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## ABSTRACT

In this report, we discuss the self-reported impacts on health, collected through 954 surveys conducted in seven coastal Louisiana oil spill-affected communities. The basis of this report is an analysis of the first on-the-ground data collected post-spill in Louisiana communities. The study served a two-fold function to gain insight into the extent of the health impacts associated with the Deepwater Horizon Oil Disaster and to be used as a pilot, or first attempt, for survey methods associated with health impact surveillance within communities affected by environmental toxics from the oil spill.

# Self-Reported Health and Economic Impact Survey

An Analysis of the Deepwater Horizon Oil Disaster in Four Coastal Louisiana Parishes

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## Executive Summary

On July 26, 2010, eleven days after the Deepwater Horizon well was capped, Tulane University's Disaster Resilience Leadership Academy (DRLA) and the Louisiana Bucket Brigade initiated a door-to-door health and economic impact survey in coastal Louisiana. A total of 954 people from four Southeast Louisiana parishes – Jefferson, Terrebonne, St. Bernard and Plaquemines - were surveyed from July 26 - October 1. This is the largest known face-to-face survey of communities impacted by the disaster. Of those surveyed, 83% were permanent residents.

## Hypothesis

The survey questions were designed to provide statistical data regarding the health and economic impacts, if any, of the Deepwater Horizon Oil Disaster. The hypothesis of the survey was that crude oil and dispersant from the oil spill were present in the environment and that people were exposed to the chemicals.

## Findings

The data below are a summary of the findings. Findings found at the town and parish level are included in the pages that follow.

**Economic Impacts:** 44% of those surveyed had the livelihood of their household's primary provider impacted. Nearly a quarter report needing but not receiving economic assistance due to lost income. More than 10% of those surveyed were considering moving.

**Health Impacts:** 46% of respondents reported being exposed to oil or dispersant; 72% percent of those who believed they were exposed also reported experiencing at least one symptom that they believed was associated with exposure. Respondents experienced the sudden onset of symptoms, a pattern representative of chemical exposure. Sudden onset symptoms included nausea, dizziness and skin irritation.

Health insurance seems to have been a determinant of seeking treatment among those who reported symptoms; 40% of those who had insurance sought treatment as opposed to only 23% of those with no health insurance. Over-the-counter medications were used "more often than usual" by a third of respondents.

## CREDITS

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The majority of respondents – 64% – expressed concern about seafood contamination.

### Recommendations

Among the recommendations of the report: a restoration economy that creates jobs through coastal repair and environmental monitoring; creation of a health care network with the proficiency to diagnose and treat environmental exposures; immediate increase in mental health care; independent seafood monitoring; future research that does not only study those impacted but also provides health care.

Residents of the coastal parishes have important anecdotal information about their experiences during and after the oil spill, but there is otherwise little data that demonstrates the problems and concerns as expressed in this survey. Those problems include health issues, seafood contamination and loss of livelihood. This survey provides initial statistical insight to compel action. More data should be gathered. In the meantime, the absence of data should not be used as an excuse for inaction.

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## SECTION 1. INTRODUCTION

On April 20, 2010, the Deepwater Horizon sank into the Gulf of Mexico, leaving in its wake what is known as the worst environmental disaster in U.S. history. This disaster also took the lives of 11 workers. This Health and Economic Impact Survey was conducted to determine if there were health and economic impacts of the Deepwater Horizon Oil Disaster on coastal Louisiana communities.

The Louisiana Bucket Brigade (LABB) is a non-profit organization. Its mission is to support communities' use of grassroots action to achieve sustainable neighborhoods free from industrial pollution. Tulane University's Disaster Resilience Leadership Academy (DRLA) was also involved in this survey. The mission of DRLA is to strengthen disaster assistance and humanitarian leadership globally to increase resilience in communities threatened by natural and manmade disasters.

In June 2010, Patagonia Clothing Company, a long-time donor of LABB, approached the organization about ways their employees could volunteer with the organization's oil spill response efforts. As a result, Patagonia sent 70 employee volunteers to Louisiana over the course of two months beginning in July 2010. With a robust labor pool, LABB was able to conduct a door-to-door survey across seven Southeast Louisiana areas from which data for this pilot study was collected.

## SECTION 2. STUDY DESIGN: BACKGROUND

### 2.1 Background

This survey was created to determine if there were health and economic impacts of the Deepwater Horizon Oil Disaster as reported by community members.

### 2.2 Purpose

This survey-based study serves a two-fold function. Primarily, this study will be used to gain insight into the extent of the health and economic impacts associated with the Deepwater Horizon Oil Disaster. The study also serves as a pilot for survey methods associated with health impact surveillance within communities affected by environmental toxics, especially those associated with the Deepwater Horizon Oil Disaster.

This study is a first-pass survey of seven selected communities. This survey evaluates each community as a whole rather than a number of select individuals. This initial report will be followed with an analysis of social and environmental justice impacts of the Deepwater Horizon Oil Disaster, to be released in the spring of 2011.

### 2.3 Study Timeline

From July 25-October 2, 2010, LABB staff, Patagonia volunteers and a Tulane DRLA staff member surveyed individuals present within selected survey areas in a first-pass fashion. Survey dates are as follows:

| Town, Parish, State  | Dates                        |
|--|------------------------------|
| Grand Isle, Jefferson, Louisiana   | July 26-30, 2010             |
| Port Sulphur to Buras, Plaquemines, Louisiana  | August 2-6, 2010             |
| Dulac, Terrebonne, Louisiana   | August 16-20, 2010           |
| Cocodrie and Chauvin, Terrebonne, Louisiana  | August 23-27, 2010           |
| Lafitte, Jefferson, Louisiana  | September 6-10, 2010         |
| Delacroix, Toca, Ycloskey, Shell Beach, Hopedale, St. Bernard, Louisiana and Phoenix, Plaquemines, Louisiana | September 13-17, 2010        |
| Buras to Venice, Plaquemines, Louisiana  | September 27-October 1, 2010 |

Volunteer surveyors, or enumerators, were placed within each survey area and surveyed for four consecutive days. Each day was divided into two approximately three-hour shifts. During the months of July and August survey teams worked from 8 or 9 a.m. until 11 a.m. or noon. The second shift ran from 2 or 3 p.m. to 5 or 6 p.m. Each area was scouted and mapped before enumerator arrival. Door-to-door efforts were meticulously executed based on these pre-visits.

## 2.4 Health Effects

The Deepwater Horizon Oil Disaster is one of the worst environmental disasters in history. The resulting crude oil and Corexit (dispersant) in the Gulf of Mexico can cause harm to humans and the environment as well.

When discussing the effects of the oil spill, use of the term *toxic* causes difficulty in that it can describe either toxic to humans, toxic to nature or both. While these chemicals pose a danger to the environment, this study focuses on examining the effects on humans.

Chemicals can affect organisms differently; for example, certain chemicals may cause cancer in laboratory rats because the rats have a unique metabolic process that humans may not have. Similarly, humans may be particularly sensitive to chemicals that may not affect laboratory animals at all.

Traditionally, health agencies determine potential adverse human health effects based on results of published animal studies. It is difficult for many agencies to say for certain if a chemical is dangerous to humans because there may be no published studies of human exposures.

Public health agencies examine all available data when evaluating chemicals. For mixtures of chemicals such as crude oil, agencies can examine studies on individual component chemicals to anticipate the toxicity of the mixture. Agencies such as the Environmental Protection Agency and the Agency for Toxic Substances and Disease Registry publish documents summarizing the potential health effects based upon current scientific knowledge.

If there have been events of human exposure to the mixture, such as a prior oil spill, worker health studies can provide the greatest amount of insight regarding future spills. These studies, such as the one conducted after the *Prestige* oil spill off the coast of Spain<sup>1</sup>, comprehensively examine adverse health effects of oil rather than a single constituent chemical. Currently the National Institute for Environmental Health Sciences is conducting a worker health study following the Gulf oil spill. Please see Appendix 2 for a further discussion of the potential adverse health effects that can be associated with the Deepwater Horizon Oil Disaster.

## 2.5 Economic Effects

The oil spill required extended closures of fishing areas. These closures not only impact the people shrimping, crabbing, fishing and harvesting oysters, but also the seafood and hospitality industries as a whole. Transport companies, stores, sports fishing operations, trappers and restaurants also felt the impact of the spill.

The questions asked in this section were meant to gauge the economic impact survey participants have experienced or believe they are yet to experience. With the moratorium on deepwater offshore drilling sites, residents of Louisiana experienced additional job loss. Responses received during the surveys are included as a means of providing narrative background to statistical data.

## Section 3. STUDY DESIGN: METHODS

### 3.1 Explanation of Survey Caveats

Seven caveats have been identified.

1. *Length of survey period*: Given the staffing available for this project, this survey was completed over a 10-week period. Current events associated with the spill may have influenced responses. These events and influences were not uniform for all communities during the 10-week period.
2. *Living versus working location*: Especially in Plaquemines and St. Bernard parishes, people who work on the Gulf do not always live in the areas surveyed. Additionally, six of the survey locations, including St. Bernard and Plaquemines parishes, Lafitte, Chauvin/Cocodrie and Grand Isle hosted BP base camps during the spring, summer and fall months of 2010. Many of the workers occupied seasonal living units in each of these locations.
3. *Hurricanes*: Since the 2000 census data was released there have been six major hurricanes that have impacted the social landscape of Louisiana – Lili and Isidore in 2002, Katrina and Rita in 2005, Ike and Gustav in 2008. Census data for 2010 will be released before April 2011 at which time this report will be updated to indicate these changes.
4. *Language*: All surveys were conducted in English. Although language barriers did not surface during the project, the enumerators' English-only language ability means that hard hit communities, including the large Vietnamese community of fishermen, were not identified in the initial survey design.
5. *Petrochemical plants in communities*: There are petrochemical plants neighboring three of the survey

locations. Toca Gas Plant is directly next to the community of Toca in St. Bernard Parish. Also in St. Bernard are Murphy Oil Refinery and Chalmette Refining which are located approximately 10 miles from the closest survey site of Toca. In Plaquemines Parish, the two major chemical plants are ConocoPhillips Alliance Refinery and Chevron Oronite Company, located approximately 37 miles away from the northernmost survey site of Port Sulphur in the Plaquemines data set and 18 miles from Phoenix, included in the St. Bernard data set. In Grand Isle, ExxonMobil Pipeline Company additionally has a facility integrated within the community. This could potentially have an impact on health-related survey results, as residents would experience exposure to chemicals similar to those produced at nearby chemical plants. There are additional chemical plants in the areas that were surveyed. A listing can be searched on The Right-to-Know Network, [rtknet.org](http://rtknet.org).

*6. Increase in hospitality business:* During the spill period, there was an increase in business for house and motel rentals and restaurants because of the influx of workers and others who rented out entire areas over extended periods of time.

*7. Employment by BP and BP contractors:* Many individuals worked for BP or BP contractors during the immediate clean-up period which was still happening during the survey period. The jobs held were many times in substitution for job loss because of fishing closure and thus could potentially affect the answer to economic impact questions. In addition, some residents stated that they were fearful of personally losing jobs or a family member losing a job and thus this potentially caused many individuals to avoid the survey.

## 3.2 Population Surveyed

While health and economic effects of the spill have been felt nationwide, this study is limited to the residents of selected areas of Southeast Louisiana. The seven coastal regions were selected based on four principal factors:

- LABB's existing relationships in the area
- Identification as a spill-affected community through pre-study outreach
- Location scouting for housing density
- Logistical feasibility

The broadest possible survey population was identified in order to obtain as much information as possible. Location within the survey area at the time of survey and willingness to participate were the only pre-determined study population characteristics.

### 3.2.1 Survey Locations and Participant Selection

The seven survey areas were:

- Grand Isle
- Port Sulphur to Empire in Plaquemines Parish
- Dulac
- Chauvin and Cocodrie
- Lafitte
- Delacroix/ Shell Beach/ Yscloskey/ Hopedale/ Vero in St. Bernard and Phoenix in Plaquemines
- Empire to Venice in Plaquemines Parish

In order to participate in the survey, participants had to meet four criteria:

- Older than 18
- Not have previously completed the same survey
- Required to complete the survey in the presence and with the assistance of an enumerator
- Located within the survey area at the time of survey

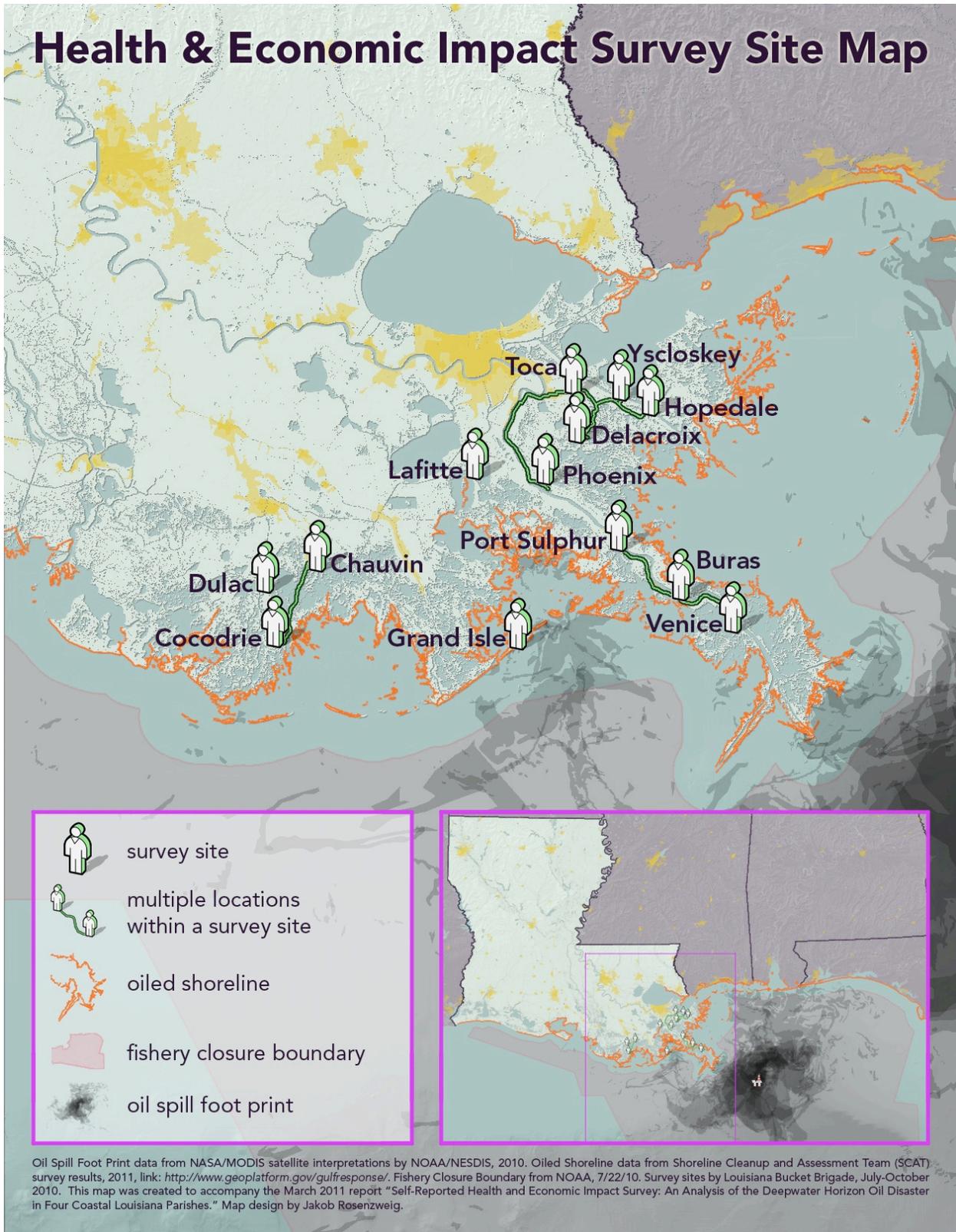
Participants were primarily approached in their homes. Labor and time constraints limited the area surveying to a single pass-through of residential areas. Participants were surveyed based on their presence within a home and their willingness to participate. No willing participant was excluded from the study unless they were under the age of 18.

Secondary to the door-to-door method, enumerators were placed at high-traffic locations within each survey area. LABB and Tulane staff members selected stationary team placements based on their evaluation as a viable location and permission from the location owner. Examples of viable high-traffic areas were grocery stores and convenience stores.

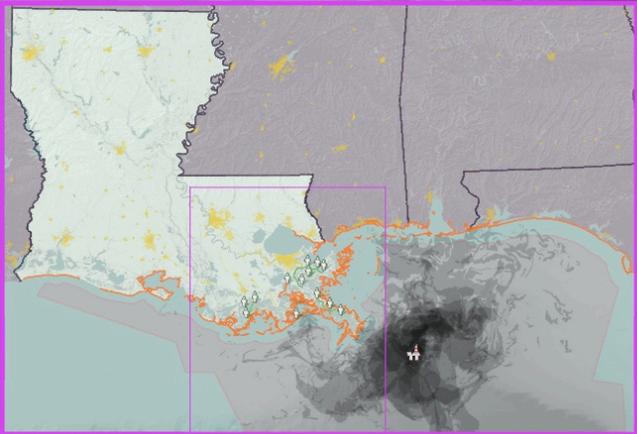
### **3.2.2 Survey Location Map**

The map on the next page shows the locations of each community that was surveyed, where oil touched land and fishing closures in the Gulf of Mexico.

# Health & Economic Impact Survey Site Map



-  survey site
-  multiple locations within a survey site
-  oiled shoreline
-  fishery closure boundary
-  oil spill foot print



Oil Spill Foot Print data from NASA/MODIS satellite interpretations by NOAA/NESDIS, 2010. Oiled Shoreline data from Shoreline Cleanup and Assessment Team (SCAT) survey results, 2011, link: <http://www.geoplatform.gov/gulfresponse/>. Fishery Closure Boundary from NOAA, 7/22/10. Survey sites by Louisiana Bucket Brigade, July-October 2010. This map was created to accompany the March 2011 report "Self-Reported Health and Economic Impact Survey: An Analysis of the Deepwater Horizon Oil Disaster in Four Coastal Louisiana Parishes." Map design by Jakob Rosenzweig.

### 3.3 Survey Design

The survey used in this study was constructed around five major study areas. These are: location identification, demographic information, symptoms experienced, over-the-counter drug use and economic impact. Data collection and analysis procedures have been designed in a way to maintain confidentiality or anonymity of study participants.

#### 3.3.1 Location and Demographic Information

Location and identification questions seek to identify participant residence and work habits. These questions were designed to yield insight into possible routes of exposure and establish possible locations of exposures to environmental toxics. Examples of possible participant classification during analysis were: domiciled within affected area and employed within affected area.

Demographic information is used to examine the distribution of health and economic impacts across the socio-economic continuum and yield insight into the socio-economic structure of study communities.

#### 3.3.2 Health Impact Questions

Self-reported retrospective symptomology is used to identify health effects that may or may not be associated with a participant's presence within a spill-affected community. These questions are designed to evaluate health symptoms that individuals may attribute to environmental exposures to crude oil or associated emissions. In a similar manner to symptomology, self-reported over-the-counter drug use yields insight into the future study of environmental exposures. It is postulated by this study that self-treatment is likely the method of choice for individuals that have chronically suffered exposures to environmental toxics.

#### 3.3.3 Economic Questions

Economic impact questions within the study represent a carry-over from established study methods from organizational efforts prior to the execution of this study. LABB began collecting, examining and reporting economic impacts resultant of the Deepwater Horizon Oil Disaster immediately after the spill. Survey participants were questioned regarding experienced economic impacts in a manner that is more individualistic than established methods of economic study.

There is baseline economic data regarding employment rates and job types from a report entitled "Coastal Employment before the 2010 Deepwater Horizon Oil Disaster" (Plyer and Campanella, 2010)<sup>2</sup>. The baseline in this report comes from 2008 data. The findings indicate many in the fishing industry of Southeast Louisiana parishes are self-employed and thus the baseline data is much lower than the numbers presented. This point is important as strictly utilizing census numbers in any forthcoming study will show a smaller number of people relying on the seafood industry than what there really is. Economic impact questions thus centered on pre- and post-spill occupations gathering commentary on the degree of impact the Deepwater Horizon Oil Disaster had on each individual, receipt or need of disaster assistance, the ability or desire to relocate and perceived changes in each community.

### 3.3.4 Additional Questions

Three additional questions were used on the survey that fell outside the five major study areas. These were used as indicators of resident sentiment toward the oil spill. These questions were about the use of dispersant, seafood safety and cultural impacts.

## 3.4 Quantitative v. Qualitative

The survey tool uses both quantitative and qualitative research methods. Quantitative questions were used for all health impact reporting. After answering the quantitative health questions, participants were given the option to leave additional comments in the form of a non-question-driven qualitative response. Economic impact questions were presented in both forms: quantitative for direct needs assessment-type questions and qualitative for self-indicated oil disaster analysis questions. Enumerators were instructed not to lead participants in their responses.

## 3.5 Analysis Techniques

Typically, a statistical study attempts to identify a characteristic of a large population by examining a smaller fraction, or sample, of that population. It is assumed that the smaller fraction will be reflective of the larger population. In some circumstances, the smaller fraction will show a characteristic that is somewhat incorrect, or erroneous. Any statistical study must discuss uncertainty and possible sources of error.

*Confounding* is a term used in statistics to describe a source of error. Some studies are affected by an unknown factor or an unanticipated relationship. When a factor is unaccounted for, it can be said to be a confounding factor. For example, this study examines several symptoms in an effort to examine the possibility of environmental contamination. These symptoms are not uniquely caused by environmental toxins and can be caused by many conditions such as seasonal allergies. In this study, seasonal allergies can be called a confounding factor and may blur the results or introduce error because it was allergy season in Louisiana.

*Bias* is a term used in statistics to describe a regular or somewhat uniform error in the results. Biased results will favor one result over another and can cause a sample population to appear different from the larger population. Steps can be taken to minimize bias, however all survey-based studies will suffer from it to some degree.

Sources of bias in a survey usually stem from the selection of participants, or respondents. So many different factors can be related to the examined characteristics, and it is practically impossible to make sure every factor, conceivable or not, is identical in proportion between a sample and a larger population. These factors can be demographic in nature, such as age and gender, or can be less obvious, such as blood type and diet.

Bias can also be introduced through the questioning and responses of participants. In this study, participants were asked to remember or recall information. In some cases, recall bias can cause results to favor negative factors; for example, years later it can be easier to remember where you had a bad meal as opposed to a good one. Additionally, bias can be introduced by the fact that these responses are given voluntarily. Satisfaction surveys can suffer from the fact that a satisfied customer is often less motivated to contact the manufacturer than an angry one.

Bias can also be introduced into the results through the non-responses or questions left blank. Given the circumstances surrounding the oil spill and the need for as much information as possible, participants were openly given the choice to refuse a response to any question. It was expressed to LABB outreach teams that the fear of losing jobs would cause many individuals to avoid the survey. This results in their systematic or uniform under-representation in the sample.

Sources of error and bias do not mean results of a survey are incorrect; rather they affect the inferences that can be drawn from the results. A high amount of bias and error in a sample would mean the sample does not accurately reflect the larger population. Acknowledging and controlling for the inherent challenges (to the extent possible) has made this survey stronger.

The results of this survey are displayed below. Blank responses and non-responses are included within the results. These responses likely occurred by a participant's wish not to respond to the question.

When reading the results of this survey, blank responses can be understood to represent uncertainty in a result. A blank response to a yes or no question can be understood as a response that could be either. For example, if a yes or no question resulted in 50 blank responses, those 50 responses could in truth be yes or no, but most likely some mixture of both.

Since each sub-population contains a different amount of participants, the percentages of each population responding the same are compared, rather than the individual numbers. Interpretations and possible inferences are discussed accompanying each result.

## **SECTION 4. SURVEY RESULTS**

### **4.1 Introduction**

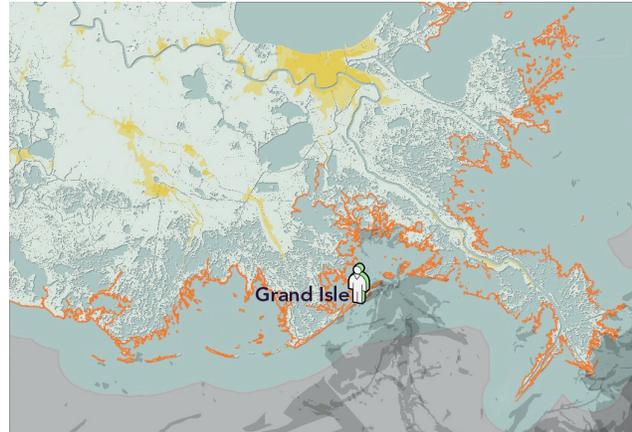
The survey results are grouped by geography and presented in the order communities were surveyed. Each section contains basic historical and contemporary information about the population in the area and the land size. Because of the number of towns surveyed in St. Bernard and Plaquemines parishes, parish level data is included. Plaquemines North and South survey results are included in the same regional section to give a regional perspective.

Results from each region are separated into the following data sets: population characteristics, exposures information (including odors), symptoms information, economic information and information not obtained. Information obtained about seafood safety concerns and concerns about dispersant spraying post-well closure are included in section five. A selection of qualitative responses for economic impact questions is included in each section.

## 4.2 Jefferson Parish - Grand Isle

### 4.2.1 Background

Grand Isle is a shoreline community on the Gulf of Mexico in Jefferson Parish located at the endpoint of La. Hwy. 1 and connected to the mainland of Louisiana by the La. Hwy. 1 Causeway Bridge. According to the town's Web site, "...the primary businesses for island residents are tourism, the seafood industry, and oilfield related professions."<sup>3</sup> Grand Isle was one of the most visibly affected communities from the oil disaster because of its beachside accessibility. It was thus used as a main access point for media, non-government organizations and other interest groups. Grand Isle was also the location of a large encampment for BP, the National Guard and other agencies such as Louisiana Wildlife and Fisheries.



The first inhabitants and visitors to Grand Isle were the Chitimacha<sup>4</sup> of the present-day United Houma Nation. In 1781, four separate land grants were distributed by the then-Spanish government of Louisiana.<sup>5</sup> The people who took the grants were of French and Spanish descent. These settlers relied on agricultural development and raised livestock.

In the mid-1800s, plantation plots were established on the island and formed the guiding boundaries for further development. Also during the mid-1800s, families from New Orleans began vacationing on Grand Isle, which was a popular beach destination for Louisianans before the spill. During the winter offseason, the population of Grand Isle is around 1,500. During the summertime it increases to approximately 20,000.

### 4.2.2 Grand Isle Demographics

The town of Grand Isle is composed of approximately 6 square miles of land and 2 square miles of water.

As of the last U.S. Census in 2000<sup>6</sup>, there were 1,541 people living in Grand Isle. Of this number, 51.1% were men and 48.9% were women with a median population age of 39.7.

From the census data, 99.1% of people identified themselves as of one racial background with the following break-down: Native American, 2.3%; African American, 0.2%; white, 96%; Hispanic or Latino, 1.5%; Asian, 0.2%; other races, 0.4%; two or more races, 0.9%. The five greatest identifications with ethnic groups were: French (24.5%), other ancestry (11.3%), American (10.6%), French Canadian (9.1%), and German (8.2%).

In Grand Isle, 76.3% of people were older than 18. Of those, 13.2% were older than 65. Married-couple households accounted for 54.2%, 8.4% were female-led households (with no husband present) and 9.3% of households had individuals of 65 and older living alone.

Of the Grand Isle population, 68.3% of individuals had a high school or higher degree and 13.3% had a bachelor's degree or higher. Of those older than 16, 57.8% were employed and the median household income was \$33,548. Self-employed individuals accounted for 15.3% of the population. The median income for men was \$34,000 and for women, \$19,333. There were 39 families living below the poverty line. The top three industries that employed Grand Isle residents were agriculture, forestry, fishing, hunting and mining (15.3%); arts, entertainment, recreation, accommodation and food services (14.8%); and retail trade (12.2%).

In Grand Isle, there were 1,875 housing units; 33.2% were occupied – 80.1% by the owner and 19.9% as rental units. Of the housing units, 66.8% were qualified as vacant properties, but 61.6% of these were seasonal living quarters. The average household size was 2.46.

### **4.2.3 Survey Results**

Survey dates: July 27-30, 2010

Number of enumerators: 16

Surveys collected: 132

Total households contacted (via knocking on doors): 243

Households that did not answer: 169

Households that declined to participate in survey: 26

Households that responded to survey: 48

Survey location not recorded: 84

#### **4.2.3.1 Quantitative Results**

##### *4.2.3.1.1 Population Characteristics*

Of the 132 individuals surveyed in Grand Isle, 66 (50%) were permanent residents (PR), 24 (18.2%) were seasonal residents (SR), 2 (1.5%) were tourists or visitors, 23 (17.4%) were oil response workers (OR), 1 (0.8%) person was locally employed, 13 (9.8%) gave no response, 1 (0.8%) individual reported being a tourist and seasonal resident, 1 (0.8%) individual identified as an oil response worker and local employee and 1 (0.8%) respondent identified as a permanent resident and local employee.

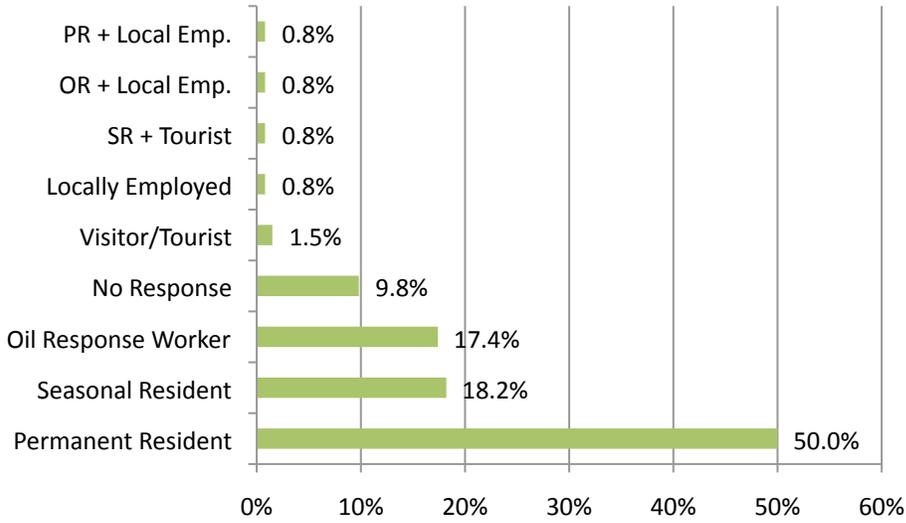


Figure 4.2.1 Population Characteristics

Of the 132 respondents, 74 (56.1%) worked predominately outside, 26 (19.7%) primarily worked inside, 25 (18.9%) spent an equal amount of time inside and outside and 7 (5.3%) chose not to respond.

