic impact analyses of recreation sites are designed to answer the question: How much does an activity contribute to the local economy? Impacts are determined by three different factors: the structure of the local economy, the amount and type of spending visitors do while on trips to the recreation site, and the total level of visitation. Depending on the assumptions about the site and its visitation, spending by residents of the local economy may be excluded from the analysis. Although visitation to the Florida Keys/Key West may contribute to the economies of many nearby counties our analysis is limited to two small impact areas: Monroe County/Florida Keys and the three-county area of Monroe, Miami-Dade and Broward counties. Miami-Dade and Broward counties are highly connected economically as there is much Intercounty commuting for work.

An overview of the baseline economy is discussed in the next section, followed by definitions of the various concepts used in the analysis, a summary of results, and an explanation of the methodology used in the analysis.

Baseline Economy

Special Features

There are several special features of the Monroe County economy that make analysis of the contribution of one sector (tourists) more difficult. Two key sectors of the economy, “tourism” and “retirement,” account for most income in the county. Special attention is required in order to avoid overestimating the contribution of tourists. Monroe County is also connected to the larger South Florida economy in so many ways that it is difficult to analyze the separate contribution of tourism to Monroe County alone. In doing so, we utilized several pieces of information about the special features of the Monroe County economy to aid in selecting appropriate methods and checking our results. Each of these special features is discussed below.

Place of Work versus Place of Residence. Compared to Florida as a whole, Monroe County’s income by place of work as a percentage of income by place of residence is much lower. Table 1 shows the percentages for 2003 through 2008. In 2003, Monroe County’s income by place of work as a percentage of income by place of residence was 57.36 percent while the percentage for Florida as a whole was 67.97 percent. There has been a continual decline in the percentage of income earned by work in Monroe County. By 2008, only about 49 percent of income received by residents of Monroe County was received from work within Monroe County. This is due in large part

Table 1 Income by Place of Work as a Percent of Income by Place of Residence for Florida and Monroe County

Year/State/County	Income by Place of Residence ¹	Income by Place of Work	Percent
2003			
Florida	531,215,779	361,091,583	67.97
Monroe County	3,140,067	1,801,125	57.36
2004			
Florida	582,767,302	389,502,660	66.84
Monroe County	3,526,669	1,882,144	53.37
2005			
Florida	633,198,348	423,331,870	66.86
Monroe County	3,868,314	1,998,057	51.65
2006			
Florida	690,273,244	452,353,587	65.53
Monroe County	4,287,418	2,117,837	49.40
2007			
Florida	713,489,866	460,365,819	64.52
Monroe County	4,511,348	2,202,975	48.83
2008			
Florida	719,707,709	455,176,422	63.24
Monroe County	4,531,670	2,214,144	48.86

1. Dollars in thousands.

Source: Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce

to the amount of income in transfer payments flowing into the county. There are a high number of retired people living in the Keys who are drawing pensions, retirement pay, dividends and interest on investments, and social security. This creates a base of income in Monroe County that is independent of employment. Retirement in Florida and Monroe County is what economists call a “basic industry.” Basic industries derive their demand from outside the area of location. Sometimes they are referred to as “export industries” because they export goods and services to other

areas (this term wouldn’t apply to retirement). However, retirement is basic in that the income that flows into the local economy results in demand for local goods and services. It is “new money” arriving in the economy that becomes a driving force in the economy, creating income and employment. The same is true of the tourist industry.

Another explanation for the significant difference between income by place of work and income by place of residence is inter-county commuters. There are a significant number of residents of Mon-

Table 2 Inter-county Commuting Patterns

Residents that work in Monroe County	39,721
Residents that commute to work outside county	1,896
Further Breakdown	
Broward County	142
Collier County	8
Miami-Dade County	1,186
Palm Beach County	14
Other counties	91
Total Other Counties	1,441
Total Other States	318
Total Other Countries	137
Non residents that work inside the county	4,225
Further Breakdown	
Broward County	256
Collier County	20
Miami-Dade County	2,821
Palm Beach County	97
Other Counties	459
Total Other Counties	3,653
Total Other States	572
Net	2,329

Source: Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce

roe County working outside the county and non-residents working inside the county. Table 2 shows the number of commuters coming into (going out of) the county and where they are coming from (going to). The net transfer of commuters is +2,329. In other words, there are 2,329 more commuters entering Monroe County for work than there are leaving to find work. In 2008, net income to Monroe County was about \$26.2 million. Residents of Monroe County that work outside the county brought in \$26.2 million more than non-residents of Monroe County that work in Monroe County even though there were over two thousand more workers

who commute to Monroe County for work. The Keys as a “bedroom community” for other counties in South Florida is also a basic industry.

Proprietors’ Employment as a Percentage of Total Employment. Another important issue to consider is the proportion of proprietors’ income in relation to the total. The percentage for Monroe County is considerably higher than for both Florida and the country as a whole. Table 3 shows proprietors’ employment as a percentage of total employment for the U.S., Florida and Monroe County. In 2008, proprietors’ employment as

a percentage of total employment in Monroe County was 29.84 percent, while in Florida it was 22.15 percent and in the U.S. as a whole it was 21.32 percent. The high proportion of proprietors’ to wage employment reflects the dominance of the many small businesses in the tourist industry.

Seasonality. In a region like the Florida Keys where tourism dominates the economic activity, an important aspect is the ups and downs of the economy during the year, i.e., seasonality. Figure 1 shows monthly gross sales in Monroe County for visitor years 2005-06, 2006-07 and 2007-08. Gross Sales is at its highest level from January - April (the heart of the winter tourist season), declines steadily from May-October, then begins increasing in November, signaling the beginning of the winter tourist season.

