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Swamp tours in Louisiana post Hurricane Katrina and Hurricane Rita

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SWAMP TOURS IN LOUISIANA POST HURRICANE KATRINA AND HURRICANE RITA

A Thesis

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanic College
in partial fulfillment of the
requirements for the degree of
Master of Science

in

The School of Renewable Natural Resources

by
Dawn Schaffer
B.S. Southampton College of Long Island University, 2003
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ABSTRACT

Hurricanes Katrina and Rita made landfall in southern Louisiana during August and September 2005, respectively. Prior to these storms swamp tours were a popular nature-based tourism experience that entertained visitors while teaching them about local flora, fauna, and culture. The number of swamp tour businesses in the state was slowly increasing. The purpose of this study was to determine how many swamp tours were operating after the hurricanes, what type of damage they sustained, and how they repaired their businesses. Differences between those tours that remained open after the hurricanes and those that closed were also examined. A 3-phase mail survey was used to collect data throughout the winter and spring 2006 with a response rate of 74%. Respondents included 22 open businesses and nine closed businesses, seven of which planned to re-open eventually. The most common damages reported were loss of telephone service and damage to the swamp. Fewer tourists were also a problem for swamp tours, as 72% reported business was much lower than before the storms. Significantly more swamp tour businesses that had been operating for more than 15 years remained open after the storms than those businesses operating for less than 15 years. Swamp tour businesses in Louisiana were primarily family owned and employed fewer than five people. The majority of swamp tour owners believed their businesses were important to both the state tourism industry and the local economy of their area. This study also found that a new type of tour, the New Orleans disaster tour, was offered by four businesses that conduct swamp tours. A follow up survey after a period of one or more years is suggested to determine if the number of fully operational swamp tour businesses in the state has increased and detect any changes in the number of tourists in the area.

INTRODUCTION

Tourism

Tourism is the second largest industry in the state of Louisiana and is very important to the state's economy (LADCRT 2004). During 2003, more than 21 million people visited Louisiana spending over \$9.4 billion in the state and more than 120,000 people were employed by the tourism industry. For 2005, tourism revenue was expected to top \$10 billion and 7,000 new jobs were expected in the industry (LADCRT 2004). Nature-based tourism is an important segment of the Louisiana tourism industry. In 2001, visitors to Louisiana spent \$168 million on wildlife watching alone (USDOI 2001). The state supports many types of nature-based tourism activities, including: swamp tours, hunting, hiking, recreational boating, recreational fishing, camping, state parks, bird watching, scenic drives, and golfing (LADCRT 2004).

Louisiana can be divided into five distinct geographic tourism regions: Sportsman's Paradise, Crossroads, Cajun Country, Plantation Country, and Greater New Orleans (LTPA 2005). Coastal Louisiana includes the Cajun Country, Plantation Country, and Greater New Orleans regions. The natural and cultural resources of the coastal region support a number of recreational activities that encompass the historical, vocational, and cultural traditions of southern Louisiana as well as the many wildlife species that make Louisiana their home (LADCRT 2004). One such tourism activity is wildlife viewing with one of the numerous swamp tours offered by nature-based businesses in Louisiana.

According to the Louisiana Department of Culture, Recreation, and Tourism Annual Report 2004, Louisiana is continually thinking of new ways to draw attention to the many sites and activities that are unique to the area. The state is making "strategic investments in developing eco-cultural and heritage tourism" and "will continue to grow an important segment of Louisiana tourism." (LADCRT

2004). The report also discussed nature-based programs on which the state is focusing such as the America's Wetland Initiative and the Louisiana African American Heritage Trail, and how these and other similar programs are important components of their "vision to brand Louisiana as the pre-eminent heritage and ecotourism destination in the world" (LADCRT 2004).

Nature-based tourism activities contribute both culturally and economically to the tourism industry of Louisiana. During 2001, anglers, hunters, and wildlife watchers spent \$1.3 billion in Louisiana (USDOI 2001). The expenditures of all people who participate in nature-based tourism activities while in Louisiana have not yet been evaluated. Although this project is not a study on the economics of disaster recovery for nature-based businesses, hopefully it will provide useful information for future studies. Hvenegaard, Butler, & Krystofiak (1989) concluded that the increasing popularity of nature-based or wildlife tourism throughout the world is making a substantial economic contribution.

Tourism is a combined product involving transportation, accommodations, catering, natural resources, entertainments, and other facilities and services such as shops, banks, travel agents, and tour operators (Sinclair and Stabler 1997). Visitors to southeastern Louisiana may not come for the sole purpose of participating in a nature-based tourism activity, but while they are in Louisiana they will most likely contribute to the local economy by staying at hotels, eating in restaurants, visiting other attractions, and buying souvenirs. A decrease in the number of swamp tour businesses in the state may negatively influence the length of time future visitors spend in the state and consequently reduce the amount of money they spend while in Louisiana, further impacting the economy.

Hurricanes Katrina and Rita

The occurrence of Hurricane Katrina on August 29, 2005, a strong category three storm that made landfall twice in southeastern Louisiana, caused extensive loss of life and property damage to the

Louisiana coast (NOAA 1 2005). The National Oceanographic and Atmospheric Administration (2005) called Hurricane Katrina, “one of the most devastating natural disasters in recent US history.” The tourism industry was one of many industries in Louisiana to suffer as a result of this storm. The city of New Orleans, a major tourist center, suffered severe damage due to strong winds, heavy rainfall, and storm surge as well as flooding caused by levee breaches (NOAA 1 2005).

The Louisiana Gulf Coast was further damaged on September 24, 2005, when Hurricane Rita, a category three storm, made landfall in Cameron Parish, Louisiana, near the Texas/Louisiana border, and continued northwest into Texas. There the hurricane weakened to a tropical storm, turned to the northeast, and returned to Louisiana with tropical depression force winds (NOAA 2 2005). Although the storm made landfall in southwestern Louisiana it caused significant damage along the entire Louisiana coast and further impacted those areas already distressed by Hurricane Katrina. (NOAA 2 2005). Hurricanes Katrina and Rita and the damage they caused to southern Louisiana’s many natural areas no doubt affected the LADCRT’s 2004 plans for nature-based tourism. However, even though the state’s main focus directly after the storms was trying to ensure the safety of its citizens, how the storm would affect the tourism industry was still an important issue.

On September 20, 2005, the Louisiana Department of Culture, Recreation, and Tourism released its new four-point plan to rebuild Louisiana’s tourism and cultural industries, called *Louisiana Rebirth: Restoring the Soul of America*. The points of the new plan are as follows:

1. Rebuild Louisiana to worldwide preeminence as a top tourist destination.
2. Make Louisiana’s cultural economy the engine of economic and social rebirth.
3. Build better lives and livelihoods than before for all Louisiana’s people.
4. Make Louisiana's recovery the standard for high performance, accountability, and ethical behavior.

The new plan recognizes that Hurricane Katrina was the largest disaster Louisiana has ever experienced and that the loss of human lives, separation of families, and destruction of communities and property will never be forgotten. The *Louisiana Rebirth: Restoring the Soul of America* plan also acknowledges that Louisiana now has the opportunity to rebuild to a better condition while demonstrating that the state is capable of response, rebuilding, and reconciliation. Although this plan was created prior to Hurricane Rita, it was amended to include areas damaged by the storm (LADCRT 2005).

The purpose of this study is to determine the affects of Hurricane Katrina and Rita on the swamp tour industry in the state of Louisiana. Although swamp tours only represent a small portion of the tourism industry as a whole, this study will provide insight into the rebuilding process for nature-based tourism businesses throughout southern Louisiana. This evaluation could provide an important component to the success of the *Louisiana Rebirth: Restoring the Soul of America* plan.

Objectives

1. To identify the type of damages sustained by each individual swamp tour company and determine whether they are going to continue in the industry.
2. To determine the rebuilding period and process for affected businesses.
3. To determine the affects the hurricanes had on those swamp tour businesses not damaged by the storms.

REVIEW OF LITERATURE

Nature-Based Tourism

Tourism has numerous impacts on society. As tourism in an area increases, the community becomes more involved in broader national and international systems and less dependent on local resources (Cohen 1984). The community's greater reliance on external factors (i.e. national prosperity or recession) makes it more vulnerable to events over which it has no control (Cohen 1984). The biggest impact new tourism has on a community is an increased level of economic activity, which in turn, causes economics to gain more importance in locals' attitudes and relationships with both the tourists and each other. The development of tourism in a community also creates new jobs, which retain people who might otherwise move away from the area to find work and draws those looking for employment to the community (Cohen 1984). The tourism industry in southern Louisiana suffered in the aftermath of Hurricanes Katrina and Rita. As tourism increases in the area, the economy should also increase and more jobs may be created.

Nature-based tourism is one of the many facets of the tourism industry and also one of the fastest growing sectors (Giannecchini 1993). It is a very diverse division of the industry that includes such varied activities as wildlife viewing, fishing, boating, and skiing (Pickering and Weaver 2003). The term nature-based tourism is similar to and often confused with the term ecotourism; varying definitions exist for each word. Strict definitions for either term have not yet been agreed upon (Giannecchini 1993). Giannecchini (1993) defined ecotourism as a partnership between the travel industry, tourists, and conservation sponsors to support and enhance environmental awareness through responsible travel. Ritchie and Crouch (2003) defined nature-based tourism as forms of tourism in which the main motivation of the tourist is the observation and appreciation of nature. According to Ditton, Holland, and Anderson (2002), "ecotourism is a component of a broader category of tourism-

nature tourism.” The researchers also stated the purpose of nature-based tourism is to enjoy generally undeveloped natural areas or wildlife while ecotourism has additional dimensions, such as activities have a low impact on the environment, educate the traveler, contribute funds for conservation, and teach respect for different cultures (Ditton, Holland, & Anderson 2002). It is difficult to classify wildlife viewing on a swamp tour as a form of either nature-based tourism or ecotourism. Although it is a form of nature-based tourism, each individual swamp tour business offers a different experience to their customers and some may meet the ecotourism qualifications described above whereas others may not.

Fennell (2001) reported on the status of nature-based tourism in the United States. He found that the federal government is not involved in the nature-based industry. States are free to make their own protocols, mandates, and budgets for its development. Pickering and Weaver (2003) stated nature-based tourism occurs in both private and public places; therefore, it can be managed by public agencies, private industry, and non-governmental organizations. These findings are important to this study because the state of Louisiana is now faced with the task of rebuilding a large portion of their tourism industry. A part of the tourism industry, swamp tour businesses previously showed an interest in developing a swamp tour association (O’Mara, Liffman, & Henning 1998); a few swamp tour businesses were previously involved in a committee that examined the development of a voluntary certification program for all nature-based tourism businesses in the Atchafalaya Basin of Louisiana. The committee focused on the Morgan City area for a trial run of the program and found that visitors often chose to frequent businesses that protect natural resources; visitors regarded a voluntary certification program as a visible sign of those activities. Businesses can therefore, use program participation as a marketing tool. (Barrett-O’Leary 2004).

Swamp Tours in Louisiana

There has been one previous study on swamp tour businesses in Louisiana (O'Mara, Liffman, and Henning 1998). The researchers felt that a new type of tourist was emerging, one who was searching for unique experiences they could not get at home and that the tourism industry would continue to develop into different specialty areas to appease them. For the purpose of their study, nature-based tourism was defined as a "specialty area that provides a tourist with an up-close encounter with natural beauty and cultural uniqueness" (O'Mara, Liffman, and Henning 1998). When they conducted their study, nature-based tourism businesses were becoming popular in coastal Louisiana parishes that were seeking economic enhancement while protecting their natural and cultural resources; economic gains of these parishes also contributed to the economy of the state as a whole. The success of these businesses peaked the researchers' interest in a better understanding of the organization of these enterprises. This descriptive study of Louisiana's swamp tours was the initial step to "understand the importance of nature-based tourism to the state's economy" (O'Mara, Liffman, and Henning 1998). Swamp tours were chosen as the business to study because they were primarily small nature-based tourism businesses whose growth in the last few years had exceeded expectations and little information was known about their structure and performance, ownership patterns, needs, challenges, and opportunities.

O'Mara, Liffman, and Henning (1998) conducted the majority of their surveys during face-to-face interviews, but there were some telephone and mail surveys included in this project. There were 43 swamp tours in operation at the time of the study and 37 agreed to participate. Of the 43 businesses named in that report, 22 were still operating in August 2005, prior to Hurricane Katrina. When swamp tour operators were asked an open-ended question regarding what they saw as the "one most negative" factor that would interfere with business success, "possibility of a hurricane" was one of the

16 different responses given. In their conclusions, O'Mara, Liffman, and Henning (1998) suggested five measures to protect the sustainability of swamp tours in Louisiana: 1. Producing more educational materials and/or training programs for swamp tour operators; 2. Organizing a swamp tour association; 3. Addressing litter problems within the state; 4. Planning and managing for attraction development; and 5. Developing outdoor educational experiences for school groups. Swamp tour owners affected by Hurricanes Katrina and Rita may want to take these ideas into consideration when rebuilding their businesses for the future.

A follow up to the O'Mara, Liffman and Henning study was conducted by Louisiana Sea Grant (2005) as a component of their overview study of nature-based tourism in Louisiana. The study was conducted during early summer 2005, prior to Hurricanes Katrina and Rita, however, they did attempt to contact swamp tour businesses during the fall of 2005. The questionnaire used in the study was a modified version of the 1998 questionnaire. The study identified 46 swamp tour businesses in Louisiana and 27 businesses responded. The majority of swamp tours that responded were small businesses that employed fewer than two people (Louisiana Sea Grant 2005). Fifty percent of respondents reported the number of passengers taking their tours has increased since the late 1990s. The most common concerns swamp tour owners had were litter problems, insurance issues, and commissions charged by hotel concierges who assisted in arranging tours. When asked to identify the "one most negative" factor that could hinder business success, operators did not list "possibility of a hurricane" as they had in the 1998 study. When swamp tour owners were contacted in the fall of 2005 27 were operating, three were closed and did not plan to re-open, and 16 could not be contacted (Louisiana Sea Grant 2005).

Hurricanes and Businesses

Of the literary resources available pertaining to the effect of natural disasters on businesses, those concerning tourism or nature-based tourism businesses specifically are limited. Piotrowski, Armstrong, and Stopp (1997) examined stress factors for small business owners in the West Florida Panhandle after Hurricanes Erin and Opal. They sampled 500 small business owners in the main population centers affected by both storms; the type of business was not a factor in the study. The survey instrument inquired on the severity of hurricane damage to the business, if the area was under mandatory evacuation, and if the business was forced to relocate. They conducted an extensive literature search for materials related to hurricanes, business, and stress and found only one relevant study conducted by Sanchez, Korbin, and Viscarra (1995) after Hurricane Andrew struck in Florida (Piotrowski, Armstrong, and Stopp 1997). Sanchez, Korbin, and Viscarra (1995) examined the effects of corporate relief efforts on employees' organizational and health strains. Their study determined that forms of support that exceed meeting employees' basic needs had little effect on reducing employee strain (Sanchez, Korbin, & Viscarra 1995).

Tierney (1997) studied the immediate and long-term effects of the Northridge Earthquake on randomly chosen businesses in the cities of Los Angeles and Santa Monica California, two areas that were particularly hard hit by the earthquake. The Northridge earthquake of 1994 impacted the greater Los Angeles region, and at the time their article was written, it was the costliest disaster in U.S. history. Data for their descriptive study was collected through a mail survey. Their study encompassed a wide range of types of businesses. The most important conclusion derived from the Northridge earthquake survey was that it is important for the idea of disaster-related business vulnerability to include both physical damage at the business site and a variety of off-site impacts, such as loss of telephone service and disruption of customers, supplies, and goods (Tierney 1997).

Some studies concern how natural disasters affect the tourism industry. The tourism industry and natural disasters are not usually associated with one another, but are sometimes connected by geography (Murphy and Bayley 1989). Murphy and Bayley (1989) stated “tourism is especially vulnerable to a range of disaster events because it depends on so many components and individual businesses.” Their study reviewed the 1980 eruption of Mt. St. Helens and the 1985 East Kootenay forest fires to assess the role of tourists in natural-disaster planning. Their study discussed the need for disaster prone, tourism rich communities to educate visitors on emergency procedures. Murphy and Bailey (1989) also stated that media attention and public awareness could aid post-disaster recovery in a community by increasing tourism in the area and boosting the economy. There were no articles found in the literature search that focused on the rebuilding process of a specific business sector after a natural disaster, the long and short term effects the disaster has on these businesses, and how their recovery affects the economy of the impacted area. No articles found during the literature search dealt with the effects of natural disasters on natural areas and the tourism businesses and activities that rely on them.

MATERIALS AND METHODS

Population

The first step of the implementation of this study was to identify all swamp tour businesses in the state of Louisiana. A complete list of swamp tour businesses and their contact information was generated with the following sources:

- Internet Searches including Google.com, Yellowpages.com, Anywho.com, and NewOrleansWebsites.com
- Telephone Directories
- Louisiana Welcome Centers: Jackson Square New Orleans, I-55 Kentwood, I-10 Slidell, and I-10 Atchafalaya
- Louisiana Official Tour Guide 2005

The search for swamp tours in Louisiana yielded a population of 51 businesses for this study. The locations of the swamp tour businesses were divided into three geographic regions comprised of southern Louisiana parishes that were declared emergency areas by the federal government during Hurricane Katrina, Hurricane Rita, or both of the storms (LDEQ 1& 2 2005). There were 18 swamp tour businesses located in parishes declared emergency areas during Hurricane Katrina, 3 during Hurricane Rita, and 30 during both of the hurricanes.

Procedure

Attempts were made to contact each business by telephone October 9-12, 2005, two weeks after Hurricane Rita. Those swamp tours able to be reached by telephone were asked if their business was operating. This contact allowed the researcher to determine if a mail survey would be a practical method under the circumstances following the storms.

The survey of southern Louisiana swamp tour businesses was conducted throughout the winter and spring 2006. Swamp tour businesses were initially contacted by telephone on February 16, 2006, between 1000 hours and 1500 hours. At this time, the survey was explained to them and they were asked if they would agree to participate in the study. The benefits of this study with respect to their business were emphasized. These benefits included determining how many businesses were damaged by the storms, how many businesses were providing service, how the tour operators as a group felt about the future of their business, how the damage to the areas the tours visit affected their business, and if the hurricanes caused the operators to change the educational information they present to their customers.

A mail survey was preferred over a telephone survey or a structured face-to-face interview for several reasons. The mail survey allowed a large amount of data to be collected at relatively low cost and with a small staff. The mail survey also provided a sense of privacy for the respondents and allowed them to complete the questionnaire at their convenience. This was especially important to this study because answering the questionnaire may have been emotional for some respondents. The use of a mail survey allowed the researcher to cover a large geographic area easily and without travel to individual sites. This method is also less sensitive to interviewer biases than the other types of surveys (Dillman 2000). By using a mail survey, the researcher was able to ask more complex questions and have a more extensive questionnaire than would have been possible with a different data collection method (Salant and Dillman 1994). Due to the circumstances under which this survey was conducted (i.e. the hurricane caused many people to be displaced, damaged telephone lines, etc.), a mail survey was chosen over a telephone survey or a structured interview in hopes that mail was either being received by swamp tour owners or forwarded to their current addresses.