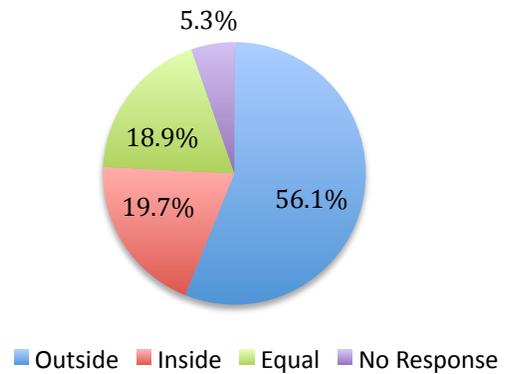


Figure 4.2.2 Location Where Time is Most Spent During the Day

Of the 132 respondents, 67 (50.8%) had health insurance, 20 (15.2%) had no health insurance and 45 (34.1%) declined to answer this question.

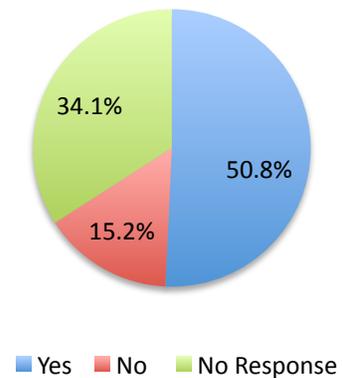


Figure 4.2.3 Health Insurance

#### 4.2.3.1.2 Exposures Information

At the time they were surveyed, 66 (50.0%) respondents believed they had been exposed to crude oil, 57 (43.2%) reported no exposure, 1 (0.8%) was unsure, and 8 (6.1%) had given no response.

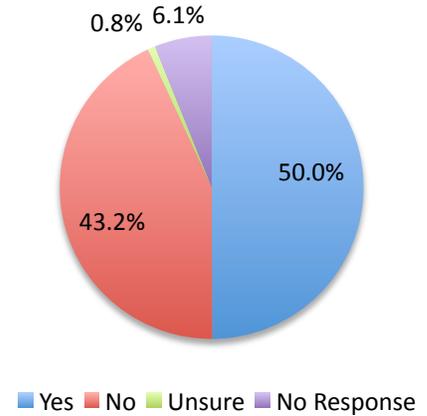


Figure 4.2.4 Believed Exposure to Crude Oil

Of the 66 (50%) respondents who believed they were exposed to crude oil, 9 (6.8%) had sought medical treatment for their exposure at the time of survey, 57 (43.2%) had not sought medical treatment or gave no response to this question.

#### Odors

Of the 132 total respondents, 71 (53.8%) reported experiencing an unusual increase in odors, 61 (46.2%) reported they had not experienced an unusual increase in odors.

Respondents further described increases of smells as follows: 50 (37.9%) respondents reported smelling gasoline or fuel, 6 (4.5%) reported rotten eggs, 2 (1.5%) reported citrus-type cleaner, 6 (4.5%) reported liquid dish soap, 2 (1.5%) reported dry-cleaning chemicals, 6 (4.5%) reported unspecified chemicals, 8 (6.1%) reported oil or other petroleum product not reported elsewhere, 5 (3.8%) respondents described either an unidentifiable odor or provided a description, such as benzene, sewage or varnish.

#### 4.2.3.1.3 Symptoms Information

Out of 132 total respondents, 60 (45.5%) reported an unusual increase in symptoms and 72 (54.5%) reported no symptoms or gave no answer. Also, 22 (16.7%) respondents reported seeking medical treatment for their increase in symptoms.

| Number of Symptoms       | Number of Individuals | Percentage of Respondents |
|--------------------------|-----------------------|---------------------------|
| <i>None Reported</i>     | 72                    | 54.5%                     |
| Total reporting symptoms | 60                    | 45.5%                     |
| 1                        | 22                    | 16.7%                     |
| 2                        | 7                     | 5.3%                      |
| 3                        | 10                    | 7.6%                      |
| 4                        | 9                     | 6.8%                      |
| 5                        | 4                     | 3.0%                      |
| 6                        | 4                     | 3.0%                      |
| 7                        | 3                     | 2.3%                      |
| 10                       | 1                     | 0.8%                      |

Figure 4.2.5 Number of Symptoms Reported by Respondents

Out of the 132 Grand Isle respondents, the following percentages represent the amount the symptoms were reported within the total responding population.

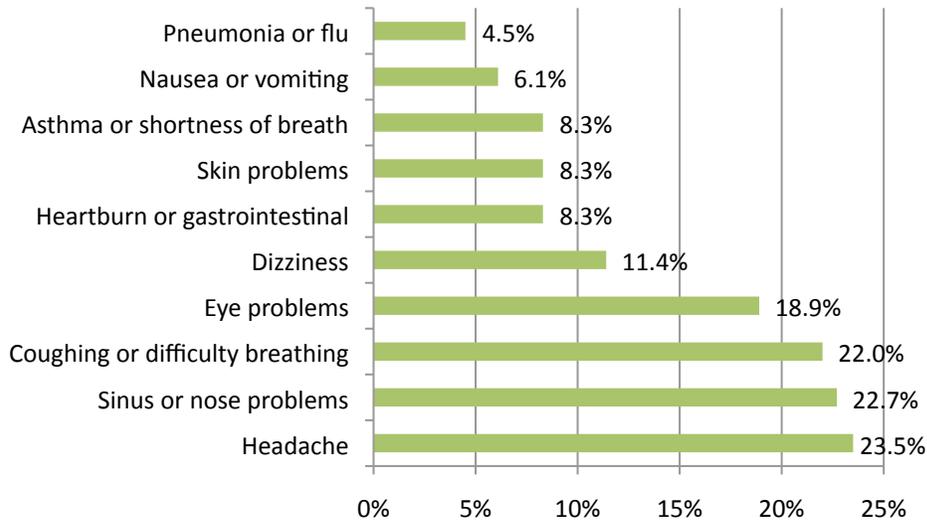


Figure 4.2.6 Types of Symptoms Reported

Of the 66 (50.0%) respondents reporting exposure to crude oil, 47 (35.6%) also identified an abnormal increase in symptoms and 19 (14.4%) did not report any increase. Of the 66 (50.0%) respondents who did not report an exposure, 13 (9.8%) reported an increase in symptoms and 53 (40.2%) did not report any increase. Grand Isle respondents were not asked if they had been exposed to dispersant.

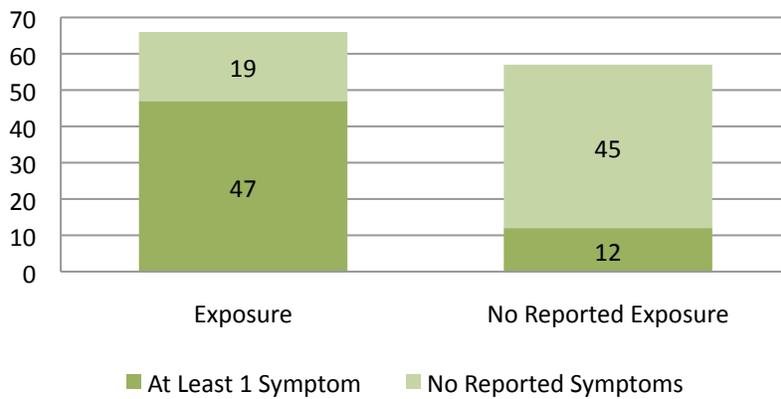


Figure 4.2.7 Exposure in Correlation to Symptoms

#### 4.2.3.1.4 Over-the-Counter Medication Use

In total, 40 (30.3%) respondents reported using over-the-counter medication more often than usual. Nineteen (14.4%) used eye medications, 10 (7.6%) used gastrointestinal medications, 31 (23.5%) used cough, cold or allergy medicine and 3 (2.3%) used skin cream.

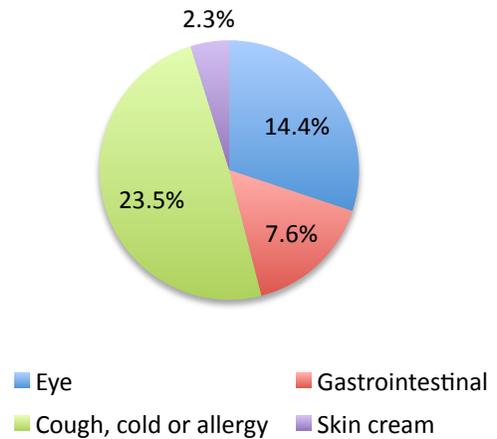


Figure 4.2.8 Over-the-Counter Medication Use

Of the 40 (30.3%) respondents reporting increases in over-the-counter medication use, 32 (24.2%) also reported an exposure to crude oil, 30 (22.7%) reported increases in odors, and 36 (27.3%) reported increases in symptoms.

#### 4.2.3.1.5 Economic and Community Information

In addressing the changing economic situations in their communities since the oil spill, 20 (15.2%) responded that they had considered moving.

In addition, 13 (9.8%) individuals reported that they were receiving disaster or economic assistance and 17 (12.9%) reported that they were in need of economic assistance.

Overall, 93 (70.5%) respondents reported that they thought there had been a change in their community since the oil spill.

## 4.2.4 Community Responses

The following responses are drawn from discussions with those interviewed. The parenthetical notes at the end of each phrase refer to the interviewee's job. Employment is listed as pre-spill/post-spill. If there is only one job listed, it is the current source of income. If there are no jobs listed, the individual chose not to respond.

### 4.2.4.1 Perspectives on how the community has changed since the oil spill

- There is violence and crime. (Heavy equipment operator/oil clean-up worker: 7.27.10)
- It has created different types of jobs, which in turn has created jealousy. There are more people, types of people that locals aren't used to. (Varied/community outreach worker: 7.27.10)
- This is a tight-knit community, especially since Katrina. Scared now because they know how to deal with a hurricane, but not this. (Bus driver: 7.27.10)
- It is like a military zone – the emotional impact is the hardest of it all, it has affected people's attitudes, people are less friendly, angrier, not as happy. (Shipping company manager: 7.29.10)

- Resident has started drinking. Believes that it is not safe, worried about drugs, robbery. He can't fish anymore and doesn't think that it is safe for tourists to come. (Retired: 7.30.10).

#### 4.2.4.2 Disaster assistance experiences or needs

- Need someone to read and help fill out forms. (Bus driver: 7.27.10)
- Some say that there is not enough assistance and it doesn't come frequently enough. Things that would be helpful include toiletries and canned goods. (Truck driver: 7.28.10)

#### 4.2.4.3 Perspectives on how livelihoods are impacted

- There is less tourism, fewer people. 50,000-60,000 normally for Tarpon Rodeo. (Retired: 7.27.10)
- They only fish, that's all they know. They don't have education; don't have another trade. (Bus driver: 7.27.10)
- Resident believes that the oil spill has put Grand Isle on the map and real estate is going to be booming with new condos. (Real Estate: 7.28.10)

#### 4.2.4.4 Statements on odor, potential exposure and food safety

- Brother was a fisherman and is out of business. Went to work for BP and was hospitalized for two weeks. Resident is optimistic that Mother Nature will fix everything and fish is safe to eat if it isn't dead. (Machine work 7.27.10)
- Works for the Coast Guard and has been deployed on Grand Isle for 60 days and may be here until August or December. Three members of his crew became sick upon arriving in which they were diagnosed with bronchitis. He was out of work for three days and used antibiotics and Sudafed. He is a smoker, but has thoughts that he may have had some poisoning from oil spill vapors. Doesn't think MDs are trained with oil contamination symptoms. (U.S. Coast Guard 7.28.10)
- Believes that fishing is okay. The closure has helped population of crab and fish. Has seen offshore fish closer in. They are bigger and more plentiful crabs and fish. (Petroleum safety engineer: 7.28.10)
- Here from Texas working on oil spill clean up. Never been to Grand Isle before. Said everyone in their house – 10 workers – have been sick. Thought it was mold in house and changed filter, but still are sick. (Oil technician: 7.28.10)

#### 4.2.5 Information Not Obtained

Grand Isle residents were not specifically asked if their livelihoods had been impacted by the oil spill, this question was added after the Grand Isle survey period.

#### 4.2.6 Conclusion

The majority of people surveyed in Grand Isle were permanent residents (50%) and a majority of those interviewed worked outside (56.1%). Half (50.8%) of the respondents had health insurance and half (50%) felt they had been exposed to crude oil. More than half (53.8%) responded that they experienced an increase in odors and the top odor reported was gasoline or fuel (37.9%). Of the respondents, a little under half (45.5%) reported feeling health symptoms. The top three symptoms reported were headaches, sinus or nose problems and coughing or difficulty breathing. The largest increase in over-the-counter medication use was for eye problems (14.4%). Only 16.7% of respondents with reported

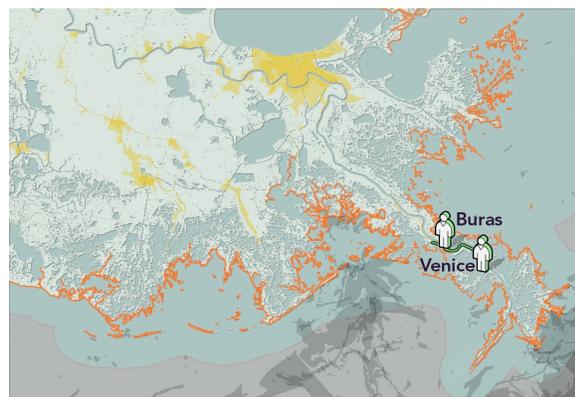
symptoms sought medical treatment. Overwhelmingly, 70.5% of respondents thought their community had changed since the oil spill.

## 4.3 Plaquemines Parish

### 4.3.1 Background

Plaquemines Parish is southeast of New Orleans and consists of a string of towns on the west bank of the Mississippi River running down La. Hwy. 23 and a string of towns on the east bank running down La. Hwy. 39. La. Hwy. 23 ends in Venice, the farthest point south people can drive in Louisiana (Pilottown houses only temporary infrastructure). La. Hwy. 39 ends in Point à la Hache, which is also the parish seat. The parish comprises the final 70 miles of the Mississippi River before it drains into the Gulf of Mexico.

The oldest European settlement in Plaquemines Parish dates to around 1699 and was called La Balize, situated near the mouth of the Mississippi. With the ongoing depletion of land since that initial settlement, the southern access points to the Gulf have continued to move upriver from La Balize to Pilottown to current-day Venice. These areas were initially home to the river pilots who still have temporary bases in Pilottown, but largely vacated the area after Hurricane Katrina.



In the early 1900s, Plaquemines Parish – the name derived from a Native American term “piakimin”<sup>7</sup>, meaning persimmon – was a major exporter of citrus and was home to many of the commercial fisheries in Louisiana. Although Plaquemines Parish is still an important area for citrus production and the seafood industry, the parish has faced damage numerous times from hurricanes and from the Great Mississippi Flood of 1927. All of the surveyed areas suffered major damage after Hurricane Katrina and estimates suggest that a large portion of the commercial fishing fleet has not returned since the storm.

### 4.3.2 Plaquemines Demographics

U.S. Census demographic numbers were not available for all of the individual towns surveyed in Plaquemines Parish. The demographic numbers below thus represent parish-level data, which includes large urban areas, such as Belle Chasse, where surveys were not conducted. Including larger urban centers in data sets that are additionally representative of larger townships can distort data sets, such as the primary industries people work in outside of urban centers. In Plaquemines Parish, many people identified and associated with Belle Chasse in addition to the areas where the survey was conducted.

Plaquemines Parish is composed of approximately 845 square miles of land and 1,584 square miles of water.

As of the last U.S. Census in 2000<sup>8</sup>, there were 26,757 people in Plaquemines Parish. Of this number, 49.8% were men and 50.2% were women. The median population age was 33.7.

In the parish, 26,377 people identified themselves as of one racial background with the following breakdown: Native American, 2.1%; African American, 23.4%; white, 69.8%; Hispanic or Latino, 1.6%; Asian, 2.6%; other race 0.7%; two or more races, 1.4%. The five greatest identifications with ethnic groups were: other ancestry (31.1%), French (19.6%), American (11.3%), German (9.2%) and Italian (7.2%).

In Plaquemines Parish, 70.8% were older than 18 and 9.8% were older than 65. In addition, 57.7% were married-couple households, 14.6% were female-led households (with no husband present) and 7.1% of households had individuals 65 and older living alone.

Of the Plaquemines Parish population, 34.2% had a high school or higher degree and 8.5% had a bachelor's degree or higher. Of those older than 16, 55.4% were employed and the median household income was \$38,173. Also, 6.6% of people identified as self-employed. The median income for men was \$37,245 and for women, \$21,691. There were 1,078 families living below the poverty line. The top three industries that employed Plaquemines Parish residents were educational, health and social services (15.1%), agriculture, forestry, fishing, hunting and mining (12.2%); and retail trade (10.6%).

In Plaquemines Parish, there were 10,481 housing units; 86.1% were occupied, 78.9% by the owner and 21.1% as rental units. Of the housing units, 13.9% were listed as vacant properties, 5.2% of these being seasonal living quarters. The average household size was 2.89.

### **4.3.3 Survey Results**

#### **Plaquemines North: Port Sulphur to Buras**

Survey dates: August 2-6, 2010

Number of enumerators: 12

Surveys collected: 142

Total households contacted (via knocking on doors): 216

Households that did not answer: 142

Households that declined to participate in survey: 21

Households that responded to survey: 53

Stationary team surveys collected: 46

Stationary team attempts at survey declined: 80

Location not recorded: 43

#### **4.3.3.1 Quantitative Results: Plaquemines North – Port Sulphur to Buras**

##### **4.3.3.1.1 Population Characteristics**

Of the individuals surveyed in Plaquemines North, 110 (77.5%) were permanent residents (PR), 6 (4.2%) were seasonal residents (SR), 6 (4.2%) were oil response workers (OR), 2 (1.4%) were locally employed (LE), 3 (2.1%) did not respond, 1(0.7%) identified as both a permanent and seasonal resident, 8 (5.6%) were both permanent residents and oil response workers, 2 (1.4%) were permanent residents, locally employed and oil response workers, 1 (0.7%) was a seasonal resident and a local employee, 2 (1.4%) were oil response workers and local employees and 1 (0.7%) was a permanent resident and locally employed.

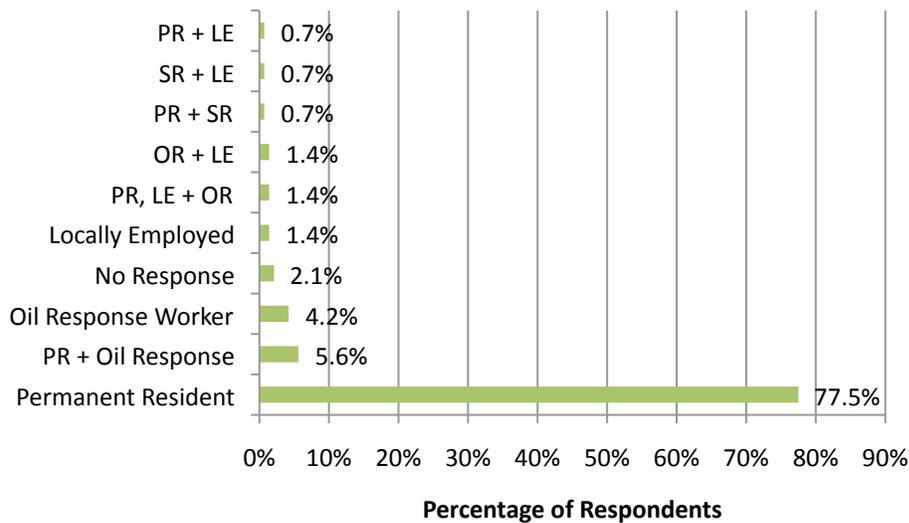


Figure 4.3.1 Population Characteristics

Of the 142 respondents, 66 (46.5%) worked predominately outside, 39 (27.5%) primarily worked inside, 30 (21.1%) spent an equal amount of time inside and outside and 7 (4.9%) chose to leave this question blank.

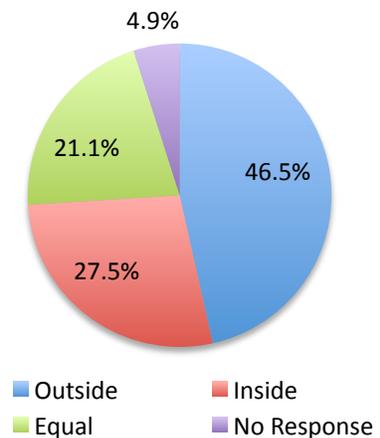


Figure 4.3.2 Location Where Time Most Spent During the Day

Of the 142 respondents, 72 (50.7%) had health insurance, 50 (35.2%) had no health insurance and 20 (14.1%) chose not to answer this question.

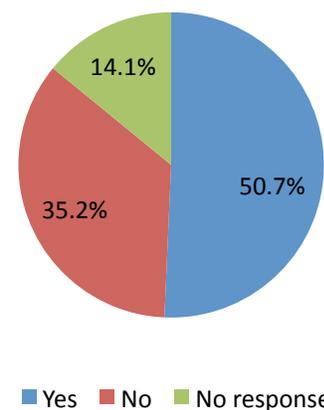


Figure 4.3.3 Health Insurance

#### 4.3.3.1.2 Exposures Information

At the time they were surveyed, 33 (23.2%) respondents believed they had been exposed only to crude oil, 2 (1.4%) believed they had been exposed only to Corexit, and 42 (29.6%) believed they had been exposed to both. A total of 77 (54.2%) respondents reported an exposure and 65 (45.8%) did not report an exposure of either type or left the question blank.

Of the 77 (54.2%) respondents who reported exposure to crude oil, Corexit, or both, 14 (9.9%) had sought medical treatment for their exposure at the time of survey, 63 (44.4%) had not sought medical treatment or gave no response to this question.

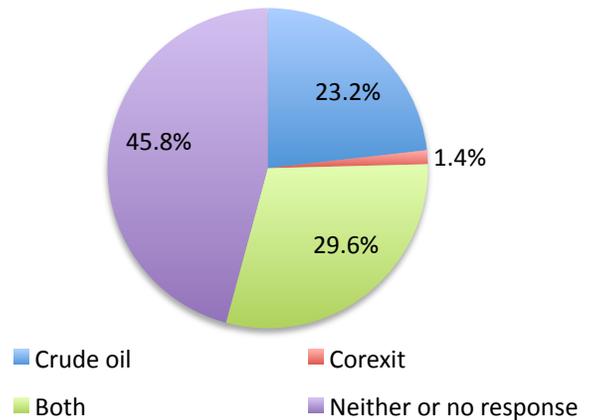


Figure 4.3.4 Believed Exposure to Crude Oil or Corexit

#### Odors

Of the 142 total respondents, 84 (59.2%) reported experiencing an unusual increase in odors, 58 (40.8%) reported that they had not experienced an unusual increase in odors.

Respondents further described increases of smells as follows: 38 (26.8%) respondents reported smelling gasoline or fuel, 11 (7.7%) reported rotten eggs, 6 (4.2%) reported citrus-type cleaner, 3 (2.1%) reported liquid dish soap, 1 (0.7%) reported dry cleaning chemicals, 5 (3.5%) reported unspecified chemicals, 19 (13.4%) reported oil or other petroleum product not reported elsewhere, 20 (14.1%) respondents described either an unidentifiable odor or provided a description, such as burning, dispersants or rubber.

#### 4.3.3.1.3 Symptoms Information

Out of 142 total respondents, 77 (54.2%) reported symptoms and 65 (45.8%) reported no symptoms or gave no answer. Also, 26 (18.3%) respondents reported seeking medical treatment for their increase in symptoms.

| Number of Symptoms       | Number of Individuals | Percentage of Respondents |
|--------------------------|-----------------------|---------------------------|
| None Reported            | 65                    | 45.8%                     |
| Total Reporting Symptoms | 77                    | 54.2%                     |
| 1                        | 21                    | 14.9%                     |
| 2                        | 16                    | 11.3%                     |
| 3                        | 13                    | 9.2%                      |
| 4                        | 7                     | 4.9%                      |
| 5                        | 6                     | 4.2%                      |
| 6                        | 5                     | 3.5%                      |
| 7                        | 4                     | 2.8%                      |
| 8                        | 2                     | 1.4%                      |
| 9                        | 1                     | 0.7%                      |
| 10                       | 2                     | 1.4%                      |

Figure 4.3.5 Number of Symptoms Reported by Respondents

Out of the 142 Plaquemines North respondents, the following percentages represent the amount the symptoms were reported within the total responding population.

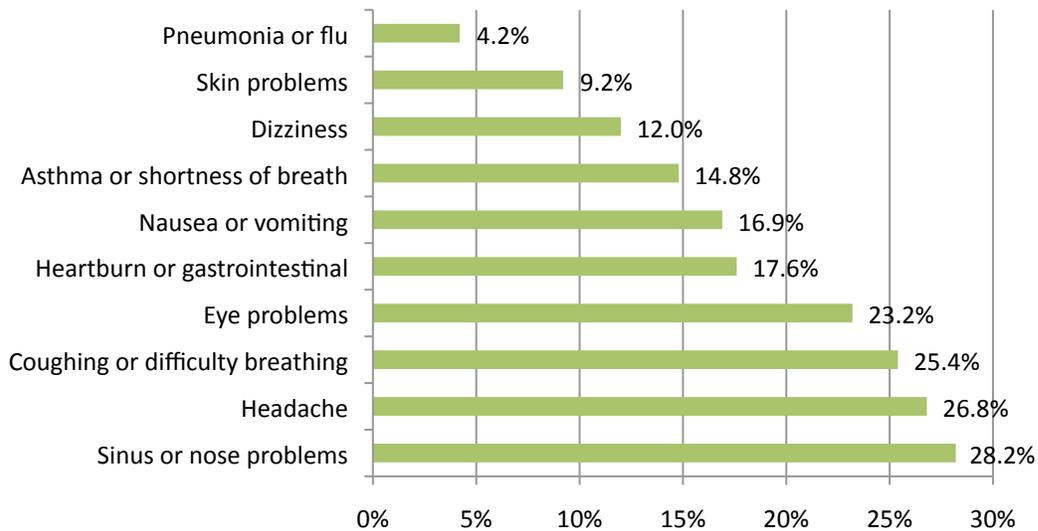


Figure 4.3.6 Types of Symptoms Reported

Out of the 77 (54.2%) respondents reporting exposure to crude oil, Corexit, or both, 59 (41.5%) respondents also identified an abnormal increase in symptoms and 18 (12.7%) did not report any increase. Of the 65 (45.8%) respondents who did not report an exposure, 18 (12.7%) reported an increase in symptoms and 47 (33.1%) did not report any increase.

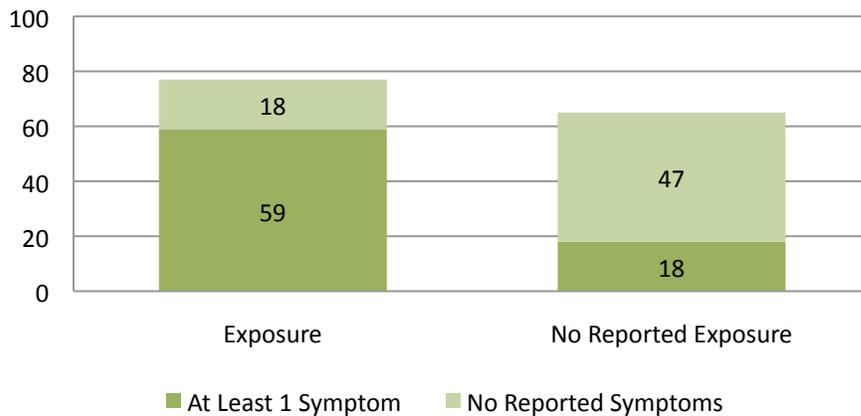


Figure 4.3.7 Exposure in Correlation to Symptoms

#### 4.3.3.1.4 Over-the-Counter Medication Use

In total, 52 (36.6%) respondents reported using over-the-counter medication more often than usual; 23 (16.2%) used eye medications, 18 (12.7%) used gastrointestinal medications, 32 (22.5%) used cough, cold or allergy medicine and 5 (3.5%) used skin cream.

Of the 52 (36.6%) respondents reporting increases in over-the-counter medication use, 41 (28.9%) also reported an exposure to crude oil, Corexit, or both, 40 (28.2%) also reported increases in odors and 46 (32.4%) also reported increases in symptoms.

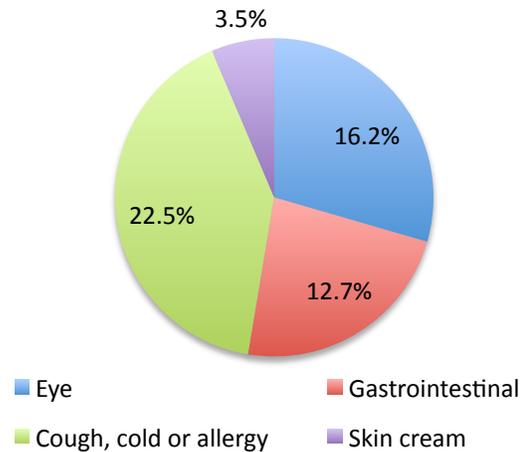


Figure 4.3.8 Over-the-Counter Medication Use

#### 4.3.3.1.5 Economic and Community Information

Of the Plaquemines North respondents, 73 (51.4%) replied that their livelihoods had been impacted by the spill. Seventeen (12%) responded that they had considered moving.

In addition, 28 (19.7%) individuals reported that they were receiving disaster or economic assistance and 41 (28.9%) reported that they were in need of economic assistance.

Overall, 100 (70.4%) respondents reported that they thought there had been a change in their community since the oil spill.

### 4.3.4 Community Responses

The following responses are drawn from discussions with those interviewed. The parenthetical notes at the end of each phrase refer to the interviewee's job. Employment is listed as pre-spill/post-spill. If there is only one job listed, it is the current source of income. If there are no jobs listed, the individual chose not to respond.