Historical Perspective

In economic impact analyses it is important to know if the year during which you surveyed is a “typical” year. By this we mean, was this a good or bad year, was there a recession in the U.S. economy, and if so, how might it have affected the local economy? The current recession is dated as starting on December 2007, which is the beginning of our survey year. In Table 4, gross sales, income (by place of work) and employment data were compiled for the years 2003 through 2008 for income and employment and for visitor years 2002-03 through 2007-08 for gross sales. Sales, after increasing steadily between 2002-03 and 2005-06, then declined slightly in 2006-07 and continued to decline in 2007-08. So the recession appears to have arrived in Monroe County before the official date used by the federal government. Income, which is in calendar years, didn’t show a decline until 2008. Strangely, employment continued to increase,

Table 3 Proprietors’ Employment as a Percentage of Total Employment for the U.S., Florida and Monroe County

	Proprietors’ Employment	Total Employment	Percent
2003			
U.S.	29,954,500	166,019,500	18.04
Florida	1,443,679	9,286,024	15.55
Monroe County	13,573	55,063	24.65
2004			
U.S.	31,435,700	169,026,700	18.60
Florida	1,760,360	9,661,605	18.22
Monroe County	13,935	54,996	25.34
2005			
U.S.	32,997,400	172,551,400	19.12
Florida	1,910,396	10,087,925	18.94
Monroe County	15,227	55,493	27.44
2006			
U.S.	34,208,600	176,124,600	19.42
Florida	2,009,216	10,407,356	19.31
Monroe County	15,563	55,981	27.80
2007			
U.S.	36,372,700	179,871,700	20.22
Florida	2,159,547	10,552,660	20.46
Monroe County	16,134	56,349	28.63
2008			
U.S.	38,742,100	181,755,100	21.32
Florida	2,309,007	10,424,100	22.15
Monroe County	17,286	57,928	29.84

Source: Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce

while sales and income declined. In any case, it is our judgment that 2007-08 was a relatively poor year and so tourism as a percent of the economy is understated relative to more prosperous times.

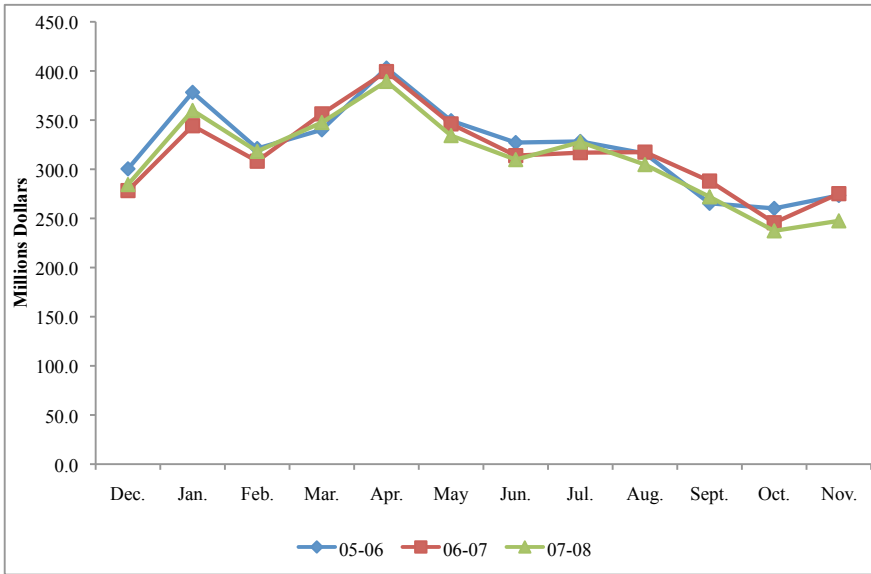


Figure 1 Monthly Gross Sales for Monroe County 2005-06 to 2007-08.
Source: Florida Department of Revenue.

Table 4 Historical Data for Sales, Income by Place of Work and Employment For Monroe County

Year1	Measure	(000s 2008 \$)/Number of Jobs2	Annual % Change
2002-03	Sales	3,742,000	
2003	Income	2,107,512	
2003	Employment	55,063	
2003-04	Sales	3,963,658	5.92
2004	Income	2,145,186	1.79
2004	Employment	54,996	-0.12
2004-05	Sales	4,037,869	1.87
2005	Income	2,202,671	2.68
2005	Employment	55,493	0.90
2005-06	Sales	4,125,077	2.16
2006	Income	2,261,757	2.68
2006	Employment	55,981	0.88
2006-07	Sales	3,935,819	-4.59
2007	Income	2,287,991	1.16
2007	Employment	56,349	0.66
2007-08	Sales	3,732,763	-5.16
2008	Income	2,214,144	-3.23
2008	Employment	57,928	2.80

1. Year for Sales is Visitor Year Dec. - Nov. and calendar year for income and employment.

2. Sales and income adjusted to 2008 dollars (\$) using the Consumer Price Index.
Sources: Florida Department of Revenue (Sales); Regional Economic Information, Bureau of Economic Analysis, U.S. Department of Commerce (Income); and U.S. Department of Labor, Bureau of Labor Statistics (CPI).

Definitions

When a local economy experiences an increase in spending by visitors, residents of that economy benefit by more than just the dollar amount of the goods and services purchased. This is because the businesses serving tourists must increase the amount of labor, goods and services they buy in order to produce the additional goods and services. Thus, the businesses that have experienced increased tourist spending will have a ripple effect on the other businesses that supply them, and those businesses, in turn, affect others on down the supply chain. Economists call the initial spending activity the “direct effect,” and the subsequent ripples are the “indirect” and “induced” effects. The indirect and induced effects are also called the multiplier impacts. See the detailed definitions of these and related terms below.

- **Direct Effects:** The amount of the increased purchase of inputs used to manufacture or produce the final goods and services purchased by visitors.
- **Indirect Effects:** The value of the inputs used by firms that are called upon to produce additional goods and services for those firms first impacted directly by recreational spending.
- **Induced effects:** Result from the direct and indirect effects of recreation spending. Induced effects are related to persons and businesses that receive added income as a result of local spending by employees and managers of the firms and plants that are impacted by the

direct and indirect effects of recreational spending. This added income results in increased demand for goods and services and, in turn, increased production and sales of inputs.

- **Total Effect:** The sum of direct, indirect, and induced effects (Walsh et al. 1987). Typically, the total effects are between 1.5 to 2 times more than the amount that the visitors originally spent in the local economy.
- **Total Output:** The value of all goods and services produced by the industries in a sector. For an economy as a whole, total output double-counts the value of production because it accounts for all sales; intermediate outputs are counted every time they are sold. In terms of direct impacts, the additional total output caused by visitor expenditures is equal to the increased final demand, and the increased final demand will roughly equal the dollar value of visitor expenditures, minus the value of items that have to be imported into the region.
- **Value Added:** Total output minus the value of inputs to a sectors' production. As such, value added is the net benefit to an economy, and it contains the sum of employee compensation, indirect business taxes, and property income.
- **Total Income:** The sum of property income and employee compensation.
- **Employment:** The number of full-time job equivalents or the sum of full-time and part-time employees, depending on

the context of analysis (this is explained in greater detail in the "Summary of Results.")

