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SGEP-13

MEASURING THE ECONOMIC CONSEQUENCES AND PUBLIC AWARENESS OF RED TIDE EVENTS IN FLORIDA

A Final Report Submitted to the
Harmful Algal Task Force
Florida Marine Research Institute
Florida Fish and Wildlife Conservation Commission

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MEASURING THE ECONOMIC CONSEQUENCES AND PUBLIC AWARENESS OF RED TIDE EVENTS IN FLORIDA

Executive Summary

This study sought to address two key objectives: (1) measuring the effects of red tide events on business activities in the Ft. Walton Beach and Destin, Florida region and (2) assessing the level of public knowledge of red tide in the southwest Florida's Manatee and Sarasota Counties.

Objective 1 –

- The relationship between business activity and red tide events in Ft. Walton Beach and Destin, Florida were examined.
- Gross taxable sales data were obtained from the Florida Department of Revenue pertaining to lodging establishments and restaurants.
- Data for weather conditions (e.g., precipitation and tropical storm events) were obtained from the National Climatic Data Center.
- Red tide occurrence data were obtained from the Florida Marine Research Institute.
- Data were obtained on a monthly basis for the 1995 to 2000 time period.
- Sales data were regressed against red tide occurrence, climatic data, seasonality, and a general time trend.
- Red tide events were found to have a statistically negative effect on restaurants and lodging establishment sales in the Destin area and the combined Ft. Walton Beach/Destin area. Red tide was found to not have a statistically negative effect on business activity solely in the Ft. Walton Beach area.

Objective 2 –

- A telephone survey of 1006 randomly selected households in the Manatee and Sarasota Counties area was conducted.

- Adult respondents were queried about their awareness of red tide, their knowledge regarding the biology of red tide, the effect of red tide on the environment, how red tide effects human health, and the effect of red tide occurrence on respondents' participation in beach/saltwater-related activities and local business patronage.
- Almost 90% of respondents were aware of red tide.
- Most respondents were knowledgeable of the basic biology associated with the causes of red tide.
- Most respondents were familiar with the environmental and human health effects of red tide, but most erroneously believed that locally caught finfish and crustaceans were unsafe to eat during a local red tide. Also, most respondents were not aware that red tide events originate in offshore waters.
- About 90% of the respondents engaged in beach going/swimming. About one-third engaged in either saltwater fishing or boating. About 99% of the respondents patronized beach/bay-front restaurants. However, less than 20% patronized local lodging establishments.
- In general, most respondents indicated that red tide events had affected their outdoor activities, while most indicated that red tide did not affect their business patronage.
- Most respondents whose outdoor activities or business patronage was affected by red tide indicated that they delayed their activity/patronage until the red tide abated.
- About 20% indicated that they engaged in outdoor activities elsewhere if effected by a red tide.
- About two-thirds of those patronizing local restaurants indicated they took their business elsewhere if effected by a red tide.

MEASURING THE ECONOMIC CONSEQUENCES AND PUBLIC AWARENESS OF RED TIDE EVENTS IN FLORIDA

1.0 Project Discussion

1.1 Introduction

The coastal waters of Florida host many indigenous species of marine algae. The population levels of the algae depend on water quality (e.g., salinity levels, dissolved oxygen, nutrient loadings, mineral content, etc.). Changing water quality can trigger algal population growth. These algal "blooms" are unpredictable and not fully understood but seem to occur naturally along the southwest coast of Florida, as well as other regions in the Gulf of Mexico. During a high-density bloom, some species of algae produce a harmful toxin that is transmitted within the water column, food chain or windborne vectors. This toxin can cause harm to finfish, shellfish, and other marine organisms. One particular red-pigmented species of marine algae, the Florida indigenous dinoflagellate *Karenia brevis*, produces a neurotoxin that causes extensive fish kills, contaminates shellfish beds, and causes eye irritations and other respiratory distress to humans near the water during periods of high-density blooms (Steidenger, et al., 1999). The blooms of these *K. brevis* are sometimes so dense that they impart a reddish color to the water, thereby giving rise to the term "red tide".

Red tides appear to have a long history in Florida, with the earliest recorded event dating to the 1800s. Since the turn of the century, approximately 20 red tide events have been reported in southwest Florida coastal waters. The duration and geographical location of red tides vary, but appear primarily along the southwest coast of the Gulf of

Mexico. Generally, red tides last for less than three months, although a prolonged, intermittent event was recorded for the period September 1994 through April 1996 in the region from Tarpon Springs to the Florida Keys. Severe red tides result in fish kills and temporary closures of local molluscan shellfish harvesting. Local tourism activities such as boating, recreational fishing and beach related activities can be affected by the presence of noxious airborne toxins and the foul odor emanating from large quantities of decomposing marine life on the water surface and beaches (Steidenger, et al., 1999). Thus, red tides can create economic losses. These losses may result from reduced beach and water-related activities, costs associated with removal of dead fish from beaches, and a general reduction in tourist expenditures. Additional losses take the form of reduced revenues for commercial fishermen and shellfish aquaculturists, reduced demand for locally caught sea-foods, and the medical costs for people experiencing more pronounced reaction to the airborne toxins. The combination of disruption of sales and expenditures from tourism, reduction of commercial sea-food production/marketing, and losses of work time in local business due to sickness from the red tide toxins can lead to further economic losses in the local economy. Businesses that are closely linked to beach and water-related activities such as shore-side hotels and restaurants, may also experience reductions in business activities.

1.2 Purpose and Objectives of the Study

The purpose of this study was to generate information that would provide for a better understanding of the economic consequences of red tide events in Florida and to provide insight into the current level of public awareness and knowledge of red tide events in Florida. Two primary objectives were proposed:

Objective 1 - To measure the economic consequences of a red tide event that occurred recently in the Ft. Walton Beach and Destin areas of Okaloosa County, Florida.

Objective 2 - To assess the level of awareness and knowledge possessed by residents of Sarasota and Manatee Counties, Florida regarding the nature, causes, and effects of red tide events which occur in that region.

2.0 Objective 1: Measuring the Economic Consequences

Although less severe red tide events have occurred in the Okaloosa County region of Florida as recently as 2000, a more pervasive red tide event occurred during the late summer and fall of 1999. Anecdotal information from local businesses, tourist development organizations, and county health agencies in the region suggested that the 1999 red tide event had a negative impact on local waterfront and water-related businesses. Objective 1 was focused on identifying the secondary data that may describe business activity in the region, determining the months in which red tides have occurred, and then assessing the changes in business activities during those months when the red tide existed.

A previous study by Adams, et al. (2000a) attempted to measure similar economic effects resulting from red tide events in the Sarasota and Manatee Counties region. That study did not find any statistically significant economic effects resulting from a prolonged red tide event during the 1994-96 period. That analysis focused on the barrier island chain, which extends from Anna Marie Island to Siesta Key. Confidentiality restrictions regarding the use of the business-related data obtained from the Florida Department of Revenue did not allow an analysis for each barrier island, rather the entire set of island communities were necessarily aggregated into a single data set. The inability to isolate a change in business activity due to the specific red tide

event in question may have resulted from (1) the data being collected by FDOR on a temporal resolution level that was too coarse (i.e., monthly) to allow detection of red tide effects that can change daily, (2) business patrons having many alternative opportunities to spend money within the local island economies (but away from the beach) during a red tide event, and/or (3) the red tide bloom being extended over a broad geographical region (i.e., 30 miles of beachfront). The latter issue may tend to "dilute" the effects of a red tide event across water-related businesses in the region. Measuring any localized business effects resulting from more severe red tide effects confined to a specific beach or waterfront area was not possible due to the data constraints associated with the confidentiality restrictions.

This study, in contrast, focused on more recent red tide events that have occurred in the Ft. Walton Beach/Destin area. The hypothesis associated with Objective 1 is that any changes in business activity associated with red tide events in the coastal region will be easier to detect with the available monthly data because the event will be more geographically confined (10 miles of beachfront). This may result in business patrons taking their expenditures completely out of the local Ft. Walton Beach/Destin economy. Focusing on a smaller, less diversified economy than that found in the Sarasota and Manatee Counties area may allow any negative impact on local businesses to be measured.

2.1 The Theoretical Model

A multiple regression model was used to measure the impact of a red tide event on the business activity in the Ft. Walton Beach/Destin areas of Florida. The model was chosen because of its extensive use in time series data analysis and the ease with which time trends and seasonality in the data can be handled. Within the chosen model, the

dependent variable (business activity) is expressed as a function of several independent variables. The model is specified in a linear functional form as follows:

$$Y_i = \beta_0 + \beta_1 F + \beta_2 M + \beta_3 A + \beta_4 M + \beta_5 J + \beta_6 J + \beta_7 A + \beta_8 S + \beta_9 O + \beta_{10} N + \beta_{11} D + \beta_{12} Hur + \beta_{13} PC + \beta_{14} RT + \beta_{15} TME + \mu \quad [1]$$

where,

Y_i is the monthly business activity (measured as nominal gross taxable sales revenue in dollars) of the **i**-th business type (**i** = restaurants or hotels) in Ft. Walton Beach, Destin;

β_0 is the intercept term;

β_1 , β_2 , β_3 ,..., β_{11} are the monthly dummy variables, February (**F**), through December (**D**), with January being the reference or base year;

Hur and **RT** are binary variables included to capture the presence of a hurricane (or tropical storm) event and red tide event, respectively. Values are equal to 1 for months when a hurricane (or tropical storm) event or red tide event occurs, and 0 otherwise;

PC is monthly precipitation data, measured in hundredths of an inch of rainfall;

TME is a time trend term to capture the general change in local economic activity of the area;

The model specification in equation [1] relates changes in monthly sales revenue for two separate business types (restaurants and hotels), located in the Ft. Walton Beach /Destin areas of Florida, as a function of several independent variables. These independent variables include months of the year (excluding the reference year, January), storm activity, precipitation levels, red tide events, and a trend term. The model was estimated for three geographic regions: Ft. Walton Beach, Destin, and the

combined Ft. Walton Beach/Destin area. Each region is identified by a specific zip code.

The parameter estimate coefficients (β_1-β_{15}) associated with each of the independent variables are anticipated to possess an *a priori* expected sign. The coefficients of the monthly dummy variables are expected to reflect the seasonal nature of business activities in the geographical areas of interest. Since the revenues generated by the two business types are characterized by strong seasonal variations, the signs of the coefficients for these seasonal dummy variables are expected to vary according to the months. For example, Figures 2.1-2.6 show that for hotels and restaurants, with respect to both of the two separate zip code regions and for the zip code regions combined, the peak revenue generating months are generally those in the early to late summer (April through August). Hence, a positive sign is expected for business revenues during these months (i.e., sales in these months are higher than sales during the base reference month, January).

The *a priori* expected sign for the trend term, **TME**, is positive. This reflects the hypothesis that over the long term (for this analysis, 1995-2000) increases in business activities lead to some gradual growth in gross taxable sales in the local economy.

The magnitude of monthly beach and water-related activity is expected to be strongly influenced by short-term weather conditions. Specifically, the presence of tropical storms, hurricanes, and increased rainfalls are hypothesized to impact negatively on beach and water-related activities. Thus, revenues of waterfront and neighboring businesses are expected to be indirectly related to inclement weather. Consequently, negative signs are expected for the coefficients for **Hur** (hurricane/tropical storms) and **PC** (precipitation). This expected finding will reflect an inverse relationship between

these climatic variables and beach activities, therefore resulting in a decline in business revenues.

The red tide variable (**RT**) is included in the econometric model to capture the impact of the occurrence of a red tide on business activities in the areas of interest. Given that red tide events are associated with fish kills, eye irritations, and nasal and other respiratory distresses, the occurrences of red tides are hypothesized to reduce beach and water-related activity, resulting in a negative impact on business revenues.

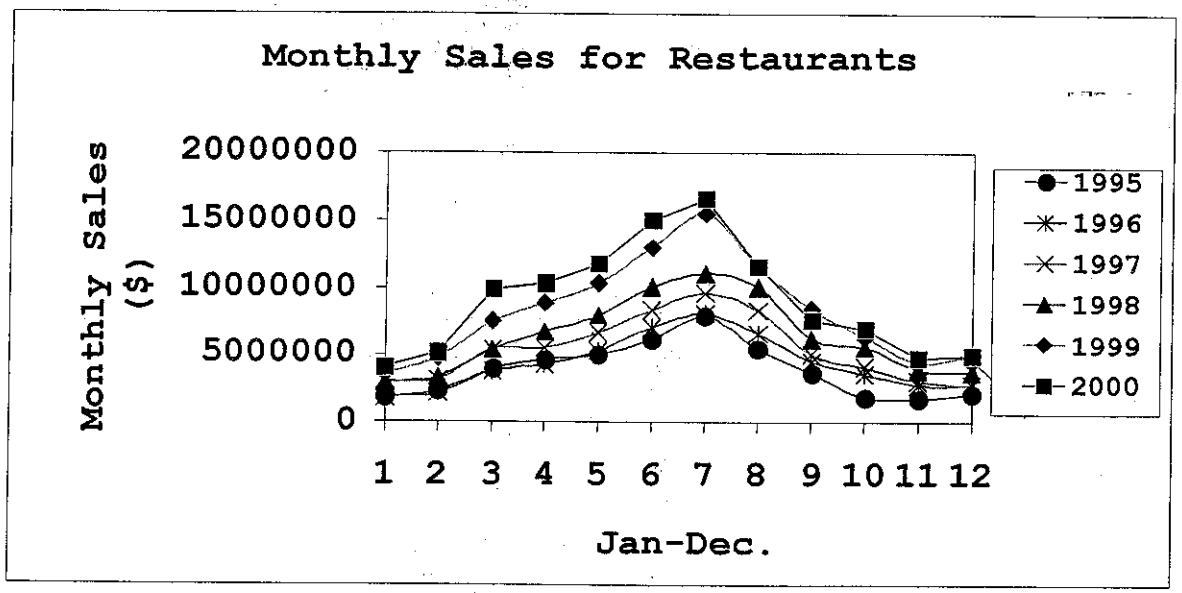

Figure 2.1. Monthly sales revenue for Destin restaurants.

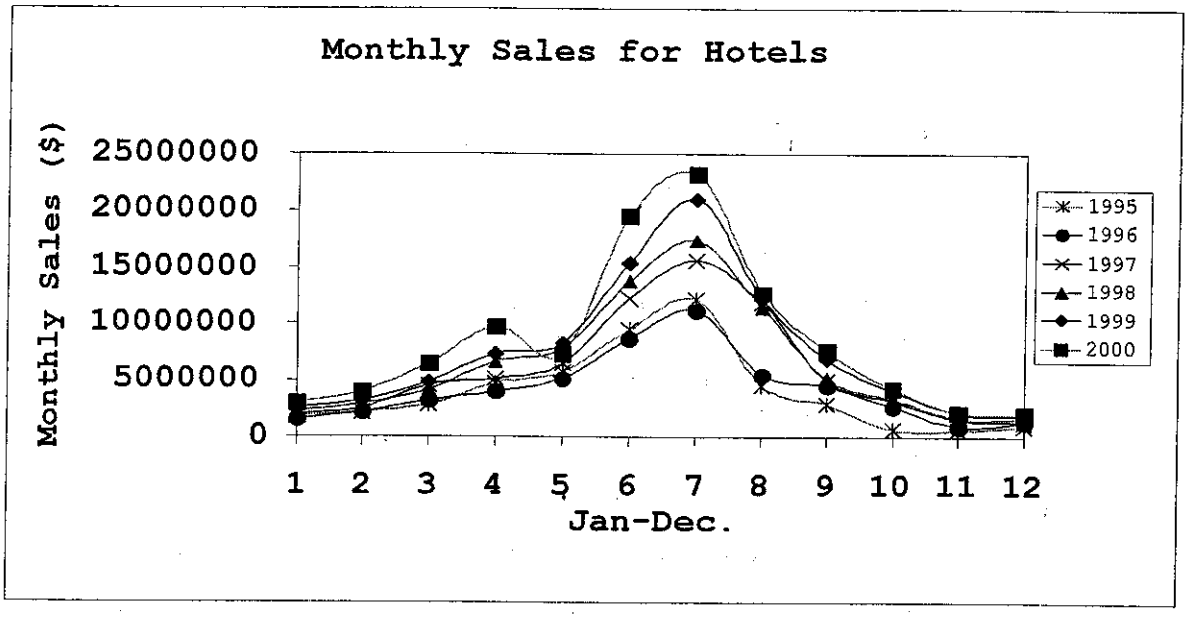

Figure 2.2. Monthly sales revenue for Destin hotels.

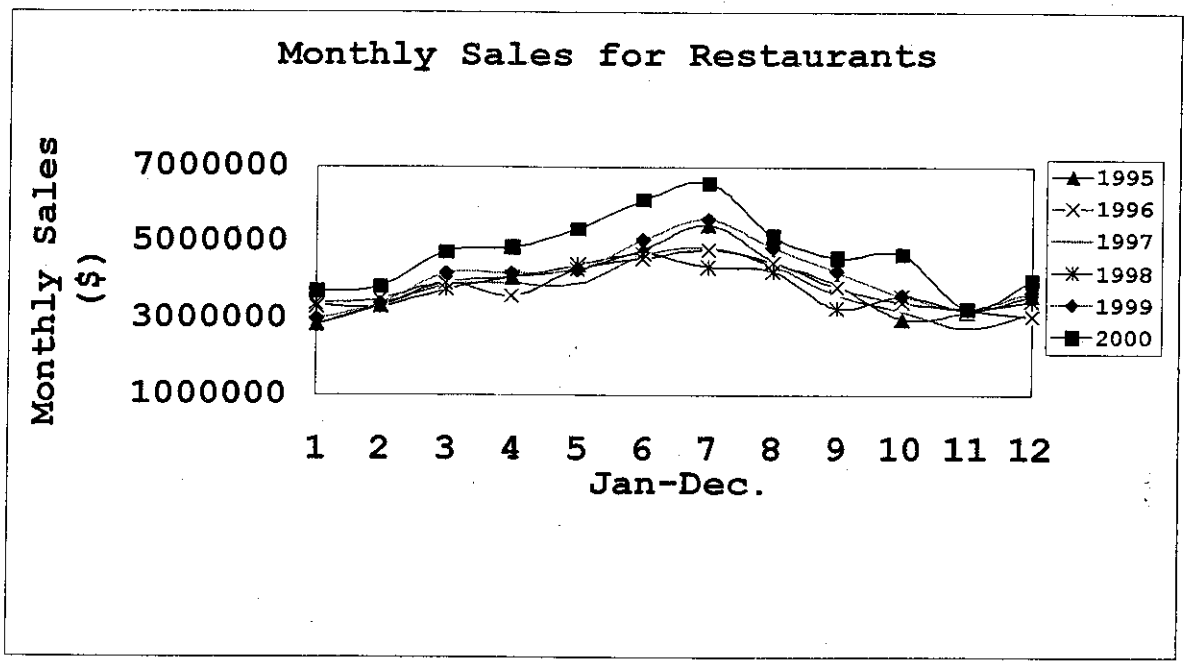

Figure 2.3. Monthly sales revenue for Ft. Walton Beach restaurants.

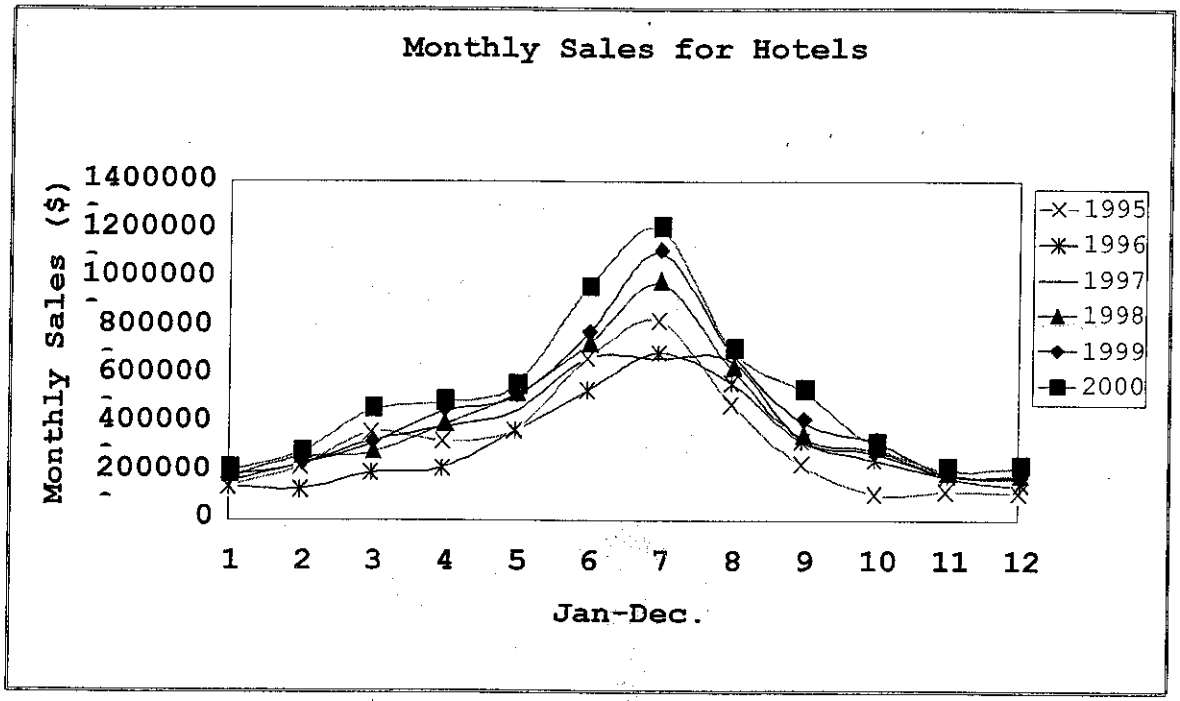

Figure 2.4. Monthly sales revenue for Ft. Walton Beach hotels.

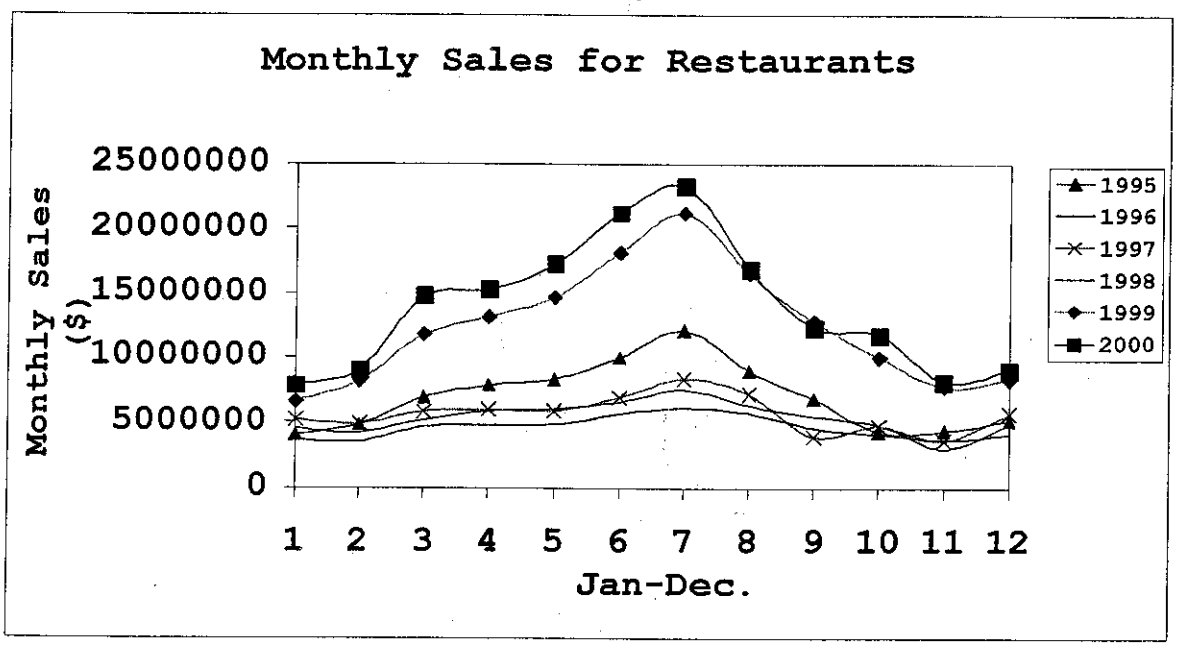

Figure 2.5. Monthly sales revenue for Ft. Walton Beach and Destin restaurants.

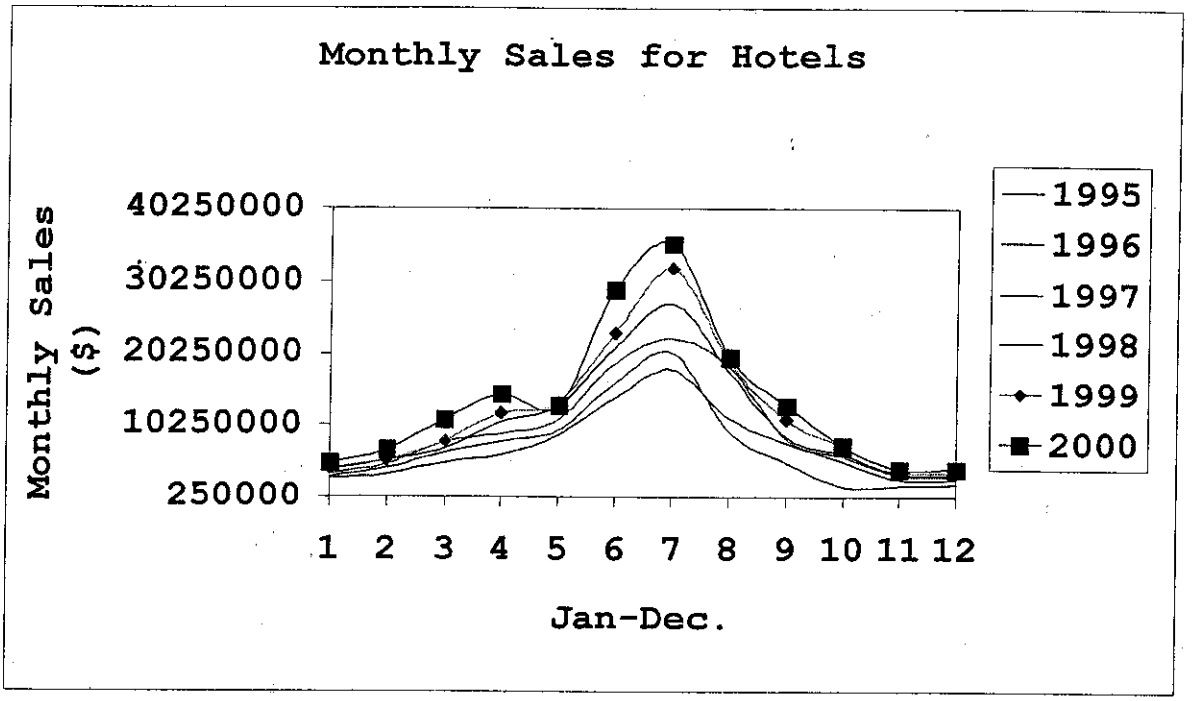

Figure 2.6. Monthly sales revenue for Ft. Walton Beach and Destin hotels.