#### 4.3.4.1 Perspectives on how the community has changed since the oil spill

- Still trying to recover from Katrina, this is a huge setback. Don't know how long it will be before we can commercial fish again. (Commercial fisherman/oil response worker: 8.4.10)
- People are depressed; fishermen are out of work and depressed. We aren't going to be able to pass fishing and shrimping onto our kids. (Fisherman and shrimper/ working for the spill: 8.3.10)
- Was working for BP, got sick doing cleanup. Makes me feel unsafe, all the outsiders coming in. (Oysterman and shrimper/unemployed: 8.3.10)
- Haven't fished in 5 months, would rather have a Katrina than an oil spill. (Plumber and recreational fisher/plumber: 8.4.10)

#### 4.3.4.2 Perspectives on how livelihoods are impacted

- “We moved here in March, my wife’s childhood home after we lost the business in Texas. Because of BP, I’ll lose everything. We’re waiting for a call from the DRC, but we’re getting the runaround. I went out one day, but they told me my boat couldn’t keep up. They told me to go home. We’ve received 2 checks from BP for \$2,500 each and a final check for \$1,000 along with a letter saying that since we don’t have proper documentation of lost income that we won’t receive no more money.” (Oyster fisherman: 8.3.10)
- Brought work to community via the cleanup. (Deckhand, owned seafood business/survey oil: 8.3.10)
- If we lose work with oil cleanup, we don’t know what we are going to do to make a living if all the fish are dead. We don’t know what our future holds. (Fishing guide/oil response: 8.3.10)
- Can’t fish for shrimp, I am the sole provider and am worried because I don’t know what I will do when cleanup is over. (Fishing, shrimper, oysterman/BP oil cleanup: 8.3.10)
- People that don’t live here come down to work while the local people can’t get the work. (Fishing guide/contract company, driving a boat around: 8.3.10)
- It’s busier, there is more traffic in and out. Stores, laundromats, inns are flourishing, but what will it be like in 6 months. (Hotel manager: 8.4.10)

#### 4.3.4.3 Disaster assistance experiences or needs

- Would take food from any organization. (Fisherman: 8.3.10)
- Doesn’t want to talk about BP because I am so frustrated with them and the process of trying to get assistance but before the spill I was doing very well as a welder, making \$60,000 boats for people. Right when the spill happened it all stopped. I am trying to do welding here and there to make a living since I am laid off from BP. Talked a lot about Katrina and his frustrations with insurance companies and having to provide proof that wind destroyed his house, not water. I compared this to his needing to prove everything from and for his business to get his claims from BP. (Welder, fisherman/worked for BP, laid off: 8.3.10)
- They get food vouchers but can’t buy too much stuff because the storms may wipe out the refrigerators and you’d lose it all. They worry what will happen. (Correctional officer for sheriff: 8.5.10)

#### 4.3.4.4 Statements on odor, potential exposure and food safety

- Unsafe to eat seafood, threw away shrimp that husband brought home after spill. (Fisherman, crabber, shrimper: 8.4.10)
- Can no longer eat what they used to eat. Diet changed dramatically – eats more frozen foods. (Journeyman and painter/disabled: 8.4.10)
- Financially, can’t find work, food and oil prices sky-rocketed, used to live off land but now can’t trust the plant and animal life is safe. (Construction and contracting: 8.4.10)
- Finding larger than normal crabs in the East Bay off Hwy 39. Don’t know if they are safe. They are nothing seen before and scares them as to why they’ve changed. Crabs have oil on their bellies so they won’t eat them. (Correctional officer for sheriff: 8.5.10)

### 4.3.5 Information Not Obtained

Plaquemines North residents were not asked if they were concerned about seafood safety or dispersant spraying as this question was added after surveys in this location were conducted.

### 4.3.6 Conclusion

The majority of people surveyed in Plaquemines North were permanent residents (77.5%) and just under half of those interviewed worked outside (46.5%). Half (50.7%) of the respondents had health insurance. More than half (54.2%) of the respondents felt they had been exposed to either crude oil, dispersant or both. More than half (59.2%) responded that they had experienced an increase in odors and the top odor reported was gasoline or fuel (26.8%). Of the respondents, a little more than half (54.2%) reported an increase in symptoms and the top three symptoms reported were sinus or nose problems, headaches and coughing or difficulty breathing. The largest increase in over-the-counter medication use was for cough, cold or allergy medicine (22.5%). Only 18.3% of respondents with reported symptoms sought medical treatment. Also, 70.4% of respondents thought their community had changed since the oil spill and about half of the respondents reported their livelihoods had been impacted by the spill.

### 4.3.7 Survey Results: Plaquemines South – Buras to Venice

Plaquemines South: Buras to Venice

Survey dates: September 27-October 1, 2010

Number of enumerators: 12

Surveys collected: 199

Total households contacted (via knocking on doors): 385

Households that did not answer: 194

Households that declined to participate in survey: 50

Households that responded to survey: 141

Location not recorded: 58

#### 4.3.7.1 Quantitative Results

##### 4.3.7.1.1 Population Characteristics

Of the individuals surveyed in Plaquemines South, 166 (83.4%) were permanent residents (PR), 10 (5%) were seasonal residents, 11 (5.5%) were oil response workers, 5 (2.5%) were locally employed (LE), 5 (2.5%) were visitors/tourists and 2 (1%) were permanent residents and locally employed.

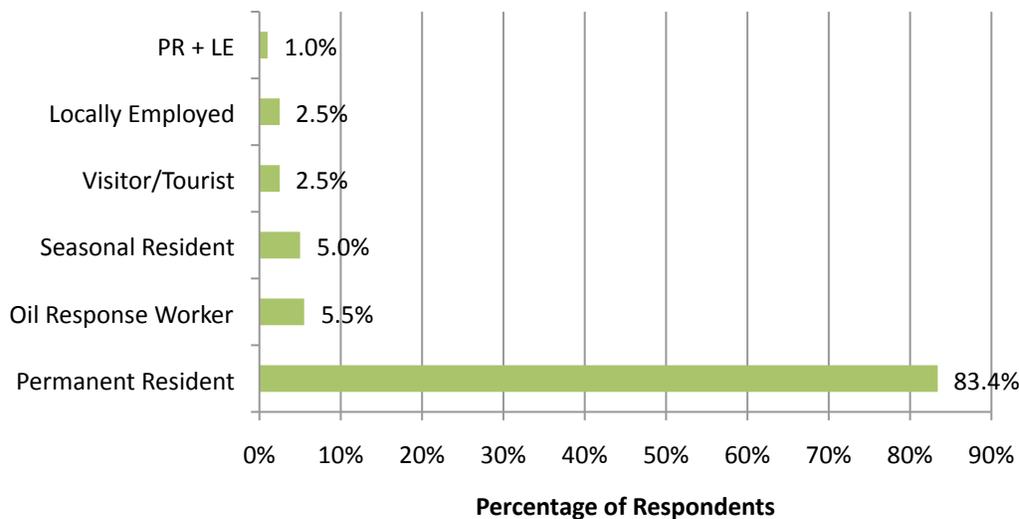


Figure 4.3.9  
Population  
Characteristics

Of the 199 respondents, 108 (54.3%) worked outside, 51 (25.6%) primarily worked inside, 38 (19.1%) spent an equal amount of time inside and outside and 2 (1%) chose to leave this question blank.

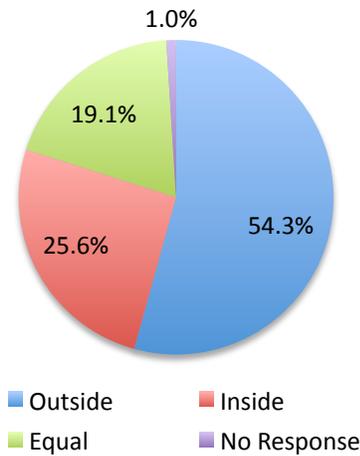


Figure 4.3.10 Location Where Time is Most Spent During the Day

Of the 199 respondents, 113 (56.7%) had health insurance, 81 (40.7%) had no health insurance and 5 (2.5%) chose not to answer this question.

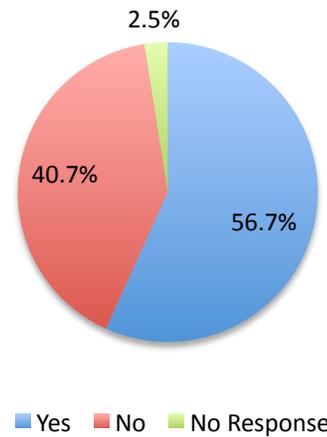


Figure 4.3.11 Health Insurance

#### 4.3.7.1.2 Exposures Information

At the time they were surveyed, 33 (16.6%) respondents believed they had been exposed only to crude oil, 8 (4.0%) believed they had been exposed only to Corexit, and 82 (41.2%) believed they had been exposed to both. A total of 123 (61.8%) respondents reported an exposure and 76 (38.2%) did not report an exposure of either type or did not respond.

Of the 123 (61.8%) respondents who reported exposure to crude oil, Corexit, or both, 22 (11.1%) respondents had sought medical treatment for their exposure at the time of

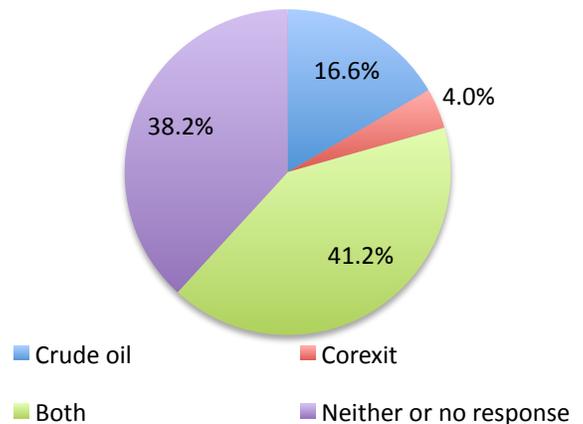


Figure 4.3.12 Believed Exposure to Crude Oil or Corexit

survey, 101 (50.8%) had not sought medical treatment or gave no response to this question.

*Odors*

Of the 199 total respondents, 129 (64.8%) reported experiencing an unusual increase in odors, 70 (35.2%) reported they had not experienced an unusual increase in odors.

Respondents further described increases of smells as follows: 32 (16.1%) respondents reported smelling gasoline or fuel, 2 (1.0%) reported rotten eggs, 1 (0.5%) reported citrus-type cleaner, 1 (0.5%) reported liquid dish soap, 1 (0.5%) reported dry cleaning chemicals, 3 (1.5%) reported unspecified chemicals, 69 (34.7%) reported oil or other petroleum product not reported elsewhere, 37 (18.6%) respondents described either an unidentifiable odor or provided a description, such as benzene, creosol, dead or rotting fish and sewage.

*4.3.7.1.3 Symptoms Information*

Out of 199 total respondents, 132 (66.3%) reported an unusual increase in symptoms and 67 (33.7%) reported no symptoms or gave no answer. Also, 45 (22.6%) respondents reported seeking medical treatment for their increase in symptoms.

| <b>Number of Symptoms</b> | <b>Number of Individuals</b> | <b>Percentage of Respondents</b> |
|---------------------------|------------------------------|----------------------------------|
| None Reported             | 67                           | 33.7%                            |
| Total Reporting Symptoms  | 132                          | 66.3%                            |
| 1                         | 20                           | 10.1%                            |
| 2                         | 28                           | 14.1%                            |
| 3                         | 11                           | 5.5%                             |
| 4                         | 11                           | 5.5%                             |
| 5                         | 21                           | 10.6%                            |
| 6                         | 22                           | 11.1%                            |
| 7                         | 6                            | 3%                               |
| 8                         | 8                            | 4%                               |
| 9                         | 3                            | 1.5%                             |
| 10                        | 2                            | 1%                               |

Figure 4.3.13 Number of Symptoms Reported by Respondents

Out of the 199 Plaquemines South respondents, the following percentages represent the amount the symptoms were reported within the total responding population.

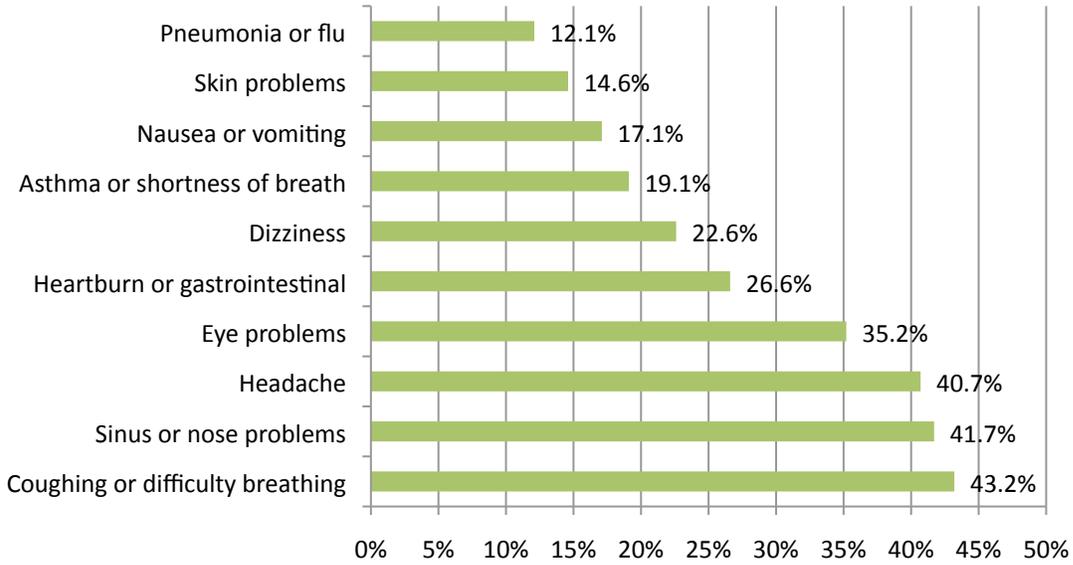


Figure 4.3.14 Types of Symptoms Reported

Of the 123 (61.8%) respondents reporting exposure to crude oil, Corexit, or both, 98 (49.2%) also identified an abnormal increase in symptoms and 25 (12.6%) did not report any increase. Of the 76 (38.2%) respondents who did not report an exposure, 34 (17.1%) reported an increase in symptoms and 42 (21.1%) did not report any increase.

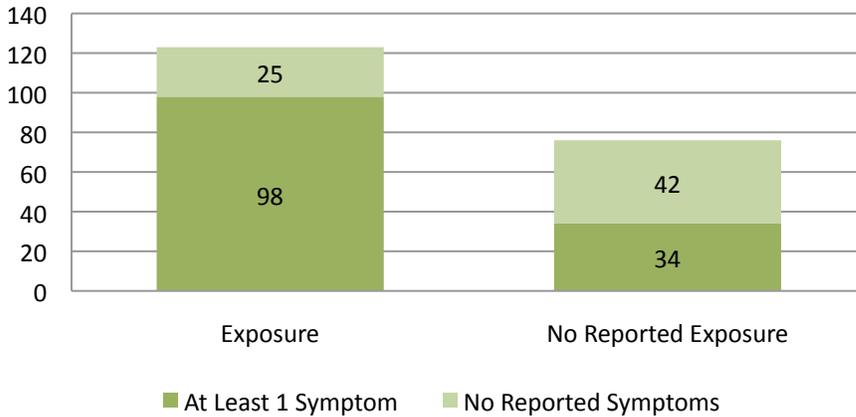


Figure 4.3.15 Exposure in Correlation with Symptoms

#### 4.3.7.1.4 Over-the-Counter Medication Use

In total, 90 (45.2%) respondents reported using over-the-counter medication more often than usual, 45 (22.6%) used eye medications, 50 (25.1%) used gastrointestinal medications, 74 (37.2%) used cough, cold or allergy medicine and 6 (3.0%) used skin cream.

Of the 90 (45.2%) respondents reporting increases in over-the-counter medication use, 69 (34.7%) also reported an exposure to crude oil, Corexit, or both, 74 (37.2%) also reported increases in odors, and 81 (40.7%) also reported increases in symptoms.

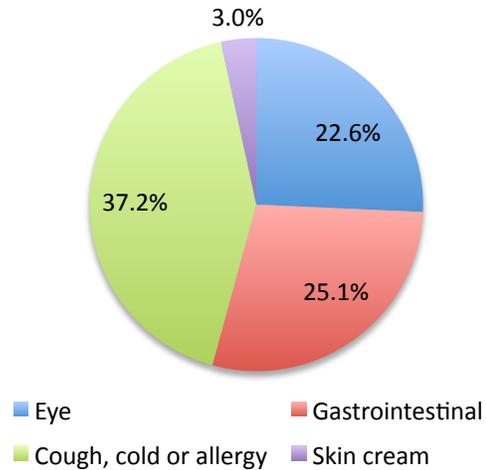


Figure 4.3.16 Over-the-Counter Medication Use

#### 4.3.7.1.5 Economic and Community Information

Of respondents, 127 (63.8%) replied that their livelihoods had been impacted by the spill.

In addition, 34 (17.1%) responded that they had considered moving, 41 (20.6%) reported that they were receiving disaster or economic assistance and 70 (35.2%) reported that they were in need of economic assistance.

Overall, 162 (81.4%) respondents reported that they thought there had been a change in their community since the oil spill.

### 4.3.8 Community Responses

Employment is listed as pre-spill/post-spill. If there is only one job listed, it is the current source of income. If there are no jobs listed, the individual chose not to respond.

#### 4.3.8.1 Perspectives on how the community has changed since the oil spill

- In regards to working with BP, “You’re damned if you do. Damned if you don’t.” “Feels like the community has been torn apart. Katrina brought everyone together and the oil spill has split everyone apart.” (Restaurant Owner: 9.29.10)
- Still stressed from Katrina—there is too much stress on community, housing recovery is still hard, everything changes-- work, new people, no one gets along anymore, attitude. There is too much stress. (Oil industry worker/boat and tank cleaner, warehouse shipping and receiving: 9.29.10)
- Afraid for the health, to lose BP jobs. Can’t fish, shrimp, crab or swim anymore. Aggravated by all the lying, knew there was much more than oil (dispersants). “You could see the dispersants in the air.” (Fisherman/BRC: 9.28.10)

#### 4.3.8.2 Perspectives on how livelihoods are impacted

- “I’m waiting for money from BP. They gave me a check but it bounced. I don’t have any work. I’m cuttin grass to make ends meet. I got two little girls, one needs a bone marrow transplant. Haven’t gotten a check since July. Nothin for August or September. Can’t go to the show, can’t go roller-skating, can’t give anything to my girls. My girl turned 17 this month and I couldn’t give her anything. I’m hurtin, and I need help.” (Commercial fisherman/unemployed: 9.30.10)
- “We worry about when the seafood will sell like normal again and I need to take care of my family. Everyone is worried about how to survive. It’s October, season is from May to November, the season is already almost over! It’s unfair because some people get a lot of money from BP, and some people get none. I waited six months to get a check, but it’s nothing. They (BP) say they will hire people in rotation, but it doesn’t happen. They hire the same people and that’s it. The problem is the Vietnamese and Cambodian people can’t speak English very well and they take advantage of that, they don’t help us.” (Fisherman/unemployed: 9.29.10)
- Crab, fish, shrimp – fisherman who have experience know the fish looks different, not how it did before. Respondent doesn’t want people to eat it. He has suffered job loss and BP won’t hire or provide financial help. He is very stressed and feels there is an overwhelming amount of fraud. BP is using taxes from the year fishermen went on strike to calculate benefits. He is unable to move because he needs another coast-related job, which is hard to find. (Commercial fisherman: 9.28.10)

#### 4.3.8.3 Statements on odor and potential exposure

- Resident would like to see a community health center opened in this location because it is too far to get health care. (9.28.10)
- Feels sick, zombie-ish. It’s gotten worse—there are too many people and store prices have gone up. He commented that he is going to do what he does regardless of the spill (in terms of activities). (Quarter Barch Captain: 9.28.10)

#### 4.3.9 Conclusion

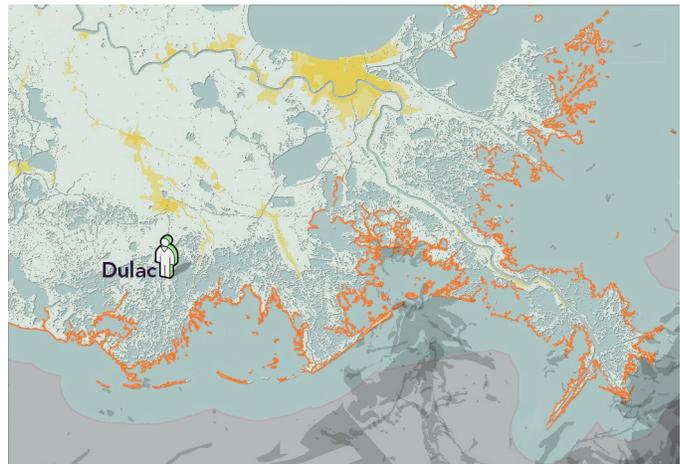
The majority of people surveyed in Plaquemines South were permanent residents (83.4%) and just more than half worked outside (54.3%). More than half (56.7%) of the respondents had health insurance. More than half (61.8%) felt they had been exposed to either crude oil, dispersant or both. More than half (64.8%) responded that they had experienced an increase in odors and the top odor reported was oil or other petroleum products (34.7%). Of the respondents, 66.3% reported an increase in symptoms and the top three symptoms reported were coughing or breathing problems, sinus or nose problems and headaches. The largest increase in over-the-counter medication use was for cough, cold and allergy medication (37.2%). Only 22.6% of respondents with reported symptoms sought medical treatment. Overwhelmingly, 81.4% of respondents thought their community had changed since the oil spill and more than half (63.8%) of the respondents reported that their livelihoods had been impacted by the spill.

## 4.4 Terrebonne Parish – Dulac

### 4.4.1 Background

*By Jamie Billiot, Dulac Community Center  
Executive Director*

Dulac, La., is located approximately 75 miles southwest of New Orleans. The small town in Terrebonne Parish has a population of about 2,500, with a general population of about 7,000 in what is considered “Grand Caillou”, “Bobtown”, “Ashland”, even Houma. The majority of families living in what is considered the outskirts of Dulac were originally in the town limits but migrated a few miles north after consistent flooding from hurricanes. This stretch of land is about 20 miles long, with Dulac being the southernmost endpoint. A majority of the local population makes a living by either supporting the seafood industry or the oil industry. Dulac is also home to the largest concentration of United Houma Nation tribal members.



### 4.4.2 Dulac Demographics

Dulac is composed of approximately 21 square miles of land and 5 square miles of water.

As of the last U.S. Census in 2000<sup>9</sup>, there were 2,458 people in Dulac. Of this number, 50% were men and 50% were women. The median population age was 31.8.

In Dulac, 2,381 people identified themselves as of one racial background with the following breakdown: Native American, 39.4%; African American, 2.5%; white, 54%; Hispanic or Latino, 1.7%; Asian, 0.5%; other race, 0.5%; two or more races, 3.1%. The five greatest identification with ethnic groups were other ancestry (31.7%), French (22.5%), French Canadian (8.9%), American (6%) and Italian (4.5%).

In Dulac, 68.6% of the population was older than 18. Of those older than 18, 9.8% were older than 65. Additionally, 57.9% were married-couple households, 14.2% were female-led households (with no husband present) and 7.6% of households had individuals 65 and older living alone.

Of the Dulac population, 27.9% of individuals had a high school or higher degree and 2.3% had a bachelor's degree or higher. Of those older than 16, 44.9% individuals were employed and the median household income was \$22,900. Also, 18.2% of people identified as self-employed. The median income for men was \$24,815 and for women, \$17,045. There were 181 families living below the poverty line. The top three industries employing Dulac residents were agriculture, forestry, fishing, hunting and mining (25.9%); arts, entertainment, recreation, accommodation and food services (10.7%) and transportation and warehousing, and utilities (10.5%).

In Dulac, there were 1,063 housing units. Of this number, 72.2% were occupied, 79.3% by the owner and 20.7% as rental units. There were 27.8% vacant properties, 20.8% of these being seasonal living quarters. The average household size was 3.20.

### 4.4.3 Survey Results

Survey dates: August 16-20, 2010

Number of enumerators: 11

Surveys collected: 157

Total households contacted (via knocking on doors): 286

Households that did not answer: 154

Households that declined to participate in survey: 6

Households that responded to survey: 141

Stationary team surveys collected: 34

Stationary team attempts at survey declined: 16

Location not recorded: 15

#### 4.4.3.1 Quantitative Results

##### 4.4.3.1.1 Population Characteristics

Of the individuals surveyed in Dulac, 147 (93.6%) were permanent residents (PR), 4 (2.5%) were seasonal residents, 2 (1.3%) were oil response workers, 2 (1.3%) were locally employed, 1 (0.6%) was a permanent resident and oil response worker and 1 (0.6%) gave no response.

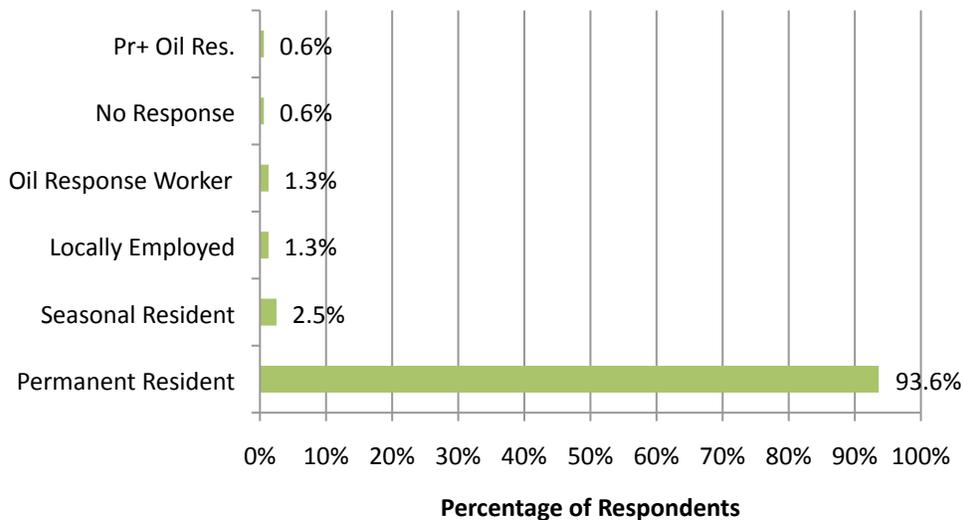


Figure 4.4.1 Population Characteristics

Of the 157 respondents, 55 (35%) worked outside, 39 (24.8%) primarily worked inside, 61 (38.9%) spent an equal amount of time inside and outside and 2 (1.3%) chose to not respond.

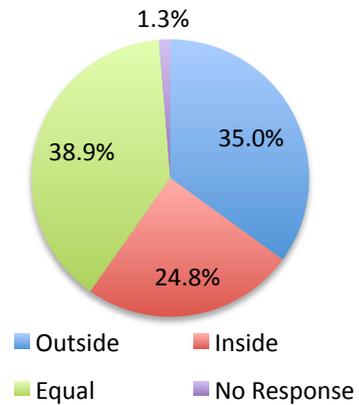


Figure 4.4.2 Location Where Time Most Spent During the Day

Of the 157 respondents, 95 (60.5%) had health insurance, 50 (31.8%) had no health insurance and 12 (7.6%) chose not to answer this question.

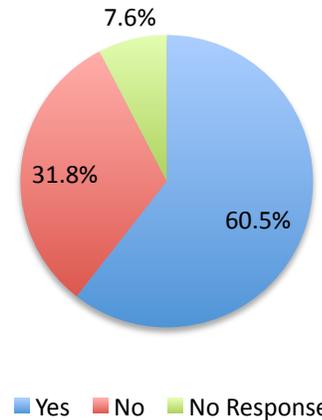


Figure 4.4.3 Health Insurance

#### 4.4.3.1.2 Exposures Information

At the time they were surveyed, 21(13.4%) respondents believed they had been exposed only to crude oil, 1 (0.6%) believed they had been exposed only to Corexit, and 15 (9.6%) believed they had been exposed to both. A total of 37 (23.6%) respondents reported an exposure and 120 (76.4%) did not report an exposure of either type or had left the question blank.

Of the 37 (23.6%) respondents who reported exposure to crude oil, Corexit, or both, 2 (1.3%) respondents had sought medical treatment for their exposure at the time of survey, 35 (22.3%) had not sought medical treatment or gave no response to this question.

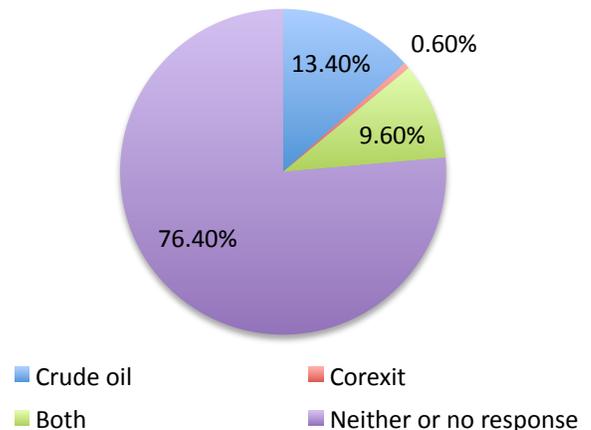


Figure 4.4.4 Believed Exposure to Crude Oil or Corexit

### Odors

Of the 157 total respondents, 49 (31.2%) reported experiencing an unusual increase in odors, 108 (68.8%) reported they had not experienced an unusual increase in odors.

Respondents further described increases of smells as follows: 25 (15.9%) respondents reported smelling gasoline or fuel, 11 (7.0%) reported rotten eggs, 1 (0.6%) reported liquid dish soap, 1 (0.6%) reported unspecified chemicals, 13 (8.3%) reported oil or other petroleum product not reported elsewhere, 5 (3.2%) respondents described either an unidentifiable odor or provided a description such as burned rubber, strong swampy smell and wet dog.