Summary of Results

Monroe County

Figure 2 summarizes the estimated economic contribution of recreating visitors to the Florida Keys/Key West. During the visitor year December 2007 through November 2008 recreating visitors spent an estimated \$1.995 billion. Of these expenditures \$598.5 million, or about 30 percent, was spent to purchase inputs outside Monroe County. An example of this may be telephone service. When a merchant sends his phone bill outside the county, only a portion of this money remains in the county to support operations. So the direct impact on the local economy is

less than the total initial spending. The direct effects are the amount of the increased purchase of inputs used to manufacture or produce the final goods and services purchased by visitors. In the case of Monroe County, this translated to \$1.396 billion in direct output (sales), \$606.5 million in direct income, and 24,628 jobs in direct employment.

As mentioned previously, businesses that have experienced increased tourist spending will have a ripple effect on the other businesses that supply them. This is represented in Figure 2 by the multiplier effect, which yields the total effects shown at the bottom of the figure. The total estimated output is \$2.234 billion, the total estimated income is \$970.3 million and the estimated total employment is 32,017 jobs.

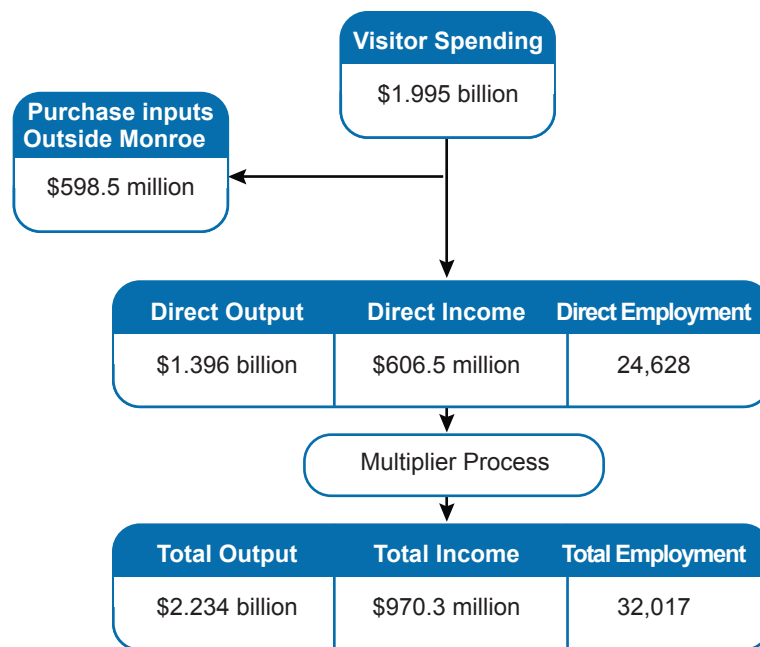


Figure 2 Impact Process Due to Visitor Spending in Monroe County

Table 5 Estimated Economic Contribution of Tourist/Recreational Activities

Official Measure	Reported ^{1,2}	Estimated Tourist Contribution		
		Direct	Total	% of Economy
Output/Sales	\$3,732,762, 683	\$1,396,425,484	\$2,234,280,683	59.86
Income	\$2,214,144,000	\$606,466,068	\$970,345,709	43.82
Employment	57,928	24,628	32,107	55.27

1. Source (Output/Sales): Florida Department of Revenue

2. Source (Income and Employment): Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce

For these numbers to be meaningful, we must be able to compare them to the Monroe County baseline economy. Table 5 shows the official reported output (sales), income and employment for the survey period in Monroe County. The official reported output for the survey period was about \$3.73 billion. The estimated total tourist contribution was \$2.23 billion or about 60 percent. The total estimated tourist contribution to income, \$970.3 million, was about 44 percent of the official reported income of \$2.2 billion.

The official reported employment was 57,928 jobs. The estimated total tourist contribution to employment was 32,107 jobs, or about 55 percent. As we can see, tourist contribution to the economy of Monroe County is very significant.

South Florida

Tourist visitation to the Florida Keys/Key West has economic impacts beyond Monroe County. One direct impact is that visitors traveling through other counties on their way may stop and purchase something. Many visitors fly to other South Florida airports and rent vehicles on their way to the Florida Keys/Key West. Also, visi-

tors are defined as nonresidents of Monroe County that participated in at least one recreation activity in the Florida Keys/ Key West. Thus, many South Florida residents are visitors and spend money in their home counties in preparation for their trips to the Florida Keys/Key West. All of these types of spending were included in our analysis.

Still, the impacts go further. Monroe County businesses are highly connected to other businesses throughout South Florida. Much of the inputs for producing goods and services in the Florida Key/Key West are supplied by businesses in other South Florida counties, including such basics as water and electricity and solid waste dispos-

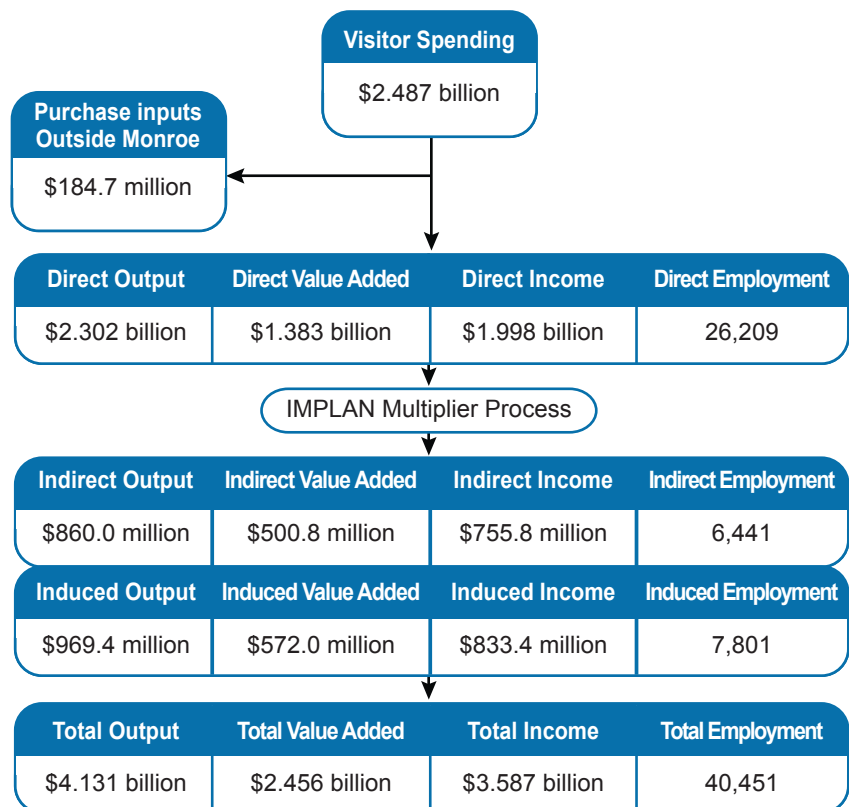


Figure 3 Impact Process Due to Visitor Spending in South Florida

al. And, as shown in the discussion of Monroe County's baseline economy, the Florida Keys/Key West is dependent on workers from outside Monroe County. Therefore, the economic contribution by recreating visitors goes beyond Monroe County. We have extended the analysis to include the contributions to Miami-Dade and Broward Counties. The South Florida economic contribution of recreating visitors includes the contribution to the three-county area (Miami-Dade, Broward and Monroe Counties).

