

2012 Gulf Coast Climate Change Survey

Executive Summary

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The 2012 Gulf Coast Climate Change Survey

Executive Summary

This project was designed to provide insight into how Gulf Coast residents view issues related to climate change, including perceptions of changes in their local climate, individual adaptation, and local government response. Situated in communities grappling with often severe weather events (e.g., hurricanes, droughts, and flooding) as well as long-term issues like coastal wetlands loss and erosion, these residents provide an ideal vantage point for understanding how individuals relate to environmental conditions and how they respond through local communities and individual action.

With this in mind, the 2012 Gulf Coast Climate Change Survey was designed to capture the perceptions of coastal residents on climate change throughout the Gulf Coast and more narrowly within specific states and regions. The final results are based on a telephone survey of 3,856 randomly selected coastal residents. Overall, this is the largest and most comprehensive assessment of individual perceptions of climate change in the Gulf Coast ever undertaken and provides the best available assessment of how coastal residents are addressing climate change in their local communities.

The results of the survey reveal that coastal residents are noticing at least some changes in their local climate, that they express some concern about the consequences of climate change to their communities and families, and that they are widely supportive of local government adaptations. In this respect,

- 58 percent of respondents said their local climate was very different or somewhat different than in the past;
- 61 percent expressed at least some concern about changes to the local climate;
- 76 percent support local government action to address the effects of climate change.

If local residents are concerned about climate change, it would be a mistake to characterize their opinions as overly alarmed. First, substantial percentages of them describe their local climate as “pretty much the same.” Second, while residents are clearly concerned about climate change, only a third of respondents describe themselves as extremely or very concerned and/or have taken individual steps to adapt to climate change. Even so, they support a wide range of specific government actions to address climate change, including support for:

- Maintaining adequate freshwater supplies (94 percent)
- Conservation of natural habitats (93 percent)
- Protecting freshwater and waste water from saltwater intrusion (90 percent)
- Insurance discounts for fortified homes (90 percent)
- Restoration of natural habitats (87 percent)
- Increasing funding for emergency planning (86 percent)
- Modifying existing developments to resist flooding (84 percent)
- Building seawalls to protect coastal communities (82 percent)
- Mandatory hazard statements (78 percent)
- Increasing funding for sea monitoring (73 percent)
- Increasing heights buildings must be elevated (73 percent)
- Limiting the types of structures that can be built in high-risk areas (71 percent)

Of the 14 items we asked about, only one failed to garner majority support among coastal residents (increasing insurance rates in high-risk areas), and only one additional measure (incentives to relocate from high-risk areas) failed to get more than 70-percent support. Moreover, more than half of respondents report having taken steps to protect their homes against environmental hazards.

Noticing changes in one's local climate is an important predictor of support for local government adaptation, but, as these results reveal, there is strong support for local government action beyond individual concerns about local climate. Coastal residents may or may not notice an increase in the number or strength of hurricanes, but they do support government action to protect their local communities from the effects.

The survey also reveals a public that is not fully informed about climate change. Thirty-four percent of coastal residents describe themselves as very well-informed about climate change, 36 percent report following news about climate change very closely, and 55 percent say they need "a lot" (22 percent) or "some" (33 percent) additional information to form a strong opinion. Because information is an important ingredient in driving support for local government action, it provides a potential pathway for mobilizing public support. While informing the public can occur through a variety of different channels, the results in this survey reveal that the most effective tool may be online news sources. Online sources are the place respondents said they were most likely to go to learn about climate change, though notably most respondents would use sites run by traditional news organizations or general search engines like Yahoo or Google. Overall, there is little question that online resources will be increasingly important in terms of how individual learn about climate change - and what they learn there will drive support for local government adaptation.

About the 2012 Gulf Coast Climate Change Survey

The 2012 Gulf Coast Climate Change Survey was designed to provide insight into how coastal residents perceive changes in local climate, the adaptations they have personally made to deal with climate change, and their level of support for local government intervention. Because attitudes may be strongly shaped by local context, the survey was designed to provide adequate sample across Gulf Coast states (Florida, Alabama, Mississippi, Louisiana, and Texas) and regionally within Florida, Louisiana, and Texas. To this end, the survey utilized stratified random sampling drawing independent samples across and within states as outlined in Table 1.

Table 1: Sampling Strategy for Gulf Coast Climate Change Survey

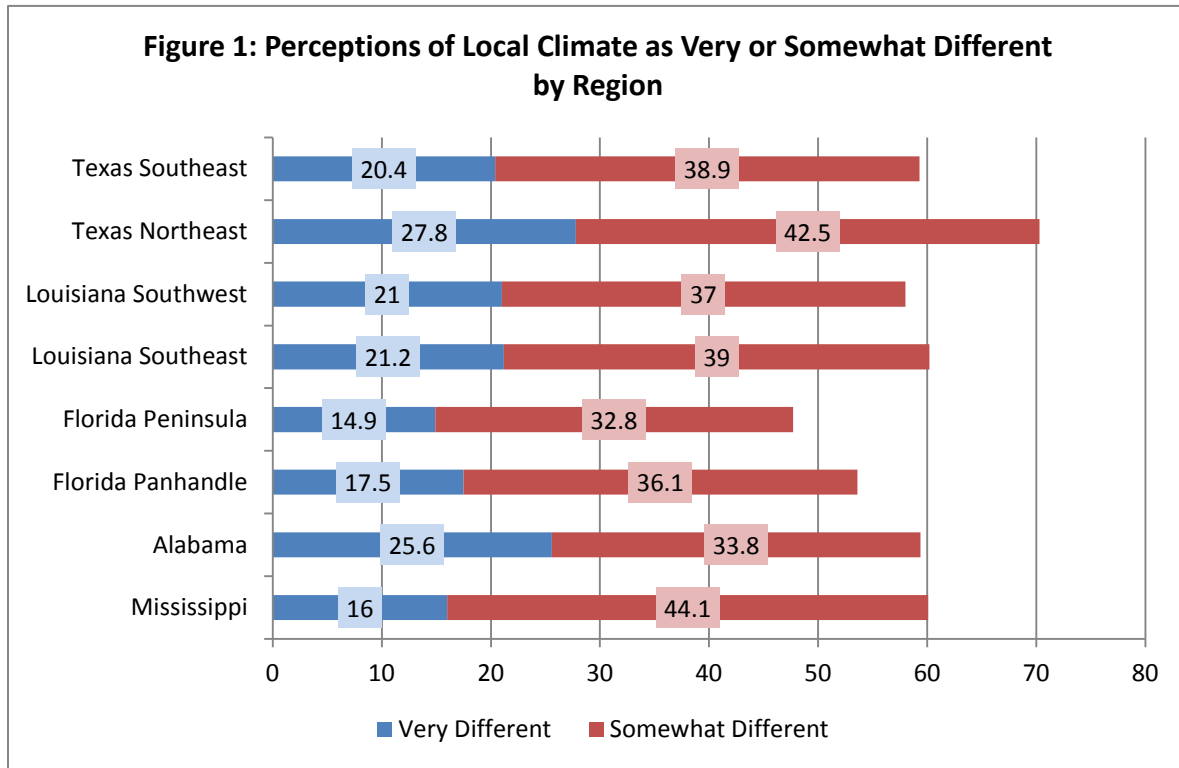
State	Counties and Parishes	Sample Size	Margin of Error
Florida	<u>Florida Panhandle</u> : Wakulla, Franklin, Gulf, Bay, Walton, Okaloosa, Santa Rosa, Escambia	418	+/- 4.82
	<u>Florida Peninsula</u> : Taylor, Dixie, Levy, Citrus, Hernando, Pasco, Pinellas, Hillsborough, Manatee, Sarasota, Charlotte, Lee, Collier, Monroe, Jefferson	421	+/- 4.79
Alabama	Baldwin, Mobile	619	+/- 3.94
Mississippi	Harrison, Hancock, Jackson	620	+/- 3.94
Louisiana	<u>Louisiana Southeast</u> : Plaquemines, Tangipahoa, St. Tammany, Orleans, St. Bernard, Jefferson, LaFourche, Terrebonne	510	+/-4.34
	<u>Louisiana Southwest</u> : Cameron, Vermillion, Iberia, St. Mary	411	+/- 4.83
Texas	<u>Texas Northeast</u> : Jefferson, Chambers, Galveston, Harris, Brazoria, Matagorda, Jackson	420	+/- 4.85
	<u>Texas Southeast</u> : Calhoun, Aransas, Refugio, San Praticio, Nueces, Kleberg, Kennedy, Willacy	437	+/- 4.74
Total	Gulf Coast Region	3856	+/-1.58

Final survey data were weighted to account for differences in the probability of selection based on the state and region where the respondent resides (sampling weights) and to approximate most recent population estimates from the U.S. Census (post-stratification weights). In Table 2, we present frequencies for select demographics for the entire sample.