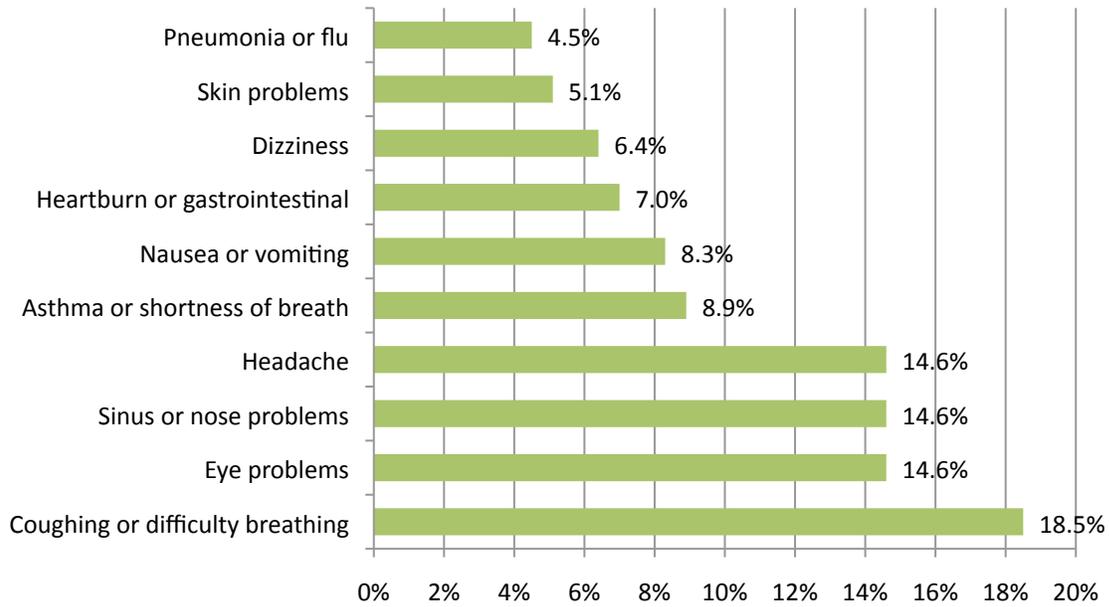
#### 4.4.3.1.3 Symptoms Information

Out of 157 total respondents, 47 (29.9%) reported an unusual increase in symptoms and 110 (70.1%) reported no symptoms or gave no answer. Thirteen (8.3%) respondents reported seeking medical treatment for their increase in symptoms.

| Number of Symptoms       | Number of Individuals | Percentage of Respondents |
|--------------------------|-----------------------|---------------------------|
| None Reported            | 110                   | 70.1%                     |
| Total Reporting Symptoms | 47                    | 29.9%                     |
| 1                        | 14                    | 8.9%                      |
| 2                        | 7                     | 4.5%                      |
| 3                        | 5                     | 3.2%                      |
| 4                        | 7                     | 4.5%                      |
| 5                        | 4                     | 2.5%                      |
| 6                        | 4                     | 2.5%                      |
| 7                        | 3                     | 1.9%                      |
| 8                        | 3                     | 1.9%                      |
| 9                        | 0                     | 0%                        |
| 10                       | 0                     | 0%                        |

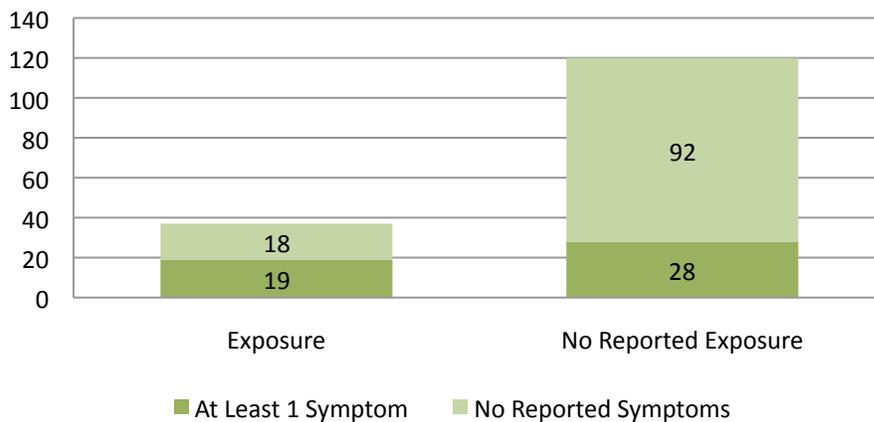
Figure 4.4.5 Number of Symptoms Reported by Respondents

Out of the 157 Dulac respondents, the following percentages represent the amount the symptoms were reported within the total responding population.



#### 4.4.6 Types of Symptoms Reported

Of the 37 (23.6%) respondents reporting exposure to crude oil, Corexit, or both, 19 (12.1%) respondents also identified an abnormal increase in symptoms and 18 (11.5%) did not report any increase. Of the 120 (76.4%) respondents who did not report an exposure, 28 (17.8%) reported an increase in symptoms and 92 (58.6%) did not report any increase.



#### 4.4.7 Exposure in Correlation with Symptoms

#### 4.4.3.1.4 Over-the-Counter Medication Use

In total, 28 (17.8%) respondents reported using over-the-counter medication more often than usual, 12 (7.6%) used eye medications, 11 (7.0%) used gastrointestinal medications, 19 (12.1%) used cough, cold or allergy medicine and 1 (0.6%) used skin cream.

Of the 28 (17.8%) respondents reporting increases in over-the-counter medication use, 10 (6.4%) also reported an exposure to crude oil, Corexit, or both, 17 (10.8%) also reported increases in odors, and 23 (14.6%) also reported increases in symptoms.

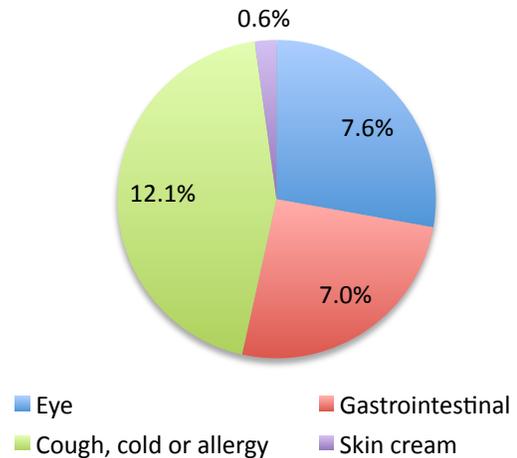


Figure 4.4.8 Over-the-Counter Medication Use

#### 4.4.3.1.5 Economic and Community Information

Of the 157 respondents, 69 (43.9%) respondents replied that their livelihood had been impacted by the spill. Thirty-nine (24.8%) individuals reported that they were receiving disaster or economic assistance and 35 (22%) reported that they were in need of economic assistance.

Fifteen (9.6%) responded that they had considered moving because of the oil spill.

One hundred and seven (68.2%) respondents reported that they thought there had been a change in their community since the oil spill.

### 4.4.4 Community Responses

Employment is listed as pre-spill/post-spill. If there is only one job listed, it is the current source of income. If there are no jobs listed, the individual chose not to respond.

#### 4.4.4.1 Perspectives on how the community has changed since the oil spill

- Somewhat worried that people won't want to spend the money on home repair or remodels if they remain out of work. He thinks it's a matter of time before things are totally back to normal and the local news is less dramatic. He only watches the world news feeling they are less biased than the local reporters. (Home remodeling: 8.17.10)
- More people are claiming unemployment, more illness, more stealing, people are angry and needing assistance, some are scamming (selling) food stamps for money. (Retired social worker: 8.17.10)

#### 4.4.4.2 Perspectives on how livelihoods are impacted

- Tried to shrimp/trawl in June, but was sick directly after. Nervous about going out to shrimp now because they may have to throw out the catch if there is oil on them. There might not even be shrimp to get. (Shrimper/unemployed: 8.17.10)
- Hours have been reduced by 2-3 hours per day due to reduced demand by oil companies for parts. (Chemical company: 8.17.10)

- The couple is afraid of losing buyers and clients so they are staying open through the oil spill cleanup. BP has taken several of their employees and they do feel it may have been easier to receive claims had they shut down. However, shutting down to receive claims would have made them lose most of their business from other states like Maryland. They feel stuck and are very stressed. (Own crab business: 8.18.10)
- Working in the oyster industry. He has been shut down and unable to work. Depressed from being unable to work. Used to get up at 4 a.m. to go to work. Concerned about the oil that is still out there and worried about what the effects of the dispersant will be on the area. Really concerned about the ban on drilling. Feels as though the local economy will be affected by the ban. Greatest concern is a hurricane hitting and bringing the oil to his house. (Packer in the oyster industry/living on BP claim check 8.18.10)
- They aren't or weren't very clear about opening the season. Back in May they made last-minute decisions about letting shrimpers go out, so people would buy fuel and ice, but then they would close areas down. Wasted a lot of money preparing for nothing. Now that everyone is back shrimping, it is really crowded and not spread out like before. The prices for buying the catch are really low – down \$1.40 from \$3.20 last year this time. Booms are still out where they shouldn't be. Crabbing and oyster areas are still closed, but the shrimp he has caught so far look good. Concerned about the next few years' breeds of shrimp in terms of health. (Shrimper: 8.19.10)

#### 4.4.4.3 Disaster assistance experiences or needs

- No one wants a handout. He wants to be back on the water. Wants to fish in the closed area. But needs the financial assistance since the mortgage is due. He can't save money right now. Usually by this time of the year he is able to put money away for the winter. Right now he isn't making enough to save. (Offshore fisherman/shrimper: 8.18.10)
- They (BP) said they'd give \$2,500 a month, but this is an insult. It's insufficient because we could potentially have made so much more. Thinks that the money handed out should be based on potential earnings (boat size). Went from \$1,000-\$8,000 a day to nothing. He doesn't get in the water or eat seafood anymore. Happy that the oil spill happened for one reason: brings people to ask real questions about what's going on. (Commercial fisherman/odd jobs, unemployed: 8.17.10)
- Financially subsidizing the loss of her oyster business. Don't know who would be able to help. (Widows pay- owns 11 acres of oyster beds: 8.17.10)

#### 4.4.4.4 Statements on odor, potential exposure and food safety

- Say they are afraid of a high storm surge because if the oil gets in their community, it will be no good to live in. Worried that dispersants will have a long-term effect on sea life. May not see the effects now, but generations down the line, definitely will. (Shrimpers, family business/Vessels of Opportunity program: 8.17.10)
- Son is working with the cleanup and doesn't want him to work on cleanup because the smell is so bad. (Shrimper/unemployed: 8.18.10)

#### 4.4.5 Information Not Obtained

Dulac residents were not asked if they were concerned about seafood safety or dispersant spraying as this question was added after the survey period.

#### 4.4.6 Conclusion

The majority of people surveyed in Dulac were permanent residents (93.6%) and the largest population of respondents worked both inside and outside (38.9%). More than half (60.5%) of the respondents had health insurance. Less than a quarter (23.6%) felt they had been exposed to either crude oil, dispersant or both. Almost three-quarters (68.8%) responded that they had not experienced an increase in odors. However, of the 31.2% who did smell odors, the top odor reported was gasoline or fuel (15.9%). Of the respondents, 29.9% reported an increase in symptoms and the top four symptoms reported were coughing or breathing problems, sinus or nose problems, eye problems and headaches. The largest increase in over-the-counter medication use was for cough, cold and allergy medication (12.1%). Only 8.3% of respondents with reported symptoms sought medical treatment. More than half of the respondents (68.2%) thought their community had changed since the oil spill and less than half (43.9%) reported that their livelihoods had been impacted by the spill.

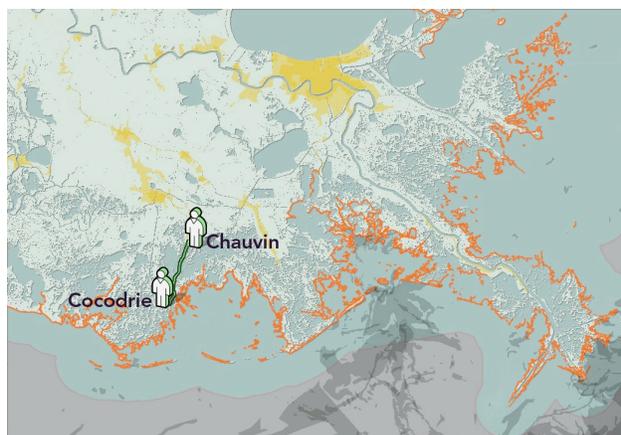
### 4.5 Terrebonne Parish – Cocodrie and Chauvin

#### 4.5.1 Background

##### A Short History of Chauvin and Cocodrie, Louisiana

By Patty Whitney, Bayou Interfaith Shared Community Organizing (BISCO)

Chauvin, La., is a small, linear community located along the banks of Bayou Petit Caillou in southern Terrebonne Parish. Located about 5 miles south of Houma, Chauvin is named after the site of the original post office located in the community at the premises of Chauvin Brothers, a local seafood and merchandise business started by Albert Eloie Chauvin in 1875.



Beginning in the early 20th Century, Mr. Chauvin was the first postmaster in the community, and the post office and community took their name from him. Located along La. Hwy. 56, Chauvin began as a rural community of Cajun fishers, trappers and oystermen. Cajun French was the primary language spoken in the area long into the 20th Century. In 2000, the total population of Chauvin was just more than 3,200 people. Being only 3 feet above sea level and situated in an area with the fastest rate of coastal land loss in the world, Chauvin remains a very ecologically vulnerable community with a rich and unique cultural history.

Even more vulnerable is the small community of Cocodrie, located 10 miles south of Chauvin at the very end of Hwy. 56. Prior to the road being laid several decades into the 20th Century, the only access to Cocodrie was a long trip by boat through the bayous and marshes. As is common in coastal Louisiana, Cocodrie developed as a series of homes or camps located on the high ground near the main waterway of Bayou Petit Caillou, causing all development to be linear in nature. The area is known as the original home of the Native American progenitor in the area, Houma Courteau. Today, Cocodrie is home to the

marine biology facility Louisiana Universities Marine Consortium, as well as a series of gentrified developments catering to the multiple recreational fishing businesses in the area. In Louisiana, the Cajuns called an alligator a “cocodrie,” a corruption of the French “cocodrille” for “crocodile.”

#### 4.5.2 Cocodrie and Chauvin Demographics

U.S. Census demographic numbers were not available for Cocodrie. Thus, the demographic numbers below solely represent data for Chauvin. Many of the residences in Cocodrie are camps used for seasonal recreation such as sports fishing and thus the demographics of this area are potentially different from Chauvin.

Chauvin is composed of approximately 5 square miles of land and .007 square miles of water.

As of the last U.S. Census in 2000<sup>10</sup>, there were 3,229 people in Chauvin. Of this number, 50.5% were men and 49.5% were women. The median population age was 34.5.

In Chauvin, 3,210 people identified themselves as of one racial background with the following breakdown: Native American, 0.2%; African American, 0.1%; white, 97%; Hispanic or Latino, 0.7%; Asian, 0.3%; two or more races, 0.6%. The five greatest identifications with ethnic groups were: American (21.8%), French Canadian (17.8%), French (15.2%), other ancestries (5.1%) and Italian (4.5%).

In Chauvin, 72% of the population was older than 18. Of those older than 18, 12% were older than 65. Furthermore, 67.6% were married-couple households, 9.4% were female-led households (with no husband present) and 8.3% of households had individuals 65 and older living alone.

Of the Chauvin population, 32.2% had a high school or higher degree and 2.9% had a bachelor’s degree or higher. Of those older than 16, 44.7% of individuals were employed and the median household income was \$25,922. Additionally, 4.6% of people identified as self-employed. The median income for men was \$32,168 and for women, \$16,495. There were 141 families living below the poverty line. The top three industries employing Chauvin residents were manufacturing (15.3%), retail (15%); and agriculture, forestry, fishing and hunting and mining (11.2%).

In Chauvin, there were 1,162 housing units; 93.8% were occupied, 85.9% by the owner and 14.1% as rental units. Additionally, 6.2% of properties were listed as vacant, 0.3% of these being seasonal living quarters. The average household size was 2.89.

#### 4.5.3 Survey Results

Survey dates: August 23-27, 2010

Number of enumerators: 10

Surveys collected: 92

Total households contacted (via knocking on doors): 285

Households that did not answer: 230

Households that declined to participate in survey: 8

Households that responded to survey: 47

Stationary team surveys collected: 27

Stationary team attempts at survey declined: 41

Location not recorded: 18

### 4.5.3.1 Quantitative Results

#### 4.5.3.1.1 Population Characteristics

Of the individuals surveyed in Cocodrie/Chauvin, 67 (72.8%) were permanent residents (PR), 5 (5.4%) were seasonal residents (SR), 7 (7.6%) were oil response workers, 2 (2.2%) were locally employed (LE), 14 (4.3%) were visitors or tourists, 1 (1.1%) was locally employed and an oil response worker, 1 (1.1%) was a seasonal resident and locally employed and 5 (5.4%) were permanent residents and locally employed.

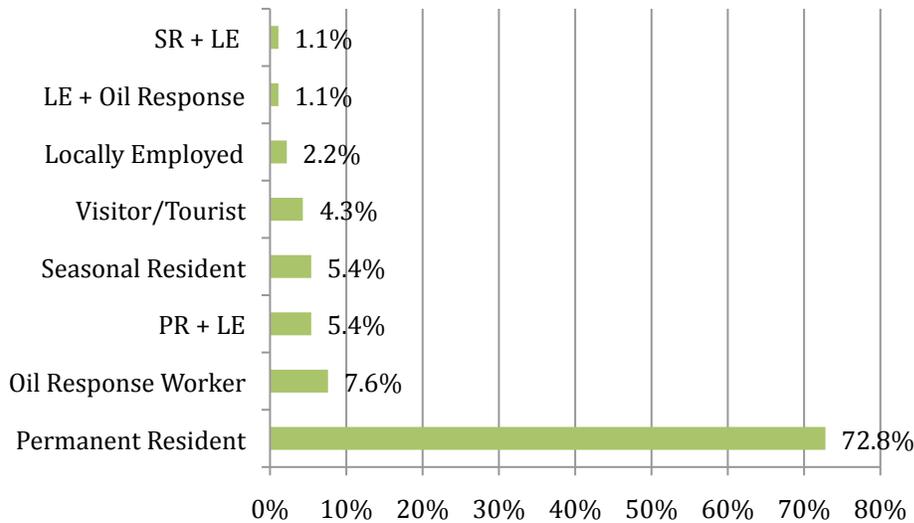


Figure 4.5.1 Population Characteristics

Of the 92 respondents, 45 (48.9%) worked outside, 19 (20.7%) primarily worked inside, 27 (29.3%) spent an equal amount of time inside and outside and 1 (1.1%) chose to not respond.

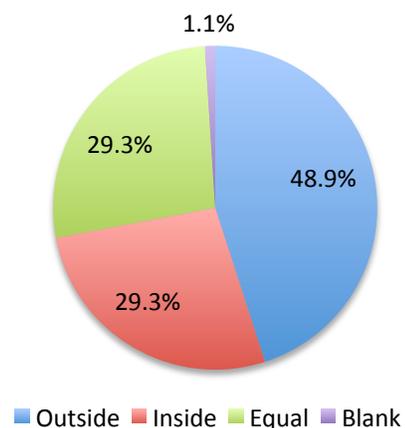
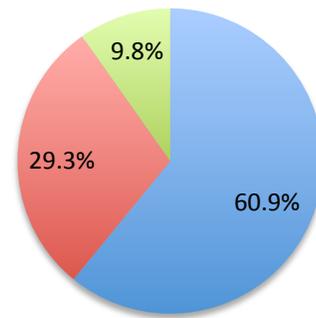


Figure 4.5.2 Location Where Time Most Spent During the Day

Of the 92 respondents, 56 (60.9%) had health insurance, 27 (29.3%) had no health insurance and 9 (9.8%) chose not to answer this question.



■ Yes ■ No ■ No response

Figure 4.5.3 Health Insurance

#### 4.5.3.1.2 Exposures Information

At the time they were surveyed, 14 (15.2%) respondents believed they had been exposed only to crude oil, 1 (1.1%) believed they had been exposed only to Corexit, and 15 (16.3%) believed they had been exposed to both. A total of 30 (32.6%) respondents reported an exposure and 62 (67.4%) did not report an exposure of either type or left the question blank.

Of the 30 (32.6%) respondents who reported exposure to crude oil, Corexit or both, 3 (3.3%) respondents had sought medical treatment for their exposure at the time of survey, 27 (29.3%) had not sought medical treatment or gave no response to this question.

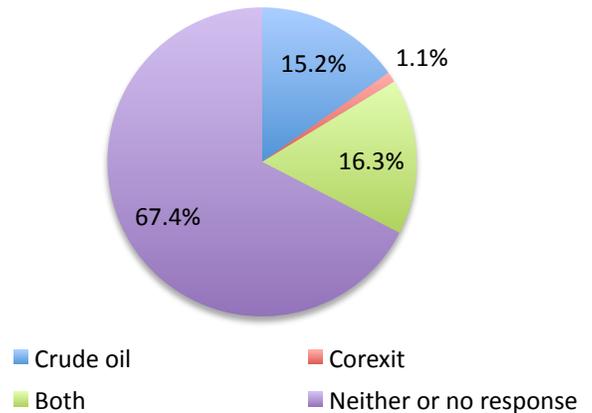


Figure 4.5.4 Believed Exposure to Crude Oil or Corexit

#### Odors

Of the 92 total respondents, 26 (28.3%) reported experiencing an unusual increase in odors, 66 (71.7%) reported they had not experienced an unusual increase in odors.

Respondents further described increases of smells as follows: 9 (9.8%) respondents reported smelling gasoline or fuel, 4 (4.3%) reported rotten eggs, 1 (1.1%) reported unspecified chemicals, 9 (9.8%) reported oil or other petroleum product not reported elsewhere. 3 (3.3%) respondents described either an unidentifiable odor or provided a description such as paint fumes, swampy smell or varnish.

#### 4.5.3.1.3 Symptoms Information

Out of 92 total respondents, 31 (33.7%) reported an unusual increase in symptoms and 61 (66.3%) reported no symptoms or gave no answer, 8 (8.7%) respondents reported seeking medical treatment for their increase in symptoms.

| Number of Symptoms       | Number of Individuals | Percentage of Respondents |
|--------------------------|-----------------------|---------------------------|
| None Reported            | 61                    | 66.3%                     |
| Total Reporting symptoms | 31                    | 33.7%                     |
| 1                        | 7                     | 7.6%                      |
| 2                        | 6                     | 6.5%                      |
| 3                        | 3                     | 3.3%                      |
| 4                        | 3                     | 3.3%                      |
| 5                        | 3                     | 3.3%                      |
| 6                        | 3                     | 3.3%                      |
| 7                        | 1                     | 1.1%                      |
| 8                        | 2                     | 2.2%                      |
| 9                        | 3                     | 3.3%                      |
| 10                       | 0                     | 0%                        |

Figure 4.5.5 Percentage of Respondents Reporting Symptoms

Out of the 92 Cocodrie/Chauvin respondents, the following percentages represent the amount the symptoms were reported within the total responding population.

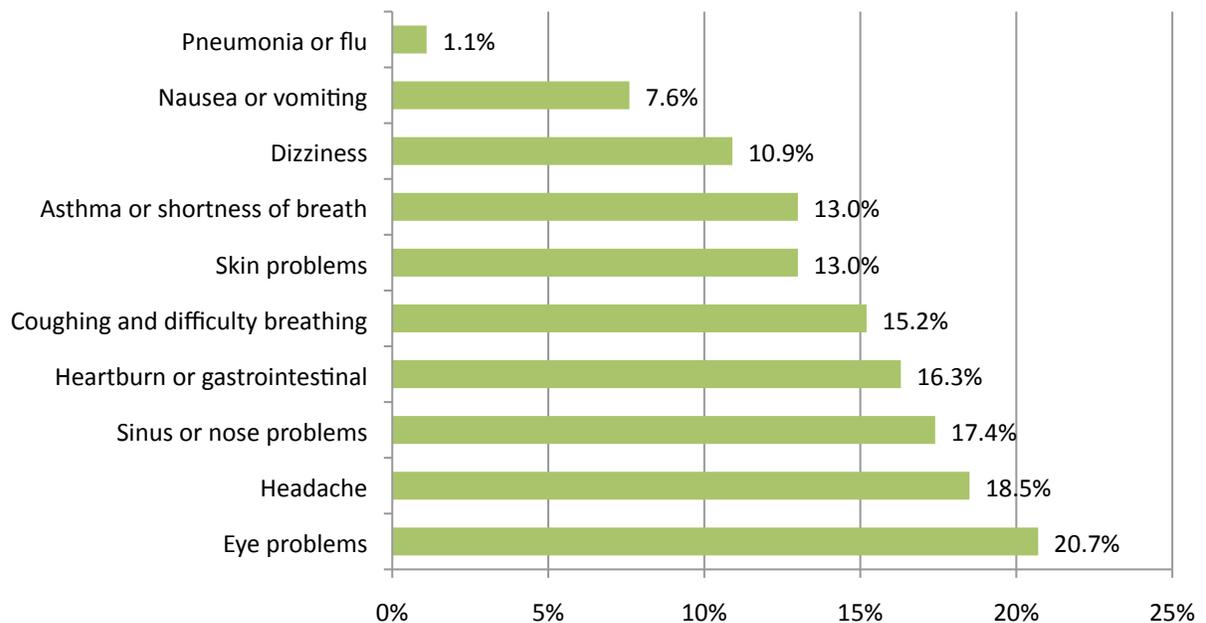


Figure 4.5.6 Types of Symptoms Reported

Of the 30 (32.6%) respondents reporting exposure to crude oil, Corexit or both, 17 (18.5%) respondents also identified an abnormal increase in symptoms and 13 (14.1%) did not report any increase. Of the 62 (67.4%) respondents who did not report an exposure, 14 (15.2%) reported an increase in symptoms and 48 (52.2%) did not report any increase.

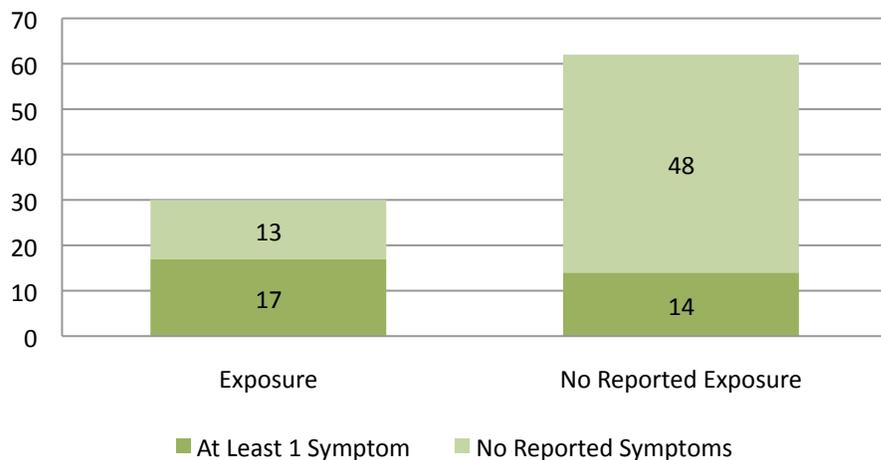


Figure 4.5.7 Exposure in Correlation with Symptoms

#### 4.5.3.1.4 Over-the-Counter Medication Use

In total, 23 (25.0%) respondents reported using over-the-counter medication more often than usual, 16 (17.4%) used eye medications, 12 (13.0%) used gastrointestinal medications, 14 (15.2%) used cough, cold or allergy medicine and 2 (2.2%) used skin cream.

Of the 23 (25.0%) respondents reporting increases in over-the-counter medication use, 12 (13.0%) also reported an exposure to crude oil, Corexit or both, 8 (8.7%) also reported increases in odors, and 17 (18.5%) also reported increases in symptoms.

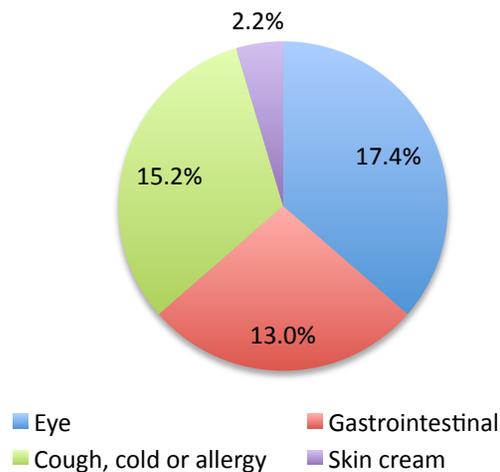


Figure 4.5.8 Over-the-Counter Medication Use

#### 4.5.3.1.5 Economic and Community Information

Of the respondents, 34 (37%) replied that their livelihood had been impacted by the spill, 7 (7.6%) responded that they had considered moving because of the oil spill.

Also, 4 (4.3%) individuals reported they were receiving disaster or economic assistance and 11 (12%) reported they were in need of economic assistance.

Overall, 57 (62%) respondents reported they thought there had been a change in their community since the oil spill.

#### 4.5.4 Community Responses

Employment is listed as pre-spill/post-spill. If there is only one job listed, it is the current source of income. If there are no jobs listed, the individual chose not to respond.

##### 4.5.4.1 Perspectives on how the community has changed since the oil spill

- Riffraff everywhere. Felons are hired for work, unsafe community. (Construction/marina business: 8.24.10)
- Change for the better. People are coming into the community to work for the oil spill and bringing money into the community. (House keeping: 8.25.10)
- Used to catch food and live off the water. Can't do this anymore, work has gone down 50%. (Truck driver: 8.26.10)
- The only change I've seen is so many people have started depending on BP. They make \$2,000 a day working for BP. Only made a max of \$60,000-\$70,000 a year shrimping. Now they make that in a month. (Charter captain/business went under: 8.26.10)
- Government needs to follow their own regulations. If fishing fails and oil fails, there will be no Chauvin. (Tugboat captain: 8.27.10)

##### 4.5.4.2 Perspectives on how livelihoods are impacted

- He owns a charter company. His business has lost 90% of its revenue due to the spill. Since the spill, he still takes his boat out and has experienced severe health problems. While on a boat trip without any visible oil, he and his crew felt burning in their eyes and nasal cavities. He developed skin rashes and severe nausea, which lasted a month. (Charter fishing/marine owner 8.24.10)
- A lot of people work on the tugs and land oil and have lost their jobs. (Tugboat captain: 8.27.10)

##### 4.5.4.3 Statements on odor, potential exposure and food safety

- When I asked him how the shrimping was going, he said it seemed OK, but they have just been OKed to begin shrimping again. He said he's not sure how the season will go. Then I asked if people are buying shrimp and he said the shrimp houses are buying, but only if you answer specific questions. He then said if you don't have the answers, you make it up so you can sell the shrimp. (Shrimper: 8.24.10)
- He was one of the first fishermen to be hired for Vessels of Opportunity. He spends many days out on the water burning the oil on the water. He took the initiative to go to the doctor because he was uneasy about his exposure to the oil and fumes. The doctor did some blood tests, but everything looked OK. (Commercial shrimper/BP cleanup worker: 8.25.10)
- It will be drastically changing in the years to come. My biggest concern is what lies on the sea bottom. I sell seafood and it has been hard to get in the past. I feel it will get harder. We can't sell stone claws and oysters. (Sells seafood: 8.26.10)

#### 4.5.5 Information Not Obtained

Cocodrie and Chauvin residents were not asked if they were concerned about seafood safety or dispersant spraying.

#### 4.5.6 Conclusion

The majority of people surveyed in Cocodrie and Chauvin were permanent residents (72.8%) and the largest population of respondents worked outside (48.9%). More than half (60.9%) of the respondents had health insurance. A little more than a quarter (32.6%) felt they had been exposed to either crude oil, dispersant or both. Almost three-quarters (71.7%) responded that they had not experienced an increase in odors. However, of the 28.3% who did smell odors, the top odors reported were either oil/other petroleum product or gasoline/fuel (both at 9.8%). Of the respondents, 33.7% reported an increase in symptoms and the top three symptoms reported were eye problems, sinus or nose problems and heartburn or gastrointestinal issues. The largest increase in over-the-counter medication use was for eye medication (17.4%). Only 8.7% of respondents with reported symptoms sought medical treatment. More than half of the respondents (62%) thought their community had changed since the oil spill and less than half (37%) reported their livelihoods had been impacted by the spill.