Figure 3 summarizes the estimated economic contribution of recreating visitors to the Florida Keys/Key West. During the survey period (December 2007 – November 2008) visitors spent an estimated \$2.487 billion. Of these expenditures \$184.7 million or about 7.4 percent was spent to purchase inputs outside South Florida. The direct effects are the amount of the increased purchase of inputs used to manufacture or produce the final goods and services purchased by visitors. In the case of South Florida, this translated to \$2.302 billion in direct output (sales), \$1.383 billion in value-added, \$1.998 billion in direct income, and 26,209 jobs in direct employment. These employment numbers are different from those reported for Monroe County. Employment here is in terms of full-time equivalent employment.

Again, businesses that have experienced increased tourist spending will have a ripple effect on the other businesses that supply them. This is represented in Figure 3 by the multiplier effect, which yields

two separate impacts: the indirect and induced impacts (see "Definitions" on p. 5 and 6).

Output. The indirect impact was \$860.0 million, while the induced impact was \$969.4 million. These figures, added to the direct output of \$2.302 billion, yield a total output impact of \$4.131 billion on South Florida.

Value added. The indirect impact was \$500.8 million, while the induced impact was \$572.0 million. These figures added to the direct value-added of \$1.383 billion, yield a total value-added impact of \$2.456 billion.

Income. The indirect impact was \$755.8 million, while the induced impact was \$833.4 million. These figures added to the direct income of \$1.998 billion, yield a total income impact of \$3.587 billion.

Employment. The indirect impact was 6,441 jobs, while the induced impact was 7,801 jobs. These figures, added to the direct impact of 26,209 jobs, yield a total impact of 40,451 full-time equivalent jobs.

Net contribution to Miami-Dade and Broward Counties. Visitors to the Florida Keys/Key West made an economic contribution to Miami-Dade and Broward Counties of about \$1.897 billion in output (sales), \$2.62 billion in income. Thus, the economies of Miami-Dade and Broward Counties are somewhat connected to recreation/tourism in the Florida Keys/Key West, and these activities are highly dependent on the quality of the natural resources

and environment of the Florida Keys/Key West. As a result, Miami-Dade and Broward Counties also have an economic stake in the protection of the environment of the Florida Keys/Key West.

Methods

Background Concepts

According to export base theory, economic growth in an economy is due to growth in exports. Purchases of local goods by nonresidents are exports, as they bring outside dollars into the local region. Thus, impacts in an economy attributable to recreation are traceable to nonresidents who spend money for locally sold goods and services while on recreation trips (English and Bergstrom 1994). In essence, food, lodging, and similar items purchased during a recreation trip are "exported" to people living outside the local economy.

This study used two different methods of regional economic analysis. For the three-county model we used input-output analysis, which is one of the most widely applied methods in regional economic analysis (Miller and Blair, 1985). Input-output models basically consist of a system in which linear equations are used to describe the linkages among production sectors in a given economy. The I-O component of our model is the IMPLAN model. Through IMPLAN, one can construct a tailor-made I-O model for any group of counties or states (Alward et al. 1985). IMPLAN has 528 industrial sector categories that can account for a variety of recreation purchase patterns (Alward and Lofting 1985). Software modules calculate the direct, indirect and induced effects of recreational spend-

ing or other final demand vectors. Interindustry linkages in the local economy determine the total output, value added, personal income, and employment impacts. The advantages and disadvantages of IMPLAN are discussed elsewhere (Alward and Lofting 1985; Alward et al. 1985; Propst 1985; Hotvedt et al. 1988).

Expenditure items included in our mail back questionnaire were developed specifically to provide visitor expenditure data that are compatible with the economic sectors in the IMPLAN model. Expenditures are reported for the purchase of specific recreation related commodities, i.e., goods and services. However, these commodities often affect multiple industrial sectors, and must be allocated as such. Thus, expenditures reported by visitors are often allocated to a larger number of economic sectors. The process of allocating expenditures to various sectors requires a series of transformations that establish the relationship between visitor expenditures and the sectors of the economy modeled by IMPLAN. The allocations are based on information from the Bureau of Economic Analysis (BEA) on commodity and service production costs and the relationship between national average purchase prices, production costs, transportation costs, and retail and wholesale margins. The allocations used in this report can be found in English et al. (1995).

Once expenditures are allocated to the IMPLAN sectors, the mean expenditure per person per trip for each sector is calculated. The mean expenditure per person per trip in each sector has been multiplied by our estimate of total visitation, and this is entered as a final demand vector for impact analysis in IMPLAN. The

IMPLAN software calculates the effect of recreation expenditures on the impact area economy. Economic effects are reported as total output, value-added, total income and employment.

For a market area with the small size and unique characteristics of Monroe County, using IMPLAN was not feasible. When attempting the analysis with IMPLAN it was discovered that there was a tendency for overestimation of impacts. Monroe County has many links to the surrounding South Florida economy. Properly calibrating an IMPLAN model for Monroe County would require additional research to specify and net-out transfers outside Monroe County. We decided that a more simplified approach would be more appropriate.

This approach uses Census of Business wages-to-sales ratios and wages-to-employment ratios specific to Monroe County, and applies them to spending estimates (Bell and Lee-worthy 1986 and English et al 1996). Spending categories are matched to Standard Industrial Classifications (SICs) that have now been changed to NAICS codes. This approach also uses relationships from BEA between income from wages and salaries and from proprietors to estimate total direct impacts. In this case, we calculated estimated expenditures (mean expenditures per person per trip multiplied by estimated person-trips) and applied the wages-to-sales ratio by SIC based on the 2007 Census of Business (see appendix table A.3) to get estimated wages by spending category. We then divided estimated wages by the wages-to-employment ratio by NAICS to get estimated employment by spending category. We then applied a multiplier of 1.6 (Kear-

ney/Centaur 1990; Bell 1991) to the three direct measures to derive total impact measures (see appendix table A.4). Note that under this approach, we cannot estimate value-added, nor can we separately estimate indirect or induced effects.