Table 2: Select Demographics for Gulf Coast Region

Characteristic	Weighted Percent
Gender	
Male	47.0%
Female	53.0%
Race	
White	58.1%
Hispanic	19.3%
Black	16.0%
Other	6.6%
Education	
Less than High School	17.4%
High School Degree	28.7%
Some College	21.9%
College	32.0%
Age	
18-24	12.2%
25-34	17.4%
35-44	17.7%
45-54	18.7%
55-64	15.1%
65 and older	18.9%
Income	
Under \$10,000	7.3%
\$10,000 - \$19,999	10.1%
\$20,000 - \$29,999	12.9%
\$30,000 - \$39,999	9.9%
\$40,000 - \$49,000	11.4%
\$50,000 - \$74,999	18.5%
\$75,000 - \$99,999	11.7%
\$100,000 or more	18.2%
Distance from the Coast	
Adjacent/On the water	7.2%
Near the water/Within 1-2 miles	9.0%
Within 2-5 miles	9.7%
5-10 miles	16.0%
11-30 miles	22.8%
31-60 miles	17.3%
More than 60 miles	15.8%

I. How Do Gulf Coast Residents Perceive Local Climate Change?



To begin the survey, we asked respondents how much their local climate had changed over recent years. The specific question wording was as follows:

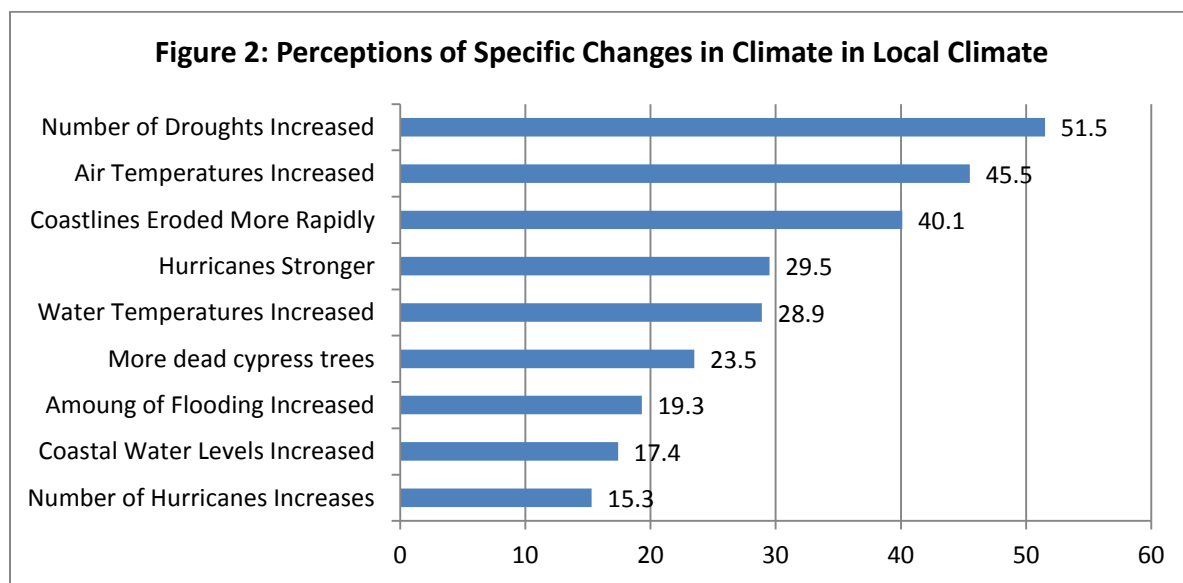
Overall, would you say the climate in your local community is very different than it was in the past, somewhat different, or pretty much the same?

In Figure 1, we present the results across the Gulf Coast regions. Two large points emerge from the data. (1) Most respondents do not perceive their local climate as “very different.” Slightly more than 1 in 5 coastal residents (20.8 percent) said their local climate was very different than in the past. (2) Most coastal residents perceive at least some difference in their local climate: 37.6 percent of coastal residents said their local climate was “somewhat different” than in the past. Combining the somewhat and very different responses, approximately 58 percent of coastal residents say their local climate was different, indicating fairly widespread recognition that climate is indeed changing. The question is by how much. Even so, a significant percentage of respondents (40.7 percent) said their local climate was pretty much the same.

As can be seen in Figure 1, perceptions of how much local climates have changed vary significantly across Gulf Coast regions. Twenty-eight percent of respondents in the Texas Northeast region said their local climate was very different compared to just 15 percent in the Florida Peninsula. The Florida Peninsula is the only region where less than 50 percent of respondents describe the local climate as very or somewhat different.

Across each of the regions there are also significant percentages who say the local climate is “pretty much the same.” In the Texas Northeast region, for example, where we find the highest percentage of respondents saying the local climate is very or somewhat different, nearly a third of respondents (30 percent) say the local climate is pretty much the same. In the Florida Peninsula where residents perceive the least change in their local climate, 51 percent of respondents said local climate was pretty much the same.

If this tells us broadly about how much respondents perceive their local climate is changing, it leaves open the question of what specific conditions are changing and how these conditions are changing. To understand how local communities are actually experiencing climate change, we asked a series of questions about specific changes ranging from more frequent and stronger hurricanes to increases in water and air temperature to increases in droughts and flooding. Full question wording is provided in Appendix A. In Figure 2, we present a summary of the results for the Gulf Coast.



As can be seen in Figure 2, respondents from across the Gulf Coast were most likely to identify an increase in the number of droughts as a change in the local climate (51.5 percent) followed by increases in air temperature (45.5 percent), coastal erosion (40.1 percent), and stronger hurricanes (29.5 percent). Notably, an increase in the number of hurricanes was only mentioned by 15.3 percent.

The view across the Gulf Coast, however, fails to capture significant differences across region. Table 3 presents the percentage of coastal residents across each of the regions who said they had noticed a change. For example, Louisiana residents (in both the southeast and southwest regions) were much more likely to have noticed coastal wetlands loss while residents in the Texas regions were much more likely to have noticed an increase in the number of droughts. In Louisiana, coastal wetlands loss has penetrated deeply into public perceptions: 73 percent of residents in Southeast Louisiana and 63 percent in Southwest Louisiana say coastal wetlands are eroding more quickly. In Alabama and Mississippi, the most commonly observed change in local climate is the increased strength of hurricanes.

Do residents associate these specific changing conditions with more general perceptions of whether (and how much) their local climate is changing? The short answer is yes, but noticing an increase in the number and strength of hurricanes or increase in air temperature does not automatically lead respondents to conclude that

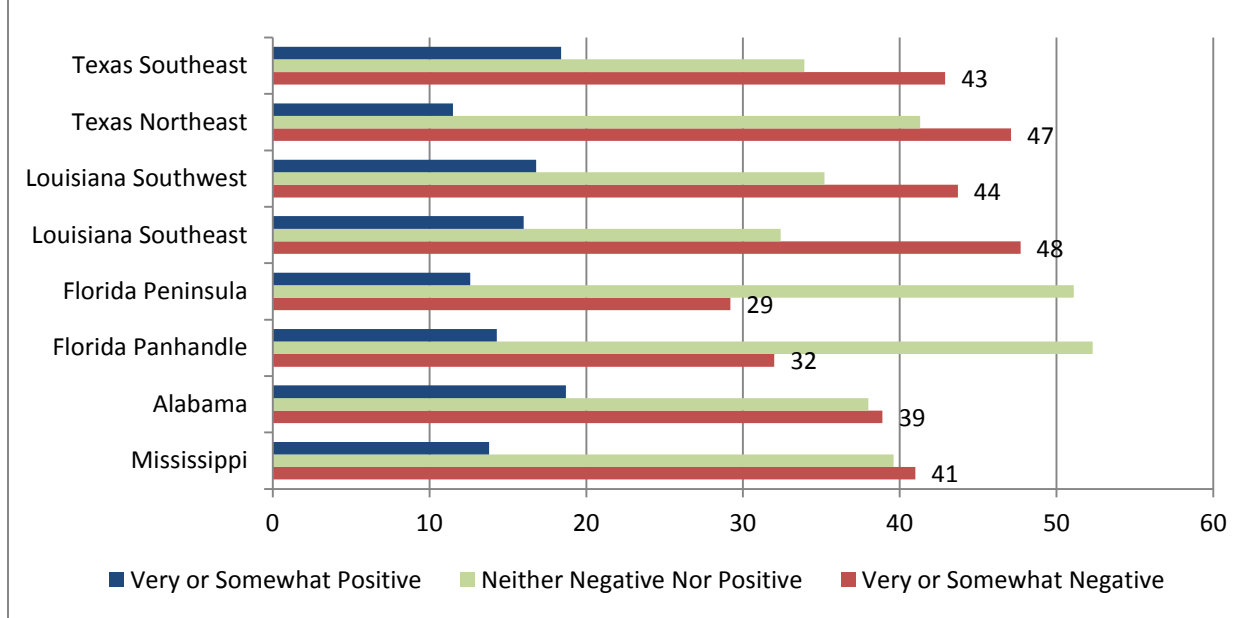
their local climate is changing. For example, 30 percent of respondents who said the air temperature had increased said the local climate was “very different” than in the past. This compares to 13 percent of respondents who said they had not noticed a change in air temperatures. Moreover, the more conditions a respondent said had changed, the higher the probability they would say that the local climate was very different.

