

**Community Assessment for Public Health Emergency
Response (CASPER) after the Gulf Coast oil spill:
Alabama, 2010**

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BACKGROUND

On April 20, 2010, the Mobile Offshore Drilling Unit (MODU) Deepwater Horizon exploded 40 miles south of the coast of Louisiana. This event resulted in 11 deaths, 17 injuries, and the largest marine petroleum release in history. Over the following 3 months, over 4.9 million barrels of oil were released into the Gulf of Mexico. Although the oil well was capped on July 15, 2010, stopping the flow of oil into the ocean, the released crude oil has prolonged negative effects on marine biota. The proximity of the well to the lucrative fishing industry of the Gulf States, popular coastal tourist attractions, and fragile estuarine, marsh, and protected ecosystems placed these resources in jeopardy of contamination and destruction. This released oil has detrimental consequences for the fishing, oil, and tourism industries of the Gulf coast, as well as potential health hazards for those exposed to or affected by the oil spill. Public health surveillance for adverse exposure-related outcomes was ongoing from April 20th in coastal area emergency departments, urgent care facilities, and community health centers. However, public health officials were concerned that some health effects, particularly mental health outcomes, were not adequately captured by these surveillance systems. To address these concerns, Alabama Department of Public Health (ADPH) in association with the Alabama Department of Mental Health (ADMH) requested CDC assistance in conducting an assessment of needs in two specific Gulf coast counties.

On 26 August, 2010, Danielle Buttke, DVM, PhD, MPH, EIS Officer departed for Mobile, Alabama. Nancy Fleischer, PhD, MPH, EIS Officer, Sara Vagi, PhD, Research Scientist, Michelle Podgornik, MPH, Epidemiologist, Tara Strine, MPH, PhD, epidemiologist, Deborah Gould, PhD, epidemiologist, and Jeneita Bell, MD, MPH, EIS Officer, departed the following day. They joined Melissa Morrison of the Alabama State Public Health department and the Mobile and Baldwin Counties' public health department employees in Mobile and Baldwin Counties. The goals of the needs assessments were to determine the general and mental health needs of the community following the Deepwater Horizon oil spill and to provide the Alabama state and local public health officials with information to guide response and allocation of resources.

METHODS AND MATERIALS

Sampling

In order to accomplish these goals, CDC utilized the Community Assessment for Public Health Emergency Response (CASPER) method in two Gulf Coast communities. CASPER is an epidemiologic technique designed to provide household-based information about an affected community's needs after a disaster quickly and at low cost. This information can then be shared in a simple format with decision-makers. A two-page data collection instrument was developed in coordination with the state Career Epidemiology Field Officer and Mobile and Baldwin county public health officials. The survey instrument included questions regarding respiratory, cardiovascular, dermatologic, and other physical symptoms and signs that had arisen or worsened in the previous 30 days, standardized questions on quality of life, mental health, and social context, as well as individual and household level exposure questions related to the oil spill (see Appendix A).

CASPER uses a two-stage probability sampling method to select a representative sample of 210 households to be interviewed. In the first stage, 30 clusters are selected from the sampling frame

and in the second stage, seven households are randomly selected from each of the 30 clusters. In Mobile County, 30 census blocks were selected from within the pre-defined sampling frame which included the coastal zip codes of 36523, 36509, 36528 representing the cities of Bayou La Batre, Coden, and Dauphin Island (Appendix B). The blocks were selected with a probability proportional to number of households within the census block. Similarly, 30 census blocks were selected from the predefined sampling frame of Baldwin County which included the area south of state highway 98 and the area of Point Clear (Appendix C). Detailed maps of each selected block were provided to the interviewers, and they were instructed to select the housing units for the seven interviews using a standardized method for randomization. Additionally, the interviewers also completed confidential referral forms whenever they encountered urgent physical or mental health needs and distributed information on mental and physical health resources.

The two CASPER surveys were conducted separately. Mobile County survey teams were trained on August 26, 2010. Data collection was conducted in Mobile County on August 27 by 14 teams of two persons each. For Baldwin County, 21 survey teams of two people were trained on August 27, 2010, with data collection on August 28, 2010. For both counties, the teams primarily consisted of local public health and mental health staff, with assistance from the CDC staff. Each team attempted to conduct seven interviews in each of the 30 census blocks selected for the sample, with a goal of 210 total interviews per county. Residents were considered eligible respondents if they were at least 18 years of age or older, were residents of the selected household, and had lived within the community sampled for at least 30 days. We conducted weighted cluster analysis to report the estimated number of households affected in the assessment area (Tables 1-3). Two weighting variables were calculated, one to account for the probability that the responding household was selected and one to account for the probability of selecting the individual respondent within the household. Results of each interview questionnaire were weighted appropriately based on whether the question referred to the individual or to the household. All percentages presented in this report are calculated using the sampling weight.