Survey Design

Research Methods. Because of the many and varied goals of this project, a split sample design was developed. There were two components of the survey: an onsite survey and a mail back survey. This design allows the pursuit of multiple objectives without overburdening any one sample of respondents. The survey was conducted in two time periods. The first was in January through April 2008 and was used to estimate spending during the winter season (December 2007 – May 2008). In this time period, 1,807 onsite exit interviews were completed. Of these respondents, 245 also completed expenditure mail back questionnaires. The second time period in which data was collected was June through August of 2008 and was used to estimate spending for the summer season (June through November 2008). In this time period, 1,047 onsite exit interviews were completed, with 192 of these respondents also completing expenditure mail back questionnaires.

The onsite survey is a stratified random sample of all visitors to the Florida Keys/Key West, and is stratified by mode of travel (air, auto, cruise ship, and ferry) and by season. By tying this sample to data on car counts, air enplanement counts, ferry passengers counts, and cruise ship passenger counts, estimates of the number of

person-trips can be developed. This can be further broken down into estimates of the number of person-trips by activity (for all activities) and by broad geographic regions (Districts) within the Florida Keys/Key West (Key Largo, Islamorada, Marathon, Lower Keys and Key West). This sample is also used to obtain overall profiles of the visitor population in terms of age, sex, race/ethnicity, income, and place of residence.

The onsite sample was used here to weight the expenditure mail back data to account for possible non-response bias, and to provide the estimates of total visitation, which were used to extrapolate the expenditure mail back sample to total visitor expenditures for each season. Detailed visitor profiles can be found in Leeworthy, Loomis and Paterson (2010); the methods for sample weighting and estimation of total visitation are in Leeworthy (2010).

The expenditure mail back component obtains information on types of accommodations, modes of transportation and expenditures made on the entire trip to the Florida Keys/Key West. Spending estimates are obtained for equipment and travel and activities. Spending is broken down by spending in the Florida Keys/Key West

Mail back Response Rates. As mentioned above, in the winter survey 1,807 visitors were interviewed in the onsite exit survey. Each of these individuals received an expenditure questionnaire to fill out and mail back. After a reminder postcard and second questionnaire mailing, 245, or 13.6 percent, responded to the mail back expenditure survey. In the summer survey, 1,047 onsite visitors were interviewed during June-August 2008.

A total of 192 people, or 18.3 percent of the onsite contacts, responded to the mail back expenditure survey. Response rates to the expenditure survey varied according to several factors, the most significant of which was mode of access. The analysis of response rates indicates the potential for non-response bias in the expenditure mail back. Overall low response rates, or low response rates for certain socioeconomic groups, do not necessarily lead to non-response bias in expenditure amounts. For non-response bias to exist, there must be a relationship between the amount spent during the recreation trip and socioeconomic characteristics that are related to survey response. We tested for non-response bias using simple univariate non-parametric tests for differences by socioeconomic factors and with a multivariate test using linear regressions. Based on the results of these tests, we concluded that there were no socioeconomic groups for which we had relatively low response rates and have significantly different expenditures. Expenditures did vary significantly by mode of access, number of days per trip and the number of people in the recreation group, but response rates only varies by mode of access. For a more detailed explanation of response rates, the problem of non-response bias and our testing procedures, refer to the Technical Appendix (Leeworthy 2010).

Weighting. Since response rates and expenditures were different by mode of access, sample weighting simply weighted responses by mode of access (e.g. auto, air, cruise ship and ferry). Again, for a more detailed explanation of weighting, please refer to the Technical Appendix (Leeworthy 2010).

Expenditures

Per Person Per Trip. Expenditure information was collected on a per group, per trip basis. When respondents were interviewed onsite, they were asked if they paid their own expenses, shared expenses with others, or if someone else paid their expenses. If they paid their own expenses or shared expenses, they were given a mail back survey. If someone else paid their expenses, that person was identified and given a mail back survey. In each case, the respondent was asked how many people's expenses they paid on the trip. The purpose was to get an estimate of spending per person, per trip. The purpose was to extrapolate to total spending by multiplying our estimates of person-trips by spending per person per trip.

Information was obtained for 47 different trip-related expenditure items via the mail survey. These can be aggregated into 5 general types of expenditures: lodging (5 items), food (3 items), transportation (9 items), activities (21 items), and miscellaneous (9 items). For each item, the survey obtained data in three categories pertaining to where the expenditures were made: the total amount spent on the trip regardless of spending location, the amount spent in South Florida (Miami-Dade, Broward and Monroe Counties), and the amount spent in the Florida Keys/Key West (Monroe County). We included not only trip-related expenditures, but also annual spending on space rental for boat storage and marina fees, condo/time-share fees, and annual RV site rentals in Monroe County. Our feeling was that these items must be related to trips to the Florida Keys/Key West,

Table 6 Summary of Average Trip Expenditures Per Person: December 2007 - November 2008

Type of Expenditure	Total Trip	In S. FL	% in S. FL	In Monroe County	% In Monroe County
Lodging	\$277.47	\$240.24	86.58	\$212.41	76.55
Food and Beverages	\$247.46	\$218.79	88.41	\$190.63	77.03
Transportation	\$145.52	\$92.65	63.67	\$50.25	34.53
Boating	\$44.12	\$41.79	94.72	\$26.89	60.95
Fishing	\$25.79	\$23.38	98.88	\$24.02	93.14
Scuba Diving/Snorkeling	\$23.66	\$23.38	98.82	\$23.38	98.82
Sightseeing	\$22.74	\$18.69	82.19	\$17.51	77.00
Other Activity Expenditures	\$12.69	\$12.38	97.56	\$12.03	94.80
Miscellaneous Expenditures	\$57.09	\$51.50	90.21	\$45.99	80.56
Services	\$2.86	\$2.71	94.76	\$2.62	91.61
Total	\$859.39	\$727.64	84.67	\$605.73	70.48

as they serve as substitutes for lodging and boat storage spending made on a per-trip basis.

Other annual purchase data on durable equipment was insufficient to be usable, and not clearly linked to trips solely to the Florida Keys/Key West. Annual boat and lodging purchases made in Monroe County were divided by the number of people in the group and by annual trips to the Florida Keys/Key West. This was done to obtain an estimate of purchases per person per trip, thus making the figures compatible with the trip-related expenditure items.