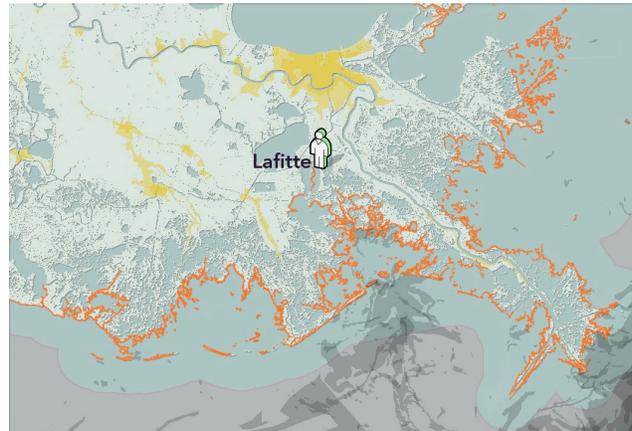
### 4.6 Jefferson Parish – Lafitte

#### 4.6.1 Background

Lafitte is located at the end of La. 3257, which continues on past La. Hwy. 45. Lafitte is east of Barataria Bay and sits on Barataria Bayou.

According to the Web site for the town of Jean Lafitte<sup>11</sup>, the Barataria region was logged from 1720 through about 1929. Beginning in the mid-1700s, maps began to list the area as “Barataria” which meant “illegality” in French. As they were known, the “Baratarians” were pardoned and allowed to stay in the area after the War of 1812 when they sided with General Jackson during the Battle of New Orleans.

The main industries that thrived in the Barataria area included seafood and moss harvesting (until World War II), animal trapping and the production of sugar cane and cotton on plantations. Besides French settlers, Canary Islanders settled in Crown Point and Filipinos and Chinese set up shrimp drying platforms over the bayous, the last one closing after Hurricane Betsy.



#### 4.6.2 Lafitte Demographics

There are separate demographics for Jean Lafitte, which is a different town, than Lafitte, the area where surveying took place.

Lafitte CDP (census-designated place) is composed of approximately 6 square miles of land and 2 square miles of water.

As of the last U.S. Census in 2000<sup>12</sup>, there were 1,576 people in Lafitte. Of this number, 51.4% were men and 48.6% were women. The median population age was 38.2.

In Lafitte, 1,553 people identified themselves as of one racial background with the following breakdown: Native American, 2.3%; African American, 1.1%; white, 94.5%; Hispanic or Latino, 1.8%; Asian, 0.5%; other race 0.1%; two or more races, 1.5%. The five greatest identifications with ethnic groups were: French (29.5%), other ancestry (13.7%), Italian (11%), German (8.3%) and French Canadian (7.1%).

In Lafitte, 75.8% of the people were older than 18. Of those older than 18, 11% were older than 65. Furthermore, 66.5% were married-couple households, 7.9% were female-led households (with no husband present) and 5.9% of households had individuals 65 and older living alone.

Of the Lafitte population, 34.1% had a high school or higher degree and 3.2% had a bachelor's degree or higher. Of those older than 16, 53.9% individuals were employed and the median household income was \$33,872. Additionally, 17.4% of people identified as self-employed. The median income for men was \$32,782 and for women, \$25,729. There were 66 families living below the poverty line. The top three industries employing Lafitte residents were agriculture, forestry, fishing, hunting and mining (25.1%); educational, health and social services (16.5%) and retail trade (12.5%).

In Lafitte, there were 623 housing units, 89.2% were occupied, 85.3% by the owner and 14.7% were used as rental units. Also, 10.8% were vacant properties, 4.7% of these being seasonal living quarters. The average household size was 2.83.

### **4.6.3 Survey Results**

Survey dates: September 6-10, 2010

Number of enumerators: 13

Surveys collected: 123

Total households contacted (via knocking on doors): 103

Households that did not answer: 17

Households that responded to survey: 86

Stationary team surveys collected: 35

Stationary team attempts at survey declined: 20

Location not recorded: 2

#### **4.6.3.1 Quantitative Results**

##### *4.6.3.1.1 Population Characteristics*

Of the individuals surveyed in Lafitte, 107 (87%) were permanent residents (PR), 1 (0.8%) was an oil response worker, 4 (3.3%) were locally employed (LE) and permanent resident, 1 (0.8%) was a seasonal resident (SR) and locally employed, 6 (4.9%) were PR and oil response and 4 (3.3%) opted to not answer this question.

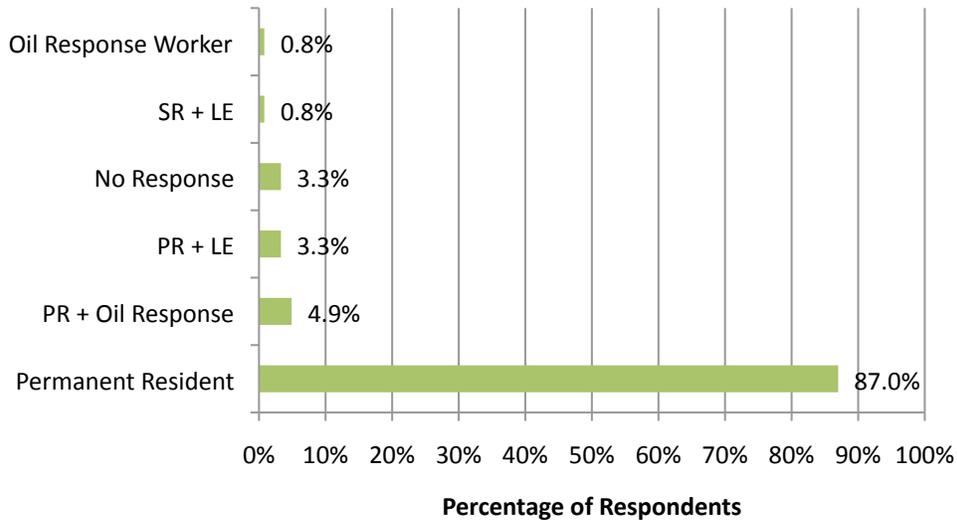


Figure 4.6.1 Population Characteristics

Of the 123 respondents, 45 (36.6%) worked outside, 32 (26%) primarily worked inside, 39 (31.7%) spent an equal amount of time inside and outside and 7 (5.7%) chose not to respond.

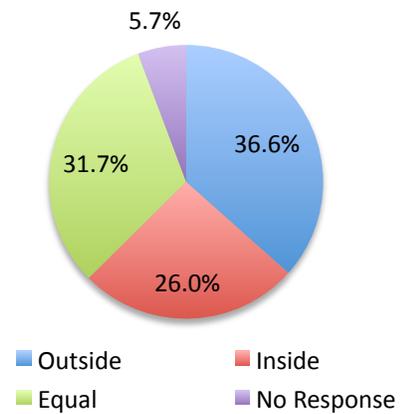


Figure 4.6.2 Location Where Time Most Spent During the Day

Of the 123 respondents, 49 (39.8%) had health insurance, 12 (9.8%) had no health insurance and 62 (50.4%) chose not to answer this question.

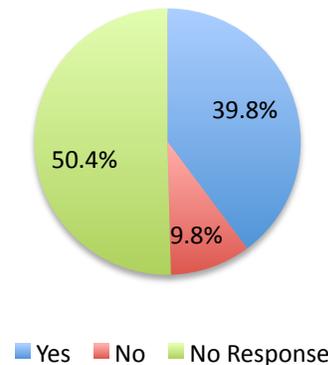


Figure 4.6.3 Health Insurance

#### 4.6.3.1.2 Exposures Information

At the time they were surveyed, 18 (14.6%) respondents believed they had been exposed only to crude oil, 3 (2.4%) believed they had been exposed only to Corexit, and 25 (20.3%) believed they had been exposed to both. A total of 46 (37.4%) respondents reported an exposure and 77 (62.6%) did not report an exposure of either type or did not respond to the question.

Of the 46 (37.4%) respondents who reported exposure to crude oil, Corexit or both, 2 (1.6%) respondents had sought medical treatment for their exposure at the time of survey, 44 (35.8%) had not sought medical treatment or gave no response to this question.

#### Odors

Of the 123 total respondents, 49 (39.8%) reported experiencing an unusual increase in odors, 74 (60.2%) reported they had not experienced an unusual increase in odors.

Respondents further described increases of smells as follows: 9 (7.3%) respondents reported smelling gasoline or fuel, 5 (4.1%) reported rotten eggs, 2 (1.6%) reported unspecified chemicals, 17 (13.8%) reported oil or other petroleum product not reported elsewhere, 7 (5.7%) respondents described either an unidentifiable odor or provided a description such as burning, dead fish or paint.

#### 4.6.3.1.3 Symptoms Information

Out of 123 total respondents, 40 (32.5%) reported an unusual increase in symptoms and 83 (67.5%) reported no symptoms or gave no answer. Also, 6 (4.9%) respondents reported seeking medical treatment for their increase in symptoms.

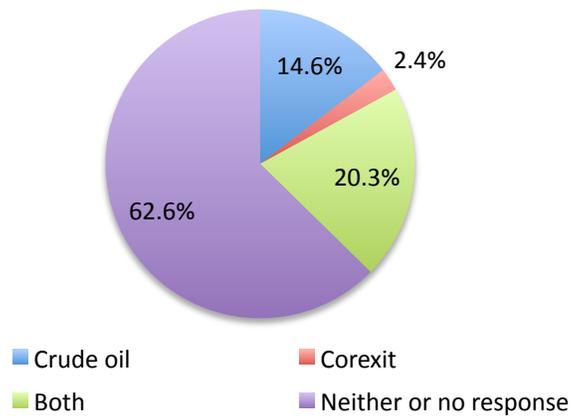


Figure 4.6.4 Believed Exposure to Crude Oil or Corexit

| Number of Symptoms       | Number of Individuals | Percentage of Respondents |
|--------------------------|-----------------------|---------------------------|
| None Reported            | 83                    | 67.4%                     |
| Total Reporting Symptoms | 40                    | 32.5%                     |
| 1                        | 16                    | 13%                       |
| 2                        | 5                     | 4.1%                      |
| 3                        | 3                     | 2.4%                      |
| 4                        | 8                     | 6.1%                      |
| 5                        | 2                     | 1.6%                      |
| 6                        | 2                     | 1.6%                      |
| 7                        | 0                     | 0%                        |
| 8                        | 3                     | 2.4%                      |
| 9                        | 1                     | 0.8%                      |
| 10                       | 0                     | 0%                        |

Figure 4.6.5 Percentage of Respondents Reporting Symptoms

Out of the 123 Lafitte respondents, the following percentages represent the amount the symptoms were reported within the total responding population.

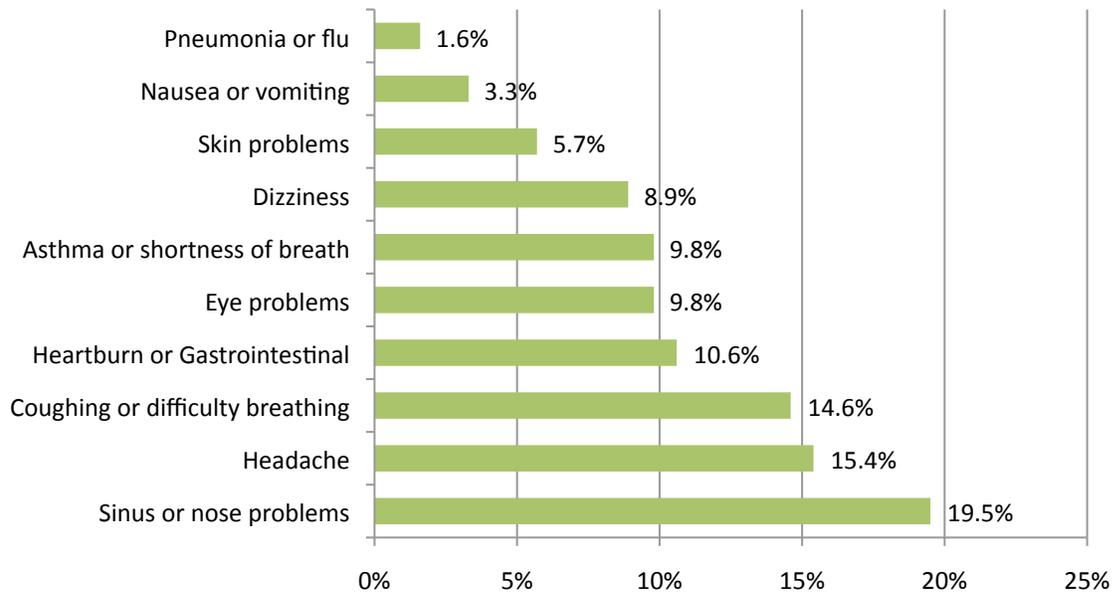


Figure 4.6.6 Types of Symptoms Reported

Of the 46 (37.4%) respondents reporting exposure to crude oil, Corexit or both, 25 (20.3%) respondents also identified an abnormal increase in symptoms and 21 (17.1%) did not report any increase. Of the 77 (62.6%) respondents who did not report an exposure, 15 (12.2%) reported an increase in symptoms and 62 (50.4%) did not report any increase.

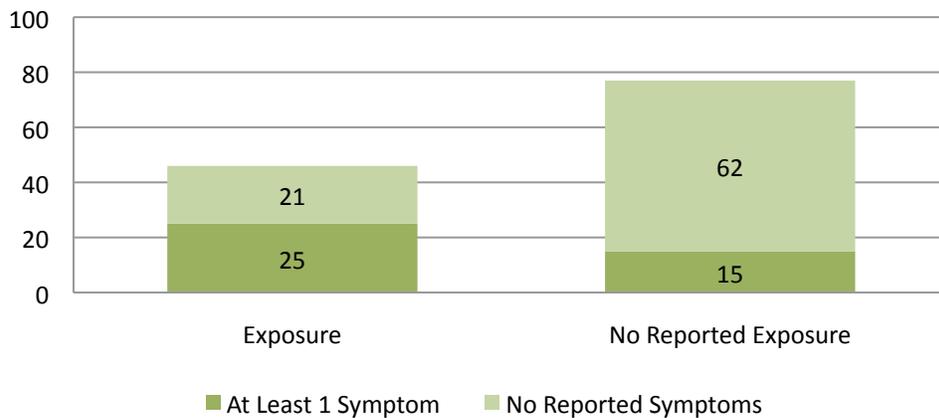
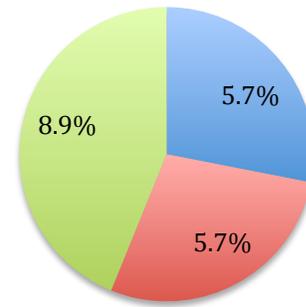


Figure 4.6.7 Exposure in Correlation with Symptoms

#### 4.6.3.1.4 Over-the-Counter Medication Use

In total, 15 (12.2%) respondents reported using over-the-counter medication more often than usual, 7 (5.7%) used eye medications, 7 (5.7%) used gastrointestinal medications and 11 (8.9%) used cough, cold or allergy medicine.

Of the 15 (12.2%) respondents reporting increases in over-the-counter medication use, 9 (7.3%) also reported an exposure to crude oil, Corexit or both, 9 (7.3%) also reported increases in odors, and 15 (12.2%) also reported increases in symptoms.



■ Eye ■ Gastrointestinal ■ Cough, cold or allergy

Figure 4.6.8 Over-the-Counter Medication Use

#### 4.6.3.1.5 Economic and Community Information

Of respondents, 45 (36.6%) replied that their livelihoods had been impacted by the spill and 12 (9.8%) responded that they had considered moving.

Also, 24 (19.5%) individuals reported they were receiving disaster or economic assistance and 13 (10.6%) reported they were in need of economic assistance.

Overall, 78 (64.2%) respondents reported they thought there had been a change in their community since the oil spill.

### 4.6.4 Community Responses

Employment is listed as pre-spill/post-spill. If there is only one job listed, it is the current source of income. If there are no jobs listed, the individual chose not to respond.

#### 4.6.4.1 Perspectives on how the community has changed since the oil spill

- There are lots of greedy people who want things that they don't need. Politicians won't shut their mouths. It's unfair to BP. When I was young we used to dump oil in the Gulf. Everybody's getting gift certificates that don't deserve it. People are taking advantage of it. When the spill started, there was already no shrimp. They knew it was going to be a bad season; it's like a cover-up. LSU predicted this. Politicians don't know anything about the oil industry. Everybody is just greedy. The community had already changed after Katrina. People just seem different. (Self-employed, company owned, oil spill-related: 9.7.10)
- People are completely depressed and frustrated. People depend on fishing; it's their life. (Fisherman: 9.9.10)
- Friends and neighbors (shrimpers and fishermen) are extremely stressed financially. BP is slow in giving out checks. Our son worked on a tugboat, after the oil spill he became sick from dispersant/oil vapors. He spent three days vomiting with flu-like symptoms. Recovery will take years because people will continue to be cautious with money and

investments. Uncertain of tomorrow. Nothing like this has ever happened. Storms can be weathered, but this? (Retired: 9.8.10)

- “Big yes” (regarding community changes). Property is now worth zero, it’s a domino effect. People are out of work, seafood plant is closed, grocery store is impacted. (9.7.10)
- Changed for the better, it gave a lot of people jobs. (9.7.10)
- More and more people are visiting the local food bank. Incoming BP workers ignore local hospitality by taking up property. There is lots of traffic. The local government is also lacking. They are taking no responsibility and spending the aid money in the cities instead of the areas most affected. (Shrimper/fisherman: 9.7.10)

#### **4.6.4.2 Perspectives on how livelihoods are impacted**

- He believes any BP Vessels of Opportunity employees are going to be tossed aside since BP is handing out violations to fire employees. Fishermen will not return to employment after BP. “It’s not peachy, BP has white washed with their ad campaigns.” He deals with the Coast Guard and since it’s not under a federal jurisdiction, they can’t do much. BP holds checks for 90 days so people forget. (Fishing/Captain: 9.8.10)
- Bayou livelihood will take a long time to recover. A large number of uneducated who can’t find work outside of bayou work. (Teacher: 9.9.10)
- The oil spill affected him positively, but he is worried about the next generations of fishing. The oil spill affected fishermen. Before the season opened, shrimp was at \$3 a pound, when season opened it was \$1 a pound. Fishing season is bad, they are making more money working for BP instead. “He” (BP) bought every factory along the coast, “He” destroyed the fishing industry. The oil industry stopped drilling, no platforms being built. He got more work after the spill due to more safety regulations, fixing platforms, etc. He’s also building the steel pipe booms. There’s no work for fishermen. He is hiring people to run his boat. Acting as the middleman between BP and his boat. BP pays him and he can pay his men. A lot of people renting out their homes. Moved to do it because they will make more money. “People are going to suffer after April 15 (2011)”. (Fishing/superintendent for oil platforms: 9.10.10)

#### **4.6.4.2 Disaster assistance experiences or needs**

- Grocery bills are higher. Can’t buy seafood if it is imported because it’s too expensive. Son and grandson work in the oil field and are crabbers. Usually relies on them to get seafood. People are mad but feel helpless. People are very frustrated and get angry easily. Grandson worked for BP on his father in-law’s boat. He got caught drinking and went to jail. Couldn’t work anymore. Didn’t get paid for a good 3 months from BP. Catholic organizations are giving to the fishing industry people. She is affected because she’s not getting it. Feels alienated. Doesn’t even make \$800 a month. Still waiting for money from Katrina. Relies on her kids to live. (School Crossing Guard: 9.7.10)

#### **4.6.4.3 Statements on odor and potential exposure**

- Fishermen are mad about working for others. Gets checks from the DRC, not BP. Treated better by DRC than BP such as getting more days off. Worked straight for 35-40 days.
- They make \$2,600 a day, which is distributed between boat, captain and deckhand. A lot of the fishermen have a hard time working under people (especially 30-year-olds from

Alabama) because they've been self-employed. Tried to tell them to angle the booms, then the guy from Alabama tells everyone to angle the booms like it was his idea. Treating them like dumb fishermen. Booms are being double bagged in clear white bags and dropped in Grand Isle. Doesn't believe that 75% of the oil is picked up. You can't even see it. It's all sunk. Don't even know what you're battling. If they had started saving the wetlands a while ago, there wouldn't be this much devastation. "The Corps of Engineers are the most destructive group of people in this country. This will be a toxic town". (Fisherman/DRC, picking up booms: 9.8.10)

- In 2010, was only able to go shrimping five times. There are no ill health effects in the community and no indication that seafood is contaminated. Dispersants are not as harmful as they say they are. Worked in the oil fields for 33 years. Residents depend on the seafood industry and can no longer do so. (Shrimper/retired: 9.9.10)
- Uncertain of future health concerns, does not feel BP informs of potential health risks. It's all about the money; most companies are. (Tugboat driver: 9.9.10)
- Had a friend die from an upper respiratory infection. Lots of his crewmembers also suffered pneumonia symptoms. Exposed seven days a week to crude oil vapors and the oil itself. (Warehouse worker/oil response worker: Lafitte 9.7.10)
- What happens later if we develop symptoms? Or if there are strange smells? Who can we contact? Who will respond? Unsure of this. Would like to be more confident about knowing how/who/where for contact. (9.7.10)

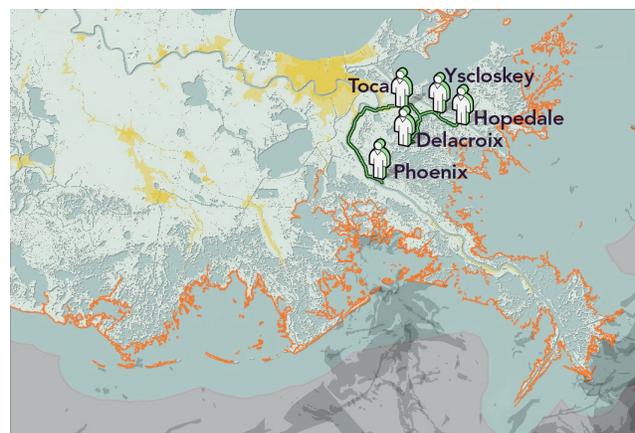
#### 4.6.5 Conclusion

The majority of people surveyed in Lafitte were permanent residents (87%) and the largest population of respondents worked outside (36.6%). Less than half (39.8%) of the respondents reported that they had health insurance, while 37.4% felt they had been exposed to either crude oil, dispersant or both. More than half (60.2%) responded that they had not experienced an increase in odors. However, of the 39.8% who did smell odors, the top odor reported was oil or other petroleum products (13.8%). Of the respondents, 32.5% reported an increase in symptoms and the top three symptoms reported were sinus or nose problems, headaches and coughing or difficulty breathing. The largest increase in over-the-counter medication use was for cough, cold and allergy medication (8.9%). Only 4.9% of respondents with reported symptoms sought medical treatment. Over half of the respondents (64.2%) thought their community had changed since the oil spill and less than half (36.6%) of the respondents reported their livelihoods had been impacted by the spill.

## 4.7 Delacroix, Vero, Shell Beach, Yscloskey, Hopedale, St. Bernard Parish and Phoenix, Plaquemines Parish

### 4.7.1 Background

St. Bernard Parish is located approximately 5 miles southeast of New Orleans' Central Business District and is divided from the Lower Ninth Ward of New Orleans by Jackson Barracks.



French traders first entered this area around 1720 and Islenos, who were Spanish colonists from the Canary Islands, began settling in the area between 1778-1783<sup>13</sup>. The Islenos settled in this area at the bequest of Spain to populate the area, produce higher quantities of food (they were also expert cattle ranchers) and help defend against British forces before the War of 1812<sup>14</sup>. St. Bernard was the site of the Battle of New Orleans, which happened in 1815 during the War of 1812. St. Bernard Parish has had experience with flood devastation over the years. In the Great Mississippi Flood of 1927, the parish was flooded in an attempt to save New Orleans. During Katrina, almost the entire parish flooded as the storm passed over the eastern tip of St. Bernard. Many of the small towns in the eastern part suffered a huge population loss. After Katrina, the parish seat, Chalmette, took in residents who had previously been living in the small towns of Hopedale, Yscloskey, Shell Beach and Delacroix.

#### 4.7.2 St. Bernard Demographics

U.S. Census demographic numbers were not available for all of the individual towns surveyed in St. Bernard Parish. The demographic numbers below thus represent parish level data, which include large urban areas such as Chalmette and Meraux where surveys were not conducted. Including larger urban centers in data sets that are additionally representative of larger townships can distort data sets such as the primary industries people work in outside of the urban centers. In St. Bernard Parish, people rarely identified and associated with Chalmette/Meraux in addition to the areas where the survey was conducted.

St. Bernard Parish is composed of approximately 465 square miles of land and 1,329 square miles of water.

As of the last U.S. Census in 2000<sup>15</sup>, there were 67,229 people in St. Bernard Parish. Of this number, 48.3% were men and 51.7% were women. The median population age was 36.6.

In the parish, 66,204 people identified themselves as of one racial background with the following breakdown: Native American, 0.5%; African American, 7.6%; white, 74.8%; Hispanic or Latino, 5.1%; Asian, 1.3%; other race 0.7%; two or more races, 1.5%. The five greatest identifications with ethnic groups were: French (25.7%), other ancestry (23.2%), Italian (20%), German (17.1%) and Irish (11.5%).

In St. Bernard Parish, 74.8% of people were older than 18. Of those residents older than 18, 13.8% were older than 65. Additionally, 53.4% were married-couple households, 14.6% were female-led households (with no husband present) and 10.1% of households had individuals 65 and older living alone.

Of the St. Bernard Parish population, 37.9% had a high school or higher degree and 6.3% had a bachelor's degree or higher. Of those older than 16, 59.7% were employed and the median household income was \$35,939. Also, 5.7% of people identified as self-employed. The median income for men was \$34,303 and for women, \$24,009. There were 1,935 families living below the poverty line. The top three industries employing St. Bernard residents were educational, health and social services (17%), retail (12.4%); and manufacturing (10.8%).

In St. Bernard Parish, there were 26,790 housing units, 93.8% were occupied, 74.6% by the owner and 25.4% as rental units. Also, 6.2% were listed as vacant properties, 1.4% of these being seasonal living quarters. The average household size was 2.64.

### 4.7.3 Survey Results

Survey dates: September 13-17, 2010  
 Number of enumerators: 10  
 Surveys collected: 109  
 Total households contacted (via knocking on doors): 392  
 Households that did not answer: 221  
 Households that responded to survey: 109  
 Households that denied participation: 62

#### 4.7.3.1 Quantitative Results

##### 4.7.3.1.1 Population Characteristics

Of the individuals surveyed in St. Bernard Parish, 84 (77.1%) were permanent residents (PR), 4 (3.7%) were seasonal residents, 1 each (0.9%) was an oil response worker, locally employed, a visitor or tourist and a permanent resident as well as an oil response worker, 17 (15.6%) were permanent residents and worked locally.

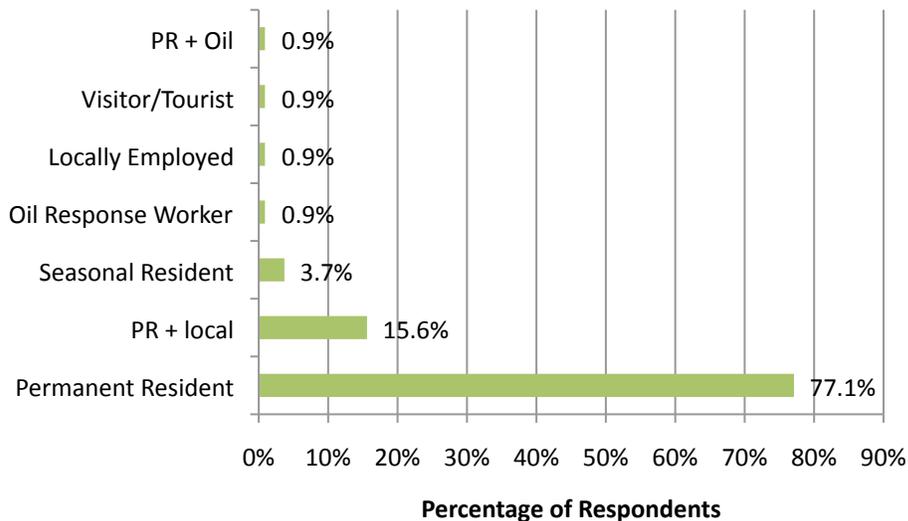


Figure 4.7.1 Population Characteristics

Of the 109 respondents, 62 (56.9%) worked outside, 22 (20.2%) primarily worked inside, 23 (21.1%) spent an equal amount of time inside and outside and 2 (1.8%) chose not to respond.

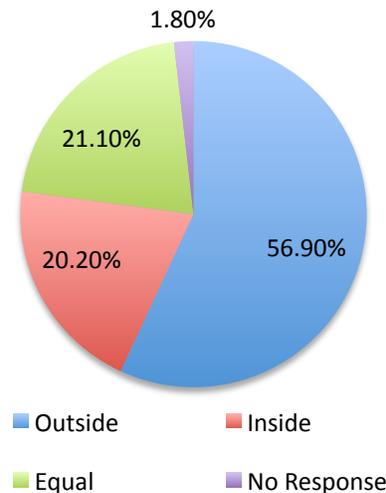
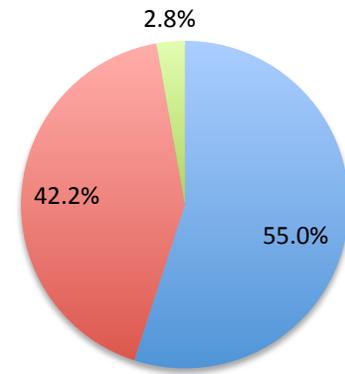


Figure 4.7.2 Where Time Most Spent During the Day

Of the 109 respondents, 60 (55%) had health insurance, 46 (42.2%) had no health insurance and 3 (2.8%) chose not to answer this question.

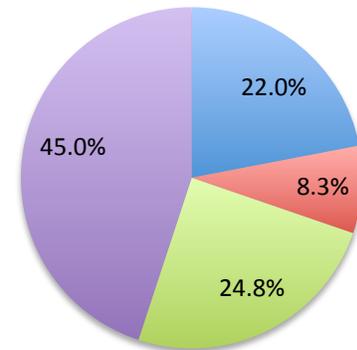


■ Yes ■ No ■ No Response

Figure 4.7.3 Health Insurance

#### 4.7.3.1.2 Exposures Information

At the time they were surveyed, 24 (22.0%) respondents believed they had been exposed only to crude oil, 9 (8.3%) believed they had been exposed only to Corexit, and 27 (24.8%) believed they had been exposed to both. A total of 60 (55.0%) respondents reported an exposure and 49 (45.0%) did not report an exposure of either type or gave no response.



■ Crude oil ■ Corexit  
■ Both ■ Neither or no response

Figure 4.7.4 Believed Exposure to Crude Oil or Corexit

Of the 60 (55.0%) respondents who reported exposure to crude oil, Corexit or both, 13 (11.9%) respondents had sought medical treatment for their exposure at the time of survey, 47 (43.1%) had not sought medical treatment or gave no response to this question.

#### Odors

Of the 109 total respondents, 54 (49.5%) reported experiencing an unusual increase in odors, 55 (50.5%) reported they had not experienced an unusual increase in odors.