Questions regarding mental health were taken from the national Behavioral Risk Factor Surveillance System (BRFSS) and administered at an individual level (Tables 10-12). The quality of life questions (Table 10) were compared to data collected using the identical question in the 2008 BRFSS in Alabama and nationally. The depressive symptom questions are taken from the PHQ-2 scale, which has a sensitivity of 83% and a specificity of 92% for major depression when using a cutoff of $>$ or $=3$ (1). The anxiety questions are taken from the GAD-2 scale, which has a 92% sensitivity and 76% specificity for generalized anxiety disorder, and a 65% sensitivity and 88% specificity for any anxiety disorder when using a cutoff of $>$ or $=3$ (2). The depressive symptom (Table 11) questions were taken from the 2006 BRFSS in Alabama, and 41 states or territories (this question was last administered by BRFSS in 2006 and not included in the 2008 BRFSS). The social context questions (Table 12) were compared to data from the 2008 BRFSS in Alabama and in 8 states. In CASPER, these questions asked the respondent to answer “in the last 4 months, how often were you worried about...” whereas in BRFSS the question is asked “In the past 12 months.” The time frame was changed for CASPER to assess social context since the oil spill, rather than the past year.

RESULTS

Mobile County

Interview teams completed 128 interviews out of the target of 210 households in Mobile County for a completion rate of 61% (Table 1). Teams completed interviews in 36% of the houses selected, with 70% of the respondents who answered being eligible or willing to complete an interview. The mean age of respondents was 53.8 years of age (Table 2), with 45.6% of respondents being male and 54.5% female. In Mobile County, 76.7% of respondents identified as white, non-Hispanic, 3.3% black, non-Hispanic, 17.3% Asian, and 2.6% identifying as other race or ethnicity. The majority of households (63.3%) have lived in the community for 11 years or more, with 13.3% residing there for 6 to 10 years, 18.8% residing there for 2 to 5 years, and 3.9% of respondents living in the community for one year or less. The average household size was 2.7 individuals, with a range of 1 to 8 individuals. The majority of household members were between 41 to 65 years of age (55.5%). Over 1/3 of respondents reported annual household income less than \$25,000 (See Table 3).

Of the households reporting in Mobile County, 58.3% of households interviewed reported having at least one person in the household experiencing one or more respiratory conditions in the 30 days prior to the survey (Table 4). Of these, nasal congestion was the most commonly reported symptom, with 33.5% of households reporting at least one person with nasal congestion followed by 30.7% of households reporting at least one person with cough.

In Mobile County, 26.6% of households interviewed reported having at least one person in the household experiencing at least one or more cardiovascular symptom in the previous 30 days (Table 5), with worsening of existing high blood pressure the most common symptom (12.4% of households).

In addition to these respiratory and cardiovascular symptoms, 16.6% of households reported having a skin condition in the past 30 days, and 17.2% reported experiencing an eye condition in the previous 30 days (Table 6). Mental and behavioral health-related symptoms reported by household are shown in Table 7, including 26.4% of households reporting at least one person with trouble sleeping or nightmares and 22.2% reporting at least one person with agitated behavior. Types of medical facilities where households with any reported condition sought medical help are shown in Table 8. Households reported seeking medical help from healthcare facilities in Mobile (14 households), Bayou La Batre (11 households), and Coden (1 household).

Within Mobile County, 30.4% of households in the sampling frame have children. Of the households with children, 10.1% reported children having problems sleeping or nightmares, 4.6% reported having problems getting along with other children, and 6.9% of children having been sad or depressed (Table 9).

Mental health-related questions were asked on the individual level and presented in Tables 10-12. In general, a higher proportion of reports were for poor mental health in this survey as compared to BRFSS in 2008 in Alabama and nationally. Within Mobile County:

- 19.7% of respondents reported greater than or equal to 14 physically unhealthy days in the previous 30 days. This compares to 13.9% of respondents in all of Alabama in 2008.

- 22.8% of respondents reported greater than or equal to 14 mentally unhealthy days in the previous 30 days. This compares to 13.1% of respondents in all of Alabama in 2008.
- 12.9% of respondents reported greater than or equal to 14 days of limited activity or self care due to physical or mental health conditions in the past 30 days. This compares to 8.7% for all of Alabama in 2008.
- 24.2% of respondents reported one or more symptoms of depression. This compares to 13.9% for all of Alabama in 2006.
- 24.3% of respondents reported one or more symptoms of anxiety. No comparison data are available for symptoms of anxiety.
- 16.4% of respondents reported always worrying about having enough money to pay the rent or mortgage within the previous 4 months.
- 12.2% of respondents reported always worrying about having enough money to buy nutritious meals

The following questions were asked of the household regarding changed behavior since the oil spill (Tables 13-14).

