

Hurricane Preparedness
in Florida Households in 2010

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Introduction

In the spring of 2006 interviews were conducted with a sample of Florida residents to ascertain their level of disaster preparedness and to measure other indicators that might affect the ability of households to respond to and recover from hurricanes. In April of 2010 another survey of Florida residents was conducted, asking many of the same questions asked in 2006, using comparable survey methods. The 2010 survey provides both an up-to-date measure of household preparedness in Florida and a comparison to preparedness indicators documented in 2006. The 2006 survey followed the unusually active hurricane seasons of 2004 and 2005, which might reasonably have led to a heightened level of preparedness in advance of the 2006 hurricane season. During the intervening four years of relatively little hurricane activity affecting most of Florida, it is possible that preparedness has declined. The 2010 re-survey provides an indication of whether that has occurred.

Summary of Findings

Current Preparedness. In general, Florida residents said they are well-prepared for the aftermath of a hurricane or other disaster. People were most likely to say they have emergency lighting, important papers, prescription medicines, battery-powered radios, and adequate gasoline in their cars. They were less likely to say they have sufficient water and ice currently on hand. Preparedness levels were very similar to those reported by residents in 2006. Age, homeownership, income, and race were more strongly related to preparedness than other factors.

Expectations about Disaster Relief. Most Floridians believe it is reasonable for agencies and organizations to have relief supplies available within 48 hours of a hurricane. However, an even larger majority don't actually expect assistance that soon. They expect to be on their own for at least three days. Similar attitudes were expressed in 2006.

Sources of Information. A large majority of residents said they've seen television programs and printed materials about hurricanes and how to prepare for them, but few have seen information in their telephone books or gone to public libraries for hurricane information. Most respondents said they have access to the internet, but few have visited their county or state emergency management agency websites to look up hurricane information. Similar results were found in 2006.

Perceived Vulnerability. Too few residents living in category 1-3 evacuation zones comprehend their vulnerability to category 3 hurricanes, and too many people living inland of the category 3 evacuation zone believe they are vulnerable. In 2010 fewer inland residents said they would be unsafe, compared to 2006, and more category 1-3 residents said their homes would flood dangerously in 2010 than in 2006. Few coastal residents know the elevation of their homes.

Watches and Warnings. Very few people know the lead times for watches and warnings (about the same as in 2006), and even fewer were aware the lead times are changing in 2010. Many residents expect to make earlier evacuation decisions if lead times are increased.

Obstacles to Evacuation. Fewer than 10% of households have members who need assistance in order to evacuate, and only 6% report having anyone with a medical problem or disability that would require special assistance, similar to 2006 findings. Of those households, only 20% believe they require assistance from an agency or organization outside their home. Few of those needing assistance are registered with their counties as having special needs. Most people with pets say they plan to take their pets with them to their evacuation destinations, but the number of people citing pets as obstacles to evacuation is down from 2006. Financial costs of evacuation were mentioned as obstacles more often than in 2006.

Mitigation. Most survey respondents said they have some sort of window protection for hurricanes, but most has to be put in place when a storm threatens. The reported amount of window protection was higher in 2010 than in 2006.

Having a Plan. More than half of Florida residents said they have a definite evacuation plan, which is down slightly from 2006. Age, years lived in Florida, education, and type of housing are the best predictors of having a plan.

Methods

Subject Areas

During April of 2010 telephone interviews were conducted with 876 Florida residents, dealing with the following subjects:

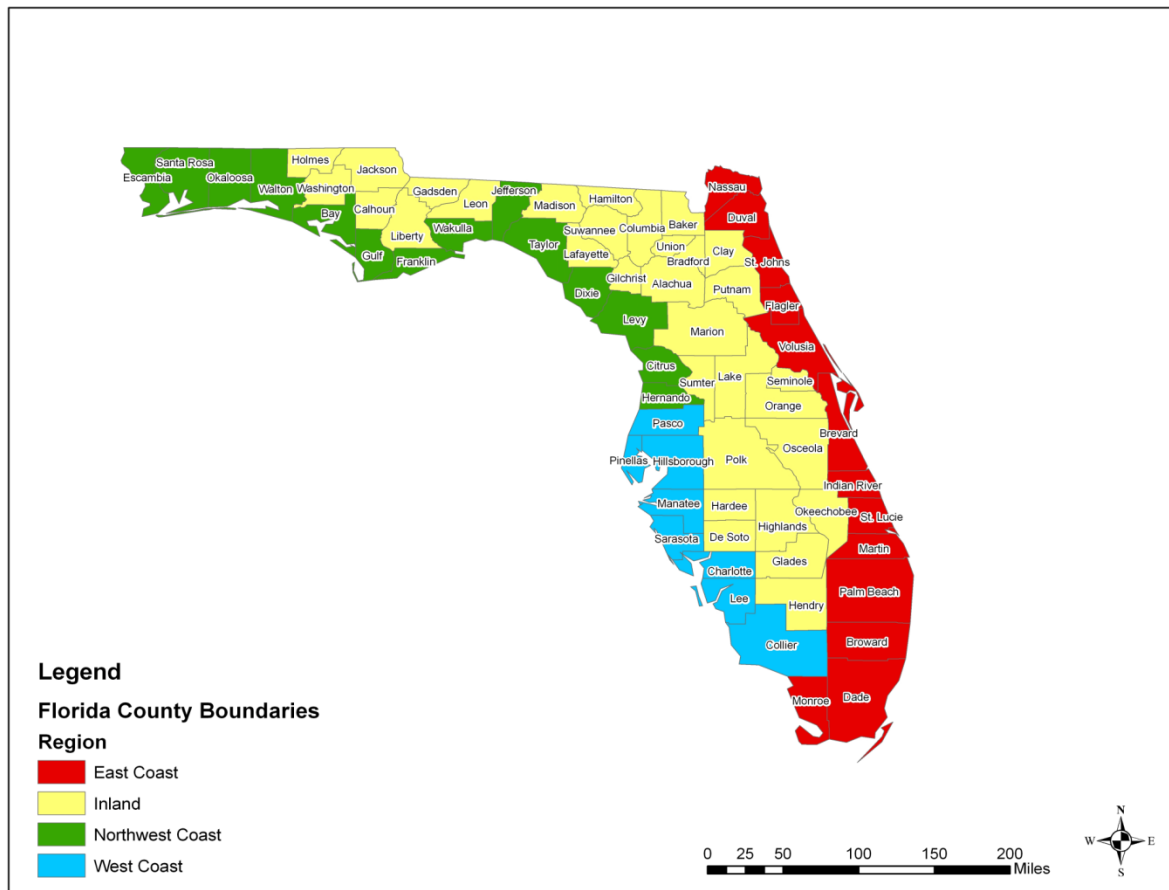
- Current preparedness
- Preparedness Attitudes and Expectations
- Information Sources for Hurricanes and Hurricane Preparedness
- Perceived Vulnerability
- Knowledge about Hurricane Watches and Warnings
- Pets, Special Needs, and other Obstacles to Evacuation
- Mitigation
- Having a Plan for Evacuation

Most questions used precisely the same wording as used in the 2006 survey of household preparedness in Florida. A small number of new questions were added in 2010.

Sampling

The sample of 876 respondents was divided equally among four regions of the state:

- East Coast Counties
- Northwest Coast Counties
- West Coast Counties
- Non-coastal Counties



The sample in coastal counties was apportioned to ensure that two-thirds of those interviewed resided in evacuation zones for category 3 hurricanes, which meant they also lived in evacuations zones for category 1 and 2 hurricanes. The balance of the coastal sample consisted of residents living inland of the category 3 evacuation zone. In order to ensure accurate identification of the survey participant's location with respect to evacuation zone, sampling was restricted to landline telephones, whose addresses could be verified in advance of the interviews.

Table 1. Samples sizes by area and risk zone

	Northwest	West	East	Non-Coastal	TOTAL
Cat 1-3 Zone	147	146	146	0	439
Inland of Cat 3	72	73	73	0	218
Non-coastal	0	0	0	219	219
TOTAL	219	219	219	219	876

The same sampling scheme and allocations among areas of the state and evacuation zones were used in the 2006 survey. One-third of the 2010 respondents also participated in the 2006 survey. Kerr and Downs Research conducted the sampling and telephone interviewing in both surveys.

Statistical Reliability

Even if two surveys were conducted simultaneously using the same questions, methods, and population, it would be unlikely for the two to yield precisely the same results. Some amount of difference would be the result of random variations in the two samples. When the 2006 and 2010 data are compared, differences generally should be at least four percentage points in order to be statistically meaningful. However, certain calculations use only a portion of the total samples. In those cases, differences need to be larger in order to be meaningful, but the necessary magnitudes will vary depending on the number of respondents used in the calculations, among other factors.

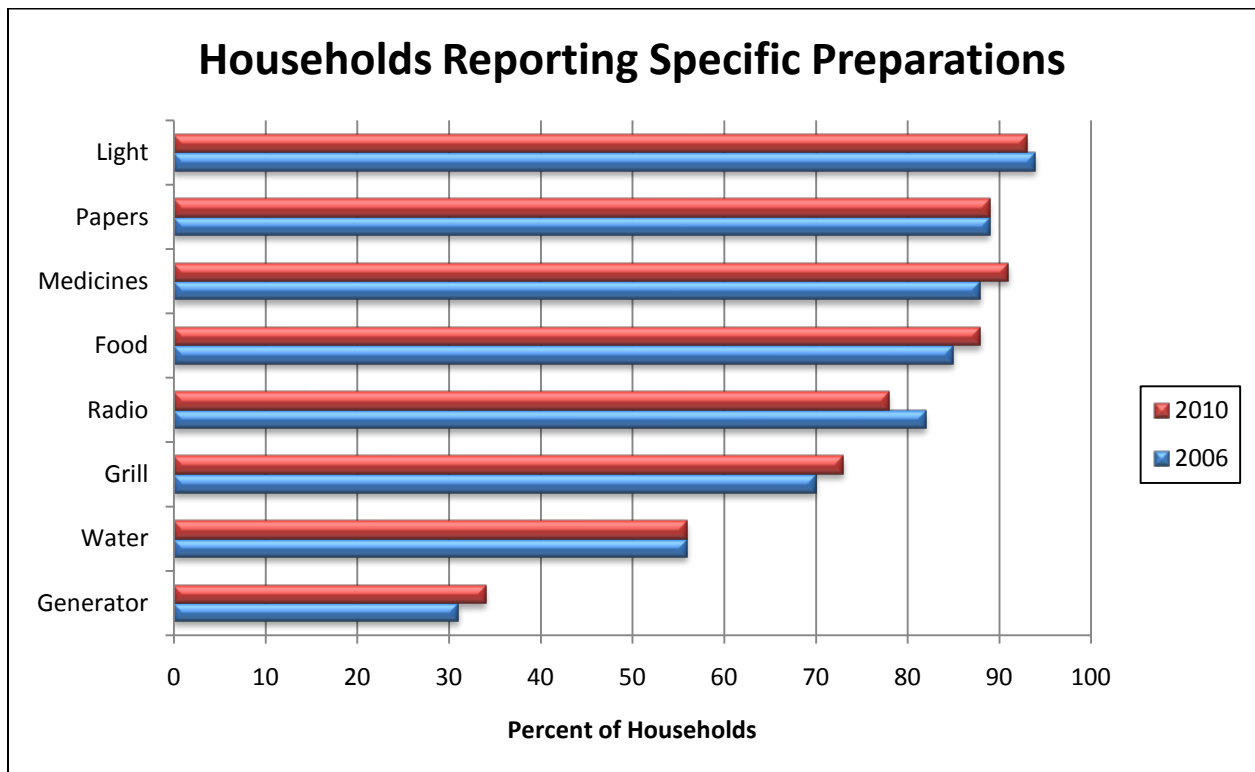
Current Preparedness

Eight Key Indicators

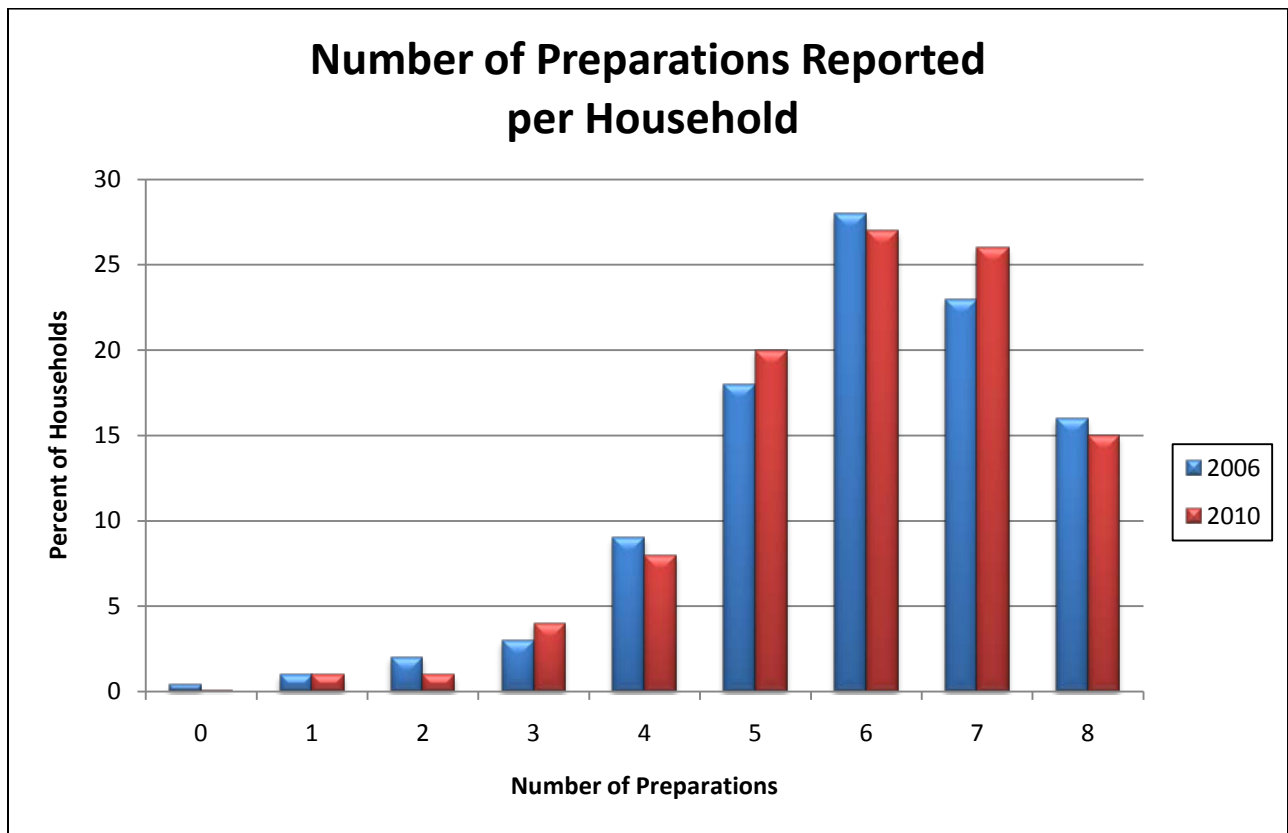
Respondents were asked a series of questions to indicate their current level of preparedness for a disaster which would cause a loss of electrical power and safe drinking water for at least three days. They were asked about eight specific preparedness indicators, which were also asked about in 2006:

- A three-day supply of non-perishable foods like canned food and other foods that don't need refrigeration
- A flashlight or lantern with enough batteries to last at least three days
- A battery-powered radio with enough batteries to last at least three days
- At least a 3-day supply of all important prescription medicines on hand for all members of the household
- At least 3 gallons of water in containers for each person in the household
- Important papers such as insurance policies, wills, bank account information, and family records in a readily accessible place in case evacuation is necessary
- An outdoor grill and fuel or charcoal for it
- A generator and at least a 3-day supply of fuel for it

Over 90% said they had a flashlight or lantern, and nearly 90% said they had sufficient non-perishable food for at least three days. Only 56% said they had a three-day supply of water, given the standard of a gallon a day per person. Preparedness levels in 2010 were comparable to those reported in 2006.