Respondents further described increases of smells as follows: 22 (20.2%) respondents reported smelling gasoline or fuel, 7 (6.4%) reported rotten eggs, 4 (3.7%) reported unspecified chemicals, 15 (13.8%) reported oil or other petroleum product not reported elsewhere. Also, 6 (5.5%) respondents described either an unidentifiable odor or provided a description such as river, musty or garbage smell.

#### 4.7.3.1.3 Symptoms Information

Out of 109 total respondents, 69 (63.3%) reported an unusual increase in symptoms and 40 (36.7%) reported no symptoms or gave no answer, 25 (22.9%) respondents reported seeking medical treatment for their increase in symptoms.

| Number of Symptoms       | Number of Individuals | Percentage of Respondents |
|--------------------------|-----------------------|---------------------------|
| None Reported            | 40                    | 36.7%                     |
| Total Reporting Symptoms | 69                    | 63.3%                     |
| 1                        | 8                     | 7.3%                      |
| 2                        | 11                    | 10.1%                     |
| 3                        | 18                    | 16.5%                     |
| 4                        | 9                     | 8.3%                      |
| 5                        | 5                     | 4.6%                      |
| 6                        | 4                     | 3.7%                      |
| 7                        | 7                     | 6.4%                      |
| 8                        | 3                     | 2.8%                      |
| 9                        | 4                     | 3.7%                      |
| 10                       | 0                     | 0%                        |

Figure 4.7.5 Percentage of Respondents Reporting Symptoms

Out of the 109 St. Bernard respondents, the following percentages represent the amount the symptoms were reported within the total responding population.

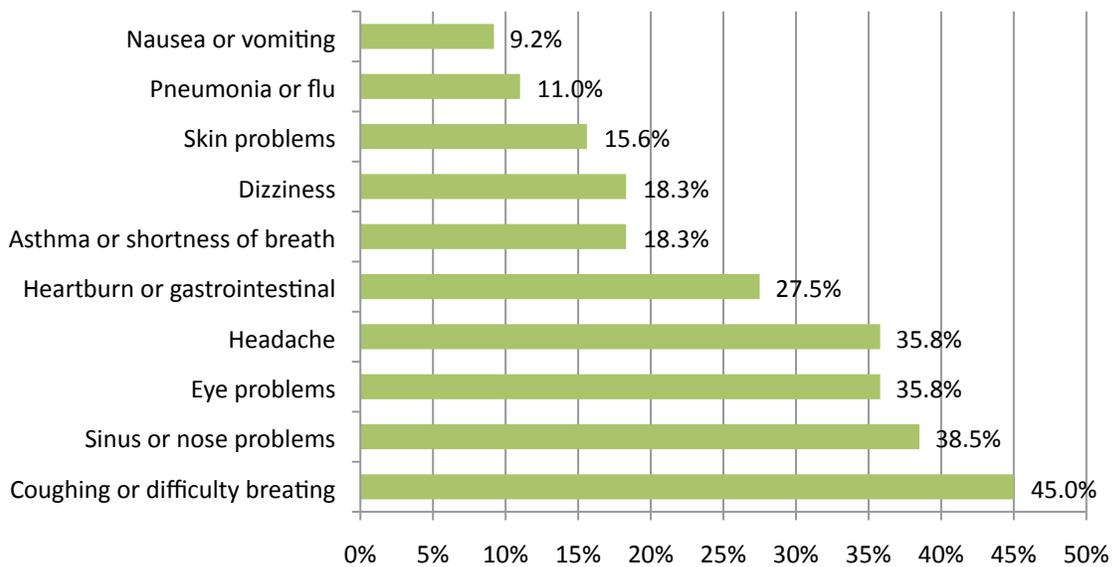


Figure 4.7.6 Types of Symptoms Reported

Of the 60 (55.0%) respondents reporting exposure to crude oil, Corexit or both, 49 (45.0%) also identified an abnormal increase in symptoms and 11 (10.1%) did not report any increase. Of the 49 (45.0%) respondents who did not report an exposure, 20 (18.3%) reported an increase in symptoms and 29 (26.6%) did not report any increase.

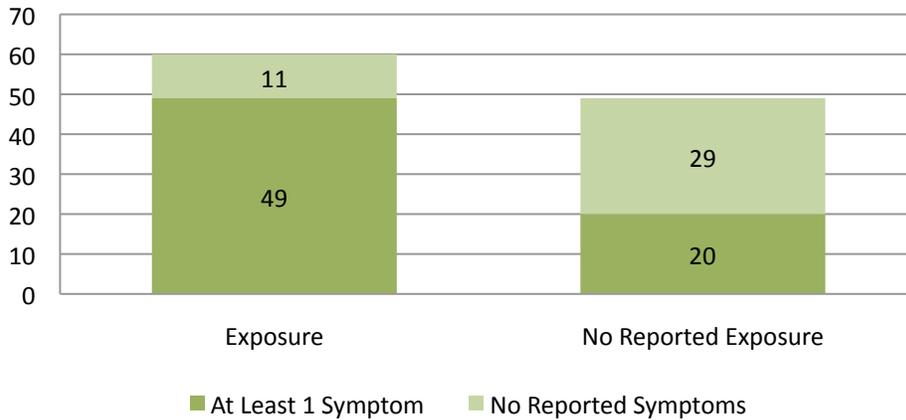


Figure 4.7.8 Exposure in Correlation with Symptoms

#### 4.7.3.1.4 Over-the-Counter Medication Use

In total, 49 (45%) respondents reported using over-the-counter medication more often than usual, 26 (23.9%) used eye medications, 28 (25.7%) used gastrointestinal medications, 31 (28.4%) used cough, cold or allergy medicine and 6 (5.5%) used skin cream.

Of the 49 (45.0%) respondents reporting increases in over-the-counter medication use, 33 (30.3%) also reported an exposure to crude oil, Corexit or both, 30 (27.5%) also reported increases in odors, and 38 (34.9%) also reported increases in symptoms.

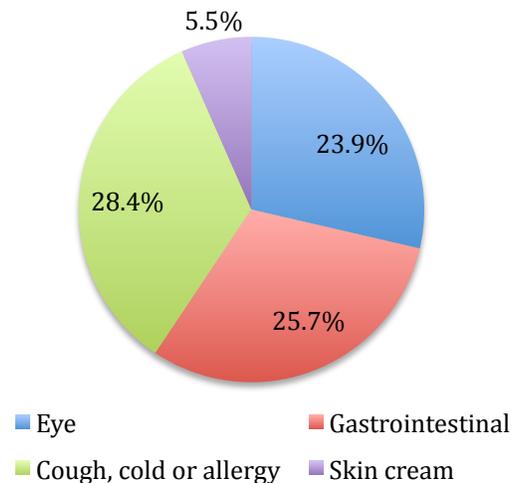


Figure 4.7.8 Over-the-Counter Medication Use

#### 4.7.3.1.5 Economic and Community Information

Of the respondents, 67 (61%) replied that their livelihoods had been impacted by the spill and 13 (11.9%) responded that they had considered moving.

Also, 11 (10.1%) individuals reported that they were receiving disaster or economic assistance and 39 (35.8%) reported that they were in need of economic assistance.

Overall, 76 (69.7%) respondents reported that they thought there had been a change in their community since the oil spill.

#### **4.7.4 Community Responses**

Employment is listed as pre-spill/post-spill. If there is only one job listed, it is the current source of income. If there are no jobs listed, the individual chose not to respond.

##### **4.7.4.1 Perspectives on how the community has changed since the oil spill**

- People are depressed and angry at each other. “We can’t fish and we’ve lost all income.” (Commercial fisherman/unemployed: 9.15.10)
- Change in food availability and diet due to community habits. (Insulator for boats: 9.14.10)

##### **4.7.4.2 Perspectives on how livelihoods are impacted**

- Can’t go fishing for fear of getting someone sick. The cost of bait, traps and gas are too high and the price of crabs is too low. Many people have moved and they need to be paid for lost work. Worried about what will happen if the fishing doesn’t return. (Fisherman: 9.14.10)
- Effected everyone; price of shrimp is too low. (Commercial fisherman/handy man: 9.14.10)

##### **4.7.4.3 Statements on odor and potential exposure**

- Very concerned about her family’s health now and in the future. Her oldest son worked for a short while with an oil response team (laying boom), but quickly realized it wasn’t for him. The Tyvek or safety suit he had to wear was incredibly hot. He lasted about two weeks, after which he began to get migraine headaches. Sees more greed in her community. Cleanup workers are making money quickly, but that will soon end. She feels that they are taking advantage of BP. (Electrician: 9.15.10)
- Brother-in-law has been working on the oil spill and puking everyday. He has hair falling out in handfuls. (Oil rigs and salvage work: 9.15.10)

#### **4.7.5 Conclusion**

The majority of people surveyed in St. Bernard Parish were permanent residents (77.1%) and the largest population of respondents worked outside (56.9%). A little more than half (55%) of the respondents reported they had health insurance. More than half (55%) felt they had been exposed to either crude oil, dispersant or both. Almost half (49.5%) responded that they had experienced an increase in odors. The top odor reported was gasoline or fuel (20.2%). Of the respondents, 63.3% reported an increase in symptoms and the top four symptoms reported were coughing or difficulty breathing, sinus and nose problems and (tied) headaches and eye problems. The largest increase in over-the-counter medication use was for cough, cold and allergy medication (28.4%), 22.9% of respondents with reported symptoms sought medical treatment. Almost three-quarters of the respondents (69.7%) thought their community had changed since the oil spill and more than half (61.5%) reported that their livelihoods had been impacted by the spill.

## SECTION 5. COMPARATIVE RESULTS, DISCUSSION AND FINDINGS

In this section, initial comparisons of survey data regarding quality of life, economics, exposures, health impacts, and over-the-counter drug use are discussed amongst seven different survey sub-groups.

### 5.1 Population Characteristics Respondent Classification

The seven regional areas surveyed by the seven enumerator groups are organized in Table 5.1 below.

| Sub-Population               | Coverage Area  | Survey Periods               | Surveys |
|------------------------------|--|------------------------------|---------|
| JP-Grand                     | Grand Isle, <i>Jefferson</i> , Louisiana   | July 26-30, 2010             | 132     |
| Plaq-North                   | Port Sulphur to Empire, <i>Plaquemines</i> , Louisiana   | August 2-6, 2010             | 142     |
| TB-Dulac                     | Dulac, <i>Terrebonne</i> , Louisiana   | August 16-20, 2010           | 157     |
| TB-Cocodrie                  | Cocodrie and Chauvin, <i>Terrebonne</i> , Louisiana  | August 23-27, 2010           | 92      |
| JP-Lafitte                   | Lafitte, <i>Jefferson</i> , Louisiana  | September 6-10, 2010         | 123     |
| St-Bern                      | Delacroix, Toca, Ycloskey, Shell Beach, Hopedale, <i>St. Bernard</i> , Louisiana and Phoenix, <i>Plaquemines</i> , Louisiana | September 13-17, 2010        | 109     |
| Plaq-South                   | Buras to Venice, <i>Plaquemines</i> , Louisiana  | September 27-October 1, 2010 | 199     |
| Total Surveys Completed: 954 |  |                              |         |

Figure 5.1 Survey Statistics

In total, the cross-sectional survey yielded 954 surveys collected from respondents in southeastern Louisiana in seven different four-day periods beginning July 26, 2010 and ending October 1, 2010. More than a third of the surveys were collected from two enumerator groups operating solely within Plaquemines Parish. The 142 (14.9%) and 199 (20.9%) surveys collected within Plaquemines Parish respectively form the sub-populations Plaq-North and Plaq-South. The largest sub-populations in this study are Plaq-North, Plaq-South and TB-Dulac with 157 (16.5%) surveys.

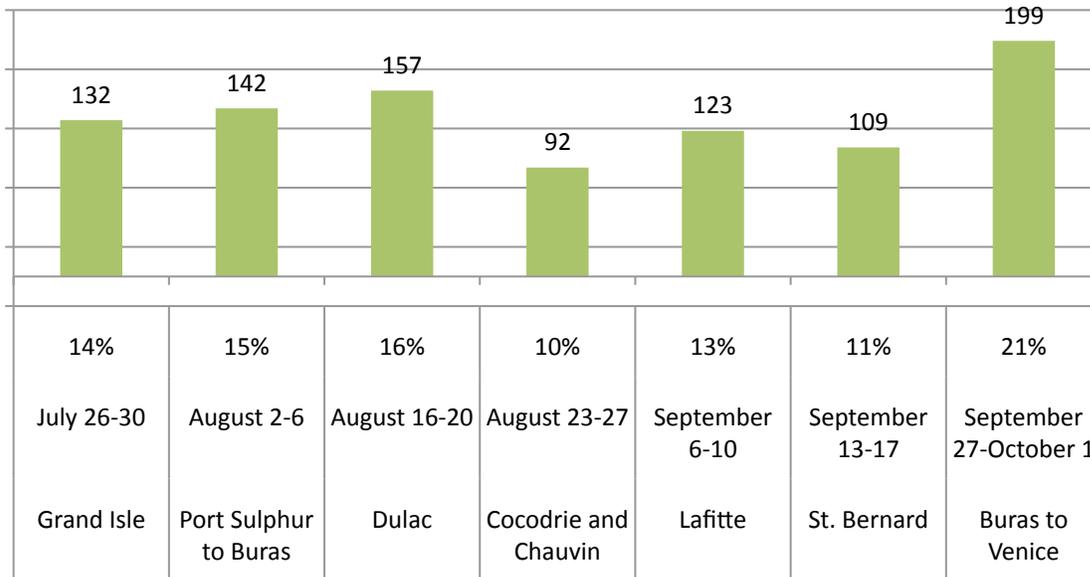


Figure 5.2 Number of Participants per Survey Site

Of the respondents comprising the entire survey population, 788 (82.6%) identified as permanent residents, 138 (14.7%) of the total respondents identified as either seasonal residents, tourists or visitors, oil response workers, locally employed or some combination not including permanent resident; these respondents are classified as temporary residents for this section. No response was recorded for 28 (2.9%) respondents as reflected within the unknown classification.

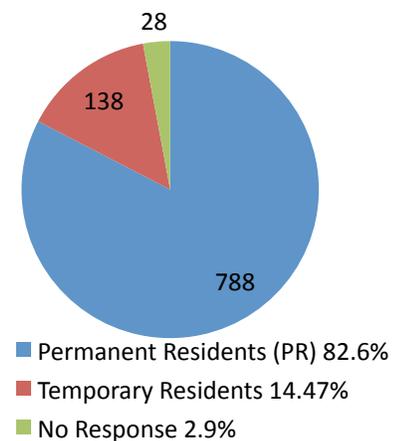


Figure 5.2 Residence Classification

Of the 954 respondents, 452 (47.4%) worked predominately outside, 226 (23.7%) primarily worked inside, 239 (25.1%) spent an equal amount of time inside and outside and 37 (3.9%) chose to leave this question blank. Also, 35-56.9% of each sub-population reported to spend the majority their day outdoors, 19.7-26.1% reported spending most of their day indoors, 18.9-38.9% reported spending equal amounts of their day indoors and out.

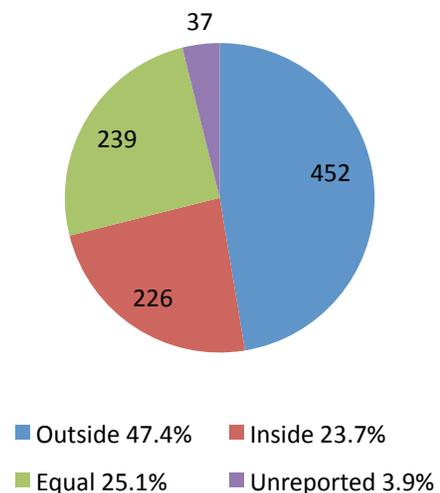


Figure 5.3 Location Where Time Spent Most During the Day

Presumptively, the presence of crude oil and dispersants in the Gulf of Mexico created an environmental health hazard primarily found outdoors. Respondents were asked to describe their predominant location throughout the majority of their day in order to gain some insight into potential outdoor exposure since respondents spending time outdoors may have a greater chance of exposure to oil and Corexit. An outdoor exposure hazard may also enter the indoor environment.

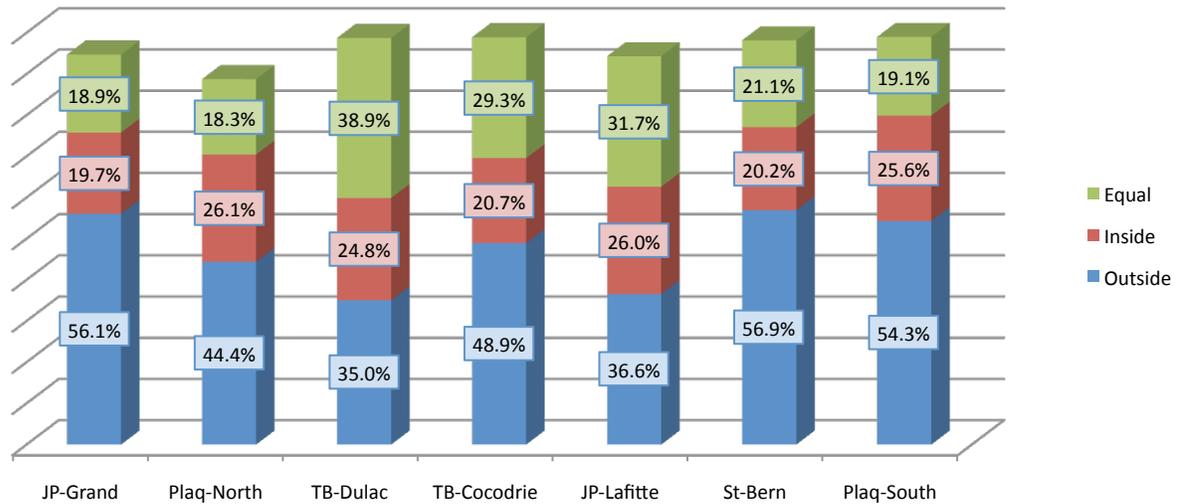


Figure 5.5 Cross-Comparison of Predominant Location (% of Subgroup)

## 5.2 Economic and Quality of Life Factors

Of the total respondents, 674 (70.6%) reported that they thought there had been a change in their community since the oil spill, 171 (17.9%) reported no change, while 105 (11%) did not provide an answer. After the conclusion of JP-Grand survey activities, subsequent respondents were asked to characterize the change in their communities. In total, 822 (86.2%) respondents were asked to choose the most appropriate description from the provided list.

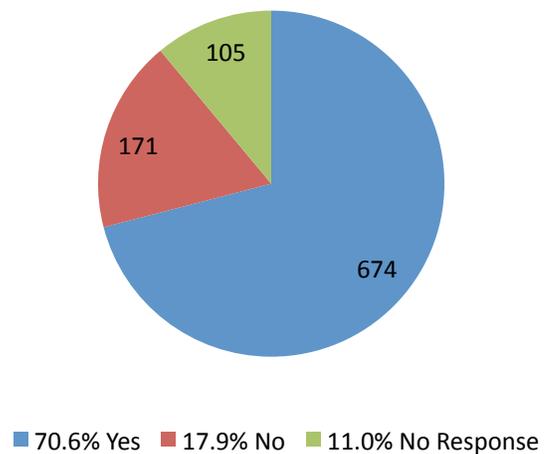


Figure 5.6 Observed Community Change

Collectively, 279 (33.9% of those questioned) stated that the change ranged from “A Lot” to “Drastically” while 189 (23% of those questioned) described the change as “somewhat” or “not much.”

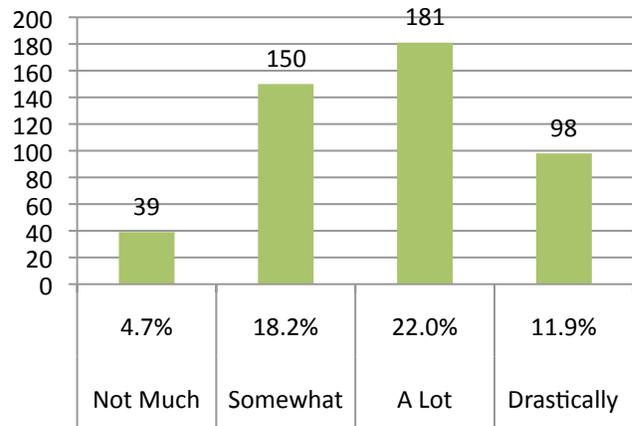


Figure 5.7 Description of Community Change

Of the 954 respondents, 512 (53.7%) had health insurance, 286 (30.0%) had no health insurance and 156 (16.4%) chose not to answer this question.

Additionally, 415 (43.5%) respondents reported that the livelihood of their household’s primary provider had been impacted by the spill, 332 (34.8%) reported no impact, and 75 (7.9%) did not record an answer. 132 (13.8%) respondents in Grand Isle were not asked this question. Also, 118 (12.4%) responded that they had considered moving.

Of the total respondents, 160 (16.8%) reported they were receiving disaster or economic assistance and 226 (23.7%) reported they were in need of economic assistance.

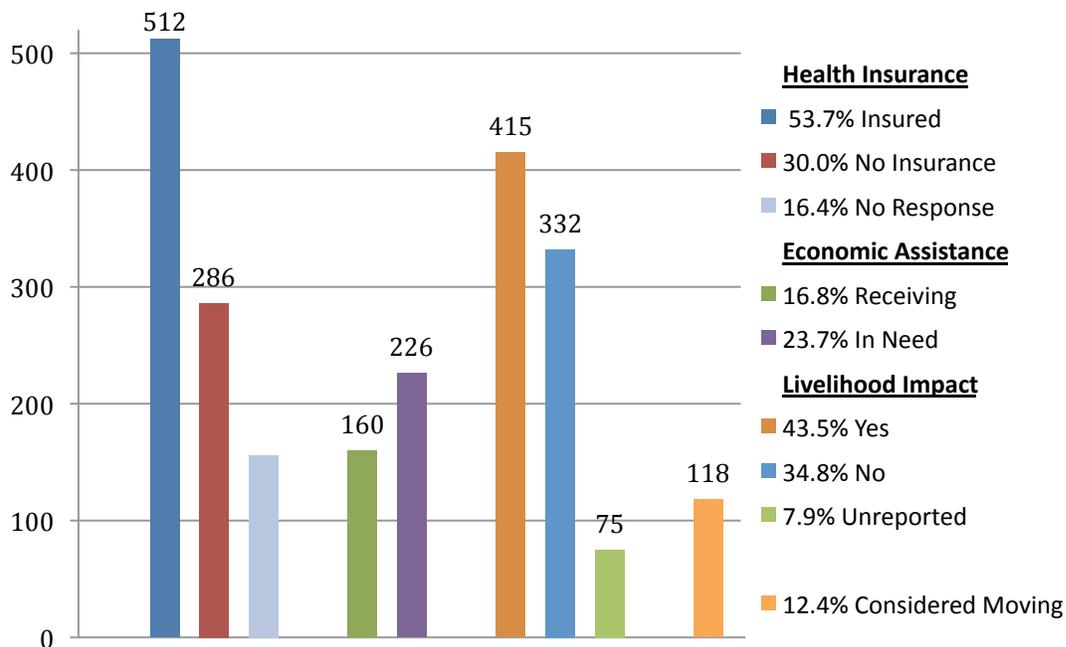


Figure 5.8 Health Insurance, Economic Assistance and Livelihood Impact

### 5.3 Exposure

The chemicals found within crude oil and Corexit range from highly toxic to relatively non-toxic to humans. The toxicity of hazards to human health is generally classified by the dosage necessary to negatively affect human health, representing a scientific estimation of the threat to the average person. Some people may be more or less sensitive.

Without medical or environmental testing at the time and location of a suspected incident, it is often difficult, if not impossible, to determine if an individual has been exposed to a specific environmental toxic. There was not enough environmental monitoring conducted in the impacted areas to document the extent of human exposure.

Respondents were asked if they believed they had been exposed to crude oil or dispersants and if they noticed any increase in symptoms. While 439 (46%) respondents reported they had been exposed to crude oil or dispersants, 515 (54%) responded that they had not. Regarding symptoms, 456 (47.8%) reported an increase in at least one symptom, while 498 (52.2%) did not.

Next we need to compare how these numbers relate to each other by examining how many respondents answered in the affirmative to both, neither or only one question. Of respondents, 314 (32.9%) reported both an increase of at least one symptom *and* a believed exposure; 125 (13.1%) reported an exposure without an increase in at least one symptom; 142 (14.9%) reported an increase in at least one symptom without a believed exposure; and 373 (39.1%) did not report an exposure and did not report an increase in symptoms. These figures are described in the table below.

It is expected that the highest percentages of respondents would respond to both lines of questions similarly. For example, we would expect that exposed persons would have symptoms, and un-exposed persons would not have symptoms. As we can see from the table, 71.5% (314) of the exposed respondents also reported symptoms. We can also see that 72.4% (373) of those who did not report an exposure also did not report any symptoms. From this data, we can see that the reported beliefs of exposure tend to be confirmed by the presence or absence of noticeable symptoms.

| Exposure | At Least 1 Symptom |     |
|----------|--------------------|-----|
|          | Yes                | No  |
|          | Yes                | 314 |
| No       | 142                | 373 |

Figure 5.9 Exposure Correlation to Symptoms

It is expected that the highest percentages of respondents would respond to both lines of questions similarly. For example, we would expect that exposed persons would have symptoms, and un-exposed persons would not have symptoms. As we can see from the table, 71.5% (314) of the exposed respondents also reported symptoms. We can also see that 72.4% (373) of those who did not report an exposure also did not report any symptoms. From this data, we can see that the reported beliefs of exposure tend to be confirmed by the presence or absence of noticeable symptoms.

If we expect that each respondent who had been exposed to either substance will develop symptoms, then we would expect to find a high percentage of the exposed developing symptoms and few of the unexposed reporting an unusual increase in symptoms. For the purposes of this section, we focus on an

assumption that a *noticeable* exposure should be consistent with a *noticeable* increase in symptoms; therefore, we compare the responses to these questions looking for consistency.

As stated above, approximately 70% of respondents fit our assumption in both respects; by answering both questions consistently in the affirmative and negative. This assumption and results would seem to support the conclusion that fewer than 30% of respondents were incorrect in their perceptions of their exposure or increase in symptoms. Respondents may have developed symptoms without noticing an exposure or may have been exposed without reporting a noticeable increase in symptoms. Given the subjective nature of the questions and other sources of error, it is only possible to conclude that these preliminary numbers tend to agree and are consistent.

Almost half of all respondents, 439 (46%), reported they believed they had been exposed to crude oil or Corexit. Regardless of the truth behind this belief, such a figure represents a large problem for public health agencies. Almost half of the sample population believed they were exposed to a toxic chemical. The percentage of each sub-population that reported being exposed ranged from 23.6% in TB-Dulac up to 61.8% in Plaqa-South. Half of the respondents or more in the JP-Grand (50%), Plaqa-North (54.2%), St-Bern (55%) and Plaqa-South (61.8%) areas report a believed exposure. Less than 40% of respondents in JP-Laffite (37.4%), TB-Dulac (23.6%) and TB-Cocodrie (32.6%) reported an exposure in that they did not believe they were exposed or had not responded to the question.

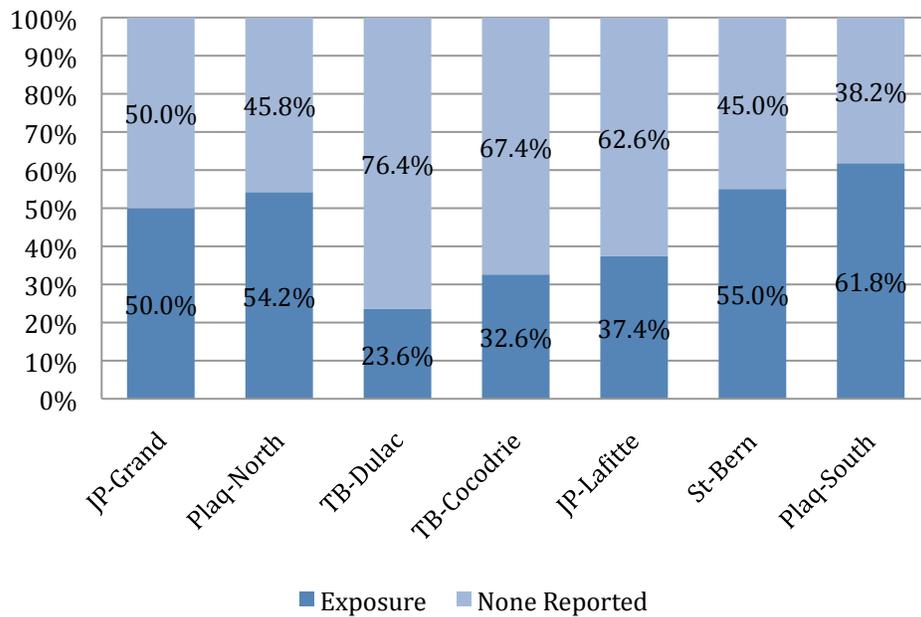


Figure 5.10 Percentage of Total Exposures

### 5.3.1 Outdoor/Indoors vs. Exposure

As stated above, 452 (47.4%) respondents spent their time predominately outside, 226 (23.7%) inside, 239 (25.1%) spent an equal amount of time inside and outside and 37 (3.9%) chose to not respond. In the context of toxics present in the outdoor environment, it is expected that individuals who spend their time predominantly outdoors would have a higher likelihood for exposure. This study is unable to medically determine if a respondent had been exposed to crude oil or Corexit; however, this study can examine how a respondent's beliefs of exposure relate to their predominant location throughout the day.

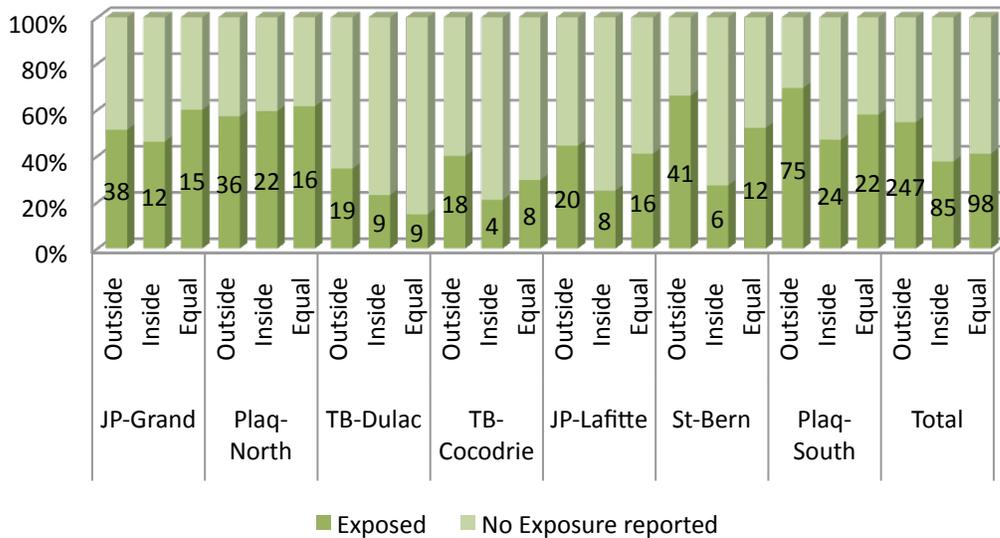


Figure 5.11 Reported Exposure Compared to Predominant Time Spent

### 5.3.2 Odors vs. Exposure

In total, 462 (48.4%) respondents reported an increase in odors, and 319 (33.4%) reported smelling a petroleum product in some form such as fuel, gas or diesel. The percentage of each sub-population detecting odors ranged from 28.3% in TB-Cocodrie to 64.8% in Plaq-South. Percentages of the other sub-populations were as follows: TB-Cocodrie 28.3%, TB-Dulac 31.2%, JP-Laffite 39.8%, St-Bern 49.5%, JP-Grand 53.8%, and Plaq-North 59.2%.