This effect may be ameliorated by prevailing wind speed and direction, as well as the intensity and duration of the red tide phenomenon. Wind currents that push the red tide airborne toxins away from the shore may minimize respiratory and eye irritations of beach goers. Similarly, a minimum or moderate red tide, compared to a severe one, may kill less marine life, and thereby foul the beach to a lesser degree. In both of these cases, therefore, red tide monitoring data may indicate the presence of a red tide event, but limited or little impact on beach related activities may result. Generally, however, the occurrence of a red tide is expected to impact negatively on near-shore or waterfront businesses that cater to water-related activities, waterfront dining, and beach-going.

2.2 The Data

Secondary data on gross monthly sales for two business activities (hotels and restaurants) located in the Ft. Walton Beach/Destin areas of Florida were requested

from the Florida Department of Revenue (FDOR). The Retail Sales and Use Tax Business Classifications, or "Kind Codes", for these two business activities are 08 (restaurants) and 39 (hotels and motels). These business activities are only a small subset of businesses in the geographic areas of interest, but were thought to be the most likely impacted by red tide events.

Monthly sales data were believed to be the most accurate representation of the level of business activity in the area that will allow an assessment of observable variations in the business activities as a result of a red tide event. Each private business in Florida is required monthly to report sales data during the prior month to FDOR. The use of a survey (e.g., telephone, mail, or personal interview) to solicit sales data directly from local businesses was rejected due to potentially large errors attributable to recall and associated with requesting "estimates" of sales losses. Actual sales data reported by each firm to FDOR were determined to be less prone to error and more defensible.

However, a reservation must be noted about the use of FDOR data. Since the data are collected on a monthly basis for the entire prior month, any lost business activity attributed to red tide effects which are confined to a day or a week (the magnitude of which may be linked entirely to wind directions and periodic changes in algal bloom intensity) may be completely or partially masked within a given month. It may be also possible that any lost business activity during this period can be recovered during the same month that the red tide event occurred. Thus, losses resulting from a severe red tide that occurs during only the first two weeks of a month may be recovered during the latter half of the month as patrons respond to the cessation of the red tide. For this reason, real short-term (i.e., daily or weekly) variations in business activity

during a given month due to a red tide event may be undetectable with data reported on a monthly basis.

In an effort to isolate the effect of red tide events on business activities located closest to the water, the data were requested for two zip codes, 32541 (the Destin region) and 32548 (the beachfront region in Ft. Myers Beach along the barrier island beaches, the waterfront on the "narrows" just north of Okaloosa Island, and the western shore of Choctawhatchee Bay south of Gap Creek) (see Figures 2.2.1 and 2.2.2). The data were also aggregated for the chosen business activities (i.e., hotels and restaurants) by combining the two zip codes. The monthly sales data were available for the period 1995-2000, but precipitation data for 2000 were unavailable. Consequently, regression models were run with precipitation data for the 1995-1999 period, and without precipitation data for the 1995-2000 period. Within these two time periods, separate regression models were estimated for hotels and for restaurants. In addition, the models were estimated for the zip code regions combined and separately for the two individual zip codes.

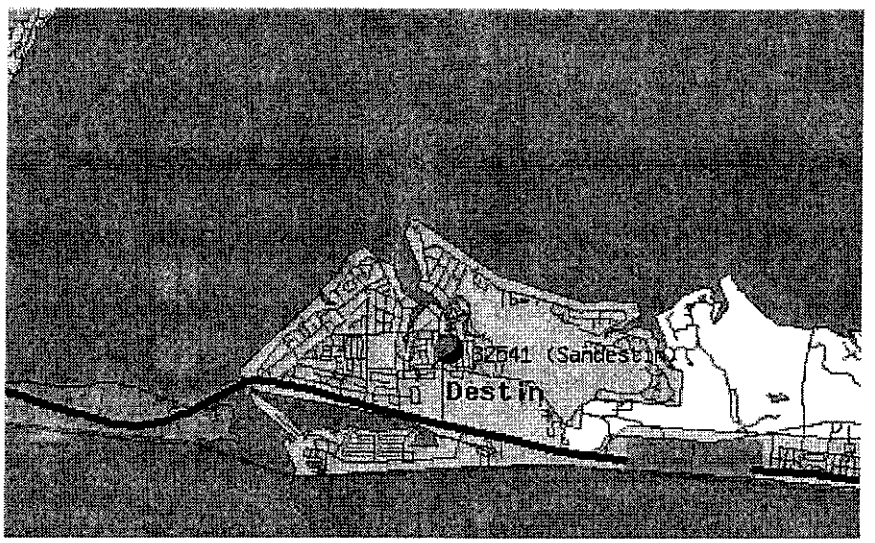

Figure 2.2.1. Map of Zipcode 32541 Region: Destin, Florida

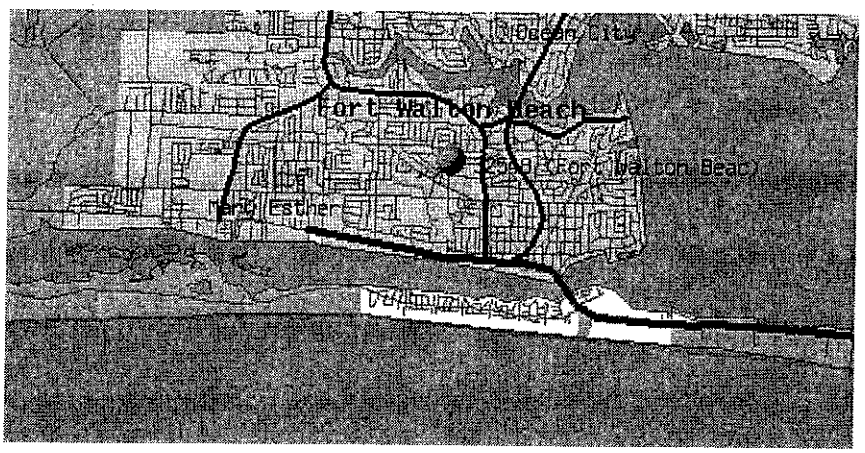

Figure 2.2.2. Map of Zipcode 32548 Region: Ft. Walton Beach, Florida

The data on hurricane and storm conditions as well as precipitation data were obtained from the website maintained by the National Climatic Data Center (NCDC), (U.S. Department of Commerce, National Oceanic and Atmosphere Administration). The closest precipitation reporting station to the Ft. Walton Beach/Destin areas is Pensacola. These data were used as a proxy for rainfall that may have an effect on beach and water-related activities.

The data on red tide occurrences in the areas of interest were obtained from the "Red Tide Status Sheets" compiled by the Florida Marine Research Institute, Florida Fish and Wildlife Conservation Commission, in St. Petersburg, Florida. These "Red Tide Status Sheets" are available for the period 1995-2000, and provide monitoring observations of the concentration of *K. brevis*, presence of fish kills, and reports of respiratory irritations at sampling sites in the areas of interest. The intensity of a red tide is determined by cell counts of *K. brevis* from water samples drawn from specific locations. The "intensity" (cells per liter of seawater) of a *K. brevis* bloom is classified as follows:

Intensity level	Cells per liter
Very Low	< 10,000
Low	10,000 – 100,000
Medium	100,000 – 1,000,000
High	> 1,000,000

In an earlier study by Adams, et al (2000b), several variables were constructed to categorize a red tide event based on its intensity and/or duration. These variables included the "expected" level of intensity (i.e., the average intensity weighted by the duration), average duration of a red tide over a given month for a specific site, the total number of observations of high intensity cell counts, and the total number of weeks that a red tide was observed at any site. In modeling the effects of these red tide variables on beach attendance and spending behavior of water-related business patrons, Adams (2000a) determined the variable that showed the most consistent explanatory power was a simple binary variable for months when a red tide occurred. For this reason, this study did not attempt to model the effects on sales revenue of different intensity levels of a red tide event. Instead, a binary variable was utilized to indicate the presence of a red tide "event", such that the binary variable took the value of "1" for months when a red tide was within the low to high intensity level range, and "0" otherwise. During the period covered by this study, two red tide "events" were recorded in 1996 (June and October), five in 1999 (consecutive months from August to December), and four in 2000 (consecutive months from September to December).

The number of observations in the data set depended upon whether or not precipitation data were included in the data set. Models without precipitation data had 72 observations (January 1995 through December 2000), while models with

precipitation data had 60 observations (January 1995 through December 1999). The data were used to construct three data sets. These included hotel data disaggregated by the two zip codes (Table 6.1), restaurant data disaggregated by the two zip codes (Table 6.2), and the hotel and restaurant data for both zip code regions combined (Table 6.3).

2.3 Estimation Procedure

The Ordinary Least Squares (OLS) estimator was initially used to estimate the regression models for equation [1] using the Time Series Processor (TSP) computing software (Hall and Cummins, 1997, 1998). Invariably, the Durbin-Watson statistics from this estimator revealed first order autocorrelation of the error terms. A maximum likelihood procedure, which imposed stationarity on the data and utilized a grid search for the serial correlation parameter, was used to transform the data (i.e. correct for autocorrelation). The models were then estimated with the Generalized Least Squares (GLS) estimator (Hall and Cummins, 1997, 1998).

2.4 Estimation Findings

Tables 6.4 - 6.6 report the OLS and GLS results for all hotels and restaurants in the areas of interest for the combined zip codes and for the two separate zip codes 32541 and 32548, respectively. As indicated earlier, the OLS estimates, while unbiased and consistent, are inefficient and lead to invalid inferences (Gujarati,1995; Johnston, 1984). The OLS estimates are reported alongside GLS estimates in the respective columns within Tables 6.4 – 6.6, but OLS estimates are not discussed any further in this study. Instead, attention is directed toward the GLS results.

Table 6.4 shows the coefficients for the independent variables in the regression model for restaurants and hotels for the combined zip codes. The models that appear to

best fit the data are those that include precipitation data. These are models identified as Resallpc and Hotallpc. The GLS models appear to fit the data fairly well as reflected in relatively high coefficients of determination (i.e. adjusted R^2 of 88.5% and 90% for combined zip code data sets for restaurants and hotels, respectively) and high F-statistics. In these models, the signs of the coefficients for **TME** (trend), **Hur** (hurricane), **PC** (precipitation), and **RT** (red tide) meet *a priori* expectations. The monthly dummies show the expected pattern of relative importance. For both Resallpc and Hotallpc, the presence of a red tide event, while holding all else constant, results in a statistically significant (i.e., 2 percent level) decline in gross taxable sales for both restaurants and hotels. The expected loss in monthly sales revenue to hotels and restaurants as a result of an occurrence of a red tide event during the time period of the study is determined by interpreting the corresponding **RT** parameter estimates in units of $1 million. For example, the findings for Resallpc suggests that the presence of a red tide event results in a reduction of monthly restaurant sales of $2.751 million (t-value of 3.722), while Hotallpc suggests that monthly hotel sales decline by $3.703 million (t-value of 2.508).

The coefficients for the independent variables in the regression models for restaurants and hotels sales within separate zip codes 32541 and 32548 are provided in Tables 6.5 and 6.6. As in the case for the combined zip codes, the models that included precipitation data performed "better". These models are identified as Restaurant-2 and Hotel-2 (i.e. restaurants and hotels with precipitation data included in model estimation). In particular, the estimation results show that monthly business activities (gross taxable sales) for either hotels or restaurants in zip code 32548 were not affected by the red tide phenomenon (Table 6.6). The estimated **RT** parameters were not significantly

significant at the 10 percent level. One possible reason for this finding is that this 32548 zip code region is fairly large, and contains businesses that are located somewhat further north and away from the coastal areas. Yet, most of the hotels and restaurants in this zip code region are located on Miracle Parkway or Santa Rosa Boulevard, both of which are located almost immediately adjacent to either The Narrows of Choctawhatchee Bay or the Gulf beaches. In contrast, the estimation results do show statistically significant negative impacts on monthly revenues for both hotels and restaurants located in the Destin area zip code 32541 (Table 6.5). The RT parameter estimates for Restaurant-2 and Hotel-2 were both significant at either the 2 or 5 percent level, with adjusted R^2 values of 89.6% and 88.5%, respectively. Thus, the expected monthly losses of revenues to restaurants and hotels in zip code 32541 as a result of the occurrence of a red tide event are $2.228 million and $2.286 million, respectively. This finding may result from the businesses in this region being confined to a relatively smaller peninsular area. The peninsula extends to the east, with Destin located at the western tip of the peninsula. Thus, a red tide could almost encircle the entire city, possibly resulting in more noticeable effects, and thereby creating a greater, more pervasive, impact on local businesses. However, it is unclear why the data yielded a statistically significant relationship between the occurrence of red tide events in the Destin area, yet not in the Ft. Walton Beach area.

2.5 Summary

The findings from the regression analyses suggest that red tide events can have a significant negative impact on local business activity. Interestingly, the analysis found that hotels and restaurants in the Destin area were negatively impacted during the red tide events that have occurred in the region, but those same types of firms in the Ft.

Walton Beach area were not significantly impacted. The data also suggest a negative impact on hotel and restaurants business activity resulting from red tide events within the combined Ft. Walton Beach/Destin area. Further, the models only suggested this relationship if data capturing precipitation levels were also included in the model. The interactive relationship that may possibly exist between red tides and precipitation was not explored.

The monthly sales losses associated with red tide events was estimated to be approximately $2.2-2.3 million for both restaurants and hotels in the Destin area. Monthly losses to restaurants and hotels in the combined region were estimated to be $2.8 million and $3.7 million, respectively. However, these losses should be interpreted as initial expenditure responses by patrons to the presence of a red tide. The study did not attempt to determine if these expenditure "losses" were then spent outside of the immediate region, or delayed until the red tide ceased and then spent within the region. Further, the study did not attempt to determine if these forgone expenditures would have been made by local residents or by "tourists" who reside outside Okaloosa County. Thus, an assessment of the true economic impact (dollars actually lost to the local economy) due to the red tide events was not possible. However, the analysis does suggest a significant localized relationship between business activity and red tide events. The losses indicate that waterfront businesses do experience reductions in business activity as a result of a red tide. The magnitude of loss is most likely linked to the geographic distribution and intensity of the red tide bloom, prevailing wind conditions, and the time of the year in which the event occurs (i.e., peak tourism season).

3.0 Objective 2: Assessing Public Awareness and Knowledge

A telephone survey was conducted in the Manatee and Sarasota Counties area to assess the level of awareness and knowledge by residents of red tide events in the two-county region. A telephone survey methodology was chosen due to the relatively low cost and the ease of probability sampling. Peters and Houseknecht (1992) suggest that telephone surveys may minimize recall bias and achieve a better overall response than mail surveys due to the positive effect of personal contact on respondent participation. Thus, a telephone survey methodology was chosen over either personal interviews or a mail-out survey. The former would have been prohibitively costly, while the latter would not have ensured a properly stratified sample with the desired number of observations.

The survey instrument was jointly developed by the (1) Florida Sea Grant and Food and Resource Economics Department, University of Florida and (2) the Florida Marine Research Institute. The questionnaire was pre-tested prior to field implementation. The survey was conducted with a randomly selected household telephone number list during January and February 2001 by the University of Florida, Policy Management Research/Florida Survey Research Center.

A brief introduction was recited by the surveyor to the initial household contact, indicating that the survey dealt with environmental issues in Florida. The selection of an adult respondent was then randomized by having the surveyor ask to speak to the person over the age of 18 whose birthday was closest to the day of the interview. A call back procedure was employed that provided repetitive attempts to reach the selected adult in the household and/or complete the interview.

The survey solicited a wide variety of information from adult respondents regarding their knowledge of red tides (Appendix). For example, respondents were queried regarding their general awareness of red tide events, their source of information about red tides, their understanding of the biological features of red tides, and perceptions regarding the environmental/natural resource effects of red tides. In addition, the survey attempted to determine to what extent red tide events may have caused survey respondents to alter their participation in saltwater or beach-related activities, or influence their patronage of local businesses which are located near the beach or bay-front. Demographic information for each respondent was also solicited. Thus, responses regarding level of knowledge and awareness could then be associated with specific demographic characteristics, such as proximity of residence to the coast, education, years of residence in region, etc.

3.1 Demographics of Sample

A total of 1006 telephone interviews were completed, with 56% and 35% of the completed interviews representing Manatee County and Sarasota County, respectively. Approximately 9% of the respondents provided either an erroneous zip code, a non-local zip code, or did not know the zip code of their primary residence in the region.

3.1.1 Seasonality and Years of Residence

Approximately 78% of the respondents indicated that they lived in the region year round, while 15% lived in the region 6 months or less per year. Twenty-five percent of the respondents had lived in the region for at least five years, while 50% indicated they had lived in the region for at least 13 years, and 25% had lived in the two-county region for at least 23 years.

3.1.2 Proximity of Residence to Beach/Waterfront

As indicated earlier, the majority of respondents resided in Manatee County. However, the zip code of the primary residence allowed the determination of their proximity to the beach. The line of demarcation within the region that separated zip codes into two groups was I-75 (**Figure 3.1.2**). Zip codes that were located west of I-75 were considered to be more near the beaches and bay-side waterfront, and thus hypothesized to be more affected by the effects of a red tide. Highway 41 may have actually been a more appropriate demarcation line, but Highway 41 bisected a much larger share of the zip code regions, thus making it virtually impossible to assign a majority of the respondents to a unique "east" or "west" subregion. Of the total number of respondents within the combined two-county region who provided local zip codes, 85% resided west of I-75 while the remainder were located east of I-75. The percentage distribution was approximately the same for each county (e.g., 86% were located "west" in Manatee County and 84% were located "west" in Sarasota County).

3.1.3 Basic Demographics

Survey data describing the basic demographics of the respondents within the combined two-county region is given in Table 3.1.3. The respondents were represented by a slightly higher percentage of females (59.1%) than published statistics would have suggested (52.8%) for Manatee and Sarasota Counties. Approximately one-quarter of the respondents had at most an undergraduate college degree, while an additional one-quarter of the respondents had attended some college, but did not graduate. In addition, about one-quarter of the respondents had obtained a high school diploma but didn't attend college. The survey targeted only respondents 18 years of age or older. Only about 3% of the respondents were between the ages of 18 to 24, while about one-quarter

of the respondents were between the ages of 25 and 44. Approximately one-third of the respondents were 45-64, with slightly more than one-third of the respondents 65 or older.

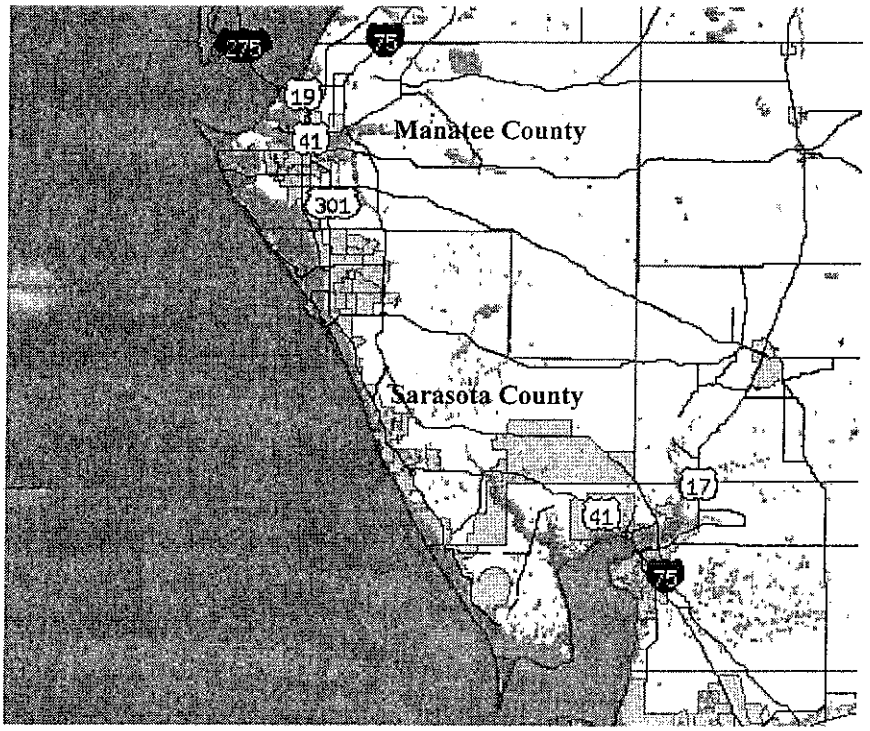

Figure 3.1.2. Survey Subject Region in SW Florida with I-75 Line Demarcation Between East and West Subregions.

In terms of the racial composition of the sample, 92% of the respondents were white and 3% were black. About 5% of the respondents indicated they were of Hispanic ancestry.

Of the respondents who indicated a selected range of household income, 8% had a household income level of $20,000 or less. The distribution of respondents across the remaining income level categories was somewhat evenly distributed, with 30% percent of the respondents not providing an income level.

Table 3.1.3. Basic Demographic Characteristics of Respondents for the Combined Two-County Region

Demographic Characteristic	Survey Respondents (%)[1]	Published Estimates (%)
Gender		
Male	40.9	47.2[2]
Female	59.1	52.8[2]
Education Level		
8th grade or less	0.4	6.7[3]
Some high school	5.2	14.4[3]
High school graduate	25.5	32.9[3]
Technical/vocational training	2.8	-
Some college	25.0	20.4[3]
College graduate	26.5	18.6[3]
Graduate/professional school	13.4	6.8[3]
Age		
18-24	3.2	5.9[2]
25-44	23.9	22.5[2]
45-64	32.8	24.3[2]
65 and over	36.1	30.1[2]
Race		
Black	3.0	5.5[2]
White	91.8	93.6[2]
Asian	0.6	<1.0[2]
American Indian	0.4	<1.0[2]
Other	2.0	<1.0[2]
Hispanic	4.5	6.0[2]
Income		
$20,000 or less	8.0	24.7[4]
$20,001 - $35,000	14.8	25.9[4]
$35,001 - $50,000	18.7	19.1[4]
$50,001 - $75,000	13.1	30.3[4,5]
over $75,000	16.3	-
no response	30.1	-

[1] The percentages for each demographic characteristic may not add to 100 due to some respondents either now knowing or refusing to provide information.
[2] Florida Statistical Abstract 2000. Bureau of Economic and Business Research, Warrington College of Business Administration, University of Florida.
[3] Bureau of Census, American FactFinder website http://factfinder.census.gov/
[4] Sales & Marketing Management Magazine. 2000 Survey of Buying Power and Media Markets.
[5] Represents a combination of the two survey categories "$50,001-$75,000" and "over $75,000".

3.2 Awareness of Red Tide (Question 1)

3.2.1 Responses in Total

Respondents were initially asked if they were aware of the coastal condition known as "red tide". This was the first question posed to the respondent, without any prior indication that the interview was going to be focused specifically on the topic of red tide. Of the total number of households interviewed in the survey (1006), 89% indicated that they were aware of the term "red tide". If respondents responded "no" to this initial question, they were routed to a series of questions regarding their participation in outdoor activities and business patronage, which were followed by the demographic-related questions.

3.2.2 Awareness by Demographic Strata

Responses to Question 1 by demographic strata are given in Table 6.7. Note that the following discussion is based on a simple comparison of response percentages, without any formal testing of statistical significance in the differences of responses between demographic strata. The findings suggest, however, that individuals who reside in the region a full twelve months of the year are more likely to know about red tide. Those respondents who have resided in the region more than five years, have a college degree, or are white are also more likely to be aware of red tide. There appeared to be little difference in awareness levels between those respondents who lived nearer to the beaches and bay-front region (west of I-75).

3.3 Source of Information (Question 2)

Respondents were asked about their source(s) of information regarding red tides. Several choices were provided, of which the respondent could chose all that applied. Of

those that responded to this question (894), the most important single sources of information on red tide came from TV and newspapers (Table 3.3.1). Radio and "word of mouth" via friends/family were of lesser importance, but considerably more so than informational brochures, internet websites, and workshops/meetings.

Table 3.3.1. Respondent's sources of information about red tide[1] (Question 2)

Source	Yes (%)	No (%)
TV	62	38
Radio	26	73
Newspaper	70	30
Informational brochure	6	94
Internet website	2	97
Workshop/meeting	2	97
Friends/family	25	75
Other (see Appendix)	42	98

[1] Respondents (894) could chose more than one source. Percentages for each source may not add to 100 due to refusals or "don't know" responses.

3.4 Describing the Effects of a Red Tide (Question 3)

Respondents were asked to identify the effects they would associate with a red tide. The respondents were not prompted as to what these effects might be, but rather were posed an open-ended question. Each respondent may have identified several effects. The percentage of total respondents (1006) that mentioned the various pre-selected effects are shown in Table 3.4.1. The most frequently mentioned effect (61%)

Table 3.4.1. Respondent's description of red tide event effects[1] (Question 3)

Effect Mentioned	Mentioned (%)	Did Not Mention (%)
Water near shore turns to a reddish color	8	92
Kills Fish	61	39
Causes eyes to water/burn	23	77
Causes nasal irritation/coughing	40	60
Has an offensive odor	36	64
Other (see Appendix)	16	84

[1] Respondents (894) may have mentioned more than one effect. Percentages for each source may not add to 100 due to refusals or "don't know" responses.

was that red tide kills fish. However, only 36% mentioned that an offensive odor was associated with a red tide. Nasal irritation/coughing and watery/burning eyes were

mentioned by 40% and 23% of the respondents, respectively. Only 8% mentioned a discoloration of the water accompanied a red tide.

3.5 The Nature of Red Tides (Question 4) and The Human Health and Environmental Consequences of Red Tides (Question 5)

Respondents were asked to evaluate a series of True/False statements about the biology of red tides (Question 4) and the consequences of red tides on human health and the environment (Question 5). These statements were designed to test each respondent's basic understanding of the biological characteristics of a red tide event and determine each respondent's perception of the health and environmental issues related to a red tide event. The statements for each question were selected after consultation with Florida Marine Research Institute (FMRI) and Mote Marine Laboratory staff, and reviewing various existing red tide-related publications, brochures, websites, and other educational materials. Steidinger and Penta (1999) and Steidinger, et al. (1999) were the major sources of information used for the selection of the statements. The hypothesis was that respondents would be familiar with these key issues since the topics had been previously addressed in the public arena via various educational materials, press releases, and broadcast media associated with past red tide events in the region. However, the final selection of statements and their correct/incorrect true or false interpretations (and any errors thereof), are the primary responsibility of the project investigative team. Each statement and the appropriate interpretation for the purposes of this study for Questions 4 and 5 is given as follows:

Question 4 -

A. Red tides are caused by tiny marine plankton: **True**. The dinoflagellate *K. brevis*, is the species of marine plankton associated with "red tide" blooms.

B. Red tides are naturally occurring: **True**. Red tide events are naturally occurring marine phenomena which unfortunately produce effects that are "undesirable" to humans. A link between man-induced water quality factors and red tide occurrence has not been established.

C. The causes of red tide are well known: **False**. The exact complement of ecological parameters that triggers a red tide event is still not well understood by science.