Fifteen percent reported all eight of the preparations, 26% reported seven, and 27% reported six. Results were very similar to those found in 2006.



Factors Related to Current Preparedness

Using six or more preparations as a point of comparison (i.e., reporting at least six preparations vs. reporting fewer than six), preparedness varied along several lines.:

- Age – People under 30 and people over 80 were less prepared than others.
- Home Ownership – Renters were less prepared than homeowners.
- Income – People in households with incomes below \$15,000/year were less prepared than others.
- Race – Hispanics were less prepared than others.
- Children – People in households with children were less prepared than others.
- Years in Home – People who had lived in their current home fewer than five years were less prepared than others.
- Living Alone – People living alone were less prepared than others.
- House Type – People living in mobile or manufactured homes were less prepared than others.
- Gender – Women were less prepared than men.

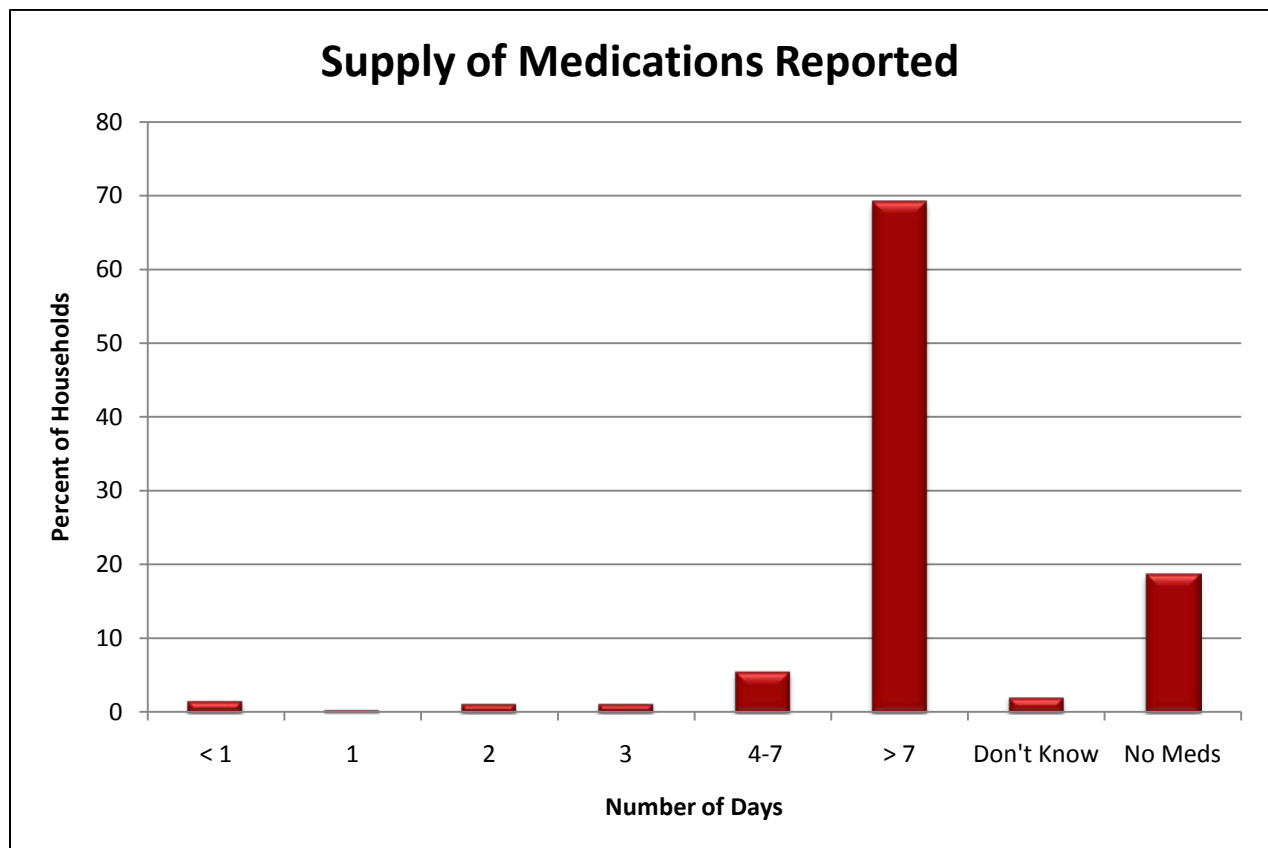
Not related to preparedness were the following:

- Sampling Area (East Coast, etc.)
- Risk Zone (Cat 1-3, etc.)
- Years Lived in Florida
- Education

Additional questions were asked about current preparedness but not in a way that could be compared with 2006 findings. These questions in 2006 were asked about the 2004-2005 hurricane seasons, not about preparedness at the time of the survey in 2006. Residents typically increase their preparedness as a storm threatens their location, so comparisons to current levels of preparedness aren't meaningful.

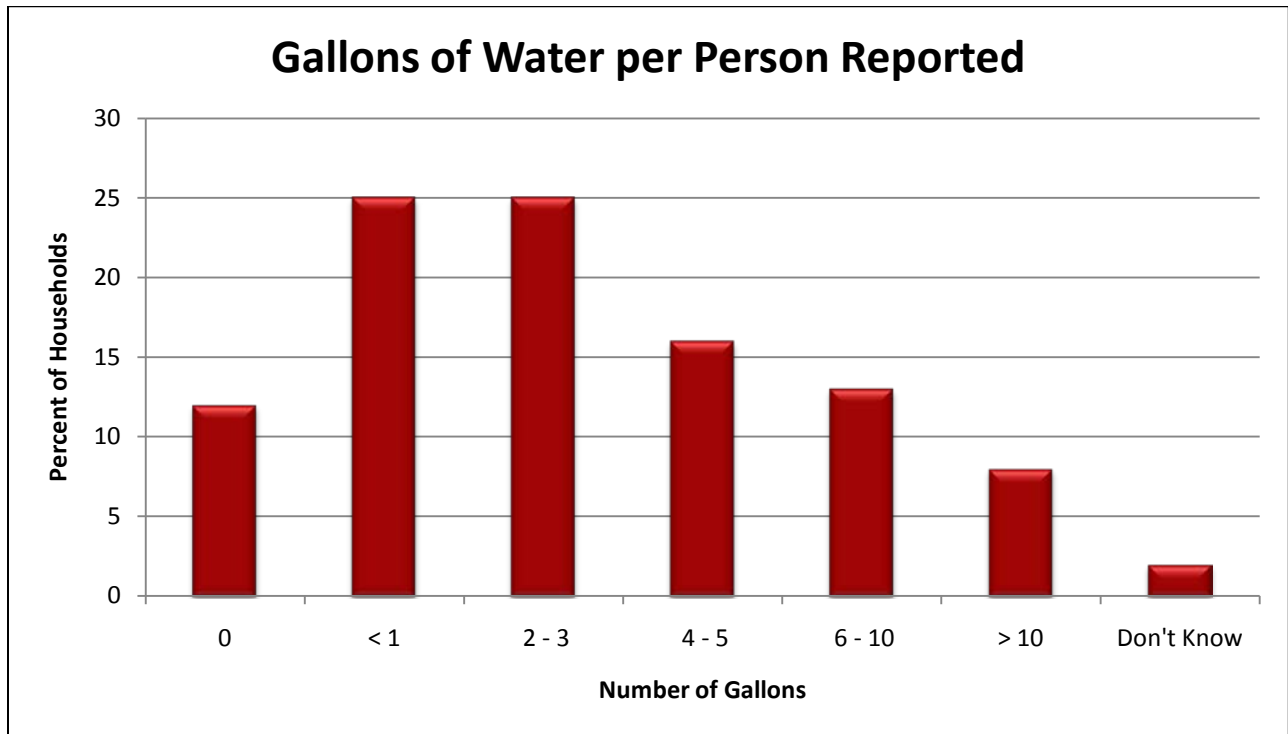
Prescription Medicines

The earlier question about prescription medicines asked if everyone in the household had at least a three-day supply. When asked specifically how many days of supply they had on hand, 70% reported at least a week's supply. Nineteen percent said no one in the home required prescription medicines.



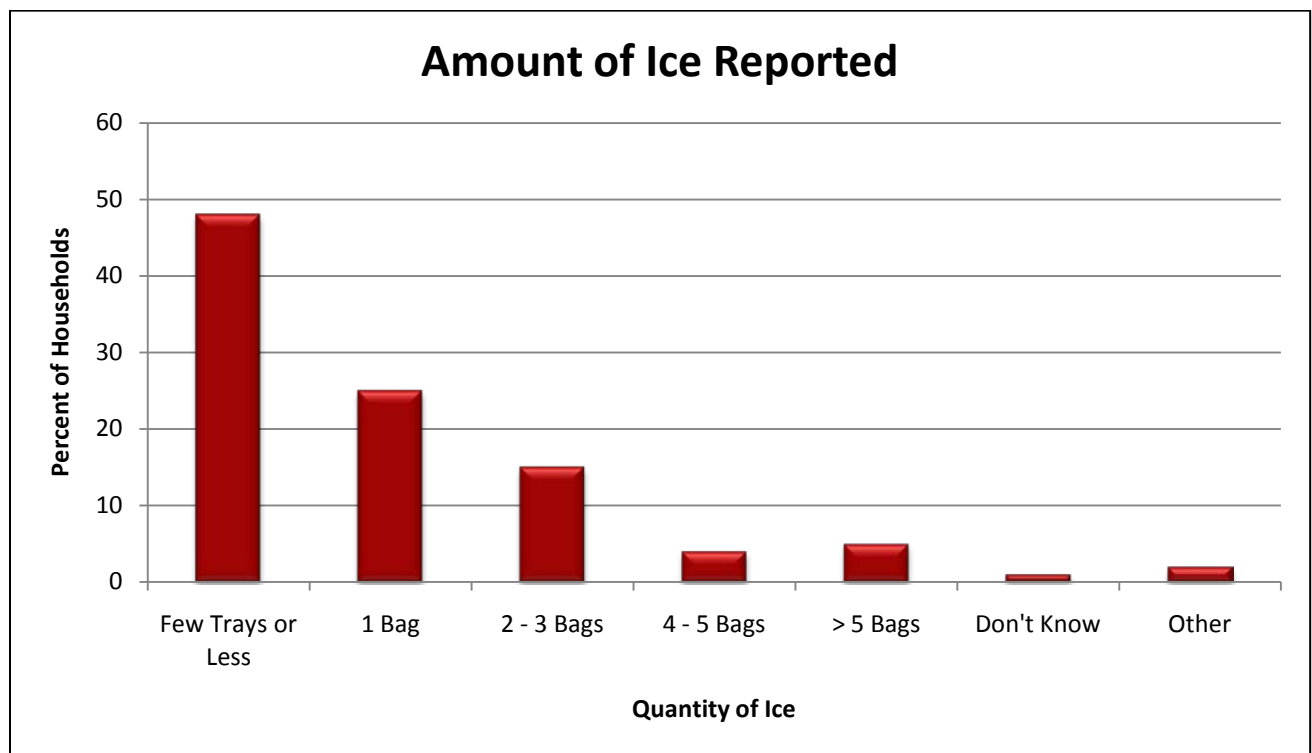
Water

Twelve percent of interviewees said they currently had no containerized water on hand, and 25% said they had a gallon or less per person in the household. Almost two-thirds said they had at least two gallons per person.



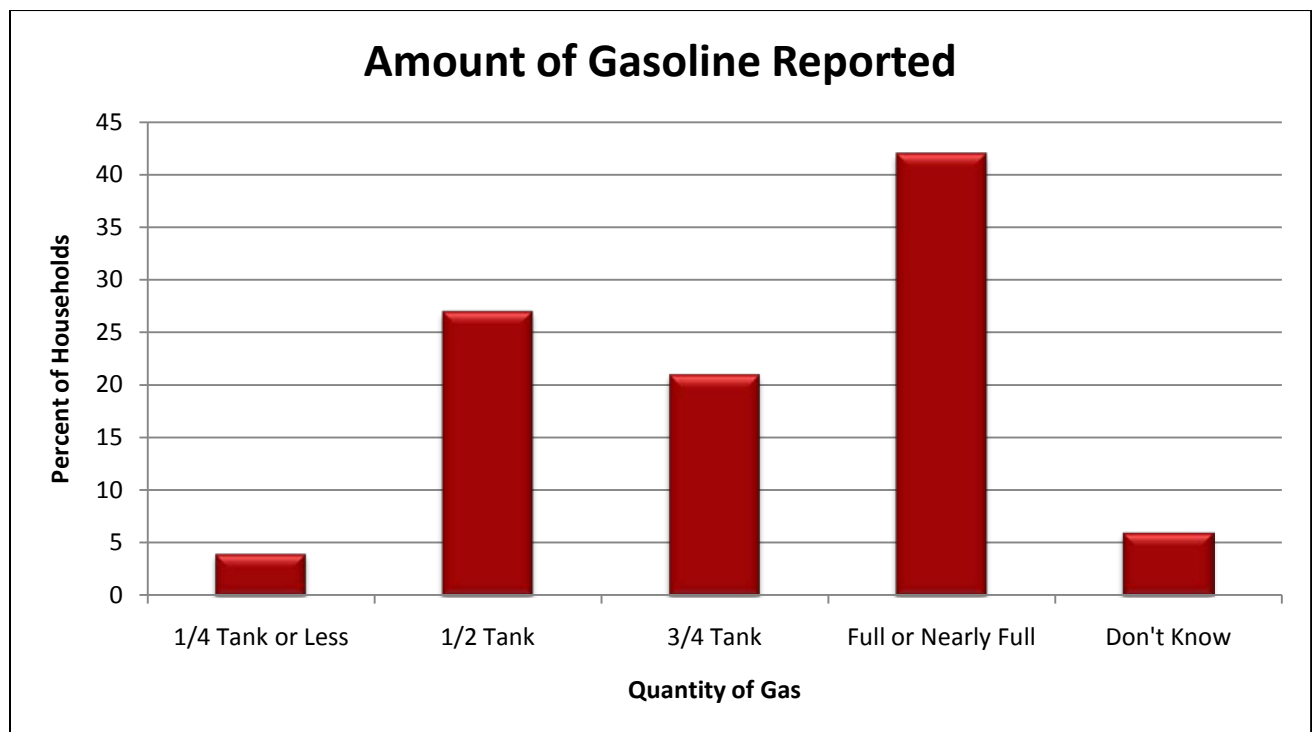
Ice

Almost half of those interviewed said they had just a few cubes or trays of ice currently on hand. One in four people said they had one ten-pound bag of ice, and 15% said they had two to three bags. Ice is a commodity which people anticipate buying in advance of a hurricane.