Survey questionnaires were administered to swamp tour businesses by first class mail. Methods for questionnaire development and mailing distribution followed those described by Dillman (2000). Questions included in the survey instrument were developed and refined in a series of 4 drafts. To encourage participants to take part in the survey, the questionnaire was developed to be attractive to respondents. The questionnaire booklet was light green in color with an alligator image on the cover. A cover letter was included to inform participants of the purpose of the study. Font used for both the cover letter and questionnaire was easy to read. The questionnaire was developed to make responding simple to reduce burden on the part of the respondents and minimize order effects. The questionnaire included fixed alternative questions, some with an open-ended “other” response option. Open-ended format was also used for some of the demographic questions. To maximize the effectiveness of the survey instrument, different types of fixed alternative questions were used, including nominal (named categories with no order), binomial (e.g. yes, no), ordinal (e.g. Likert scale) and interval (estimated costs, continuous data converted to interval scale for data analysis).

The first mailing of the survey included a cover letter, questionnaire, and a pre-addressed, stamped, return envelope. The cover letter included a brief description of the purpose of the survey and contact information in the event the respondent had questions or wanted to request more information on the study. The cover letter also explained to the respondent that participation in the survey was voluntary and their answers would remain confidential. Swamp tour businesses were coded numerically with a random numbers table. This code was stamped on the questionnaire. The first mailing of the questionnaire took place February 22, 2006 and was followed 10 days later by a postcard reminding respondents to fill out and return their questionnaire if they had not already done so. As questionnaires were returned, respondent names and addresses were removed from the mailing list. A second mailing of questionnaires was sent to non-respondents March 16, 2006, 10 days after

the post card reminder. The second postcard reminder followed the second questionnaire mailing 14 days later. A third mailing of questionnaires was conducted April 12, 2006.

Data Analysis

Data analysis was conducted with SPSS® for Windows (SPSS v. 10.0, SPSS, Inc.).

Descriptive statistics including means and frequencies were used to determine trends and compare variables. Key variables were analyzed with contingency tables. These variables were: “pastdam”, “open”, “passeng”, “typeboat”, “combyear”, “family”, and “employee”. To use the contingency function in SPSS, data for certain variables were collapsed to create binomial responses. The variable “hours” representing the question, “How do your current hours of operation compare to your hours of operation before Hurricanes Katrina and Rita?” originally had five answer choices, these responses were combined into two categories (businesses that were open after the hurricanes and businesses that were not open after the hurricanes) and re-entered into the database under the variable “open” (Table 5). The variable “years” representing the question, “How long has your swamp tour business been in operation?” was originally analyzed on an interval scale and then condensed into two categories (businesses open 15 years or less and businesses open 15 years or more) and re-entered into the database under the variable “combyear” (Table 6). Pearson’s Chi Square was used to analyze statistical significance of the following variables: “pastdam”, “open”, “passeng”, “combyear”, and “family”.

After data entry was completed and analysis was begun, an additional question arose which concerned the operating status of the swamp tour businesses. This lead me to investigate the possible differences between those swamp tour businesses that closed following Hurricanes Katrina and Rita and those swamp tour businesses that remained open.

Table 1. Variable “hours” collapsed to variable “open” for contingency table

	Answer choices for variable “open”	
	Open	Not Open
Answer choices for variable “hours”	25% Open	Not Open
	50% Open	
	75% Open	
	100% Open	

Table 2. Variable “years” collapsed to variable “combyear” for contingency table

	Answer choices for variable “combyear”	
	15 years or Less	More than 15 years
Answer choices for variable “years”	Less than 5 years	16-20 years
	6-10 years	21-25 years
	11-15 years	26-30 years

RESULTS

Swamp Tours Prior to Hurricanes Katrina and Rita

Prior to Hurricane Katrina there were 51 swamp tour businesses in 17 Louisiana parishes (Table 3). A total of 44 swamp tours were declared emergency areas due to one or both of the hurricanes (Figure 1). Of the 25 parishes declared emergency areas from Hurricane Katrina, 15 of these parishes were home to 94% of swamp tour businesses in the state (Table 4). Of the 19 parishes declared emergency areas due to Hurricane Rita, 10 of these parishes were home to 65% of swamp tour businesses in the state (Table 5). There is no occurrence of a swamp tour business located in a parish that was not declared an emergency area during either Hurricane Katrina or Hurricane Rita. A total of 30 (59%) swamp tour businesses were located in parishes that were declared emergency areas during both hurricanes.

Table 3. Swamp tour businesses per parish prior to Hurricane Katrina

Parish	Number of swamp tours	Percent of swamp tours
Acadia	1	2%
Ascension	1	2%
Iberia	1	2%
Iberville	2	4%
Jefferson	9	17%
Lafayette	2	4%
Lafourche	2	4%
Orleans	6	12%
Plaquemines	1	2%
St. Charles	5	10%
St. James	1	2%
St. John the Baptist	2	4%
St. Martin	5	10%
St. Mary	1	2%
St. Tammany	6	12%
Tangipahoa	1	2%
Terrebonne	5	10%
Total	51	100%

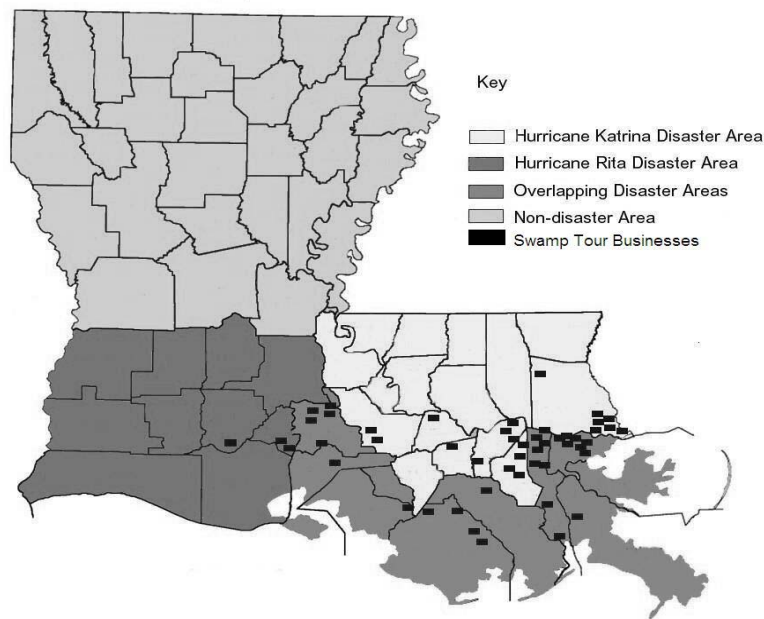


Figure 1. Geographic location of swamp tour businesses in Louisiana prior to Hurricanes Katrina and Rita

Table 4. Swamp tours in emergency areas due to Hurricane Katrina

Parish	Number of swamp tours
Ascension	1
Iberia	1
Iberville	2
Jefferson	9
Lafourche	2
Orleans	6
Plaquemines	1
St. Charles	5
St. James	1
St. John the Baptist	2
St. Martin	5
St. Mary	1
St. Tammany	6
Tangipahoa	1
Terrebonne	5
Total	48

Table 5. Swamp tours in emergency areas due to Hurricane Rita

Parish	Number of swamp tours
Acadia	1
Iberia	1
Jefferson	9
Lafayette	2
Lafourche	2
Orleans	6
Plaquemines	1
St. Martin	5
St. Mary	1
Terrebonne	5
Total	33

Damage Caused by Hurricanes Katrina and Rita

A total of 31 useable responses were received for a response rate of 74%. The last day for accepting surveys was Wednesday May 3, 2006, three weeks after the final mailing of the survey questionnaires. A total of nine surveys returned but not used for data analysis; of these, six were undeliverable, two were returned blank, and one was returned blank but the respondent wrote on the front that the business was closed. Eleven swamp tour businesses did not reply to the questionnaire.

The 11 swamp tour businesses that did not respond to the survey were contacted by telephone on April 20, 2006. Of these 11 businesses, four (36%) were willing to answer a few questions about the effect of Hurricanes Katrina and Rita on their swamp tour. Non-respondent's answers appeared similar to those provided by respondents. Of the 11 non-respondent swamp tour businesses 46% were confirmed to be open while 27% are known to be closed. Of the seven businesses that were not willing to participate or were not able to be reached by telephone, one had previously stated they were closed and did not plan to reopen when first contacted in October 2005 (Table 6). Of the 31 swamp tours that did respond to the survey questionnaire, 71% were open and 29% were closed for business (Table 7). When respondent and non-respondent swamp tour businesses were combined, a total of 27 swamp tour businesses were open and 13 were closed (Table 8). Comparing the parishes of respondent swamp

tours to non-respondent swamp tours showed that Jefferson, Orleans, and St. Tammany, the three parishes with the most swamp tours prior to the hurricanes; all had more businesses respond to the survey than not respond (Tables 6 & 7). Orleans Parish and St. Tammany Parish were both directly in the path of Hurricane Katrina while Jefferson Parish was also hit hard by the storm. Although these parishes were not in the direct path of Hurricane Rita, they did experience damage from that storm.

Table 6. Undeliverable surveys and operating status of non-respondent swamp tour businesses before and after Hurricanes Katrina and Rita per parish

Parish	Swamp tours prior to Hurricane Katrina	Non-respondent swamp tours	Open non-respondent swamp tours	Closed non-respondent swamp tours	Undeliverables
Acadia	1	0	0	0	1 ^a
Ascension	1	0	0	0	0
Iberia	1	0	0	0	0
Iberville	2	0	0	0	0
Jefferson	9	3 ^b	2	0	2 ^a
Lafayette	2	1 ^b	0	0	0
Lafourche	2	1 ^b	0	0	0
Orleans	6	2	1 ^c	1 ^e	1
Plaquemines	1	0	0	0	0
St. Charles	5	0	0	0	3
St. James	1	0	0	0	1
St. John the Baptist	2	1	0	1 ^d	0
St. Martin	5	2	1	1 ^e	0
St. Mary	1	0	0	0	0
St. Tammany	6	1	1	0	1 ^f
Tangipahoa	1	0	0	0	0
Terrebonne	5	0	0	0	0
Total	51	11	5	3	9

^a 1 business returned blank questionnaire

^b 1 business did not wish to participate in the survey, official operating status unknown

^c Business did not wish to participate in the phone call follow up survey, but did state that they were open

^d Business stated they were closed when contacted in October, 2005

^e Business assumed to be closed, could not be reached by telephone

^f This business returned the survey blank except for writing, "Business closed" on the front cover, this business is included in the undeliverable column because they did not provide answers for the specific items on the questionnaire

Table 7. Operating status of respondent swamp tours per parish before and after Hurricanes Katrina and Rita

Parish	Swamp tours prior to Hurricane Katrina	Respondent swamp tours	Open respondent swamp tours (full and part-time)	Closed respondent swamp tours
Acadia	1	0	0	0
Ascension	1	1	1	0
Iberia	1	1	0	1
Iberville	2	2	1	1
Jefferson	9	4	3	1
Lafayette	2	1	1	0
Lafourche	2	1	1	0
Orleans	6	3	2	1
Plaquemines	1	1	0	1
St. Charles	5	2	1	1
St. James	1	0	0	0
St. John the Baptist	2	1	1	0
St. Martin	5	3	3	0
St. Mary	1	1	1	0
St. Tammany	6	4	2	2
Tangipahoa	1	1	0	1
Terrebonne	5	5	5	0
Total	51	31	22	9

Table 8. Total number of swamp tour businesses (including survey respondents, non-respondents, and undeliverables) that are open and closed at the conclusion of the study

		Survey Respondent Status			Total
		Respondent	Non-respondent	Undeliverable	
Operating Status	Open	22	5	0	27
	Closed	9	3	1	13
	Total	31	8	1	40

The majority (80%) of responding swamp tour owners stated that their business had sustained damage from Hurricane Katrina. One-half of respondents stated that their business was damaged during Hurricane Rita (Figure 2). One-half of respondents also reported their business was damaged by both of the storms, therefore, there were no swamp tours damaged by Hurricane Rita that were not previously harmed by Hurricane Katrina. Only six (21%) of the responding swamp tours were not damaged by either of the hurricanes (Figure 3). Those businesses were concentrated in the southeast

portion of the state in Jefferson Parish, St. Tammany Parish, Tangipahoa Parish, Plaquemines Parish, Orleans Parish, and St. Charles Parish; however, two businesses were located in south-central Louisiana, in Iberia Parish and Iberville Parish respectively. The majority of respondents (63%) whose businesses were damaged by both of the storms stated that Hurricane Katrina was more destructive to their business than Hurricane Rita. Slightly more than one-fourth (26%) of the swamp tours owners reported their business was equally damaged by both of the storms, 11% of the swamp tours were damaged more by Hurricane Rita than Hurricane Katrina (Figure 4). More than one-half (58%) of the respondents were located in parishes that were declared emergency areas by the Federal government after both of the hurricanes. Only one (3%, N=31) of these businesses was located in a parish that was declared an emergency area during only Hurricane Rita (Figure 5).

“Did your swamp tour business sustain damage from Hurricanes Katrina and Rita?”

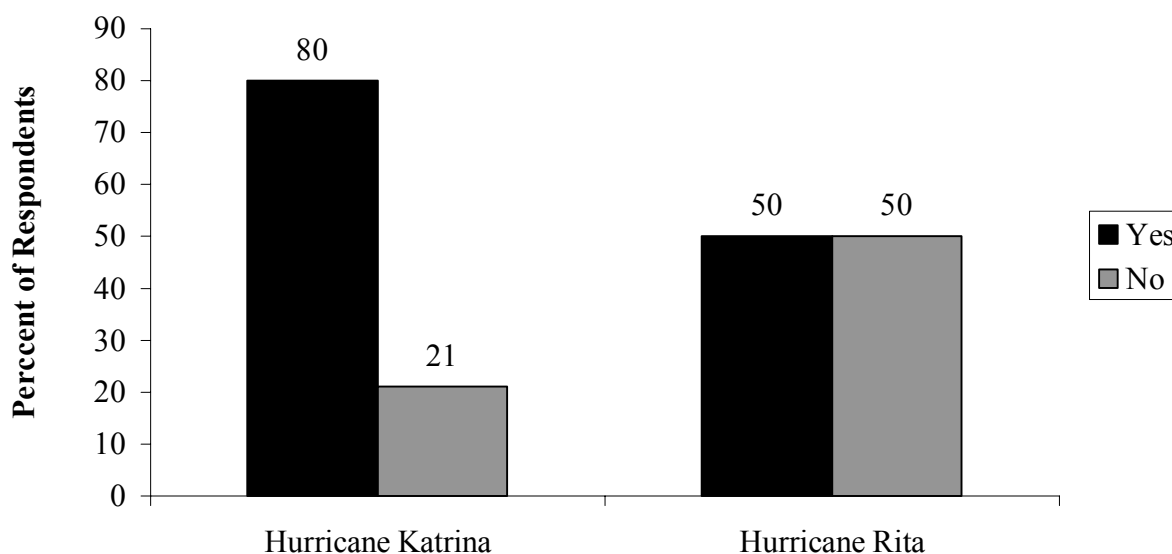


Figure 2. Swamp tours damaged by Hurricanes Katrina (N=29) and Rita (N=28)

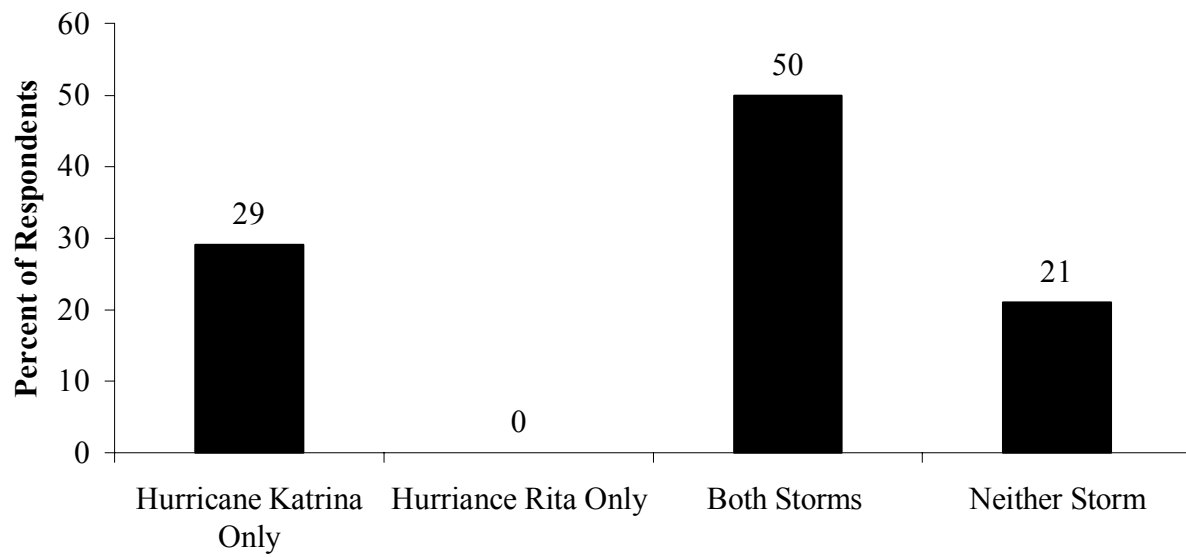


Figure 3. Breakdown of the percent of swamp tour businesses affected by Hurricanes Katrina and Rita (N=28)

“If your swamp tour business was damaged by both storms, which caused more damage?”

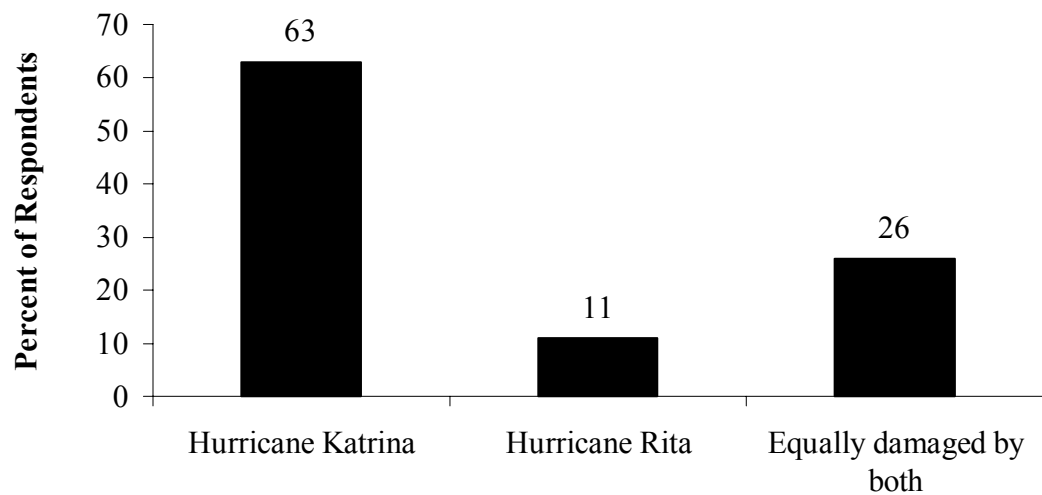


Figure 4. Damage caused by hurricanes Katrina and Rita (N=19)

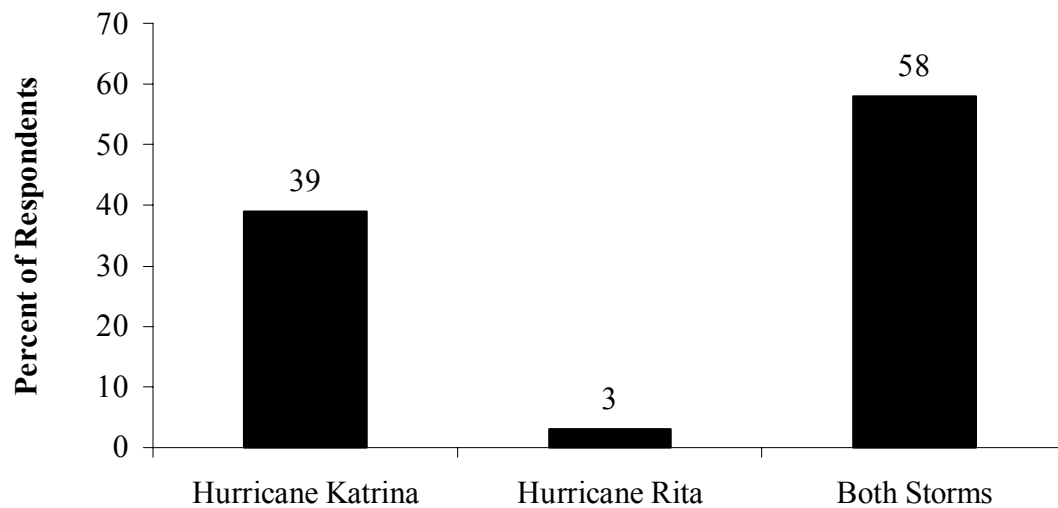


Figure 5. Swamp tour businesses located in a parish declared an emergency area due to Hurricane Katrina, Hurricane Rita, or both storms (N=31)

Slightly less than three-fourths (71%) of respondent swamp tours were open for business in the spring of 2006, including those who were operating part time (Figure 6). When the current hours of operation of swamp tour businesses were compared to their hours of operation prior to the hurricanes, 29% of businesses were 100% open and did not experience any long-term change in business hours as a result of the storms while 29% were not open for business at all (Figure 6). Of the nine swamp tours that reported they were not open for business, 22% did not plan to re-open while nearly half (44%) expected to be ready to serve customers within 0 to 3 months of responding to the survey (Figure 7). All (100%, N=13) tours that were operating part-time compared to their hours before the storms planned on remaining open for business (Figure 8).