Table 6 shows average expenditures per person per trip for the entire visitor year December 2007 – November 2008. In column one, total trip expenditures are reported. In columns two and three, the amount spent in South Florida and the percentage of total expenditures is reported respectively. In columns four and five, the amount spent in the Florida Keys/Key West (Monroe County) and the percentage of total expenditures are reported, respectively. In the December 2007 through November 2008 season, the average per person expenditure was \$859.39. The average trip to the Florida Keys/Key West entails about \$277.50 in lodging costs, \$145.50 for

transportation, and \$247.50 for food and beverages. Of this total expenditure amount, 84.67 percent (about \$728) was spent in South Florida, including \$240 for lodging, \$219 for food and beverages, and \$120 for activity-related items. About 70.5 percent (about \$606) of all trip expenses were made in the Florida Keys/Key West (Monroe County), including \$212 for lodging, \$191 for food and beverages, \$104 for activities, and \$50 for transportation.

Table 7 shows average selected annual expenditures per person per trip. This includes boat storage and marina fees, condo and time share fees,

Table 7 Summary of Selected Annual Expenditures Per Person Per Trip December 2007 - November 2008

Type of Expenditure	In South Florida	In Monroe County
Boat Storage and Marina fees	\$16.47	\$1.50
Condo/time share fees	\$82.63	\$55.80
RV/Trailer Park fees	\$0.09	\$0.28
Total	\$99.19	\$57.58

Table 8 Summary of Total Expenditures December 2007 - November 2008

Type of Expenditure	Total Trip ¹	In S. FL	% in S. FL	In Monroe County ¹	% In Monroe County
Trip Related Expenditures					
Lodging	834.49	722.52	86.58	638.82	76.55
Food and Beverages	744.23	658.01	88.41	573.32	77.04
Transportation	437.65	278.64	63.67	151.13	34.53
Boating	132.69	125.68	94.72	80.87	60.95
Fishing	77.56	76.69	98.87	72.24	93.14
Scuba diving/Snorkeling	71.16	70.31	98.81	70.31	98.81
Sightseeing	68.39	56.21	82.19	52.66	77.00
Other Activity Expenditures	38.16	37.23	97.55	36.18	94.80
Miscellaneous Expenditures	171.70	154.88	90.21	138.31	80.55
Services	8.60	8.15	94.75	7.88	91.61
Total	2,584.63	2,188.36	84.67	1,821.72	70.48
Annual Expenditure Items					
Boat Storage and Marina fees	N/A	49.53	-	4.51	-
Condo/Time Share Fees	N/A	248.51	-	167.82	-
RV/Trailer Park Fees	N/A	0.271	-	0.842	-
Total	N/A	298.31	-	173.17	-
Total All Expenditures	N/A	2,486.68		1,994.89	

1. Millions of dollars.

and RV or trailer park fees. Condo/time share fees have emerged as a major expenditure in the Florida Keys/Key West. Normalized on a per person per trip basis, on average, recreating visitors spend \$55.80 in Monroe County. For detailed average trip expenditures by season, please refer to Leeworthy, Loomis and Paterson (2010). For detailed average trip expenditures for December 2007 – November 2008, see appendix table A.2 for South Florida and A.3 for the Florida Keys/Key West (Monroe County).

Total Expenditures. Table 8 is a summary of total expenditures. These numbers are derived by multiplying the mean expenditures per person per trip by visitation (the number of person trips). The visitation was 3,007,482 for the December 2007 – November 2008 visitor year. These numbers are the interim step between expenditures from the survey data and the multiplier process. Once we have calculated these numbers, we deduct the inputs that are not purchased locally and calculate the multiplier effect.

Before proceeding with the multiplier analysis, we conducted several consistency checks to ensure that we had not overestimated expenditures. Remember, total expenditures are a function of estimated average expenditures from a survey and are multiplied by a visitor estimate. Either of these measures could contain error, so consistency checks are vital. We conducted consistency checks on lodging, food and beverage expenditures in Monroe County against actual reported sales from the State of Florida's Department of Revenue. Our estimates of private lodging expenditures (public would be recorded

under government revenue, not lodging) were 93.82 percent, and food and beverage expenditures were 58.67 percent, of the total reported sales in Monroe County. Therefore we believe our estimates of visitation and average expenditures are consistent with the total Monroe County economy. For detailed total expenditures, please refer to appendix tables A.2 (South Florida) and A.3 (Monroe County).

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Appendix



Table A.1 Gross Monthly Sales in Monroe County: Visitor Years 02-03 to 07-08

Month	02-03	03-04	04-05	05-06	06-07	07-08
Dec.	223,784,856	250,297,317	267,358,312	300,421,341	278,291,099	284,427,986
Jan.	277,216,983	340,076,765	354,294,029	378,256,027	344,261,763	359,877,613
Feb.	277,171,059	290,053,049	293,960,499	321,100,177	308,189,435	318,200,950
Mar.	269,691,170	314,637,380	352,210,239	340,140,261	356,351,763	347,598,894
Apr.	335,068,192	357,722,008	395,565,458	402,928,528	399,374,325	389,363,072
May	276,156,447	317,768,148	340,332,314	349,406,844	346,134,463	334,251,754
Jun.	264,570,363	283,973,095	320,350,866	327,154,698	313,870,265	309,803,195
Jul.	282,546,129	297,876,838	322,570,795	328,292,213	316,895,059	327,643,193
Aug.	261,776,590	294,616,179	300,216,241	316,024,573	317,432,728	304,751,238
Sept.	240,443,864	237,020,271	256,106,492	265,339,288	288,009,261	271,977,978
Oct.	244,894,106	236,660,709	229,382,474	260,181,964	245,596,045	237,353,265
Nov.	244,673,668	256,934,497	230,428,714	273,343,624	275,167,877	247,513,545
Total	3,197,993,427	3,477,636,256	3,662,776,433	3,862,589,538	3,789,574,083	3,732,762,683