D. Red tides occur mostly during fall and winter: **False**. Steindinger and Penta (1999) indicate that late summer and fall is the time when most red tides occur.

E. Red tides only occur in Florida: **False**. Although most recorded red tide events in the US have occurred in southwest Florida, red tides have been observed as far north as North Carolina, and as far west as Texas.

F. Red tides begin in bays, estuaries, and near the beach: **False**. *K. brevis* blooms are thought to begin offshore at depth, and then move up in the water column. Onshore winds and surface currents are then associated with the shoreward movement of a bloom, which can eventually move into coastal embayments.

G. Red tides never occurred until recently: **False**. Most formal documenting of red tides has occurred within the last seventy years. However, fish kills possibly associated with red tide were recorded as early as 1530 by the Spanish explorer Nunez Cabeza de Vaca.

H. Red tides can be predicted with total accuracy: **False**. The occurrence and movement of red tides cannot yet be totally forecasted. However, recent improvements in recording hydrographic data within the Gulf of Mexico has helped scientists better explain the movement of red tide blooms.

I. Red tides never last longer than 1 or 2 weeks: **False**. Red tides can be very brief or last for many months; for example, a red tide bloom in southwest Florida lasted for approximately 18 months during the 1994-96 period.

Question 5 –

A. Locally caught oysters & clams are safe to eat during a red tide: **Debatable!** This statement was poorly worded. Shellfish harvested in waters affected by a red tide would likely be unsafe to eat due to the toxins being accumulated within the edible body tissues of the oyster or clam. Shellfish harvesting areas will be closed to harvest when *K. brevis* is found to exceed threshold levels. Shellfish subsequently taken from closed harvesting areas would be unsafe to eat. However, molluscan shellfish harvested from open and approved waters when a red tide is in the region would be deemed safe to eat.

B. Locally caught fin-fish are safe to eat during a red tide: **True**. Red tide toxins do not accumulate in the edible tissue of fin-fish.

C. Locally caught shrimp & crabs are safe to eat during a red tide: **True**. Similar to fin-fish, red tide toxins do not accumulate in the edible tissues of crustaceans.

D. Red tide toxin is in the water and the air: **True**. Although the plankton containing the toxins are found in the water, the toxins of red tide can become airborne as wave action ruptures the plankton. The toxin can then become an aerosol and drift with the wind.

E. Red tides cause lasting health problems for people: **False**. The common red tide symptoms, such as watery eyes, coughing, and nasal irritation, are only temporary and cease when the effected individuals move away from airborne toxins.

F. Red tides can be controlled by chemical means: **False**. Large-scale chemical treatment of red tide blooms is currently not feasible. Studies have been done that indicate small-scale treatment with algicides and clay materials show some promise.

G. Red tides only effect those people in the water or on the beach: **False**. Red tide toxins and the odors of decaying marine life are mostly a problem near the water. However, the negative reaction of people to these effects can impact businesses and other establishments elsewhere within the local community.

H. It is safe for humans to swim in a red tide: **True**. It is not harmful for humans to swim in water containing red tide. However, the classic symptoms associated with red tide toxins will likely occur. In addition, swimming in the presence of decaying marine life may pose problems associated with other types of bacteria.

3.5.1 Question 4 Responses in Total

Most of the respondents evaluated the statements for Question 4 "correctly", with the exception of statement 4.F (Table 3.5.1). A slightly greater number of respondents (43%) answered 4.F incorrectly, although the difference in the two responses is likely not statistically different. The findings suggest that respondents apparently have a working understanding of the basic biology of red tide events. However, the number of respondents who provided incorrect responses to 4.C, 4.D, and 4.I equaled or exceeded 20%.

Table 3.5.1. Responses to statements about the biology of red tides[1,2] (Questions 4)		
Statement	**True (%)**	**False (%)**
A. Red tides are caused by tiny marine plankton	**58**	18
B. Red tides are naturally occurring	**74**	16
C. The causes of red tide are well known	20	**72**
D. Red tides occur mostly during fall and winter	23	**53**
E. Red tides only occur in Florida	10	**66**
F. Red tides begin in bays, estuaries and near the beach	43	**40**
G. Red tides never occurred until recently	6	**79**
H. Red tides can be predicted with total accuracy	8	**80**
I. Red tides never last longer than 1 to 2 weeks	24	**61**

[1] Percentages for each source may not add to 100 due to refusals or "don't know" responses.
[2] The percentage of "correct" responses are indicated in bold and underlined.

3.5.2 Question 4 Responses by Demographic Strata

Responses to each Statement in Question 4 were associated with the various demographic strata of the sample (Tables 6.8 – 6.16). Information regarding the demographic strata with the higher number of incorrect responses will be useful for developing strategies for future educational efforts. In general, the higher percentage of correct answers were associated with those respondents who are male, reside in the area for twelve months, have lived in the area longer, have a college education or higher, have an annual income in excess of $35,000, and are white. Patterns associated with age and location of residence are less clear. The apparent certainty of responses also varied across the statements. For example, the percentage of respondents who indicated that they didn't know how to evaluate the statement was relatively higher for 4.A, 4.D, and 4.E.

3.5.3 Question 5 Responses in Total

Respondents evaluated half the Question 5 statements correctly, with the problematic statements being A, B, C, and H (Table 3.5.3). The response to statement 5.A (which may have been misleading) was interesting. Filter-feeding organisms, such as molluscan shellfish (e.g., oysters and clams), will bio-accumulate the red tide toxin rendering them unsafe for human consumption. However, during a red tide event, the oyster and hard clam harvesting areas will be closed by the Florida Department of Environmental Protection to commercial and recreational harvest if *K. brevis* cell counts exceed a threshold level of 5,000 cells/liter (personal communication, Florida Marine Research Institute). Hard clam harvesting has been delayed in the Charlotte Harbor area and oyster harvesting has been postponed in the Apalachicola Bay area due to red tides. Prior to reaching that threshold density, the harvesting areas will remain open and shellfish harvested from those waters will be safe to eat, even if a red tide is reportedly "in the area". However, shellfish harvested commercially or recreationally from waters closed due to a red tide would be unsafe to eat.

The responses to statements 5.B and 5.C indicate a misunderstanding of the marine fauna that is rendered unsafe to eat by red tide toxin. Fish caught alive during a red tide would be safe to eat since they do not bio-accumulate red tide toxins. The same would be true for crustaceans such as shrimp and crab. Approximately three-fourths of the respondents evaluated these statements incorrectly. Finally, 73% of the respondents indicated that it would be unsafe for humans to swim during a red tide (statement 5.H). In fact, incidental ingestion of red tide organisms while swimming in seawater during a red tide would most likely not make a healthy person sick. However, being in the water during a severe red tide would likely result in the classic symptoms from exposure to

aerosol red tide toxins, such as burning sensations in the eyes and respiratory irritations. It may be "safe" to swim during a red tide, but it would most likely not be a very pleasant experience.

Table 3.5.3. Responses to statements about the human health and environmental consequences of red tides[1,2] (Question 5)

Statement	True (%)	False (%)
A. Locally caught oysters & clams are safe to eat during a red tide[3]	7	83
B. Locally caught finfish are safe to eat during a red tide	**13**	72
C. Locally caught shrimp & crabs are safe to eat during a red tide	**10**	78
D. Red tide toxin is in the water and in the air	**76**	16
E. Red tide causes lasting health problems for people	33	**45**
F. Red tides can be controlled by chemical treatments	10	**59**
G. Red tides only effect those people in the water or on the beach	28	**66**
H. It is safe for humans to swim in a red tide	**18**	73

[1] Percentages for each source may not add to 100 due to refusals or "don't know" responses.
[2] The percentage of "correct" responses are indicated in bold and underlined.
[3] The interpretation depends on knowledge of the source of the molluscan shellfish harvested during a red tide. If harvested from approved waters, the shellfish will be safe to eat. If harvested from closed waters, the shellfish will be unsafe to eat. Thus, a "correct" designation is not provided.

3.5.4 Question 5 Responses by Demographic Strata

Responses to statements 5.A -- 5.H by demographic strata are provided in Tables 6.17 - 6.24. Information regarding the demographic strata with the higher number of incorrect responses will be useful for developing strategies for future educational efforts. The findings may be useful in better identifying those demographic categories that should be specifically targeted by educational efforts. Unfortunately, patterns in

distribution among "correct" and "incorrect" responses are not clear by demographic strata. Further statistical analysis will be required to assess the existence of any significant differences in responses between the various demographic strata. The reader is encouraged to examine Tables 6.17 – 6.24 to obtain insight into how responses varied among demographic strata.

3.6 Saltwater and Beach-related Activity Participation (Questions 6 and 6.A) and Frequency (Question 6.B): Those Respondents Aware of Red Tide

A primary goal of the survey was to determine to what extent the presence of a red tide influenced respondents' participation in saltwater and beach-related activities. Thus, respondents who were aware of red tide were asked to indicate if they participated in any saltwater or beach-related activities within the Manatee and Sarasota Counties region. If they did, respondents were asked to indicate the various types of activities in which they participated and provide an estimate of the frequency in which they engaged in these activities within an average year. Over three-fourths (76.1%) of the respondents indicated that they did engage in saltwater and beach-related activities during the course of an average year. Of those that indicated they participated in at least one of these activities, the participation percentage for each activity is given in Table 3.6. In addition, the distribution of participation frequency is provided for a set of discrete frequency categories (e.g., 0, 1-6, 7-12, 13-24, and greater than 24 times per year).

Table 3.6. Participation Percentages[1] and Frequencies[2] for Respondents Engaging in Saltwater and Beach-related Activities in Sarasota and Manatee Counties (Question 6)

Activity	Participate in Activity?		Participation Frequency (#) Per Average Year				
	Yes(%)	No(%)	0	1-6	7-12	13-24	>24
Saltwater fishing from a boat	36.9	63.1	429	111	39	36	65
Saltwater fishing from shore, bridge, or pier	32.9	67.1	456	96	48	32	48
Beach-going or swimming at the beach	89.9	10.1	69	169	113	77	252
Sail/power pleasure boating	34.0	65.9	448	68	39	33	91
Personal watercraft use	10.3	89.6	609	27	13	4	26
Water skiing	6.9	93.1	633	25	7	3	12
Sail-boarding/surfing	3.8	96.2	654	9	3	2	10
Scuba diving/snorkeling	19.0	81.0	551	65	20	18	27
Kayaking/canoeing	11.5	88.5	602	51	8	7	12
Shell/"treasure" hunting	30.4	69.6	473	83	37	23	65
Other (Appendix)	4.9	95.1	647	12	6	2	13

[1] Percentages for each source may not add to 100 due to refusals or "don't know" responses.
[2] The total for the frequency values represents only those respondents that participate in at least one activity during a typical year.

The activity with the greatest percentage of respondents participating was "beach-going /swimming at the beach" (89.9%). Other activities that had the next highest levels of participation included "saltwater fishing from a boat" (36.9%), "sail or power pleasure boating (34.0%), "saltwater fishing from shore or a bridge or pier"

(32.9%), and "shell or treasure hunting" (30.4%). The distribution of participation frequencies is also found in Table 3.6. Note that the activity that most respondents participated in at least once a year is beach-going. The other most frequently participated in activities included saltwater fishing (either from a boat or otherwise), sail/power boating, and shell/treasure hunting.

3.6.1 The Effect of Red Tide on Participation in Saltwater and Beach-Related Activities (Question 6.C-D): Those Respondents Aware of Red Tide

An important objective of the survey was to determine how red tide affects those individuals who participate in beach going, saltwater fishing, boating, etc. Respondents who indicated that they participated in saltwater or beach-related activities were asked if their participation in these activities had ever been effected by a red tide event (Table 3.6.1). Further, those that responded positively were asked how their participation had been effected.

3.6.1.1 Question 6.C-D Responses in Total

With the exception of water skiing, kayaking/canoeing, and scuba diving/snorkeling, at least 50% of the respondents associated with each activity indicated that red tide had, at some time, effected their participation in the specific activity. The activity for which most respondents had indicated an effect by red tide was beach-going/swimming at the beach. For that activity, 70% of the respondents indicated that a red tide had effected their participation whereas 28.0% indicated that they had not been affected by a red tide. In contrast, only 34.6% of those engaged in kayaking/canoeing were effected by a red tide.

Respondents that indicated red tide had effected their participation in a specific activity were asked to characterize how their participation was influenced. "Cut Short"

was intended to indicate that the participation in the activity was begun on a given day but was discontinued due to the effects of a red tide. "Delay" meant to indicate that the participation in the activity was postponed to some other time when the effects of the red tide would be minimal or non-existent. "Somewhere Else" meant to indicate that participation in the activity occurred somewhere other than originally intended (e.g., at a location where the effects of a red tide were non-existent). This may have been outside of the Manatee and Sarasota Counties area. However, Question 6.D was not designed to determine the exact location of the relocated activity.

Table 3.6.1. How Respondents Participation in Saltwater and Beach-Related Activities Were Effected by Red Tide[1] (Question 6)

Activity	Effected by Red Tide? (%)		How Was Activity Effected? (%)		
	Yes	No	Cut Short	Delay	Go Elsewhere
Saltwater fishing from a boat	53.4	46.6	17.2	56.0	26.9
Saltwater fishing from shore, bridge, or pier	62.5	37.5	22.9	55.0	22.1
Beach-going or swimming	70.0	29.8	23.6	59.3	17.1
Sail/power pleasure boating	53.7	46.3	21.0	55.6	23.4
Personal watercraft use	55.7	44.3	23.1	61.5	15.4
Water skiing	46.8	53.2	18.2	68.2	13.6
Sail-boarding/surfing	61.5	38.5	43.8	50.0	6.3
Scuba diving/snorkeling	47.7	52.3	19.4	64.5	16.1
Kayaking/canoeing	34.6	65.4	14.8	66.7	18.5
Shell/"treasure" hunting	60.6	38.5	30.2	54.8	15.1
Other (See Appendix)	51.5	48.5	23.5	47.1	29.4

[1] Percentages for each source may not add to 100 due to refusals or "don't know" responses.

Most respondents indicated that participation in an activity effected by red tide was delayed until some other time. Interestingly, a significant portion of the respondents indicated that they went somewhere else to engage in the activity. If this participation was relocated outside of the Manatee and Sarasota Counties region (the survey did not ask specifically where the relocated expenditures occurred), the economic activity associated with that participation would be lost to the local economy of the two-county region. The activities with the greatest relocation response were saltwater fishing from a boat (26.9%), saltwater fishing from shore, bridge, or pier (22.1%), and sail/power pleasure boating (23.4%). However, it is worth noting that most respondents indicated that they had either cut short or delayed their water-related activity.

3.6.1.2 Question 6.D Participation Effect Responses by Demographic Strata

Responses to how a red tide event effected respondents' participation in saltwater or beach related activities were disaggregated by demographic strata (Tables 6.25-6.34). Thus, for each type of activity, the percentage distribution of participation across the demographic strata of the respondents is provided. The findings may be useful in better identifying those demographic categories that should be targeted by educational efforts. In general, the distribution of response effect by strata resembles that seen for the group in aggregate. However, some notable differences were observed. For example, over 47% of respondents who reside furthest from the coast (east of I-75) chose an alternate site for their saltwater fishing from a boat, while only about 22% of those respondents who reside nearer the coast did likewise (Table 6.25). In addition, only about 36% of respondents between the ages of 18 and 24 delayed their visit to a beach, preferring instead to cut short the activity or go elsewhere (Table 6.27). In contrast, approximately 60% of respondents in the remaining age categories chose to

delay their visit to a beach during the red tide. Comparisons between responses across other demographic strata can be made for the remaining activities.

3.7 Beach or Bay-front Business Patronage (Questions 7 and 7.A) and Frequency (Question 7. B): Those Respondents Aware of Red Tide

Respondents were also asked to provide information on their patronage of beach and bay-front businesses. Respondents were given a list of businesses to consider and indicate which types of beach and bay-front businesses they patronize within the Manatee and Sarasota Counties region. Similar to Question 6, respondents were then asked to provide an estimate of their frequency of patronage during a typical month (as opposed to a yearly basis as solicited for Question 6) for each business type identified. Approximately 80% of the respondents indicated that they did patronize beach and bay-front businesses within the region. The remaining 20.1% indicated that they did not patronize businesses that are adjacent to the beach or bay-front within the Manatee and Sarasota Counties region.

Of those respondents that indicated they patronized at least one of these businesses types, the patronage percentage for each activity is given in Table 3.7. In addition, the distribution of patronage frequency is provided for a set of discrete frequency categories (e.g., 0, 1, 2-4, 5-8, and greater than 8 times per month). Most respondents who indicated that they did patronize beach and bay-front businesses, most indicated that they visited restaurants (98.5%) (Table 3.7). And of these respondents, 82.1% (541) visited beach and bay-front restaurants 1-4 times per month. Only 17.1% of the respondents indicated patronizing hotels/motels near the waterfront in the Manatee and Sarasota Counties region during a typical month. Similarly, approximately two-thirds of the respondents indicated that they did not patronize either

fish/seafood or other retail stores in the region. Of those that did, most visited these stores 1-4 times per month.

Table 3.7. Percentages[1] and Frequencies[2] for Respondent Beach and Bay-Front Business Patronage in Sarasota and Manatee Counties (Question 7)

Business Type	Patronize Business Type?		Frequency (#) Per Average Month				
	Yes (%)	No (%)	0	1	2-4	5-8	>8
Restaurants	98.5	1.5	11	302	239	66	52
Lodging (hotels/motels)	17.1	82.9	592	58	14	4	3
Fish/Seafood Retail Stores	35.0	64.8	463	105	95	17	13
Other Retail Stores	38.2	61.6	440	110	75	22	45
Other (see Appendix)	1.5	98.5	703	5	3	1	0

[1] Percentages for each source may not add to 100 due to refusals or "don't know" responses.
[2] The total for the frequency values represents only those respondents that patronize at least one business type during a typical month.

3.7.1 The Effect of Red Tide on Patronage of Beach and Bay-front Businesses (Question 7.C-D): Those Respondents Aware of Red Tide

A working hypothesis of this study is that the presence of a red tide will reduce the patronage of businesses located near the water. Those respondents that indicated they visited beach and bay-front businesses were asked if the presence of a red tide had ever affected their patronage of businesses near the beach or bay-front (Table 3.7.1).

3.7.1.1 Question 7.C-D Responses in Total

About one-third (35.7%) of those respondents who visit restaurants located near the beach or bay-front indicated that red tide had at some time affected their patronage. About a quarter of the respondents who patronize the other business types indicated that their visitation to these businesses had been effected by red tide. For example, 23.0%,

28.8%, and 24.2% of respondents who patronize hotels/motels, fish/seafood stores, and other retail stores, respectively, had been affected by red tide.

Table 3.7.1. How Respondents Patronage of Beach and Bay-Front Businesses Were Effected by Red Tide[1] (Question 7)

Business Type	Effected by Red Tide? (%)		How Was Patronage Effected? (%)	
	Yes	No	Postponed	Went Elsewhere
Restaurants	35.7	64.0	37.1	62.9
Lodging (hotels/motels)	23.0	77.0	57.1	42.9
Fish/Seafood Retail Stores	28.8	70.0	63.9	36.1
Other Retail Stores	24.2	75.8	59.1	40.9
Other (see Appendix)	54.5	45.5	83.3	16.7

[1] Percentages for each source may not add to 100 due to refusals or "don't know" responses.

But how did the presence of red tide affect respondents' patronage? Most respondents (62.9%) who visit beach and bay-front restaurants indicated that they took their business elsewhere (Table 3.7.1). Again, the survey did not determine if the expenditures were relocated to a red tide-free area either within or outside the Manatee and Sarasota County area. In contrast, the majority of respondents who patronized other types of businesses indicated that they simply postponed their lodging plans or visits to retail establishments in the area, presumably until the red tide event had ceased. However, 42.9%, 36.1%, and 40.9% of those respondents who patronized hotels/motels, seafood retail stores, and other retail stores took their expenditures elsewhere. If these expenditures were relocated outside of the Manatee and Sarasota Counties area, this relocation of expenditures would represent a loss to the local two-county economy.

3.7.1.2 Question 7. D Responses by Demographic Strata

Responses as to how a red tide event affected respondents' patronage of beach or bay-front businesses were disaggregated by demographic strata (Tables 6.35 – 6.40). Thus, for each type of business, the percentage distribution of patronage-effect responses across the demographic strata of the respondents is provided. In general, the distribution of response effect by strata resembles that seen for the group in aggregate. Some differences in response rates across demographic strata do exist. For example, almost 70% of the respondents with college education or higher go elsewhere to restaurants during a red tide, whereas only about 29% of those respondents who have not completed high school go elsewhere (Table 6.37). A similar pattern is revealed with respect to income. A greater percentage (about 74%) of those respondents with annual household incomes in excess of $75,000 go to restaurants elsewhere during a red tide than those respondents in lower income categories. Comparisons between responses across other demographic strata can be made for the remaining activities.

3.8 Relationship Between Responses to Questions 4 - 5 and Outdoor Activity and Business Patronage Frequency

Responses to statements in Questions 4 and 5 were cross-tabulated with frequency measures for saltwater/beach-related activities and beach/bay-front business patronage. In these comparisons, all saltwater fishing activities were combined into a single "saltwater fishing" category, and activities other than fishing, beach going/swimming, and boating were combined into an "other" category. This cross-tabulation makes possible the comparison of "correct" versus "incorrect" responses to the statements based on participation or patronage frequency levels. The findings may

be useful in better identifying those demographic categories that should be targeted by educational efforts.

Cross tabulations between outdoor activity participation frequencies and Question 4 are given in Tables 6.41 - 6.49. The same tabulations for Question 5 are given in Tables 6.50 – 6.57. Cross tabulations between business patronage frequencies and Question 4 are given in Tables 6.58 – 6.66. The same cross tabulations with respect to Question 5 are given in Tables 6.67-6.74. For example, over 22% of those respondents who visit the beach more than 24 times a year were aware that swimming during a red tide is safe, whereas only about 12% of those respondents who visit the beach 1-6 times a year correctly evaluated the statement (Table 6.57). And although most respondents evaluated statement Question 5.B incorrectly ("False"), fewer of those who visit beach and bay-front restaurants more than 8 times per month evaluated the statement incorrectly as opposed to respondents who visit such restaurants less frequently (Table 6.67).

3.9 Saltwater and Beach-related Activity Participation (Questions 8 and 8.A) and Effect on Participation of Water Quality Conditions (Question 8. C): Those Respondents Not Aware of Red Tide

Those respondents who indicated that they were not aware of red tide by answering "No" to Question 1 were also asked to indicate their participation in saltwater and beach-related activities. Subjecting this set of respondents (who were unaware of red tide) to similar questions as those respondents who were aware of red tide provides a potential basis of comparison between the two groups with respect to participation/frequency in saltwater and beach-related activities and their response to red tide conditions.

Of those respondents who indicated they were not aware of red tide, 36.6% participated in saltwater and beach-related activities. The activities were primarily associated with beach-going/swimming (92.7%). Other activities included saltwater fishing (e.g., 14.6% from a boat and 19.5% otherwise), pleasure boating (22.0%), and shell/"treasure" hunting (22.0%) (Table 3.9.1). The frequency of participation is not

Table 3.9.1. Saltwater and Beach-related Activity Participation Percentages[1] and Observation of Water Quality Conditions[2] by Respondents Not Aware of Red Tide in Sarasota and Manatee Counties (Question 8)

Activity	Participate in Activity?		Ever Notice "Red Tide" Conditions?	
	Yes (%)	No (%)	Yes (%)	No (%)
Saltwater fishing from a boat	14.6	85.4	16.7	83.3
Saltwater fishing from shore, bridge, or pier	19.5	80.5	25.0	75.0
Beach-going or swimming at the beach	92.7	7.3	34.2	63.2
Sail/power pleasure boating	22.0	78.0	22.2	77.8
Personal watercraft use	7.3	92.7	33.3	66.7
Water skiing	0.0	100.0	--	--
Sail-boarding/surfing	2.4	97.6	100.0	0.0
Scuba diving/snorkeling	7.3	92.7	33.3	66.7
Kayaking/canoeing	4.9	95.1	0.0	100.0
Shell/"treasure" hunting	22.0	78.0	33.3	66.7
Other (see Appendix)	0.0	100.0	--	--

[1] Percentages for each source may not add to 100 due to refusals or "don't know" responses.
[2] The total for the frequency values represents only those respondents that participate in at least one activity during a typical year.

reported due to the extremely small number of observations. (Note: these limited data are available from the project investigators upon request). Respondents who were not aware of red tide were asked if they had ever noticed a "reddish color to the water near the beach, dead fish, an offensive odor, and irritation to your eyes or nose" while engaging in saltwater or beach-related activities (Table 3.9.1). The majority of respondents indicated that they had not encountered these conditions. Slightly more than one-third of the respondents engaged in beach going had encountered these conditions. As determined by the sequencing of questions, these individuals were not aware the conditions were characteristic of a red tide. Respondents who had experienced these conditions were then asked if these conditions had ever effected their participation in specific activities; however, the low number of observations prevented the development of any conclusions. (Note: these limited data are available from the project investigators upon request).

3.10 Beach and Bay-front Business Patronage (Questions 9 and 9.A) and Effect on Patronage of Water Quality Conditions (Question 9. C): Those Respondents Not Aware of Red Tide

Those respondents who indicated that they were not aware of red tide by answering "No" to Question 1 were also asked to indicate their patronage of beach and bay-front businesses in the Manatee and Sarasota Counties area. Subjecting this set of respondents (who were unaware of red tide) to similar questions as those respondents who were aware of red tide provides a potential basis of comparison between the two groups with respect to patronage/frequency with beach and bay-front businesses and their response to red tide conditions.

Of those respondents who indicated they were not aware of red tide, 53.6% patronized beach and bay-front businesses. Patronage was primarily associated with

restaurants (96.7%), with fewer respondents visiting hotels/motels (13.3%), fish /seafood retail stores (18.3%), and other retail stores (28.3%) (Table 3.10). The frequency of patronage is not reported due to the extremely small number of observations. (Note: these limited data are available from the project investigators upon request).

Table 3.10. Patronage of Beach and Bay-Front Businesses Percentages[1] and Observation of Water Quality Conditions[2] by Respondents Not Aware of Red Tide in Sarasota and Manatee Counties (Question 9)

Business Type	Patronage?		Ever Notice "Red Tide" Conditions?	
	Yes (%)	No (%)	Yes (%)	No (%)
Restaurants	96.7	3.3	15.5	84.5
Lodging (hotels/motels)	13.3	86.7	12.5	75.0
Fish/Seafood Retail Stores	18.3	81.7	9.1	90.9
Other Retail Stores	28.3	71.7	0.3	99.7
Other (see Appendix)	1.7	98.3	0.0	100.0

[1] Percentages for each source may not add to 100 due to refusals or "don't know" responses.
[2] The total for the frequency values represents only those respondents that participate in at least one activity during a typical year.