The three most common types of damages experienced by swamp tour businesses after the hurricanes were loss of telephone service (61%) damage to the swamp area where tours are taken (52%), and loss of electricity (48%,). Flooding to the office building and other structures was the least reported (23%) type of damage to swamp tour businesses (Figure 9). Nearly one-third (32%) of

swamp tour owners reported their business had suffered damages other than those provided in the questionnaire. The most common response provided by these respondents (N=10) was the fact that there were no tourists visiting their business (60%) (Figure 10).

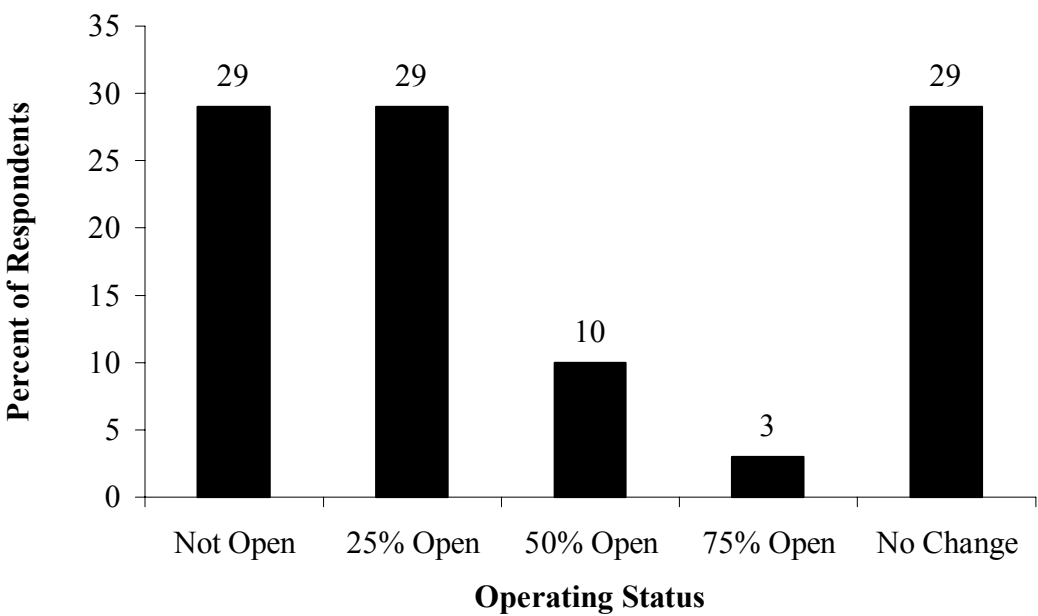


Figure 6. Current hours of operation compared to hours of operation prior to Hurricanes Katrina and Rita (N=31)

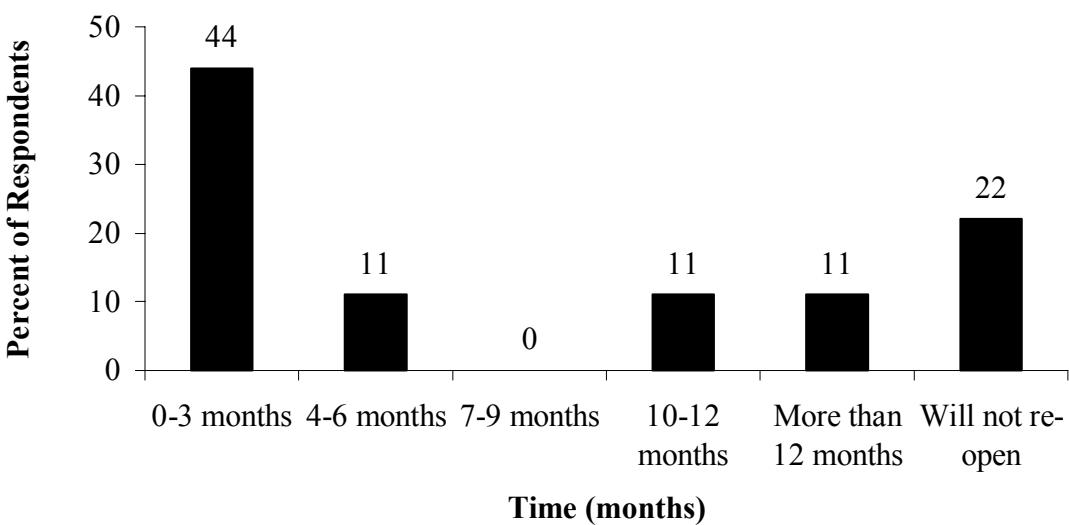


Figure 7. Estimated time to re-open swamp tour business (N=9)

“If you are currently operating part-time, do you plan on remaining open for business?”

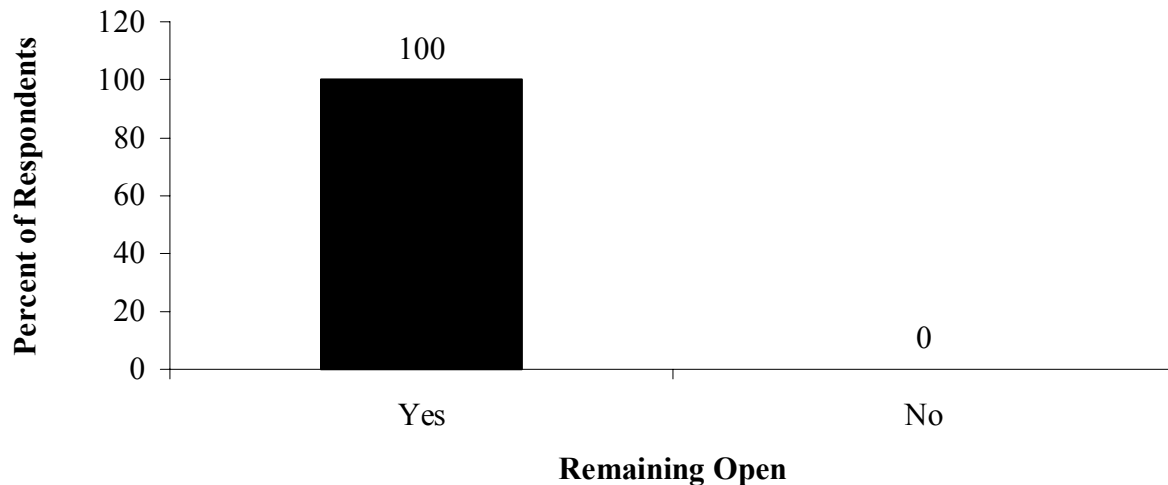


Figure 8. Percentage of swamp tour owners operating at a part-time status planning to keep their business open (N=14)

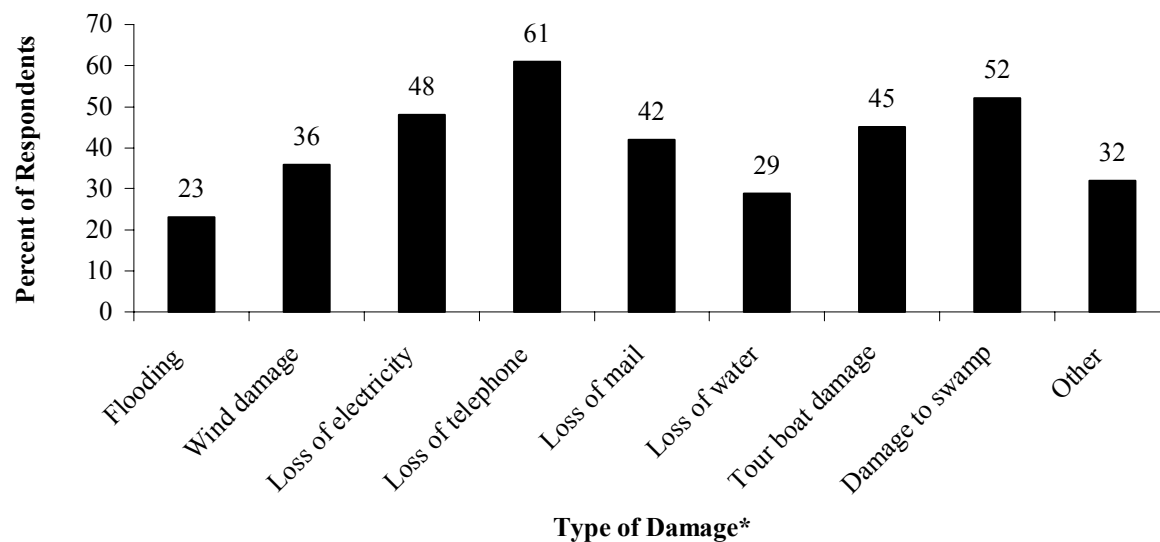


Figure 9. Type of damage sustained by swamp tour businesses from Hurricanes Katrina and Rita
* Respondents chose multiple answers for this question (N=31)

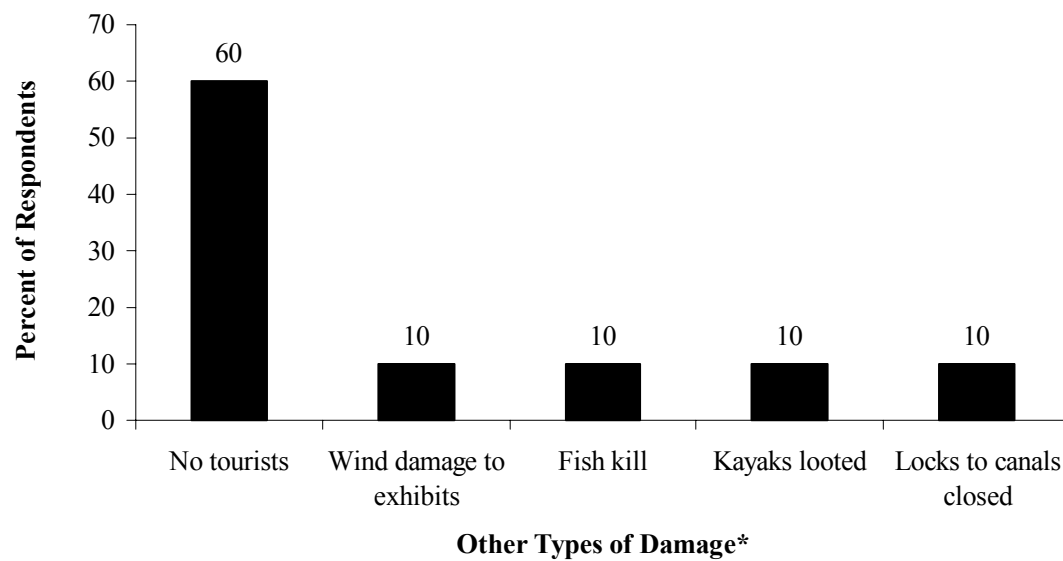


Figure 10. Types of damages sustained by swamp tour businesses from Hurricanes Katrina and Rita, as described by respondents who experienced other problems than those provided in Figure 5 (N=10)

*Respondents chose multiple answers for this question

The type of damages reported by swamp tour owners who listed Hurricane Katrina as the more destructive storm varied more than the type of damages reported by those who were harder hit by Hurricane Rita (Figure 11). Respondents more affected by Hurricane Katrina than Hurricane Rita reported loss of telephone service (47%) and damage to the swamp area where tours were taken (47%) as the two biggest problems their businesses were faced with after the storms (Figure 11).

Respondents more affected by Hurricane Rita reported that damage to the swamp area where tours were taken as their biggest problem (11%) (Figure 11). Loss of telephone service (26%) was also the most common problem faced by those swamp tour businesses equally damaged by both of the storms (Figure 11). Swamp tour owners were asked to describe the level of damage to three specific aspects of their businesses that researchers felt were important for day-to-day operations. The majority of business owners reported moderate damage to both tour boats (23%) and the swamp area (23%) while stating that their office buildings were only slightly damaged (19%) (Figure 12).

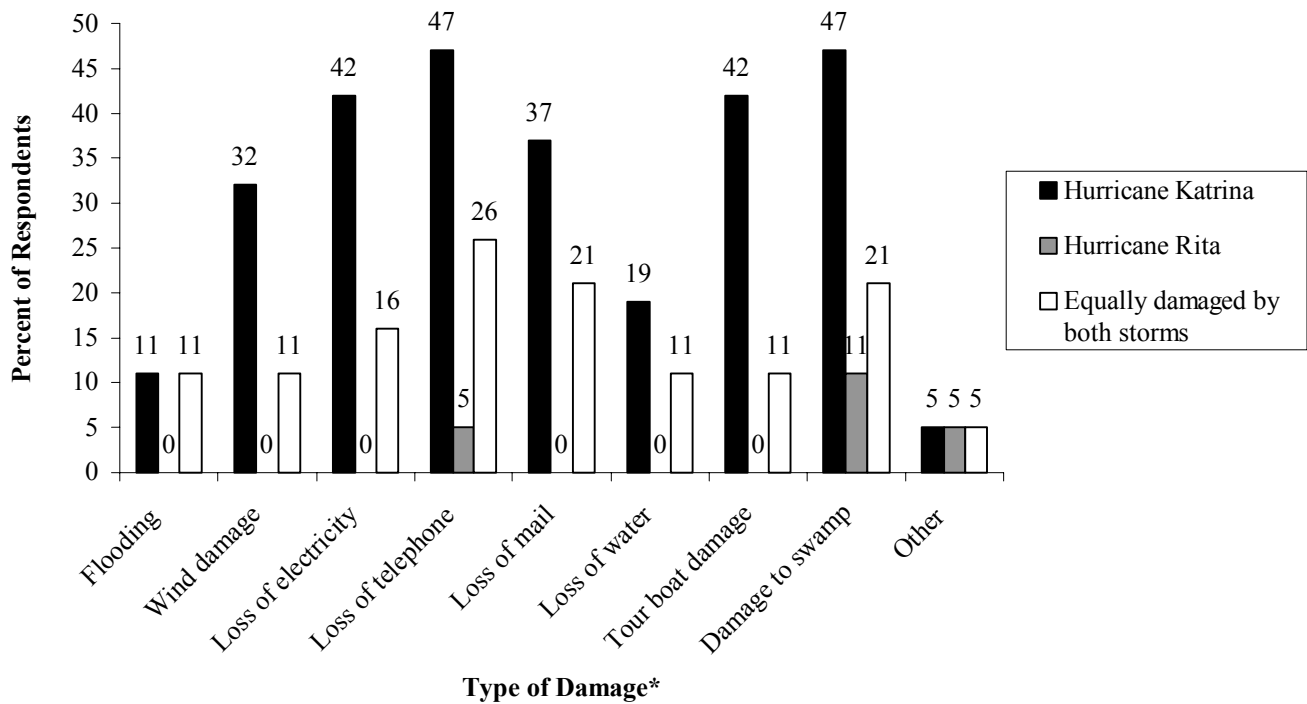


Figure 11. Type of damages to swamp tours as described by which hurricane was more destructive to the business (N=31)

*Respondents chose multiple answers for this question

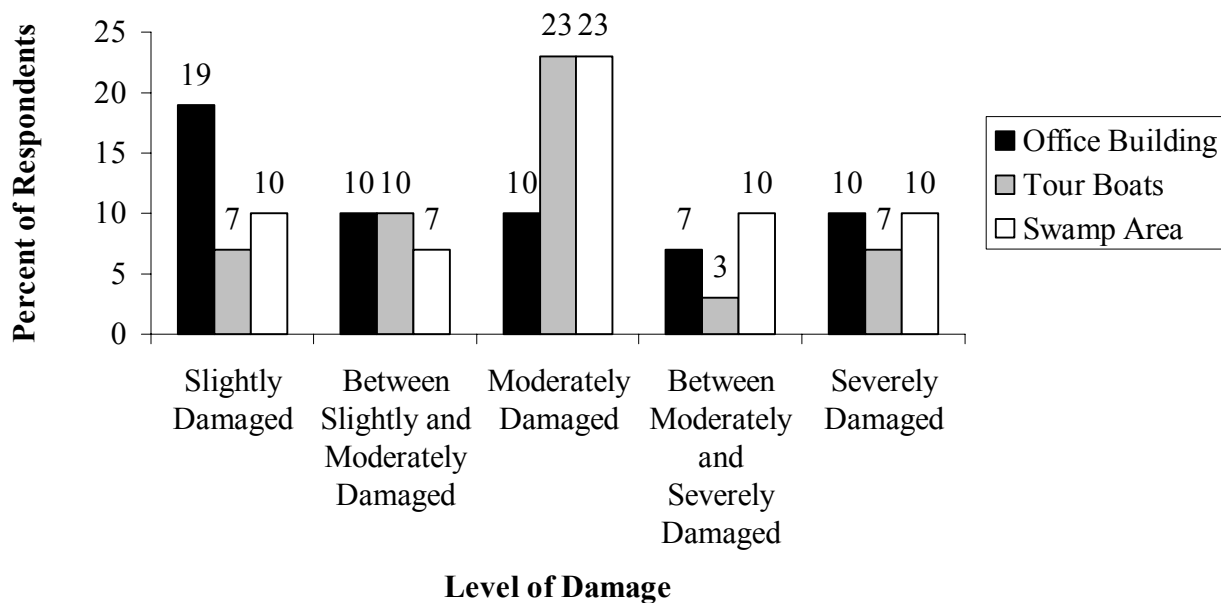


Figure 12. Level of damage to specific aspects of swamp tour businesses (N=31)

Slightly less than three-fourths of respondents (68%) had either finished repairs or were in the process of repairing damage to their swamp tour business caused by the hurricanes (Figure 13). Nearly one-half (45%) of swamp tour owners chose to do the repair work themselves rather than enlist the help of family and friends (36%) or hire a professional contractor (10%) (Figure 14). When asked to estimate the cost of repairs to their swamp tour businesses 17% of swamp tour owners reported it would cost them less than \$999 while the majority (39%) believed they would have to pay more than \$40,000 (Figure 15). Less than one-fourth (17%) of swamp tour owners utilized government aid to help pay for repairs. Of this 17%, 10% of respondents received aid from the Federal Emergency Management Agency (FEMA) while 7% received a United States Small Business Administration loan (Figure 16). Less than one-fourth (20%) of respondents either took out a local bank loan or used their own money to pay for repairs to their business (Figure 16).