Source: Florida Department of Revenue

Table A.2 Detailed Expenditures in South Florida December 2007 - November 2008

	Per Trip	Total	NAICS
Trip Expenditures			
Lodging	\$240.24	\$722,517,475.68	
<i>Publicly Owned</i>			
Hotel/motel/bed & breakfast/cabin, etc.	\$17.22	\$51,788,840.04	721211 RV, park and recreation camps
Camping site (RV/tent/camper)	\$0.28	\$842,094.96	721211 RV, park and recreation camps
<i>Privately Owned</i>			
Hotel/motel/bed & breakfast/cabin, etc.	\$167.19	\$502,820,915.58	7211 Hotels and Motels (except casinos)
Rental home, cottage, cabin, condo	\$50.66	\$152,359,038.12	53 Real estate and rental leasing
Camping site (RV/tent/camper)	\$4.89	\$14,706,586.98	721211 RV, park and recreation camps
Food and Beverages	\$218.79	\$658,006,986.78	
Food & Drinks consumed at restaurants & bars	\$177.41	\$533,557,381.62	722 Food Services and Drinking Places
Beverages purchased at a store for carry-out	\$13.61	\$40,931,830.02	445 Food and Beverage Stores
Food purchased at a store for carry-out	\$27.77	\$83,517,775.14	445 Food and Beverage Stores
Transportation	\$92.65	\$278,643,207.30	
Rental automobile, motor home, trailer, motorcycle, or other recreation vehicle	\$33.88	\$101,893,490.16	532111 Passenger Car Rental
Gas & Oil - auto or RV	\$22.89	\$68,841,262.98	447 Gasoline Stations
Repair & Services - auto or RV	\$2.11	\$6,345,787.02	8111 Automotive repair and maintenance
Parking fees & tolls	\$5.25	\$15,789,280.50	81293 Parking lots and garages
Taxi fare	\$1.40	\$4,210,474.80	48531 Taxi services
Train fare	\$0.01	\$30,074.82	485112 Commuter Rail Systems
Bus Fare			
a) Package tour	\$0.20	\$601,496.40	4855 Charter bus services
b) Any other bus fare	\$1.12	\$3,368,379.84	4855 Charter bus services
Airline Fares			
a) Package tours	\$18.77	\$56,450,437.14	5615 Travel arrangements and reservations
b) Any other airline fares	\$6.32	\$19,007,286.24	5615 Travel arrangements and reservations
Ferry Fare	\$0.70	\$2,105,237.40	4872 Scenic and sightseeing trans-water
Boating	\$41.79	\$125,682,672.78	

Table A.2 Detailed Expenditures in South Florida December 2007 - November 2008 (Continued)

Boat, jet ski, and wave runner rental	\$4.28	\$12,872,022.96	71	Arts, entertainment, and recreation
Boat fuel and oil	\$10.94	\$32,901,853.08	447	Gasoline stations
Boat repairs	\$22.75	\$68,420,215.50	8114902	Boat Repair
Boat launch fees	\$0.28	\$842,094.96	71393	Marinas
Boat slip or marina fees (this trip only)	\$0.34	\$1,022,543.88	71393	Marinas
Sailing charters or sunset cruises	\$3.20	\$9,623,942.40	71	Arts, entertainment, and recreation
Fishing	\$25.50	\$76,690,791.00		
Cut bait	\$1.70	\$5,112,719.40	71	Arts, entertainment, and recreation
Live bait	\$1.48	\$4,451,073.36	71	Arts, entertainment, and recreation
Daily or special fishing permits/licenses	\$0.92	\$2,766,883.44	71	Arts, entertainment, and recreation
Fishing lines, fly lines, fish nets, traps	\$3.88	\$11,669,030.16	71	Arts, entertainment, and recreation
Charter/party boat/guide fees	\$17.51	\$52,661,009.82	71	Arts, entertainment, and recreation
Scuba Diving/Snorkeling	\$23.38	\$70,314,929.16		
Rental fee for equipment	\$5.72	\$17,202,797.04	71	Arts, entertainment, and recreation
Charter/party boat/guide service	\$17.66	\$53,112,132.12	71	Arts, entertainment, and recreation
Sightseeing	\$18.69	\$56,209,838.58		
Sightseeing tours	\$8.00	\$24,059,856.00	71	Arts, entertainment, and recreation
Glass-bottom boat rides	\$1.71	\$5,142,794.22	71	Arts, entertainment, and recreation
Backcountry excursions, kayak tours	\$1.09	\$3,278,155.38	71	Arts, entertainment, and recreation
Park entrance fees	\$2.41	\$7,248,031.62	71	Arts, entertainment, and recreation
Admission to tourist, amusement, festivals and other tourist attractions	\$5.48	\$16,481,001.36	71	Arts, entertainment, and recreation
Other Activity Expenditures	\$12.38	\$37,232,627.16		
Rental fee for recreation equipment (bicycles, golf carts or others not listed above)	\$2.87	\$8,631,473.34	532	Rental and leasing services
Guides service, tour, or outfitters (not listed above like parasailing)	\$4.81	\$14,465,988.42	71	Arts, entertainment, and recreation
Admission to motion pictures, museums, etc.	\$2.26	\$6,796,909.32	71	Arts, entertainment, and recreation
Admission to concerts or other musical	\$0.11	\$330,823.02	71	Arts, entertainment, and recreation
Spa treatments	\$1.89	\$5,684,140.98	71	Arts, entertainment, and recreation
Fitness activity fees	\$0.43	\$1,293,217.26	71	Arts, entertainment, and recreation
Miscellaneous Expenditures	\$51.50	\$154,885,323.00		
Film purchases	\$0.81	\$2,436,060.42	452	General Merchandise Stores
Film development	\$0.07	\$210,523.74	452	General Merchandise Stores
Footware	\$3.67	\$11,037,458.94	448	Clothing and clothing accessories
Clothing	\$28.38	\$85,352,339.16	448	Clothing and clothing accessories
Souvenirs and gifts (not including clothing)	\$17.36	\$52,209,887.52	45322	Gift, novelty, and souvenir stores
Other general merchandise	\$1.21	\$3,639,053.22	452	General Merchandise Stores
Services	\$2.71	\$8,150,276.22		
Barber, laundry, and other personal services	\$0.86	\$2,586,434.52	812	Personal and laundry services
Telephone, fax, and other business services	\$0.08	\$240,598.56	81	Other services (except public admin)
Physician, dentist and other medical services	\$1.77	\$5,323,243.14	62	Health care and social assistance
Total Trip	\$727.64	\$2,188,364,202.48		
Annual Expenses (normalized per trip)				
Annual Boat Storage/Marina	\$16.47	\$49,533,228.54	71393	Marinas
Annual Condo/Time Share	\$82.63	\$248,508,237.66	5311	Lessors of real estate
Annual RV/Trailer Park	\$0.09	\$270,673.38	721211	RV, park and recreation camps
Total Annual Expense Items	\$99.19	\$298,312,139.58		
Total All Expenditures in SFL	\$826.83	\$2,486,676,342.06		