Respondents who were not aware of red tide were asked if they had ever noticed a "reddish color to the water near the beach, dead fish, an offensive odor, and irritation to your eyes or nose" while attempting to patronize beach and bay-front businesses (Table 3.10). The majority of respondents indicated that they had not encountered these conditions. Of those respondents visiting restaurants, 15.5% had encountered these conditions. As determined by the sequencing of questions, these individuals were not aware of the conditions that are characteristic of a "red tide". Respondents who had experienced these conditions were then asked if these conditions had ever affected their

patronage of beach and bay-front businesses; however, the low number of observations prevented the development of any conclusions. (Note: these limited data are available from the project investigators).

3.11 Summary

The survey findings provide some detailed insight into the level of awareness and knowledge of red tide as natural phenomena by residents of the Manatee and Sarasota Counties region. Almost 90% of the survey respondents were aware of red tide. Most had learned about red tide via the TV and local newspaper. Few had obtained any information from other forms of educational venues (i.e. educational brochures, internet sites or workshops). Most respondents associated red tide events with fish kills, but the majority did not associate red tides with the more common human health symptoms, such as burning eyes, nasal irritation, or coughing. The knowledge level was determined via a complement of evaluative statements regarding the biological nature of red tides and the effect of red tides on human health and the environment. In general, respondents were able to correctly evaluate these statements in a true/false format. A notable exception was that most respondents did not know red tide blooms originate in offshore waters. In addition, most respondents erroneously believed that locally caught finfish and crustaceans were unsafe to eat during a red tide.

The survey also sought to determine the effect red tide events have had on participation in outdoor activities and local business patronage. Respondents were asked to indicate which saltwater/beach-related activities in which they participate and the types of local beach/bay-front businesses they patronize. Respondents also provided estimates of the frequency in which they participate in the identified outdoor activities and/or patronize local businesses. Although 90% of the respondents participated in

beach going/swimming, only about one-third of the respondents participated in fishing, boating, or shell hunting, while at most about 20% of respondents participated in any other form of activity. In addition, about 99% of respondents patronized beach/bay-front restaurants, while about one-third of the respondents patronized all types of retail stores. Less than 20% patronized local lodging establishments.

Respondents were then asked if red tide conditions had ever effected their activity participation and business patronage. And if so, in what manner had this effect manifested itself. With respect to participation in beach/saltwater related activities, most respondents affected by a red tide indicated they delayed their participation during a red tide event. However, over 20% of those participating in fishing and boating engaged in their activity in some other location. With respect to business patronage, almost two-thirds of the respondents who visited beach and bay-front restaurants and were affected by a red tide went elsewhere during a red tide, whereas the respondents typically postponed their patronage of lodging facilities, seafood retail shops, and other retail establishments. Similar questions were posed to respondents who were unaware of red tide but had experienced red tide-like conditions. Unfortunately, too few observations were obtained to develop meaningful conclusions regarding the effect on these respondents' participation and patronage patterns.

Section 4.0: Conclusions

This study attempted to address two major objectives: (1) develop and utilize a methodology for measuring the effect red tide events have on local business communities in two Florida locations and (2) assess the level of red tide awareness and knowledge possessed by adult residents in Sarasota and Manatee Counties. The study successfully addressed these objectives.

Utilizing existing secondary business sales data as collected by the Florida Department of Revenue (FDOR) was deemed to be the most appropriate data set by which to measure any changes in business activity resulting from red tide events. The econometric analysis by which sales data were regressed against a variety of independent variables, including the presence of red tide, provided mixed results. Statistically significant declines in business activity associated with the presence of red tide was found in the Ft. Walton Beach/Destin area, in contrast to an earlier study of red tides and the barrier island business communities in Sarasota/Manatee Counties area (Adams, et al., 2000a). This may be a function of limitations to the data and/or the nature of the local economy. The former may be explained by the temporal and geographic resolution of the available FDOR data being too coarse (i.e., monthly across several zip code regions) to allow definition of an environmental condition that can change daily and be site specific within a zip code or county region. The latter may be a function of the difference in expenditure distribution potential within a diverse economy (such as Sarasota/Manatee Counties) versus a smaller, less complex economy (such as Ft. Walton Beach/Destin). With less local options, residents may be more likely to either not spend money during a red tide or be forced to make expenditures elsewhere. Thus, the less diverse economy may be more vulnerable to a red tide.

Although most respondents to the telephone survey were aware of red tide events, educational opportunities exist. Misconceptions exist particularly regarding the health and environmental effects of red tide events. The study provides a wealth of information on the resident population within the Sarasota/Manatee Counties region that may provide some useful guidance in the further improvement of existing red tide educational programs and materials. In addition, the survey provides information about

the patterns of outdoor activity participation and business patronage by locals residents. Interestingly, the manner in which a red tide effects these participation and patronage patterns suggests a sizable portion of the respondents involved in water related activities and water-front business patronage take their expenditures elsewhere during a red tide. Thus, even though the initial test for changes in business activities during a red tide found no statistically significant declines, the evidence suggests people take their money elsewhere during a red tide. Corroborating this finding is the analysis on beach attendance that found a strong negative relationship between beach attendance and red tide occurrence (Adams, et al., 2000a).

Completion of the study provided insight into future research needs concerning the economic consequences of red tide, which are discussed below:

(1) Given the apparent limitations on data available for measuring the changes in local expenditures associated with a red tide, a program for collecting business data on a much finer resolution is needed. This study found that most business owners were not supportive of any program that would require them to collect additional data. Thus, a data monitoring or collection program will need to focus on developing a method to utilize data currently archived by local businesses. Such a program should be explored in more depth. The data produced by such a program would help overcome issues related to temporal and geographic data resolution.

(2) A more accurate proxy of red tide occurrence should be developed. Such a proxy would better allow the delineation of time periods when red tide effects are most prominent, and thus more likely to cause a measurable impact on local outdoor activity, business patronage, and spending

behavior. Previous attempts by Adams, et al. (2000a) were unsuccessful. The temporal resolution of an intensity-related proxy will need to match that for business activities data. Otherwise, assessing the effect of a more acute red tide may not be possible. More frequent and consistent red tide data will be needed.

(3) A method to better describe the temporal and geographic redistribution of expenditures as a result of a red tide is needed. At present, any measurable changes in local expenditures provide insight into only the initial changes in expenditures. Assessing the true economic impact to the region is only possible when the eventual time and location of those expenditures disrupted by red tide can be described. Until then, the true economic impact of a red tide event to the local economy (i.e., zip code, city, county, etc.) will be unknown. A data monitoring/collection program as discussed in (1) would be a key component of this effort.

(4) A more thorough analysis of the awareness, knowledge, and activity/patronage patterns of survey respondents is needed. Such an analysis will help better define the improvements that can be made in the existing educational materials and programs related to red tide.

Section 5.0: Literature Cited

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Section 6.0: Appendices

A. **Copy of Telephone Survey Instrument**

B. **Tables 6.1 – 6.72**

C. **Responses to "Other" on survey instrument questions**

A. Copy of Survey Instrument

Time Began _____ **ID No.** ____ ____ ____ ____

Time Ended _____ Int. No. _____ _____
Total Time _____ County _____

Hello, my name is _____ and I am calling you from the Florida Survey Research Center at the University of Florida. In cooperation with the Florida Sea Grant Program, we are conducting a survey of the opinions of Florida residents regarding coastal environmental issues in Florida. This is not a sales call and your answers are completely confidential. You may stop the interview at any time. May I speak to the person over 18 with the next birthday?
(If individual is not available, please get name and a time to call back _____.)

1. Are you aware of the coastal condition known as "red tide"?	Yes 1 (Go to Q2) / No 2 / DK 8 (...Go to Q8....)
2. From what informational sources have you learned about "red tide"?	Yes / No / DK / Ref
A. TV	1 2 8 9
B. Radio	1 2 8 9
C. Newspaper	1 2 8 9
D. Informational Brochure	1 2 8 9
E. Internet/Website	1 2 8 9
F. Workshop/Meeting	1 2 8 9
G. Friends/Family	1 2 8 9
H. Other _____	1 2 8 9
3. How would you describe the effects of a red tide event? **[MARK ALL THAT APPLY; DO NOT READ]**	Mentioned / Didn't Mention
A. water near shore turns a reddish color	1 0
B. kills fish	1 0
C. causes eyes to water/burn	1 0
D. causes nasal irritation/coughing	1 0
E. has an offensive odor	1 0
F. Other _____	1 0

4. Next, I will read you a list of statements about the nature of red tide, please tell me if each statement is true or false.

	True	False	DK	Ref
A. Red tides are caused by tiny marine plankton	1	2	8	9
B. Red tides are naturally occurring	1	2	8	9
C. The causes of red tide are well known	2	1	8	9
D. Red tides occur mostly during fall and winter	1	2	8	9
E. Red tides only occur in Florida	2	1	8	9
F. Red tides begin in bays, estuaries, and near the beach	2	1	8	9
G. Red tides never occurred until recently	2	1	8	9
H. Red tides can be predicted with total accuracy	2	1	8	9
I. Red tides never last longer than 1 to 2 weeks	2	1	8	9

5. Next, I'll read you a list of statements about the health and environmental consequences of red tide. Please tell me if each is true or false.

	True	False	DK	Ref
A. Locally caught oysters & clams are safe to eat during a red tide	2	1	8	9
B. Locally caught fin-fish are safe to eat during a red tide	1	2	8	9
C. Locally caught shrimp & crabs are safe to eat during a red tide	1	2	8	9
D. Red tide toxin is in the water and in the air	1	2	8	9
E. Red tide causes lasting health problems for people	2	1	8	9
F. Red tides can be controlled by chemical treatments	2	1	8	9
G. Red tides only effect those people in the water or at the beach	2	1	8	9
H. It is safe for humans to swim in a red tide	1	2	8	9

Next, we would like to ask you some questions about saltwater and beach-related activities.

6. Do you engage in saltwater or beach-related activities within the Sarasota and Manatee County area?

Yes	No	DK	Ref
1	2	8	9
(Go to Q6A)	(.....Go to Q7.....)		

IF YES:
6A. Please indicate which of the following saltwater or beach-related activities you participate in:

IF YES:
6B. How many times, on average, do you participate in _____ each year?

6C. Has red tide ever effected your participation in _____ ?

IF YES:
6D. How did red tide effect your activities, did it cut short your activity, postpone your activity, or cause you to go somewhere else?

	Q6A Participate				Q6B	Q6C			Q6D		
	Yes	No	DK	Ref	#Times/Yr.	Red Tide Yes	No	DK/R	Cut Short	Delay	Some-where Else
A. Saltwater fishing from a boat	1	2	8	9	_____	1	2	8/9	1	2	3
B. Saltwater fishing from shore or a bridge or pier	1	2	8	9	_____	1	2	8/9	1	2	3
C. Beach-going/Swimming at the beach	1	2	8	9	_____	1	2	8/9	1	2	3
D. Sail or power pleasure boating	1	2	8	9	_____	1	2	8/9	1	2	3
E. Personal watercraft use	1	2	8	9	_____	1	2	8/9	1	2	3
F. Water skiing	1	2	8	9	_____	1	2	8/9	1	2	3
G. Sail-boarding/Surfing	1	2	8	9	_____	1	2	8/9	1	2	3
H. Scuba diving/Snorkeling	1	2	8	9	_____	1	2	8/9	1	2	3
I. Kayaking/Canoeing	1	2	8	9	_____	1	2	8/9	1	2	3
J. Shell or "treasure" hunting	1	2	8	9	_____	1	2	8/9	1	2	3
K. Other _____	1	2	8	9	_____	1	2	8/9	1	2	3

Next, we would like to ask you about establishments near the beach and y areas.

7. Do you ever go to restaurants, hotels, retail stores or other businesses located near the beach or bay-front in the Sarasota and Manatee County area?

Yes	No	DK	Ref
1	2	8	9
(Go to Q7A)	(.....Go to Q10.....)		

IF YES:
7A. Please indicate which of the following types of businesses you have visited at the beach or bay-front:

7B. How many times, on average, do you visit beach or bay-front _____ each month?

7C. Has red tide ever effected your patronage of beach or bay-front _____?

IF YES:
7D. How did red tide effect your patronage, did it postpone your activity, or cause you to go somewhere else?

	Q7A Participate				Q7B	Q7C			Q7D	
	Yes	No	DK	Ref	#Times per mon	Red Tide Yes	No	DK/R	Effects Post-Poned	Went Some-where Else
A. Restaurants	1	2	8	9	_____	1	2	8/9	1	2
B. Lodging (hotels/motels)	1	2	8	9	_____	1	2	8/9	1	2
C. Fish/Seafood Retail Stores	1	2	8	9	_____	1	2	8/9	1	2
D. Other Retail Stores	1	2	8	9	_____	1	2	8/9	1	2
E. Other _____	1	2	8	9	_____	1	2	8/9	1	2

GO TO Q10....LAST PAGE !

IF NO ON Q1 START HERE: First, we would like to ask you some questions about salt-water and beach related activities.

8. Do you engage in saltwater or beach-related activities within the Sarasota and Manatee County area?

Yes	No	DK	Ref
1	2	8	9
(Go to Q8A)	(.....Go to Q9.....)		

IF YES:
8A. Please indicate which of the following saltwater or beach-related activities you participate in:

IF YES:
8B. How many times, on average, do you participate in _____ each year?

8C. When you were participating in saltwater or beach-related activities, did you ever notice a reddish color to the water near the beach, dead fish, an offensive odor, and irritation to your eyes and nose?

IF YES:
8D. Did this effect your participation in _____?

IF YES:
8E. How did this effect your activities, did it cut short your activity, postpone your activity, or cause you to go somewhere else?

	Q8A Participate			Q8B	Q8C Red Tide			Q8D Effect			Q8E		
	Yes	No	DK/Ref	#Times/Yr.	Yes	No	DK/R	Yes	No	DK/R	Cut Short	Delay	Some where Else
A. Saltwater fishing from a boat	1	2	8/9	_____	1	2	8/9	1	2	8/9	1	2	3
B. Saltwater fishing from shore or a bridge or pier	1	2	8/9	_____	1	2	8/9	1	2	8/9	1	2	3
C. Beach-going/Swimming at the beach	1	2	8/9	_____	1	2	8/9	1	2	8/9	1	2	3
D. Sail or power pleasure boating	1	2	8/9	_____	1	2	8/9	1	2	8/9	1	2	3
E. Personal watercraft use	1	2	8/9	_____	1	2	8/9	1	2	8/9	1	2	3
F. Water skiing	1	2	8/9	_____	1	2	8/9	1	2	8/9	1	2	3
G. Sail-boarding/Surfing	1	2	8/9	_____	1	2	8/9	1	2	8/9	1	2	3
H. Scuba diving/Snorkeling	1	2	8/9	_____	1	2	8/9	1	2	8/9	1	2	3
I. Kayaking/Canoeing	1	2	8/9	_____	1	2	8/9	1	2	8/9	1	2	3
J. Shell or "treasure" hunting	1	2	8/9	_____	1	2	8/9	1	2	8/9	1	2	3
K. Other _____	1	2	8/9	_____	1	2	8/9	1	2	8/9	1	2	3

Next, we would like to ask you about establishments near the beach and bay-front areas.

9. Do you ever go to restaurants, hotels, retail stores or other businesses located near the beach or bay-front in the Sarasota and Manatee County area?

Yes	No	DK	Ref
1	2	8	9
(Go to Q9A)	(.....Go to Q10.....)		

IF YES:

9A. Please indicate which of the following types of businesses you have visited at the beach or bay-front:

9B. How many times, on average, do you visit beach or bay-front _____ each month?

9C. When you were in the beach or bay-front area, did you ever notice a reddish color to the water near the beach, dead fish, an offensive odor, and irritation to your eyes and nose?

IF YES

9D. Did this ever effect your patronage of beach or bay-front _____ ?

IF YES:

9E. How this effect your patronage, did it postpone your activity, or cause you to go somewhere else?

	Q9A			Q9B	Q9C			Q9D			Q9E	
	Visit			#Times	Red Tide			Effect			Post-	Some-
	Yes	No	DK/Ref	per Mon	Yes	No	DK/R	Yes	No	DK/R	poned	where else
A. Restaurants	1	2	8/9	_____	1	2	8/9	1	2	8/9	1	2
B. Lodging (hotels/motels)	1	2	8/9	_____	1	2	8/9	1	2	8/9	1	2
C. Fish/Seafood Retail Stores	1	2	8/9	_____	1	2	8/9	1	2	8/9	1	2
D. Other Retail Stores	1	2	8/9	_____	1	2	8/9	1	2	8/9	1	2
E. Other _____	1	2	8/9	_____	1	2	8/9	1	2	8/9	1	2

Finally, we have a few demographic questions for statistical purposes.

10.	How many months of the year do you reside in the Sarasota and Manatee Counties area?	1 2 3 4 5 6 7 8 9 10 11 12 88 99 DK Ref
11.	How many years have you resided in the Sarasota and Manatee Counties area?	_____ 88 99 DK Ref
12.	What is the zip code of your residence in the Sarasota and Manatee counties area?	_ _ _ _ _ 88888 99999 DK Ref
13.	Gender – [DON'T ASK, JUST RECORD].	Male 1 Female 2
14.	What is the highest level of education you have completed?	8th grade or less .....1 Some high school .....2 High School graduate .....3 Technical/Vocational .....4 Some college .....5 College graduate .....6 Graduate/Professional School....7 Refused 9
15.	In what year were you born?	_ _ _ _ 99 Ref
16.	And, just to make sure that we have a representative sample, would you please tell me your race?	Black.....1 White.....2 Asian.....3 American Indian.....4 Other.....5 Refused.....9
17.	And would you say that you are of Hispanic ancestry?	Yes 1 No 2 DK 8 Ref 9
18.	Which of the following categories best represents your total household income before taxes?	$20,000 or less ..... 1 $20,001 to $35,000 .....2 $35,001 to $50,000 .....3 $50,001 to $75,000 .....4 Over $75,000 .....5 DK..... 8 Refused.....9

Thank you for completing the survey. Have a pleasant evening (day).

_____ _____

Edited By Errors

B. Tables 6.1 – 6.74

Table 6.1 Gross Taxable Sales for Hotels and Restaurants (combined zip codes).

YR	MTH	KC	REV	KC	REV	HUR	RT	PC
1995	J	8	3976532	39	3207248	0	0	6
1995	F	8	4786060	39	4406134	0	0	4
1995	M	8	6897902	39	6533157	0	0	9
1995	A	8	7846797	39	8093475	0	0	8
1995	M	8	8326520	39	9581008	0	0	7
1995	J	8	9938196	39	16196445	0	0	3
1995	J	8	12057218	39	20443394	0	0	9
1995	A	8	8956727	39	9400656	1	0	2
1995	S	8	6789018	39	5227226	1	0	4
1995	O	8	4194089	39	1780557	0	0	16
1995	N	8	4311040	39	1854097	0	0	13
1995	D	8	5097537	39	2152145	0	0	6
1996	J	8	4528767	39	2971757	0	0	4
1996	F	8	4930239	39	3445458	0	0	6
1996	M	8	6837748	39	5179335	0	0	9
1996	A	8	7260333	39	6204899	0	0	8
1996	M	8	8805129	39	8926862	0	0	1
1996	J	8	10909635	39	14143855	0	1	6
1996	J	8	12126343	39	18116549	0	0	8
1996	A	8	10244347	39	11244761	0	0	9
1996	S	8	7661194	39	7864285	0	0	5
1996	O	8	6376895	39	5237072	0	1	3
1996	N	8	5476817	39	2715755	0	0	2
1996	D	8	5316326	39	2741970	0	0	5
1997	J	8	5500248	39	3579738	0	0	7
1997	F	8	5924887	39	4894374	0	0	7
1997	M	8	8677416	39	7913788	0	0	4
1997	A	8	8798299	39	9093061	0	0	6
1997	M	8	9969698	39	11038478	0	0	8
1997	J	8	12042718	39	18986887	0	0	6
1997	J	8	13719514	39	22344534	0	0	16
1997	A	8	12351376	39	18469061	0	0	5
1997	S	8	8292360	39	8416396	0	0	3
1997	O	8	6896460	39	6003272	0	0	3
1997	N	8	5459213	39	3447455	0	0	9
1997	D	8	5627822	39	3061097	0	0	5
1998	J	8	6025272	39	4194355	0	0	10
1998	F	8	6291038	39	5524570	0	0	5
1998	M	8	8800239	39	7032798	0	0	8
1998	A	8	10416023	39	10708324	0	0	2
1998	M	8	11857738	39	13028979	0	0	1
1998	J	8	14325851	39	21062152	0	0	1
1998	J	8	14860120	39	27195211	0	0	10
1998	A	8	14102046	39	17722166	0	0	2

1998	S	8	9477066	39	8664136	1	0	20
1998	O	8	9052232	39	6317768	0	0	0
1998	N	8	7207653	39	3576438	0	0	4
1998	D	8	7204744	39	3413093	0	0	4
1999	J	8	6615456	39	4455563	0	0	6
1999	F	8	8154464	39	5542471	0	0	1
1999	M	8	11718922	39	8101890	0	0	5
1999	A	8	13096779	39	11906705	0	0	1
1999	M	8	14652055	39	13470120	0	0	5
1999	J	8	18090713	39	23106183	0	0	6
1999	J	8	21135015	39	32099621	0	0	9
1999	A	8	16442184	39	19164804	0	1	5
1999	S	8	12733276	39	11042130	0	1	1
1999	O	8	9966424	39	7400244	0	1	3
1999	N	8	7709562	39	4068140	0	1	2
1999	D	8	8276295	39	3701815	0	1	4
2000	J	8	7835000	39	5059252	0	1	
2000	F	8	9017769	39	6872989	0	0	
2000	M	8	14691945	39	11075316	0	0	
2000	A	8	15219003	39	14589769	0	0	
2000	M	8	17176115	39	12951120	0	0	
2000	J	8	21133945	39	29185236	0	0	
2000	J	8	23246737	39	35274957	0	0	
2000	A	8	16823560	39	19842526	0	0	
2000	S	8	12261941	39	13029529	1	1	
2000	O	8	11714006	39	7479981	0	1	
2000	N	8	8092528	39	4283222	0	1	
2000	D	8	9002304	39	4250132	0	0	

YR= year; MTH= month; KC= kind code; REV= gross taxable sales; HUR= hurricane/storm dummy; RT= red tide dummy; PC= precipitation.

Table 6.2 Gross Taxable Sales for Hotels (zip codes 32541 and 32548).

YR	MTH	KC	ZIP	REV	ZIP	REV	HUR	RT	PC
1995	J	8	32541	1793873	32548	2864163	0	0	6
1995	F	8	32541	2154056	32548	3370707	0	0	4
1995	M	8	32541	2857608	32548	3975240	0	0	9
1995	A	8	32541	4786275	32548	4108509	0	0	8
1995	M	8	32541	5803208	32548	4327995	0	0	7
1995	J	8	32541	9485243	32548	4847830	0	0	3
1995	J	8	32541	12156111	32548	5487016	0	0	9
1995	A	8	32541	4573743	32548	4545733	1	0	2
1995	S	8	32541	2870359	32548	3939052	1	0	4
1995	O	8	32541	681885	32548	3020818	0	0	16
1995	N	8	32541	640660	32548	3204483	0	0	13
1995	D	8	32541	988247	32548	3632864	0	0	6
1996	J	8	32541	1589254	32548	3428231	0	0	4
1996	F	8	32541	2140637	32548	3536385	0	0	6
1996	M	8	32541	3200714	32548	3960685	0	0	9
1996	A	8	32541	4016392	32548	3624897	0	0	8
1996	M	8	32541	5216527	32548	4315327	0	0	1
1996	J	8	32541	8728224	32548	4594531	0	1	6
1996	J	8	32541	11164750	32548	4820758	0	0	8
1996	A	8	32541	5546722	32548	4503710	0	0	9
1996	S	8	32541	4542519	32548	3855601	0	0	5
1996	O	8	32541	2719690	32548	3450590	0	1	3
1996	N	8	32541	927188	32548	3251004	0	0	2
1996	D	8	32541	1316905	32548	3089883	0	0	5
1997	J	8	32541	1942050	32548	2862110	0	0	7
1997	F	8	32541	2538841	32548	3348925	0	0	7
1997	M	8	32541	4592602	32548	3886687	0	0	4
1997	A	8	32541	5202796	32548	3944666	0	0	6
1997	M	8	32541	6496237	32548	3941376	0	0	8
1997	J	8	32541	12265404	32548	4684368	0	0	6
1997	J	8	32541	15647702	32548	4892129	0	0	16
1997	A	8	32541	11855809	32548	4428842	0	0	5
1997	S	8	32541	5035779	32548	3663146	0	0	3
1997	O	8	32541	3213630	32548	3224009	0	0	3
1997	N	8	32541	1558337	32548	2774444	0	0	9
1997	D	8	32541	1340773	32548	3171810	0	0	5
1998	J	8	32541	2332340	32548	3352508	0	0	10
1998	F	8	32541	2896050	32548	3344799	0	0	5
1998	M	8	32541	4219183	32548	3787440	0	0	8
1998	A	8	32541	6746849	32548	4112266	0	0	2
1998	M	8	32541	7821202	32548	4438861	0	0	1
1998	J	8	32541	13777917	32548	4728831	0	0	1
1998	J	8	32541	17369268	32548	4382687	0	0	10
1998	A	8	32541	11423042	32548	4275615	0	0	2

1998	S	8	32541	5200770	32548	3293234	1	0	20
1998	O	8	32541	3388104	32548	3616137	0	0	0
1998	N	8	32541	1673647	32548	3267991	0	0	4
1998	D	8	32541	1641952	32548	3486634	0	0	4
1999	J	8	32541	2585029	32548	3002756	0	0	6
1999	F	8	32541	3223012	32548	3416590	0	0	1
1999	M	8	32541	4921949	32548	4207200	0	0	5
1999	A	8	32541	7379652	32548	4220977	0	0	1
1999	M	8	32541	8333906	32548	4312523	0	0	5
1999	J	8	32541	15410266	32548	5084896	0	0	6
1999	J	8	32541	21011689	32548	5624730	0	0	9
1999	A	8	32541	12227560	32548	4890460	0	1	5
1999	S	8	32541	6926629	32548	4264016	0	1	1
1999	O	8	32541	4101009	32548	3633655	0	1	3
1999	N	8	32541	2130849	32548	3308777	0	1	2
1999	D	8	32541	1870277	32548	3728646	0	1	4
2000	J	8	32541	2994077	32548	3749698	0	1	
2000	F	8	32541	4040019	32548	3867460	0	0	
2000	M	8	32541	6491805	32548	4776838	0	0	
2000	A	8	32541	9676301	32548	4882631	0	0	
2000	M	8	32541	7361230	32548	5374132	0	0	
2000	J	8	32541	19567659	32548	6132618	0	0	
2000	J	8	32541	23207950	32548	6585124	0	0	
2000	A	8	32541	12754229	32548	5183574	0	0	
2000	S	8	32541	7645365	32548	4618343	1	1	
2000	O	8	32541	4334227	32548	4703611	0	1	
2000	N	8	32541	2159531	32548	3312601	0	1	
2000	D	8	32541	2054250	32548	4015384	0	0	

YR= year; MTH= month; KC= kind code; ZIP= zip code; REV= gross taxable sales; HUR= hurricane/storm dummy; RT= red tide dummy; PC= precipitation.