“Did you have to or are you currently making repairs to your swamp tour business?”

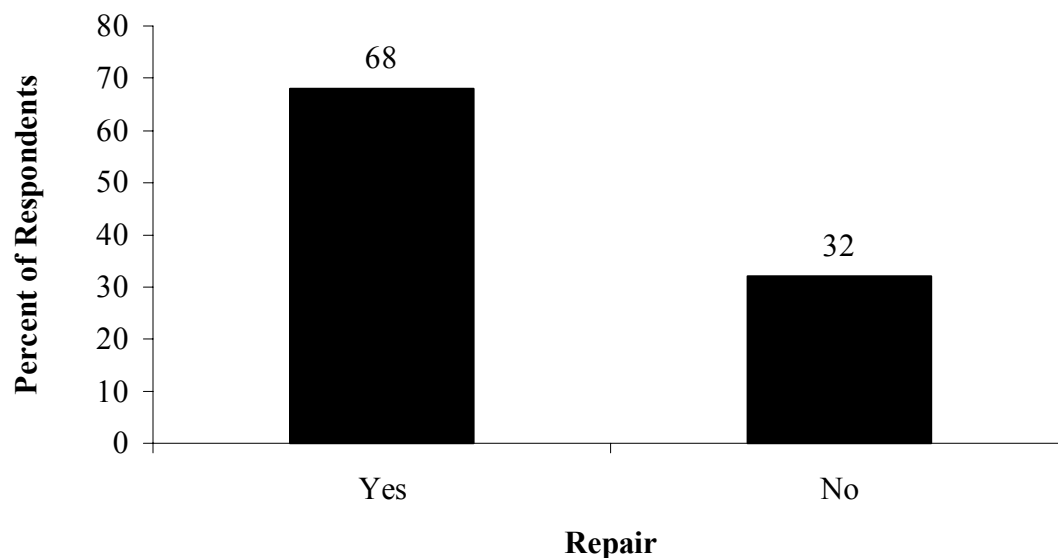


Figure 13. Percentage of respondents who made repairs to their swamp tour business (N=25)

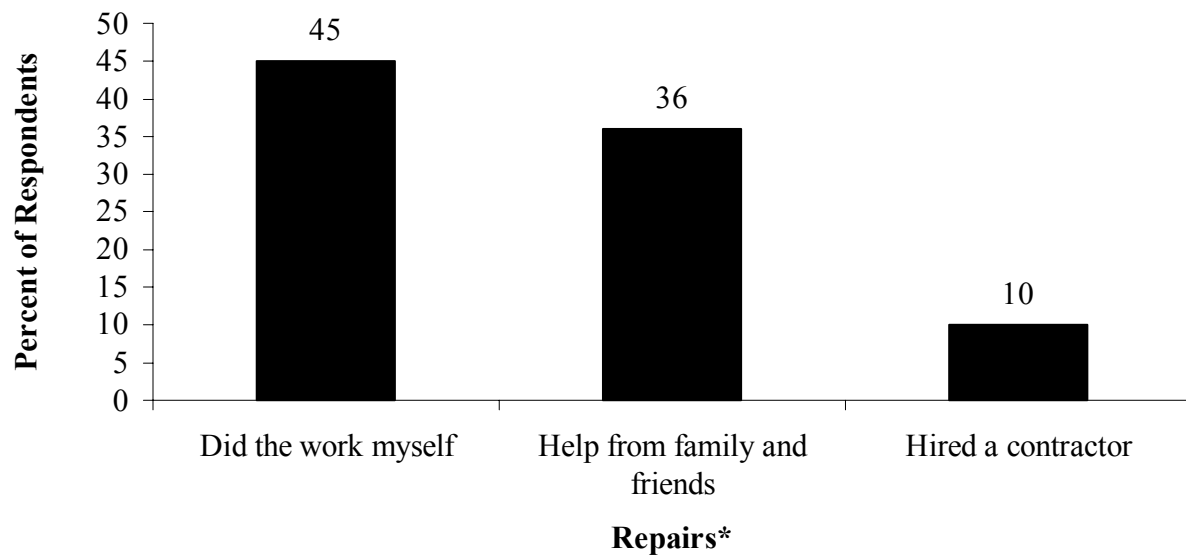


Figure 14. Methods used by swamp tour owners to repair their business (N=31)
 *Respondents chose multiple answers for this question

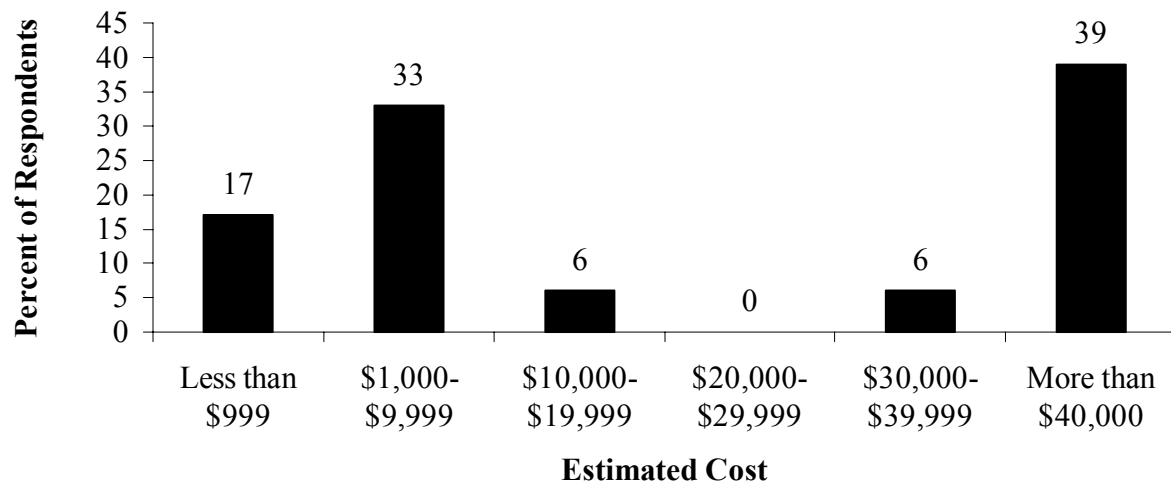


Figure 15. Owner estimated cost of repairs to swamp tour businesses (N=18)

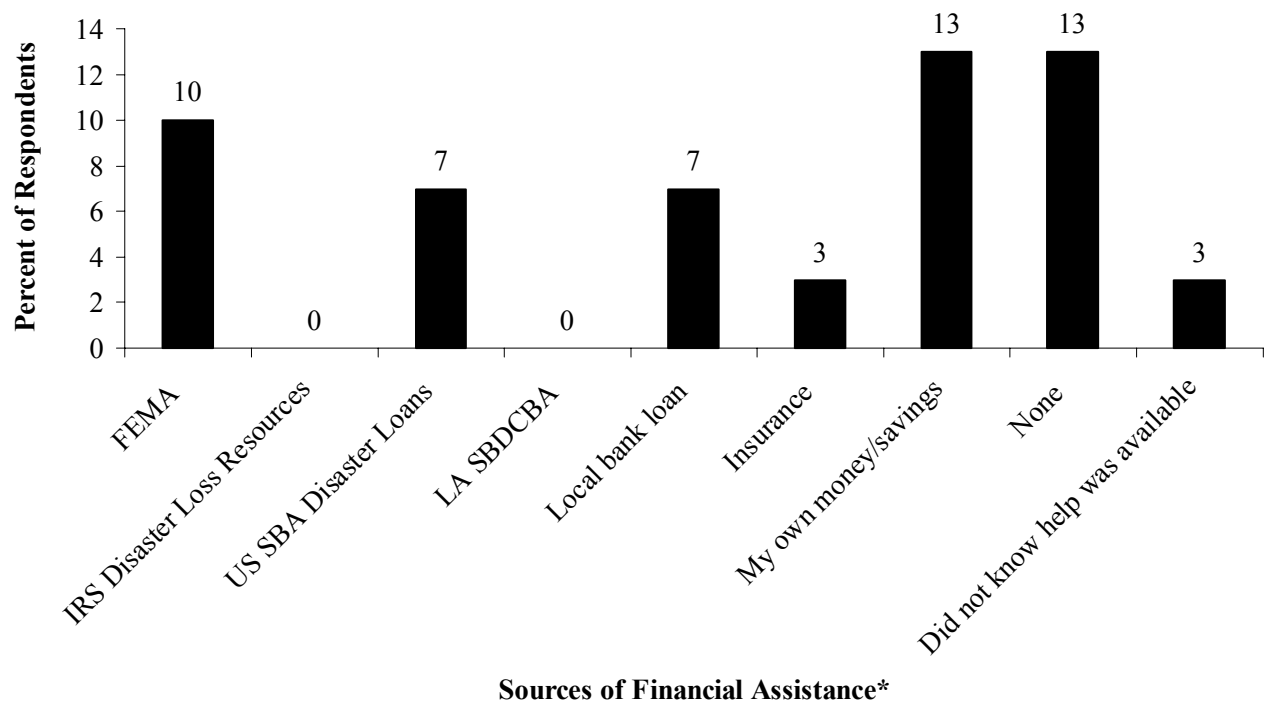


Figure 16. Sources of financial assistance used by swamp tour owners to pay for repairs to their businesses (N=31)
 *Respondents chose multiple answers for this question

The majority of respondent swamp tour businesses (62%) had not experienced damage as a result of a hurricane prior to Hurricanes Katrina and Rita (Figure 17). Of those businesses, nearly one-half (48%) were impaired due to Hurricane Katrina and 31% were impaired as a result of Hurricane Rita (Figure 18). No significant difference was found between those swamp tours that were open and those that were forced to close and if their business was damaged by previous hurricanes ($\chi^2=0.235$, $df=1$, $p>0.05$) (Table 9). Of the swamp tour owners who reported they had experienced damage to their business as a result of a previous hurricane, 27% were affected by Hurricane Andrew in 1992, an equal amount (27%) were not sure which storm system caused problems for their company and 18% experienced damage caused by Hurricane Allison in 2001 (Figure 19).

“Has your swamp tour been damaged by hurricanes in the past?”

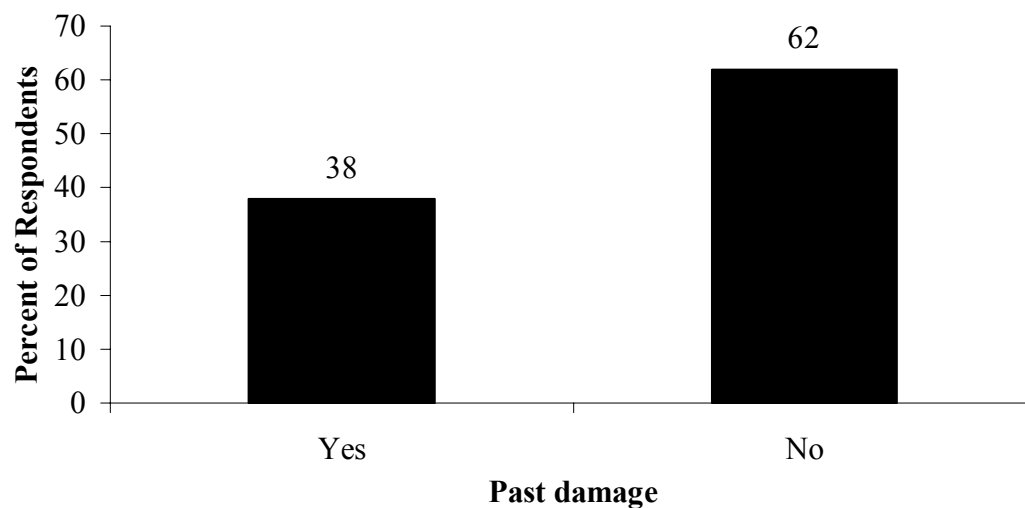


Figure 17. Respondents who's swamp tour businesses experienced damage from hurricanes prior to hurricanes Katrina and Rita (N=29)

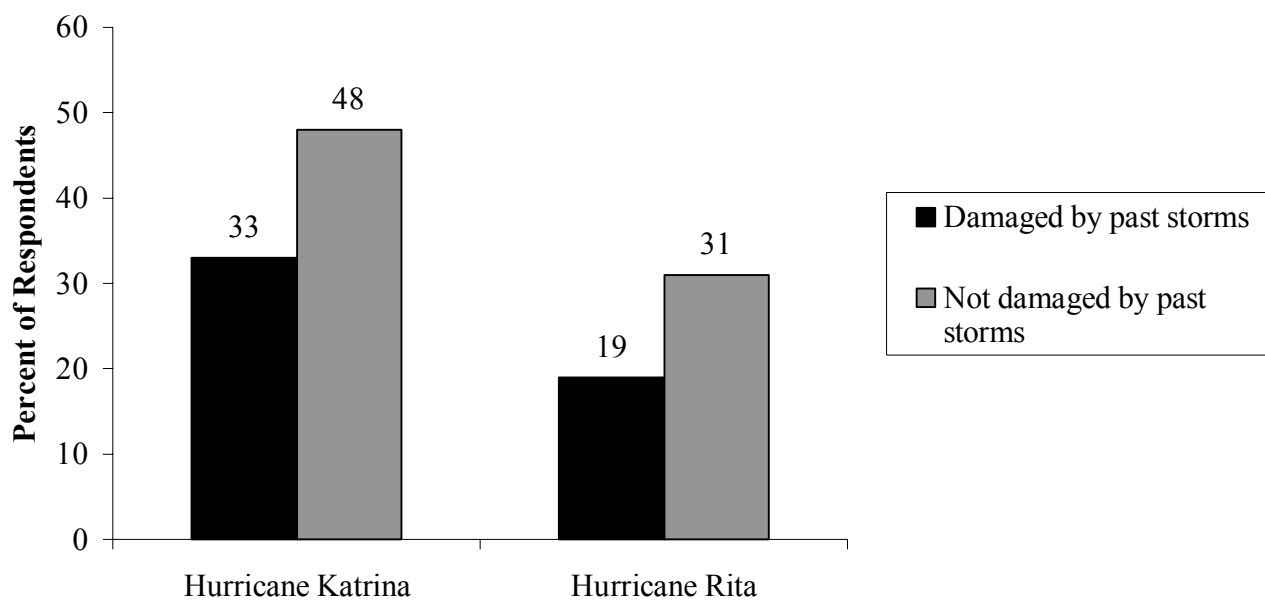


Figure 18. Comparison of swamp tour businesses damaged by past storms and those damaged by Hurricanes Katrina and Rita (N=18)

Table 9. Operating status of swamp tours compared to if the businesses experienced damage from past hurricanes before Hurricanes Katrina and Rita

		Swamp tours damaged by past hurricanes		
Operating status of tour		Yes	No	Total
	Open	35%	65%	100%
	Not Open	44%	56%	100%
(χ2=0.235, df=1, p>0.05)				

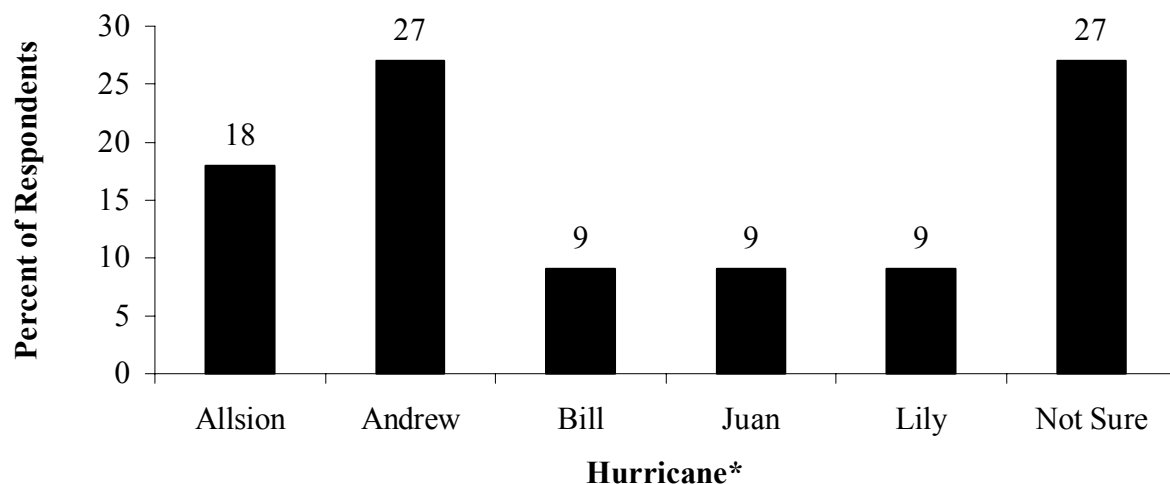


Figure 19. Previous hurricanes that have caused damage to swamp tour businesses (N=11)

*Respondents chose multiple answers for this question

Passenger Information

Swamp tour owners were asked a series of questions concerning their past and present passengers in order to gain a better understanding of how the hurricanes affected their customer base. In the 12 months prior to Hurricane Katrina, less than one-fourth (17%) of swamp tours served less than 499 customers, while more than one-fourth (28%) of swamp tours served between 500-1499 customers and approximately one-fourth (24%) of swamp tour businesses served 5000 or more customers (Figure 20). There is no significant relationship between the numbers of passengers a swamp tour business had in the year before Hurricane Katrina and the operating status of the business

after the storm ($\chi^2=5.021$, $df=4$, $p>0.05$) (Table 10). For the five-year period before Hurricanes Katrina and Rita (2000-2005), more than three-fourths (76%) of swamp tour owners reported their highest level of customer activity took place during the spring season and 86% reported they experienced their lowest level of customer activity during the winter season (Figure 21). High levels of customer activity were also reported in the fall (55%) and summer (61%) (Figure 21). The majority of swamp tour owners (70%) considered spring to be the peak season for their business (Figure 22). Slightly more than one-fourth (26%) of swamp tour owners reported summer to be their peak season (Figure 22).

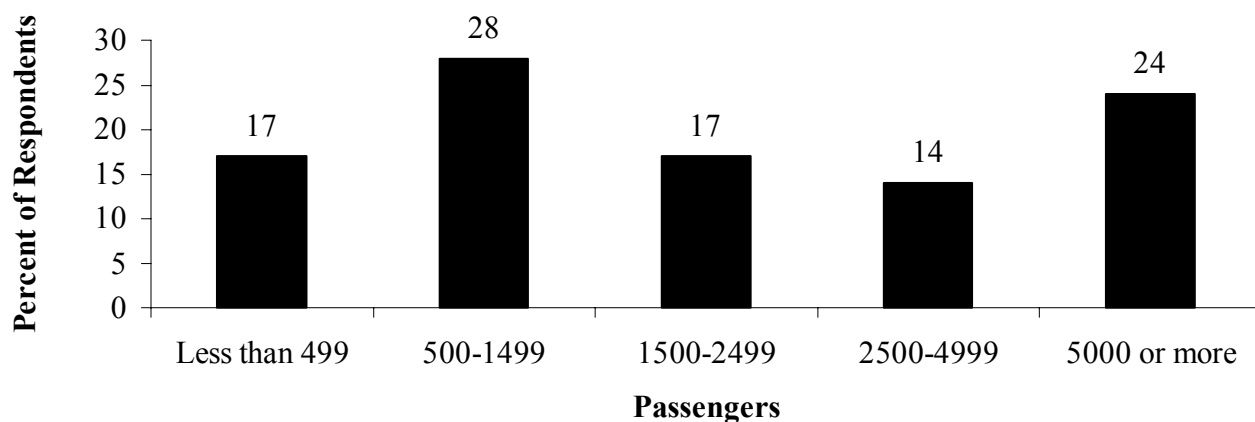


Figure 20. Estimated number of passengers served by swamp tour businesses in the 12 months prior to Hurricane Katrina (N=29)

Table 10. Operating status of swamp tour businesses after Hurricanes Katrina and Rita compared to number of estimated passengers served in the 12 months prior to Hurricane Katrina.