- 57.6% reported decreased time spent swimming
- 49.0% reported decreased time spent outdoors
- 58.2% reported decreased time spent boating
- 64.0% reported decreased consumption of local seafood
- 38.2% reported exposure to oil
- 23.1% reported involvement in the oil spill cleanup efforts
- 32.1% reported decreased household income

Baldwin County

Within Baldwin County, 168 interviews were conducted out of the goal of 210 interviews, for a completion rate of 80% (Table 1). Teams completed interviews in 34% of the houses selected, with 72% of households answering doors eligible or willing to complete an interview. The mean age of respondents was 55.5 years of age, with 54.6% of respondents being male and 45.4% female (Table 2). Of the persons answering the questionnaire, 76.8% of respondents identified as white, non-Hispanic, with 15.6% black, non-Hispanic, and 1.8% Hispanic. The majority of households (48.1%) have lived in the community for 11 years or more, with 17.1% residing there for 6 to 10 years, 22.5% residing there for 2 to 5 years, and 10.8% of respondents living in the community for one year or less. The average household size was 2.26 individuals, with a range of 1 to 7 individuals. The majority of all household members were between 41 to 65 years of age (57.5%). Self-reported mean household income is shown in Table 3.

In Baldwin County, 50.4% of households interviewed reported having at least one person in the household experiencing one or more respiratory conditions in the 30 days prior to the survey (Table 4). Nasal congestion was the most common respiratory symptom, with 25.3% of households reporting at least one person with nasal congestion, followed by 24.4% of households reporting at least one person with cough.

Cardiovascular symptoms were also addressed in the questionnaire. In Baldwin County, 19.4% of households interviewed reported having at least one person in the household experiencing at

least one or more cardiovascular symptom in the previous 30 days (Table 5). Chest pain was the most common cardiovascular condition, with 7.2% of households reporting at least one person with chest pain.

In addition to these respiratory and cardiovascular symptoms, 15.7% of households reported at least one person with a skin condition in the past 30 days, and 17.4% reported experiencing an eye condition in the previous 30 days (Table 6). Additional self-reported mental and behavioral health symptoms are shown in Table 7, including 23.2% of households reporting at least one person with trouble sleeping or nightmares. Types of medical centers where households with any reported condition sought medical help are shown in Table 8. Households seeking medical help for these conditions visited facilities in Foley (4 households), Pensacola (3 households), Gulf Shores (3 households), Mobile (2 households), Daphne (2 households), and Fairhope (1 household).

Within Baldwin County, 23.1% of households in the sampling frame have children. Of the households with children, 8.4% reported children having problems sleeping or nightmares, 5.7% reported having problems getting along with other children, and 3% reported sadness or depression (Table 9).

Questions regarding mental health were taken from the national Behavioral Risk Factor Surveillance System (BRFSS) and administered at an individual level to the survey respondent only (Tables 10-12). In general, a higher proportion of reports were for poor mental health in this survey as compared to BRFSS in 2008 in Alabama and Nationally.

- 15.8% of respondents reported greater than or equal to 14 physically unhealthy days in the previous 30 days. This compares to 13.9% of respondents in all of Alabama in 2008.
- 16.3% of respondents reported greater than or equal to 14 mentally unhealthy days in the previous 30 days. This compares to 13.1% of respondents in all of Alabama in 2008.
- 9.8% of respondents reported greater than or equal to 14 days of limited activity or self-care due to physical or mental health conditions in the past 30 days. This compares to 8.7% for all of Alabama in 2008.
- 15.4% of respondents reported one or more symptoms of depression. This compares to 13.9% for all of Alabama in 2006.
- 21.4% of respondents reported one or more symptoms of anxiety. No comparison data are available for symptoms of anxiety.
- 16.5% of respondents reported *always* worrying about having enough money to pay the rent or mortgage within the previous 4 months compared to 9.7% of respondents in all of Alabama in 2008.
- 7.0% of respondents reported *always* worrying about having enough money to buy nutritious meals compared to 6.3% of respondents in all of Alabama in 2008

The following questions regarding changed behavior since the oil spill were asked at the household level (Tables 13-14).

- 55.7% reported decreased time spent swimming
- 47.2% reported decreased time spent outdoors
- 52.0% reported decreased time spent boating

- 62.1% reported decreased consumption of local seafood
- 36.9% reported exposure to oil
- 11.3% reported at least one household member with involvement in the oil spill cleanup efforts
- 33.5% reported decreased household income

CONCLUSIONS

The data presented here represent preliminary reports from the CASPER surveys conducted in Mobile and Baldwin counties on August 27 and 28, respectively. Information from the 2000 census was used to determine a household and individual probability of being selected to then create a sampling weight. Because the assessed areas have undergone many changes since 2000, the most recent available census data may not be representative of the current population within selected clusters in either Mobile or Baldwin County. Thus, the weighted percentages may be limited in their generalizability to the sampling frame. The discrepancy between 2000 census and current status would not, however, affect the frequencies present in this report. For Mobile County, response rates were below 80% and therefore these data may not be appropriate to generalize to the entire Mobile sampling frame.