Table A.3 Detailed Expenditures in Monroe County, Dec. 07 - Nov.08

Category	Expenditures Per Person Per Trip	Total Expenditures	Wages to Sales Ratio	Wages to Employment Ratio	NAICS
Lodging	\$212.41	\$638,819,464			
<i>Publicly Owned</i>					
Hotel/motel/bed & breakfast/cabin, etc.	\$16.40	\$49,322,721	0.196	17,715	721211
Camping site (RV/tent/camper)	\$0.27	\$812,020	0.196	17,715	721211
<i>Privately Owned</i>					
Hotel/motel/bed & breakfast/cabin, etc.	\$143.57	\$431,784,334	0.293	26,551	7211
Rental home, cottage, cabin, condo	\$48.42	\$145,622,327	0.154	33,884	53
Camping site (RV/tent/camper)	\$3.75	\$11,278,061	0.196	17,517	721211
Food and Beverages	\$190.63	\$573,316,484			
Food & Drinks consumed at restaurants & bars	\$153.28	\$460,986,994	0.266	17,461	722
Beverages purchased at a store for carry-out	\$12.28	\$36,931,891	0.111	23,425	445
Food purchased at a store for carry-out	\$25.07	\$75,397,599	0.111	23,425	445
Transportation	\$50.25	\$151,126,021			
Rental automobile, motor home, trailer, motorcycle, or other recreation vehicle	\$13.56	\$40,781,469	0.148	31,533	532111
Gas & Oil - auto or RV	\$17.14	\$51,548,259	0.072	19,848	447
Repair & Services - auto or RV	\$2.02	\$6,075,116	0.265	34,985	8111
Parking fees & tolls	\$3.38	\$10,165,293	0.315	21,233	81293
Taxi fare	\$1.36	\$4,090,177	0.194	54,121	48531
Bus Fare					
a) Package tour	\$0.15	\$451,122	0.264	25,388	4855
b) Any other bus fare	\$0.60	\$1,804,490	0.264	25,388	4855
Airline Fares					
a) Package tours	\$8.03	\$24,150,088	0.321	45,027	5615
b) Any other airline fares	\$3.33	\$10,014,918	0.321	45,027	5615
Ferry Fare	\$0.68	\$2,045,088	0.267	25,180	4872
Boating	\$26.89	\$80,871,218			
Boat, jet ski, and wave runner rental	\$4.28	\$12,872,027	0.241	24,248	71
Boat fuel and oil	\$5.41	\$16,270,483	0.072	19,848	447
Boat repairs	\$13.38	\$40,240,123	0.234	21,960	8114902
Boat launch fees	\$0.28	\$842,095	0.185	27,280	71393
Boat slip or marina fees (this trip only)	\$0.34	\$1,022,544	0.185	27,280	71393
Sailing charters or sunset cruises	\$3.20	\$9,623,946	0.241	24,248	71
Fishing	\$24.02	\$72,239,742			
Cut bait	\$1.70	\$5,112,721	0.241	24,248	71
Live bait	\$1.46	\$4,390,925	0.241	24,248	71
Daily or special fishing permits/licenses	\$0.92	\$2,766,884	0.241	24,248	71
Fishing lines, fly lines, fish nets, traps	\$3.88	\$11,669,034	0.241	24,248	71
Charter/party boat/guide fees	\$16.06	\$48,300,177	0.241	24,248	71
Scuba Diving/Snorkeling	\$23.38	\$70,314,953			
Rental fee for equipment	\$5.72	\$17,202,803	0.241	24,248	71
Charter/party boat/guide service	\$17.66	\$53,112,150	0.241	24,248	71
Sightseeing	\$17.51	\$52,661,027			
Sightseeing tours	\$7.86	\$23,638,816	0.241	24,248	71
Glass-bottom boat rides	\$1.71	\$5,142,796	0.241	24,248	71
Backcountry excursions, kayak tours	\$1.09	\$3,278,156	0.241	24,248	71
Park entrance fees	\$2.04	\$6,135,265	0.241	24,248	71
Admission to tourist, amusement, festivals and other tourist attractions	\$4.81	\$14,465,993	0.241	24,248	71

Table A.3 Detailed Expenditures in Monroe County, Dec. 07 - Nov.08 (Continued)

Category	Expenditures Per Person Per Trip	Total Expenditures	Wages to Sales Ratio	Wages to Employment Ratio	NAICS
Other Activity Expenditures	\$12.03	\$36,180,020			
Rental fee for recreation equipment (bicycles, golf carts or others not listed above)	\$2.78	\$8,360,803	0.218	17,994	532
Guides service, tour, or outfitters (not listed above like parasailing)	\$4.79	\$14,405,844	0.241	24,248	71
Admission to motion pictures, museums, etc.	\$2.21	\$6,646,537	0.241	24,248	71
Admission to concerts or other musical	\$0.02	\$60,150	0.241	24,248	71
Spa treatments	\$1.80	\$5,413,469	0.241	24,248	71
Fitness activity fees	\$0.43	\$1,293,218	0.241	24,248	71
Miscellaneous Expenditures	\$45.99	\$138,314,143			
Film purchases	\$0.64	\$1,924,789	0.114	21,864	452
Film development	\$0.07	\$210,524	0.114	21,864	452
Footware	\$2.96	\$8,902,150	0.129	20,996	448
Clothing	\$24.23	\$72,871,313	0.129	20,996	448
Souvenirs and gifts (not including clothing)	\$16.89	\$50,796,388	0.215	23,344	45322
Other general merchandise	\$1.20	\$3,608,980	0.114	21,864	452
Services	\$2.62	\$7,879,605			
Barber, laundry, and other personal services	\$0.85	\$2,556,361	0.300	25,009	812
Telephone, fax, other other business services	\$0.08	\$240,599	0.264	26,284	81
Physician, dentist and other medical services	\$1.69	\$5,082,646	0.318	40,541	62
Total Trip	\$605.73	\$1,821,722,678			
Annual Boat Storage/Marina	\$1.50	\$4,511,225	0.185	27,280	71393
Annual Condo/Time Share	\$55.80	\$167,817,551	0.137	20,458	5311
Annual RV/Trailer Park	\$0.28	\$842,095	0.196	17,517	721211
Total Annual Expense Items	\$57.58	\$173,170,871			
Total All	\$663.31	\$1,994,893,549			

Table A.4 Economic Impact Multipliers

Type of Multiplier	Monroe County	3-County S. Florida
Total/Direct (Type III)		
Total Output	1.6	1.79
Total Income	1.6	1.80
Value Added	n/a	1.77
Employment	1.3	1.54
Total Output/Spending (Type I)		
Total Output/Spending (Type I)	1.12	1.66