		Number of passengers in the 12 months prior to Hurricane Katrina					
Operating status of tour	Open	Less than 500	500-1499	1500-2499	2500-4999	5000 or More	Total
	Not Open	10%	25%	15%	20%	30%	100%
		33%	33%	22%	0%	11%	100%

($\chi^2=5.021$, $DF=4$, $p>0.05$)

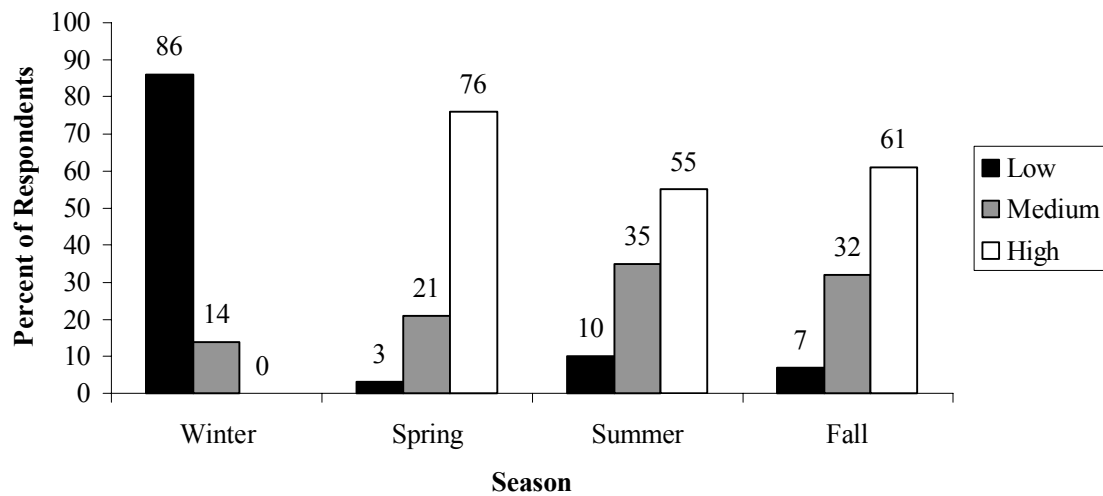


Figure 21. Seasonal level of customer activity for the past five years (2000-2005) (N=29)
 *Respondents chose multiple answers for this question

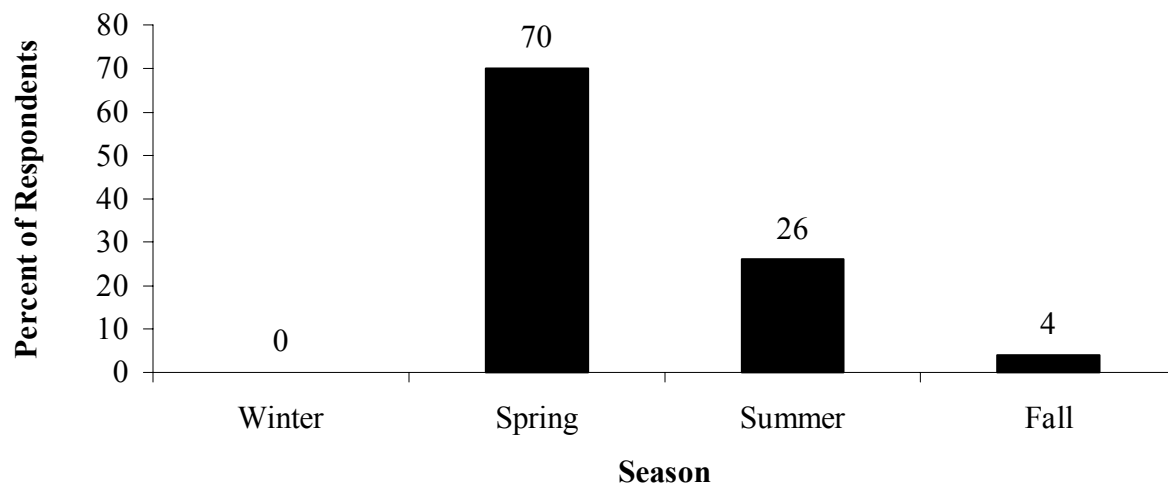


Figure 22. Peak season for swamp tour businesses (N= 27)

When asked to compare their current level of customer activity to the level they experienced prior to the hurricanes, respondents were given the options of choosing from a scale of “Much More” to “Much Lower” and also given the option of “My business is closed”. No responses were recorded in the “Much More” to “Somewhat Lower” categories. Slightly less than three-fourths (72%) of tour owners stated their business has been “Much Lower” (Figure 23). By comparing the number of

passengers swamp tour businesses served in the 12 months prior to Hurricane Katrina to the level of customer activity businesses have experienced since the storms, it was found that one-fourth (25%) of all responding businesses served fewer than 1500 people in the 12 month period and were closed following the hurricanes (Figure 24). The majority of swamp tour owners stated that most of their customers visited from outside of Louisiana both in the five years prior to the hurricanes (93%) and since the hurricanes (76%) (Figure 25). The majority (39%) of swamp tour owners believed it would take 1-2 years for business to resume at a pre-hurricane level (Figure 26). Most tour owners (79%) agreed that their business would increase as progress is made in rebuilding the city of New Orleans (Figure 27). The three most common advertising methods used by swamp tour businesses to attract customers were brochures in visitors' centers (77%), brochures in hotels (65%), and ads in tour books (58%) (Figure 28). The most common geographic area used by swamp tour owners to advertise their businesses was the city of New Orleans (48%); the least common area was in states other than Louisiana (13%) (Figure 29).

“Since the hurricanes occurred, how has your current level of business been compared to before the storms?”

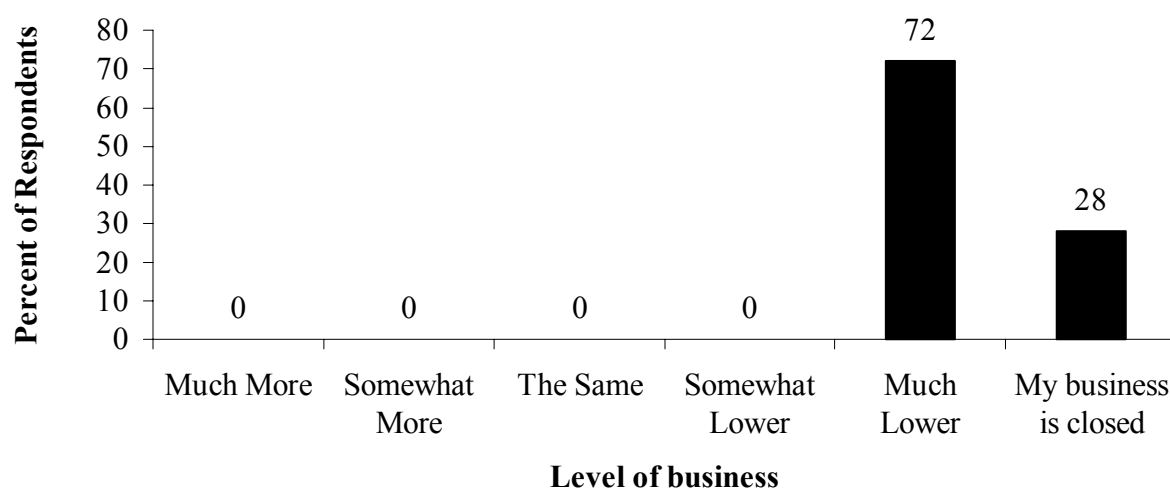


Figure 23. Current level of business compared to level of business before Hurricanes Katrina and Rita (N=29)

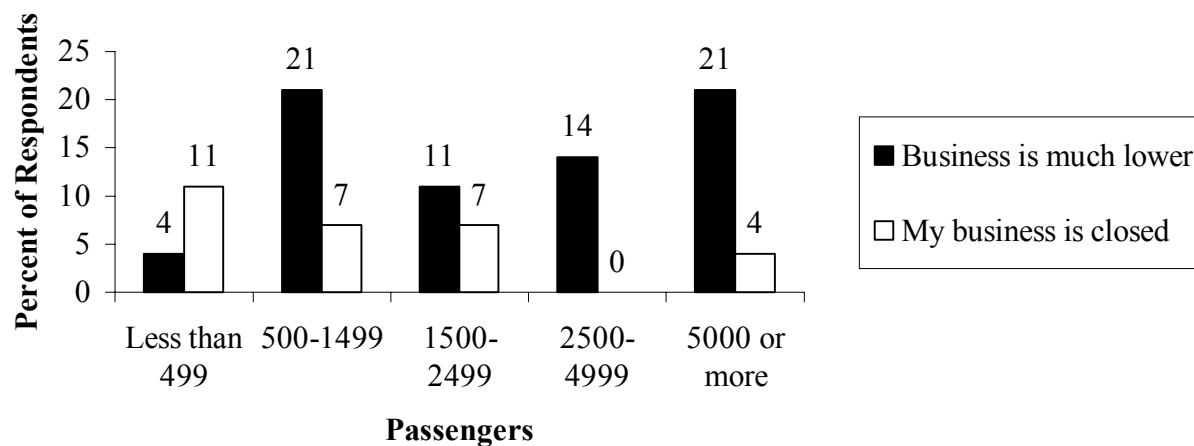


Figure 24. Number of passengers served in the 12 months prior to Hurricane Katrina and level of customer activity since the storms (N=29)

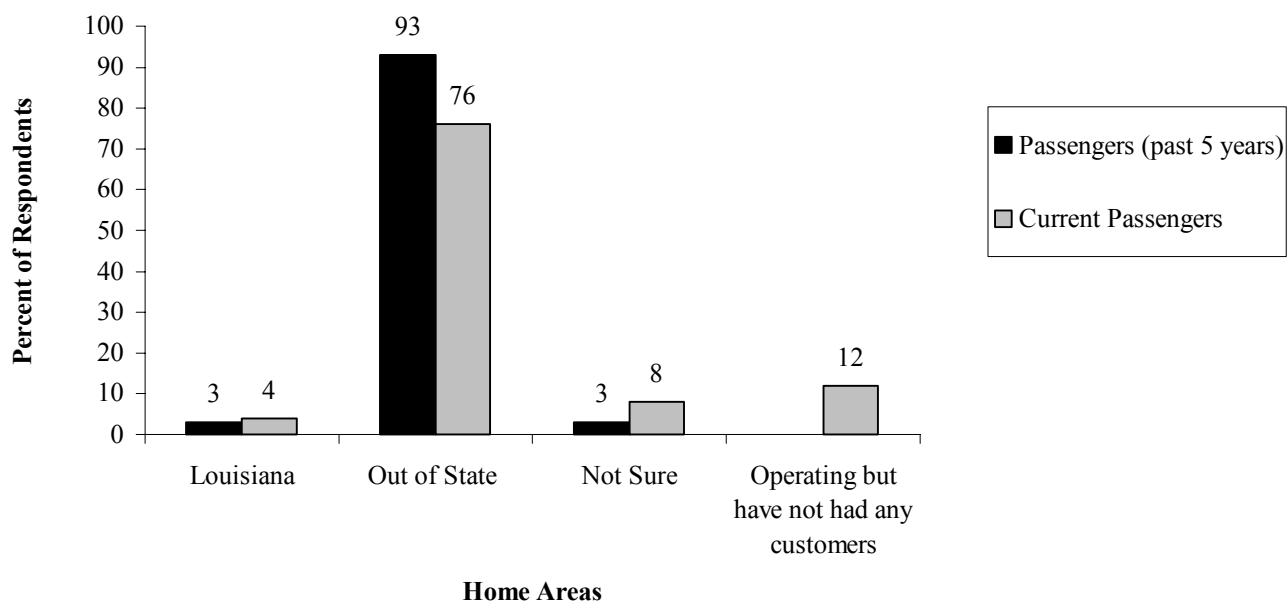


Figure 25. Comparison of home areas of swamp tour passengers from the past 5 years (2000-2005) (N=30) and current passengers (N=25)

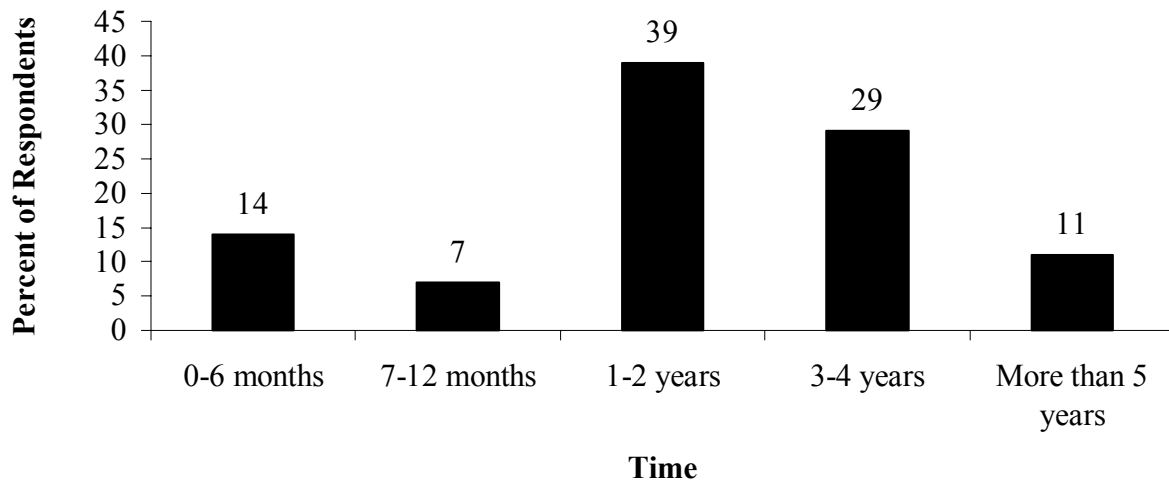


Figure 26. Estimated time for level of swamp tour customer activity to return to a pre-hurricane level (N=28)

“Do you expect your business to increase with the progression of repairs to New Orleans?”

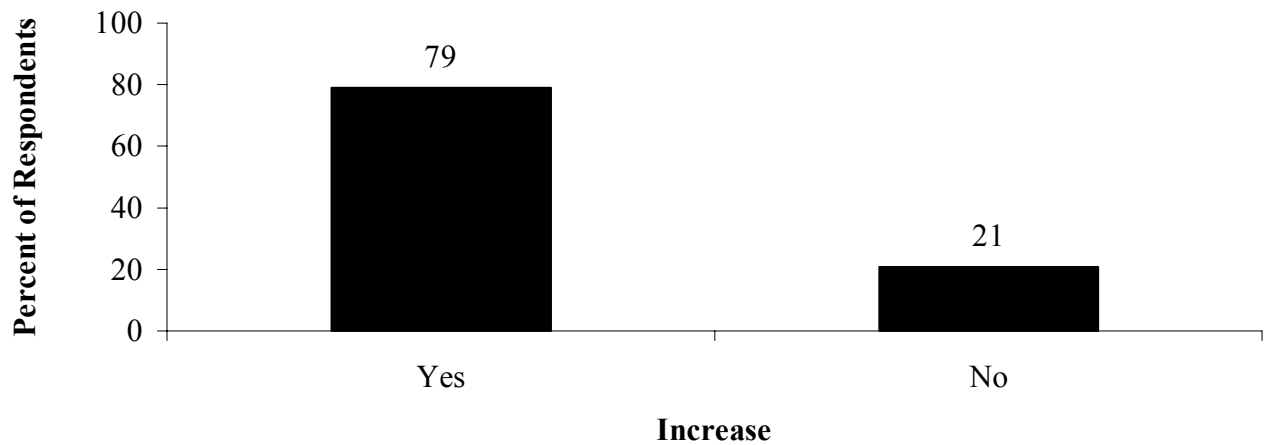


Figure 27. Percentage of respondents who expect their business to increase as progress is made rebuilding the city of New Orleans (N=25)

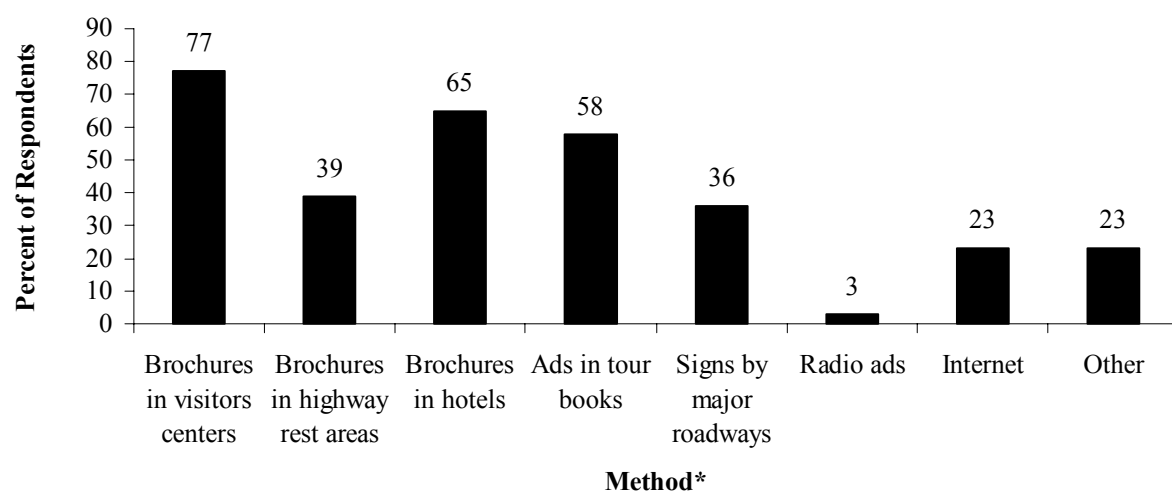


Figure 28. Advertising methods used to promote swamp tour businesses (N=31)

*Respondents chose multiple answers for this question

“Where are you currently advertising your swamp tour business?”