Table 3: Perceptions of Changes in Local Climate by Region

	Mississippi	Alabama	Florida Panhandle	Florida Peninsula	Louisiana Southeast	Louisiana Southwest	Texas Northeast	Texas Southeast
<i>Climate is Very Different</i>	16.0	25.6	17.5	14.9	21.2	21.0	27.8	20.4
<i>Number of Hurricanes Increased</i>	28.1	18.5	8.9	5.4	38.6	32.8	19.2	15.3
<i>Hurricanes Stronger</i>	49.3	34.3	34.8	16.1	50.4	42.1	35.6	27.3
<i>Coastlines Eroded More Rapidly</i>	46.6	47.1	47.5	25.3	72.7	62.6	46.4	27.9
Air Temperatures Increased	52.4	52.5	44.3	41.8	50.2	51.5	47.8	40.1
Water Temperatures Increased	36.4	44.0	25.3	24.0	40.1	35.4	28.1	35.5
<i>Coastal Water Levels Increased</i>	24.7	12.5	18.6	8.5	47.6	26.2	19.3	14.1
<i>More dead cypress trees</i>	18.3	22.1	16.2	22.0	43.0	23.6	24.4	10.2
<i>Number of Droughts Increased</i>	43.9	47.4	37.4	42.6	44.8	43.8	64.7	65.1
<i>Amount of Flooding Increased</i>	27.9	19.6	10.7	8.2	36.9	31.7	27.7	17.5

*Bolded categories indicate statistical significance at the .01 level or below.

Figure 3: Perceptions of the Effect of Climate Changes on Local Communities



To understand how coastal residents perceived the effects of changes in their local climate, we asked respondents the following question:

How would you describe the effect of changes to the climate on your local community? Would you say the effects of the changes have been very negative, somewhat negative, neither negative nor positive, somewhat positive, or very positive?

Looking first at the overall results, a plurality of respondents (44.1 percent) said the effect has been neither positive nor negative; 38.8 percent said the effect has been either very negative (6.7 percent) or somewhat negative (32.1 percent); and 13 percent said the effect has been very positive (3.5 percent) or somewhat positive (9.8 percent). Among respondents who say the effect has been negative, most say the effect has been “somewhat” (32 percent) rather than “very” negative (7 percent).

Interestingly, the relationship between perceiving the local climate as very different and perceptions that the effects of local climate change are negative are related, but perceiving a “very different” local climate does not automatically translate into concern about the negative consequences of these changes. For example, 43.8 percent of respondents who said the local climate was very different also said the effect of climate change was very or somewhat negative, while 22.7 percent of these respondents said the local climate was pretty much the same. Noticing differences in local climate increases the likelihood that an individual will perceive these changes as negative, but a substantial percentage of respondents who said their local climate was very different than in the past – 37.4 percent – said the effect of these changes has been neither negative nor positive.

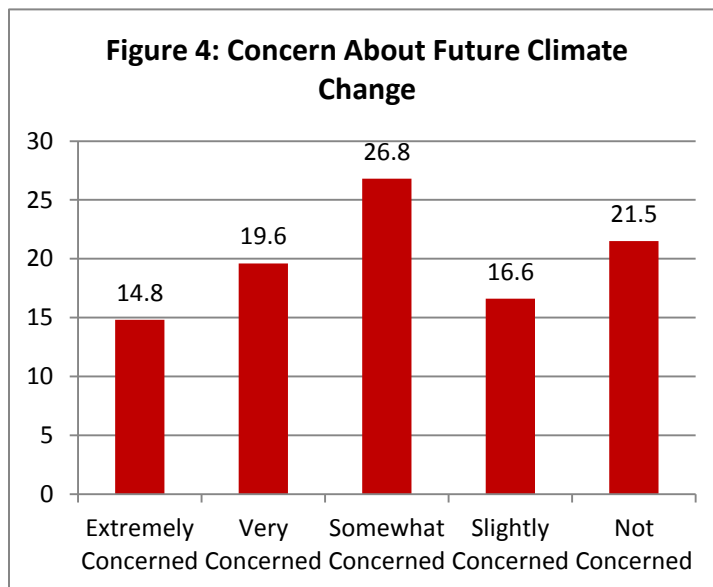
We see similar patterns when we observe the relationship between specific changes in the local climate (e.g., an increase in flooding, the number and strength of hurricanes, or an increase in air temperature) and perceptions of the impact of those changes on local communities. As is illustrated in Table 4, observing any of the specific changes to the climate increases the probability that respondents will see the effect of climate change as negative, but the response is not automatic. For example, 56.5 percent of respondents who said the

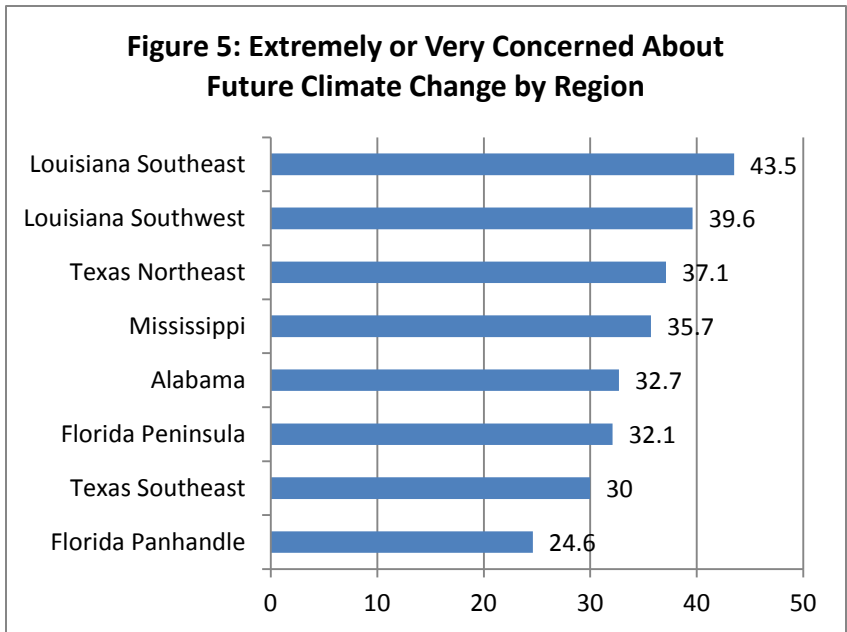
strength of hurricanes had increased said the effect of climate change on the local community was very negative (12.2 percent) or somewhat negative (42.3 percent). However, a third of those respondents said the effect of these changes was neither positive nor negative.

Table 4: The Effect of Climate Change on the Local Community by Specific Changes in the Local Climate

	Very Negative	Somewhat Negative	Neither Positive Nor Negative	Somewhat Positive	Very Positive
Number of Hurricanes	12.0	44.5	26.8	7.9	6.9
Stronger Hurricanes	12.2	42.3	33.3	5.3	4.3
Coastlines Eroding	8.8	45.2	34.7	5.3	3.6
Increase in Air Temperatures	8.4	42.7	33.3	6.8	5.1
Increase in Water Temperatures	9.2	43.8	32.2	9.7	4.1
Increase in Water Level	11.9	43.1	33.7	8.1	1.6
More Dead Cypress Trees	11.1	43.2	27.0	8.6	9.1
Increase in Droughts	8.6	41.8	39.1	6.3	2.6
Increase in Flooding	14.2	35.6	31.9	6.7	10.3

In Figure 4, we present responses to a question asking respondents how concerned they are about future changes to their local climate. Most respondents expressed at least some concern though only slightly more than 1 in 3 respondents (34.4 percent) said they are extremely or very concerned about future climate change. More than 1 in 5 coastal residents (21.5 percent) said they were unconcerned. Concern about the future impact of climate change was strongly related to perceptions of current climate changes, particularly perceptions that hurricanes have gotten stronger and the number of droughts and floods are increasing. For example, 58.2 percent of respondents who said hurricanes were getting stronger said they were extremely or very concerned about the effects of future climate change on their local community compared to just 22.2 percent of respondents who said hurricanes were about as strong as in the past.