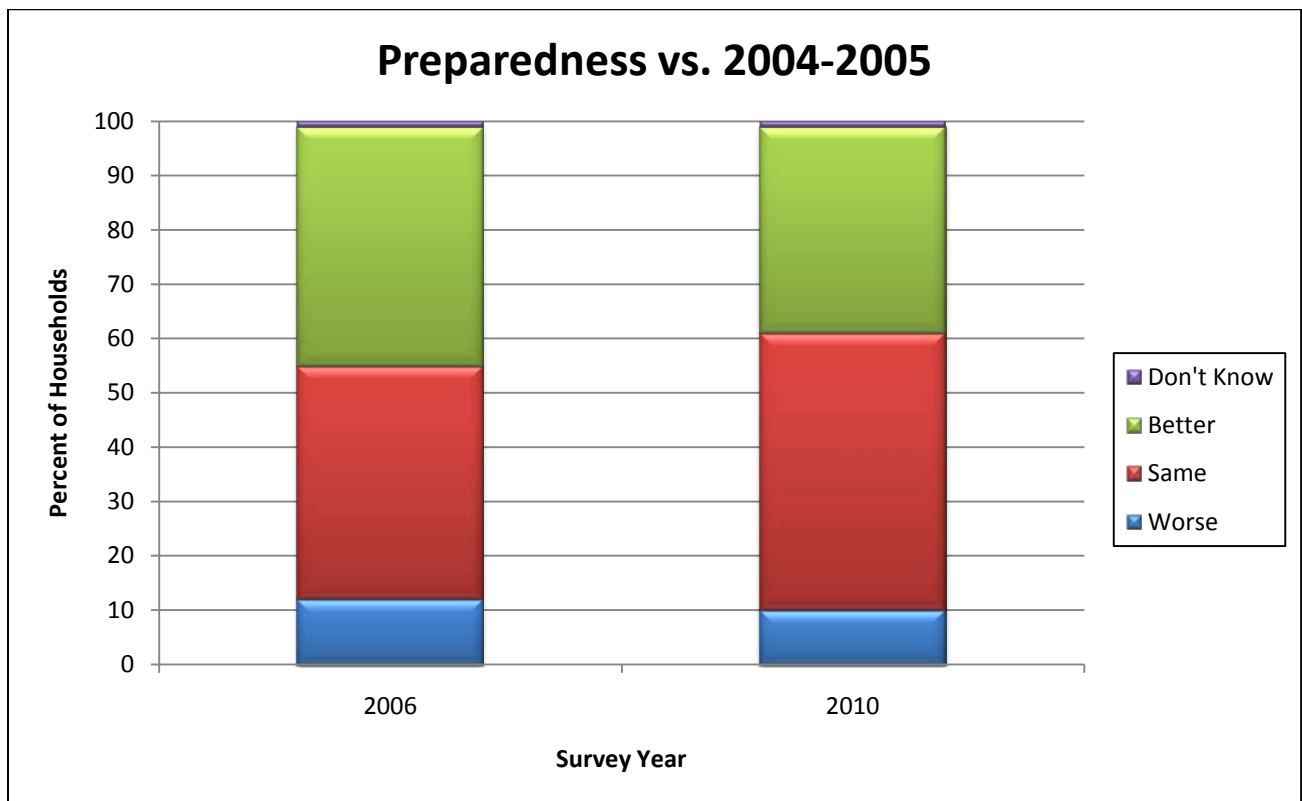
Gasoline

Interviewees were asked how much gasoline they had in their vehicles at the time of the interview. More than 60% said they had more than half a tank, and over 40% said they had a full or nearly full or nearly full tank. Just 4% said they had $\frac{1}{4}$ of a tank or less.



Current Preparedness vs. 2004-2005

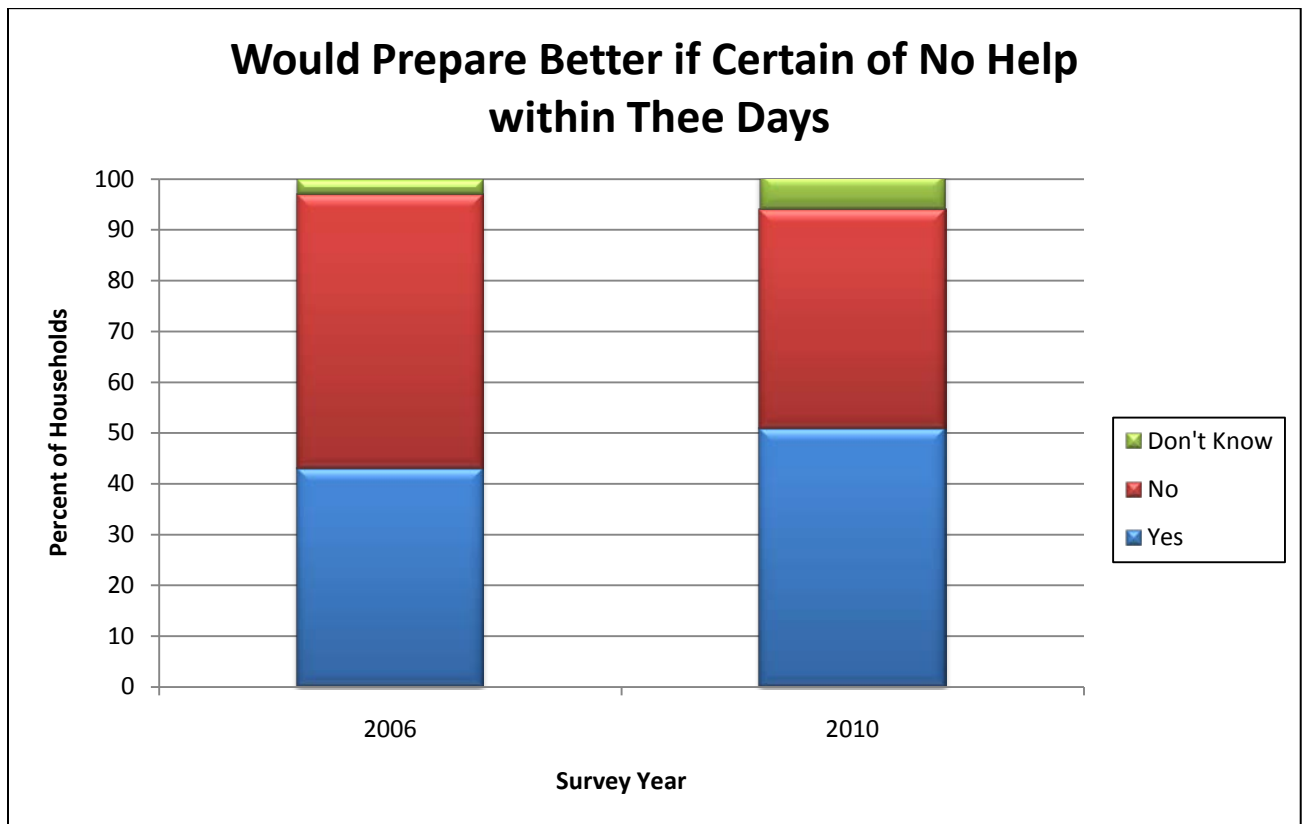
In both 2006 and 2010 people were asked how well prepared for a disaster event they were currently, compared to how well prepared they had been during the 2004 and 2005 hurricane seasons. In both surveys the great majority of respondents said they were currently prepared as well or better than they were in 2004 and 2005. In 2006 more interviewees said they were better prepared, compared to 2010 (44% vs. 38%).



Preparedness Attitudes and Expectations

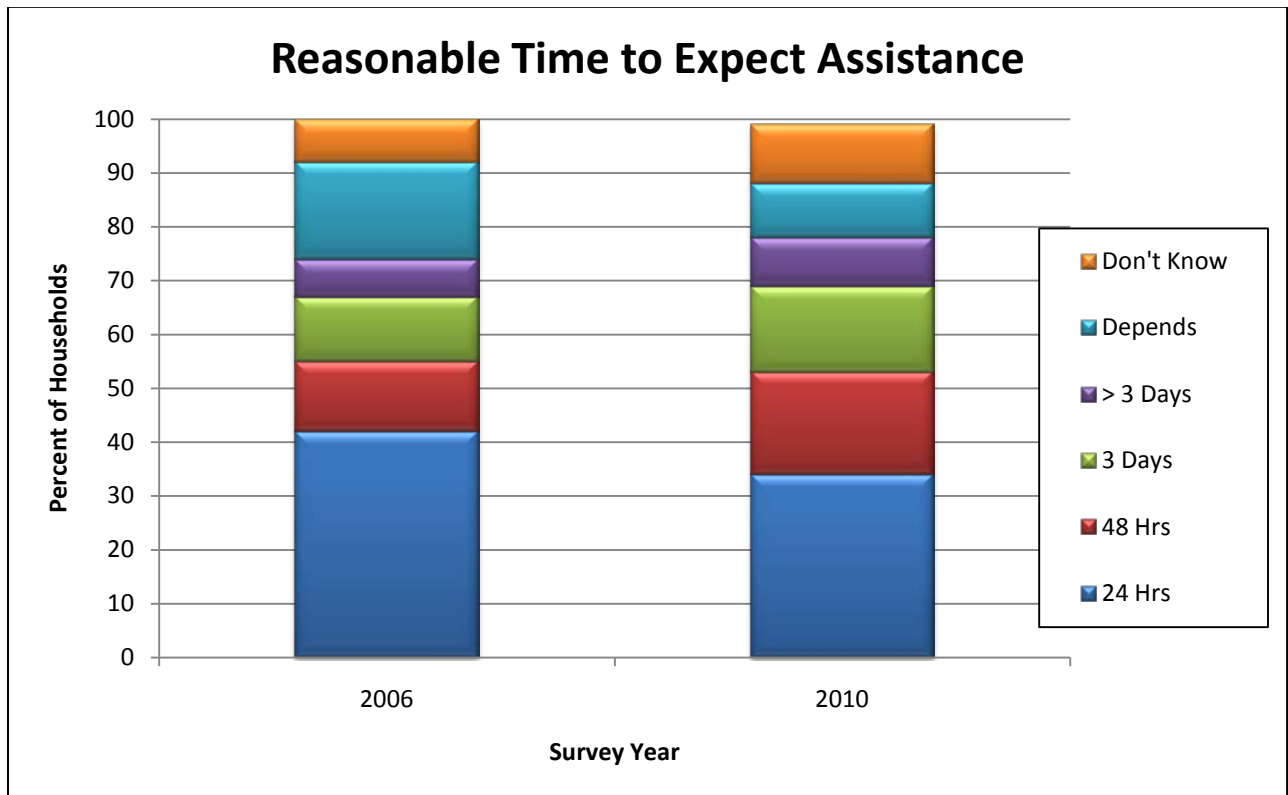
Effect of Assistance Timing on Preparedness

Residents were asked if they would be more likely to prepare better than they had prepared in recent hurricane seasons if they knew for certain that government agencies and relief organizations would not provide any kind of assistance for at least three days following a hurricane. In 2010 a slight majority said they would prepare better, compared to 43% in 2006.



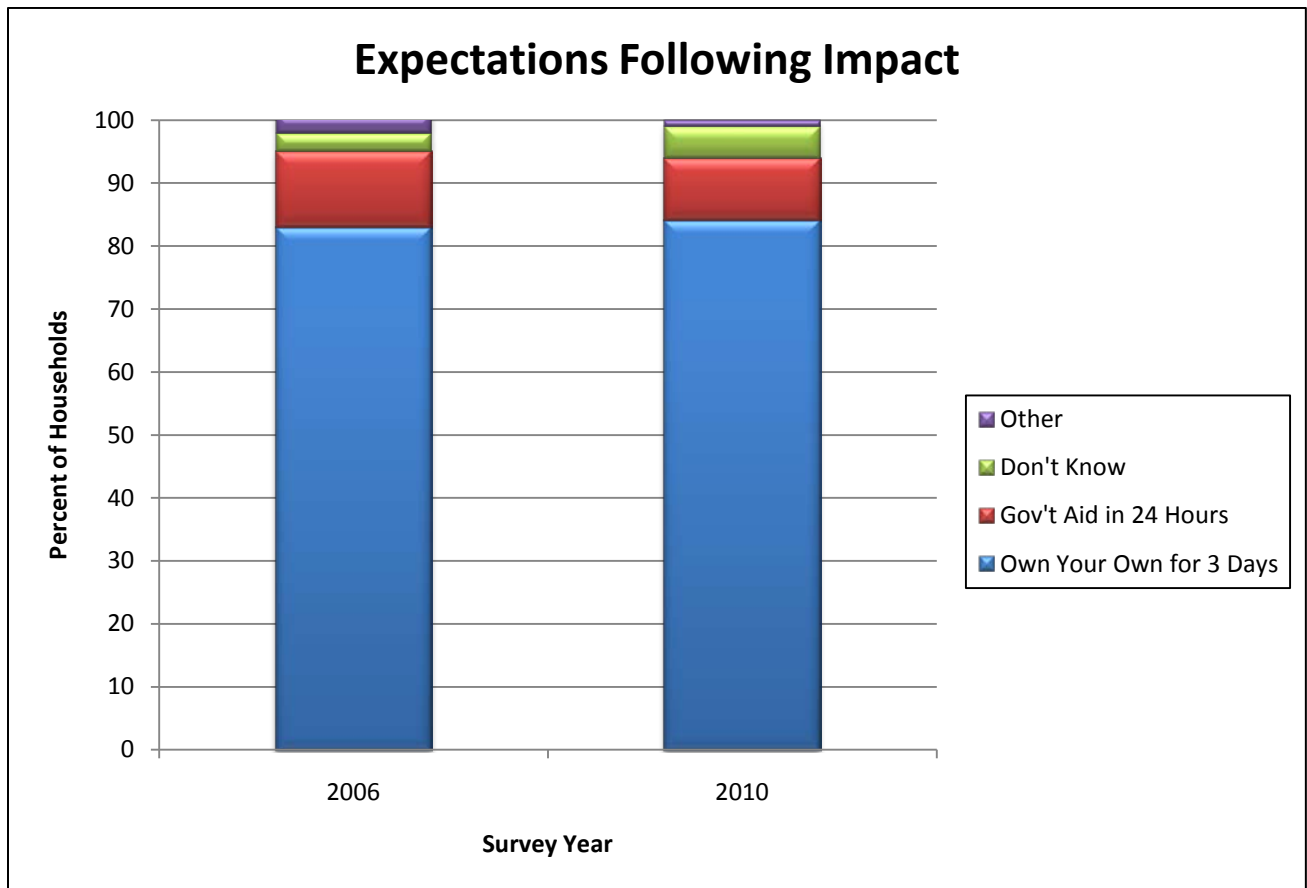
Beliefs about Reasonable Timing of Assistance

Survey participants were asked how quickly after a hurricane strikes and its winds die down that it's reasonable for the public to expect government agencies or disaster relief organizations to be present in neighborhoods to start providing water, ice, and food. Thirty-four percent in 2010 said that relief should start in 24 hours, but that was down from 42% in 2006. Respondents in 2010 were more likely, compared to 2006, to say that relief should begin within 48 or 72 hours and less likely to say that it depended on the amount of damage or that they didn't know. Fewer than 10% in both surveys said it should take more than three days to start providing assistance.