The prevalence of households reporting respiratory conditions in either county warrants further investigation. However, these data represent a period prevalence of the previous 30 days, do not account for chronic conditions, and there is no available information on a comparison group that can be used in interpreting these percentages.

Both Baldwin and Mobile counties reported an increased prevalence of individuals with greater than or equal to 14 days of physically unhealthy days, mentally unhealthy days, or limited activity days compared to the reported prevalence for the state of Alabama or nation-wide in the 2008 BRFSS. Similarly, the percent of individuals reporting symptoms of depression are elevated compared to state and national data for 2006 BRFSS. Together, the increased prevalence of negative quality of life indicators, depressive symptoms, and symptoms of anxiety suggest that resources should focus on mental health intervention and follow-up surveillance of mental health concerns.

There was a reported increase in time spent worrying about paying the rent or mortgage and buying nutritious meals compared to 2008, and a reported decrease in household income compared to 2009. Based on this survey alone, a link cannot be made between the oil spill and the reported increase in concern regarding finances. However, these economic factors will likely have an impact on mental health and should be considered a component of mental health follow-up activities (3).

REFERENCES

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Table 1. Questionnaire response rates by county for the August 2010 questionnaire

	Mobile County (n=128)	Baldwin County (n=168)
Questionnaire response	Percent	Percent
Completion¹	61	80
Contact²	36	34
Cooperation³	70	72

¹ Percent of surveys completed out of the goal of 210

² Percent of households randomly selected that completed an interview

³ Percent of households contacted that were eligible and willing to participate in the survey

Table 2. Demographics of respondents by county, August, 2010

County	Mobile (n=128)			Baldwin (n=168)		
Mean Age (years)	53.8			55.5		
Age Range (years)	20-89			19-95		
Demographics	Frequency	Weighted %	95% CI	Frequency	Weighted %	95% CI
Gender						
Male	59	45.6	33.9–57.3	85	54.6	47.1–62.1
Female	67	54.5	42.7–66.2	77	45.4	37.9–52.9
Race/ethnicity						
White, non-Hispanic	105	76.7	64.9–88.5	134	76.8	62.9–90.7
Black, non-Hispanic	4	3.3	-0.4–7.1	23	15.6	1.8–29.4
Asian	17	17.3	5.2–29.5	0	---	
Hispanic	0	---		4	1.8	0.0–3.7
Other	2	2.6	-0.9–6.2	0	---	
Don't know/Refused	0	---		4	3.9	0.5–6.2

Table 3. Frequency and weighted percent of annual 2009 household income reported by respondents in US dollars by county, August 2010

County	Mobile			Baldwin		
Annual household income (2009)	Unweighted frequency	Weighted %	95% CI	Unweighted frequency	Weighted %	95% CI
0–14,999	24	19.7	6.1–33.2	29	17.2	11.7–22.6
15,000–19,999	14	11.9	5.0–18.7	12	6.7	2.9–10.4
20,000–24,999	8	7.1	0.9–13.3	12	7.6	2.6–12.6
25,000–34,999	14	11.2	5.1–17.2	12	5.7	2.2–9.3
35,000–49,999	16	13.5	6.7–20.3	16	9.3	4.6–13.9
50,000–74,999	14	10.3	3.5–17.2	20	17.2	11.7–22.6
>75,000	12	8.6	1.3–16.0	35	21.1	11.6–30.6
Don't Know/Refused	26	17.7	6.8–28.6	23	14.1	7.7–20.4

Table 4. House-hold level frequencies and weighted percents of self-reported household respiratory conditions by county, August 2010

County	Mobile			Baldwin		
Condition	Unweighted frequency	Weighted %	95% CI	Unweighted frequency	Weighted %	95% CI
Total households with any respiratory condition	75	58.3	45.3–71.2	89	50.8	41.5–60.2
Sore throat	28	21.2	12.1–30.2	25	13.9	8.7–19.1
Nasal congestion	45	33.5	21.6–45.3	45	25.28	17.2–33.4
Sinus Infection	34	26.9	17.2–36.6	26	15.6	7.8–23.4
Cough	42	30.7	19.2–42.2	43	24.4	16.9–31.8
Worsening of existing asthma	7	3.5	0.3–6.7	12	7.3	2.3–12.3
Worsening of COPD	4	2.8	-1.5–7.0	4	2.6	0.2–5.1
Wheezing	19	12.6	4.7–20.4	19	10.5	5.9–15.0
Difficulty breathing	30	21.8	11.6–31.9	18	10.63	6.4–14.9

Table 5. Household level frequencies and weighted percents of self-reported cardiovascular conditions by county, August 2010