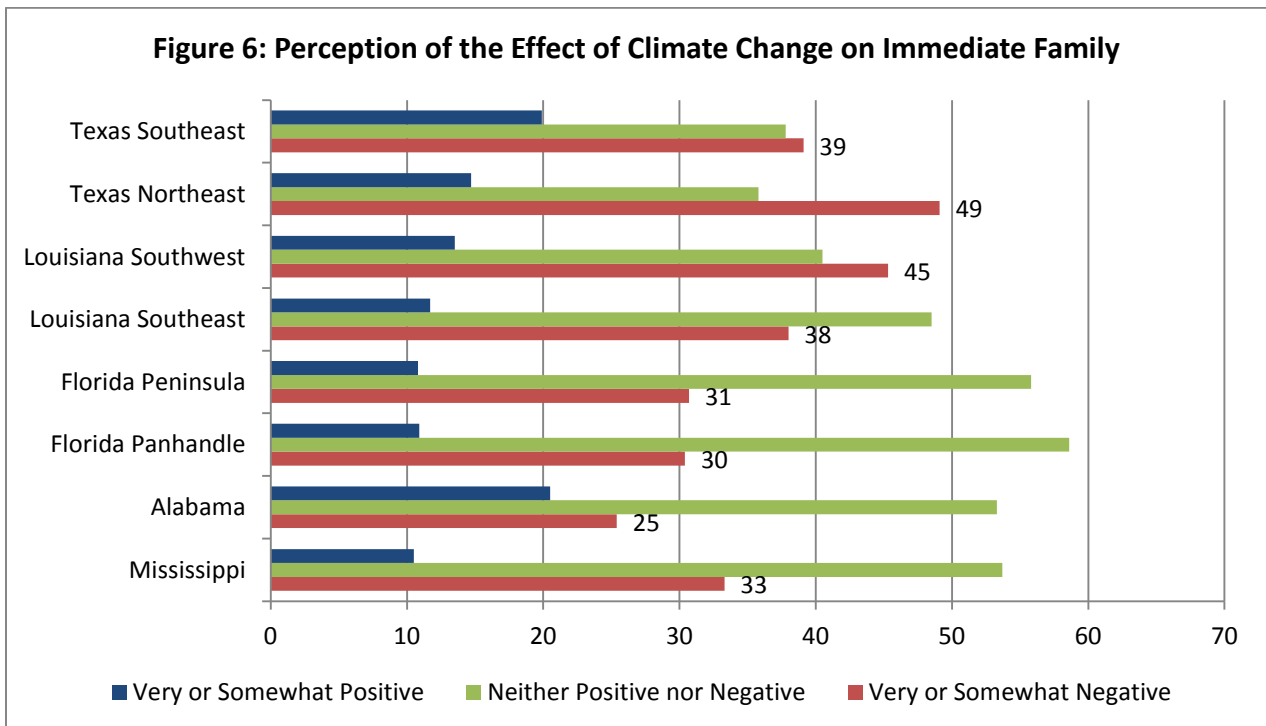


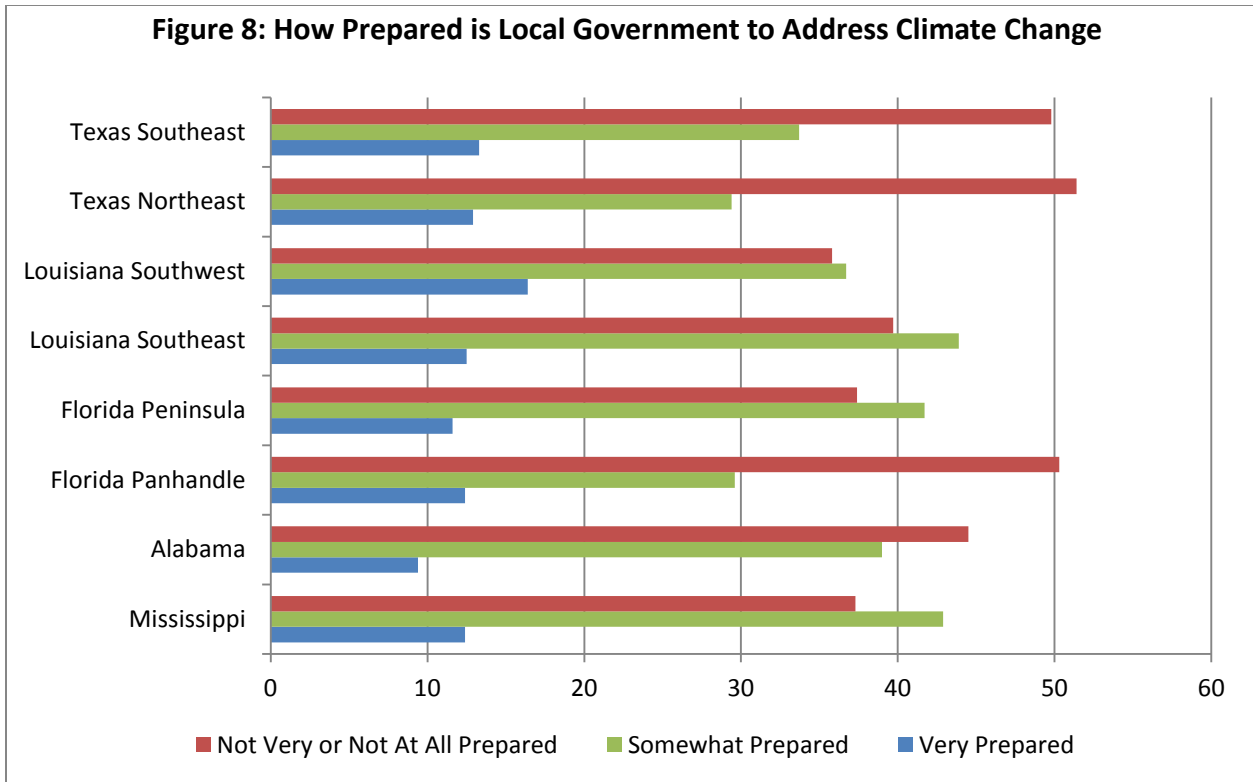


Looking across regions (in Figure 5), the percentage of respondents who said they were very or extremely concerned about future climate change ranges from a low of 24.6 percent of respondents in the Florida Panhandle to 43.5 percent in Southwest Louisiana.

As can be seen in Figure 6, there is also considerable variance across regions in terms of perceived effects on one's immediate family. Overall, 38 percent of coastal residents said the effect of climate change on

their immediate family would be very negative (5.3 percent) or somewhat negative (32.9 percent) while 47.1 percent of residents said the effects would be neither negative nor positive, and 13.1 percent said the effects would be very or somewhat positive. Looking across regions, concerns about the effect on one's immediate family match concerns about climate change more generally. For example, respondents in the Texas Northeast region and Southwest Louisiana were more likely to believe climate change will have negative effect on their immediate family. Respondents in the Florida regions and Alabama were least likely to perceive effects on their immediate family.

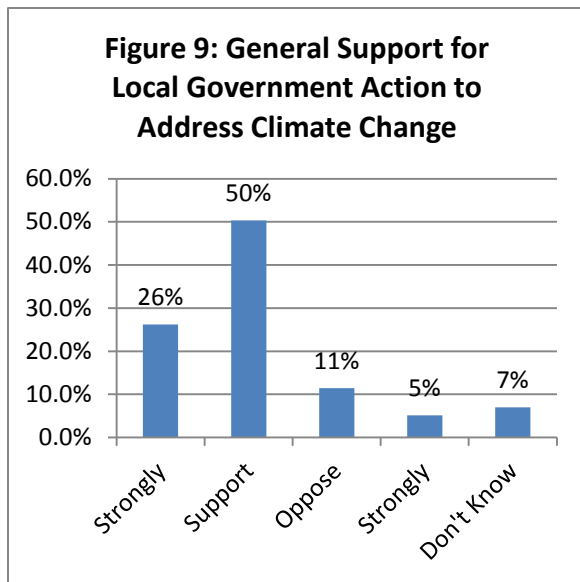




II. Support for Local Government Action

Overall, coastal residents give their local government relatively low marks when it comes to their level of preparation for dealing with climate change. Forty-four percent of respondents said local government was not very or not at all prepared, while only 12 percent said local government was very prepared. There is fairly wide variation across regions when it comes to perceptions of local government preparedness. For example, 16 percent of respondents in Southwest Louisiana said local government was very prepared. For the remaining regions, the percentage of respondents saying local government is very prepared ranged from 9.4 percent in Alabama to 13.3 percent in Texas Southeast.

Respondents were most likely to say local government was not very or not at all prepared in the Texas regions and the Florida Panhandle. Approximately half of respondents in those regions said local government was not very or not at all prepared. In Southwest Louisiana – where residents give local government relatively high marks for preparation – more than a third of respondents (35.3 percent) rate local government as not very or not at all prepared.