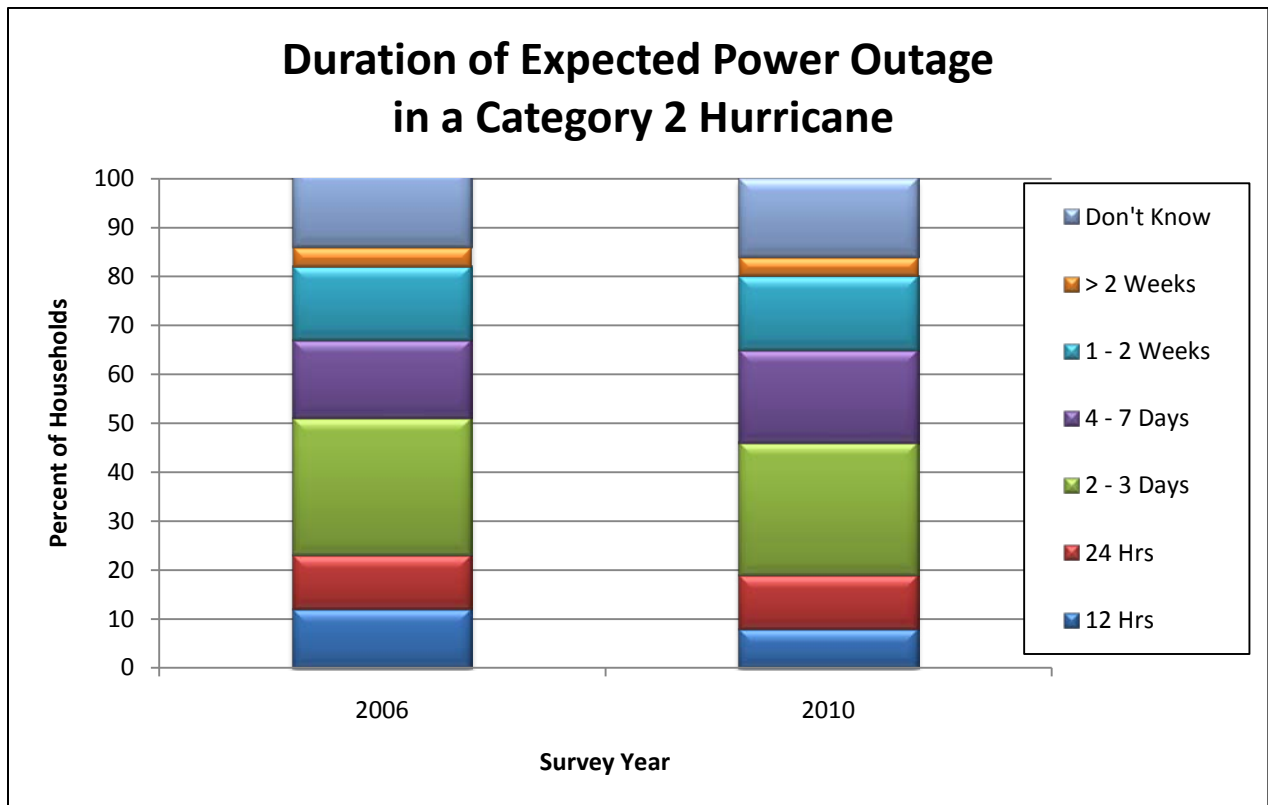
Expectations of Timing of Assistance

Although a third of those interviewed believe it's reasonable to expect assistance within 24 hours of a hurricane, few actually expect that standard to be met. Over 80% said that Floridians should be prepared to be on their own for at least three days, rather than expecting that government and organizational assistance would be available 24 hours after a storm. The response was essentially the same as in 2006.



Expected Duration of Electrical Outage

People were asked how long they would expect to be without electricity if a category 2 hurricane with winds of 100 MPH struck their community. Two-thirds of the 2010 respondents said they would be without power for a week or less, and 19% said it would be 24 hours or less. The 2006 responses were similar, but in 2010 people were slightly more optimistic that outages would last just 12, 24, or 72 hours.

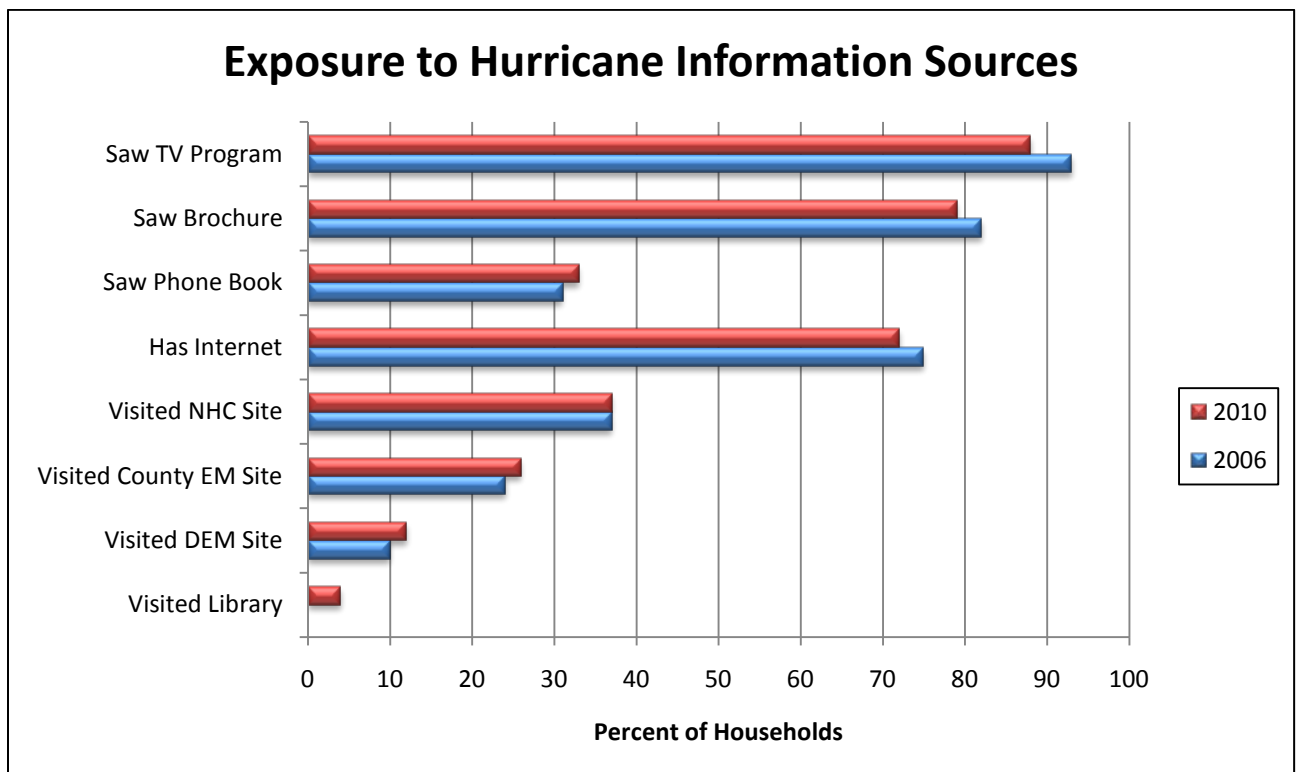


Information Sources for Hurricanes and Hurricane Preparedness

Exposure to Sources of Information

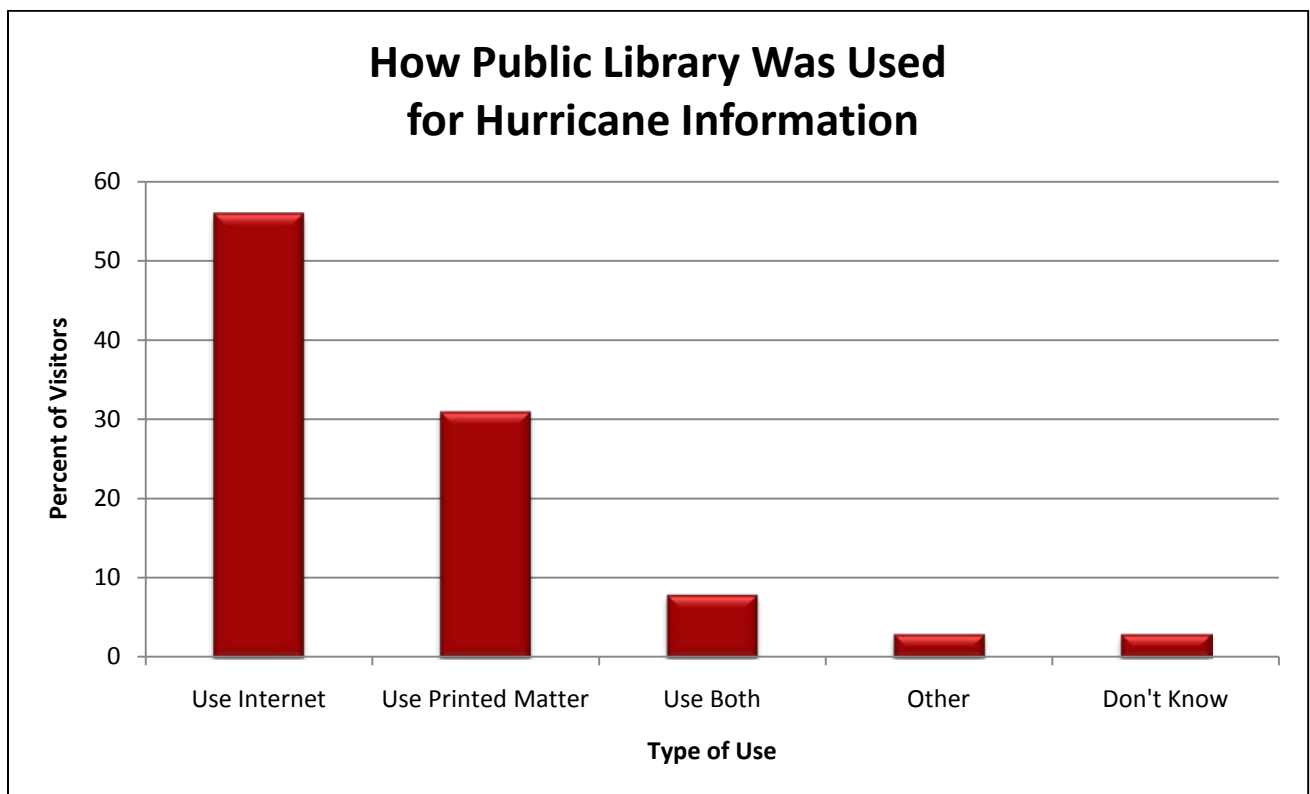
Survey participants were asked if they had ever seen information about hurricanes and how to prepare for them on television, in printed materials such as brochures, and in their telephone book. They were also asked if they had ever gone to a public library to look up information about hurricanes, and whether they had access to the internet to look for hurricane information. Those with internet access were asked if they had ever visited the National Hurricane Center site, their county emergency management site, or *floridadisaster.org* for hurricane information.

Almost 90% said they had seen television programs about hurricanes, and almost 80% said they had seen brochures, both down very slightly from 2006. About 70% said they had access to the internet, but only 37% percent (of the total sample) said they had visited the NHC website, and even fewer had visited their county or the state web sites. Just 4% said they had gone to a public library for hurricane information. The library question was not asked in 2006.



Use of Public Libraries

Of the four percent who said they had visited a public library for hurricane information, most said they did so to use the internet. Thirty percent said they used printed matter at the library, and eight percent said they used both the internet and printed matter.

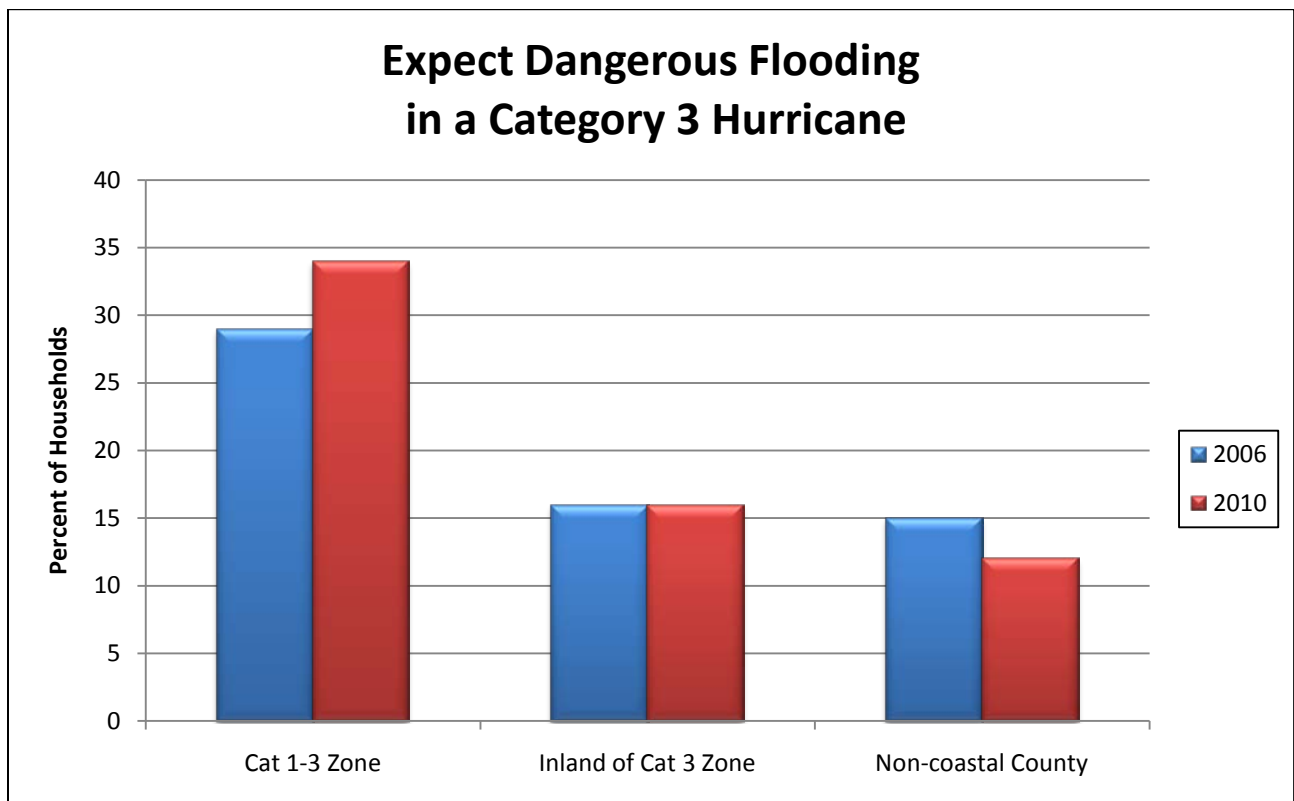


Perceived Vulnerability

The main reason people do or don't evacuate in hurricanes is that they believe they need to or don't need to in order to be safe. A series of questions were asked to indicate public beliefs related to the safety of their homes.