County	Mobile			Baldwin		
	Unweighted frequency	Weighted %	95% CI	Unweighted frequency	Weighted %	95% CI
Total % reporting cardiovascular symptoms	36	26.6	13.6–39.7	35	19.4	11.5–27.3
Chest pain	18	12.6	5.0–20.1	12	7.2	3.5–10.9
Irregular heartbeat	10	8.8	3.1–14.5	12	6.81	2.6–11.0
Worsening of high blood pressure	16	12.4	5.3–19.5	10	5.7	0.8–10.6
Worsening of existing condition	6	4.3	1.0–7.7	7	4.0	1.2–6.8

Table 6. Household level frequencies and weighted percents of Household-reported other physical symptoms by county, August 2010

County	Mobile			Baldwin		
	Unweighted frequency	Weighted %	95% CI	Unweighted frequency	Weighted %	95% CI
Skin conditions	23	16.6	7.8–25.4	28	15.7	10.3–21.1
Eye conditions	24	17.2	9.1–25.2	30	17.4	10.9–24.0
Nausea or vomiting	21	14.6	6.2–23.0	19	10.9	5.8–16.1
Diarrhea	16	11.3	4.7–17.9	19	10.9	5.8–16.0
Headache	39	28.3	19.0–37.6	50	29.9	20.4–39.3
Heat-related illness	13	9.9	3.8–16.0	2	1.1	-0.5–2.7

Table 7. Household level frequencies and weighted percents of self-reported mental health conditions by county, August 2010

County	Mobile			Baldwin		
	Unweighted frequency	Weighted %	95% CI	Unweighted frequency	Weighted %	95% CI
Trouble sleeping	36	26.4	15.3–37.4	40	23.4	17.0–29.8
Difficulty concentrating	20	14.5	6.3–22.7	23	13.3	7.2–19.3
Agitated behavior	28	22.2	15.7–28.6	21	12.0	5.3–18.7
Loss of appetite	24	17.6	8.4–26.7	18	11.0	6.3–15.7
Racing heartbeat	14	10.6	1.9–19.3	14	8.3	3.7–12.9

Table 8. Household level frequencies and weighted percents of facilities where medical help was sought for any condition in the previous 30 days by county, August 2010

County	Mobile			Baldwin		
	Unweighted frequency	Weighted %	95% CI	Unweighted frequency	Weighted %	95% CI
Emergency room	2	1.5	-0.8–3.9	3	3.0	-0.3–6.3
Family doctor	20	18.7	6.7–30.7	31	28.6	19.7–31.5
Urgent care	0	0	---	1	0.9	-0.9–2.7
VA hospital	1	0.2	-0.2–0.6	1	1	-1.1–3.2

Table 9. Household level frequencies and weighted percents of increase in children’s behavioral symptoms among households with children by county, August 2010

County	Mobile			Baldwin		
	Unweighted frequency	Weighted %	95% CI	Unweighted frequency	Weighted %	95% CI
Been sad or depressed	3	6.9	-1.9–15.7	3	6.1	-1.9–14.1
Problems getting along with other children	2	4.6	-2.6–11.7	3	8.5	-2.7–19.7
Problems sleeping	4	10.1	-0.9–21.0	6	13	1.2-24.8

Table 10. Individual-level weighted percents of respondents reporting general quality of life by county, August 2010

Measure	Mobile Weighted % (95% CI)	Baldwin Weighted % (95% CI)	Alabama 2008 BRFSS ¹ Weighted % (95% CI)	National 2008 BRFSS ¹ Weighted % (95% CI)
≥14 physically unhealthy days	19.7 (8.0–31.4)	15.8 (9.8–21.9)	13.9 (12.7–15.1)	10.8 (10.6–11.1)
≥14 mentally unhealthy days	22.8 (10.9–34.6)	16.3 (9.1–23.4)	13.1 (11.8–14.5)	10.3 (10.0–10.5)
≥14 activity limitation days	12.9 (5.2–20.6)	9.8 (3.0–15.9)	8.7 (7.7–9.7)	7.0 (6.8–7.2)

¹ Behavioral Risk Factor Surveillance System (BRFSS)

Table 11. Individual-level weighted percents of respondents reporting depressive or anxious symptoms by county August, 2010

Measure	Mobile % (95% CI)	Baldwin % (95% CI)	Alabama (2006 BRFSS) ¹	Available U.S (2006 BRFSS) ¹
Depressive symptoms	24.2 (13.0–35.3)	15.4 (9.6–21.3)	13.9 (11.7–16.4)	9.7 (9.3–10.0)
Symptoms of anxiety	24.3 (13.2–35.5)	21.4 (13.3–29.5)	N/A	N/A

¹ Behavioral Risk Factor Surveillance System (BRFSS) from 41 states or territories

Table 12. Individual-level weighted percents of respondents reporting frequency of worry or stress by county, August 2010, according to BRFSS¹ social context categories