But if residents were not convinced their local governments were prepared to address climate change, they expressed widespread support for government action. This support extended beyond general support for government action and to support for a number of specific activities. First, in terms of general support, 76 percent of respondents support (50 percent) or strongly support (26 percent) local government action to address climate change, while only 16 percent oppose (11 percent) or strongly oppose (5 percent) local government action. An additional 7 percent said they did not know or were unsure. Moreover, we see broad support across regions for local government action. Support ranges from a low of 72 percent (support or strongly support) in Alabama to 84 percent in Southeast Louisiana. Overall, this suggests nearly consensus level

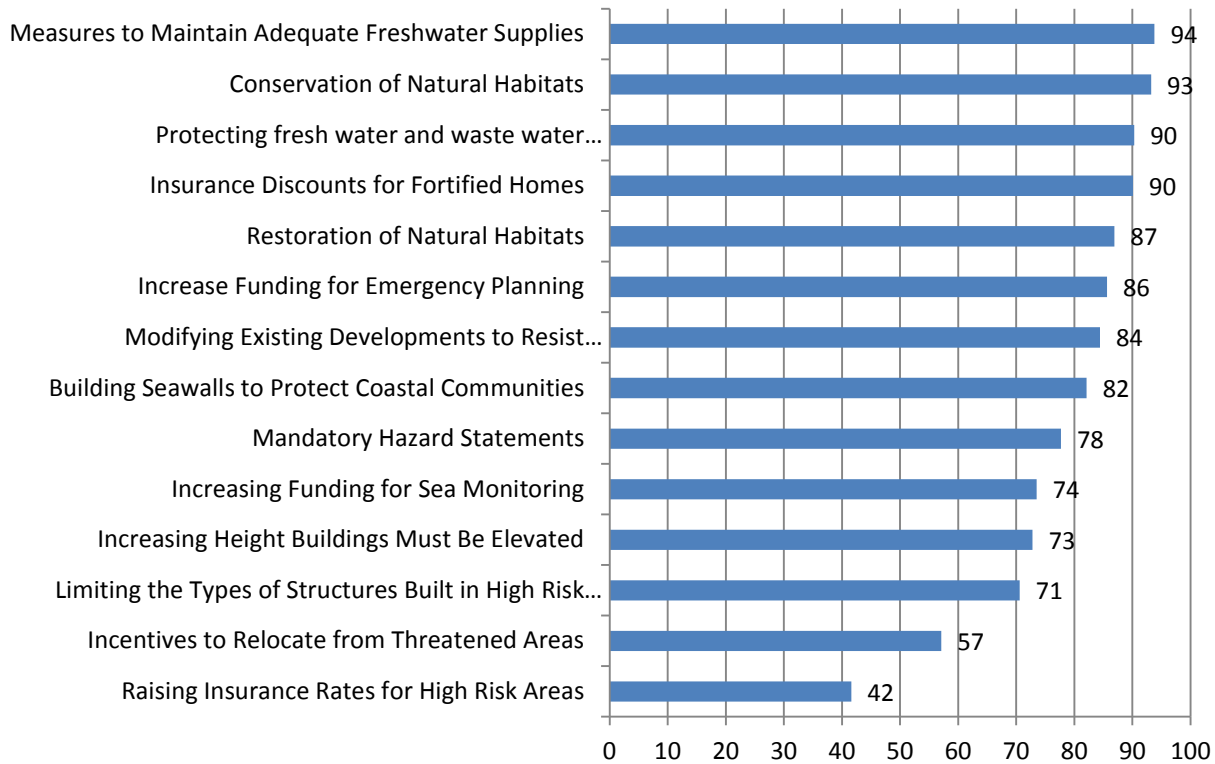
support, at least in the abstract, for local government action. As a limitation, we would note the public is often supportive of government action when there is not a tradeoff in the form of a tax increase or an alternative proposal. Even with this qualification in mind, these results reflect strong public support for local government action.

What about the specifics? In Figure 10, we present levels of support for specific government actions ranging from maintaining freshwater supplies to restoration of natural habitats to elevating buildings in high-risk areas to increasing insurance rates. Overall, support for specific local government actions was fairly high with a couple of notable exceptions. Of the 14 items we asked about, only one failed to garner majority support among coastal residents (increasing insurance rates in high-risk areas) and only one additional measure (incentives to relocate from high-risk areas) failed to get more than 70-percent support.

In all, coastal residents overwhelmingly supported measures to maintain adequate freshwater supplies (94 percent), conservation of natural habitats (93 percent), protecting freshwater and wastewater from saltwater intrusion (90 percent), and insurance discounts for fortified homes (90 percent). Moreover, the regional variations in support for these measures (presented in Table 5) were fairly small. We do not, for example, see widespread differences across regions in support for maintaining adequate freshwater supplies. We also see very strong support for restoration of natural habitats (87 percent), increasing funding for emergency planning (86 percent), modifying existing developments (84 percent), and building seawalls to protect coastal communities (82 percent). And, we see strong support for requiring hazard statements (78 percent), increasing funding for sea monitoring (74 percent), increasing heights buildings must be elevated (73 percent), and limiting the types of structures that can be built in high-risk areas (71 percent).

Overall, opinion in this area is perhaps best described as “permissive,” meaning that public opinion among coastal residents is supportive of a range of activities that might help protect local communities against climate change.

Figure 10: Percentage Supporting Specific Local Government Actions to Address Climate Change



Only one of the measures we considered – increasing insurance rates – failed to generate majority support. Looking across regions, increasing insurance rates for high-risk areas had little support across most of the Gulf Coast with two exceptions – the Texas Northeast region and the Florida Panhandle – where 51.1 percent and 52.4 percent of respondents, respectively, supported increasing insurance rates. In the remaining regions, support ranges from 24 percent in Southwest Louisiana to 38 percent in Texas Southeast. This level of opposition is not particularly surprising given that this action – raising insurance rates – would most directly and clearly affect the pocketbooks of local residents.

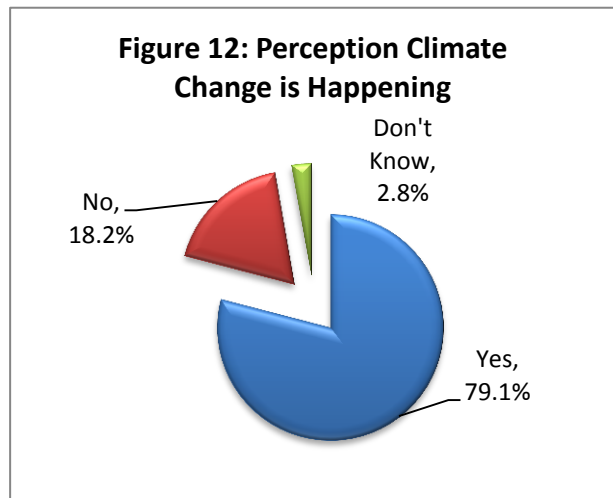
Not surprisingly, opposition to raising insurance rates is also related to proximity to the coast. Sixty-nine percent of respondents who live within two miles of the coast oppose increasing insurance rates compared to 50 percent who live between 2-10 miles and 52 percent who live more than 10 miles away. Even so, looking across regions, the Florida Panhandle shows the greatest support for increased insurance rates but also has the highest percentage of respondents living within two miles of the coast

Table 5: Support for Local Government Initiatives to Address Climate Change

	Mississippi	Alabama	Florida Panhandle	Florida Peninsula	Louisiana Southeast	Louisiana Southwest	Texas Northeast	Texas Southeast
Incentives to Relocate from Threatened Areas	71.3	56.0	55.3	51.6	66.4	66.1	60.0	55.9
Mandatory Hazard Statements	81.7	69.7	84.9	80.9	80.0	75.5	74.7	67.6
Increasing Height Buildings Must Be Elevated	63.0	69.0	66.3	68.0	77.0	74.4	79.1	73.9
Increasing Funding for Sea Monitoring	68.6	69.7	71.7	72.6	84.3	82.2	73.3	69.4
Raising Insurance Rates for High-Risk Areas	24.9	30.1	52.4	36.9	33.1	24.1	51.1	37.7
Insurance Discounts for Fortified Homes	86.4	85.5	87.9	92.7	88.4	83.2	89.7	87.3
Limiting the Types of Structures Built in High-Risk Areas	70.1	73.3	75.2	79.2	67.9	69.3	59.8	74.9
Modifying Existing Developments to Resist Flooding/Erosion	87.5	75.9	83.5	79.7	87.2	83.0	89.0	89.6
Building Seawalls to Protect Coastal Communities	87.5	71.4	82.6	77.2	92.6	89.8	84.4	87.6
Protecting Saltwater and Waste Water from Saltwater Intrusion	92.6	87.0	92.7	86.8	92.4	93.0	93.0	92.2
Measures to Maintain Adequate Freshwater Supplies	95.8	92.3	93.0	90.7	95.1	94.8	96.4	96.5
Conservation of Natural Habitats	95.1	91.8	95.0	92.5	97.5	90.2	92.3	95.8
Restoration of Natural Habitats	90.1	89.4	89.2	87.9	96.1	87.5	81.6	90.9
Increase Funding for Emergency Planning	85.2	84.7	85.2	81.5	88.5	90.1	88.2	91.8

III. Is Climate Change Happening?

While there may be some debate over the best words to use to capture “global warming” or “climate change,” coastal residents definitely believe it is occurring. Seventy-nine percent of coastal residents believe that climate change is happening. By comparison, 64 percent of respondents nationally in a Yale University survey in May 2011 believe “global warming is happening.”¹ A 2008 survey in Florida similarly found that 71 percent of those surveyed were mostly or completely convinced global warming was happening. And, a Resurgent Republic national survey conducted in 2010 found that 68 percent of respondents thought climate change was happening while 26 percent thought climate change was not happening. A national survey by the same organization (Resurgent Republic) in 2009 found that 75 percent of respondents thought climate change was happening. While there is some regional variation in perceptions about whether climate change is happening, the range is from 70 percent in the Florida Panhandle who believed climate change is happening to 86 percent in Texas Southeast. So, perception that climate change is happening ranges from very strong numbers (70 percent) to a near consensus (86 percent).