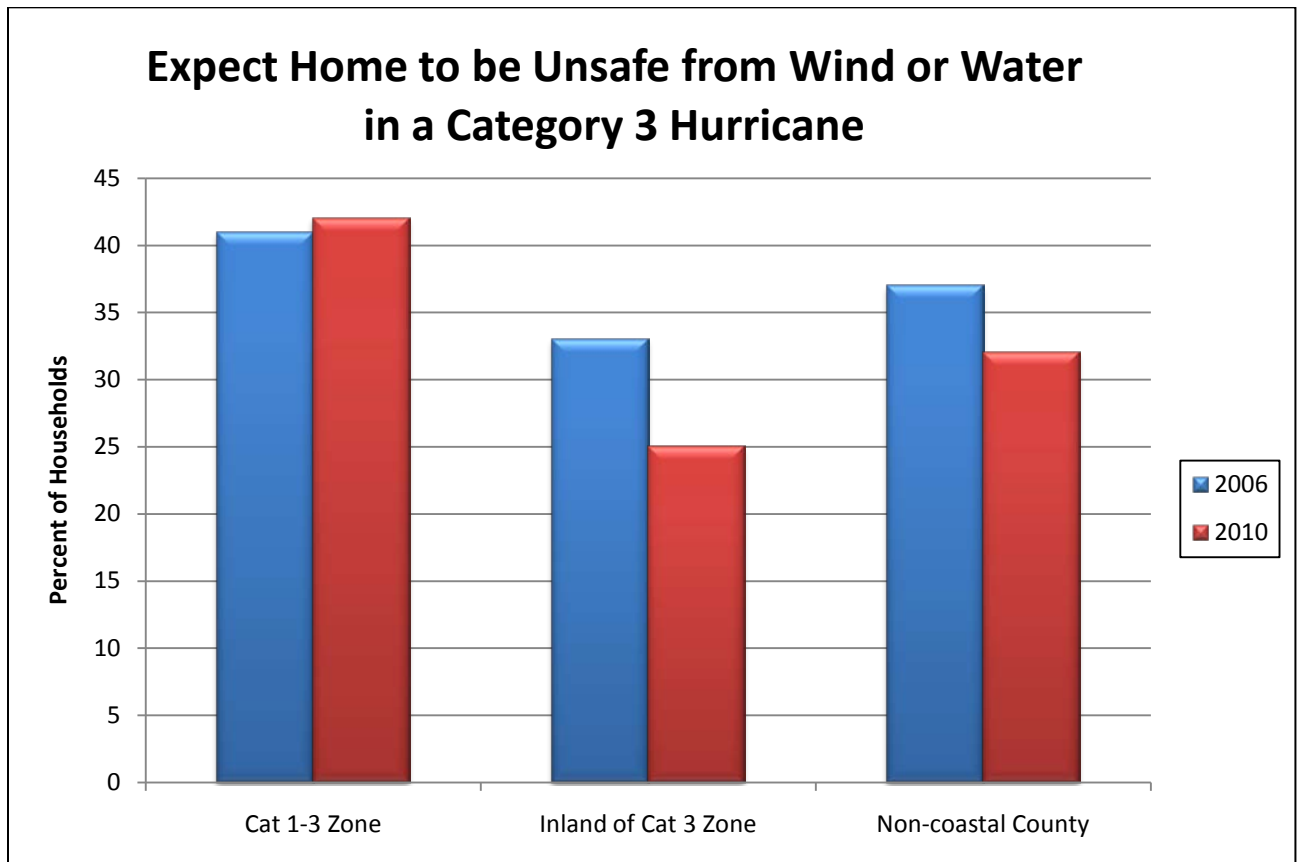
Flooding from Storm Surge and Waves

One indicator of perceived vulnerability is related to flooding. People were asked if their homes would experience dangerous flooding from storm surge and waves in a category 3 hurricane with 125 MPH winds striking their location. Only a third of the respondents living in category 1, 2, or 3 evacuation zones believe their homes would flood dangerously, but that's up from 2006. Twelve percent of interviewees in non-coastal counties believe their homes would flood dangerously from storm surge and waves, but that's down slightly from 2006.



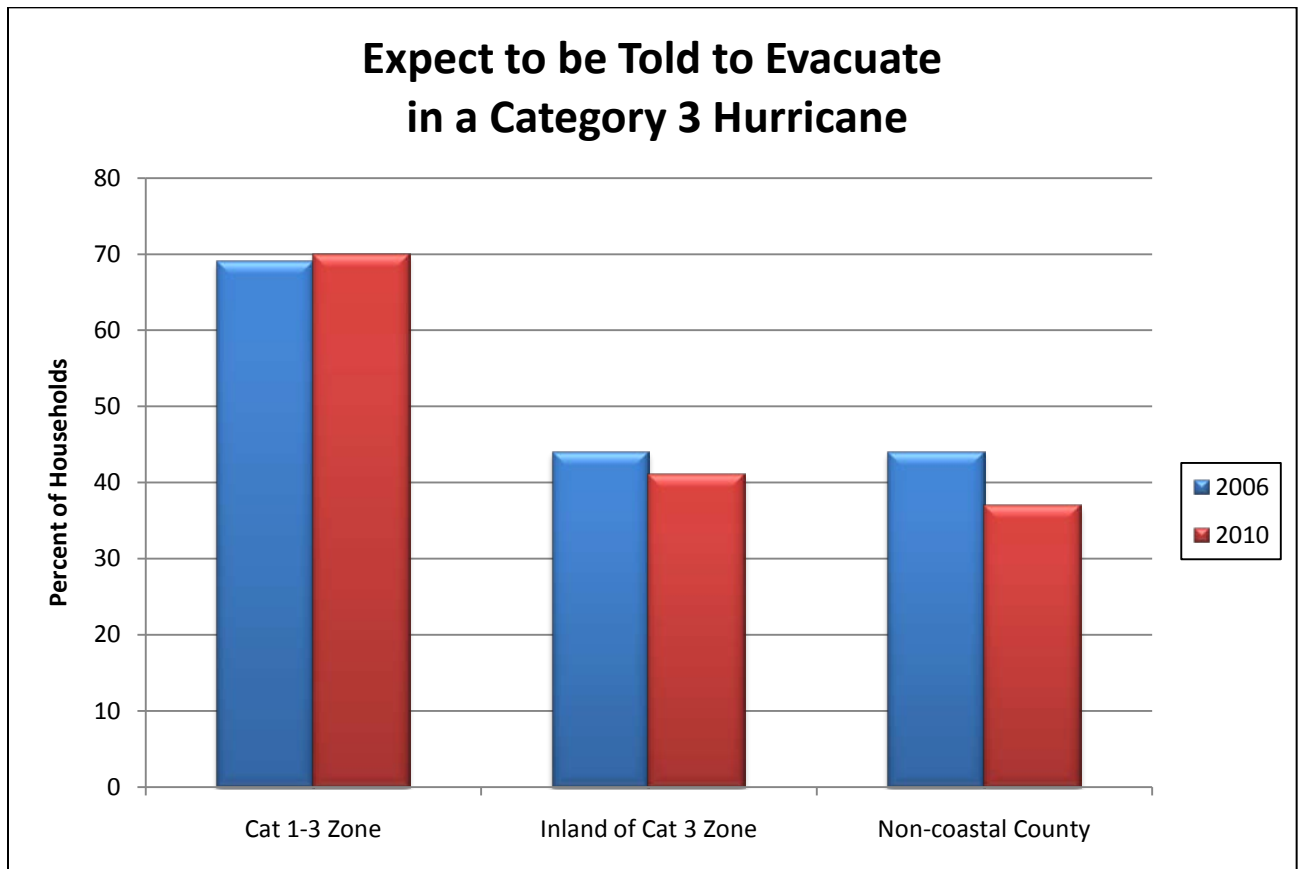
Safety from Wind and Water

Only 42% of the residents in category 1-3 evacuation zones believe it would be unsafe to stay in their homes in a category 3 hurricane with 125 MPH winds, considering both wind and water. Approximately eight percent said they didn't know if it would be safe or not, but the remainder said it would be safe. Almost as many people in coastal counties inland of the category 3 evacuation zone and in non-coastal counties believe their homes also would be unsafe, which can contribute to shadow evacuation. Those figures were down from 2006. Mobile home residents were much more likely than site-built residents to say their homes would be unsafe (80% vs. 30% overall). They represented 4% of the cat 1-3 sample, 9% of the inland of cat 3 coastal sample, and 17% of the non-coastal sample.



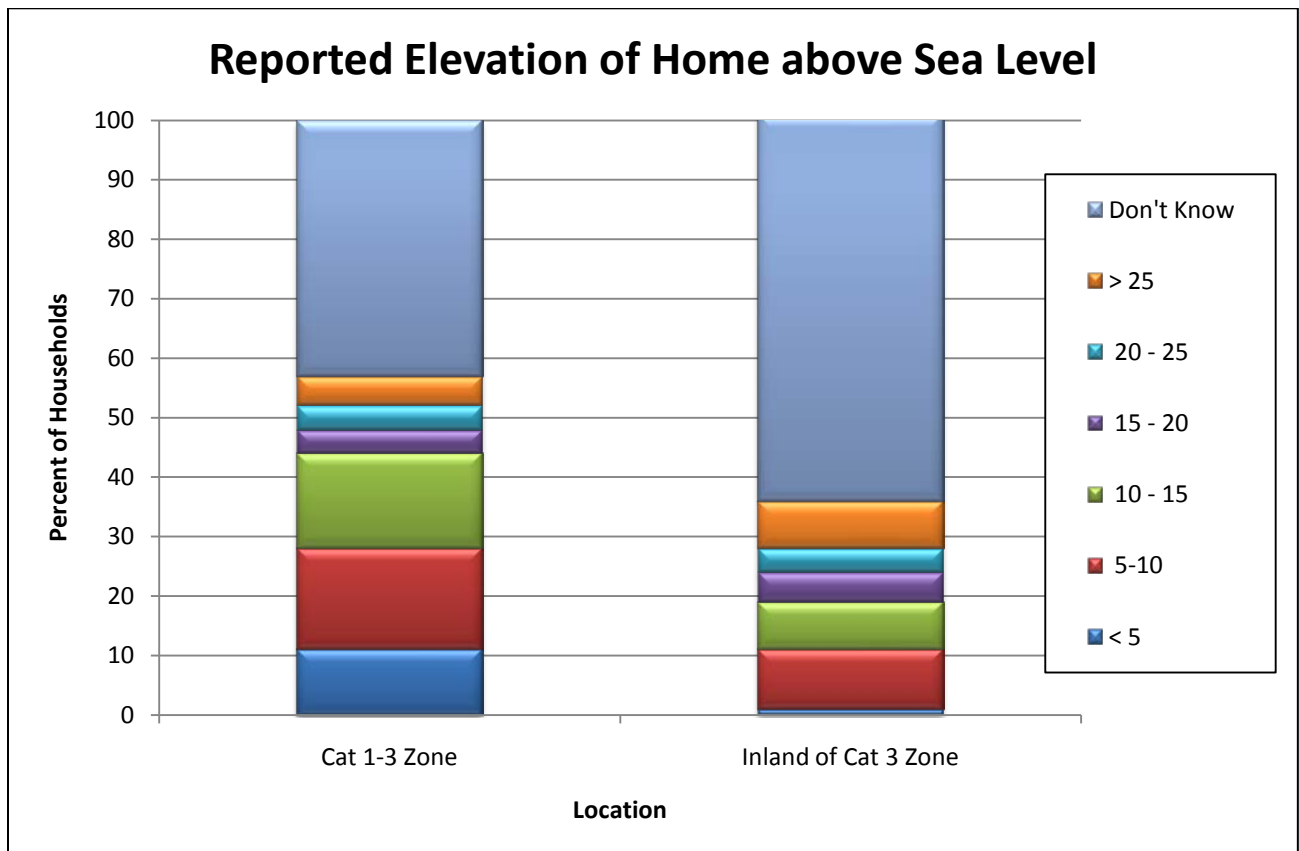
Expectation of Evacuation Notice

Respondents were asked whether public safety officials would tell them to evacuate in a category 3 hurricane with 125 MPH winds, that is, whether the respondent lives in the evacuation zone for a category 3 hurricane. Although evacuation areas can depend on factors other than the storm's wind velocity, existing evacuation zones are based primarily on worst-case storm surge inundation, and only respondents in the category 1-3 evacuation zone would be told to evacuate, unless they live in mobile homes or manufactured housing. Seventy percent of people in the cat 1-3 zone believe they will be told to evacuate, compared to 41% inland of the cat 3 zone in coastal counties and 37% in non-coastal counties. Outside the cat 1-3 zone, numbers were lower in 2010 than in 2006. Overall 62% of mobile home residents expect an evacuation notice, compared to 54% of site-built residents.



Perceived Elevation

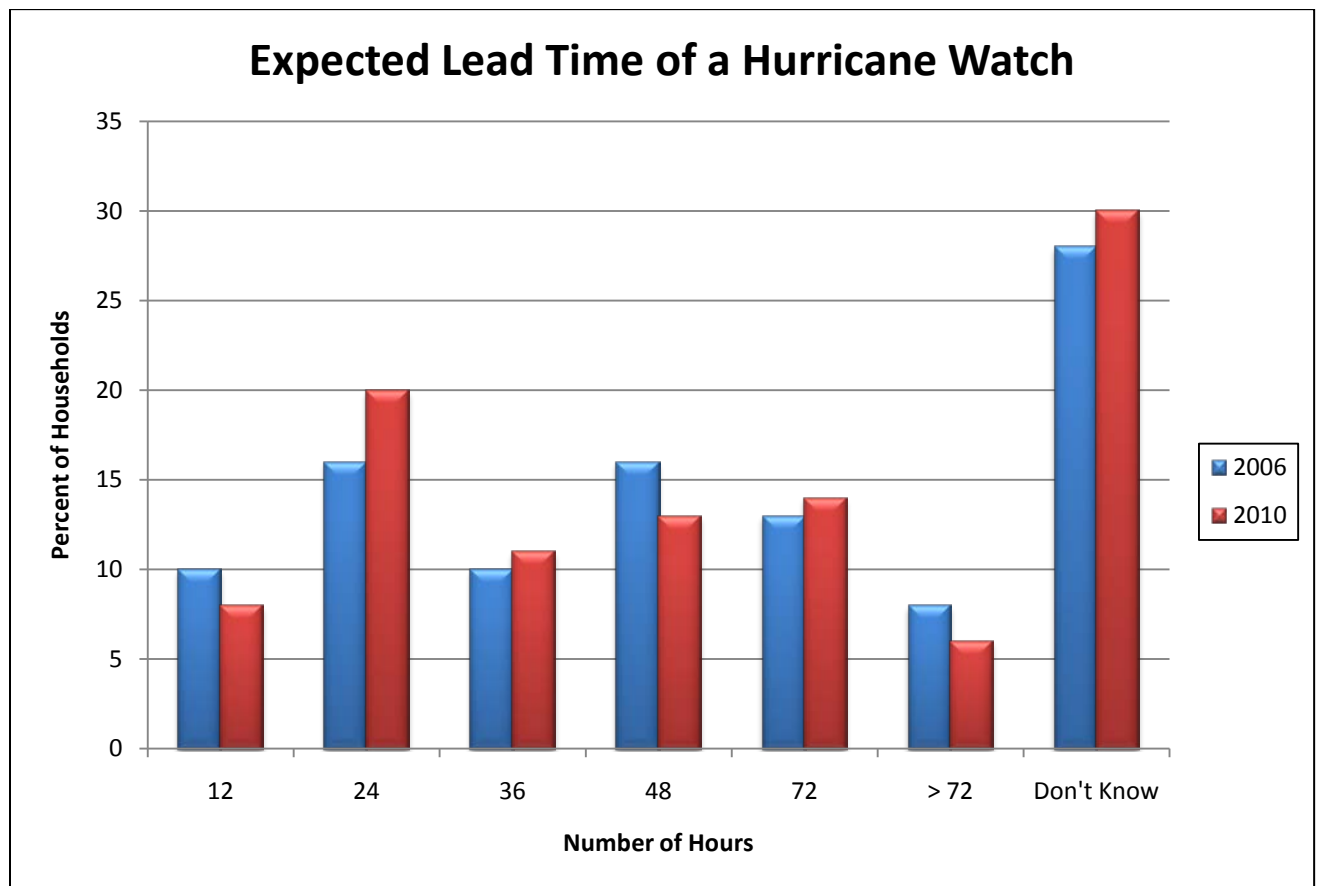
Respondents in coastal counties were asked the elevation of their building site – that is, the number of feet above sea level of the land on which their home is located. People in the category 1-3 evacuation zone do believe they are at lower elevations than people inland of the category 3 evacuation zone. However, beyond that, there is no way to evaluate the accuracy of their beliefs. It is important to note that 43% of the cat 1-3 residents and 65% of those inland of the cat 3 zone declined to attempt an estimate of their elevation. If people don't know their elevation, it's questionable how effectively they can use forecasts of surge heights. This question was not asked in 2006.