Table 6.3 Gross Taxable Sales for Restaurants (zip codes 32541 and 32548).

YR	MTH	KC	ZIP	REV	ZIP	REV	HUR	RT	PC
1995	J	39	32541	1924697	32548	2864163	0	0	6
1995	F	39	32541	2308688	32548	3370707	0	0	4
1995	M	39	32541	3926481	32548	3975240	0	0	9
1995	A	39	32541	4667009	32548	4108509	0	0	8
1995	M	39	32541	5004739	32548	4327995	0	0	7
1995	J	39	32541	6134809	32548	4847830	0	0	3
1995	J	39	32541	7912168	32548	5487016	0	0	9
1995	A	39	32541	5475564	32548	4545733	1	0	2
1995	S	39	32541	3639804	32548	3939052	1	0	4
1995	O	39	32541	1885393	32548	3020818	0	0	16
1995	N	39	32541	1755182	32548	3204483	0	0	13
1995	D	39	32541	2186483	32548	3632864	0	0	6
1996	J	39	32541	1823849	32548	3428231	0	0	4
1996	F	39	32541	2147301	32548	3536385	0	0	6
1996	M	39	32541	3776505	32548	3960685	0	0	9
1996	A	39	32541	4286617	32548	3624897	0	0	8
1996	M	39	32541	5291803	32548	4315327	0	0	1
1996	J	39	32541	7052883	32548	4594531	0	1	6
1996	J	39	32541	8141292	32548	4820758	0	0	8
1996	A	39	32541	6609374	32548	4503710	0	0	9
1996	S	39	32541	4522367	32548	3855601	0	0	5
1996	O	39	32541	3593199	32548	3450590	0	1	3
1996	N	39	32541	2808418	32548	3251004	0	0	2
1996	D	39	32541	2782124	32548	3089883	0	0	5
1997	J	39	32541	3054906	32548	2862110	0	0	7
1997	F	39	32541	3127204	32548	3348925	0	0	7
1997	M	39	32541	5383226	32548	3886687	0	0	4
1997	A	39	32541	5508873	32548	3944666	0	0	6
1997	M	39	32541	6665158	32548	3941376	0	0	8
1997	J	39	32541	8402933	32548	4684368	0	0	6
1997	J	39	32541	9654389	32548	4892129	0	0	16
1997	A	39	32541	8326311	32548	4428842	0	0	5
1997	S	39	32541	5066692	32548	3663146	0	0	3
1997	O	39	32541	4106239	32548	3224009	0	0	3
1997	N	39	32541	3060722	32548	2774444	0	0	9
1997	D	39	32541	2765296	32548	3171810	0	0	5
1998	J	39	32541	2963811	32548	3352508	0	0	10
1998	F	39	32541	3317646	32548	3344799	0	0	5
1998	M	39	32541	5400852	32548	3787440	0	0	8
1998	A	39	32541	6734823	32548	4112266	0	0	2
1998	M	39	32541	7935532	32548	4438861	0	0	1
1998	J	39	32541	10087981	32548	4728831	0	0	1
1998	J	39	32541	11079378	32548	4382687	0	0	10

1998	A	39	32541	10096876	32548	4275615	0	0	2
1998	S	39	32541	6197732	32548	3293234	1	0	20
1998	O	39	32541	5568019	32548	3616137	0	0	0
1998	N	39	32541	3939662	32548	3267991	0	0	4
1998	D	39	32541	3718585	32548	3486634	0	0	4
1999	J	39	32541	3612699	32548	3002756	0	0	6
1999	F	39	32541	4737875	32548	3416590	0	0	1
1999	M	39	32541	7511722	32548	4207200	0	0	5
1999	A	39	32541	8875802	32548	4220977	0	0	1
1999	M	39	32541	10339532	32548	4312523	0	0	5
1999	J	39	32541	13005817	32548	5084896	0	0	6
1999	J	39	32541	15510285	32548	5624730	0	0	9
1999	A	39	32541	11551723	32548	4890460	0	1	5
1999	S	39	32541	8469260	32548	4264016	0	1	1
1999	O	39	32541	6332769	32548	3633655	0	1	3
1999	N	39	32541	4400786	32548	3308777	0	1	2
1999	D	39	32541	4547649	32548	3728646	0	1	4
2000	J	39	32541	4085302	32548	3749698	0	1	
2000	F	39	32541	5150309	32548	3867460	0	0	
2000	M	39	32541	9915107	32548	4776838	0	0	
2000	A	39	32541	10336372	32548	4882631	0	0	
2000	M	39	32541	11801982	32548	5374132	0	0	
2000	J	39	32541	15001327	32548	6132618	0	0	
2000	J	39	32541	16661614	32548	6585124	0	0	
2000	A	39	32541	11639986	32548	5183574	0	0	
2000	S	39	32541	7643598	32548	4618343	1	1	
2000	O	39	32541	7010395	32548	4703611	0	1	
2000	N	39	32541	4779927	32548	3312601	0	1	
2000	D	39	32541	4986919	32548	4015384	0	0	

YR= year; MTH= month; KC= kind code; ZIP= zip code; REV= gross taxable sales; HUR= hurricane/storm dummy; RT= red tide dummy; PC= precipitation.

Table 6.4 Gross Monthly Revenue Sales Regression Coefficients for Restaurants and Hotels for the Combined Zip Codes.

Variables	OLS	GLS	OLS	GLS	OLS	GLS	OLS	GLS
	Resall		Resallpc		Hotall		Hotallpc	
C	2.004 (3.431)	2.230 (2.539)	2.840 (4.431)	2.920 (2.287)**	0.471 (0.496)	0.496 (0.450)	1.111 (1.020)	1.171 (0.876)
Feb.	0.530 (0.682)	0.577 (1.391)	0.517 (0.737)	0.477 (1.625)	0.851 (0.686)	1.045 (1.178)	0.940 (0.788)	0.853 (1.235)
March	3.482 (4.562)	3.593 (6.692)*	3.054 (4.383)	3.018 (7.719)*	3.257 (2.625)	3.518 (3.269)*	3.063 (2.585)	3.043 (3.430)*
April	4.192 (5.488)	4.351 (7.154)*	3.780 (5.401)	3.711 (8.166)*	5.600 (4.508)	5.900 (5.089)*	5.170 (4.345)	5.074 (5.060)*
May	5.426 (7.095)	5.626 (8.640)*	4.892 (6.957)	4.805 (9.694)*	6.880 (5.534)	7.205 (6.013)*	7.061 (5.905)	6.939 (6.472)*
June	8.000 (10.360)	8.364 (12.175)*	7.185 (10.001)	7.134 (13.609)*	1.581 (12.591	16.178 (13.190)*	14.611 (11.961)	14.519 (12.938)*
July	9.570 (12.480)	9.845 (14.388)*	8.922 (12.373)	8.878 (16.592)*	2.106 (16.892	21.418 (17.500)*	19.779 (16.128)	19.863 (17.432)*
August	6.633 (8.658)	6.973 (10.315)*	6.308 (8.696)	6.826 (12.917)*	1.134 (9.111)	11.658 (9.600)*	11.066 (8.971)	11.574 (10.270)*
Sept.	3.106 (3.934)	3.524 (5.274)*	2.834 (3.946)	3.372 (6.676)*	4.625 (3.605)	4.909 (3.996)*	4.035 (3.304)	4.633 (4.254)
Oct.	1.384 (1.800)	1.829 (2.931)*	0.983 (1.358)	1.509 (3.186)*	1.064 (0.851)	1.376 (1.168)	1.006 (0.818)	1.587 (1.522)
Nov.	-0.493 (-0.647)	.0.128 (-0.023)	-0.420 (-0.594)	0.0793 (0.193)	-1.539 (-1.243)	-1.171 (-1.066)	-1.467 (-1.222)	-0.826 (-0.891)
Dec.	-0.271 (-0.352)	0.290 (0.656)	-0.232 (-0.321)	0.312 (0.933)	-1.900 (-1.511)	-1.323 (-1.422)	-1.546 (-1.254)	-0.828 (-1.065)
TME	0.125 (14.557)	0.112 (5.806)*	0.108 (11.27)	0.119 (3.475)*	0.119 (8.505)	0.108 (5.010)*	0.107 (6.600)	0.116 (3.345)*
HUR	-0.567 (-0.932)	-0.696 (-2.120)**	-0.308 (-0.520)	-0.532 (-2.026)**	-0.631 (-0.638)	-0.688 (-0.940)	-0.835 (-0.830)	-0.991 (-1.571)
RT	-0.755 (-1.295)	-0.813 (-1.452)	0.129 (0.205)	-2.751 (-3.722)*	-1.402 (-1.479)	-0.980 (-0.907)	-0.826 (-0.773)	-3.703 (-2.508)*
PC			-0.032 (-0.706)	-0.041 (-1.977)***			-0.0169 (-0.223)	-0.505 (-1.018)
Eq. Stats.								
Obs.	72	72	60	60	72	72	60	60
Adj. R^2	0.907	0.822	0.911	0.885	0.921	0.879	0.927	0.900
DW-Stat.	0.606	1.966	0.537	1.759	1.004	1.921	0.783	1.811
F-Stat.	50.678	24.283	41.035	31.035	60.461	37.818	50.819	36.374
Rho		0.750 (8.254)*		0.900 (14.158)*		0.500 (4.308)*		0.700 (6.777)*

Resall, Hotall = Restaurants and Hotels, respectively, for the combined zip codes; Resallpc, Hotallpc = Restaurants and Hotels for the combined zip codes, respectively, with precipitation data included in the regression models; TME = Trend variable; HUR, RT = Hurricane and Red Tide dummy variables, respectively; PC = precipitation variable. The numbers in parentheses are t-statistics; *, **, *** = statistical significance at 2 (or lower), 5 and 10 percent levels, respectively. The OLS models suffer from autocorrelation and are disregarded in favor of the GLS models.

Table 6.5 Gross Revenue Sales Regression Coefficients for Restaurants and Hotels for Zip Code 32541.

Variables	OLS	GLS	OLS	GLS	OLS	GLS	OLS	GLS
	Restaurant-1		Restaurant-2		Hotel-1		Hotel-2	
C	0.050 (0.107)	0.271 (0.401)	0.565 (1.056)	0.814 (0.819)	-0.233 (-0.334)	-0.221 (-0.275)	-0.465 (-0.057)	0.228 (0.234)
Feb.	0.329 (0.534)	0.394 (1.239)	0.332 (0.567)	0.309 (1.351)	0.365 (0.401)	0.513 (0.795)	0.491 (0.554)	0.403 (0.799)
March	2.748 (4.529)	2.870 (6.961)*	2.353 (4.045)	2.347 (7.708)*	1.829 (2.007)	2.031 (2.590)**	1.744 (1.982)	1.770 (2.734)*
April	3.401 (5.600)	3.566 (7.638)*	3.048 (5.217)	3.025 (8.546)*	3.367 (4.018)	3.900 (4.615)*	3.361 (3.802)	3.300 (4.509)*
May	4.409 (7.252)	4.613 (9.229)*	3.983 (6.784)	3.956 (10.249)*	4.118 (4.509)	4.370 (5.006)*	4.400 (4.952)	4.314 (5.515)*
June	6.481 (10.552)	6.738 (12.929)*	5.813 (9.693)	5.836 (14.298)*	10.487 (11.365)	10.757 (12.044)*	9.644 (10.628)	9.560 (11.676)*
July	7.869 (12.909)	8.146 (15.506)*	7.311 (12.143)	7.347 (17.634)*	13.870 (15.147)	14.150 (15.867)*	12.886 (14.146)	13.100 (15.754)*
August	5.424 (8.913)	5.744 (11.068)*	5.130 (8.470)	5.611 (13.636)*	7.019 (7.678)	7.266 (8.211)*	6.791 (7.411)	7.084 (8.614)*
Sept.	2.495 (3.976)	2.863 (5.580)*	2.239 (3.734)	2.751 (6.995)*	2.837 (3.010)	3.056 (3.414)*	2.471 (2.724)	2.880 (3.623)*
Oct.	1.164 (1.903)	1.561 (3.260)*	0.844 (1.340)	1.358 (3.681)*	0.370 (0.403)	0.613 (0.714)	0.320 (0.351)	0.689 (0.906)
Nov.	-0.286 (-0.472)	0.151 (.353)	-0.362 (-0.615)	1.332 (0.417)	-1.358 (-1.493)	-1.071 (-1.337)	-1.336 (-1.497)	-0.864 (-1.278)
Dec.	-0.415 (-.678)	0.113 (0.334)	-0.433 (-0.716)	1.203 (0.463)	-1.513 (-1.647)	-1.082 (-1.595)	-1.226 (-1.338)	-0.747 (-1.316)
TME	0.097 (14.176)	0.084 (5.661)*	0.0885 (11.078)	0.091 (3.383)*	0.0843 (8.244)	0.077 (4.867)*	0.080 (6.613)	0.081 (3.204)*
HUR	-0.366 (-0.756)	-0.459 (-1.821)***	-0.146 (-0.295)	-0.375 (-1.836)***	-0.515 (-0.708)	-0.537 (-1.008)	-0.634 (-0.849)	-0.595 (-1.292)
RT	-0.801 (-1.728)	-0.747 (-1.739)***	-0.0764 (-0.146)	-2.228 (-3.956)*	-1.060 (-1.523)	-0.753 (-0.957)	-0.588 (-0.741)	-2.286 (-2.122)**
PC			-0.016 (-0.416)	-0.024 (-1.498)			0.0146 (0.259)	0.0312 (-0.864)
Eq. Stats.								
Obs.	72	72	60	60	72	72	60	60
Adj. R^2	0.910	0.841	0.908	0.896	0.908	0.863	0.911	0.885
DW-Stat.	0.562	1.754	0.479	1.471	0.977	1.836	0.750	1.604
F-Stat.	51.739	27.645	39.642	34.613	50.811	32.957	41.294	31.182
Rho		0.750 (8.546)*		0.900 (14.894)*		.0500 (4.331)*		0.700 (6.756)*

Restaurant-1, Hotel-1 = Restaurants and Hotels, respectively, without precipitation data; Restaurant-2, Hotel-2 = Restaurants and Hotels, with precipitation data included in the regression models, respectively; TME = Trend variable; HUR, RT = Hurricane and Red Tide dummy variables, respectively; PC = precipitation variable. The numbers in parentheses are t-statistics; *, **, *** = statistical significance at 2 (or lower), 5 and 10 percent levels, respectively. The OLS models suffer from autocorrelation and are disregarded in favor of the GLS models.

Table 6.6 Gross Revenue Sales Regression Coefficients for Restaurants and Hotels for Zip Code 32548.

Variables	OLS	GLS	OLS	GLS	OLS	GLS	OLS	GLS
	Restaurant-1		Restaurant-2		Hotel-1		Hotel-2	
C	2.854 (17.400)	2.853 (13.665)*	3.257 (24.096)	3.236 (22.464)*	0.704 (2.213)	0.704 (2.035)**	1.158 (3.049)	1.038 (2.534)*
Feb.	0.288 (1.346)	0.263 (2.048)**	0.259 (1.750)	0.249 (2.251)**	0.486 (1.170)	0.522 (1.554)	0.449 (1.079)	0.461 (1.464)
March	0.896 (4.181)	0.870 (5.332)*	0.871 (5.929)	0.859 (6.523)*	1.428 (3.437)	1.474 (3.792)*	1.319 (3.194)	1.310 (3.497)*
April	0.935 (4.360)	0.904 (4.998)*	0.867 (5.877)	0.851 (6.027)*	1.933 (4.648)	1.983 (4.890)*	1.809 (4.364)	1.813 (4.517)*
May	1.227 (5.716)	1.193 (6.247)*	1.120 (7.553)	1.101 (7.563)*	2.762 (6.633)	2.814 (6.834)*	2.663 (6.393)	2.669 (6.449)*
June	1.890 (8.345)	1.786 (9.033)*	1.673 (11.043)	1.650 (11.021)*	5.328 (12.664)	5.385 (12.892)*	4.967 (11.670)	4.997 (11.735)*
July	2.053 (9.538)	2.016 (10.153)*	2.025 (13.313)	2.007 (13.342)*	7.186 (17.211)	7.241 (17.433)*	6.892 (16.132)	6.849 (16.007)*
August	1.387 (6.454)	1.380 (7.020)*	1.359 (8.885)	1.361 (9.036)*	4.319 (10.362)	4.368 (10.572)*	4.275 (9.948)	4.403 (10.281)*
Sept.	0.682 (3.080)	0.704 (3.597)*	0.677 (4.469)	0.678 (4.588)*	1.788 (4.160)	1.830 (4.333)*	1.563 (3.675)	1.676 (3.988)*
Oct.	0.308 (1.427)	0.318 (1.720)***	0.229 (1.500)	0.224 (1.535)	0.694 (1.657)	0.737 (1.780)*	0.685 (1.599)	0.811 (1.952)**
Nov.	-0.157 (-0.735)	-0.159 (-0.950)	-0.008 (-0.056)	-0.0176 (-0.130)	-0.180 (-0.435)	-0.131 (-0.333)	-0.131 (-0.314)	-0.032 (-0.084)
Dec.	0.227 (1.053)	0.215 (1.582)	0.258 (1.690)	0.234 (1.924)*	-0.377 (-0.899)	-0.283 (-0.811)	-0.320 (-0.745)	-0.163 (-0.473)
TME	0.011 (4.406)	0.012 (2.651)*	-0.000 (-0.251)	0.001 (0.335)	0.034 (7.313)	0.033 (5.200)*	0.027 (4.816)	0.030 (3.418)*
HUR	-0.198 (-1.157)	-0.265 (-2.563)*	-0.158 (-1.263)	-0.152 (-1.478)	-0.116 (-0.351)	-0.141 (-0.502)	-0.200 (-0.572)	-0.339 (-1.315)
RT	0.166 (1.017)	0.048 (0.285)	0.299 (2.260)	0.160 (0.912)	-0.342 (-1.076)	-0.265 (-0.724)	-0.238 (-0.604)	-0.75.10 (-1.503)
PC			-0.022 (-2.294)	-0.023 (-2.817)*			-0.0314 (-1.190)	-0.024 (-1.059)
Eq. Stats.								
Obs.	72	72	60	60	72	72	60	60
Adj. R^2	0.782	0.694	0.879	0.810	0.918	0.878	0.920	0.872
DW-Stat.	0.729	2.224	1.144	1.905	1.288	2.042	1.220	2.103
F-Stat.	19.193	12.527	29.600	17.680	57.969	37.507	46.308	27.815
Rho		0.650 (6.583)*		0.450 (3.371)*		0.350 (2.818)*		0.450 (3.389)*

Restaurant-1, Hotel-1 = Restaurants and Hotels, respectively, without precipitation data; Restaurant-2, Hotel-2 = Restaurants and Hotels, with precipitation data included in the regression models, respectively; TME = Trend variable; HUR, RT = Hurricane and Red Tide dummy variables, respectively; PC = precipitation variable. The numbers in parentheses are t-statistics; *, **, *** = statistical significance at 2 (or lower), 5 and 10 percent levels, respectively. The OLS models suffer from autocorrelation and are disregarded in favor of the GLS models.

Table 6.7 Are you aware of the coastal condition known as "red tide"?

Strata	No	Yes	N*
	-------Percent-------		
Months Residing in Region during a Year			
<12 months	21.46	78.54	219
12 months	8.16	91.84	784
Years of Residence in Region			
<5 years	21.50	78.50	200
5–8 years	6.47	93.53	139
9–13 years	8.54	91.46	104
>13 years	8.98	91.02	501
Location of Residence in Region			
Non-coastal (east of I-75)	9.92	90.08	131
Coastal (west of I-75)	10.09	89.91	793
Gender			
Female	12.10	87.90	595
Male	9.73	90.27	411
Education Level			
College Degree or Higher	6.22	93.78	402
High School Diploma, Technical School, some college	13.22	86.78	537
Not completed high school	23.21	76.79	56
Age			
<24	24.24	75.76	33
25–30	19.30	80.70	57
31–40	9.02	90.98	122
41–50	5.52	94.48	181
>50	11.17	88.83	573
Annual Household Income			
<$35,000	14.85	85.15	229
$35,001–$75,000	6.88	93.13	320
>$75,000	7.93	92.07	164
Race			
White	9.63	90.37	924
Black	30.00	70.00	30
Asian	66.67	33.33	6
American Indian	0	100.00	4
Other	35.00	65.00	20

*The total N for each strata may not add to 100% due to exclusion of those respondents that could not identify or refused to give their demographic strata.

Table 6.8 Responses to statement 4.A: Red tides are caused by tiny marine plankton.

Strata	True	False	D/K	N*
	----------Percent----------			
Months of Residence				
<12 months	55.23	14.53	30.23	172
12 months	58.47	18.61	22.92	720
Years of Residence				
<5 years	52.87	22.29	24.84	157
5–8	53.08	13.08	33.85	130
9–13	60.00	23.33	16.67	150
>13 years	60.09	15.79	24.12	456
Location of Residence				
East	55.08	18.64	26.27	118
West	57.50	17.81	24.68	713
Gender				
Female	53.35	18.55	28.11	523
Male	64.15	16.71	19.14	371
Education Level				
College or higher	63.13	17.77	19.10	377
High school, Tech, some college	55.15	17.60	27.25	466
Not completed high school	39.53	23.26	37.21	43
Age				
<24	48.00	36.00	16.00	25
25–30	65.22	19.57	15.22	46
31–40	58.56	23.42	18.02	111
41–50	63.16	21.64	15.20	171
>50	55.80	14.93	29.27	509
Annual Income				
<$35,000	52.82	16.92	30.26	195
$35,001–$75,000	62.42	17.45	20.13	298
>$75,000	60.26	15.89	23.84	151
Race				
White	58.44	17.72	23.83	835
Black	38.10	14.29	47.62	21
Asian	100.00	0	0	2
American Indian	50.00	25.00	25.00	4
Other	38.46	23.08	38.46	13

*The total N for each strata may not equal to 894 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.9 Responses to statement 4.B: Red tides are naturally occurring.

Strata	True	False	D/K	N*
	----------Percent----------			
Months of Residence				
<12 months	71.51	13.37	15.12	172
12 months	74.17	16.81	9.03	720
Years of Residence				
<5 years	72.61	17.83	9.55	157
5–8	70.00	16.92	13.08	130
9–13	75.33	14.00	10.67	150
>13 years	74.56	16.01	9.43	456
Location of Residence				
East	73.73	19.49	6.78	118
West	74.19	15.15	10.66	713
Gender				
Female	71.13	17.02	11.85	523
Male	77.36	14.82	7.82	371
Education Level				
College or higher	77.72	13.26	9.02	377
High school, Tech, some college	71.89	18.45	9.66	466
Not completed high school	65.12	16.28	18.60	43
Age				
<24	92.00	8.00	0	25
25–30	84.78	8.70	6.52	46
31–40	76.58	17.12	6.31	111
41–50	73.68	17.54	8.77	171
>50	72.10	16.50	11.39	509
Annual Income				
<$35,000	67.18	20.00	12.82	195
$35,001–$75,000	81.21	13.42	5.37	298
>$75,000	77.48	14.57	7.95	151
Race				
White	74.25	15.43	10.30	835
Black	52.38	42.80	4.76	21
Asian	100.00	0	0	2
American Indian	75.00	0	25.00	4
Other	61.54	23.08	15.38	13

*The total N for each strata may not equal to 894 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.10 Responses to statement 4.C: The causes of red tide are well known.

Strata	True	False	D/K	N*
	----------Percent----------			
Months of Residence				
<12 months	14.53	72.67	12.79	172
12 months	20.42	72.22	7.36	720
Years of Residence				
<5 years	17.20	75.16	7.64	157
5–8	16.92	73.08	10.00	130
9–13	21.33	73.33	5.33	150
>13 years	20.18	70.61	9.21	456
Location of Residence				
East	18.64	76.27	5.08	118
West	18.93	72.09	8.98	713
Gender				
Female	18.74	73.04	8.22	523
Male	20.49	70.89	8.63	371
Education Level				
College or higher	15.38	77.19	7.43	377
High school, Tech, some college	19.96	71.24	8.80	466
Not completed high school	46.51	41.86	11.63	43
Age				
<24	36.00	52.00	12.00	25
25–30	30.43	63.04	6.52	46
31–40	19.82	73.87	6.31	111
41–50	18.71	78.36	2.92	171
>50	18.07	71.51	10.41	509
Annual Income				
<$35,000	22.56	69.74	7.69	195
$35,001–$75,000	19.80	71.81	8.39	298
>$75,000	13.25	78.15	8.61	151
Race				
White	17.96	73.29	8.74	835
Black	38.10	61.90	0	21
Asian	100.00	0	0	2
American Indian	0	100.00	0	4
Other	53.85	38.46	7.69	13

*The total N for each strata may not equal to 894 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.11 Responses to statement 4.D: Red tides occur mostly during fall and winter.

Strata	True	False	D/K	N*
	----------Percent----------			
Months of Residence				
<12 months	38.37	32.56	29.07	172
12 months	56.39	20.56	23.06	720
Years of Residence				
<5 years	48.41	22.93	28.66	157
5–8	48.46	26.15	25.38	130
9–13	51.33	24.00	24.67	150
>13 years	55.92	21.71	22.37	456
Location of Residence				
East	54.24	25.42	20.34	118
West	52.31	22.30	25.39	713
Gender				
Female	51.05	21.03	27.92	523
Male	55.26	25.61	19.14	371
Education Level				
College or higher	54.11	21.22	24.67	377
High school, Tech, some college	52.79	22.53	24.68	466
Not completed high school	46.51	39.53	13.95	43
Age				
<24	40.00	40.00	20.00	25
25–30	63.04	13.04	23.91	46
31–40	54.05	17.12	28.83	111
41–50	57.31	21.64	21.05	171
>50	50.69	25.15	24.17	509
Annual Income				
<$35,000	51.79	25.64	22.56	195
$35,001–$75,000	53.02	22.82	24.16	298
>$75,000	58.28	19.87	21.85	151
Race				
White	53.53	22.16	24.31	835
Black	42.86	42.86	14.29	21
Asian	0	50.00	50.00	2
American Indian	50.00	0	50.00	4
Other	30.77	38.46	30.77	13

*The total N for each strata may not equal to 894 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.12 Responses to statement 4.E: Red tides only occur in Florida.

Strata	True	False	D/K	N*
	----------Percent----------			
Months of Residence				
<12 months	9.88	60.47	29.65	172
12 months	9.44	67.78	22.98	720
Years of Residence				
<5 years	6.37	76.43	17.20	157
5–8	9.23	65.38	25.38	130
9–13	9.33	65.33	25.33	150
>13 years	10.75	63.60	25.66	456
Location of Residence				
East	10.17	64.41	25.42	118
West	9.68	66.48	23.84	713
Gender				
Female	9.56	62.91	27.53	523
Male	9.43	71.43	19.04	371
Education Level				
College or higher	7.96	72.15	19.89	377
High school, Tech, some college	10.30	63.30	26.39	466
Not completed high school	13.95	51.16	34.88	43
Age				
<24	0	92.00	8.00	25
25–30	10.87	76.09	13.04	46
31–40	9.91	61.26	28.83	111
41–50	6.43	76.02	17.54	171
>50	11.00	63.06	25.94	509
Annual Income				
<$35,000	9.23	61.54	29.23	195
$35,001–$75,000	9.73	68.79	21.48	298
>$75,000	9.93	71.52	18.54	151
Race				
White	9.22	66.95	23.83	835
Black	19.05	61.90	19.05	21
Asian	0	50.00	50.00	2
American Indian	25.00	25.00	50.00	4
Other	7.69	61.54	30.77	13

*The total N for each strata may not equal to 894 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.13 Responses to statement 4.F: Red tides begin in bays, estuaries, and near the beach.