Measure	Mobile % (95% CI)	Baldwin County %	Alabama 2009 BRFSS ^{1,2} % (95% CI)	Available U.S. ³ 2009 BRFSS ^{1,2} % (95% CI)
Worried/stressed about money for mortgage/rent				
Always	16.4 (9.2–23.5)	16.5 (10.1–22.8)	9.7 (8.6–11.0)	6.6 (6.2–7.1)
Usually	11.8 (4.6–18.9)	8.0 (3.5–12.5)	4.5 (3.7–5.4)	4.8 (4.4–5.2)
Sometimes	14.8 (8.5–21.1)	19.6 (11.8–27.3)	15.2 (13.7–16.8)	17.3 (16.6–18.0)
Rarely	8.4 (2.8–14.0)	9.2 (4.0–14.5)	2.8 (1.5–14.3)	14.9 (14.2–15.6)
Never	48.7 (39.5–57.8)	46.7 (39.2–54.3)	57.8 (55.7–59.8)	56.4 (55.5–57.3)
Worried/stressed about money to buy nutritious meals				
Always	12.2 (4.2–20.2)	7.0 (2.1–12.0)	6.3 (5.5–7.2)	4.0 (3.6–4.3)
Usually	5.9 (0.6–11.2)	5.5 (1.4–9.7)	3.8 (3.1–4.7)	3.3 (3.0–3.64)
Sometimes	16.6 (8.3–25.0)	10.7 (4.5–16.9)	15.1 (13.7–16.5)	14.4 (13.8–15.0)
Rarely	11.3 (4.2–18.3)	9.5 (5.3–13.7)	13.2 (11.7–14.7)	13.9 (13.2–14.6)
Never	54.0 (41.9–66.1)	67.3 (58.3–76.3)	61.7 (59.8–63.6)	64.1 (63.5–65.3)

¹ Behavioral Risk Factor Surveillance System (BRFSS)

² BRFSS asked question “in the past 12 months” CASPER asked question “in the past 4 months”

³ 8 states

Table 13. Household level frequencies and weighted percents of change in activity since the oil spill by county, August 2010

County	Mobile			Baldwin		
	Unweighted frequency	Weighted %	95% CI	Unweighted frequency	Weighted %	95% CI
Decreased swimming	69	57.6	46.6–68.7	93	55.7	45.9–65.5
Decreased time outdoors	59	49.0	41.1–56.9	76	47.2	36.7–57.6
Decreased boating	71	58.2	50.1–66.4	87	52.0	42.3–61.7
Decreased local seafood consumption	79	64.0	53.7–74.3	99	62.1	53.0–71.3

Table 14. Household level frequencies and weighted percents of reported effects of the oil spill by county, August 2010

County	Mobile			Baldwin		
	Unweighted frequency	Weighted %	95% CI	Unweighted frequency	Weighted %	95% CI
Household income						
Increased	9	7.4	1.3–13.5	7	4.6	1.6–7.6
Decreased	41	32.1	20.4–43.8	58	33.5	25.0–41.8
Exposed to oil	55	38.2	25.0–51.5	63	36.9	26.1–47.7
Type of exposure						
Skin	11	7.3	1.7–12.8	39	22.2	12.4–32.0
Inhalation	39	26.4	16.0–36.7	44	24.35	14.8–33.9
Ingestion	4	3.3	0.2–6.5	2	1.3	-0.5–3.1
Worked on cleanup	29	23.1	13.1–33.0	18	11.3	5.8–16.7

Appendix A. Gulf Coast Oil Spill CASPER Questionnaire

To be completed by team BEFORE interview	
Q1. Date (MM/DD/YY):	Q2. Survey Number:
Q3. Team Member Initials:	Q4. Team Number:
Q5. County Name:	Q6. Cluster Number:
Demographic Questions	
Q7. How many people live in your household?	Q8. How many people in your household are: _____ < 2 _____ 3-5 _____ 6-9 _____ 10-17 _____ 18-25 _____ 26-40 _____ 41-65 _____ 66-75 _____ >75 <input type="checkbox"/> DK <input type="checkbox"/> Refused

Q9. In the past 30 days, have you or any household members experienced any of the following: (Please check all that apply.)

Category	You	Household member	Symptoms
A) Respiratory Conditions	<input type="checkbox"/>	<input type="checkbox"/>	Sore throat <input type="checkbox"/> None <input type="checkbox"/> DK <input type="checkbox"/> Refused Nasal congestion Sinus infection Shortness of breath Cough Wheezing Difficulty breathing Worsening of existing asthma symptoms Worsening of existing chronic obstructive pulmonary disease or emphysema
B) Cardiovascular symptoms/conditions	<input type="checkbox"/>	<input type="checkbox"/>	Chest pain <input type="checkbox"/> None <input type="checkbox"/> DK <input type="checkbox"/> Refused Irregular heart beat Worsening of existing high blood pressure Worsening of any existing chronic cardiovascular disease
C) Other Presentations	<input type="checkbox"/>	<input type="checkbox"/>	Skin irritations including rash <input type="checkbox"/> None <input type="checkbox"/> DK <input type="checkbox"/> Refused Any eye conditions or irritations Nausea and/or vomiting Diarrhea Headache Heat-related illness such as hyperthermia Other (specify): _____ None
Q10. Has anyone in your household experienced any of the following in the last 30 days?	<input type="checkbox"/>	<input type="checkbox"/>	Difficulty concentrating <input type="checkbox"/> None <input type="checkbox"/> DK <input type="checkbox"/> Refused Trouble sleeping/nightmares Loss of appetite Racing or pounding heartbeat Agitated behavior Witnessed first-hand violent behavior or threats of violence Thoughts or attempts to harm self