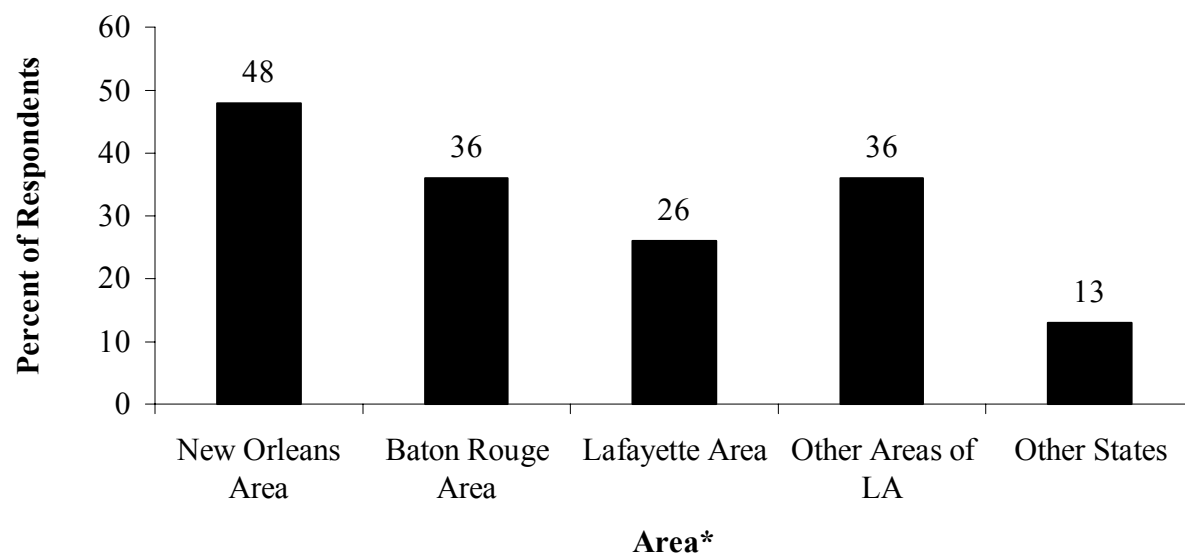


Figure 29. Geographic areas where swamp tour owners advertise their businesses (N=31)

*Respondents chose multiple answers for this question

Swamp Tours

The survey instrument included six questions concerning the services offered by swamp tour businesses. When asked about what topics swamp tour guides included in their informative talks before and after Hurricanes Katrina and Rita, the only topics that showed an increase in use after the storms were “Hurricanes” (39% pre-storms, 52% post-storms) and “Other” (0% pre-storms, 19% post-storms) (Figures 30 and 31). All additional topics showed a decrease in presentation (Figure 30). Wetland loss was the most common topic included in swamp tour presentations both before the hurricanes (71%) and after (61%) (Figure 30). The majority of respondents (60%) reported that their swamp tour would not focus on areas of the swamp damaged by Hurricanes Katrina and Rita (Figure 32).

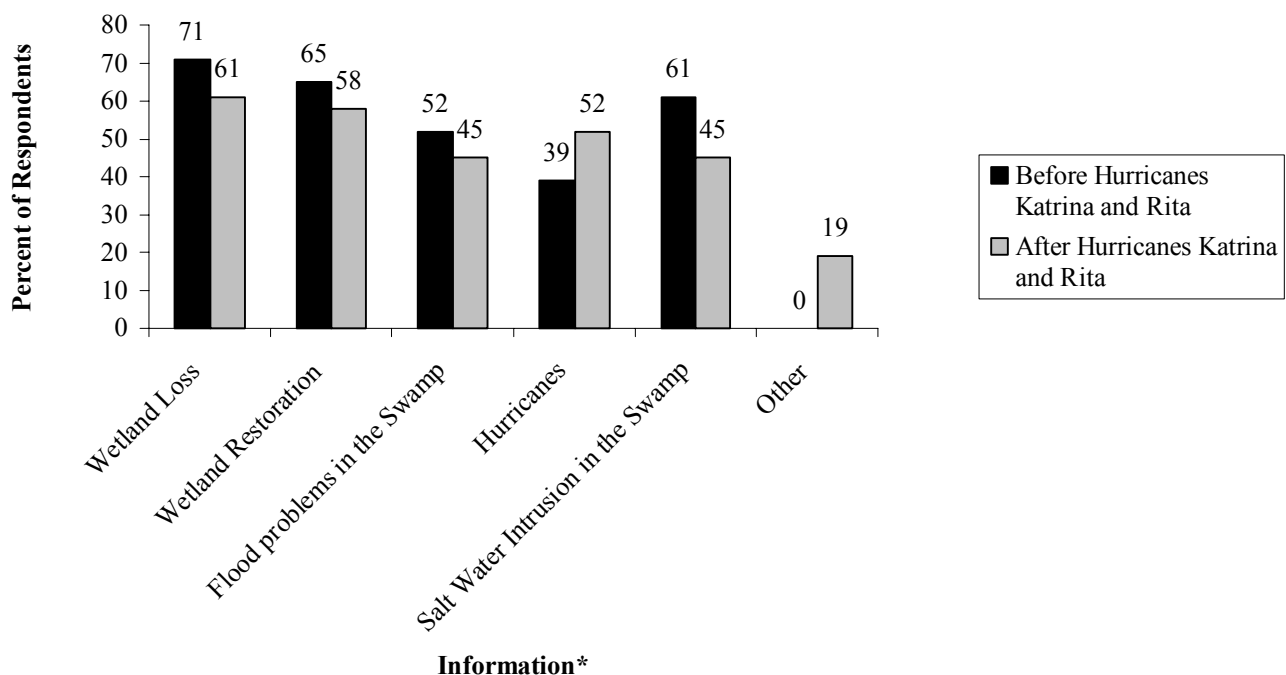


Figure 30. Information provided to passengers by swamp tour guides before and after Hurricanes Katrina and Rita (N=25)

*Respondents chose multiple answers for this question

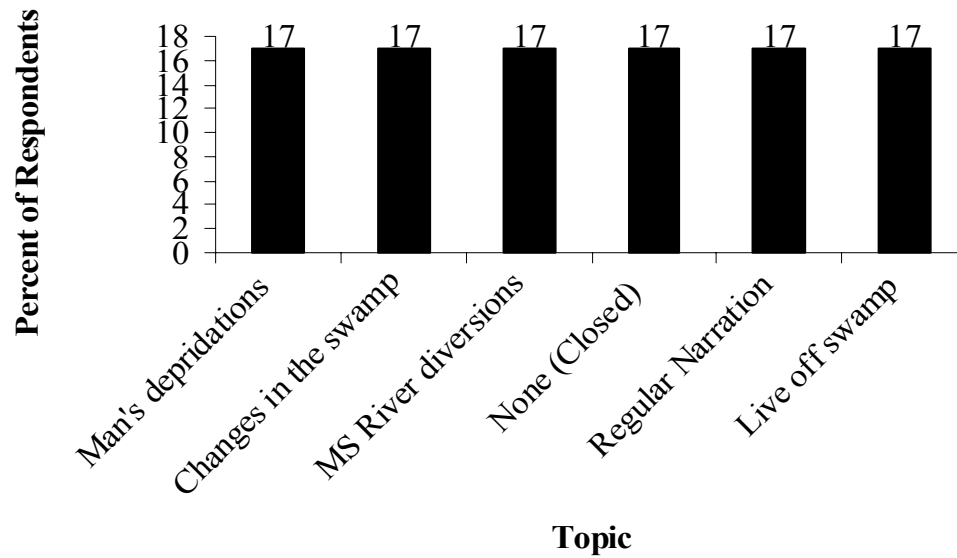


Figure 31. “Other” responses for information provided to passengers by swamp tour guides before and after Hurricanes Katrina and Rita (N=6)

“Will your swamp tours focus on areas of the swamp damaged by Hurricanes Katrina and Rita?”

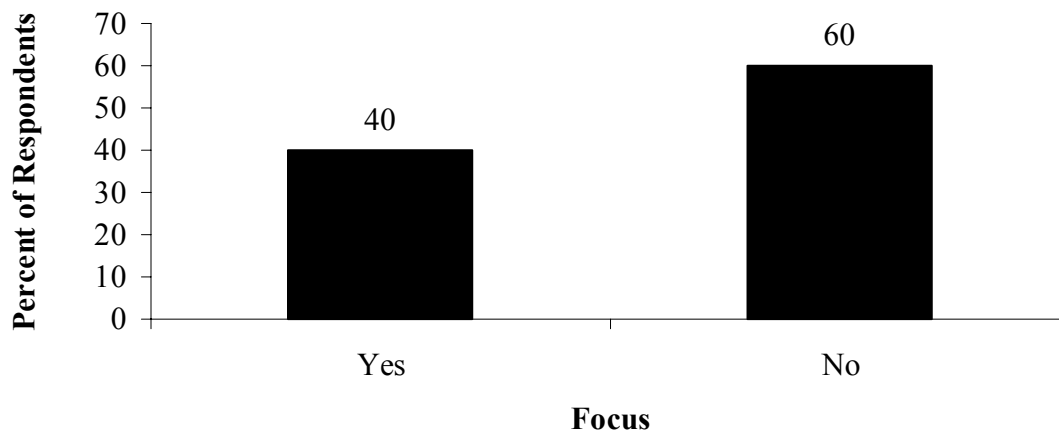


Figure 32. Percentage of respondent swamp tour businesses that will focus their tour on areas of the swamp damaged by Hurricanes Katrina and Rita (N=25)

More than one-half (55%) of respondent swamp tour businesses took their passengers to visit state land and slightly more than one-third each visited federal land (36%) and land the swamp tour owner leased or rented (36%) (Figure 33). Less than one-fourth (16%) of respondent swamp tour businesses gave tours on land they owned (Figure 33). More swamp tours were given on pontoon boats (36%) than any other type of boat (Figure 34). Slightly more than one-fourth (26%) of swamp tours were taken on airboats (Figure 34). Swamp tour business owners reported using a variety of other types of boats to give their tours; the most common of these were eight passenger outboards (22%) and inboard aluminum lafitte skiffs (22%) (Figure 34). All types of boats reportedly used by swamp tour owners were compared to the operating status of the swamp tour businesses after the hurricanes. Some swamp tour businesses reported using more than one type of boat therefore, this data could not be analyzed for statistical significance with the Pearson Chi Square test, but may indicate some trends (Table 11).

“What areas do your swamp tours take passengers to visit?”

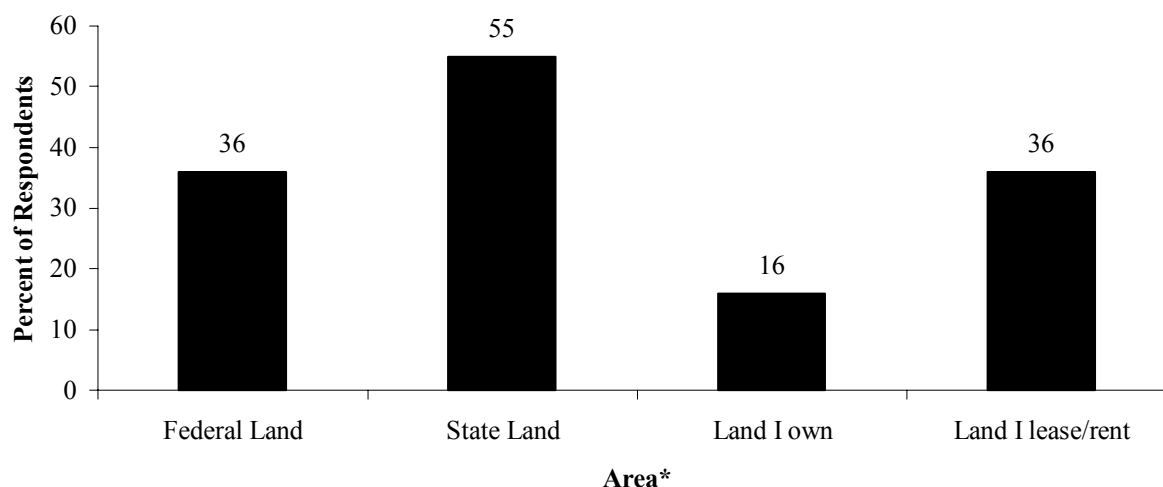


Figure 33. Ownership of areas swamp tours take passengers to visit (N=31)

*Respondents chose multiple answers for this question

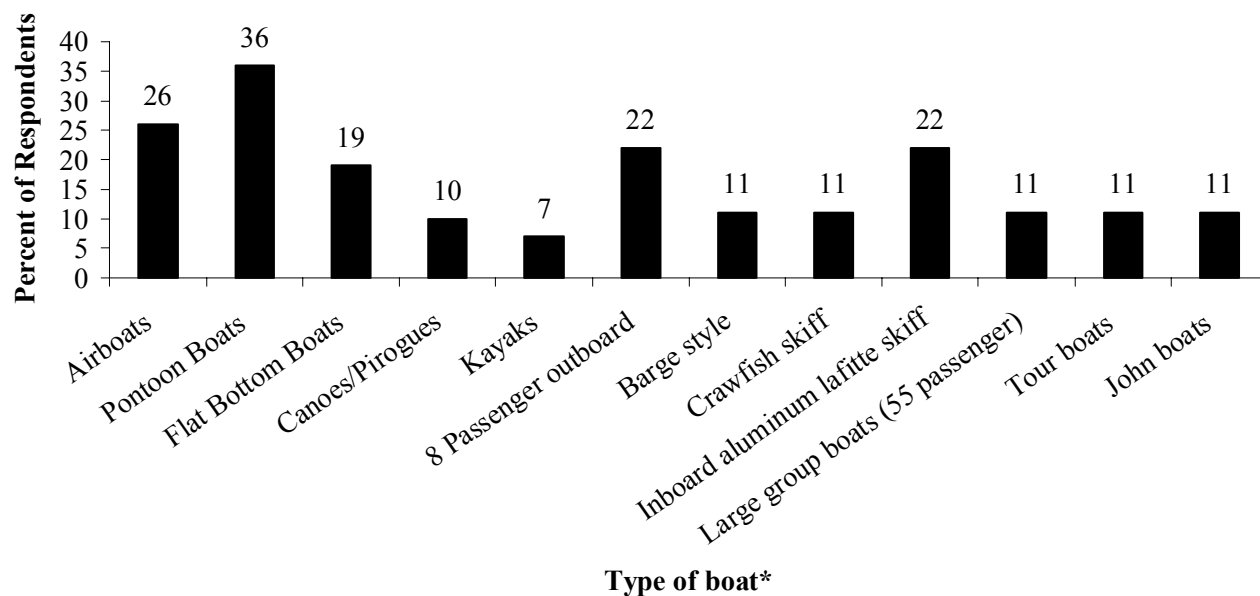


Figure 34. Types of boats used by swamp tour businesses (N=31)

*Respondents chose multiple answers for this question

Table 11. Operating status of swamp tour compared to what type of boat the company uses to give tours

Type of boat*	Operating status of swamp tour		Total
	Open (n)	Not Open (n)	
Airboat	5	3	8
Pontoon	9	2	11
Canoe/Pirogue	2	1	3
Kayak	1	1	2
8 Passenger Outboard	1	1	2
Flat Bottom	4	2	6
Barge Style	1	0	1
Crawfish Skiff	1	0	1
Aluminum Lafitte Skiff	2	0	2
Large Group Boat	1	0	1
Tour Boat	0	1	1
John Boat	1	0	1
Total	28	11	39

*Respondents chose multiple answers for this question

Airboat tours were offered by eight businesses and non-airboat tours were offered by 31 businesses (Table 11). To estimate the economic contribution of swamp tours to the Louisiana tourism industry the maximum and minimum ticket costs for airboat and non-airboat tours was multiplied by lowest and the highest numbers of passengers respondent businesses served in the 12 months prior to Hurricane Katrina. The estimated minimum amount of money earned by airboat tour owners who served fewer than 499 passengers in the 12 months before Hurricane Katrina was \$114,770 (Table 12). The estimated minimum amount earned by non-airboat swamp tour owners who served fewer than 499 passengers in the 12 months prior to Hurricane Katrina was \$37,425 (Table 12). The estimated maximum amounts earned by swamp tour owners who served more than 5000 passengers in the 12 months before Hurricane Katrina was \$2,975,000 for airboat tours and \$2,100,000 for non-airboat tours (Table 13). The maximum amounts were calculated with 5000 as the number of passengers served and therefore, are conservative estimates of the earnings of the larger swamp tour businesses because in reality, they serve more than 5000 passengers a year.

Table 12. Minimum and maximum earning (\$) for swamp tour businesses that served less than 499 passengers in the 12 months prior to Hurricane Katrina

	Tours Serving < 499	Passengers	Minimum Ticket Cost (\$)	Maximum Ticket Cost (\$)	Minimum Earning (\$)	Maximum Earning (\$)
Airboat Tours	5	2,495	46	85	114,770	212,075
Non-Airboat Tours	5	2,495	15	60	37,425	149,700

Table 13. Minimum and maximum earning (\$) for swamp tour businesses that served more than 5000 passengers in the 12 months prior to Hurricane Katrina

	Tours Serving 5000 <	Passengers	Minimum Ticket Cost (\$)	Maximum Ticket Cost (\$)	Minimum Earning (\$)	Maximum Earning (\$)
Airboat Tours	7	35,000	46	85	1,610,000	2,975,000
Non-Airboat Tours	7	35,000	15	60	525,000	2,100,000

Swamp tour businesses offered a variety of additional services to their passengers.

Approximately one-half (45%) of swamp tour businesses had a gift shop, followed by food and beverage (32%), hotel pick-up/drop-off (32%), and picnic areas (32%) (Figure 35). Less than one-fourth (16%) of respondent swamp tour businesses offered no additional services to their passengers (Figure 35). A description of services offered by the one-fourth (26%) of respondent swamp tour business owners who responded to the question's "other" category can be found in Figure 36. Of these businesses, the most common service offered was pirogue/canoe rentals (25%), while 13% offered a New Orleans disaster tour, a tour that emerged in the city after Hurricanes Katrina and Rita (Figure 36).