Strata	True	False	D/K	N*
	----------Percent----------			
Months of Residence				
<12 months	43.60	33.14	23.26	172
12 months	42.64	41.53	15.83	720
Years of Residence				
<5 years	47.13	34.39	18.47	157
5–8	43.08	33.85	23.08	130
9–13	46.67	36.67	16.67	150
>13 years	40.13	44.52	15.35	456
Location of Residence				
East	44.07	40.68	15.25	118
West	42.78	39.97	17.25	713
Gender				
Female	45.32	35.56	19.12	523
Male	39.35	46.09	14.56	371
Education Level				
College or higher	43.24	40.32	16.45	377
High school, Tech, some college	41.42	40.56	18.03	466
Not completed high school	55.81	30.23	13.95	43
Age				
<24	80.00	12.00	8.00	25
25–30	60.87	34.78	4.35	46
31–40	44.14	38.74	17.12	111
41–50	38.01	46.78	15.20	171
>50	40.86	39.69	19.45	509
Annual Income				
<$35,000	45.13	38.97	15.50	195
$35,001–$75,000	43.62	40.27	16.11	298
>$75,000	41.06	42.38	16.56	151
Race				
White	42.04	40.96	17.01	835
Black	76.19	14.29	9.52	21
Asian	0	0	100	2
American Indian	25.00	50.00	25.00	4
Other	46.15	38.46	15.38	13

*The total N for each strata may not equal to 894 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.14 Responses to statement 4.G: Red tides never occurred until recently.

Strata	True	False	D/K	N*
	----------Percent----------			
Months of Residence				
<12 months	6.98	69.19	23.84	172
12 months	6.25	81.67	12.08	720
Years of Residence				
<5 years	9.55	75.80	14.65	157
5–8	7.69	73.85	18.46	130
9–13	7.33	73.33	19.33	150
>13 years	4.61	83.99	11.40	456
Location of Residence				
East	4.24	80.51	15.25	118
West	6.59	78.68	14.73	713
Gender				
Female	6.12	76.86	17.02	523
Male	6.74	82.75	10.51	371
Education Level				
College or higher	6.63	80.11	13.26	377
High school, Tech, some college	5.58	79.40	15.02	466
Not completed high school	13.95	72.09	13.95	43
Age				
<24	8.00	92.0	0	25
25–30	6.52	86.96	6.52	46
31–40	5.41	83.78	10.81	111
41–50	7.60	79.53	12.87	171
>50	6.29	76.82	16.90	509
Annual Income				
<$35,000	7.18	76.92	15.90	195
$35,001–$75,000	6.04	81.54	12.42	298
>$75,000	5.96	81.46	12.58	151
Race				
White	5.95	79.52	14.49	835
Black	23.81	71.43	4.76	21
Asian	0	50.00	50.00	2
American Indian	0	100.00	0	4
Other	7.69	69.23	23.08	13

*The total N for each strata may not equal to 894 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.15 Responses to statement 4.H: Red tides can be predicted with total accuracy.

Strata	True	False	D/K	N*
	----------Percent----------			
Months of Residence				
<12 months	6.40	74.42	19.19	172
12 months	7.78	82.22	10.00	720
Years of Residence				
<5 years	8.28	78.98	12.74	157
5–8	6.15	78.46	15.38	130
9–13	6.00	81.33	12.67	150
>13 years	8.11	81.80	10.09	456
Location of Residence				
East	5.08	85.59	9.32	110
West	7.57	80.50	11.92	713
Gender				
Female	7.65	78.97	13.38	563
Male	7.28	83.02	9.70	371
Education Level				
College or higher	6.90	84.35	8.75	377
High school, Tech, some college	6.44	80.04	13.52	466
Not completed high school	23.26	58.14	18.60	43
Age				
<24	20.00	68.00	12.00	25
25–30	10.87	78.26	10.87	46
31–40	4.50	81.98	13.51	111
41–50	4.68	87.72	7.60	171
>50	8.25	70.78	12.97	509
Annual Income				
<$35,000	10.26	74.36	15.38	195
$35,001–$75,000	6.38	84.56	9.06	298
>$75,000	3.97	86.75	9.27	151
Race				
White	6.59	82.28	11.14	835
Black	38.10	57.14	4.76	21
Asian	0	0	100.00	2
American Indian	0	50.00	50.00	4
Other	15.38	46.15	38.46	21

*The total N for each strata may not equal to 894 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.16 Responses to statement 4.I: Red tides never last longer than 1 to 2 weeks.

Strata	True	False	D/K	N*
	----------Percent----------			
Months of Residence				
<12 months	27.33	49.42	23.26	172
12 months	23.19	64.03	12.78	720
Years of Residence				
<5 years	28.03	55.41	16.56	157
5–8	23.08	53.08	23.85	130
9–13	18.67	72.67	8.67	150
>13 years	24.56	61.84	13.60	456
Location of Residence				
East	23.73	68.64	7.63	118
West	23.70	59.89	16.41	713
Gender				
Female	24.28	60.04	15.68	523
Male	23.45	63.07	13.48	371
Education Level				
College or higher	17.51	67.64	14.85	377
High school, Tech, some college	27.68	57.51	14.81	466
Not completed high school	39.53	46.51	13.95	43
Age				
<24	36.00	52.00	12.00	25
25–30	21.74	65.22	13.04	46
31–40	25.23	63.96	10.81	111
41–50	18.71	70.18	11.11	171
>50	24.95	58.15	16.90	509
Annual Income				
<$35,000	26.67	52.31	21.03	195
$35,001–$75,000	23.83	65.10	11.07	298
>$75,000	24.50	66.23	9.27	151
Race				
White	23.83	61.98	14.49	835
Black	42.86	33.33	23.81	21
Asian	0	0	100.00	2
American Indian	25.00	50.00	25.00	4
Other	7.69	69.23	23.08	13

*The total N for each strata may not equal to 894 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.17 Responses to statement 5.A: Locally caught oysters & clams are safe to eat during a red tide.

Strata	True	False	D/K	N*
	----------Percent----------			
Months of Residence				
<12 months	11.63	71.51	16.86	172
12 months	6.11	85.42	8.47	720
Years of Residence				
<5 years	10.19	78.34	11.46	157
5–8	10.00	73.08	16.92	130
9–13	6.67	82.00	11.33	150
>13 years	5.48	87.28	7.24	456
Location of Residence				
East	5.93	83.90	10.17	118
West	7.01	83.31	9.68	713
Gender				
Female	6.31	82.22	11.47	523
Male	8.36	83.56	8.09	371
Education Level				
College or higher	6.90	82.23	10.88	377
High school, Tech, some college	6.87	83.91	9.23	466
Not completed high school	9.30	79.07	11.63	43
Age				
18–24	8.00	92.00	0	25
25–30	10.87	89.13	0	46
31–40	6.31	86.49	7.21	111
41–50	3.51	89.47	7.02	171
>50	8.25	78.19	13.56	509
Annual Income				
<$35,000	7.18	80.51	12.31	195
$35,001–$75,000	8.05	84.23	7.72	208
>$75,000	7.95	82.78	9.27	151
Race				
White	7.43	82.40	10.18	835
Black	0	100.00	0	21
Asian	0	50.00	50.00	2
American Indian	25.00	50.00	25.00	4
Other	0	84.62	15.38	21

*The total N for each strata may not equal to 894 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.18 Responses to statement 5.B: Locally caught finfish are safe to eat during a red tide.

Strata	True	False	D/K	N*
	----------Percent----------			
Months of Residence				
<12 months	62.21	16.28	21.51	172
12 months	74.44	11.94	13.61	720
Years of Residence				
<5 years	70.06	13.38	16.56	157
5–8	70.00	10.77	19.23	130
9–13	76.00	8.67	15.33	150
>13 years	72.15	14.47	13.38	456
Location of Residence				
East	73.73	16.95	9.32	118
West	72.51	11.78	15.71	713
Gender				
Female	72.85	9.94	17.21	523
Male	71.16	16.71	12.13	371
Education Level				
College or higher	68.97	14.06	16.98	377
High school, Tech, some college	74.89	11.16	13.95	466
Not completed high school	72.09	16.28	11.63	43
Age				
18–24	80.00	4.00	16.00	25
25–30	84.78	15.22	0	46
31–40	81.98	9.00	9.01	111
41–50	73.10	14.04	12.87	171
>50	67.58	13.75	18.66	509
Annual Income				
<$35,000	75.38	11.28	13.33	195
$35,001–$75,000	72.48	15.10	12.42	298
>$75,000	67.55	18.54	13.91	151
Race				
White	71.14	13.41	15.45	835
Black	95.24	0	4.76	21
Asian	100.00	0	0	2
American Indian	75.00	0	25.00	4
Other	76.92	15.38	7.69	13

*The total N for each strata may not equal to 894 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.19 Responses to statement 5.C: Locally caught shrimp & crabs are safe to eat during a red tide.

Strata	True	False	D/K	N*
	----------Percent----------			
Months of Residence				
<12 months	66.86	16.28	16.86	172
12 months	80.56	8.19	11.25	720
Years of Residence				
<5 years	75.00	10.83	13.38	157
5–8	71.54	12.31	16.15	130
9–13	80.00	7.33	12.67	150
>13 years	79.82	9.43	10.75	456
Location of Residence				
East	79.66	10.17	10.17	118
West	78.12	9.12	12.76	713
Gender				
Female	78.20	7.84	13.96	523
Male	77.63	12.40	9.97	371
Education Level				
College or higher	74.27	11.67	14.06	377
High school, Tech, some college	81.12	7.51	11.37	466
Not completed high school	76.74	16.28	6.98	43
Age				
18–24	88.00	4.00	8.00	25
25–30	80.43	19.57	0	46
31–40	86.49	6.31	7.21	111
41–50	80.12	7.02	12.87	171
>50	74.66	10.81	14.93	509
Annual Income				
<$35,000	78.46	8.21	13.33	195
$35,001–$75,000	79.53	10.40	10.07	298
>$75,000	74.83	13.25	11.92	151
Race				
White	77.60	9.94	12.46	835
Black	95.24	0	4.76	21
Asian	50.00	0	50.00	2
American Indian	75.00	0	25.00	4
Other	76.92	15.38	7.69	13

*The total N for each strata may not equal to 894 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.20 Responses to statement 5.D: Red tide toxin is in the water and in the air.

Strata	True	False	D/K	N*
	----------Percent----------			
Months of Residence				
<12 months	21.51	68.60	9.86	172
12 months	15.14	77.78	7.08	720
Years of Residence				
<5 years	32.48	57.32	10.19	157
5–8	11.54	76.92	11.54	130
9–13	14.00	81.33	4.67	150
>13 years	12.94	80.48	6.58	456
Location of Residence				
East	17.80	79.66	2.54	118
West	15.85	76.02	8.13	713
Gender				
Female	12.43	78.39	9.18	523
Male	21.83	72.78	5.39	371
Education Level				
College or higher	15.92	77.19	6.90	377
High school, Tech, some college	16.31	75.97	7.73	466
Not completed high school	23.26	65.12	11.63	43
Age				
18–24	32.00	56.00	12.00	25
25–30	26.09	71.74	2.17	46
31–40	14.41	81.08	4.50	111
41–50	15.79	80.70	3.51	171
>50	15.72	74.66	9.63	509
Annual Income				
<$35,000	17.95	71.28	10.77	195
$35,001–$75,000	16.78	78.86	4.36	298
>$75,000	15.23	76.82	7.95	151
Race				
White	16.53	75.57	7.90	835
Black	4.76	90.48	4.76	21
Asian	0	100.00	0	2
American Indian	25.00	75.00	0	4
Other	23.08	76.92	0	13

*The total N for each strata may not equal to 894 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.21 Responses to statement S.E: Red tide causes lasting health problems for people.

Strata	True	False	D/K	N*
	----------Percent----------			
Months of Residence				
<12 months	27.91	44.77	27.33	172
12 months	34.44	45.42	20.14	720
Years of Residence				
<5 years	37.58	38.85	23.57	157
5–8	25.38	43.08	31.54	130
9–13	32.67	43.33	24.00	150
>13 years	33.99	48.68	17.32	456
Location of Residence				
East	32.20	46.41	21.19	118
West	32.96	45.30	21.74	713
Gender				
Female	32.70	44.17	23.14	523
Male	33.96	46.63	19.41	371
Education Level				
College or higher	31.03	50.93	18.04	377
High school, Tech, some college	34.33	41.85	23.84	466
Not completed high school	44.19	32.56	23.26	43
Age				
18–24	56.00	28.00	16.00	25
25–30	52.17	32.61	15.22	46
31–40	27.03	44.14	28.83	111
41–50	39.18	43.86	16.96	171
>50	30.45	47.15	22.40	509
Annual Income				
<$35,000	40.00	37.44	22.56	195
$35,001–$75,000	35.57	47.99	16.44	298
>$75,000	23.48	45.70	25.83	151
Race				
White	32.57	45.99	21.44	835
Black	57.14	23.81	19.05	21
Asian	0	0	100.00	2
American Indian	50.00	25.00	25.00	4
Other	46.15	23.08	30.77	13

*The total N for each strata may not equal to 894 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.22 Responses to statement 5.F: Red tides can be controlled by chemical treatments.

Strata	True	False	D/K	N*
	----------Percent----------			
Months of Residence				
<12 months	11.05	53.49	35.47	172
12 months	10.14	60.83	29.03	720
Years of Residence				
<5 years	14.65	64.33	21.02	157
5–8	11.54	56.15	32.31	130
9–13	11.33	54.67	34.00	150
>13 years	8.11	60.31	31.58	456
Location of Residence				
East	9.32	64.41	26.27	118
West	10.38	58.63	31.00	713
Gender				
Female	9.56	56.41	34.03	523
Male	11.32	63.61	25.07	371
Education Level				
College or higher	11.41	62.33	26.26	377
High school, Tech, some college	8.15	58.58	33.26	466
Not completed high school	20.93	48.84	30.23	43
Age				
18–24	16.00	60.00	24.00	25
25–30	15.22	69.57	15.22	46
31–40	7.21	66.67	26.13	111
41–50	9.36	63.16	27.49	171
>50	9.82	56.19	33.99	509
Annual Income				
<$35,000	12.31	54.36	33.33	195
$35,001–$75,000	8.72	66.44	24.83	298
>$75,000	10.60	64.24	15.17	151
Race				
White	9.70	59.88	30.42	835
Black	23.81	52.38	23.81	21
Asian	0	50.00	50.00	2
American Indian	0	50.00	50.00	4
Other	7.69	46.15	46.15	13

*The total N for each strata may not equal to 894 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.23 Responses to statement 5.G: Red tides only effect those people in the water or on the beach.

Strata	True	False	D/K	N*
	----------Percent----------			
Months of Residence				
<12 months	33.72	56.98	9.30	172
12 months	26.81	68.33	4.86	720
Years of Residence				
<5 years	24.84	70.06	5.10	157
5–8	27.69	66.92	5.38	130
9–13	28.00	66.00	6.00	150
>13 years	29.39	64.69	5.92	456
Location of Residence				
East	38.14	60.17	1.69	118
West	26.65	66.76	6.59	713
Gender				
Female	26.00	67.30	6.69	523
Male	31.27	64.42	4.31	371
Education Level				
College or higher	25.73	69.76	4.51	377
High school, Tech, some college	28.33	65.02	6.65	466
Not completed high school	46.51	48.84	4.65	43
Age				
18–24	32.00	64.00	4.00	25
25–30	39.13	56.52	4.35	46
31–40	29.73	66.67	3.60	111
41–50	19.30	77.19	3.51	171
>50	29.67	63.46	6.88	509
Annual Income				
<$35,000	31.28	60.00	8.72	195
$35,001–$75,000	28.19	69.13	2.68	298
>$75,000	23.84	69.54	6.62	151
Race				
White	27.54	66.71	5.75	835
Black	23.81	71.43	4.76	21
Asian	50.00	0	50.00	2
American Indian	50.00	50.00	0	4
Other	61.54	38.46	0	13

*The total N for each strata may not equal to 894 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.24 Responses to statement 5.H: It is safe for humans to swim in a red tide.

Strata	True	False	D/K	N*
	----------Percent----------			
Months of Residence				
<12 months	69.77	20.35	9.88	172
12 months	73.75	17.64	8.61	720
Years of Residence				
<5 years	76.43	14.01	9.55	157
5–8	73.08	15.38	11.54	130
9–13	76.67	16.00	7.33	150
>13 years	70.61	21.05	8.33	456
Location of Residence				
East	76.27	16.10	7.63	118
West	72.37	18.65	8.98	713
Gender				
Female	72.28	17.78	9.94	523
Male	74.12	18.60	7.28	371
Education Level				
College or higher	71.09	17.77	11.14	377
High school, Tech, some college	74.89	18.03	7.08	466
Not completed high school	76.74	16.28	6.98	43
Age				
18–24	96.00	4.00	0	25
25–30	78.26	21.74	0	46
31–40	77.48	13.51	9.01	111
41–50	70.76	22.22	7.02	171
>50	70.96	18.66	10.41	509
Annual Income				
<$35,000	74.87	14.87	10.26	195
$35,001–$75,000	74.83	18.79	6.38	298
>$75,000	66.89	24.50	8.61	151
Race				
White	72.10	18.68	9.22	835
Black	95.24	0	4.76	21
Asian	50.00	50.00	0	2
American Indian	100.00	0	0	4
Other	92.31	7.69	0	13

*The total N for each strata may not equal to 894 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.25 Saltwater fishing from a boat: How did red tide effect your activities, did it cut short your activity, postpone your activity, or cause you to go somewhere else?

Strata	Cut Short	Delay	Elsewhere	N*
	----------Percent----------			
Months of Residence				
<12 months	9.09	81.82	9.09	11
12 months	17.89	53.66	28.46	123
Years of Residence				
<5 years	12.50	50.00	37.50	16
5–8	14.29	64.29	21.43	14
9–13	25.00	50.00	25.00	16
>13 years	17.05	56.82	26.14	88
Location of Residence				
East	26.32	26.32	47.37	19
West	16.50	61.17	22.33	103
Gender				
Female	15.79	63.16	21.05	57
Male	18.18	50.65	31.17	77
Education Level				
College or higher	21.43	53.57	25.00	56
High school, Tech, some college	13.89	58.37	27.78	72
Not completed high school	20.00	40.00	40.00	5
Age				
18–24	25.00	50.00	25.00	4
25–30	25.00	43.75	31.25	16
31–40	19.23	53.85	26.92	26
41–50	11.43	48.57	40.00	35
>50	16.33	69.39	14.29	49
Annual Income				
<$35,000	8.70	56.52	34.78	23
$35,001–$75,000	24.14	44.83	31.03	58
>$75,000	8.00	60.00	32.00	25
Race				
White	16.13	57.26	26.61	124
Black	0	100.00	0	2
Asian	0	0	100.00	1
American Indian	50.00	0	50.00	2
Other	100.00	0	0	1

*The total N for each strata may not equal to 134 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.26 Saltwater fishing from shore or a bridge or pier: How did red tide effect your activities, did it cut short your activity, postpone your activity, or cause you to go somewhere else?

Strata	Cut Short	Delay	Elsewhere	N*
	----------Percent----------			
Months of Residence				
<12 months	35.29	47.06	17.65	17
12 months	21.14	56.10	22.76	123
Years of Residence				
<5 years	0	75.00	25.00	20
5–8	22.22	55.56	22.22	18
9–13	37.93	41.38	20.69	29
>13 years	23.29	54.79	21.92	73
Location of Residence				
East	26.09	60.87	13.04	23
West	20.95	54.29	24.76	105
Gender				
Female	20.31	65.63	14.06	64
Male	25.00	46.05	28.95	76
Education Level				
College or higher	18.75	56.25	25.00	48
High school, Tech, some college	23.46	55.56	20.99	81
Not completed high school	40.00	40.00	20.00	10
Age				
18–24	12.50	37.50	50.00	8
25–30	46.15	38.46	15.38	13
31–40	19.35	61.29	19.35	31
41–50	16.67	56.67	26.67	30
>50	21.43	58.93	19.64	56
Annual Income				
<$35,000	32.14	53.57	14.29	28
$35,001–$75,000	24.19	50.00	25.81	62
>$75,000	10.53	52.63	36.84	19
Race				
White	21.54	56.92	21.54	130
Black	33.33	66.67	0	3
Asian	0	0	100.00	1
American Indian	100.00	0	0	1
Other	33.33	0	66.67	3

*The total N for each strata may not equal to 140 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.27 Beach-going/swimming at the beach: How did red tide effect your activities, did it cut short your activity, postpone your activity, or cause you to go somewhere else?

Strata	Cut Short	Delay	Elsewhere	N*
	----------Percent----------			
Months of Residence				
<12 months	26.09	59.42	14.49	69
12 months	22.91	59.50	17.60	358
Years of Residence				
<5 years	15.25	62.71	22.03	59
5–8	26.09	59.42	14.49	69
9–13	26.19	58.33	15.48	84
>13 years	24.07	58.80	17.13	216
Location of Residence				
East	35.00	48.33	16.67	60
West	21.61	61.67	16.71	347
Gender				
Female	25.28	59.25	15.47	265
Male	20.86	59.51	19.63	163
Education Level				
College or higher	21.76	64.25	13.99	193
High school, Tech, some college	24.31	55.50	20.18	218
Not completed high school	46.15	46.15	7.65	13
Age				
18–24	35.71	35.71	28.57	14
25–30	26.09	65.22	8.70	23
31–40	19.40	61.19	19.40	67
41–50	23.36	57.01	19.63	107
>50	24.51	59.80	15.69	204
Annual Income				
<$35,000	24.36	58.97	16.67	78
$35,001–$75,000	24.85	58.79	16.36	165
>$75,000	27.27	53.25	19.48	77
Race				
White	23.33	59.06	17.62	403
Black	0	100.00	0	4
Asian	50.00	0	50.00	2
American Indian	66.67	33.33	0	3
Other	25.00	62.50	12.50	8

*The total N for each strata may not equal to 428 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.28 **Sail or power pleasure boating: How did red tide effect your activities, did it cut short your activity, postpone your activity, or cause you to go somewhere else?**

Strata	Cut Short	Delay	Elsewhere	N*
	----------Percent----------			
Months of Residence				
<12 months	15.38	61.54	23.08	13
12 months	21.62	54.95	23.42	111
Years of Residence				
<5 years	20.00	40.00	40.00	15
5–8	26.67	60.00	13.33	15
9–13	31.82	45.45	22.73	22
>13 years	16.67	61.11	22.22	72
Location of Residence				
East	12.50	50.00	37.50	16
West	19.59	57.73	22.68	97
Gender				
Female	14.29	67.14	18.57	70
Male	29.63	40.74	29.63	54
Education Level				
College or higher	22.81	54.39	22.81	57
High school, Tech, some college	19.05	57.14	23.81	63
Not completed high school	25.00	50.00	25.00	4
Age				
18–24	0	100.00	0	1
25–30	33.33	33.33	33.33	9
31–40	29.63	44.44	25.93	27
41–50	20.00	52.50	27.50	40
>50	14.89	68.09	17.02	47
Annual Income				
<$35,000	18.75	56.65	25.00	16
$35,001–$75,000	23.08	53.85	22.08	52
>$75,000	17.24	55.17	27.59	29
Race				
White	18.80	56.41	24.79	117
Black	0	0	0	0
Asian	0	0	0	0
American Indian	0	0	0	0
Other	66.67	33.33	0	3

*The total N for each strata may not equal to 124 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.29 Personal watercraft use: How did red tide effect your activities, did it cut short your activity, postpone your activity, or cause you to go somewhere else?

Strata	Cut Short	Delay	Elsewhere	N*
	----------Percent----------			
Months of Residence				
<12 months	50.00	50.00	0	2
12 months	21.62	62.16	16.22	37
Years of Residence				
<5 years	25.00	25.00	50.00	4
5–8	20.00	80.00	0	5
9–13	28.57	71.43	0	7
>13 years	21.74	60.87	17.39	23
Location of Residence				
East	0	80.00	20.00	5
West	27.59	55.17	17.24	29
Gender				
Female	5.00	85.00	10.00	20
Male	42.11	36.84	21.05	19
Education Level				
College or higher	42.86	42.86	14.29	14
High school, Tech, some college	9.09	72.73	18.18	22
Not completed high school	33.33	66.67	0	3
Age				
18–24	0	100.00	0	3
25–30	0	100.00	0	2
31–40	35.71	50.00	14.29	14
41–50	30.00	60.00	10.00	10
>50	10.00	60.00	30.00	10
Annual Income				
<$35,000	12.50	62.50	25.00	8
$35,001–$75,000	23.53	64.71	11.76	17
>$75,000	22.22	55.56	22.22	9
Race				
White	17.65	64.71	17.65	34
Black	0	0	0	0
Asian	0	0	0	0
American Indian	0	0	0	0
Other	66.67	33.33	0	3

*The total N for each strata may not equal to 39 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.30 Water skiing: How did red tide effect your activities, did it cut short your activity, postpone your activity, or cause you to go somewhere else?

Strata	Cut Short	Delay	Elsewhere	N*
	----------Percent----------			
Months of Residence				
<12 months	0	0	0	0
12 months	18.18	68.18	13.64	22
Years of Residence				
<5 years	0	50.00	50.00	2
5–8	50.00	50.00	0	2
9–13	0	100.00	0	3
>13 years	20.00	66.67	13.33	15
Location of Residence				
East	0	0	0	0
West	20.00	65.00	15.00	20
Gender				
Female	0	87.50	12.50	8
Male	28.57	57.14	14.29	14
Education Level				
College or higher	16.67	83.33	0	6
High school, Tech, some college	13.33	66.67	20.0	15
Not completed high school	100.00	0	0	1
Age				
18–24	0	100.00	0	1
25–30	50.00	50.00	0	2
31–40	11.11	66.67	22.22	9
41–50	28.57	57.14	14.29	7
>50	0	100.00	0	3
Annual Income				
<$35,000	0	60.00	40.00	5
$35,001–$75,000	20.00	80.00	0	10
>$75,000	0	80.00	20.00	5
Race				
White	10.53	73.68	16.79	19
Black	0	0	0	0
Asian	0	0	0	0
American Indian	0	0	0	0
Other	100.00	0	0	1

*The total N for each strata may not equal to 22 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.31 Sail-boarding/surfing: How did red tide effect your activities, did it cut short your activity, postpone your activity, or cause you to go somewhere else?