<input type="checkbox"/>	<input type="checkbox"/>	Increased alcohol consumption
<input type="checkbox"/>	<input type="checkbox"/>	Increased drug use
<input type="checkbox"/>	<input type="checkbox"/>	Other (<i>specify</i>) _____
<input type="checkbox"/>	<input type="checkbox"/>	None

Q11. Did you or any member of your household seek help for any of the above physical or mental health conditions at any of the following? **Please check all that apply:**

Family doctor ER VA hospital Urgent care center Hospital Other: _____

City: _____ No No conditions DK Refused

Now I am going to ask you questions about yourself only, not about other members in the household.

Q12. What is your age and sex?
Age: _____ Refused Male Female Refused

Q13. How long have you lived in this community?

Q14. What is your race/ethnicity?
 White, Non-Hispanic Black, Non-Hispanic Hispanic Asian Other: _____ DK Refused

Q15. Now thinking about your physical health, which includes physical illness and injury, for how many days during the **past 30 days** was your physical health not good?
Number: _____ DK Refused

Q16. Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the **past 30 days** was your mental health not good?
Number: _____ DK Refused

Q17. During the **past 30 days**, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?
Number: _____ DK Refused

Now, I am going to ask you some questions about your mood. When answering these questions, please think about how many days each of the following has occurred in the past 2 weeks.

Q18. Over the last **2 weeks**, how often have you had little interest or pleasure in doing things?
 Not at all Several days More than half the days Nearly every day DK Refused

Q19. Over the last **2 weeks**, how often have you felt down, depressed or hopeless?
 Not at all Several days More than half the days Nearly every day DK Refused

Q20. Over the last **2 weeks**, how often have you felt nervous, anxious, or on edge?
 Not at all Several days More than half the days Nearly every day DK Refused

Q21. Over the last **2 weeks**, how often have you been unable to stop or control worrying?
 Not at all Several days More than half the days Nearly every day DK Refused

Q22. How often in the **past 4 months** would you say you were worried or stressed about having enough money to pay your rent/mortgage? Would you say you were worried or stressed---

Always Usually Sometimes Rarely Never DK Refused

Q23. How often in the **past 4 months** would you say you were worried or stressed about having enough money to buy nutritious meals? Would you say you were worried or stressed---