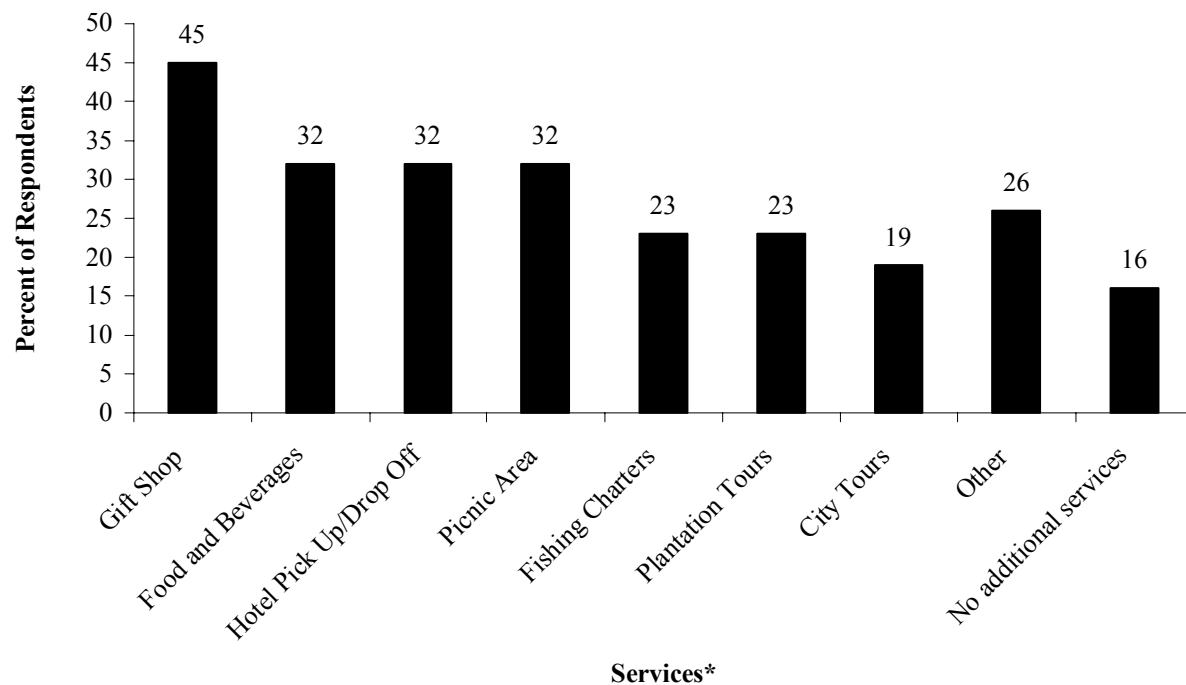


Figure 35. Additional services offered by swamp tour businesses (N=31)

*Respondents chose multiple answers for this question

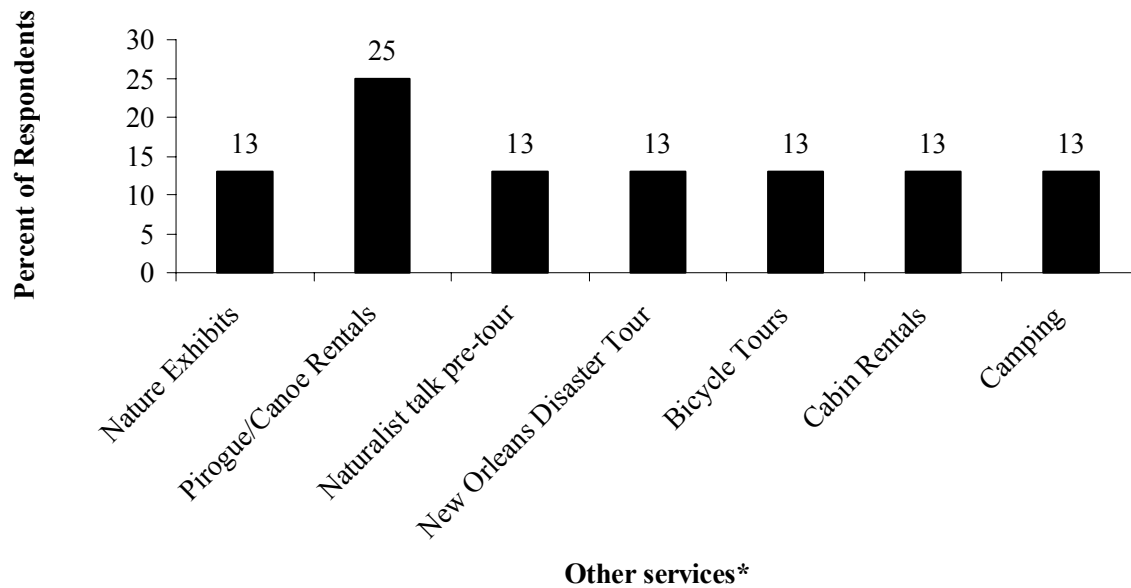


Figure 36. Other additional services offered by swamp tour businesses (N=8)
 *Respondents chose multiple answers for this question

Swamp Tour Business Facts and the Tourism Industry

The mean number of years Louisiana swamp tour businesses have been operating was 15 (N=31). The newest business has been open for 2 years while the oldest has been running for 30 years (Figure 37). The length of time swamp tours were operating was compared to business' hours of operation after the hurricanes. A Pearson Chi-Square test was used to determine if any significant difference existed between the older and the younger businesses and their operating status after Hurricanes Katrina and Rita. Years of operation were divided into 2 categories, 15 years or less and more than 15 years. Fifteen was chosen as the divider for years of operation because this was where the natural cut point of the data occurs (Figure 37). More of the older swamp tour businesses (operating more than 15 years) were open than those tours operating less than 15 years ($\chi^2=4.094$, $df=1$, $p<0.05$) (Table 14). There is no relationship between the number of years a swamp tour has been operating and damage sustained by the business from hurricanes prior to Katrina and Rita ($\chi^2=0.00$, $df=1$, $p>0.05$) (Table 15).

“How long has your swamp tour business been in operation?”

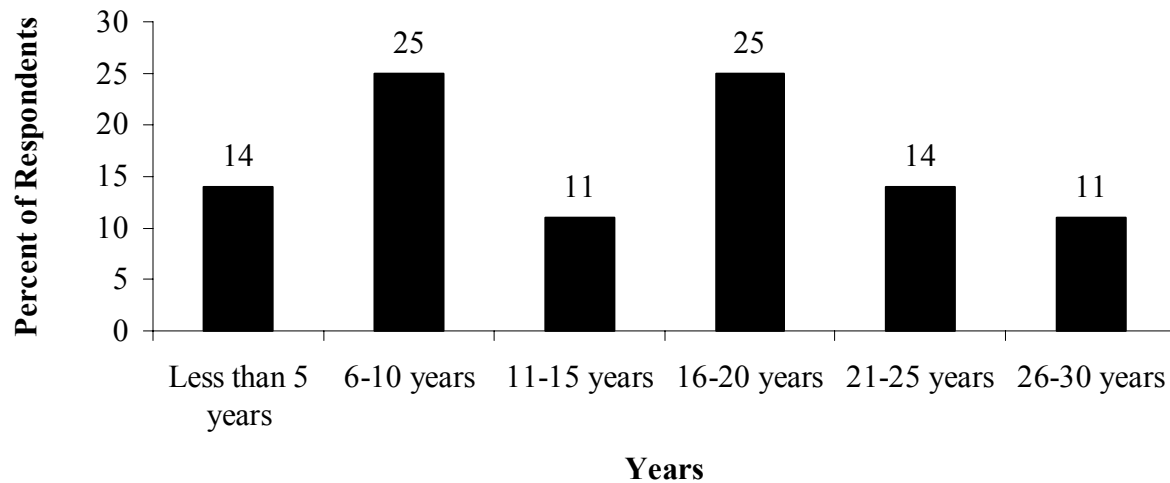


Figure 37. Length of time (in years) swamp tour businesses have been operating (N=28)

Table 14. Operating status of swamp tours by length of operation in years

		Operating Status of Swamp Tours		
Years of Operation		Open	Not Open	Total
	Less than 15 years	50%	50%	100%
	More than 15 years	86%	14%	100%

($\chi^2=4.094$, $df=1$, $p<0.05$)

Table 15. Years of operation of swamp tours compared to damage to tours caused by past hurricanes prior to Hurricanes Katrina and Rita

		Swamp tours damaged by past hurricanes		
Years of Operation		Yes	No	Total
	Less than 15 years	38%	62%	100%
	More than 15 years	38%	62%	100%

($\chi^2=0.00$, $df=1$, $p>0.05$)

More than half (59%) of respondent swamp tour businesses were family owned and operated (Figure 38). No significant relationship was found when comparing family owned and non-family owned swamp tour businesses to their operating status after the hurricanes ($\chi^2=2.229$, $df=1$, $p>0.05$) (Table 16). Family owned businesses employed an average of three family members and 57% employed two family members (Figure 39). The majority (76%) of respondents, including family owned and not family owned, employed between 1 and 5 people. Only 16% of swamp tour businesses provided jobs for more than 10 people (Figure 40). When the number of people employed by swamp tours was compared to operating status after the hurricanes 56% of businesses that employed 1-5 people were open while 20% were closed (Table 17). Further statistical analysis was not performed on these variables because a large majority of the businesses employed 1-5 people. When asked how their current employee base compared to their number of employees before the hurricanes, 55% of swamp tour owners reported they had fewer employees and 5% indicated an increase in employees (Figure 41). Nearly all swamp tour business owners believed swamp tours were either extremely or moderately important to the state of Louisiana's tourism industry (97%), as well as, to the local economy of the area where their business is located (90%) (Figure 42).

“Is your swamp tour business a family operation?”

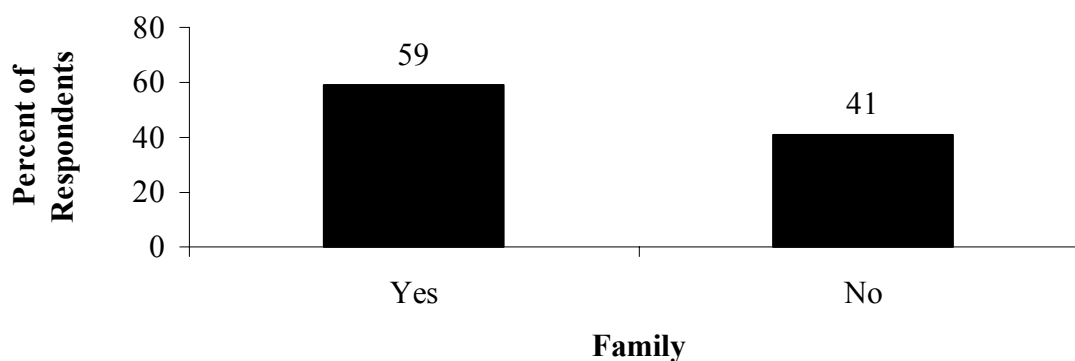


Figure 38. Percentage of swamp tour businesses that are family owned (N=27)

Table 16. A comparison of swamp tours that are family operations to the operating status of their businesses after Hurricanes Katrina and Rita

		Family operated swamp tour		
Operating status of tour	Open	Yes	No	Total
	Not Open	68%	32%	100%
		38%	62%	100%

($\chi^2=2.229$, $df=1$, $p>0.05$)

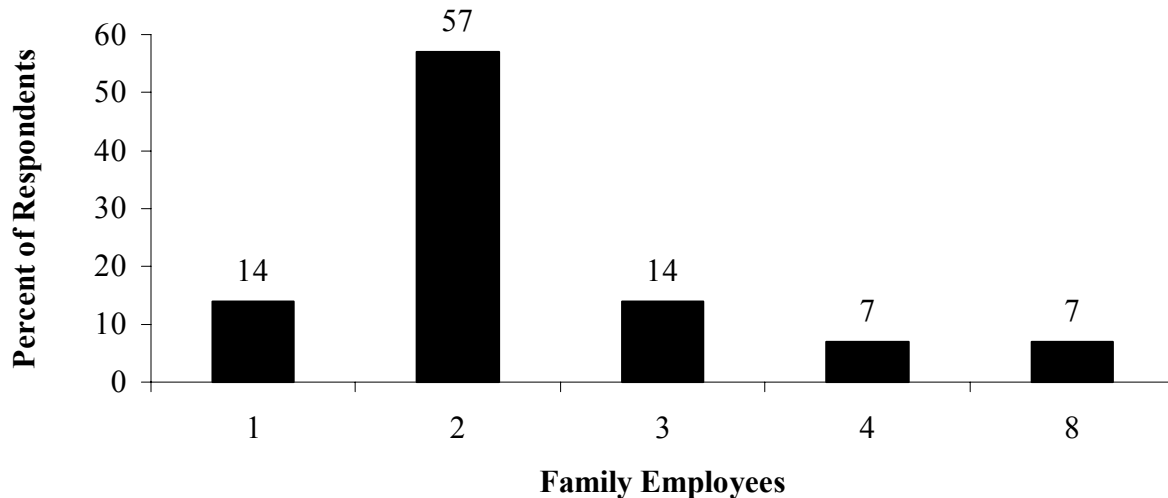


Figure 39. Number of family members employed by family owned swamp tour businesses (N= 14)

“How many total people does your swamp tour business employ?”

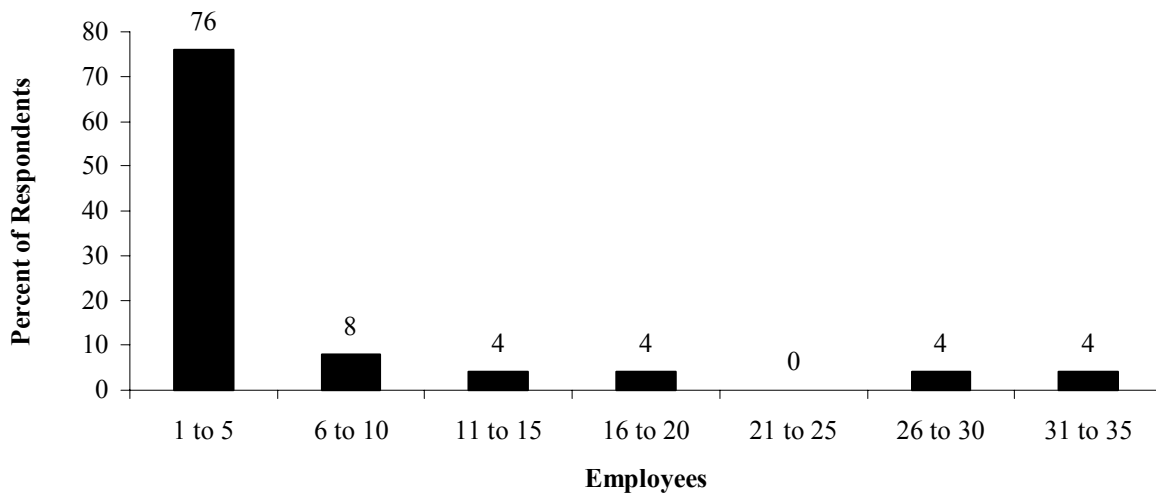


Figure 40. Total number of people employed by swamp tour businesses (N=25)

Table 17. Operating status of swamp tour businesses after Hurricanes Katrina and Rita compared to the number of people they employ

		Operating status of swamp tour		
Number of swamp tour employees		Open	Not Open	Total
	1-5	56%	20%	76%
	6-10	4%	4%	8%
	11-15	4%	0%	4%
	16-20	4%	0%	4%
	21-25	0%	0%	0%
	26-30	4%	0%	4%
	31-35	4%	0%	4%
Total		76%	24%	100%

“How does your current employee base compare to before Hurricanes Katrina and Rita?”

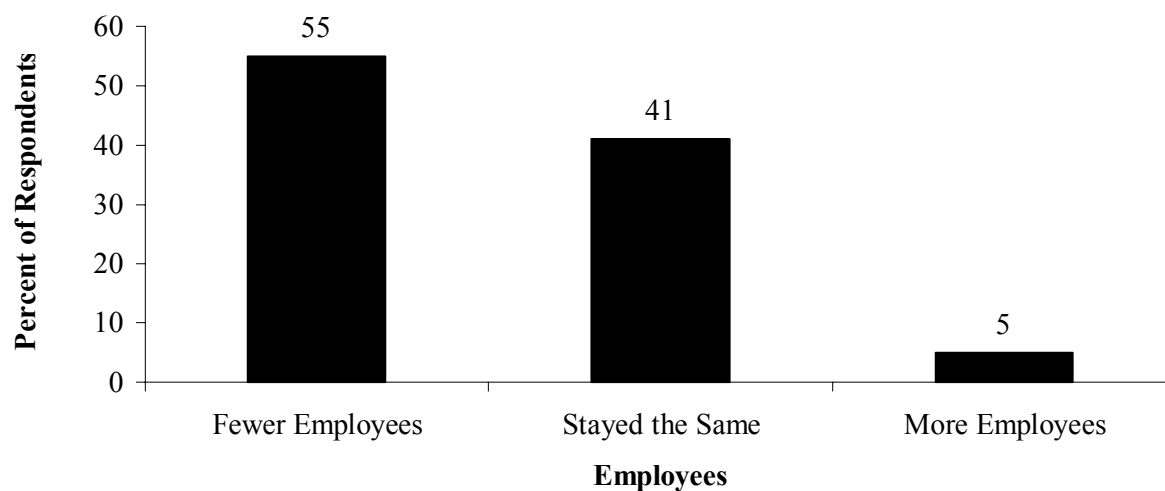


Figure 41. Current employee base of swamp tour businesses compared to employee base before Hurricanes Katrina and Rita (N=22)

“How important do you feel swamp tour businesses are to the state of Louisiana’s tourism industry and the local economy of your area?”

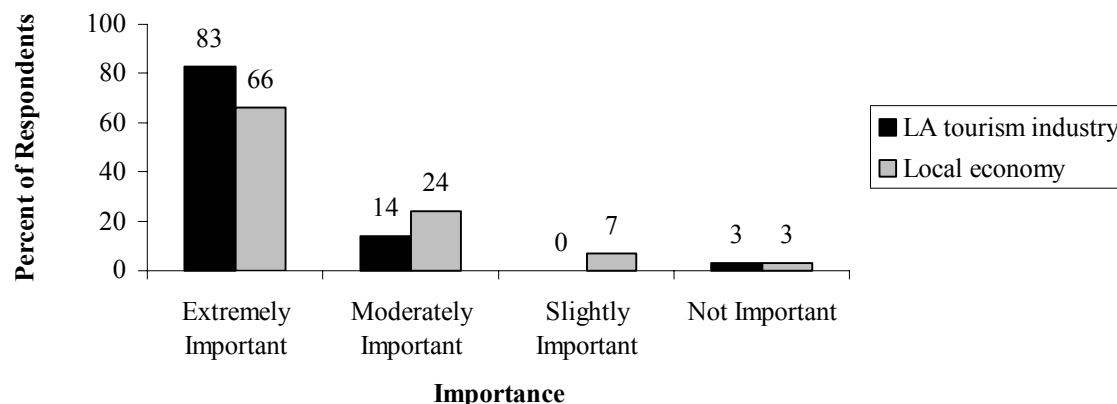


Figure 42. “Importance swamp tour owners place on their business in relation to the state of Louisiana’s tourism industry and the local economy” (N=29)

After completing the questionnaire, swamp tour owners were given the opportunity to make additional comments concerning their business or the survey. Of the 31 respondent swamp tours, 10 (32%) provided comments. The majority (60%) of these owners stated that the lack of tourists since Hurricanes Katrina and Rita has been a problem for their business, basically they all stated that no tourists equals no business (Figure 43). When comparing those owners who commented on the lack of tourists in this question to those who stated “no tourists” (60%) when asked to describe the damage their business sustained from the storms (Figure 9) I found that only 1 (9%) of the owners stated a lack of tourists as an answer for both questions (Table 16). All other respondents only noted lack of tourists as a problem for one of the two questions. A total of 11 (36%) of the 31 respondent swamp tours consider the reduced number of tourists since the hurricanes to be a problem for their business (Table 18).

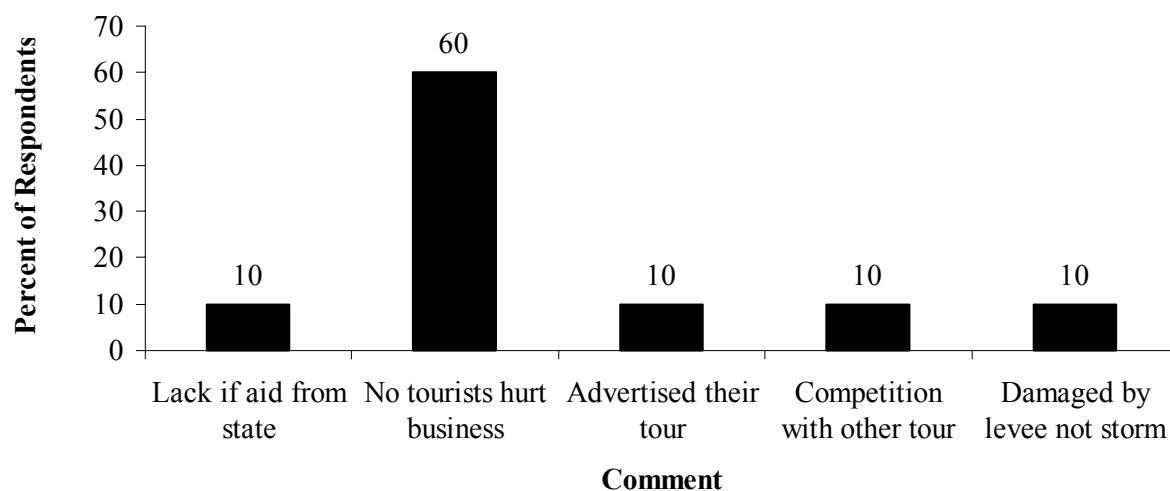


Figure 43. Comments given by swamp tour owners after completing the survey (N=10)

Table 18. Number of swamp tour owners who stated “no tourists” as a problem for the “Describe the type of damage your business sustained” and in the “Comment” section

		Number of swamp tour owners who listed “No tourists” as a type of damage sustained by their business from Hurricanes Katrina and Rita		
		Yes	No	Total
Number of swamp tour owners who commented “no tourists hurt business”	Yes	1	5	6
	No	5	0	5
	Total	6	5	11

DISCUSSION

The majority of swamp tour businesses in southern Louisiana sustained damage as a result of Hurricanes Katrina and Rita, but the severity and type of damage to each business varied. While most swamp tour businesses were operating at least part-time, some were forced to close. Of the businesses that closed, the majority were planning to re-open within the next year. Hurricane Katrina was more destructive to swamp tour businesses than Hurricane Rita. Some tour businesses were not physically damaged by the storm but were damaged by the subsequent reduction in tourism in the state. Hurricane induced problems included flooding and wind damage to office buildings and other structures, damage to tour boats, and damage to the swamp, all of which ranged from slight to severe. The decreased number of tourists in southern Louisiana reduced the clientele and therefore the profits for swamp tour businesses. Loss of telephone service and interrupted mail delivery, as well as the loss of basic utilities electricity and water made it difficult to conduct business. These findings agree with those of Tierney (1997) who, when studying the business impacts of the Northridge earthquake, stated that “it is important to broaden our conception of disaster related business vulnerability to encompass both physical damage at the business site and a range of off-site impacts, such as damage to lifelines and disruption of the flow of goods and supplies, that become problematic for business owners in the aftermath of disasters.”