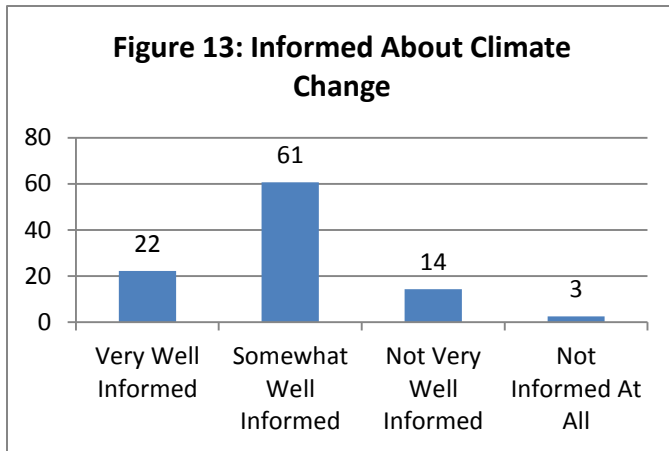
Overall, we would be cautious in interpreting this estimate because: (1) it falls within the survey after asking respondents about specific changes in their local environment (e.g., stronger and more frequent hurricanes, coastal erosion, increasing water and air temperatures, etc.); and (2) it does not distinguish between the causes of climate change, specifically whether climate change is due to human activity or natural cycles. Even with these cautions, the numbers reflect widespread recognition that climate change is happening. Respondents who say their local climate is very different relative to the past are more likely to say climate change is happening, as are respondents who observe specific changes in their local climate (e.g., stronger hurricanes). For example, 95.4 percent of respondents who say their local climate is very different say climate change is happening as do 92.1 percent of respondents who say the number of hurricanes is increasing. These differences are outlined in Table 6.

Table 6: Percentage Saying Climate Change is Happening by Perceptions of Changes in Local Climate

Local Climate is Very Different	95.4
Number of Hurricanes Increased	92.1
Hurricanes Stronger	89.1
Coastline Eroding	88.2
Air Temperatures Increased	92.9
Water Temperatures Increased	92.8
Level of Water Increased	87.7
More Dead Cypress Trees	85.8
Number of Droughts Increased	89.2
Flooding Increased	90.3

¹ <http://environment.yale.edu/climate/research/the-climate-change-communication-project/>

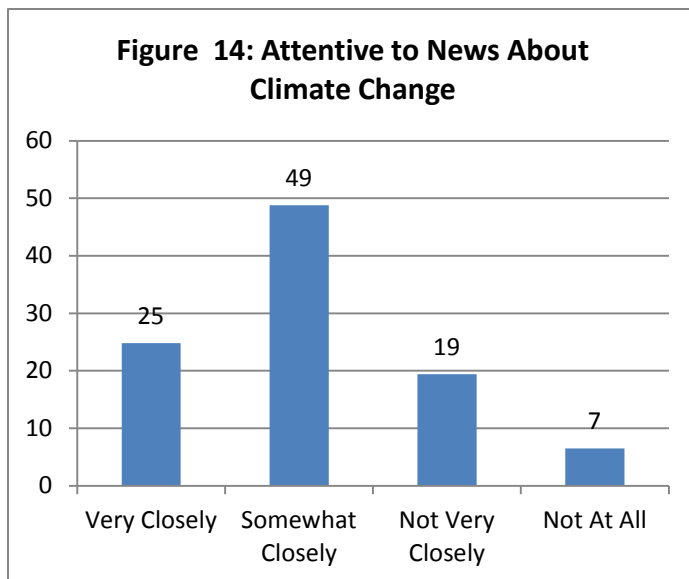
IV. Information and News About Climate Change



In this section of the report, we consider how informed coastal residents were about climate change, where they received their news and information, and whether they needed additional information to form a strong opinion. We begin by considering how informed respondents said they were they are about climate change. The specific question wording is as follows:

Overall, how well informed would you say you are about climate change?

Slightly more than 1 in 5 Gulf Coast residents (22 percent) said they are very well informed about climate while 61 percent described themselves as somewhat informed and 17 percent as not very (14 percent) or not at all informed (3 percent). Variations across regions were fairly small ranging from 18 percent very informed in Southwest Louisiana to 25 percent very informed in Alabama. Across each of the regions, a majority of respondents (50-65 percent) described themselves as somewhat informed. The percentage of respondents describing themselves as not very or not at all informed ranged from 12 percent in the Texas Northeast region to 22 percent in Alabama.



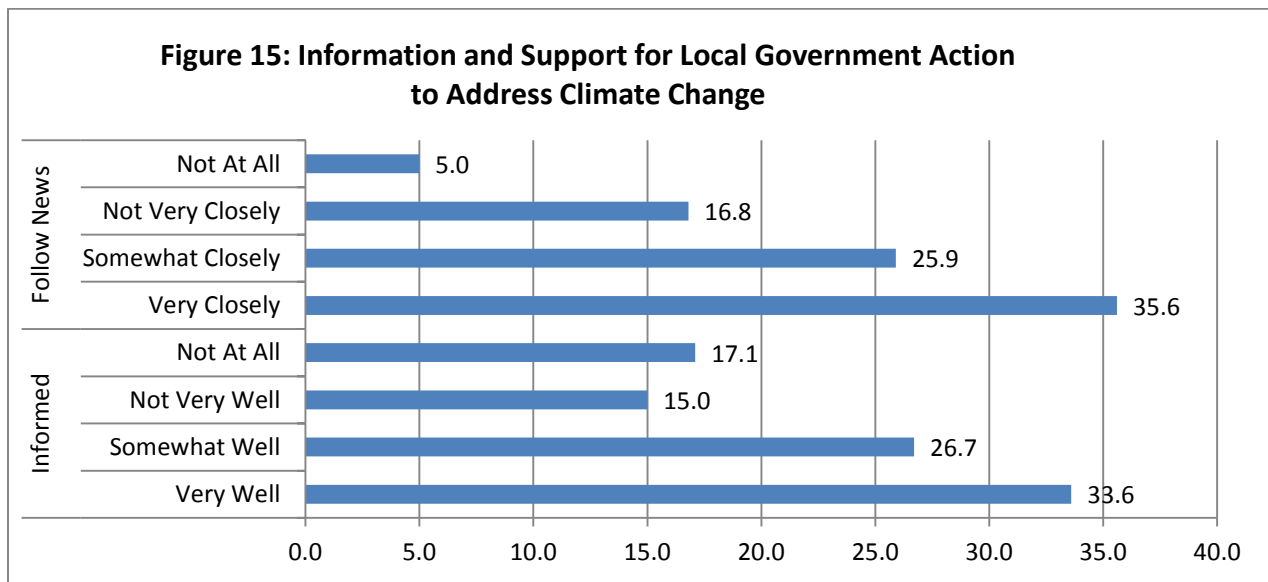
We saw similar results when we asked respondents how closely they followed the news about climate change. One in four respondents reported following news about climate change very closely while just under 50 reported following the news somewhat closely and 28 percent not very closely or not at all. Not surprisingly, how informed a respondent said they were about climate change is strongly related to how closely they followed the news.