Strata	Cut Short	Delay	Elsewhere	N*
	----------Percent----------			
Months of Residence				
<12 months	0	0	0	0
12 months	43.75	50.00	6.25	16
Years of Residence				
<5 years	50.00	25.00	25.00	4
5–8	0	0	0	0
9–13	0	100.00	0	1
>13 years	45.45	54.55	0	11
Location of Residence				
East	0	0	0	0
West	42.86	50.00	7.14	14
Gender				
Female	50.00	50.00	0	2
Male	42.86	50.00	7.14	14
Education Level				
College or higher	42.86	42.86	14.29	7
High school, Tech, some college	37.50	62.50	0	8
Not completed high school	100.00	0	0	1
Age				
18–24	66.67	33.33	0	3
25–30	100.00	0	0	1
31–40	33.33	66.67	0	6
41–50	66.67	33.33	0	3
>50	0	66.67	33.33	3
Annual Income				
<$35,000	0	100.00	0	1
$35,001–$75,000	45.45	45.45	9.09	11
>$75,000	50.00	50.00	0	2
Race				
White	42.86	50.00	7.14	14
Black	0	0	0	0
Asian	0	0	0	0
American Indian	0	0	0	0
Other	100.00	0	0	1

*The total N for each strata may not equal to 16 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.32 Scuba diving/snorkeling: How did red tide effect your activities, did it cut short your activity, postpone your activity, or cause you to go somewhere else?

Strata	Cut Short	Delay	Elsewhere	N*
	----------Percent----------			
Months of Residence				
<12 months	0	50.00	50.00	4
12 months	20.69	65.52	13.79	58
Years of Residence				
<5 years	20.00	80.00	0	5
5–8	25.00	50.00	25.00	8
9–13	30.00	50.00	20.00	10
>13 years	15.38	69.23	15.38	39
Location of Residence				
East	66.67	22.22	11.11	9
West	10.20	71.43	18.37	49
Gender				
Female	23.33	60.00	16.67	30
Male	15.63	68.75	15.63	32
Education Level				
College or higher	21.74	73.91	4.35	23
High school, Tech, some college	13.51	62.16	24.32	37
Not completed high school	100.00	0	0	0
Age				
18–24	0	66.67	33.33	3
25–30	42.86	28.57	28.57	7
31–40	18.18	72.73	9.09	11
41–50	28.57	57.14	14.29	21
>50	5.00	80.00	15.00	20
Annual Income				
<$35,000	14.29	71.43	14.29	14
$35,001–$75,000	12.50	75.00	12.50	24
>$75,000	33.33	46.67	20.00	15
Race				
White	15.52	67.24	17.24	58
Black	0	0	0	0
Asian	0	0	0	0
American Indian	0	0	0	0
Other	100.00	0	0	2

*The total N for each strata may not equal to 62 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.33 Kayaking/canoeing: How did red tide effect your activities, did it cut short your activity, postpone your activity, or cause you to go somewhere else?

Strata	Cut Short	Delay	Elsewhere	N*
	----------Percent----------			
Months of Residence				
<12 months	0	0	100.00	3
12 months	16.67	75.00	8.33	24
Years of Residence				
<5 years	0	100.00	0	1
5–8	0	75.00	25.00	4
9–13	40.00	40.00	20.00	5
>13 years	11.76	70.59	17.65	17
Location of Residence				
East	0	50.00	50.00	2
West	17.39	65.22	17.39	23
Gender				
Female	15.38	69.23	15.38	13
Male	14.29	64.29	21.43	14
Education Level				
College or higher	25.00	62.50	12.50	8
High school, Tech, some college	5.56	72.22	22.22	18
Not completed high school	100.00	0	0	1
Age				
18–24	0	0	0	0
25–30	0	100.00	0	1
31–40	14.29	71.43	14.29	7
41–50	20.00	70.00	10.00	10
>50	0	62.50	37.50	8
Annual Income				
<$35,000	14.29	71.43	14.29	7
$35,001–$75,000	0	100.00	0	5
>$75,000	12.50	37.50	50.00	8
Race				
White	9.09	72.73	18.18	22
Black	0	0	0	0
Asian	0	0	0	0
American Indian	0	0	0	0
Other	66.67	0	33.33	3

*The total N for each strata may not equal to 27 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.34 Shell or "treasure" hunting: How did red tide effect your activities, did it cut short your activity, postpone your activity, or cause you to go somewhere else?

Strata	Cut Short	Delay	Elsewhere	N*
	----------Percent----------			
Months of Residence				
<12 months	28.57	50.00	21.43	28
12 months	30.61	56.12	13.27	98
Years of Residence				
<5 years	33.33	46.67	20.00	15
5–8	41.18	52.94	5.88	17
9–13	23.33	53.33	23.33	30
>13 years	29.69	57.81	12.50	64
Location of Residence				
East	66.67	33.33	0	15
West	25.24	58.25	16.50	103
Gender				
Female	24.74	62.89	12.37	97
Male	48.28	27.59	24.14	29
Education Level				
College or higher	27.27	63.64	9.09	44
High school, Tech, some college	30.67	50.67	18.67	75
Not completed high school	50.00	33.33	16.67	1
Age				
18–24	0	100.00	0	1
25–30	50.00	25.00	25.00	4
31–40	25.00	70.00	5.00	20
41–50	23.33	53.33	23.33	30
>50	33.33	51.52	15.15	66
Annual Income				
<$35,000	42.31	34.62	23.08	26
$35,001–$75,000	29.41	58.82	11.76	51
>$75,000	28.57	57.14	14.29	21
Race				
White	31.09	53.78	15.13	119
Black	0	100.00	0	2
Asian	0	0	0	0
American Indian	0	100.00	0	1
Other	33.33	33.33	33.33	3

*The total N for each strata may not equal to 126 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.35 Other: How did red tide effect your activities, did it cut short your activity, postpone your activity, or cause you to go somewhere else?

Strata	Cut Short	Delay	Elsewhere	N*
	----------Percent----------			
Months of Residence				
<12 months	0	50.00	50.00	4
12 months	30.77	46.15	23.08	13
Years of Residence				
<5 years	100.00	0	0	1
5–8	50.00	0	50.00	2
9–13	0	100.00	0	1
>13 years	15.38	53.85	30.77	13
Location of Residence				
East	50.00	50.00	0	2
West	21.43	50.00	28.57	14
Gender				
Female	22.22	33.33	44.44	9
Male	25.00	62.50	12.50	8
Education Level				
College or higher	22.22	44.44	33.33	9
High school, Tech, some college	14.29	57.14	28.57	7
Not completed high school	100.00	0	0	0
Age				
18–24	0	100.00	0	1
25–30	100.00	0	0	1
31–40	0	0	0	0
41–50	100.00	0	0	2
>50	8.33	50.00	41.67	12
Annual Income				
<$35,000	33.33	66.67	0	3
$35,001–$75,000	33.33	33.33	33.33	3
>$75,000	0	75.00	25.00	4
Race				
White	25.00	50.00	25.00	16
Black	0	0	100.00	1
Asian	0	0	0	0
American Indian	0	0	0	0
Other	0	0	0	0

*The total N for each strata may not equal to 17 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.36 Restaurants: How did red tide effect your patronage, did it postpone your activity or cause you to go somewhere else?

Strata	Elsewhere	Postpone	N*
	----------Percent----------		
Months of Residence			
<12 months	68.75	31.25	32
12 months	61.93	38.07	218
Years of Residence			
<5 years	48.15	51.85	27
5–8	54.84	45.16	31
9–13	57.14	42.86	56
>13 years	70.07	29.93	137
Location of Residence			
East	64.52	35.48	31
West	63.00	37.00	200
Gender			
Female	58.11	41.89	148
Male	69.90	30.10	103
Education Level			
College or higher	69.64	30.36	112
High school, Tech, some college	59.54	40.46	131
Not completed high school	28.57	71.43	7
Age			
18–24	75.00	25.00	4
25–30	76.92	23.08	13
31–40	77.78	22.22	36
41–50	57.14	42.86	56
>50	60.14	39.86	138
Annual Income			
<$35,000	56.00	44.00	50
$35,001–$75,000	58.76	41.24	97
>$75,000	73.91	26.09	46
Race			
White	63.71	36.29	237
Black	40.00	60.00	5
Asian	0	0	0
American Indian	100.00	0	1
Other	66.67	33.33	6

*The total N for each strata may not equal to 251 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.37 Lodging (hotels/motels): How did red tide effect your patronage, did it postpone your activity or cause you to go somewhere else?

Strata	Elsewhere	Postpone	N*
	----------Percent----------		
Months of Residence			
<12 months	25.00	75.00	4
12 months	45.83	54.17	28
Years of Residence			
<5 years	42.86	57.14	7
5–8	50.00	50.00	2
9–13	0	100.00	1
>13 years	44.44	55.56	18
Location of Residence			
East	42.86	57.14	7
West	42.11	57.89	19
Gender			
Female	46.15	53.85	13
Male	40.00	60.00	15
Education Level			
College or higher	30.00	70.00	10
High school, Tech, some college	50.00	50.00	18
Not completed high school	0	0	0
Age			
18–24	0	0	0
25–30	0	0	0
31–40	40.00	60.00	5
41–50	50.00	50.00	12
>50	36.36	63.64	11
Annual Income			
<$35,000	50.00	50.00	4
$35,001–$75,000	45.45	54.55	11
>$75,000	0	100	5
Race			
White	40.74	59.26	27
Black	0	0	0
Asian	0	0	0
American Indian	0	0	0
Other	100.00	0	1

*The total N for each strata may not equal to 28 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.38 Fish/seafood retail stores: How did red tide effect your patronage, did it postpone your activity or cause you to go somewhere else?

Strata	Elsewhere	Postpone	N*
	----------Percent----------		
Months of Residence			
<12 months	57.14	42.86	7
12 months	33.85	66.15	65
Years of Residence			
<5 years	15.38	84.62	13
5–8	54.55	45.45	11
9–13	28.57	71.43	14
>13 years	41.18	58.82	34
Location of Residence			
East	28.57	71.43	7
West	37.93	62.07	58
Gender			
Female	35.50	67.50	40
Male	40.63	59.38	32
Education Level			
College or higher	37.14	62.86	35
High school, Tech, some college	36.36	63.64	33
Not completed high school	33.33	66.67	3
Age			
18–24	50.00	50.00	2
25–30	0	100.00	3
31–40	14.29	85.71	7
41–50	35.71	64.29	14
>50	42.22	57.78	45
Annual Income			
<$35,000	20.00	80.00	15
$35,001–$75,000	34.78	65.22	23
>$75,000	50.00	50.00	14
Race			
White	36.36	63.64	66
Black	100.00	0	1
Asian	0	0	0
American Indian	0	0	0
Other	33.33	66.67	3

*The total N for each strata may not equal to 72 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.39 Other retail stores: How did red tide effect your patronage, did it postpone your activity or cause you to go somewhere else?

Strata	Elsewhere	Postpone	N*
	----------Percent----------		
Months of Residence			
<12 months	22.22	77.78	9
12 months	43.86	56.14	57
Years of Residence			
<5 years	100.00	0	2
5–8	40.00	60.00	10
9–13	26.67	73.33	15
>13 years	43.59	56.41	39
Location of Residence			
East	28.57	71.43	7
West	43.40	56.60	53
Gender			
Female	35.71	64.29	42
Male	50.00	50.00	24
Education Level			
College or higher	43.75	56.25	32
High school, Tech, some college	41.94	58.06	31
Not completed high school	0	100.00	3
Age			
18–24	100.00	0	1
25–30	0	100.00	1
31–40	66.67	33.33	6
41–50	38.46	61.54	13
>50	38.64	61.36	44
Annual Income			
<$35,000	30.77	69.23	13
$35,001–$75,000	36.36	63.64	22
>$75,000	41.18	58.82	17
Race			
White	40.63	59.38	64
Black	50.00	50.00	2
Asian	0	0	0
American Indian	0	0	0
Other	0	0	0

*The total N for each strata may not equal to 66 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.40 Other: How did red tide effect your patronage, did it postpone your activity or cause you to go somewhere else?

Strata	Elsewhere	Postpone	N*
	----------Percent----------		
Months of Residence			
<12 months	0	0	0
12 months	16.67	83.33	6
Years of Residence			
<5 years	0	0	0
5–8	0	0	0
9–13	0	0	0
>13 years	16.67	83.33	6
Location of Residence			
East	0	100.00	1
West	33.33	66.67	3
Gender			
Female	25.00	75.00	4
Male	0	100.00	2
Education Level			
College or higher	25.00	75.00	4
High school, Tech, some college	0	100.00	2
Not completed high school	0	0	0
Age			
18–24	0	0	0
25–30	0	0	0
31–40	0	0	0
41–50	0	100.00	1
>50	20.00	80.00	5
Annual Income			
<$35,000	0	0	0
$35,001–$75,000	0	100.00	2
>$75,000	0	100.00	1
Race			
White	25.00	75.00	4
Black	0	100.00	1
Asian	0	0	0
American Indian	0	0	0
Other	0	0	0

*The total N for each strata may not equal to 6 due to the exclusion of some respondents that could not identify or refused to give their demographic strata.

Table 6.41 Responses to statement 4.A: Red tides are caused by tiny marine plankton.

Activity and Yearly Frequency	True	False	D/K	N*
	----------Percent----------			
Saltwater Fishing (Combined)				
0	54.69	15.22	30.09	565
1–6	57.52	25.66	16.81	113
7–12	77.08	18.75	4.17	48
13–24	57.89	22.81	19.30	57
>24	65.77	19.82	14.41	111
Beach-going/Swimming				
0	55.48	14.49	30.04	283
1–6	59.76	17.16	23.08	169
7–12	59.29	19.47	21.24	113
13–24	51.95	18.18	29.87	77
>24	60.32	21.03	18.65	252
Sail or Power Boating				
0	56.11	16.74	27.15	663
1–6	55.88	27.94	16.18	68
7–12	58.97	23.08	17.95	39
13–24	60.61	18.18	21.21	33
>24	70.33	14.29	15.38	91
Other Activities (Combined)				
0	54.53	15.99	29.48	519
1–6	63.71	17.74	18.55	124
7–12	55.56	23.61	20.83	72
13–24	51.06	29.79	19.15	47
>24	68.94	17.42	13.64	132

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.42 Responses to statement 4.B: Red tides are naturally occurring.

Activity and Yearly Frequency	True	False	D/K	N*
	----------Percent----------			
Saltwater Fishing (Combined)				
0	71.50	16.81	11.68	565
1–6	79.65	15.04	5.31	113
7–12	68.75	25.00	6.25	48
13–24	70.18	22.81	7.02	57
>24	82.88	6.31	10.81	111
Beach-going/Swimming				
0	68.90	17.31	13.78	283
1–6	76.92	16.57	6.51	169
7–12	76.99	16.81	6.19	113
13–24	80.52	12.99	6.49	77
>24	73.41	15.08	11.51	252
Sail or Power Boating				
0	71.64	17.35	11.01	663
1–6	82.35	11.76	5.88	68
7–12	71.79	15.38	12.82	39
13–24	81.82	9.09	9.09	33
>24	80.22	13.19	6.59	91
Other Activities (Combined)				
0	71.29	16.96	11.75	519
1–6	79.61	12.90	10.48	124
7–12	70.83	20.83	8.33	72
13–24	85.11	8.51	6.38	47
>24	78.03	15.91	6.06	132

* The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.43 Responses to statement 4.C: The causes of red tide are well known.

Activity and Yearly Frequency	True	False	D/K	N*
	----------Percent----------			
Saltwater Fishing (Combined)				
0	20.53	70.62	8.85	565
1–6	14.16	78.76	7.08	113
7–12	22.92	70.83	6.25	48
13–24	10.53	82.46	7.02	57
>24	22.52	68.47	9.01	111
Beach-going/Swimming				
0	24.38	65.02	10.60	283
1–6	18.34	75.15	6.51	169
7–12	14.16	78.76	7.08	113
13–24	14.29	80.52	5.19	27
>24	18.65	72.62	8.73	252
Sail or Power Boating				
0	20.21	70.44	9.35	663
1–6	17.65	77.94	4.41	68
7–12	7.69	92.31	0	39
13–24	24.24	69.70	6.06	33
>24	18.68	72.53	8.79	91
Other Activities (Combined)				
0	20.04	69.94	10.02	519
1–6	16.94	75.81	7.26	124
7–12	20.83	75.00	4.17	72
13–24	10.64	82.98	6.38	47
>24	21.97	71.97	6.06	132

* The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.44 Responses to statement 4.D: Red tides occur mostly during fall and winter months.

Activity and Yearly Frequency	True	False	D/K	N*
	----------Percent----------			
Saltwater Fishing (Combined)				
0	47.43	23.01	29.56	565
1–6	57.52	26.55	15.93	113
7–12	54.17	25.00	20.83	48
13–24	66.67	17.54	15.79	57
>24	67.57	20.72	11.71	111
Beach-going/Swimming				
0	45.23	25.09	29.68	283
1–6	55.03	22.49	22.49	169
7–12	49.56	22.12	28.32	113
13–24	66.23	19.48	14.29	77
>24	57.14	22.22	20.63	252
Sail or Power Boating				
0	49.32	23.38	27.30	663
1–6	48.53	26.47	25.00	68
7–12	66.67	23.08	10.26	39
13–24	63.64	24.24	12.12	33
>24	71.43	16.48	12.09	91
Other Activities (Combined)				
0	50.10	23.12	26.78	519
1–6	52.42	25.00	22.58	124
7–12	58.33	19.44	22.22	72
13–24	59.57	19.15	21.28	47
>24	58.33	23.48	18.18	132

* The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.45 Responses to statement 4.E: Red tides only occur in Florida.

Activity and Yearly Frequency	True	False	D/K	N*
	----------Percent----------			
Saltwater Fishing (Combined)				
0	10.09	62.65	27.26	565
1–6	12.39	72.57	15.04	113
7–12	10.42	66.67	22.92	48
13–24	3.51	75.44	21.05	57
>24	6.31	74.77	18.92	111
Beach-going/Swimming				
0	10.25	60.78	28.98	283
1–6	10.65	67.46	21.89	169
7–12	10.62	68.14	21.24	113
13–24	15.58	62.34	22.08	77
>24	5.56	72.62	21.83	252
Sail or Power Boating				
0	10.56	64.25	25.04	663
1–6	4.41	64.71	30.88	68
7–12	2.56	71.79	25.64	39
13–24	12.12	60.61	27.27	33
>24	7.69	83.52	8.79	91
Other Activities (Combined)				
0	12.14	61.46	26.40	594
1–6	6.45	66.94	26.61	124
7–12	4.17	73.61	22.22	72
13–24	8.51	78.72	12.77	47
>24	5.30	77.27	16.67	132

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.46 Responses to statement 4.F: Red tides begin in bays, estuaries, and near the beach.

Activity and Yearly Frequency	True	False	D/K	N*
	----------Percent----------			
Saltwater Fishing (Combined)				
0	43.54	35.40	21.08	565
1–6	49.56	40.71	9.73	113
7–12	35.42	52.08	12.50	48
13–24	43.86	43.86	12.28	57
>24	35.14	54.95	9.91	111
Beach-going/Swimming				
0	45.23	33.57	21.20	283
1–6	44.97	40.83	14.20	169
7–12	37.17	47.79	15.04	113
13–24	32.47	46.75	20.78	77
>24	44.44	40.87	14.68	252
Sail or Power Boating				
0	44.19	37.10	18.70	663
1–6	38.24	47.06	14.71	68
7–12	30.77	51.28	17.95	39
13–24	33.33	45.45	21.21	33
>24	6.59	48.35	45.05	91
Other Activities (Combined)				
0	45.86	34.87	19.27	519
1–6	43.55	41.94	14.52	124
7–12	41.67	40.28	18.06	72
13–24	27.66	59.57	12.77	47
>24	12.88	50.76	36.36	132

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.47 Responses to statement 4.G: Red tides never occurred until recently.

Activity and Yearly Frequency	True	False	D/K	N*
	----------Percent----------			
Saltwater Fishing (Combined)				
0	6.73	75.04	18.23	565
1–6	4.42	87.61	7.96	113
7–12	10.42	81.25	8.33	48
13–24	7.02	87.72	5.26	57
>24	4.50	87.39	8.11	111
Beach-going/Swimming				
0	7.77	75.62	16.61	283
1–6	6.51	78.70	14.79	169
7–12	3.54	85.84	10.62	113
13–24	2.60	84.42	12.99	77
>24	7.14	79.37	13.49	252
Sail or Power Boating				
0	6.94	72.36	15.69	663
1–6	4.41	80.88	14.71	68
7–12	2.56	84.62	12.82	39
13–24	9.09	81.82	9.09	33
>24	4.40	89.01	6.59	91
Other Activities (Combined)				
0	6.74	76.88	16.38	519
1–6	8.06	79.03	12.90	124
7–12	5.56	79.17	15.28	72
13–24	2.13	91.49	6.38	47
>24	5.30	84.85	9.85	132

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.48 Responses to statement 4.H: Red tides can be predicted with total accuracy.

Activity and Yearly Frequency	True	False	D/K	N*
	----------Percent----------			
Saltwater Fishing (Combined)				
0	8.14	78.96	12.92	565
1–6	7.08	79.65	13.27	113
7–12	6.25	81.25	12.50	48
13–24	3.51	89.47	7.02	57
>24	7.21	85.59	7.21	111
Beach-going/Swimming				
0	11.31	73.50	15.19	283
1–6	4.73	83.43	11.83	169
7–12	8.85	81.42	9.73	113
13–24	3.90	89.61	6.49	77
>24	5.56	83.73	10.71	252
Sail or Power Boating				
0	8.14	78.58	13.27	663
1–6	4.41	83.82	11.76	68
7–12	5.13	92.31	2.56	39
13–24	3.03	90.91	6.06	33
>24	7.69	84.62	7.69	91
Other Activities (Combined)				
0	9.06	77.26	13.68	519
1–6	4.84	83.87	11.29	124
7–12	6.94	80.56	12.50	72
13–24	2.13	91.49	6.38	47
>24	6.06	87.12	6.82	132

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.49 Responses to statement 4.I: Red tides never last longer than 1 to 2 weeks.

Activity and Yearly Frequency	True	False	D/K	N*
	----------Percent----------			
Saltwater Fishing (Combined)				
0	23.72	58.94	17.35	565
1–6	30.97	61.95	7.08	113
7–12	25.00	64.58	10.42	48
13–24	19.30	68.42	12.28	57
>24	19.82	67.57	12.61	111
Beach-going/Swimming				
0	22.97	59.72	17.31	283
1–6	26.63	55.62	17.75	169
7–12	18.58	68.14	13.27	113
13–24	24.68	57.14	18.18	77
>24	25.40	65.08	9.52	252
Sail or Power Boating				
0	24.28	59.43	16.29	663
1–6	7.94	61.76	13.24	68
7–12	28.21	64.10	7.69	39
13–24	27.27	63.64	9.09	33
>24	17.58	72.53	9.89	91
Other Activities (Combined)				
0	23.51	60.50	15.99	519
1–6	27.42	57.26	15.32	124
7–12	31.94	59.72	8.33	72
13–24	8.33	65.96	14.89	47
>24	19.70	67.42	12.88	132

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.50 Responses to statement 5.A: Locally caught oysters and clams are safe to eat during a red tide.

Activity and Yearly Frequency	True	False	D/K	N*
	----------Percent----------			
Saltwater Fishing (Combined)				
0	7.96	80.00	12.04	565
1–6	7.08	84.96	7.96	113
7–12	0	89.58	10.42	48
13–24	5.26	89.47	5.26	57
>24	7.21	88.29	4.50	111
Beach-going/Swimming				
0	8.48	80.21	11.31	283
1–6	6.51	82.84	10.65	169
7–12	8.85	84.07	7.08	113
13–24	6.49	81.82	11.69	77
>24	5.56	85.32	9.13	252
Sail or Power Boating				
0	7.69	81.60	10.71	663
1–6	7.35	79.41	13.24	68
7–12	5.13	84.62	10.26	39
13–24	6.06	87.88	6.06	33
>24	4.40	91.21	4.40	91
Other Activities (Combined)				
0	7.90	80.73	11.37	519
1–6	5.65	85.48	8.87	124
7–12	6.94	88.89	4.17	72
13–24	8.51	82.89	8.51	47
>24	5.30	84.85	9.85	132

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.51 Responses to statement 5.B: Locally caught fin-fish are safe to eat during a red tide.

Activity and Yearly Frequency	True	False	D/K	N*
	----------Percent----------			
Saltwater Fishing (Combined)				
0	11.33	69.38	19.29	565
1–6	15.04	75.22	9.73	113
7–12	6.25	83.33	10.42	48
13–24	17.54	73.68	8.77	57
>24	18.02	77.48	4.50	111
Beach-going/Swimming				
0	11.66	69.61	18.73	283
1–6	13.02	72.78	14.20	169
7–12	17.70	74.34	7.96	113
13–24	11.69	74.03	14.29	77
>24	11.90	73.02	15.08	252
Sail or Power Boating				
0	11.31	71.19	17.50	663
1–6	17.65	73.53	8.82	68
7–12	12.82	76.92	10.26	39
13–24	27.27	66.67	6.06	33
>24	14.29	78.02	7.69	91
Other Activities (Combined)				
0	12.14	71.29	16.57	519
1–6	15.32	69.35	15.32	124
7–12	12.50	80.56	6.94	72
13–24	10.64	70.21	19.15	47
>24	13.64	74.24	12.12	132

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.52 Responses to statement 5.C: Locally caught shrimp and crabs are safe to eat during a red tide.

Activity and Yearly Frequency	True	False	D/K	N*
	----------Percent----------			
Saltwater Fishing (Combined)				
0	8.85	76.28	14.87	565
1–6	15.04	76.11	8.85	113
7–12	8.33	85.42	6.25	48
13–24	7.02	82.46	10.53	57
>24	10.81	82.88	6.31	111
Beach-going/Swimming				
0	6.71	78.09	15.19	283
1–6	8.88	79.29	11.83	169
7–12	15.93	75.22	8.85	113
13–24	15.58	74.03	10.39	77
>24	9.13	79.37	11.51	252
Sail or Power Boating				
0	8.75	78.58	12.67	663
1–6	16.18	69.12	14.71	68
7–12	5.13	79.49	15.38	39
13–24	18.18	66.67	15.15	33
>24	10.99	83.52	5.49	91
Other Activities (Combined)				
0	9.25	76.69	14.07	519
1–6	10.48	75.00	14.52	124
7–12	5.56	88.89	5.56	72
13–24	19.15	70.21	10.64	47
>24	9.85	82.58	7.58	132

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.53 Responses to statement 5.D: Red tide toxin is in the water and in the air.

Activity and Yearly Frequency	True	False	D/K	N*
	----------Percent----------			
Saltwater Fishing (Combined)				
0	75.04	15.93	9.03	565
1–6	78.76	14.16	7.08	113
7–12	89.58	8.33	2.08	48
13–24	68.42	26.32	5.26	57
>24	76.58	18.92	4.50	111
Beach-going/Swimming				
0	72.79	17.67	9.54	283
1–6	73.37	18.93	7.69	169
7–12	83.19	11.50	5.31	113
13–24	70.13	18.18	11.69	77
>24	80.16	14.68	5.16	252
Sail or Power Boating				
0	74.96	16.59	8.45	663
1–6	80.88	11.76	7.35	68
7–12	76.92	17.95	5.13	39
13–24	72.73	21.21	6.06	33
>24	81.32	15.38	3.30	91
Other Activities (Combined)				
0	74.76	16.18	9.06	519
1–6	75.00	17.74	7.26	124
7–12	81.94	12.50	5.56	72
13–24	68.09	25.53	6.38	47
>24	81.82	14.39	3.79	132

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.54 Responses to statement 5.E: Red tide causes lasting health problems for people.