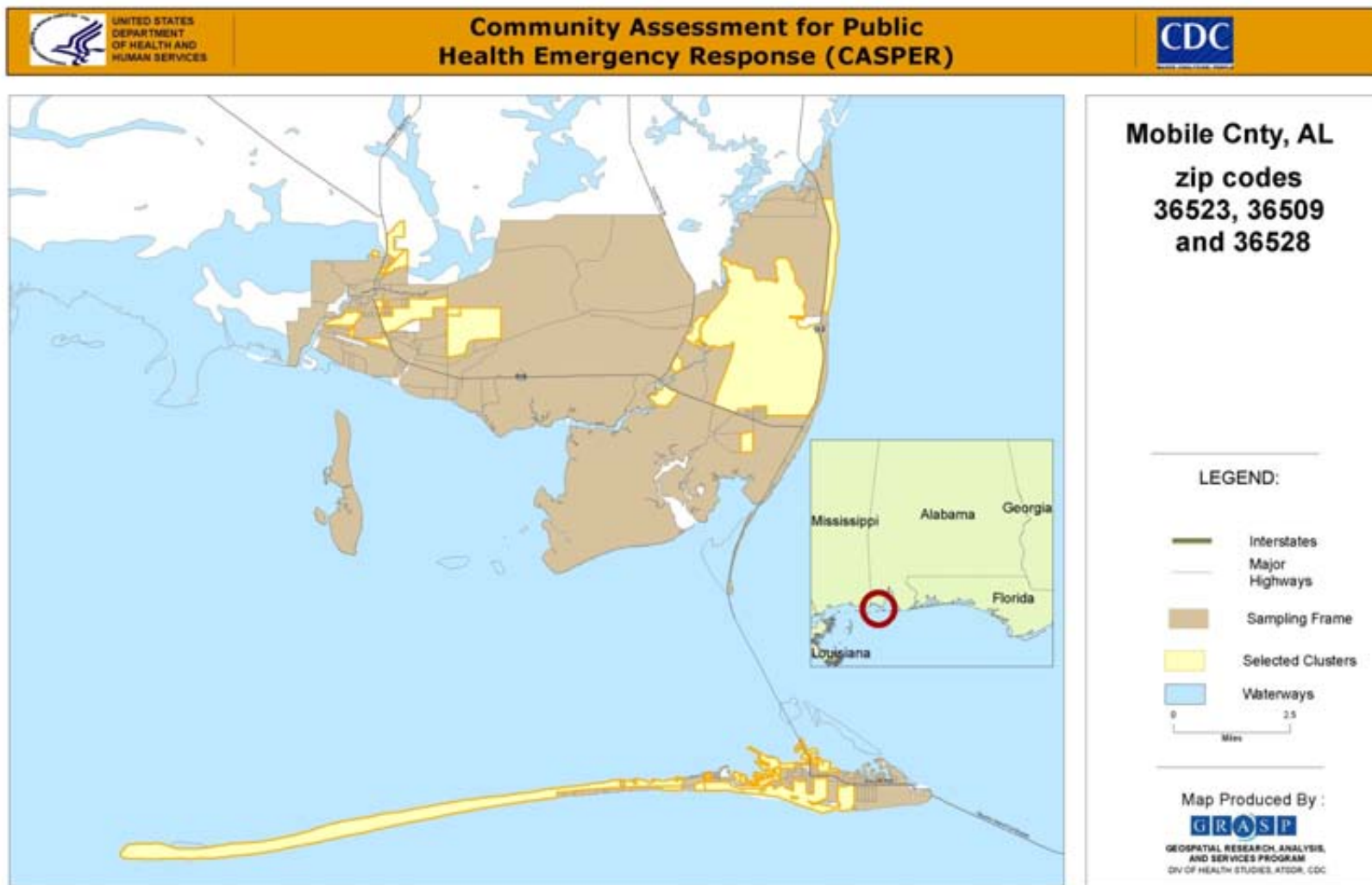
Always Usually Sometimes Rarely Never DK Refused

Q24. What is your estimated annual household income in 2009?
 0-<\$15,000 \$15,000-<\$20,000 \$20,000-<\$25,000 \$25,000-<\$35,000

<input type="checkbox"/> \$35,000-<\$50,000 <input type="checkbox"/> \$50,000-<\$75,000 <input type="checkbox"/> >\$75,000 <input type="checkbox"/> Unknown/refused	
Q25. How did the oil spill affect your household income? <input type="checkbox"/> Decreased <input type="checkbox"/> Increased <input type="checkbox"/> No Change <input type="checkbox"/> DK <input type="checkbox"/> Refused <input type="checkbox"/> Other (please specify): _____	
Q26. In the past 30 days, have any of the children in your household experienced an increase in any of the following difficulties? Please check all that apply: <input type="checkbox"/> Been very sad or depressed <input type="checkbox"/> Felt nervous or afraid <input type="checkbox"/> Problems sleeping <input type="checkbox"/> Problems getting along with other children Other (specify) : _____ <input type="checkbox"/> No <input type="checkbox"/> No children <input type="checkbox"/> DK <input type="checkbox"/> Refused	Q27. Have other household members changed any of the following activities at the coast since the oil spill? <input type="checkbox"/> None <input type="checkbox"/> Refused Swimming: <input type="checkbox"/> Increased <input type="checkbox"/> Decreased <input type="checkbox"/> DK Time outdoors: <input type="checkbox"/> Increased <input type="checkbox"/> Decreased <input type="checkbox"/> DK Boating: <input type="checkbox"/> Increased <input type="checkbox"/> Decreased <input type="checkbox"/> DK Local seafood consumption: <input type="checkbox"/> Increased <input type="checkbox"/> Decreased <input type="checkbox"/> DK
Q28. Have you been exposed to oil in any of the following ways: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused <i>if yes:</i> <input type="checkbox"/> Skin <input type="checkbox"/> Inhalation <input type="checkbox"/> Ingestion <input type="checkbox"/> Other _____	Q29. Have you or any household members been exposed to oil in any of the following ways: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused <i>if yes:</i> <input type="checkbox"/> Skin <input type="checkbox"/> Inhalation <input type="checkbox"/> Ingestion <input type="checkbox"/> Other _____
Q30. Did you work on any of the cleanup activities of the oil spill? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused	Q31. Did other household members work on any of the cleanup activities of the oil spill? <input type="checkbox"/> Yes How many? _____ <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused
Q32. What is/are your main concern(s) at this time? <input type="checkbox"/> None <input type="checkbox"/> DK <input type="checkbox"/> Refused	

Q15-23 – BRFS QUESTION

Appendix B. Sampling frame and selected clusters in Mobile County, AL.



Appendix C: Sampling frame and selected clusters in Baldwin County, AL.