Knowledge about Hurricane Watches and Warnings

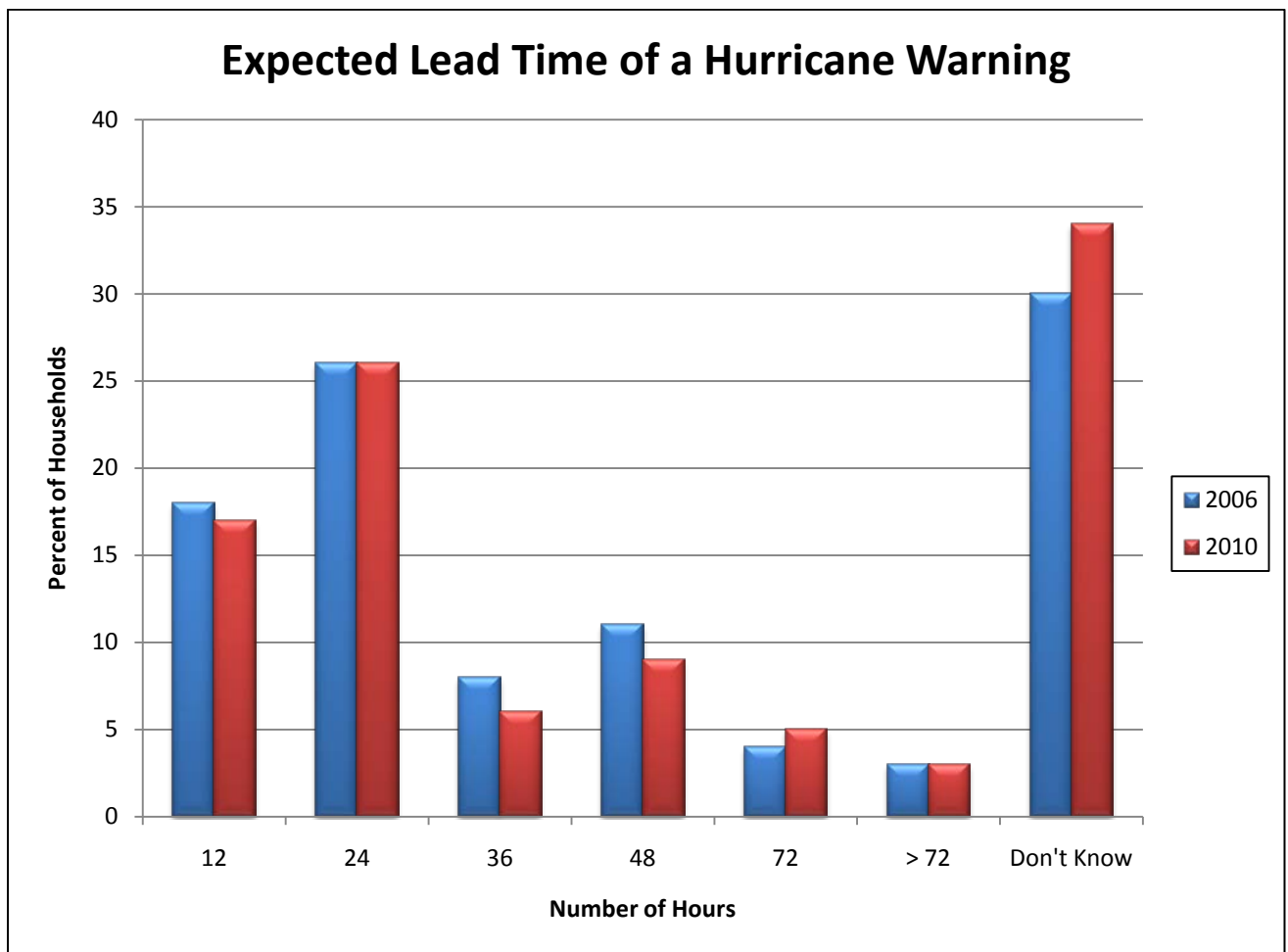
Watches

Survey participants were asked to indicate the number of hours prior to anticipated landfall of a hurricane the National Hurricane issues a hurricane watch. The answer prior to 2010 had been 36 hours, but beginning on May 15, 2010 the targeted lead time changed to 48 hours. The 2010 survey data collection occurred in April of 2010. Only 11% answered 36 hours and just 13% said 48 hours. Twenty-eight percent indicated 24 hours or less. Fourteen percent stated 72 hour or more, but 30% said they didn't know at all. There was no clear pattern of differences, compared to 2006.



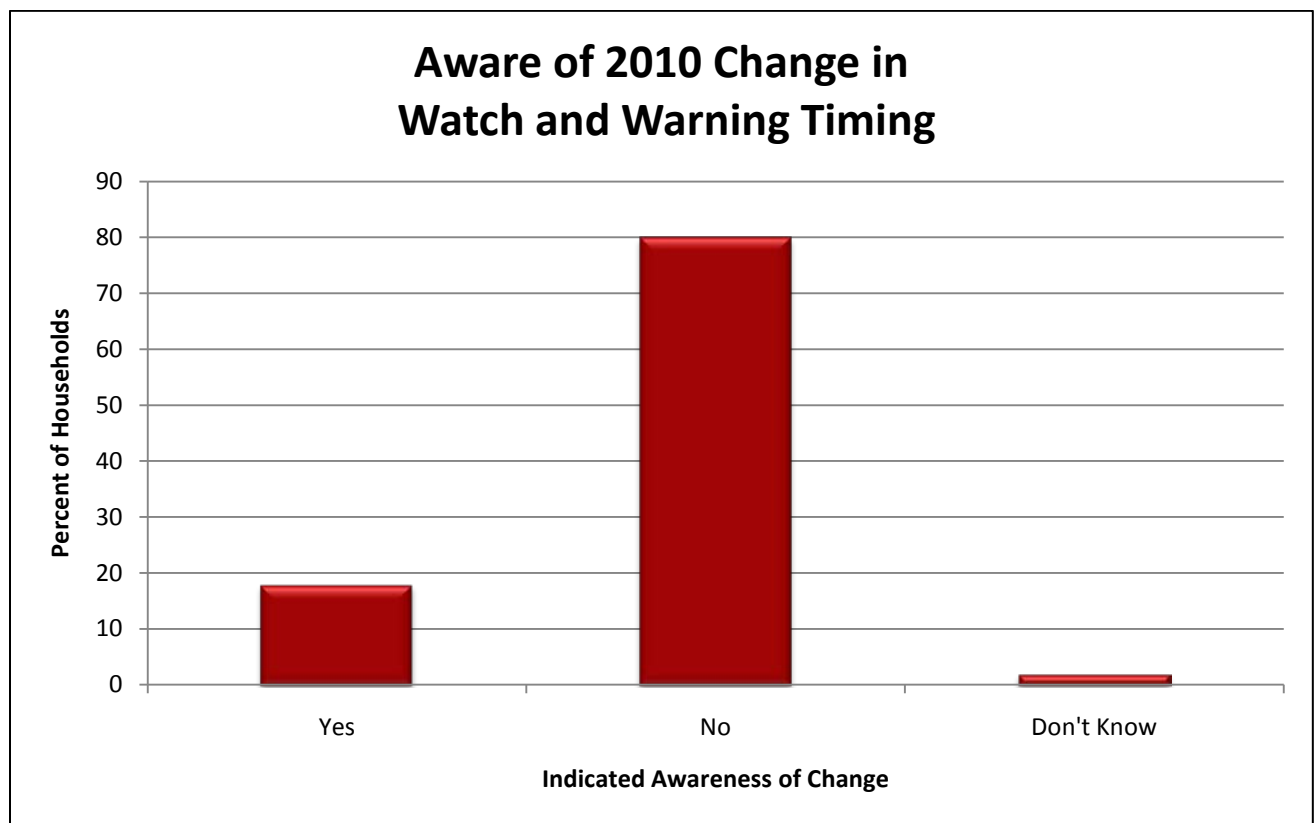
Warnings

Respondents were also asked to indicate the number of hours prior to anticipated landfall the National Hurricane Center issues hurricane warnings. Beginning on May 15, 2010 the National Hurricane Center began issuing warnings with 36 hour lead times, instead of 24 hours as done in previous years. Twenty-six percent of those interviewed said that warnings are issued at 24 hours, in both 2006 and 2010. Only six percent in 2010 said 36 hours. Seventeen percent said 12 hours and 17% said more than 36 hours. A third said they didn't know. There was no obvious pattern of differences between 2006 and 2010, although slightly more in 2010 said "don't know."



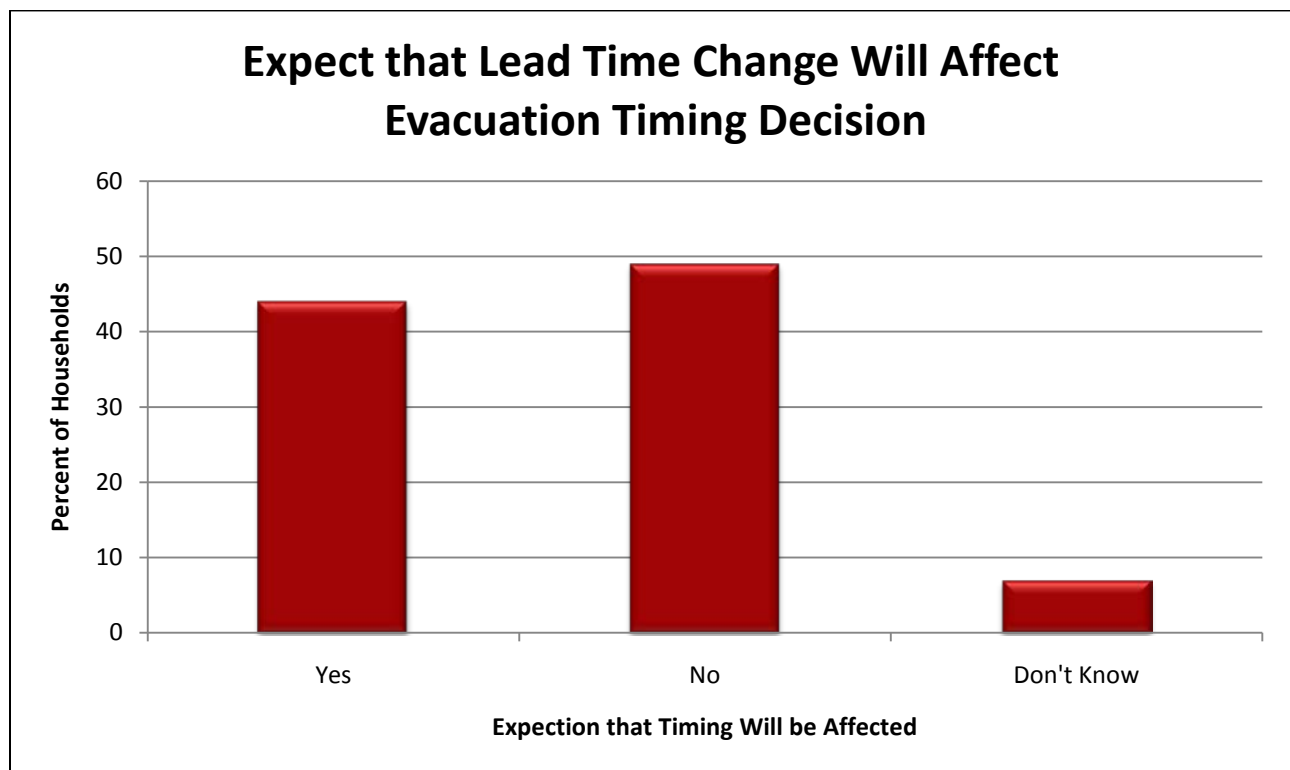
Awareness of New Lead Times

When asked, 18% of the 2010 sample said they were aware of the new lead times for hurricane watches and warnings. However, those who said they knew about the lead time changes were no more likely than others to state the new lead times when replying to the previous two questions about watches and warnings.



Effect of New Lead Times

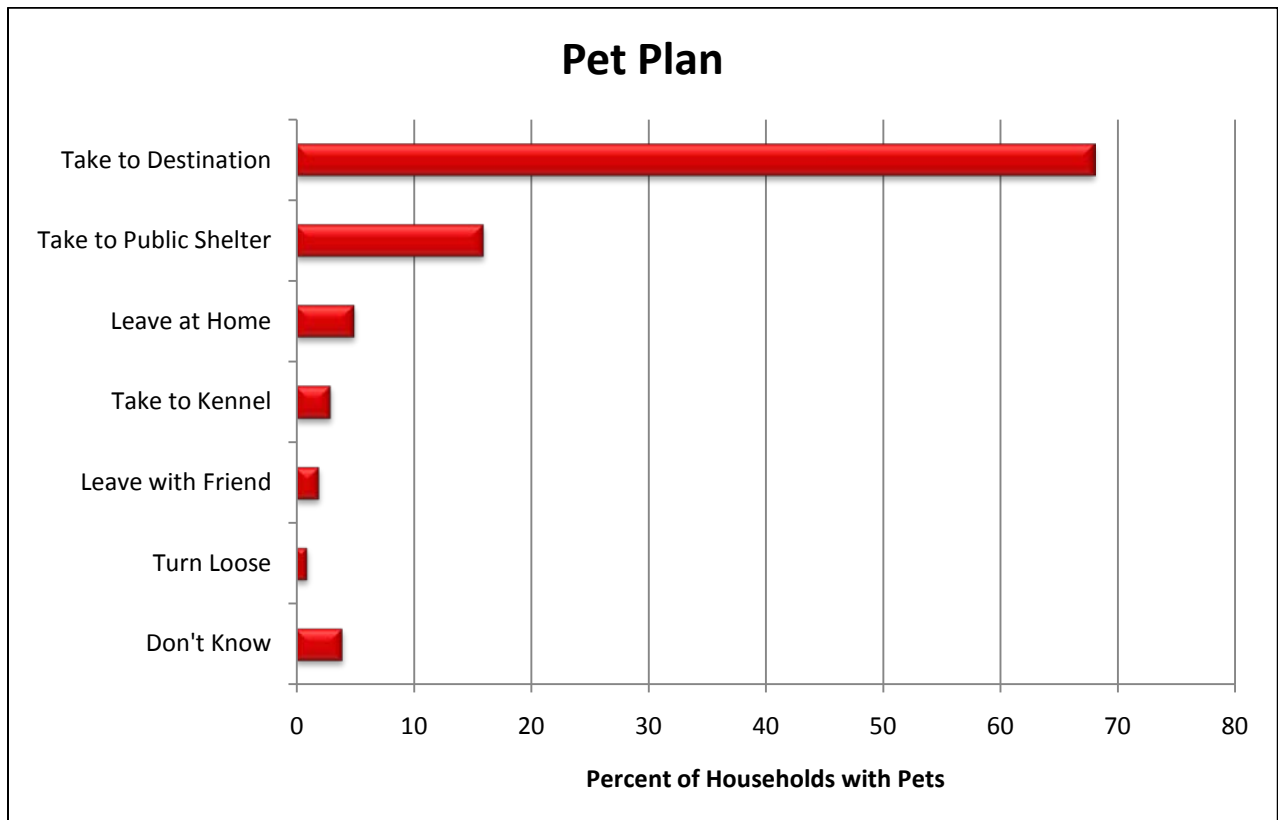
All respondents were told about the increase in lead times for watches and warnings and asked if the changes would affect the timing of their decision to evacuate. Forty-four percent said the new lead times will affect the timing of their evacuation decisions.