How informed a respondents said they were about climate change, however, was only weakly related to perceptions that climate change is happening. Seventy-one percent of

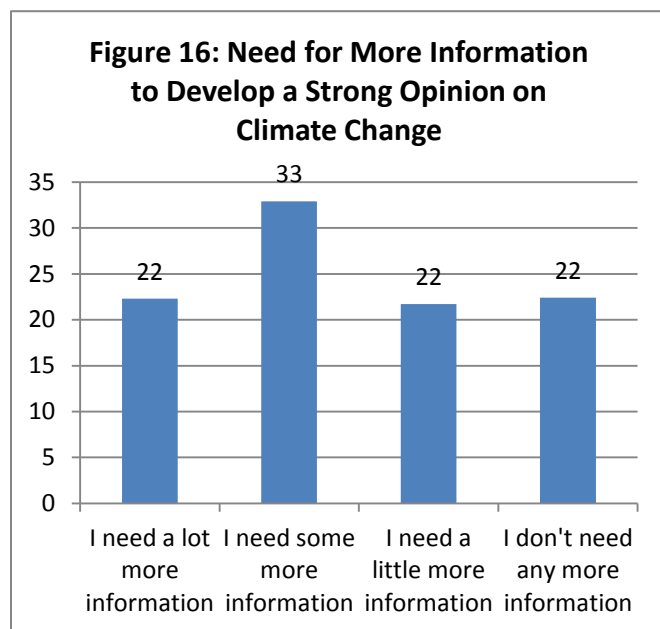
respondents who said they were very well informed about climate change said they thought climate change

was happening compared to 81.1 percent who said they were not very informed and 88.4 percent who said they were not informed at all. Following news about climate change was similarly unrelated to a recognition that climate change is happening: 79.7 percent of respondents who said they followed the news very closely said climate change is happening compared to 77.2 percent of respondents who did not follow the news at all. Overall, self-reported information about climate change or attentiveness to the news did not increase the probability that someone would recognize climate change is happening. Notably, however, this may reflect a ceiling effect in that recognition that climate change is happening is already very high among coastal residents.

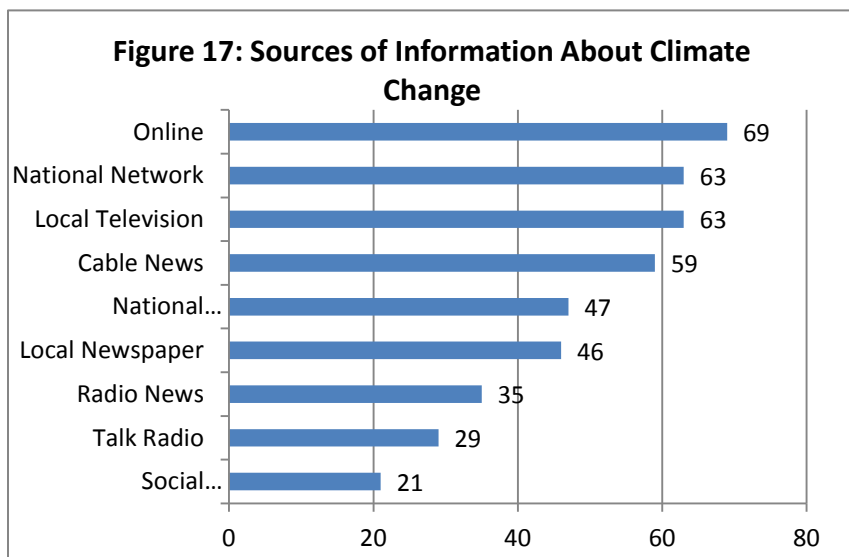
How informed respondents are about climate change and how closely they follow the news were related to strength of support for local government action to address climate change. For example, 35.6 percent of respondents who followed the news about climate change very closely also strongly supported local government action compared to 5 percent who do not follow news about climate change.



Most coastal residents acknowledge the need for more information to develop a strong opinion on climate change. Overall, 22 percent of respondents said they need a lot more information while 33 percent said they need some more information. Slightly more than 1 in 5 (22 percent) said they did not need any additional information. Coastal residents who said they were already very well-informed about climate change were least likely to say they needed additional information. Forty-four percent of respondents who said they were very well informed also said they did not need additional information to form a strong



opinion on climate change. In contrast, 16.3 percent of respondents who said they were somewhat informed and 11.6 percent who said they were not very informed said they did not need additional information. Interestingly, 29.9 percent of respondents who said they were not at all informed said they did not need any more information to form a strong opinion on climate change, suggesting for at least for a subset of the population there is a level of apathy or disinterest in the issue.



To gauge where coastal residents would look for information on climate change, we asked a series of questions about whether respondents would go to local newspapers, national newspapers, local television news, national network news, cable news, or to online sources for information about climate change. An overview of the results is presented in Figure 17. Perhaps surprising, the single most cited source for news about climate

change was online sources followed by national network news and local television news. Given the specific subject matter, it makes some intuitive sense that respondents would rely on online news sources rather than more traditional (and general) news organizations.

Overall, 69 percent of coastal residents said they would look online for information about climate change. Respondents from the Texas Northeast region were most likely to say they would go to online sources (79.3 percent) while respondents in the Florida Peninsula were least likely to say they would go to online sources. Interestingly, when asked in an open-ended question about what online sources they would use, most respondents mentioned traditional news organizations (e.g., CNN, Fox, or MSNBC), general search engines, such as Google or Yahoo, or more subject-specific sites like The Weather Channel. These responses are displayed as a word cloud in Figure 18. Not surprisingly, age also is strongly related to online news sources. Eighty-nine percent of respondents in the 25-34 age group said they would go online to learn about climate change compared to 52 percent in the 55-64 age group and 49 percent of respondents 65 and older.

Appendix A

Survey Questionnaire and Frequencies

To begin, we are interested in whether people have noticed changes in their local climate. For the purposes of this study climate refers to weather patterns over a long period of time (for example decades rather than months or years) and not to short-term or temporary weather conditions

1. Overall, would you say the climate in your local community is very different than it was in the past, somewhat different, or pretty much the same?

Don't Know	0.9
Very Different	20.8
Somewhat Different	37.6
Pretty Much the Same	40.7

2. Would you say that the number of hurricanes that have impacted your local community have increased, decreased, or stayed about the same as in the past?

Don't Know	4.4
Increased	15.3
Decreased	25.6
Stayed the Same	54.7

3. Would you say that the hurricanes that do impact your local community are stronger, not as strong, or about as strong as hurricanes in the past?

Don't Know	7.3
Stronger	29.5
Not as Strong	17.2
About as Strong	46

4. Would you say that nearby coastal areas have been eroding more rapidly, less rapidly, or at about the same rate as in the past?

Don't Know	11.8
More Rapidly	40.1
Less Rapidly	6.6
About the Same Rate	41.5

5. Would you say that air temperatures in your local community have increased, decreased, or stayed about the same?
- | | |
|----------------|------|
| Don't Know | 2.1 |
| Increased | 45.5 |
| Decreased | 4.8 |
| About the Same | 47.7 |
6. Would you say that the temperatures of nearby coastal waters have increased, decreased, or stayed about the same?
- | | |
|----------------|------|
| Don't Know | 15.5 |
| Increased | 28.9 |
| Decreased | 4.7 |
| About the Same | 50.9 |
7. What about levels of coastal waters in your community; have the levels of coastal waters increased, decreased or stayed about the same as they have been in the past?
- | | |
|----------------|------|
| Don't Know | 16.4 |
| Increased | 17.4 |
| Decreased | 20.6 |
| About the Same | 45.6 |
8. And have you happened to notice if there are more dead cypress trees or other plant species in nearby freshwater swamps?
- | | |
|--|------|
| Don't Know | 11.7 |
| Yes, there are more dead cypress trees | 23.5 |
| No, I haven't noticed a difference | 64.8 |
9. Would you say droughts in your local community have increased, decreased or stayed about the same?
- | | |
|----------------|------|
| Don't Know | 1.8 |
| Increased | 51.5 |
| Decreased | 8.5 |
| About the Same | 38.2 |
10. Would you say flooding in your local community has increased, decreased, or stayed about the same?
- | | |
|----------------|------|
| Don't Know | 2 |
| Increased | 19.3 |
| Decreased | 18.6 |
| About the Same | 60.1 |

11. How would you describe the effect of changes to the climate on your local community? Would you say the effect of the changes have been...

Don't Know	3.8
Very Negative	6.7
Somewhat Negative	32.1
Neither Positive nor Negative	44.1
Somewhat Positive	9.8
Very Positive	3.5

12. When it comes to the impact of changing climate conditions in your community, what is your single greatest concern?

<Open End>

13. How concerned are you that your local community will be negatively affected by future changes to the local climate?

Don't Know	0.8
Extremely Concerned	14.8
Very Concerned	19.6
Somewhat Concerned	26.8
Slightly Concerned	16.6
Not Concerned at All	21.5

14. How would you describe the effect of changes to climate on you and your immediate family? Would you say the effect of the changes has been...

Don't Know	1.6
Very Negative	5.2
Somewhat Negative	32.8
Neither Positive nor Negative	47.2
Somewhat Positive	8.8
Very Positive	4.4

15. IF NEGATIVE OR SOMEWHAT NEGATIVE: How?

<Open End>

16. How well prepared do you think your local government is to address issues related to changes in local climate?

Don't Know	7.2
Very Prepared	12.3
Somewhat Prepared	36.5
Not Very Prepared	21.6
Not Prepared at All	22.4

17. And would you support or oppose your local government taking action to address issues related to changes in the local climate?