If smelling a chemical results in exposure to that chemical, we should expect that most if not all respondents who noticed an odor would also believe they had been exposed. Respondents were first asked if they had been exposed and later asked about odors. Percentages of respondents answering in the affirmative to odors and exposure ranged from 66.7% in TB-Cocodrie up to 84.6% in Plaq-South. Similarly, percentages of residents answering in the negative to both questions or were unresponsive to either or both ranged from 67.1% in Plaq-South up to 90.3% in TB-Cocodrie.

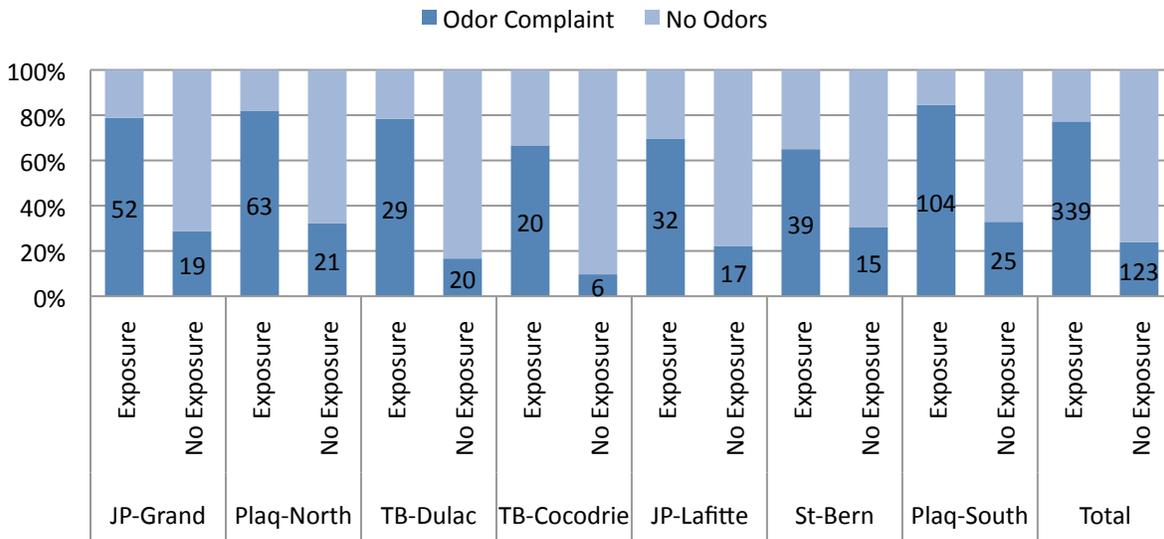


Figure 5.12 Exposure as Compared to Odor Complaints

As seen in figure 5.12 above, there is consistency in that more than half of respondents in each region surveyed answered consistently affirmative and consistently negative or unresponsive. This consistency seems to support an assumption that odor detection results in exposure. Although all odors were expected to accompany believed exposure, not all exposures were expected to be accompanied by odor complaints; therefore, odor complaints are not expected to comprise 100% of all exposures.

Percentages of respondents who reported odors but no exposure ranged from 9.7% in TB-Cocodrie up to 37.9% in Plaqa-South. This would seem to indicate that a subset of the sample population does not believe that smell results in exposure, or do not necessarily associate the smell of petroleum products with exposure to crude oil or their associated vapors. If we accept that the presence of petroleum odors signals an exposure to petroleum products, then a percentage of the sample population was unaware of their exposure or did not associate an increase in odors with potential exposure.

## 5.4 Symptoms

This cross-sectional survey was created with a few hypotheses in mind. First and foremost, it is hypothesized that toxic chemicals emanating from spilled crude oil and cleanup activities were present in the environment surrounding human activity. It was then hypothesized that humans in South Louisiana were exposed to these toxins. It was also hypothesized that the spill, the health threat and the cleanup activities were adversely impacting the quality of life in Southeast Louisiana. The survey questions were designed to examine these assumptions in a manner that can be analyzed statistically.

Medical professionals distinguish between a clinical *sign* and a clinical *symptom*. Signs are typically conditions that can be objectively discovered. For example, a blood test showing the presence of a foreign chemical would be a clinical sign of exposure to that chemical. If that chemical exposure caused a sensation of pain or caused a funny taste in the mouth, then those would be symptoms of the exposure.

The enumerators of this study were not medical professionals and not otherwise trained to distinguish between signs and symptoms or further evaluate a self-diagnosed symptom in any way. The data in this

section reflects only the self-reported increased occurrence of 10 different conditions. Respondents were asked if they had experienced an unusual increase in the described symptoms.

Out of 954 respondents, 456 (47.8%) reported abnormal increases of at least one symptom and 498 (52.2%) reported no symptoms or gave no answer. Additionally, 143 (15%) respondents reported consulting a medical professional regarding their symptoms. In total, respondents reported the highest increases in coughing bouts or difficulty breathing (27.4%), itching, watering or burning eyes (23.2%), headache (26.0%), and/or sinus or nose irritation (27.0%).

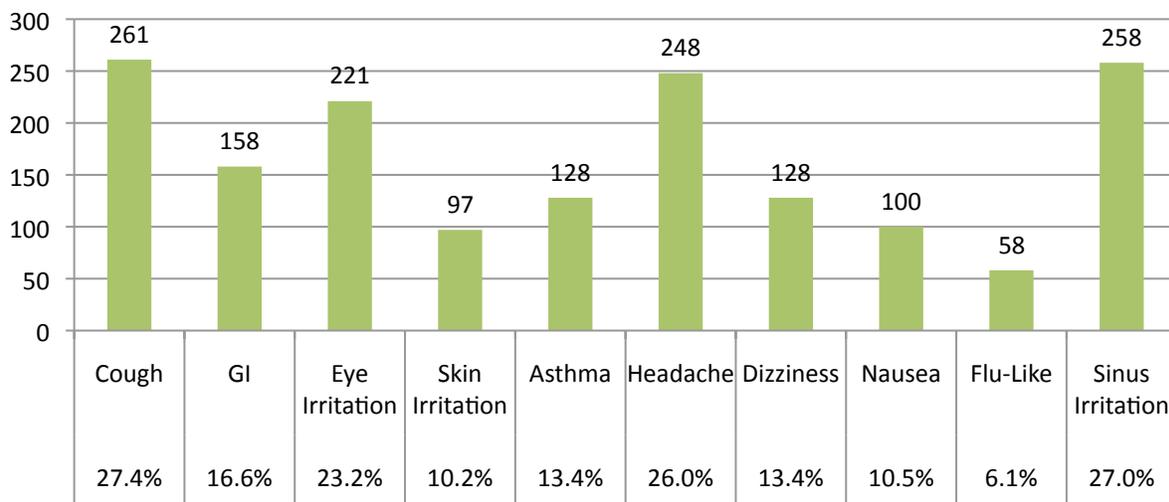


Figure 5.13 Total Reported Symptoms

The goal of symptom-related questions was to describe and raise awareness of a hypothesized emerging threat to public health.

A preliminary review of the reports shows that approximately 23-27% of respondents complained of increases in cough, eye irritation, headache and sinus irritation (Figure 5.13). It is difficult to determine the cause of these increases. It remains the responsibility of public health agencies to determine if such an increase in complaints is expected either for the area or the time of year or because of exposure to oil and dispersant.

#### 5.4.1 Exposure vs. Symptoms

A primary avenue of inquiry is the link between a believed exposure and noticed symptoms. A possible exposure is one of the potential causes when someone complains of the listed symptoms. It is a hypothesis that the environmental toxics associated with crude oil and Corexit are causing an increase of listed symptoms within the survey area. Accordingly, we would expect that most of the individuals reporting exposure would also report an increase of at least one symptom.

In this study, 439 (46%) respondents reported being exposed to crude oil or Corexit, 314 or 71.5% of those reporting an exposure also reported at least one symptom. The highest percentages of exposed individuals also identifying at least one symptom were JP-Grand (71.2%), Plaq-North (76.6%), St-Bern (81.7%) and Plaq-South (79.7%). Percentages for the remaining sub-populations were as follows: TB-Dulac 51.4%, TB-Cocodrie 56.7%, and JP-Lafitte 54.3%. Figure 5.14 below shows the relative percentages

of reported exposed respondents who are also reporting increases in at least one symptom, alongside relative percentages of no reported exposure and blank responses where the respondent also reported at least one symptom.

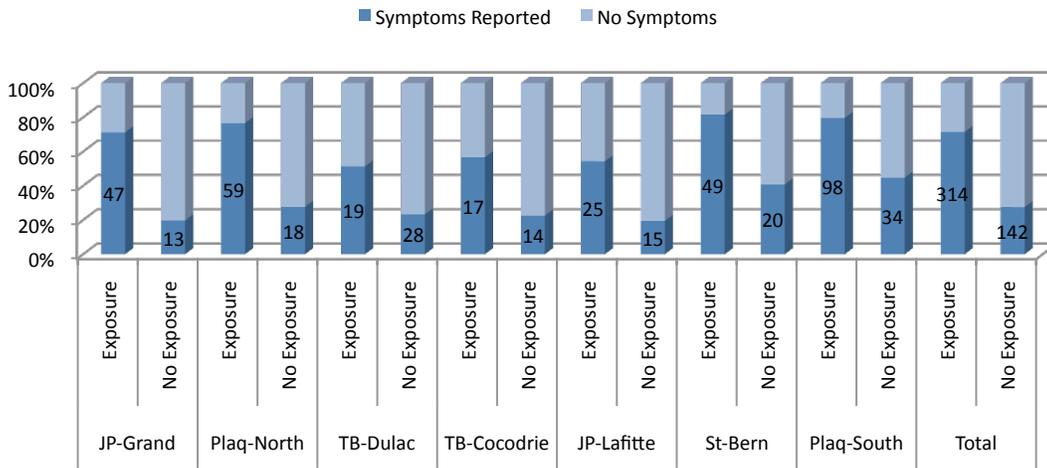


Figure 5.14 Symptoms Reported as Compared to Exposure

The majority of respondents who reported an exposure in each community also reported an increase of at least one symptom. This would potentially support a relationship between individuals reporting an exposure and individuals reporting at least one symptom. A difficulty is the percentages of respondents who did not describe an exposure or left the questions blank. Respondents reporting symptoms without also reporting exposure may potentially be unaware of exposure, or may be responding to some other stimulus.

#### 5.4.2 Seasonal Allergies vs. Symptoms

The four most commonly reported increased symptoms were cough, eye irritation, headache and sinus irritation. These symptoms are among the symptoms expected in the case of an irritant present in the environment. Crude oil or dispersant would be an irritant, as would an allergen that triggers seasonal allergies. Respondents were asked if they suffered from seasonal allergies prior to questioning regarding symptoms.

Out of 954 respondents, 322 (33.8%) reported suffering from seasonal allergies. Of the reported allergy sufferers, 192 respondents, or 59.6%, also reported an unusual increase in at least one symptom. Of the remaining 632 (66.2%) respondents who did not report seasonal allergies, 264 respondents, or 41.8%, reported an unusual increase in at least one symptom.

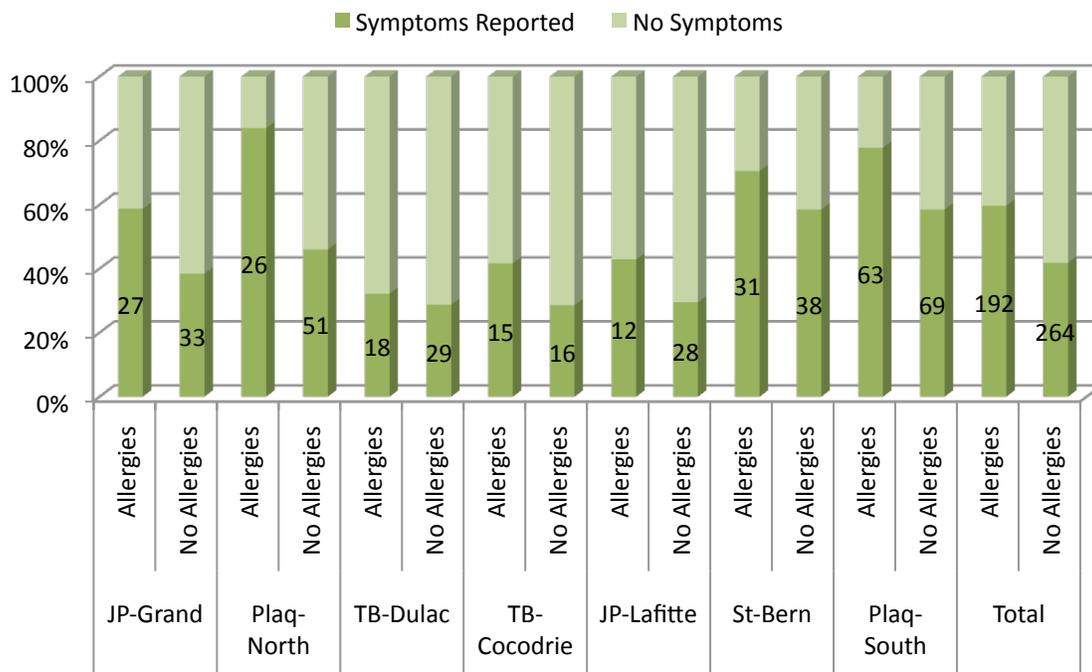


Figure 5.15 Symptoms Reported as Compared to Allergies Reported

The presence of seasonal allergies may have several potential affects on this study. In the case of an individual with seasonal allergies, the effects of naturally occurring allergens in the environment could compete with or mask the effects of allergens released into the environment as a result of the oil spill. For example, a respondent may attribute eye irritation to either exposure or a heavy allergy day. If the presence of seasonal allergies had no effect on this study, we would expect the relative percentages across each group to be fairly constant in the above figure. Differences in relative percentages ranged from 3.4% in TB-Dulac to 37.9% in Pla-q-North.

Seasonal allergies are often studied using statistics gathered from hospitals, clinics, and doctor visits. In the context of healthcare, seasonal allergies are often specifically diagnosed as hay fever, sinusitis, or chronic bronchitis. Hay fever is the most general condition and describes allergic rhinitis; both describe the symptoms commonly referred to as seasonal allergies. The Centers for Disease Control and Prevention released national estimates for these conditions, derived from the 2009 National Health Interview Survey<sup>16</sup>. The CDC estimates that in 2009, 8% of adults had been told they had hay fever, 13% had sinusitis, and 4% were told they had chronic bronchitis.

There are many different methods available to compare these findings with the national averages, each focusing on different aspects. It is most accurate to directly compare the seasonal allergy figures with the national estimates of hay fever, given that this represents the most general term. Regardless of the method used to compare, this study has found that the reports of seasonal allergies are higher than the national average. Further study is required to determine the role that seasonal allergies have played in this study.

### 5.4.3 Severity of Symptoms

As discussed above, many factors may lead to an increase in symptoms. It is possible that these symptoms may be caused by a toxic in the environment or they may be the result of a pre-existing condition, such as seasonal allergies. In order to help examine the role of pre-existing conditions, this study asked respondents to classify the severity of their symptoms.

When a respondent reported an unusual increase in a listed symptom, enumerators followed up with a question regarding the symptoms severity. Respondents were asked to classify the symptom as either sudden and severe or chronic and constant. Figure 5.16 below displays the total aggregate relative percentages of this classification.

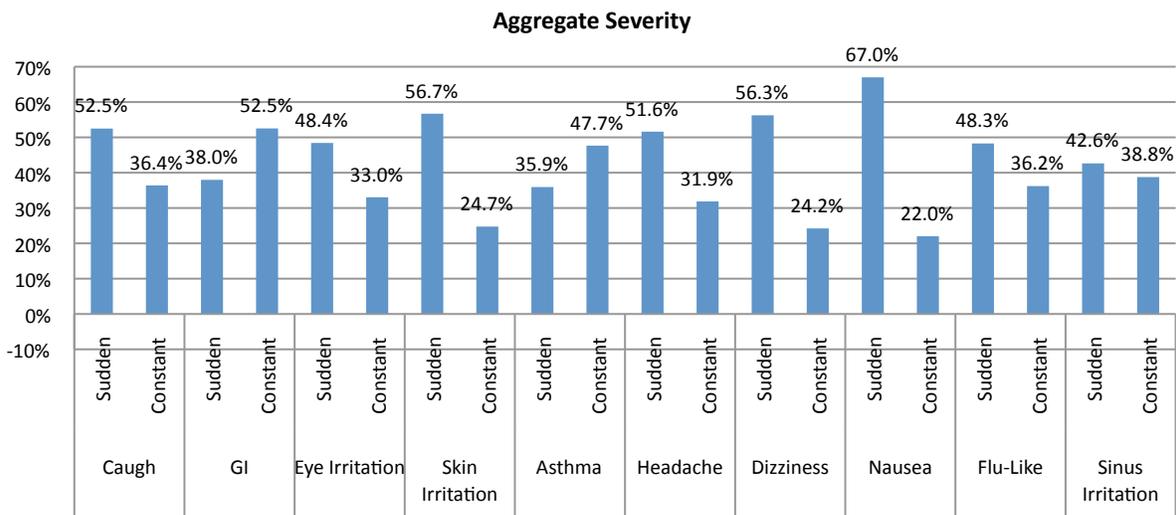


Figure 5.16 Severity of Reported Symptoms

When a person is exposed to a toxic in the environment, symptoms related to the exposure typically occur suddenly, over the course of minutes to hours and are often severe. Acute symptoms of an environmental poisoning typically subside as soon as the toxic is removed from the person's environment. As these symptoms were directly related to the person's exposure to a toxic, they do not reoccur unless the person is exposed again.

Symptoms of pre-existing conditions do not typically display this rapid course of development and are often chronically associated with a condition. Pre-existing conditions tend to cause chronic or reoccurring symptoms. These conditions are a constant threat to a person's health as opposed to being sudden and unfamiliar.

Symptoms commonly associated with pre-existing or chronic conditions should be expected to display a higher percentage of classification as chronic or constant – as is the case with asthma, which displays an 11.7% difference favoring classification as constant. Heartburn can be considered a frequently occurring symptom, and as expected showed a 14.6% difference favoring classification as constant. Although classification of these two symptoms displays somewhat expected results, they do not differ in classification as much as nausea.

Many conditions can cause frequent nausea; however, it was expected that nausea would be more closely associated with an environmental toxic and show a much higher percentage of the sudden/severe classification. Dizziness (32%) and skin irritation (32%) also displayed a higher percentage of classification as sudden and severe. Under the assumed presence of an environmental toxic, these results indicate that these symptoms may be the most informative when assessing exposure symptoms compared to pre-existing conditions.

Respondents were asked to characterize their unusual symptoms in order to help identify the most informative symptoms for subsequent study. In general, each of the expected symptoms displayed a higher percentage of classification as sudden and severe. This would tend to confirm the assumption of a toxic substance within the environment. More study is required to identify the length, type and amount of exposures of these affected individuals. The relatively high level of disparity in classification of nausea, dizziness and skin irritation would indicate that a future study of environmental contaminations should pay particular attention to these symptoms.

## 5.5 Treatment

There are many barriers that can prevent an individual from seeking care from a medical professional. These barriers could not only impact the ability to obtain care, but also the motivation to seek care. In this case, two specific barriers were examined for their impact on medical treatment for potential symptoms experienced and exposures.

In this study, it is hypothesized that the severity and perceived threat to an individual's health are closely tied to motivation to seek medical care. Specifically, it is hypothesized that the belief of exposure would not cause individuals to seek attention. Any exposure to a toxic chemical can produce health problems with a wide range of severity, depending on the amount of exposure. Exposures producing mild or non-obvious symptoms are not likely to cause an individual to seek medical care. Although exposures cause a threat to an individual's health, it is likely that an individual will only seek care if this exposure develops symptoms.

Respondents were questioned regarding medical treatment for both believed exposures and reported increase of listed symptoms. Respondents were first asked if they believed they had been exposed and a follow-up question asked if they had sought treatment for their exposure. Subsequently, respondents were asked if they had noticed any unusual increases in the listed symptoms. Respondents who reported at least one symptom were asked if they had sought treatment for their symptom.

In total, 14.8% of respondents who reported an exposure also reported seeking treatment for the exposures; compared to 31% of respondents who sought medical treatment for their symptoms. Percentages of respondents seeking treatment for believed exposures ranged from 4.3% in JP-Lafitte to 23.1% in St-Bern. Percentages of respondents seeking treatment for symptoms ranged from 36.8% in St-Bern to 29.5% in TB-Dulac.

As expected, total treatments for the perceived health threat of exposures was less than total treatments for the developing health threat of symptoms. A little more than half of all respondents who reported symptoms consulted a medical professional for their unusual increase in symptoms. This would seem to indicate healthcare providers were only consulted by half of the potential patients in the sample population, receiving only half of the overall picture.

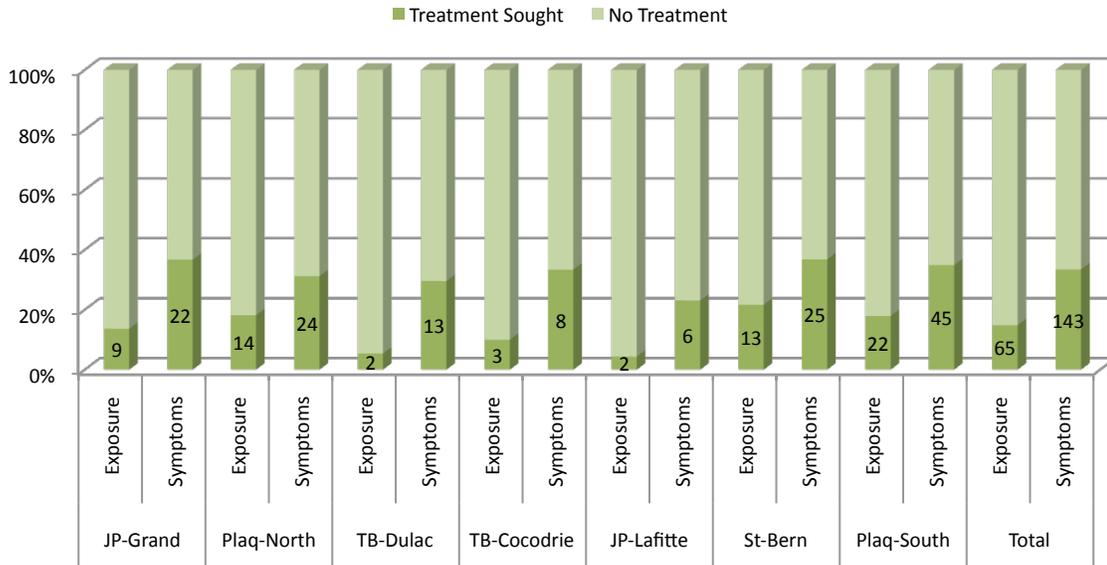


Figure 5.17 Treatment Sought as Compared to Exposure and Symptoms

### 5.5.1 Health Insurance vs. Treatment

The total percentage of treatments for exposures and symptoms would seem to indicate that other barriers exist to medical treatment. The lack of health insurance is a barrier to medical treatment. Respondents were asked if they had health insurance in order to determine if health insurance was tied to treatment seeking behavior for exposure or for the development of symptoms.

### 5.5.2 Treatment for Exposure

In total, 439 (46%) of respondents reported a believed exposure, of which 218 (22.9%) had health insurance and 221 (22.6%) did not report having insurance or left the question blank. Out of the 218 respondents who reported both believed exposure and health insurance, 13.5% sought medical treatment. Of the 221 respondents who reported a believed exposure and did not report having health insurance, 17.3% sought medical treatment.

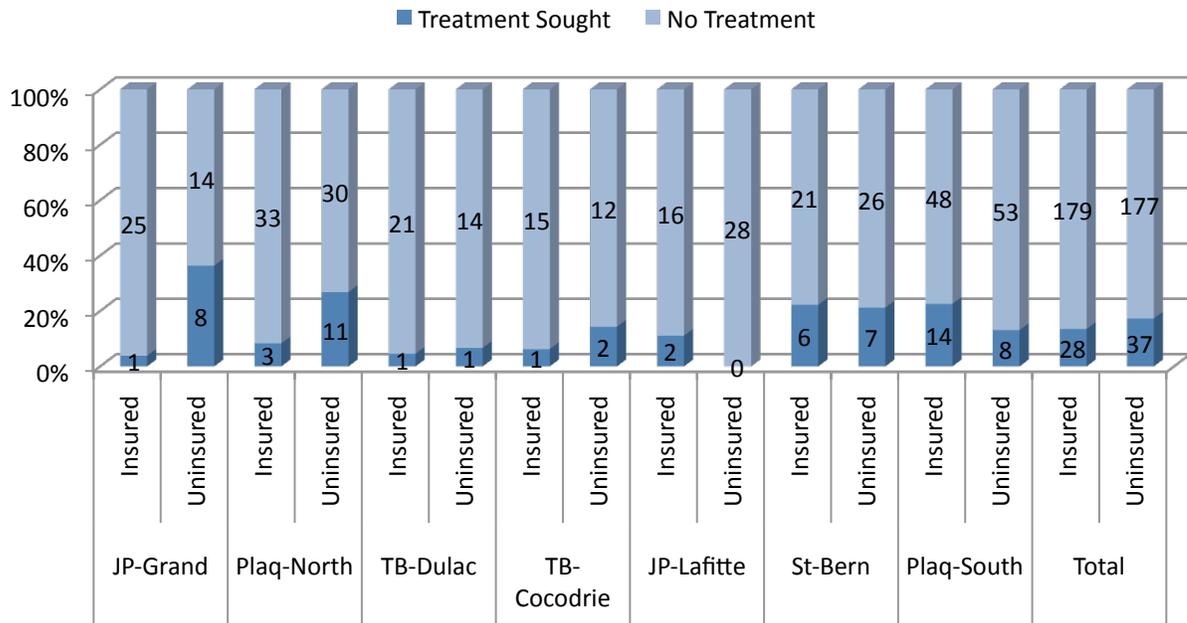


Figure 5.18 Treatment Sought for Exposure as Compared to Health Insurance Carriers

The sub-population in JP-Grand is clearly an outlier within this particular statistical study. Differences between percentages for each of the sub-populations ranged from 1% in St-Bern up to 18.5% in Plaq-North, with the difference in JP-Grand at 32.5%. Clearly some other factor is impacting this figure. The exact relationship between health insurance and treatment for exposure is unclear in this figure and additional study is required.

### 5.5.3 Treatment for Symptoms

In total, 456 (47.8%) of respondents reported an increase in at least one symptom, of which 230 (24.1%) reported having health insurance while 226 (23.7%) did not report having health insurance or left the question blank. Out of the 230 respondents who reported an increase in at least one symptom and health insurance, 40% sought medical treatment. Of the 226 respondents who reported an increase in at least one symptom and did not report having health insurance, 22.6% sought medical treatment. The difference in total percentages is 17.4%.

In this instance, the figure uniformly shows that in every sub-population, a higher percentage of individuals with insurance sought medical treatment. Differences in percentages between the insured and uninsured in each sub-population ranged from 3.8% in Plaq-North up to 28.8% in St-Bern. The remaining percentages are as follows: 7.0% in TB-Dulac, 8.5% in JP-Grand, 21.6% in JP-Lafitte, 21.8% in TB-Cocodrie, and 23.8% in Plaq-South. Consistently higher percentages of treatment among insured individuals would seem to indicate that health insurance might have acted as a barrier to medical treatment.

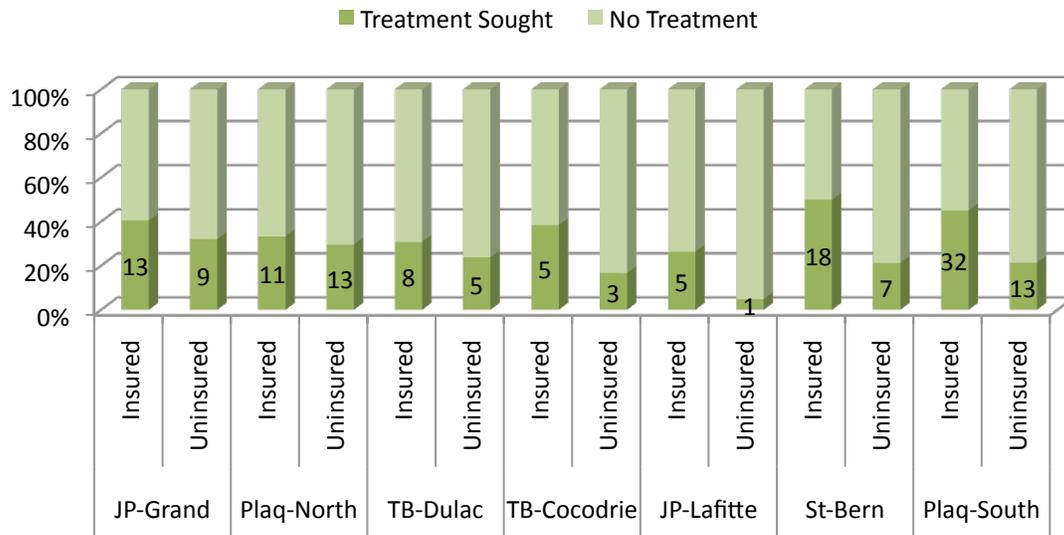


Figure 5.19 Treatment for Symptoms Sought as Compared to Health Insurance Carriers

### 5.5.4 Self-treatment

It was hypothesized that impacted individuals would choose to self-treat their symptoms using over-the-counter (OTC) medications. Respondents were asked if they had increased their use of five different types of over-the-counter medications. These types were eye drops, gastro-intestinal (GI) or stomach medications, cough, cold or allergy medications, and hydrocortisone-type skin creams.

In total, 297 (31.1%) respondents reported using over-the-counter medication more often than usual, 148 (15.5%) used eye medications, 136 (14.3%) used gastrointestinal medications, 212 (22.2%) used cough, cold or allergy medications and 23 (2.4%) used a skin cream.