Pets, Special Needs, and Other Obstacles to Evacuation

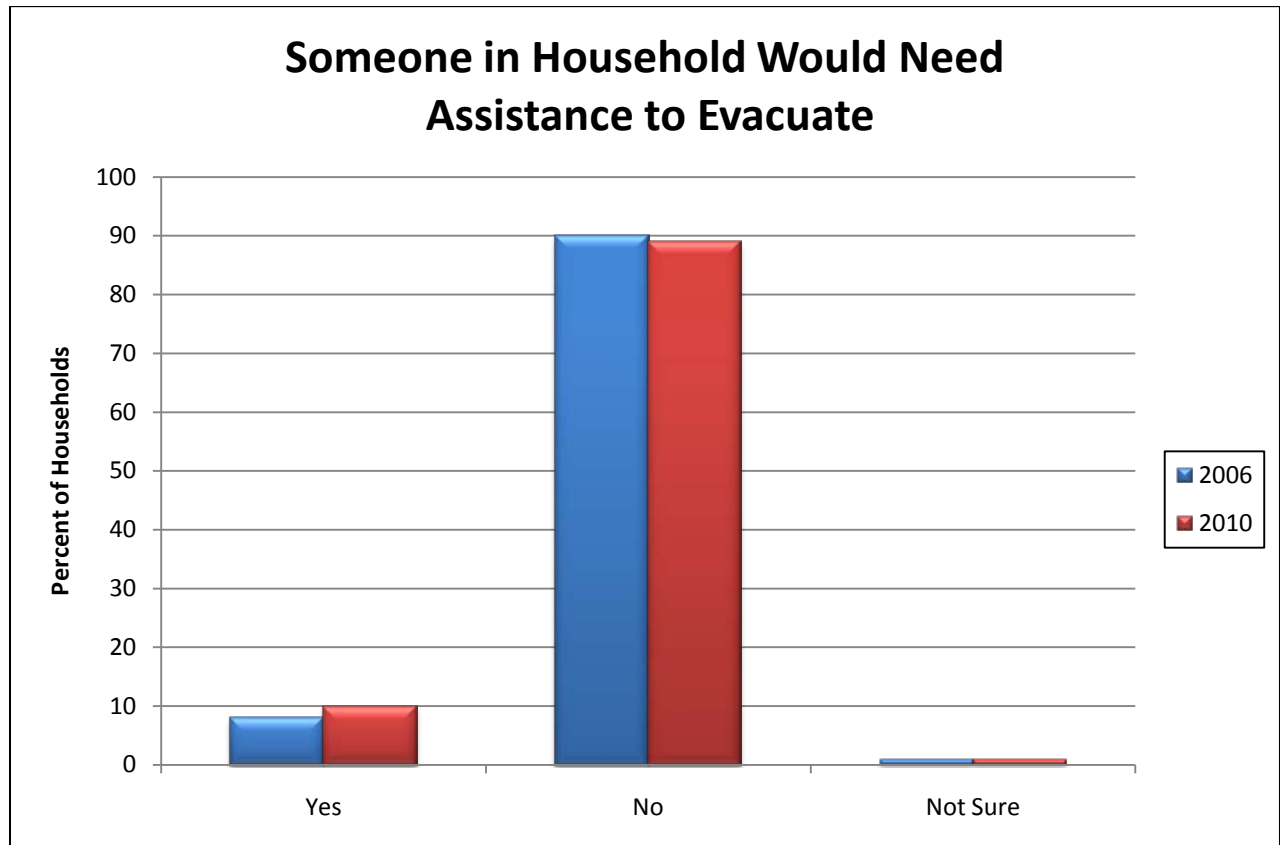
Pets

Pet owners (approximately half the sample) were asked what they would do with their pets if they evacuated for a hurricane. The majority said they would take their pets with them to a destination other than a public shelter that accepted pets. Sixteen percent said they would take their pets with them to a shelter that accepted pets. However, the pet-friendly shelter option was offered explicitly, along with others, in asking the question, and people tend to overstate their likelihood of going to public shelters generally when posed with hypothetical evacuation scenarios. This question wasn't asked as a hypothetical in 2006, but respondents were asked what they did with their pets if they actually evacuated in Wilma or Dennis. Although not directly comparable, most evacuees with pets in the 2006 survey took the pets with them to their destinations. However, none went to public shelters.



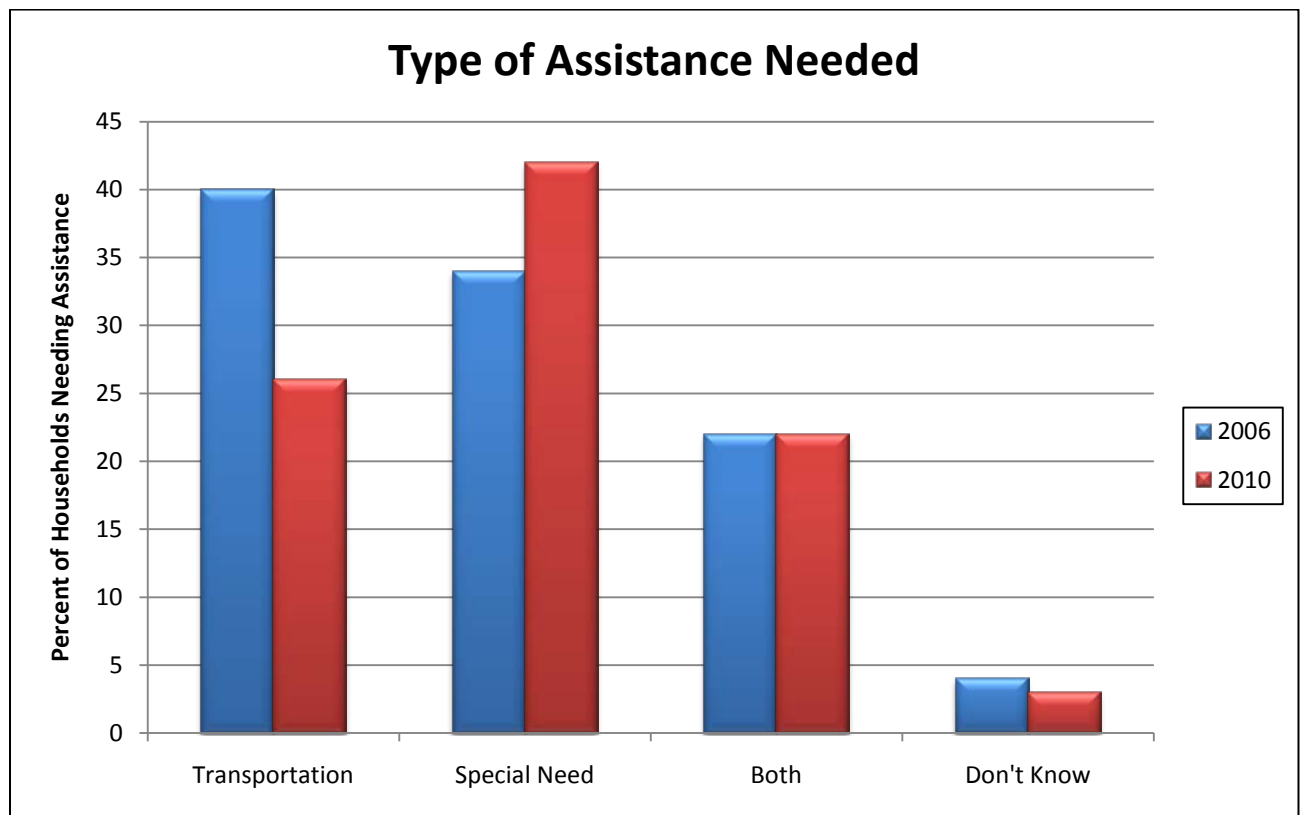
Households Needing Evacuation Assistance

Ten percent of the interviewees said someone in their household would require assistance in order to evacuate. That was essentially the same as in 2006.



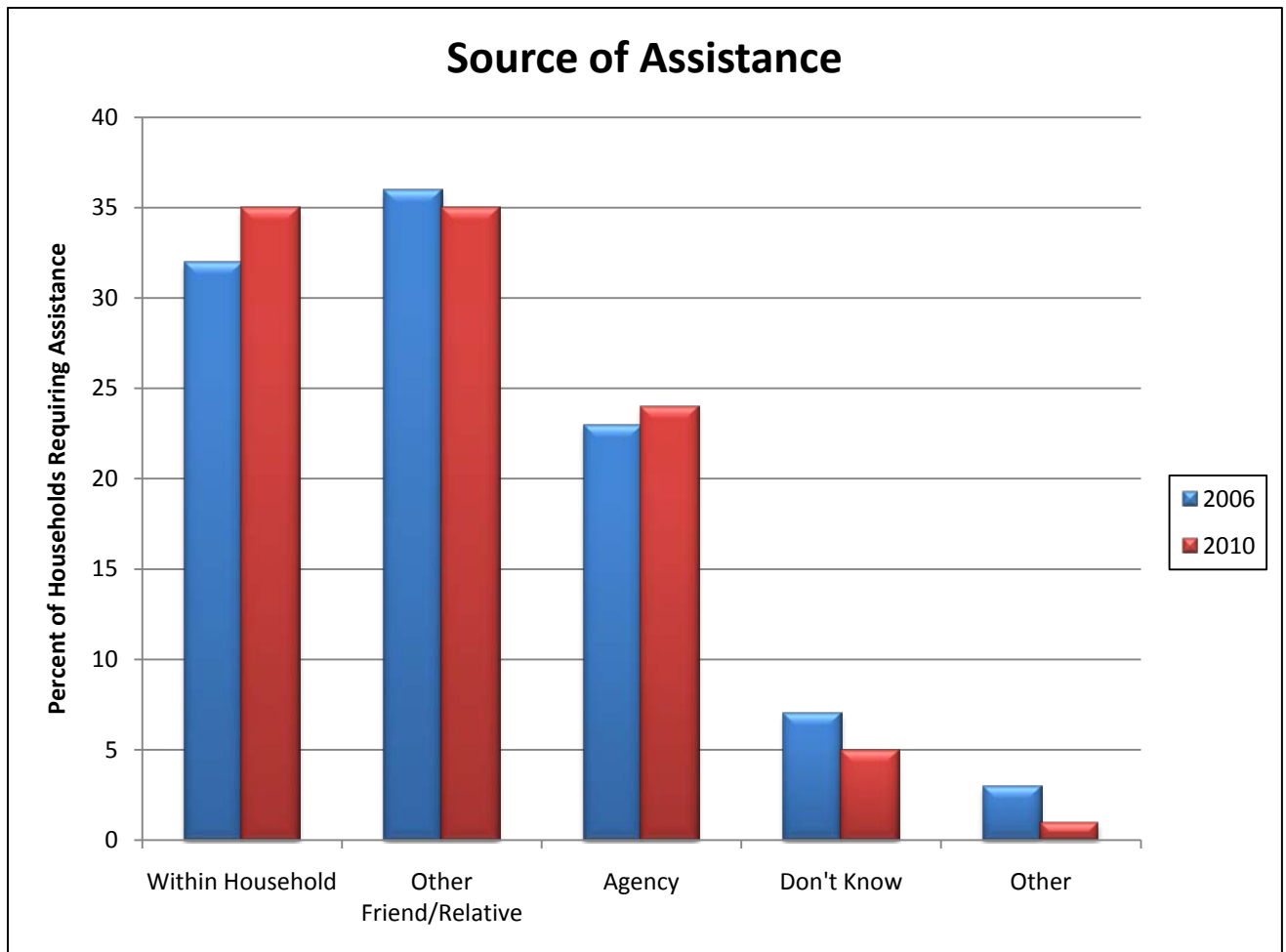
Type of Assistance Needed

Of those needing assistance, 26% needed transportation only, 42% had disability or medical condition requiring special assistance, and 22% had both. (For percentages of the entire sample, multiply these percentages by .10.) Transportation needs were lower and special needs were higher in 2010, compared to 2006. However, these calculations were based on just 10% of the 2010 sample and 8% of the 2006 sample, so their statistical reliability is significantly lower than for most calculations in this report.



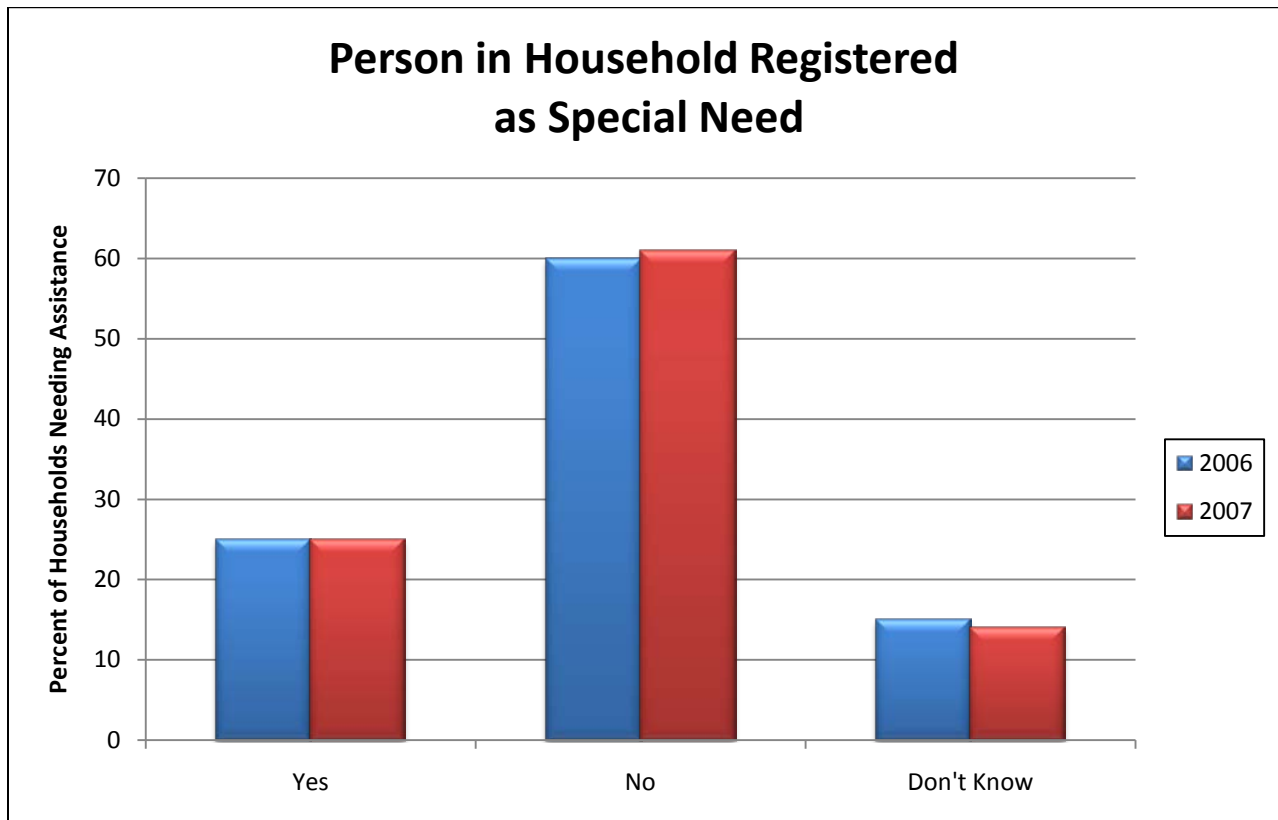
Source of Assistance

Thirty-five percent of those needing assistance expect the assistance to come from within the household, and another 35% believe it will be provided by a friend or family member from outside the household. Twenty-four percent said they would need assistance from an agency outside the household (i.e., 2.4% of the total sample). The responses were essentially the same in 2006.