Don't Know	7.0
Strongly Support	26.2
Support	50.3
Oppose	11.4
Strongly Oppose	5.1

18. Are you personally doing anything to adapt to changes in your local climate?

Don't Know	0.6
Yes	35.5
No	63.9

19. What specifically are you doing?

<Open End>

Now I am going to read a number of ideas for how communities might adapt to climate variability. Please tell me if you support or oppose each proposal.

20. Do you support or oppose providing incentives for property owners to relocate threatened houses, buildings, and other structures?

Don't Know	7.2
Support	57.1
Oppose	35.7

21. Do you support or oppose requiring coastal hazard statements for the sale of property in coastal areas? INTERVIEWER: *A home buyer would receive a statement/disclosure informing them if the property they plan to purchase is in a high hazard zone (vulnerable to high wind speeds/storm surge).*

Don't Know	2.3
Support	77.7
Oppose	20.0

22. Do you support or oppose increasing the height that buildings and houses must be elevated above ground level?

Don't Know	5.7
Support	72.8
Oppose	21.5

23. Do you support or oppose increasing funding for sea-level monitoring?

Don't Know	3.8
Support	73.5
Oppose	22.6

24. Do you support or oppose raising insurance rates for property located in high risk areas?

Don't Know	4.0
Support	41.6
Oppose	54.4

25. Do you support or oppose insurance discounts for fortified homes? INTERVIEWER: *May also have to explain what fortified means. Ex: strengthening a home's outer envelope---notably roof and wall systems, doors, glazed openings, and the foundation.*

Don't Know	0.7
Support	90.1
Oppose	9.2

26. Do you support or oppose limiting the type of structures that can be built in high risk areas?

Don't Know	3.5
Support	70.6
Oppose	26

27. Do you support or oppose making modifications to existing developments to resist flooding and erosion impacts?

Don't Know	4.0
Support	84.4
Oppose	11.6

28. Do you support or oppose building seawalls or jetties to protect coastal communities?

Don't Know	2.9
Support	82.1
Oppose	14.9

29. Do support or oppose protecting fresh water and waste water infrastructure from saltwater contamination?

Don't Know	4.4
Support	90.3
Oppose	5.2

30. Do you support or oppose measures to maintain adequate freshwater supplies?

Don't Know	3.2
Support	93.8
Oppose	3.0

31. Do you support or oppose the CONSERVATION of natural habitats such as wetlands and barrier islands to protect coastal communities?

Don't Know	1.6
Support	93.2
Oppose	5.2

32. Do you support or oppose the RESTORATION of natural habitats such as wetlands and barrier islands to protect coastal communities?

Don't Know	2.3
Support	86.9
Oppose	10.8

33. Do you support or oppose increasing funding for public education on emergency preparation and evacuation?

Don't Know	1.4
Support	85.6
Oppose	13.0

34. Recently, you may have noticed that climate change has been getting some attention in the news. Climate change refers to the idea that the world's average temperature has been increasing over the past 150 years, may be increasing more in the future, and that the world's climate may change as a result. What do you think? Do you think climate change is happening?

Don't Know	2.8
Yes	79.1
No	18.2

35. Overall, how well informed would you say you are about climate change?

Don't Know	0.4
Very Well Informed	22.2
Somewhat Well Informed	60.6
Not Very Well Informed	14.3
Not Informed At All	2.5

36. Overall, how closely do you follow news about issues related to climate change?

Don't Know	0.1
Very Closely	30.0
Somewhat Closely	49.1
Not Very Closely	15.6
Not At All	5.3

37. Regarding the issue of climate change, some people feel that they have all the information they need in order to form a firm opinion, whereas other people feel that they would like more information before making up their minds. How about you..

Don't Know	0.6
I need a lot more information	22.3
I need some more information	32.9
I need a little more information	21.7
I don't need any more information	22.4

38. If you wanted to learn more about changes to your local climate would you go to a LOCAL newspaper for information?

Don't Know	0.4
Yes	46.0
No	53.7

39. And would you read a paper version of this local newspaper or would you read it online?

Don't Know	0.3
Paper Version	43.2
Online Newspaper	30.8
Both	25.7

40. If you wanted to learn more about changes to your local climate would you go to a national newspaper for information?

Don't Know	0.3
Yes	46.6
No	53.1

41. And would you read a paper version of this national newspaper or would you read it online?

Don't Know	0.3
Paper Version	29.6
Online Newspaper	43.8
Both	26.3

42. If you wanted to learn more about changes to your local climate would you go to local television news for information?

Don't Know	0.9
Yes	62.6
No	36.5

43. If you wanted to learn more about changes to your local climate would you go to national network television news for information?

Don't Know	0.4
Yes	62.6
No	36.9

44. And which of the following national network news programs is the one you are most likely to watch?

Don't Know	7.1
ABC	31.8
NBC	16.4
Fox	30.3
CBS	14.5

45. If you wanted to learn more about changes to your local climate would you go to cable television news for information?

Don't Know	0.5
Yes	59.1
No	40.4

46. And which of the following cable network news programs is the one you are most likely to watch?

CNN	37.8
Fox	33.7
MSNBC	12.1
Weather	7.6
Other	8.9

47. If you wanted to learn more about changes to your local climate would you go to NEWS RADIO programs for information?

Don't Know	0.5
Yes	35.4
No	64.1

48. And which NEWS radio programs would you listen to?

<Open End>

49. If you wanted to learn more about changes to your local climate would you go to TALK Radio programs for information?

Don't Know	2
Yes	29
No	69

50. If you wanted to learn more about changes to your local climate would you go to Online News sources for information?

Don't Know	0.6
Yes	69.3
No	30.0

51. And which online news sources would you get information from?

<Open End>

52. If you wanted to learn more about changes to your local climate would you go to online social networking sites sources for information?

Don't Know	1.5
Yes	20.5
No	78.0

53. And which online social networks would you get information from?

<Open End>

54. Are there any other news or information sources you would use to get information which we have not talked about?

Don't Know	0.2
Yes	24.4
No	75.4

55. And what other sources would you use to get information from?

<Open End>

We just have few more questions for statistical purpose.

56. How many years have you lived in your community?

One Year or Less	2.4
2-5 Years	8.9
6-10 Years	12.8
11-20 Years	25.8
More than 20 Years	50.1

57. What is your zip code?

58. Including yourself, how many people currently live in your household?

1	20.2
2	40.7
3	15.6
4	14.1
More than 4	9.5

59. And how many of these are children under 18 years of age?

0	54.1
1	15.3
2	20.2
More than 2	10.3

60. Generally speaking do you consider yourself a Democrat, Republican, or Independent?

Don't Know	4.3
Democrat	31.8
Republican	22.8
Independent	41.1

61. Do you own your own home, pay rent, or something else?

Don't Know	0.1
Own	66.9
Rent	22.5
Something Else	10.5

62. Do you currently have flood insurance?

Don't Know	2.7
Yes	45.0
No	52.3

63. Why do you have flood insurance? Is it because it is required or because you feel safer with it?

Don't Know	0.9
Required	25.9
Safer	48.6
Both	24.6

64. Have you personally taken any actions to make your home more resistant to hazards?

Don't Know	0.3
Yes	51.4
No	48.3

65. What actions did you take?

<Open End>

66. How far away from the coastal waters do you live?

Don't Know	2.2
Adjacent/On the water	7.2
Near the water/within 1-2 miles	9.0
within 2-5 miles	9.7
5-10 miles	16.0
11-30 miles	22.8
31-60 miles	17.3
More than 60 miles	15.8

67. In what year were you born? [Recoded in Age Categories]

18-24	12.1
25-34	17.4
35-44	17.7
45-54	18.7
55-64	15.1
65 and over	18.9

68. Which of the following categories best describes your level of education? Please stop me when I get to that category.

Less than High School	17.4
High School Degree	28.7
Some College	21.9
College Degree	32.0

69. Which of the following best describes you: Are you White, Hispanic, African-American, Asian, Mixed race or other?

White/Caucasian	58.1
Black/African American	19.3
Hispanic	16.0
Asian	0.8
Mixed Race	4.0
Other	1.9

70. Are you a member of any conservation or environmental organizations?

Yes	9
No	91

71. We would like to know what your household income was last year before taxes. This information will remain strictly confidential and will only be used for statistical purposes. Please stop me when I get to the category that includes your family income.

Under \$10,000	7.3
\$10,000 - \$19,999	10.1
\$20,000 - \$29,999	12.9
\$30,000 - \$39,999	9.9
\$40,000- \$49,999	11.4
\$50,000 - \$74,999	18.5
\$75,000 - \$99,999	11.6
\$100,000 or more	18.2

72. Record gender

Male	47.0
Female	53.0