Although most swamp tour owners estimated the cost of repairs made to their businesses at more than \$10,000, very few owners reported receiving government aid. Most swamp tour owners paid for repairs with their own money or savings. One owner stated that they did not know any type of financial aid was available and it is very possible that other businesses did not apply for aid for the same reason. Some possible explanations for this may be that assistance programs for small businesses were not well advertised in the days and weeks following the hurricanes and swamp tour business

owners may have been waiting for insurance claims to be processed which may have caused them to miss real or perceived deadlines for applying for government aid or disregard government assistance altogether.

The relationship between the operating status of swamp tour businesses after Hurricanes Katrina and Rita and damage by past hurricanes was not statistically significant. This lack of relationship shows that swamp tour owners see hurricanes as individual events and, after experiencing Hurricanes Katrina and Rita, were not discouraged enough by the thought of future hurricane damage to close their business. It also shows that those owners who had experienced damage from past storms were able to make necessary repairs and resume their swamp tour business.

No statistical differences were found between the number of passengers swamp tour businesses served in the twelve months prior to the hurricanes and their operating status after the storms. The data did suggest, however, a trend of more smaller swamp tour businesses, those with less than 1500 passengers, to be closed than businesses serving more than 1500 people. This trend may have been statistically significant if the sample size was bigger, or it may have been completely voided if the intervals given in the question for numbers of passengers had been smaller (e.g. using intervals of 500 for each category instead of continually increasing intervals).

The type of boat used to give swamp tours did not have any relationship whether the tour business was open or not open following Hurricanes Katrina and Rita. If the questionnaire had asked owners to identify the type of boat they use on the majority of their tours instead of asking them to list all types of boats used, more meaningful results may have been obtained. The type of boat used by swamp tour businesses may be related to the landscape of the areas traveled through during the tour. For example airboats may be more likely to be used by swamp tours that travel primarily through marsh lands while pontoon and flat bottomed may be used primarily in the swamps. These areas may

have been affected differently by the hurricanes, which may have influenced the operating status of the swamp tours that utilized them.

More older swamp tour businesses, those operating for more than 15 years, remained open after Hurricanes Katrina and Rita than those businesses that have been operating for less than 15 years. Some possible explanations for this may be that older swamp tour businesses were more financially secure than newer businesses, older businesses may have been more established in their local area and had a more reliable clientele than newer businesses (e.g. older businesses may have customers that come back every summer), and older businesses may have more social connections to their local area while owners of newer businesses may have been more apt to close and move elsewhere after the hurricanes. No significant relationship was found between the years of operation of swamp tour businesses and if they experienced damage as a result of hurricanes prior to Katrina and Rita, this finding is in agreement with the previous statement that hurricanes are independent events.

Although more swamp tour businesses were family owned than non-family owned; the family owned businesses did not differ from non-family owned businesses in being open for business or closed following Hurricanes Katrina and Rita. Because the vast majority of swamp tour businesses employed between 1 and 5 people, the operating status of swamp tours was not related to number of employees.

After analyzing the results of this study I recognized additional questions could have been asked that may have yielded more information regarding differences between those swamp tour businesses that remained open and those swamp tour businesses that had to close after the hurricanes. Possibilities for these questions include: How did the swamp tour businesses prepare for Hurricanes Katrina and Rita? Will they prepare for future hurricanes differently than they did for Katrina and Rita? Which swamp tour business owners also suffered damage to their homes? Were the swamp tour

owners forced to evacuate their home during the storms? Were the swamp tour owners forced to evacuate their business during the storms?

An interesting finding of this study is the emergence of a new type of tour, the New Orleans Disaster Tour. While visiting the Jackson Square Visitor's Center, New Orleans, in February 2006, one pamphlet was found for a disaster tour offered by a company that conducts a variety of tours, including swamp tours (Gray Line New Orleans 2006). A different swamp tour business listed a disaster tour as one of the additional services they offered to their customers (Figure 34). An internet search was conducted to determine if more disaster tours of New Orleans existed and two others were found, both operated by swamp tour businesses (Airboat Adventures, LLC 2006 & Tours By Isabelle: Inter-Tour Louisianne, Inc. 2006). The four swamp tour businesses that offered disaster tours represented 15% of the 27 swamp tours that were known to be operating after Hurricanes Katrina and Rita (Table 9), suggesting that swamp tour owners were seeking out new ways to profit while the swamp tour business was slow and that they were capable of adjusting their businesses to cater to the changing needs and wants of tourists. The disaster tours offered people the chance to tour some of the New Orleans areas most devastated by Hurricane Katrina, including the 17th Street Canal Breach and the Lower 9th Ward. The tours were also a source of controversy for residents of these areas who don't want their misfortune to be exploited, but tour representatives said they were conducted in a tasteful manner and raised awareness of the importance of New Orleans industry and coastal wetlands protection (Mowbray 2005).

Swamp tour businesses were a growing portion of the nature-based tourism industry in the state of Louisiana before the 2005 hurricane season brought Hurricanes Katrina and Rita. From 1997, when O'Mara, Liffman & Henning (1998) conducted their descriptive study of Louisiana swamp tours, to August 28, 2005, the day before Hurricane Katrina made landfall, the number of swamp tour

businesses in the state had grown from 43 to 51. After Hurricanes Katrina and Rita, 27 swamp tour businesses remained open (Table 8). Although this was a setback for the swamp tour industry, most owners believed that their businesses make important contributions to both their local economy and the state of Louisiana's tourism industry. The operating swamp tour businesses seemed willing to wait out this reduction in the tourism trade for as long as financially possible; most expected their business to increase as the city of New Orleans is revitalized. A follow up survey after a period of one or more years is suggested to determine if the number of fully operational swamp tour businesses in the state has increased and what progress those who are still operating part-time have made, as well as to detect any changes in the number of tourists in the area.

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APPENDIX A: FIRST MAILING COVER LETTER



LOUISIANA STATE UNIVERSITY
AND AGRICULTURAL AND MECHANICAL COLLEGE
School of Renewable Natural Resources

February 20, 2006

Swamp Tour Name
Address

Dear Swamp Tour Owner,

You recently spoke with us about taking part in our survey of swamp tour business owners in Southern Louisiana. By participating in this survey, you are providing valuable information about how Hurricanes Katrina and Rita affected your own swamp tour business and the industry as a whole. We are contacting all swamp tour businesses in the state.

Your answers are completely confidential and will not be reported in a way that identifies individual businesses or business owners. Participation in this survey is voluntary; however, your input will provide valuable information that will be useful in assisting the tourism industry in the state.

If you have any questions concerning this study or the questionnaire, please contact Dawn Schaffer, Graduate Research Assistant, Louisiana State University, (225) 578-4224, or Dr. Craig Miller, School of Renewable Natural Resources, Louisiana State University, (225) 578-2374.

Thank you very much for taking part in this survey.

Sincerely,

Dawn Schaffer
Graduate Research Assistant

Dr. Craig Miller
Assistant Professor, School of Renewable Natural Resources

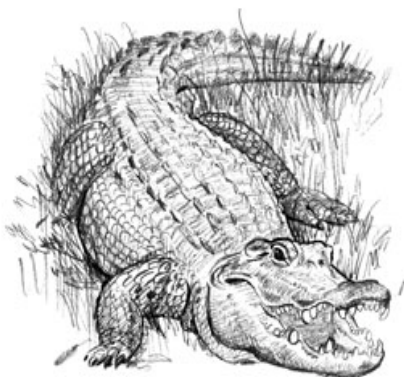
School of Renewable Natural Resources
Renewable Natural Resources Bldg
Louisiana State University
Baton Rouge, LA 70803

APPENDIX B: REMINDER POSTCARD

(FRONT)

See Reverse
Swamp Tour Operator Survey Information

Dawn Schaffer
School Of Renewable Natural Resources
Renewable Natural Resources Bldg
Louisiana State University
Baton Rouge, LA 70803



(BACK)

Dear Louisiana Swamp Tour Owner,

We recently mailed you a survey questionnaire concerning the affects of Hurricanes Katrina and Rita on your business. If you have already returned this questionnaire, we thank you very much for your participation. If you have not returned the questionnaire, please do so as soon as possible. Your input is important to us!

Your name and address will be removed from our mailing list when we receive your questionnaire.

Thank you for your assistance!

APPENDIX C: SECOND MAILING COVER LETTER



LOUISIANA STATE UNIVERSITY
AND AGRICULTURAL AND MECHANICAL COLLEGE
School of Renewable Natural Resources

March 16, 2006

Swamp Tour Name
Address

Dear Swamp Tour Owner,

We recently mailed you a survey questionnaire seeking information on your experience as a swamp tour owner during Hurricanes Katrina and Rita. As of today, we have not received your completed questionnaire. If you have already returned this questionnaire, thank you very much for your participation. If you have not returned your questionnaire, please fill out this new survey as soon as possible. By participating in this survey, you are providing valuable information about how Hurricanes Katrina and Rita affected your own swamp tour business and the industry as a whole. We are contacting all swamp tour businesses in the state.

Your answers are completely confidential and will not be reported in a way that identifies individual businesses or business owners. Participation in this survey is voluntary; however, your input will provide valuable information that will be useful in assisting the tourism industry in the state. Your name and address will be removed from our mailing list when we receive your questionnaire.

If you have any questions concerning this study or the questionnaire, please contact Dawn Schaffer, Graduate Research Assistant, Louisiana State University, (225) 578-4224, or Dr. Craig Miller, School of Renewable Natural Resources, Louisiana State University, (225) 578-2374.

Thank you very much for taking part in this survey.

Sincerely,

Dawn Schaffer
Graduate Research Assistant

Dr. Craig Miller
Assistant Professor, School of Renewable Natural Resources

School of Renewable Natural Resources
Renewable Natural Resources Bldg
Louisiana State University
Baton Rouge, LA 70803

Swamp Tour Owner Survey



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Louisiana State University
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All Responses Are Confidential
Thank You For Your Participation!
Postage-paid return envelope provided

Section I. Hurricane Damage. Please take a few minutes of your time to complete this questionnaire by checking the answer that matches your response. Your responses will tell us more about how Hurricanes Katrina and Rita affected swamp tour businesses in Louisiana. All responses are confidential. Thank you for your cooperation.

1. Did your swamp tour business sustain damage from Hurricane Katrina?
☐ Yes ☐ No
2. Did your swamp tour business sustain damage from Hurricane Rita?
☐ Yes ☐ No
3. If your swamp tour business was damaged by both storms, which caused more damage? (Please check only one)
☐ Hurricane Katrina
☐ Hurricane Rita
☐ Equally damaged by both
4. How do your current hours of operation compare to your hours of operation before Hurricanes Katrina and Rita? (Please check only one)
☐ Not Open ☐ 25% Open
☐ 50% Open ☐ 75% Open
☐ 100% Open (No Change)
5. If your swamp tour is **not open** for business, how long do you estimate it will be until your business is ready to serve customers?
☐ 0-3 months ☐ 4-6 months
☐ 7-9 months ☐ 10-12 months
☐ More than 12 months ☐ I do not plan to re-open
6. If you are currently **operating part time**, do you plan on remaining open for business?
☐ Yes ☐ No

7. Which of the following describes the damage your business sustained? (Please check all that apply)

☐ Flooding to office building and other structures
☐ Wind damage to office area
☐ Loss of electricity
☐ Loss of telephone service
☐ Loss of mail service
☐ Loss of water
☐ Damage to tour boat(s)
☐ Damage to swamp area where tours are taken
☐ Other (Please Identify: _____)

8. Please describe the level of damage to these aspects of your business by circling the number that matches your response.

	Slightly Damaged		Moderately Damaged		Severely Damaged
Office Building	1	2	3	4	5
Tour Boats	1	2	3	4	5
Swamp Area	1	2	3	4	5

9. Did you have to or are you currently making repairs to your swamp tour business?

☐ Yes ☐ No

- 9a. If "Yes", how did you repair your business?

☐ Did the work myself
☐ Help from family and friends
☐ Hired a Contractor

- 9b. If "Yes", how much do you estimate these repairs to cost?

☐ Less than \$999 ☐ \$1,000 - \$9,999
☐ \$10,000 - \$19,999 ☐ \$20,000 - \$29,999
☐ \$30,000 - \$39,999 ☐ More than \$40,000

10. Please identify any sources of financial assistance you have used to help with repairs to your swamp tour business. (Please check all that apply)

- ☐ Federal Emergency Management Agency (FEMA)
☐ IRS Disaster Loss Resources
☐ US Small Business Administration (SBA) Disaster Loans
☐ LA Small Business Development Centers (LSBDC) Business Assistance
☐ LA Economic Development
☐ Other (Please Identify: _____)

11. Has your swamp tour business been damaged by hurricanes in the past?

☐ Yes ☐ No

12a. If "Yes", which storms? _____

Section II. Customers. Please answer questions # 1 - 3 based on your swamp tour customers before Hurricanes Katrina and Rita (August 29, 2005)

1. How many passengers did your business serve in the 12 months prior to Hurricane Katrina?

- ☐ Less than 499 ☐ 500 - 1499
☐ 1500 - 2499 ☐ 2500 - 4999
☐ 5000 or more

2. Please rank the following seasons by the level of customer activity for your swamp tour business in the last 5 years. Circle the number that matches your response.

	Low	Medium	High
Winter	1	2	3
Spring	1	2	3
Summer	1	2	3
Fall	1	2	3

2a. Which of the following is the peak season for your swamp tour business?

- ☐ Winter ☐ Spring
☐ Summer ☐ Fall

3. What area did the majority of your swamp tour passengers from the past 5 years live in?
- _____ Louisiana
- _____ Out of State
- _____ Not Sure

Please answer questions # 4 – 9 based on your swamp tour passengers and business from the time Hurricanes Katrina and Rita occurred (August 29, 2005) to the present day.

4. Since the hurricanes occurred, how has your level of business been compared to before the storms?

_____ Much More

_____ Somewhat More

_____ The Same

_____ Somewhat Lower

_____ Much Lower

_____ My business is closed

- 4a. If your swamp tour business is less busy since the storms, how long do you project it will be until business resumes at a pre-hurricane level?

_____ 0-6 months _____ 7-12 months

_____ 1-2 years _____ 3-4 years

_____ More than 5 years

5. Do you expect your business to increase with the progression of repairs to New Orleans?

_____ Yes _____ No

6. What area do the majority of your current swamp tour passengers live in?

_____ Louisiana _____ Out of State

_____ Not Sure _____ Operating but have not had any customers

7. What advertising methods do you currently use to promote your swamp tour business? (Please check all that apply).

- ☐ Brochures in visitors centers ☐ Brochures in highway rest areas
☐ Brochures in hotels ☐ Ads in tour books
☐ Signs along major roadways ☐ Radio Ads
☐ Television Ads
☐ Other (Please identify: _____)

8. Where are you currently advertising your swamp tour business?

- ☐ New Orleans area
☐ Baton Rouge area
☐ Lafayette area
☐ Other Areas of LA (Please Identify: _____)
☐ Other States (Please Identify: _____)

Section III. Swamp Tours. Please answer the following questions concerning the tours and services you offer to your customers.

1. Before Hurricanes Katrina and Rita, which of the following topics did you include in your tour guide/naturalist talk? (Please check all that apply).

- ☐ Wetland Loss ☐ Wetland Restoration
☐ Flood Problems in the Swamp ☐ Hurricanes
☐ Salt Water Intrusion in the Swamp

2. Since the hurricanes, which of the following topics will you include in your tour guide/naturalist talk? (Please check all that apply).

- ☐ Wetland Loss
☐ Wetland Restoration
☐ Flood Problems in the Swamp
☐ Salt Water Intrusion in the Swamp
☐ Damage to the Swamp caused by Hurricanes Katrina and Rita
☐ Other (Please Identify: _____)

3. Will your swamp tours focus on areas of the swamp damaged by Hurricanes Katrina and Rita?

- ☐ Yes ☐ No

4. What areas do your swamp tours take passengers to visit?
(Please check all that apply)
- _____ Federal Land (National Wildlife Refuge, National Park, etc.)
 _____ State Land
 _____ Land I own
 _____ Land I lease/rent
5. What type of boats do you use for your swamp tours?
(Please check all that apply).
- _____ Airboats _____ Pontoon Boats
 _____ Canoes _____ Kayaks
 _____ Other (Please Identify): _____
6. What additional services does your swamp tour business offer to customers?
(Please check all that apply)
- _____ Gift Shop _____ Food and Beverages
 _____ Hotel Pick Up/ Drop Off _____ Picnic Area
 _____ Fishing Charters _____ Plantation Tours
 _____ City Tours (Please Identify City): _____
 _____ Other (Please Identify): _____
 _____ No additional services

Section IV. General Questions. Please answer the following questions regarding your swamp tour business and the tourism industry.
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1. How long has your swamp tour business been in operation? _____ Years
2. Is your swamp tour business a family operation?
 _____ Yes _____ No
- 2a. If "Yes", how many family members work there? _____
3. How many total people does your swamp tour business employ? _____
4. How does your current employee base compare to before the storms?
 _____ Fewer Employees
 _____ Stayed the Same
 _____ More Employees

5. How important do you feel swamp tour businesses are to the state of Louisiana's tourism industry?

- ☐ Extremely Important
- ☐ Moderately Important
- ☐ Slightly Important
- ☐ Not Important

6. How important do you feel swamp tour businesses are to the local economy of you area?

- ☐ Extremely Important
- ☐ Moderately Important
- ☐ Slightly Important
- ☐ Not Important

Please feel free to make any additional comments concerning your swamp tour business or this survey in the space provided below.

Thank you for taking the time to complete this questionnaire. Your assistance is greatly appreciated!

A POSTAGE PAID ENVELOPE IS PROVIDED FOR YOUR RESPONSE.

VITA

Dawn Schaffer is originally from Luthersburg, Pennsylvania. She graduated from DuBois Area High School in 1999 and received her bachelor's degree in interdisciplinary psychology/biology from Southampton College of Long Island University in May 2003. While attending Southampton College, Dawn participated in many experiential learning programs including: the Wild Dolphin Study Field Behavior Class which took place in Manzanillo, Costa Rica, the Seamester Program through Southampton College and the Ocean Classroom Foundation, and the Internship program; completing an internship at both The Whale Center of New England in Gloucester, Massachusetts, and with Dr. Robert Otis as a killer whale field research assistant in Friday Harbor, Washington. She also completed the Southampton College Co-operative Education Program while working at the Atlantis Marine World Aquarium in Riverhead, New York, in the marine mammal department for a semester in addition to attending classes. Dawn returned to The Whale Center of New England as a field naturalist for the 2003 season before beginning her graduate studies in wildlife with a focus on human dimensions in the School of Renewable Natural Resources at Louisiana State University in the spring of 2005.