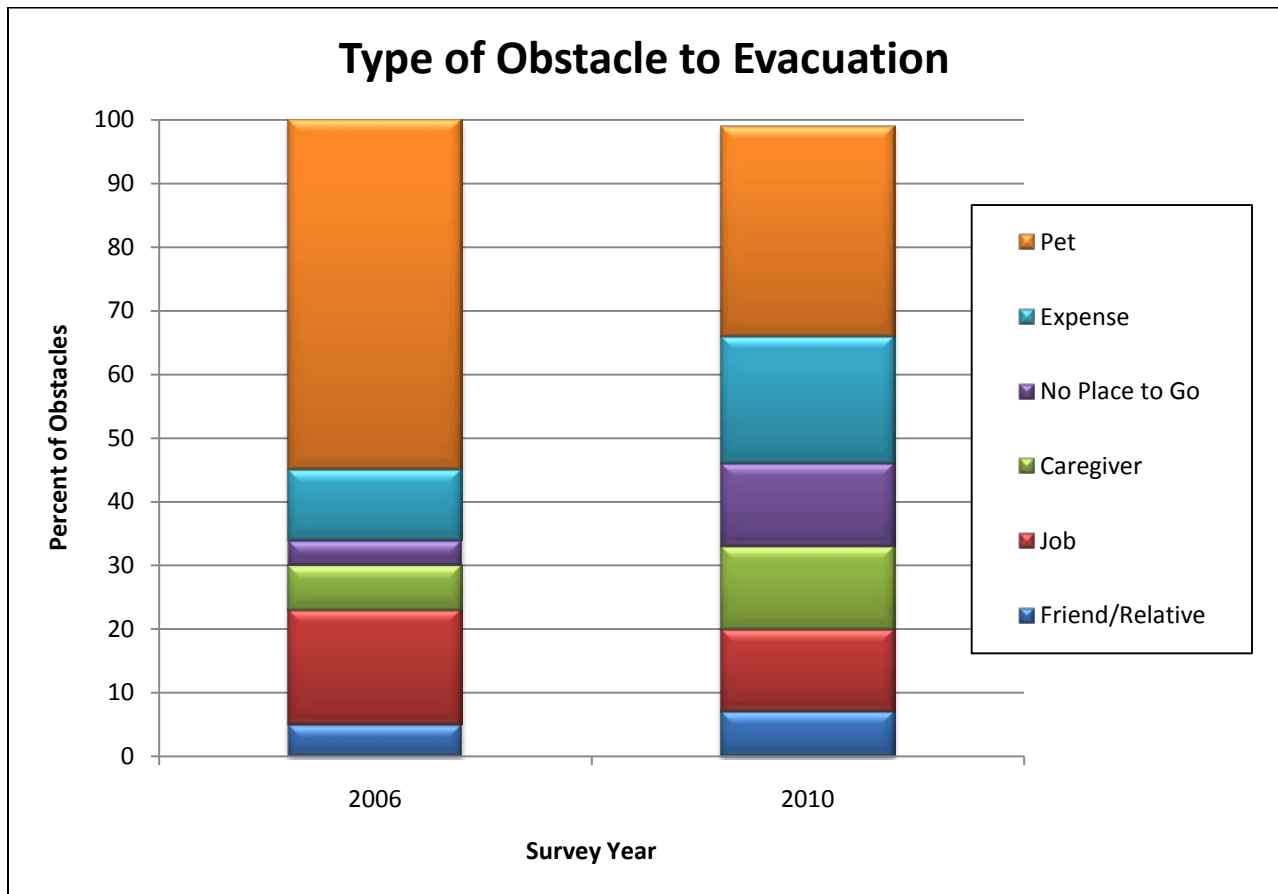
Registered as Having Special Needs

One-in-four persons needing evacuation assistance are registered with their county emergency management agency as someone having special needs during a hurricane evacuation. The figure was slightly lower for people needing just transportation (18%). In households saying they would need assistance from an agency, the registration was higher than in households saying the assistance would be provided by friends and relatives (35% vs. 20%).



Other Obstacles to Evacuation

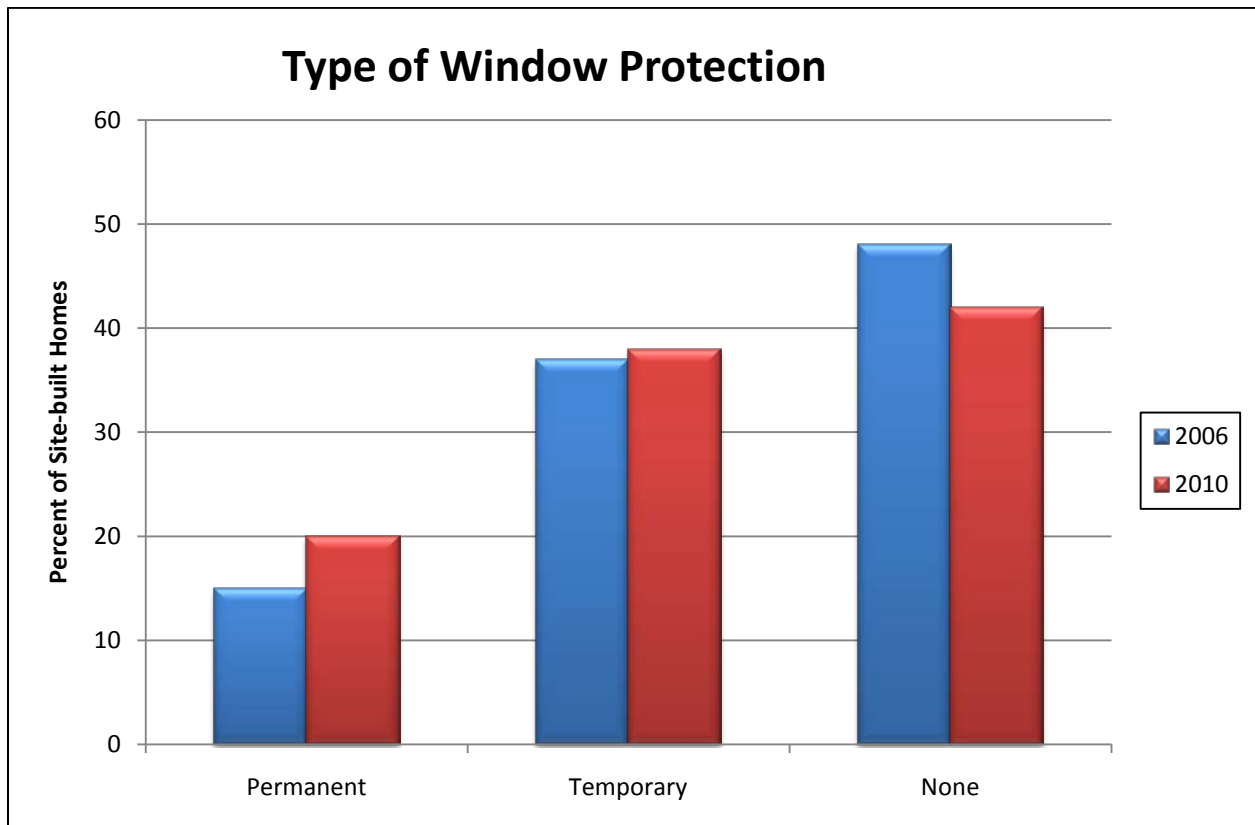
Interviewees were asked if there were any obstacles other than a lack of transportation or special needs that they had already been asked about that would prevent them from being able to leave their home and go someplace safer during a hurricane threat. Approximately seven percent of the 2010 participants and nine percent of the 2006 participants said there were such obstacles. However, many of the obstacles were the result of speculation about traffic or weather conditions that might prevent evacuation. Among lifestyle and economic factors, pets were cited more frequently than other obstacles (33% in 2010 and 55% in 2006). (These percentages apply just to the less-than-ten-percent of the total sample who said they had such obstacles.) Expenses and having no place to go were mentioned more often than in 2006, as a percentage of all reasons cited. The variations between 2006 and 2010 are not as meaningful as variations in most of the survey data, because these calculations are based on less than 10% of the total samples.



Mitigation

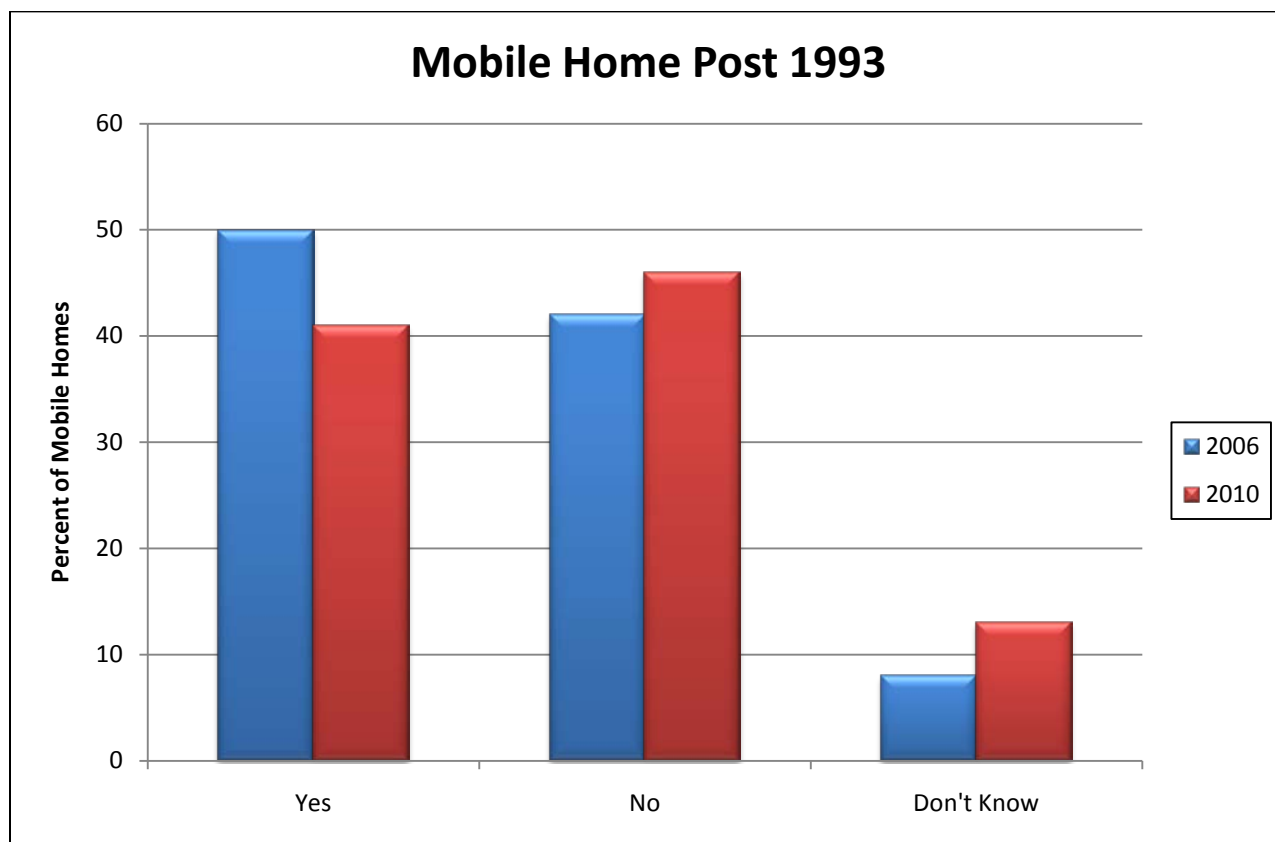
Window Protection

Residents living in site-built homes were asked if they had any sort of window protection such as shutters or plywood panels. Those saying yes were asked if the protection was permanently in place or something they had to put in place when a storm threatened. Most people said they had some sort of window protection, but just 20% said it was permanent. Protection was up slightly in 2010 compared to 2006. Residents of coastal counties were more likely to have window protection than people living in non-coastal counties (65% vs. 34%). East coast residents had the highest incidence of window protection (80%) and panhandle respondents had the lowest (53%).



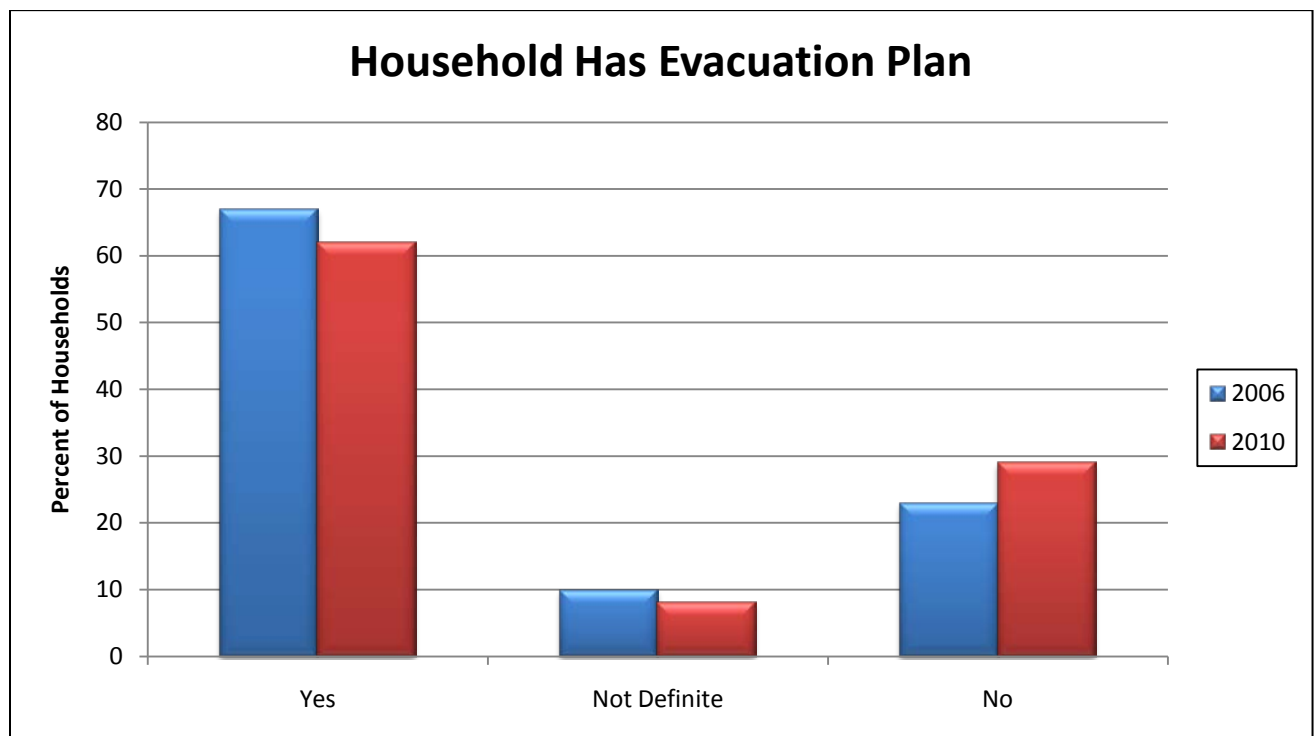
Mobile and Manufactured Homes

People living in mobile homes or manufactured housing were asked if their homes had been constructed since stronger building standards were implemented in 1994. Forty-one percent said in 2010 that their homes were built under the newer standard, compared to 50% in 2006. However, the statistical reliability of the mobile home data is lower than data for the entire sample, due to the small number of mobile home respondents (76 in 2010 and 113 in 2006), so the differences are not statistically significant.



Having a Plan for Evacuation

Survey participants were asked if their family had a definite plan that they had discussed for deciding whether to evacuate and where to go when a hurricane threatens. Sixty-two percent in 2010 and 67% in 2006 said they did have a definite plan. About 10% more said they had a plan but it wasn't very definite.



Factors Related to Having a Plan

The following variables were related to having a definite evacuation plan:

- Age – People under 30 were least likely to have a plan, followed by people between 30 and 45. People over 80 were less likely to have a plan than people between 46 and 80.
- Years in Florida – People who had lived in Florida fewer than 5 years were less likely than other to have a plan.
- Education – People who had attended college but didn't finish were less likely than others to have a plan. People with post-graduate education were most likely.
- Type of Housing – People living in mobile and manufactured homes were more likely than others to have a plan.
- Children – People living in households with children were less likely than others to have a plan.
- Race – Blacks and Hispanics were less likely than white non-Hispanics to have a plan.
- Sampling Area – West Coast and Northwest Coast residents were more likely than East Coast and non-coastal residents to have a plan.
- Risk Zone – People living in category 1-3 evacuation zones were most likely to have a plan, and people living in non-coastal counties were least likely.

The following variables were not related to having a plan.

- Years Lived in Current Home
- Living Alone
- Home Ownership
- Income
- Gender