Activity and Yearly Frequency	True	False	D/K	N*
	----------Percent----------			
Saltwater Fishing (Combined)				
0	33.98	42.65	23.36	565
1–6	30.97	46.02	23.01	113
7–12	29.17	50.00	20.83	48
13–24	36.84	47.37	15.79	57
>24	31.53	54.05	14.41	111
Beach-going/Swimming				
0	36.40	39.93	23.67	283
1–6	31.95	45.56	22.49	169
7–12	33.63	46.90	19.47	113
13–24	25.97	51.95	22.08	77
>24	32.54	48.02	19.44	252
Sail or Power Boating				
0	32.13	43.14	24.74	663
1–6	38.24	44.12	17.65	68
7–12	35.90	48.72	15.38	39
13–24	15.15	72.73	12.12	33
>24	42.86	49.45	7.69	91
Other Activities (Combined)				
0	33.91	42.97	23.12	519
1–6	24.19	49.19	26.61	124
7–12	37.50	52.78	9.72	72
13–24	27.66	57.45	14.89	47
>24	38.64	41.67	19.70	132

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.55 Responses to statement 5.F: Red tides can be controlled by chemical treatments.

Activity and Yearly Frequency	True	False	D/K	N*
	----------Percent----------			
Saltwater Fishing (Combined)				
0	10.44	55.04	34.51	565
1–6	12.39	62.83	24.78	113
7–12	10.42	68.75	20.83	48
13–24	10.53	68.42	21.05	57
>24	7.21	69.37	23.42	111
Beach-going/Swimming				
0	12.37	55.48	32.16	283
1–6	8.28	64.50	27.22	169
7–12	13.27	58.41	28.32	113
13–24	11.69	49.35	38.96	77
>24	7.54	63.89	28.57	252
Sail or Power Boating				
0	10.71	56.11	33.18	663
1–6	7.35	63.24	29.41	68
7–12	5.13	79.49	15.38	39
13–24	12.12	72.73	15.15	33
>24	10.99	67.03	21.98	91
Other Activities (Combined)				
0	12.33	54.91	32.76	519
1–6	4.03	66.94	29.03	124
7–12	13.89	62.50	23.61	72
13–24	6.38	65.96	27.66	47
>24	7.58	65.91	26.52	132

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.56 Responses to statement 5.G: Red tides only effect those people in the water or at the beach.

Activity and Yearly Frequency	True	False	D/K	N*
	----------Percent----------			
Saltwater Fishing (Combined)				
0	27.61	64.96	7.43	565
1–6	23.01	73.45	3.54	113
7–12	33.33	66.67	0	48
13–24	33.33	63.16	3.51	57
>24	31.53	65.77	2.70	111
Beach-going/Swimming				
0	28.27	63.25	8.48	283
1–6	29.59	65.68	4.73	169
7–12	25.66	69.91	4.42	113
13–24	35.06	61.04	3.90	77
>24	26.19	69.44	4.37	252
Sail or Power Boating				
0	29.26	63.80	6.94	663
1–6	23.53	72.06	4.41	68
7–12	23.08	74.36	2.56	39
13–24	39.39	60.61	0	33
>24	21.98	76.92	1.10	91
Other Activities (Combined)				
0	29.09	64.16	6.74	519
1–6	30.65	64.52	4.84	124
7–12	25.00	68.06	6.94	72
13–24	29.79	70.21	0	47
>24	23.48	72.73	3.79	132

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.57 Responses to statement 5.H: It is safe for humans to swim in a red tide.

Activity and Yearly Frequency	True	False	D/K	N*
	----------Percent----------			
Saltwater Fishing (Combined)				
0	17.70	71.86	10.44	565
1–6	21.24	72.57	6.19	113
7–12	16.67	81.25	2.08	48
13–24	17.54	78.95	3.51	57
>24	18.02	72.97	9.01	111
Beach-going/Swimming				
0	17.67	71.02	11.31	283
1–6	12.43	80.47	7.10	169
7–12	16.81	76.11	7.08	113
13–24	19.48	67.53	12.99	77
>24	22.62	70.63	6.75	252
Sail or Power Boating				
0	16.14	74.06	9.80	663
1–6	26.47	64.71	8.82	68
7–12	17.95	76.92	5.13	39
13–24	30.30	66.67	3.03	33
>24	21.98	72.53	5.49	91
Other Activities (Combined)				
0	17.92	72.45	9.63	519
1–6	15.32	73.29	11.29	124
7–12	16.67	76.39	6.94	72
13–24	23.40	72.34	4.26	47
>24	20.45	6.06	73.48	132

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.58 Responses to statement 4.A: Red tides are caused by tiny marine plankton.

Activity and Monthly Frequency	True	False	D/K	N*
	----------Percent----------			
Restaurants				
0	51.06	17.87	31.06	235
1	61.92	17.22	20.86	302
2–4	57.32	17.57	25.10	239
5–8	60.61	21.21	18.18	66
>8	63.46	17.31	19.23	52
Lodging (hotels/motels)				
0	58.77	17.18	24.05	815
1	44.83	25.86	29.31	58
2–4	57.14	21.43	21.43	14
5–8	75.00	0	25.00	4
>8	33.33	33.33	33.33	3
Fish/Seafood Retail				
0	56.33	16.87	26.81	664
1	55.24	19.05	25.71	105
2–4	67.37	21.05	11.58	95
5–8	58.82	35.29	5.88	17
>8	84.62	7.69	7.69	13
Other Businesses				
0	57.48	16.85	25.67	635
1	56.25	20.54	23.21	112
2–4	58.23	24.05	17.72	79
5–8	65.22	13.04	21.74	23
>8	62.22	15.56	22.22	45

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.59 Responses to statement 4.B: Red tides are naturally occurring.

Activity and Monthly Frequency	True	False	D/K	N*
	----------Percent----------			
Restaurants				
0	69.79	18.72	11.49	235
1	77.15	14.24	8.61	302
2–4	74.90	14.23	10.88	239
5–8	75.76	16.67	7.58	66
>8	63.46	23.08	13.46	52
Lodging (hotels/motels)				
0	73.25	16.44	10.31	815
1	82.76	12.07	5.17	58
2–4	71.43	7.14	21.43	14
5–8	50.00	50.00	0	4
>8	66.67	0	33.33	3
Fish/Seafood Retail				
0	72.74	15.96	11.30	664
1	78.10	17.14	4.76	105
2–4	72.63	17.89	9.47	95
5–8	82.35	17.65	0	17
>8	84.62	0	15.38	13
Other Businesses				
0	73.54	15.43	11.02	635
1	72.32	22.32	5.36	112
2–4	78.48	13.92	7.59	79
5–8	78.26	0	21.74	23
>8	68.89	22.22	8.89	45

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.60 Responses to statement 4.C: The causes of red tide are well known.

Activity and Monthly Frequency	True	False	D/K	N*
	----------Percent----------			
Restaurants				
0	26.81	63.40	9.79	235
1	16.23	78.15	5.63	302
2–4	15.48	75.73	8.79	239
5–8	19.70	68.18	12.12	66
>8	11.54	65.38	23.08	52
Lodging (hotels/motels)				
0	19.51	71.90	8.59	815
1	18.97	72.41	8.62	58
2–4	14.29	85.71	0	14
5–8	25.00	75.00	0	4
>8	33.33	66.67	0	3
Fish/Seafood Retail				
0	19.88	71.69	8.43	664
1	18.10	73.33	8.57	105
2–4	20.00	72.63	7.37	95
5–8	11.76	88.24	0	17
>8	15.38	61.54	23.08	13
Other Businesses				
0	19.53	70.87	9.61	635
1	21.43	74.11	4.46	112
2–4	18.99	77.22	3.80	79
5–8	4.35	82.61	13.04	23
>8	22.22	71.11	6.67	45

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.61 Responses to statement 4.D: Responses to statement 4.D: Red tides occur mostly during fall and winter.

Activity and Monthly Frequency	True	False	D/K	N*
	----------Percent----------			
Restaurants				
0	51.06	21.70	27.23	235
1	54.97	22.52	22.52	302
2–4	50.63	23.01	26.36	239
5–8	65.15	21.21	13.64	66
>8	42.31	32.69	25.00	52
Lodging (hotels/motels)				
0	52.15	22.33	25.52	815
1	56.62	31.03	10.34	50
2–4	57.14	28.57	14.29	14
5–8	100	0	0	4
>8	33.33	33.33	33.33	3
Fish/Seafood Retail				
0	81.36	22.74	25.90	664
1	55.24	22.86	21.90	105
2–4	56.84	23.16	20.00	95
5–8	70.59	17.65	11.76	17
>8	53.85	38.46	7.69	13
Other Businesses				
0	50.08	23.94	25.98	635
1	66.07	16.96	16.96	112
2–4	54.43	21.52	24.05	79
5–8	47.83	30.43	21.74	23
>8	57.78	22.22	20.00	45

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.62 Response to statement 4.E: Red tides only occur in Florida.

Activity and Monthly Frequency	True	False	D/K	N*
	----------Percent----------			
Restaurants				
0	13.62	62.55	23.83	235
1	7.95	66.23	25.83	302
2–4	9.21	69.87	20.92	239
5–8	4.55	66.67	28.79	66
>8	7.69	69.23	23.08	52
Lodging (hotels/motels)				
0	9.45	66.50	24.05	815
1	12.07	70.69	17.24	58
2–4	0	50.00	50.00	14
5–8	25.00	50.00	25.00	4
>8	0	66.67	33.33	3
Fish/Seafood Retail				
0	10.24	65.06	24.70	664
1	7.62	72.38	20.00	105
2–4	9.47	68.42	22.11	95
5–8	0	70.59	29.41	17
>8	0	69.23	30.77	13
Other Businesses				
0	10.87	64.72	24.41	635
1	5.36	76.79	17.86	112
2–4	8.86	56.96	34.18	79
5–8	0	86.96	13.04	23
>8	6.67	71.11	22.22	45

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.63 Responses to statement 4.F: Red tides begin in bays, estuaries, and near the beach.

Activity and Monthly Frequency	True	False	D/K	N*
	----------Percent----------			
Restaurants				
0	38.30	44.68	17.02	235
1	43.38	38.08	18.54	302
2–4	44.77	36.82	18.41	239
5–8	48.48	37.88	13.64	66
>8	44.23	46.15	9.62	52
Lodging (hotels/motels)				
0	41.96	80.61	17.42	815
1	55.17	32.76	12.07	58
2–4	42.86	28.57	28.57	14
5–8	50.00	50.00	0	4
>8	33.33	33.33	33.33	3
Fish/Seafood Retail				
0	41.87	40.81	17.32	664
1	41.90	39.05	19.05	105
2–4	51.58	33.68	14.74	95
5–8	41.18	41.18	17.65	17
>8	38.46	46.15	15.38	13
Other Businesses				
0	42.20	40.16	17.64	635
1	44.64	43.75	11.61	112
2–4	43.04	32.91	24.05	79
5–8	43.48	47.83	8.70	23
>8	46.67	35.56	17.78	45

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.64 Responses to statement 4.G: Red tides never occurred until recently.

Activity and Monthly Frequency	True	False	D/K	N*
	----------Percent----------			
Restaurants				
0	7.66	80.00	12.34	235
1	5.63	78.48	15.89	302
2–4	7.11	78.24	14.64	239
5–8	6.06	83.33	10.61	66
>8	1.92	80.77	17.31	52
Lodging (hotels/motels)				
0	6.26	79.51	14.23	815
1	8.62	79.31	12.07	58
2–4	0	64.29	35.71	14
5–8	0	100	0	4
>8	33.33	66.67	0	3
Fish/Seafood Retail				
0	6.17	78.77	15.06	664
1	10.48	74.29	15.24	105
2–4	4.21	87.37	8.42	95
5–8	0	88.24	11.76	17
>8	7.69	76.92	15.38	13
Other Businesses				
0	6.61	79.37	14.02	635
1	8.93	76.79	14.29	112
2–4	2.53	78.48	18.99	79
5–8	8.70	73.91	17.39	23
>8	2.22	88.89	8.89	45

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.65 Responses to statement 4.H: Red tides can be predicted with total accuracy.

Activity and Monthly Frequency	True	False	D/K	N*
	----------Percent----------			
Restaurants				
0	8.09	76.17	15.74	235
1	6.95	83.77	9.27	302
2–4	7.11	81.59	11.30	239
5–8	7.58	78.79	13.64	66
>8	9.62	80.77	9.62	52
Lodging (hotels/motels)				
0	7.36	80.61	12.02	815
1	10.34	81.03	8.62	58
2–4	7.14	71.43	21.43	14
5–8	0	100.00	0	4
>8	0	100.00	0	3
Fish/Seafood Retail				
0	7.68	80.42	11.90	664
1	4.76	84.76	10.48	105
2–4	10.53	76.84	12.63	95
5–8	5.88	76.47	17.65	17
>8	0	92.31	7.69	13
Other Businesses				
0	8.19	79.37	12.44	635
1	6.25	81.25	12.50	112
2–4	3.80	87.34	8.86	79
5–8	4.35	82.61	13.04	23
>8	8.89	84.44	6.67	45

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.66 Responses to statement 4.I: Red tides never last longer than 1 to 2 weeks.

Activity and Monthly Frequency	True	False	D/K	N*
	----------Percent----------			
Restaurants				
0	23.40	57.45	19.15	235
1	25.50	61.92	12.58	302
2–4	20.50	65.27	14.23	239
5–8	27.27	63.64	9.09	66
>8	28.85	53.85	17.31	52
Lodging (hotels/motels)				
0	23.68	61.35	14.97	815
1	27.59	60.34	12.07	58
2–4	28.57	57.14	14.29	14
5–8	25.00	50.00	25.00	4
>8	0	100.00	0	3
Fish/Seafood Retail				
0	23.49	61.14	15.36	664
1	23.81	63.81	12.38	105
2–4	27.37	56.84	15.79	95
5–8	35.29	64.71	0	17
>8	7.69	76.92	15.38	13
Other Businesses				
0	24.09	59.37	16.54	635
1	19.64	71.43	8.93	112
2–4	30.38	60.76	8.86	79
5–8	21.74	56.52	21.74	23
>8	22.22	66.67	11.11	45

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.67 Responses to statement 5.A: Locally caught oysters and clams are safe to eat during a red tide.

Activity and Monthly Frequency	True	False	D/K	N*
	----------Percent----------			
Restaurants				
0	81.70	6.81	11.49	235
1	84.77	6.95	8.28	302
2–4	80.75	7.11	12.13	239
5–8	86.36	4.55	9.09	66
>8	80.77	13.46	5.77	52
Lodging (hotels/motels)				
0	82.70	6.99	10.31	815
1	81.03	10.34	8.62	58
2–4	92.86	7.14	0	14
5–8	75.00	0	25.00	4
>8	100.00	0	0	3
Fish/Seafood Retail				
0	82.23	7.38	10.39	664
1	78.10	10.48	11.43	105
2–4	89.47	3.16	7.37	95
5–8	82.35	5.88	11.76	17
>8	100.00	0	0	13
Other Businesses				
0	81.57	7.87	10.55	635
1	87.50	5.36	7.14	112
2–4	81.01	5.06	13.92	79
5–8	86.96	8.70	4.35	23
>8	88.89	4.44	6.67	45

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.68 Responses to statement 5.B: Locally caught fin-fish are safe to eat during a red tide.

Activity and Monthly Frequency	True	False	D/K	N*
	----------Percent----------			
Restaurants				
0	13.62	69.36	17.02	235
1	11.92	74.83	13.25	302
2–4	12.13	71.55	16.32	239
5–8	13.64	74.24	12.12	66
>8	15.38	69.23	15.38	52
Lodging (hotels/motels)				
0	12.52	72.15	15.34	815
1	12.07	75.86	12.07	58
2–4	28.57	57.14	14.29	14
5–8	0	75.00	25.00	4
>8	33.33	66.67	0	3
Fish/Seafood Retail				
0	12.05	71.69	16.27	664
1	11.43	70.48	18.10	105
2–4	15.79	76.84	7.37	95
5–8	29.41	64.71	5.88	17
>8	15.38	84.62	0	13
Other Businesses				
0	12.44	72.28	15.28	635
1	13.39	73.21	13.39	112
2–4	11.39	67.09	21.52	79
5–8	21.74	73.91	4.35	23
>8	13.33	75.56	11.11	45

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.69 Responses to statement 5.C: Locally caught shrimp and crabs are safe to eat during a red tide.

Activity and Monthly Frequency	True	False	D/K	N*
	----------Percent----------			
Restaurants				
0	8.09	77.02	14.89	235
1	8.28	82.78	8.94	302
2–4	11.30	74.48	14.23	239
5–8	12.12	77.27	10.61	66
>8	15.38	71.15	13.46	52
Lodging (hotels/motels)				
0	9.33	78.40	12.27	815
1	8.62	79.31	12.07	58
2–4	35.71	57.14	7.14	14
5–8	25.00	50.00	25.00	4
>8	0	66.67	33.33	3
Fish/Seafood Retail				
0	9.64	77.86	12.50	664
1	8.57	75.24	16.19	105
2–4	9.47	83.16	7.37	95
5–8	23.53	70.59	5.88	17
>8	7.69	76.92	15.38	13
Other Businesses				
0	8.66	78.74	12.60	635
1	10.71	80.36	8.93	112
2–4	10.13	70.89	18.99	79
5–8	26.09	60.87	13.04	23
>8	13.33	82.22	4.44	45

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.70 Responses to statement 5.D: Red tide toxin is in the water and in the air.

Activity and Monthly Frequency	True	False	D/K	N*
	----------Percent----------			
Restaurants				
0	71.91	17.45	10.64	235
1	79.47	14.90	5.63	302
2–4	75.73	16.32	7.95	239
5–8	83.33	15.15	1.52	66
>8	67.31	21.15	11.54	52
Lodging (hotels/motels)				
0	76.32	15.83	7.85	815
1	75.86	17.24	6.90	58
2–4	64.29	35.71	0	14
5–8	75.00	25.00	0	4
>8	66.67	33.33	0	3
Fish/Seafood Retail				
0	75.15	16.87	7.98	664
1	76.19	17.14	6.67	105
2–4	83.16	11.58	5.26	95
5–8	82.35	17.65	0	17
>8	61.54	15.38	23.08	13
Other Businesses				
0	75.12	16.54	8.35	635
1	81.25	14.29	4.46	112
2–4	77.22	16.46	6.33	79
5–8	56.52	30.43	13.04	23
>8	84.44	11.11	4.44	45

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.71 Responses to statement 5.E: Red tide causes lasting health problems for people.

Activity and Monthly Frequency	True	False	D/K	N*
	----------Percent----------			
Restaurants				
0	37.02	35.74	27.23	235
1	29.47	50.99	19.54	302
2–4	35.56	45.61	18.83	239
5–8	36.36	45.45	18.18	66
>8	23.08	51.92	25.00	52
Lodging (hotels/motels)				
0	33.37	44.54	22.09	815
1	36.21	46.55	17.24	58
2–4	21.43	71.43	7.14	14
5–8	0	75.00	25.00	4
>8	33.33	33.33	33.33	3
Fish/Seafood Retail				
0	34.64	43.83	21.54	664
1	26.67	46.67	26.67	105
2–4	33.68	48.42	17.89	95
5–8	17.65	70.59	11.76	17
>8	30.77	46.15	23.08	13
Other Businesses				
0	35.59	41.26	23.15	635
1	26.79	55.36	17.86	112
2–4	25.32	58.23	16.46	79
5–8	21.74	56.52	21.74	23
>8	35.56	46.67	17.78	45

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.72 Responses to statement 5.F: Red tides can be controlled by chemical treatments.

Activity and Monthly Frequency	True	False	D/K	N*
	----------Percent----------			
Restaurants				
0	8.51	56.17	35.32	235
1	10.93	62.25	26.82	302
2–4	9.21	59.83	30.96	239
5–8	16.67	56.06	27.27	66
>8	11.54	59.62	28.85	52
Lodging (hotels/motels)				
0	9.94	59.21	30.55	815
1	13.79	55.17	31.03	58
2–4	21.43	64.29	14.29	14
5–8	0	75.00	25.00	4
>8	0	66.67	33.33	3
Fish/Seafood Retail				
0	10.24	60.09	29.67	664
1	5.71	61.90	32.38	105
2–4	13.68	54.74	31.58	95
5–8	11.76	47.06	41.18	17
>8	23.08	53.85	23.08	13
Other Businesses				
0	9.76	58.90	31.34	635
1	16.07	55.36	28.57	112
2–4	5.06	60.76	34.18	79
5–8	17.39	60.87	21.74	23
>8	8.89	73.33	17.78	45

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.73 Responses to statement 5.G: Red tides only effect those people in the water or at the beach.

Activity and Monthly Frequency	True	False	D/K	N*
	----------Percent----------			
Restaurants				
0	27.66	66.81	5.53	235
1	29.47	69.90	5.63	302
2–4	27.20	66.95	5.86	239
5–8	25.76	66.67	7.58	66
>8	30.77	65.38	3.85	52
Lodging (hotels/motels)				
0	27.85	66.26	5.89	815
1	31.03	65.52	3.45	58
2–4	35.71	64.29	0	14
5–8	25.00	50.00	25.00	4
>8	33.33	66.67	0	3
Fish/Seafood Retail				
0	28.92	65.06	6.02	664
1	21.90	73.33	4.76	105
2–4	30.53	66.32	3.16	95
5–8	35.29	52.94	11.76	17
>8	15.38	76.92	7.69	13
Other Businesses				
0	29.13	64.41	6.46	635
1	26.79	69.64	3.57	112
2–4	24.05	72.15	3.80	79
5–8	30.43	60.87	8.70	23
>8	24.44	73.33	2.22	45

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

Table 6.74 Responses to statement 5.H: It is safe for humans to swim in a red tide.

Activity and Monthly Frequency	True	False	D/K	N*
	----------Percent----------			
Restaurants				
0	15.32	74.89	9.79	235
1	18.87	74.17	6.95	302
2–4	17.57	72.80	9.62	239
5–8	24.24	62.12	13.64	66
>8	21.15	73.08	5.77	52
Lodging (hotels/motels)				
0	17.79	73.13	9.08	815
1	17.24	77.59	5.17	58
2–4	50.00	42.86	7.14	14
5–8	0	100	0	4
>8	0	66.67	33.33	3
Fish/Seafood Retail				
0	17.17	73.49	9.34	664
1	17.14	75.24	7.62	105
2–4	21.05	72.63	6.32	95
5–8	41.18	47.06	11.76	17
>8	23.08	69.23	7.69	13
Other Businesses				
0	16.85	74.33	8.82	635
1	16.96	73.21	9.82	112
2–4	27.85	62.03	10.13	79
5–8	26.09	73.91	0	23
>8	17.78	73.33	8.89	45

*The total N for each strata may not equal to 894 due to the exclusion of some respondents who either could not or refused to identify their demographic strata.

C. Responses to "Other" on survey instrument questions

Red Tide "Other" Responses

Question 2h:

-personal experience = 206
-first-hand experience = 73
-been there = 2
-books = 2
-laboratory = 2
-living on beach = 4
-fishing guide
-fisherman = 3
-school = 14
-work = 6
-dept. of health
-classes = 2
-colleagues
-seen it = 2
-news
-close to bay
-coast
-smell
-researcher
-lived in New England
-smelled it
-lecture
-aquarium
-charter captain
-saw in Washington state
-living in Cape Cod
-island live = 2
-mote marine lab = 7
-live there = 3
-living in it = 3
-seen red tide
-observations = 2
-beach = 2
-discovery channel, experience
-lifeguarding
-hearsay
-beach posting
-marine
-being there for 30 years
-on beach
-living there for 25 years
-magazines = 7
-Sea World
-live near it
-resident
-going to the beach

-in the Navy, near ocean
-by living there
-by observing
-living in bay

Question 3f:
-skin condition
-toxins in water = 3
-bad for environment = 2
-plant or weed in the water
-economy = 2
-unpleasant
-stops people from visiting the beach
-oxygen depletion = 2
-can't breathe = 3
- beach closed = 2
-makes me feel like crap
-stay out of the water
-horrible, makes people sick, dangerous for children
-usually doesn't occur
-biological effect
-dangerous = 3
-air and beach pollutions = 4
-annoying = 3
-minor
-devastating - means staying inside
-can't play golf with friends, moved away
-people leave the beach = 2
-something needs to be done
-tourists can't go to the beach
-affects people badly
-tourism affected
-algae bloom = 6
-not safe to go in water = 2
-nasty = 7
-serious
-doesn't help environment
-terrible
-bad = 4
-mess
-sneeze = 2
-destroys coastline, mess up tourism
-bad effects
-not healthy
-causes physical problems for people, kills animals
-no tourists
-devastating = 7
-bad for tourism = 5
-makes you sick
-kills nutrients
-pollution of beaches = 2
-discourage tourists
-toxic to sealife = 3

-devastating to environment, unpleasant
-devastating to a manatee, mystery = 2
-breathing problems = 7
-no swimming = 2
-danger to ocean
-seafood prices
-people as sick as animals = 2
-disastrous, spoils fishing = 2
-gross
-can't remain outside
-can't go to beach = 4
-different every year
-ruined habitat
-respiratory, uncomfortable
-sinus, coughing
-contamination
-not good for tourists
-throat sore = 2
-can't eat shellfish/breathing
-haven't seen much of it
-never saw it
-way out in the sea
-human illness
-male sea creatures behave differently
-bacteria growth
-choking = 2
-residents off the beach
-discourage people to go near beach
-serious problems causes illness
-kills turtles
-varies, depends on how long and severe
-effect people
-people get sick
-mess up shoreline
-pain in the ass
-it effects me
-poor quality water
-allergic
-hurt business
-miserable outside I-spores
-bad boating days
-really try to stay away from it
-water gets warmer
-foam on water
-respiratory problems
-not good sea life
-expensive to clean up, hard for people to go out, hard on their health
-tourists, people on beach
-whales wash up
-undesirable to swim
-takes oxygen from water, health problems (asthma)
-pollutes water

-blown by wind
-nausea, headaches
-toxic
-allergies

Question 6k1:
-walking on shoreline
-kiting
-walk = 8
-volleyball = 2
-picnic = 3
-sunbathing = 3
-mote marine
-exercise
-shark-teeth hunting
-watch girls
-boating
-crab traps
-walking on beach
-games
-picture-taking
-watch sunsets
-painting
-BBQ
-bird-watching at beach
-skin board
-walking around

Question 7e:
-art galleries and craft shows
-marina
-different restaurants
-no answer = 2
-photography
-art shows
-friends
-street fairs
-boating club

Question 8k1:
(no answers)

Question 9e1:
-pier