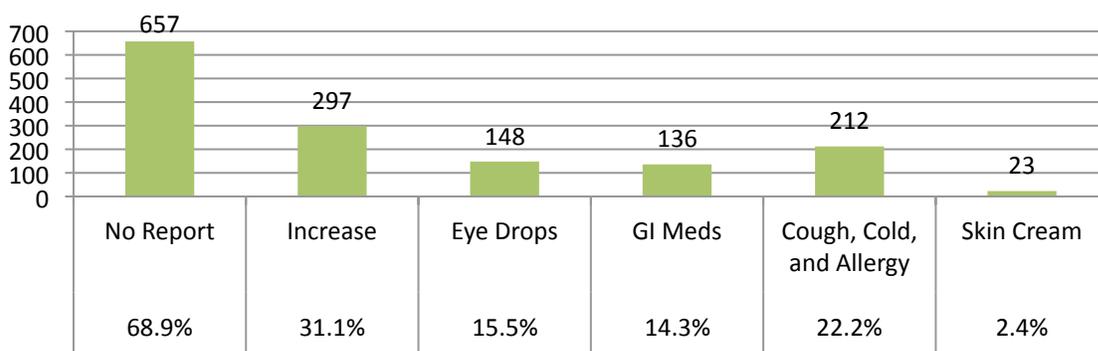


Figure 5.20 Increases in Over-the-Counter Medications

In context, 31.1% of total respondents increased their use of OTC medications, 47.8% of respondents reported an increase in at least one symptom, and 46% of respondents reported a believed exposure. Also, 22.2% of total respondents reported an unusual increase in cough, cold and allergy medication use.

As these medications do not require a prescription from a medical professional, the concern going forward is that self-treatment of individuals using OTC medication would not contribute to the overall understanding of health impacts from this disaster.

## 5.6 Special Questions

As the survey period progressed, new areas of concern were expressed to enumerators and volunteers. Two additional topics were introduced to the survey regarding the growing concerns of seafood contamination and the spraying of dispersants within communities. Responses to these questions were collected from the JP-Lafitte, St-Bern, and Plaq-South areas, which represent the period of September 6 to October 1, 2010. In total, 409 (42.9%) respondents were asked if they were concerned about these topics.

### 5.6.1. Seafood Concerns

Seafood is very much a way of life in Louisiana and residents rely on fishing both economically and recreationally. The Deepwater Horizon Oil Spill released millions of gallons of crude oil into the waters off the coast of Louisiana. The crude oil spread into the fishing grounds and marshes, which were closed. As the fishing grounds have reopened, it is unknown exactly how marine life would be affected.

Respondents were specifically asked if they were concerned about seafood contamination. Out of the 409 respondents questioned, 64.1% (262) answered in the affirmative, 24.9% (102) answered in the negative, and 11% (45) respondents choose not respond.

The relative percentages for answers in the affirmative ranged from 48.8% in JP-Laffite, 67.3% in Plaq-South, and 78.2% in St-Bern. Percentages for answers in the negative ranged from 14.9% in St-Bern, 25.2% in JP-Lafitte, and 29.1% in Plaq-South.

As seen in Figure 5.21, the majority of respondents (64.1%) expressed a concern about seafood contamination. Respondents in the JP-Lafitte and Plaq-South areas were almost twice as likely to be concerned about seafood rather than not concerned. Respondents in St-Bern were more than five times more likely to be concerned about seafood.

In the below responses, employment is listed as pre-spill/post-spill. If there is only one job listed, it is the current source of income. If there are no jobs listed, the individual chose not to respond.

#### Respondents in Plaq-South made the following comments:

- No one wants to buy seafood; you don't get a good price for your seafood. You don't know what is going to happen down the line with the effects of the disaster. (Commercial Shrimper/recently finished Vessels of Opportunity program: 9.29.10)
- "Nobody down here likes what is happening. Don't eat the fish this year." (Shrimper: 9.28.10)

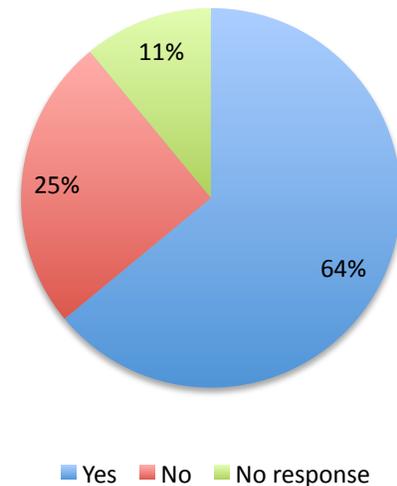


Figure 5.21 Seafood Safety Concern

- Friends are oyster fishermen. Vast areas of oysters dying like never before, not catching any female crabs with eggs. When his propeller hits the bottom it comes up with oil. In Bastian Bay he tried to fish instead of working for BP until he couldn't take people out fishing. (BP oil response worker: 9.29.10)
- People are under stress. There are too many people, not from here. Definitely not eating seafood; scared to eat all types. (Boat captain: 9.28.10)
- Fewer people buying fish. People think it's not safe. Devastated commercial fishing; even when locals can go out there are no buyers. Even people who work for BP had a problem getting paid, about 50%. (Security guard: 9.28.10)

**Respondents in Lafitte made the following comments:**

- He is concerned about contaminant suits. Why are they wearing them and he isn't? Regarding fishermen: shrimp prices are too low to support their livelihoods. "Why catch fish, shrimp when nobody is going to pay you for it?" (Dock worker/unemployed: 9.7.10)
- Scared to eat seafood, scared to buy it, especially oysters. Due to the oil spill, the fishermen and trawlers are unable to provide the seafood, which she cooks to feed the family. However, if they do catch it, she questions the safety of the seafood. Can she buy it? And if she and others do not buy it, the community's economy fails. (Bakery manager: 9.7.10)
- People are scared, dog eat dog. Job placement is tough. People are fighting each other for jobs. Scared about eating seafood until he knows it is safe. He said that even though most of the area is open for fishing, he would wait until the next generation since he has seen shrimping and crabbing happening while in the background workers are cleaning up oil. "No matter how bad it gets, we can live off the land. But now we can't." (Shrimper and fisherman/works with BP: 9.8.10)
- Fear of the future. Fear that the oil is going to get in the homes in the case of another hurricane. There is a lot of money, but you can't judge or say that it is over until you wait at least one shrimp life cycle. BP is lying about spraying dispersant in the Gulf. Never know what's actually happening there. Oysters and shellfish are going to be hardest hit. Crabs are smelling and tasting different. The future of the coastal communities doesn't look very good. Not until the federal government decides to help. (Retired: 9.8.10)

**Respondents in St. Bernard made the following comments:**

- Won't catch or feed crabs to family or other people. (Commercial fisherman/unemployed, BP settlement: 9.14.10)
- Scared to eat fish. Turning fishermen against each other to survive. (Boat captain: 9.14.10)

### 5.6.2 Dispersant Spraying

Scientific knowledge of dispersants, their use, effectiveness and potential for human and environmental harm continues to grow. Little information is publicly available regarding the exact usage of Corexit chemicals. Restorethegulf.gov reported on December 23, 2010, that 1.8 million gallons of dispersant had been used. An EPA publication<sup>17</sup> reports that use of dispersant had ceased on July 15, 2010, with a single exception on July 19, 2010. Residents in Grand Isle and Terrebonne Parish report dispersant spraying past this date.

Beginning 51 days after the reported end of dispersant use, respondents were asked, “Are you worried about dispersant spraying in your community post-well closure?” This question referenced the July 15 cap of the well. Out of 409 respondents, a total of 57.5% (235) answered in the affirmative, 32.5% (133) answered in the negative, and 10.0% (41) left the question blank or did not answer.

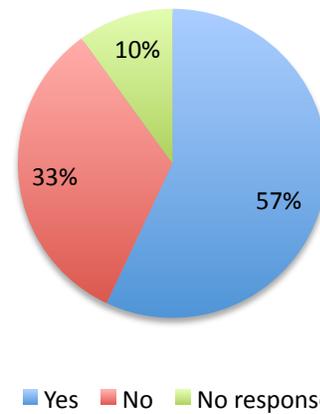


Figure 5.22 Dispersant Spraying Concern

The relative percentages for answers in the affirmative ranged from 43.9% in JP-Lafitte, 60.8% in St-Bern, and 69.0% in Pla-q-South. Percentages for answers in the negative ranged from 22.0% in St-Bern, 31.7% in JP-Lafitte, and 35.2% in Pla-q-South.

The relative percentages for answers in the affirmative ranged from 43.9% in JP-Lafitte, 60.8% in St-Bern, and 69.0% in Pla-q-South. Percentages for answers in the negative ranged from 22.0% in St-Bern, 31.7% in JP-Lafitte, and 35.2% in Pla-q-South.

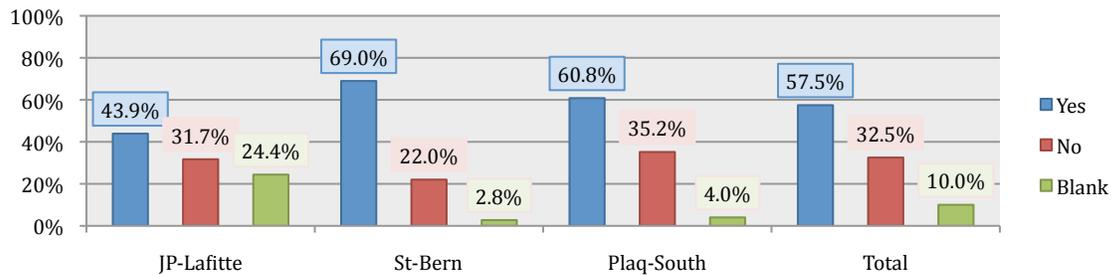


Figure 5.23 Concern with Dispersant Spraying in Each Community Surveyed

As seen in Figure 5.22 (above), the majority of respondents (57.5%) expressed a concern about dispersant spraying within their communities. Respondents in the JP-Lafitte and Pla-q-South sub-populations were about 1.5 times more likely to be concerned about dispersant spraying rather than not concerned. Respondents in St-Bern were 2.5 times more likely to be concerned about dispersant spraying within their communities.

### 5.7 Ongoing and Future efforts

Examination of the data set in order to identify further sub-populations based upon other factors, such as geographic location or demographics is an ongoing objective of this study in order to draw stronger conclusions and insights regarding specific communities within Southeast Louisiana. Statistical methods such as multivariate analysis, regression modeling and chi-square analysis may yield insight into correlations and relationships within the data set are currently being conducted.

## SECTION 6. RECOMMENDATIONS

A common thread among all disasters is that they highlight both the strengths and inadequacies of our response efforts and policies. In the wake of the Deepwater Horizon Oil Disaster, it is our responsibility to learn what could have been done differently, how future disasters such as this can be prevented or minimized, and to recognize and address the needs of affected communities in the years after the oil spill. From this survey, we have developed several recommendations for future community needs and research.

While these recommendations are made as next steps in the response to the Deepwater Horizon Oil Disaster, implementation would improve the state's disaster preparedness not just for this response, but for future emergencies and the legacy of pollution in the region as well.

The recommendations presented here represent an opportunity for the medical industry of the state. While these recommendations would cost the state in the short term, the long-term benefit would be prevention and, thus, financial savings for the state in the future. What's more, environmental health training, treatment and surveillance represent a potential growth industry for the state, especially in light of the new Veterans Administration Medical Center in New Orleans.

### **1. Create Access to Long-Term Health Care for Exposure-Related Illnesses**

On December 22, 2010, nine years after the terrorist attacks of 9/11, a bill to address the health problems of the first responders was finally passed. These responders today suffer from cancer, heart disease and other illnesses associated with exposure during the clean-up efforts.

Residents and clean-up crews along the Gulf Coast have experienced chemical exposure, as documented in this survey and in other reports. As noted by Greenwire journalist, Elana Schor, "In an under-the-radar release of new test results for its Gulf of Mexico oil spill workers, BP PLC is reporting potentially hazardous exposures to a now-discontinued dispersant chemical – a substance blamed for contributing to chronic health problems after the *Exxon Valdez* clean-up – among more than 20 percent of offshore responders."<sup>18</sup> Gulf Coast residents and clean up workers need follow-up health care. The example of the 9/11 first responders illustrates the challenge Gulf Coast residents will face to get such care.

### **2. Facilitate Access to Health Care Providers with Experience Diagnosing Chemical Exposure**

In total, 71.5% of respondents who believed they had been exposed to crude oil and dispersants *also* reported an unusual increase in symptoms that included headaches, eye irritation, difficulty breathing and nausea. The lack of medical personnel in the area trained to diagnose and treat health impacts of chemical exposure indicates affected residents did not receive proper medical care. We are additionally concerned about the lack of health facilities in coastal communities. A network of health care providers, familiar with the treatment of chemical exposure should be established and until that happens, a mobile treatment unit should visit the parishes on a weekly basis.

### **3. Ensure Continued Access to Mental Health Care**

Although there were few post-Exxon Valdez physical or mental health studies conducted, there was a noticeable rise in suicide and domestic violence in Alaskan communities impacted by the spill. The continued involvement of mental health professionals in communities and individual access to mental health professionals at medical facilities and other central community locations is suggested.

#### **4. Establish an Ongoing Public Health Surveillance**

Surveillance methods can be established that monitor clinical signs to alert practitioners of potentially widespread health concerns. Monitoring the demand, for example, of over-the-counter medications would be one way to find out about a spike in symptoms. Such surveillance programs should be funded and established in spill-affected communities to present and communicate clear and convincing evidence to the public regarding health threats.

#### **5. Train and Hire Local Residents to Conduct Independent Seafood Sampling**

During this survey, 64.1% of respondents said they were concerned about the safety of seafood despite government assurances. It is thus recommended that the establishment and funding of independent sampling, including the employment of local residents as samplers, be prioritized in recovery and coastal restoration funding allocations. Suggested support structures of independent community monitoring and sampling include training sessions, funding for coastal residents and assistance in the interpretation and use of data collected.

#### **6. Future Research Should be Action-Oriented in Collaboration with Communities**

Funding from the National Institute of Environmental Health Science, National Science Foundation, Environmental Protection Agency and others will bring a cohort of health-based research projects to the Gulf Coast to assess the impacts of this disaster. As researchers collect data from coastal residents, it is urged that research questions are established in collaboration with coastal residents. Disclosing health data to researchers should not simply be a one-way relationship. As many residents of the Gulf Coast have also expressed, health results should be accompanied by health care.

A true picture of the full extent of long-term economic impacts has yet to be established. The year 2010 was one of turmoil for the oil and seafood industry in Louisiana. The government authorized the opening and closing of fishing grounds in a schizophrenic manner that allowed access to only an assortment of seafood harvesting opportunities. The deepwater exploratory drilling moratorium cut off work for Louisianans employed by oil companies, yet BP employed many during the oil spill clean-up efforts. Of the respondents to this survey, 43.5% said their livelihoods had been impacted by the spill. It is suggested that with such a focus on the spill's public health implications, there should additionally be a reassessment of economic needs in affected families one year on. This type of research proposition would necessitate a stronger involvement from the social science fields in conducting quantitative and qualitative research that would inform both individual and community needs assessments moving forward.

#### **7. Pursue a Restoration Economy**

There is work that needs to be done in the wake of the Deepwater Horizon Oil Disaster. This work represents an employment opportunity for those whose livelihoods are at risk or destroyed. Among the possible jobs: environmental monitoring for the presence of oil, clean up of the oil as it appears, and ongoing sampling of seafood, water, air and sediment. Thwarting coastal loss is another aspect of a restoration economy. Employment possibilities include barrier island reinforcement, planting of marsh grasses and oyster reef construction.

#### **8. Improve the Claims Process**

In signing BP claims contracts, individuals have given up their rights to independently or collectively pursue BP for potentially more money than they would receive through the claims process. The claims process in many cases encourages residents to settle claims payments because of the immediate

necessity of financial support for job loss. As Kenneth Feinberg is now required to state that he is a contractor of BP, it is urged that there be an appeals process that involves local Gulf Coast representation. Local governments should have a voice on an appeals board with a staff of independent claims investigators that can collect evidence beyond paper records and curb fraud.

## SECTION 7. ACKNOWLEDGEMENTS

The Louisiana Bucket Brigade would like to thank the people of Southeast Louisiana for their participation in this study. This area has been surveyed repeatedly over the last five years because of hurricane impacts, yet people were genuinely appreciative of our work, welcoming to the volunteers and happy to share their stories. Special thanks to Jamie Billiot, director of the Dulac Community Center, the Landry family at the Grand Isle Sureway, Fremin's Food Market and Delta Drugs in Port Sulphur, Delta Marina in Plaquemines Parish, and Cecil Lapeyrouse Grocery in Cocodrie for hosting volunteers and acting as survey locations.

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## RESOURCES

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## APPENDIX

### A.1 Health Effects Associated with Crude Oil and Dispersant

#### A.1.1 Crude Oil

Crude oil is a mixture containing thousands of different chemicals and is often described based on the relative proportions of these chemicals. For example, the Deepwater Horizon had been handling Louisiana Light Sweet Crude oil. The terms “light” and “sweet” refer to a larger proportion of light chain hydrocarbons and a lower proportion of sulfur (sweetness). Petroleum products such as gasoline, kerosene and asphalt are extracted from crude oil through the refining process. These chemicals are most often separated based upon their different boiling points. “Gasoline” generally refers to all chemicals that boil and are collected when crude oil is heated between 40 and 200 degrees Celsius. Some of the chemicals in crude oil have significantly higher boiling points, such as the chemicals that make up jet fuel, while others have boiling points so low that they boil at less than room temperature. It is the lighter chemicals, those that are gases at room temperature, that often present the greatest risk to human health.

Louisiana Sweet Crude is often referred to as light because it contains a high amount of chemicals that have very low boiling points. When crude oil is spilled into the environment, many of these chemicals are exposed to the heat in the environment and will vaporize, or change into their gaseous forms. The term weathering refers to this process, where the lighter constituents of crude oil vaporize into the atmosphere. Humans can become exposed to these chemicals either by touching crude oil, or by inhaling the volatilized chemicals.

The health concerns associated with the Deepwater Horizon Oil Spill have recently centered on a class of chemicals known as Polycyclic Aromatic Hydrocarbons, or PAHs. These crude oil chemicals can enter the atmosphere through volatilization in nature or by the burning of crude oil. Lighter hydrocarbons, such as the ones present in Louisiana Sweet Crude, are relatively small and lightweight.

The toxicity of each PAH is best understood as dependant on the size of their molecules. Relatively heavy chemicals have large molecules, such as those found in asphalt, and are described as low toxic. Large and heavy molecules have a hard time entering the human body and do not have much opportunity to cause harm. Lighter chemicals, often gases at room temperature, have relatively small molecules that can enter the body through the lungs or even through skin. Given their small size and weight, these molecules can reach deep into the lungs and can cross into the bloodstream easily. PAHs can also enter the body through contact with contaminated soil or sediments, skin or eye contact and ingestion of food, water or other consumable particles including dust.

PAHs represent a human health concern in two different ways. When a human is exposed to PAHs, they can suffer immediate and long-term health effects. Generally PAHs are immediate irritants, so the first sign of exposure may be skin, eye, sinus, throat or respiratory irritation. Exposures to PAHs may present themselves as a sore throat, watery eyes, severe cough or headache similar to a cold or flu. Immediate exposures can sometimes be discovered through blood or urine testing; however, these samples are not

able to indicate future health effects or the direct source of contact.<sup>19</sup> Due to the difficulty in testing for exposure to PAHs, sometimes the only sign of exposure may be the initial irritation.

The long-term effects of PAH exposures are not well understood. Several of the chemicals that belong to this class of chemicals have been described as carcinogens. Others have been shown to cause damage to internal organs, such as the liver or kidneys. Long-term effects of exposure may be a result of a combination of risk factor considerations for adverse health effects such as how long an individual was exposed, how much you were exposed to, what the frequency of your exposure was, how you were exposed – did you inhale, ingest or come in dermal contact with PAHs. Age and lifestyle factors also play a role. Elderly, young children and those with ongoing health conditions are more at risk than other populations when they come in contact with PAHs.<sup>20</sup> PAH exposure may be linked to low birth weights or other birth defects in pregnant women.

The Agency for Toxic Substances and Disease Registry (ATSDR), under the US Department of Health and Human Services, maintains Toxicological Profiles for a variety of substances. The 1999 profile for “Total Petroleum Hydrocarbons” closely parallels the more recent publications regarding “Polynuclear Aromatic Hydrocarbons”, and comprehensively covers most if not all of the same substances. Many of the health effects described by the ATSDR profile are adapted in the table below.

|                                       |  |                                      |
|---------------------------------------|--|--------------------------------------|
| Nausea                                | Chemical Pneumonia                                     | Infertility                          |
| Vomiting                              | Skin Irritation and Damage                             | Nervous System Damage                |
| Diarrhea                              | Blood Cancer - Leukemia                                | Cardiovascular System Stress         |
| Dizziness                             | Central Nervous System Effects                         | Gastrointestinal Disturbance         |
| Confusion                             | Neurological Damage                                    | Endocrine Disruption                 |
| Loss of Balance                       | Blood Disorders  | Hormone Level Disruption             |
| Eye, Nose, Throat and Lung Irritation | Damage to Liver, Lungs, Kidneys and Respiratory System | Immune System Damage and Suppression |
| Difficulty Breathing                  | Aplastic Anemia  | Respiratory Impacts                  |
| Mutations and Birth Defects           |  |                                      |

### A.1.2 Heavy Metals

Heavy Metals: Crude oil is often contains varying amounts of inorganic compounds, which can contain heavy metals. The term Heavy Metal, is loosely defined, and can refer to many different naturally occurring elements. Examples of heavy metals are lead, mercury, arsenic, and cadmium; which are monitored by Louisiana Office of Public Health. Compounds containing heavy metals can often become a danger when ingested through food or released into the atmosphere through burning. For example, fish can accumulate high amounts of mercury, and the burning of leaded gasoline introduced a significant amount of lead into the atmosphere. Crude oil can contain many different heavy metals depending on where it is obtained. Depending on the amount and type of heavy metal compound, exposure can result in a variety of symptoms.

More information on heavy metal poisoning can be obtained at:  
<http://www.atsdr.cdc.gov/toxfaqs/index.asp#H>

More information and a copy of the Toxicological Profile can be found at:  
<http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=75>

### A.1.3 Corexit

The use of Corexit as a dispersant during the Deepwater Horizon Oil Disaster response has been surrounded by controversy despite government assurances of safety. The health effects of exposure to Corexit are not established.

Corexit refers to a line of chemical solvents rather than a single chemical mixture, two different formulations of which have been used in the oil spill response. Relatively few studies have been performed on Corexit itself; however, the individual chemicals used in the formulation of Corexit have been studied. Of particular note is the ingredient 2-butoxy ethanol which has been shown to cause adverse human health effects.<sup>22</sup> While studies do exist for many of the components of Corexit, it is important to note that the combination of these chemicals may have a synergistic impact beyond the effects of a single chemical.

| <b>Potential Health Effects of Exposure to Corexit<sup>23</sup></b> |  |   |
|---|--|---|
| Headaches   | Difficulty Breathing                       | Neurotoxic Effects  |
| Nausea  | Respiratory System Damage                  | Damage to Red Blood Cells                                   |
| Vomiting  | Rapid Breathing                            | Genetic Damage and Mutations                                |
| Diarrhea  | Asthma Attacks                             | Reproductive and Developmental Damage                       |
| Abdominal Pains   | Allergic Reactions                         | Immune System Damage  |
| Dizziness   | Skin Irritation, Damage, and Sensitization | Cardiac Arrhythmia  |
| Chest Pains and Tightness   | Hypertension                               | Cardiovascular Damage                                       |
| Eye, Nose, Throat and Lung Irritation                               | Damage to Liver and Kidneys                | Increased Severity of Chronic Obstructive Pulmonary Disease |
| Decreased Lung Function   | Central Nervous System Depression          |   |

## A.2 Survey Template

Date \_\_\_\_\_

Parish \_\_\_\_\_

ZIP \_\_\_\_\_



Staff Initials \_\_\_\_\_

Name \_\_\_\_\_  
(optional)

**Q1.** What town or area do you live in? \_\_\_\_\_ **Q2.** Work in? \_\_\_\_\_

**Q3.** Address or Nearest Intersection to your home \_\_\_\_\_

**Q4.** Are you a: (circle one)  Permanent area resident  Seasonal area resident  Visitor/Tourist  
 Oil response worker  Locally employed  
\*\*\*

**Q5.** Are your days spent predominately **outside** in an open environment, exposed to the elements, or **inside** a building or structure protected from the elements? (Circle one) Outside or Inside or About equal  
\*\*\*

**Q6.** Do you believe you have been exposed to crude oil or vapors? (Circle one) Yes No No-response

**Q7.** Do you believe you have been exposed to dispersant or Corexit? (Circle one) Yes No No-response  
Describe your exposure:  
**7b.** Are you worried about dispersant spraying in your community post-well closure? Yes No No-response  
If **yes**, please describe:

**Q8.** Have you sought medical treatment for this? Yes No N/A No Response **from a** MD Other-Professional  
\*\*\*

**Q9.** Do you have health insurance? Yes No No-Response **Q10.** Do you have seasonal allergies? Yes No No-Response

**Q11.** Since the Oil Spill, Have you experienced any of these symptoms **more often than usual**

|  | Y/N                      | Sudden Severe            | Chronic Constant         |                          | Y/N                      | Sudden Severe            | Chronic Constant         |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Coughing bouts or difficulty breathing   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Headache                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Heartburn or similar stomach problems    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Dizziness                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Itching, Watering or Burning Eyes        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Nausea or Vomiting       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Strange rashes or other skin irritations | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Pneumonia or flu         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Asthma or shortness of breath            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Sinus or Nose irritation | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Q12.** Have you been treated by a physician for any of these **unusual** symptoms?(circle) Yes No No-Response N/A

**Q13.** Did you ask your physician about exposure to crude oil or associated vapors(circle) Yes No No-Response N/A

**Q14.** Related to these symptoms has a doctor or other medical professional advised the use of:  
Prescription medications:  Yes  No  No-Response  N/A **by an**  MD  other professional  
Over-the-counter medications:  Yes  No  No-Response  N/A **by an**  MD  other professional

**Q15.** Have you used any of the following **over-the-counter** medications **more often than usual**? (Check all that apply)

|                                | Yes                      | No                       |                                     | Yes                      | No                       |
|--------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|
| Eye Drops for Allergy          | <input type="checkbox"/> | <input type="checkbox"/> | Heartburn or Indigestion Medication | <input type="checkbox"/> | <input type="checkbox"/> |
| Visine                         | <input type="checkbox"/> | <input type="checkbox"/> | Pepto-Bismol                        | <input type="checkbox"/> | <input type="checkbox"/> |
| Bausch and Lomb's Opcon-A      | <input type="checkbox"/> | <input type="checkbox"/> | Tums                                | <input type="checkbox"/> | <input type="checkbox"/> |
| Clear Eyes (ACR)               | <input type="checkbox"/> | <input type="checkbox"/> | Maalox                              | <input type="checkbox"/> | <input type="checkbox"/> |
| Other _____                    | <input type="checkbox"/> | <input type="checkbox"/> | Other _____                         | <input type="checkbox"/> | <input type="checkbox"/> |
| Allergy & Other Medications    |                          |                          |                                     |                          |                          |
| Clairton                       | <input type="checkbox"/> | <input type="checkbox"/> | Mucinex                             | <input type="checkbox"/> | <input type="checkbox"/> |
| Benadryl                       | <input type="checkbox"/> | <input type="checkbox"/> | Delsym                              | <input type="checkbox"/> | <input type="checkbox"/> |
| Robitussin                     | <input type="checkbox"/> | <input type="checkbox"/> | Antihistamine (Brand _____)         | <input type="checkbox"/> | <input type="checkbox"/> |
| Tylenol Products (type: _____) | <input type="checkbox"/> | <input type="checkbox"/> | Hydrocortisone Cream( brand _____)  | <input type="checkbox"/> | <input type="checkbox"/> |

**Q16.** Other Medications(optional): \_\_\_\_\_

Date \_\_\_\_\_

Staff Initials \_\_\_\_\_

**\*\*\*Optional Demographic Information\*\*\***

Age\_\_\_\_ Sex\_\_ Ethnicity\_\_\_\_\_ Highest level of education\_\_\_\_\_ Marital Status\_\_\_\_\_

Are you the Primary Provider for your Household? Y or N How many people live in your household (including you)\_\_\_\_

How many people in your household are above 18 years old?\_\_\_\_\_ How many are younger?\_\_\_\_\_

Annual household income (circle one) N/A No-response

\$0-25,000 \$25,000-50,000 \$50,000-75,000 \$75,000-100,000 +\$100,000

**Q17.** Since the Oil Spill, did you notice an **unusual** increase in smells or odors?  Yes  No  No-Response  
(*examples:* Citrus-type Cleaner, Rotten Eggs, Gasoline, Fuel, Liquid Dish Soap, or Dry-cleaning Chemicals)  
If so, please describe:

\* Are you concerned about seafood contamination? Yes No No-Response  
If **yes**, please describe (including contamination in which types of seafood)

\*\*\*Please answer for your Household's **Primary Provider**: (indicate if *No Response* or Not applicable)\*\*\*

**Q18.** Has your livelihood been impacted by the Oil Spill?  Yes  No  No-response  N/A

Occupation/Main Source of Income *before the spill*? \_\_\_\_\_

*Current* Occupation/Main Source of Income? \_\_\_\_\_

If **unemployed**, do you anticipate finding work within the next  3-months  6-months  12-months  More

Please describe the impact on your livelihood:

**Q19.** Due to the oil spill are you or your family considering moving?  Yes  No  No-response

If yes, are you able to move within:  3-months  6-months  12-months  Unable  N/A

Are you considering a move to a different:  town  parish  state  country  N/A

Please Describe:

**Q20.** Is your household **currently accepting** economic or disaster assistance?  Yes  No  No-response  N/A

Is your household **currently in need** of economic or disaster assistance?  Yes  No  No-response  N/A

If desired, what kinds of assistance would you consider accepting? And from what organizations or agencies?

**Q21.** Do you feel that your community has changed since the oil spill?  Yes  No  No-response  N/A

If so, how much has it changed?  Not Much  Somewhat  A lot  Drastically

Please describe the change:

**Q22.** Please describe any specific activities that you or your family is no longer able to do because of the oil spill

The Information you have provided will be used to better understand the effects of an oil spill and its economic affect on communities. Every effort will be made to protect the anonymity and integrity of the information you have provided. Your name and any information specific to your identity will not be published, shared or sold in order to protect your privacy. Analysis of the data collected and portions of this survey response may be reproduced on the LABB website as well as other media. Your signature below acknowledges that you have read and understood this survey and will allow the LABB to use this information for the purpose of this study, the oil spill crisis map, and any other lawful purpose.

Signature \_\_\_\_\_ Date \_\_\_\_\_