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Southeast Louisiana Hurricane Taskforce

Survey Research Center, UNO

Center for Hazards Assessment, Response and Technology (CHART), UNO

Department of Geography, UNO

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Released by
The Southeast Louisiana Hurricane Taskforce

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The Southeast Louisiana Hurricane Taskforce
(parishes participating in survey)

Parish	**OEP Director**
Assumption	……..…………..…… John Boudreaux
Jefferson	……..………….Walter S. Maestri, III
Lafourche	……..……………..…... Greg Serigny
Orleans	……………….…… Joseph Matthews
Plaquemines	………..… Jesse St. Amant, President
St. Bernard	……………...…... Larry Ingargiola
St. Charles	……...….…..…… Tab Troxler
St. James	…………..….……Gerald Falgoust
St. John	………...…….….…… Paul Oncale
St. Tammany	…….….…………. Dexter Accardo
Tangipahoa	….….………………John Ballard
Terrebonne	………….............. Michael Deroche

The UNO Research Team

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Introduction

Given the propensity for hurricanes to threaten southeast Louisiana and the importance of citizen response to these threats, Southeast Louisiana Hurricane Task Force and the University of New Orleans Survey Research Center (SRC), in collaboration with the Center for Hazards Assessment, Response and Technology (CHART) and the UNO Department of Geography, have conducted a study of citizen evacuation behavior in twelve parishes. The research was funded by FEMA through its Hazard Mitigation Grant Program.

Working with Office of Emergency Preparedness officials in the parishes of the Southeast Louisiana Hurricane Task Force, the UNO SRC designed and implemented a survey for each parish to determine citizen evacuation decision-making, obstacles to evacuation, and sources of information utilized when threatened by a hurricane.

The surveys were customized to each parish according to the recommendations of the OEP officer in that parish. Questions were included or excluded depending on the particular situation in each parish, and in some parishes certain geographic areas were targeted. A description of the geographic composition of each survey is in the Appendix.

At least 400 residents were interviewed in every parish, totaling to over 4800 respondents. This summary report does not combine the twelve surveys because there are some clear differences in willingness to evacuate and hurricane risk perception from parish to parish, differences which would be masked if the surveys were pooled.

What follows is a summary of the key findings of the Citizen Hurricane Evacuation Behavior Surveys and the implications of these findings for public education and future evacuations.

Pre-Ivan and Post-Ivan Surveys

The study began in the spring of 2004, of course not knowing that a major evacuation would occur in September 2004 with Hurricane Ivan. As a result, eight parishes were surveyed prior to Ivan, one parish was split between pre- and post- Ivan surveys, and the remaining three parishes were surveyed following the Ivan evacuation. The pre- and post-Ivan results are noted when appropriate throughout this report.

Parishes Surveyed Before Ivan: *Parishes Surveyed After Ivan:*
Orleans   St. John
Jefferson   St. Charles
Plaquemines   Tangipahoa (south of I-12)
St. Bernard   St. James (half)
LaFourche
Assumption
Terrebonne
St. Tammany (south of I-12)
St. James (half)

Risk Perception

The most remarkable finding in this study is the low perception of risk felt by most residents in southeast Louisiana. In nine of the twelve parishes, 60% or more of the respondents said they felt safe in their homes if a Category 3 hurricane came near.[1] Far fewer residents believe they would be safe in a Category 4 storm, indicating that the difference between Category 3 and Category 4 is the border at which most people believe they are at risk (Table 1). However, based on predictions about flooding from federal agencies, disaster officials in all of these parishes consider nearly everyone in the areas surveyed to be at risk in their home in a Category 3 hurricane.

Two factors summarize why people feel safe in their homes in a Category 3 hurricane: beliefs about the strength or location of their house and their past experiences. The following specific perceptions and experiences are at the root of this feeling of safety:

- Having lived in south Louisiana more than thirty years
- Never having lived in a home damaged by a hurricane
- A belief that one's home is strong, sturdy, brick, elevated, or some other factor that protects it
- A belief that one's home is on high ground/not in a flood zone

People naturally rely on their past experiences to assess how safe they are. Many residents of southeast Louisiana have lived here all of their lives and never experienced hurricane damage to their home. In fact, an average of 40% of residents in these parishes have both lived in southern Louisiana more than thirty years *and* have never had hurricane damage to their home (Table 1). It is difficult for some of these longtime residents to realize that the environment is much different today, and that past experiences are probably not relevant.

In eight of the twelve parishes[2], high and middle income residents feel safer than lower income residents, which sounds reasonable on the surface because low income people are more likely to live in trailers, less sturdy houses, or in low lying areas. However, having a well-built house or living in an elevated subdivision does not mean you are safe in a Category 3 hurricane. Public education about the lack of protection in a Category 3 afforded by a "strong" house or a housing development that is higher than the surrounding area is needed.

There is no evidence that the Ivan experience affected citizens' perception of risk in a Category 3 hurricane. This makes sense when we remember that Ivan was a Category 4, the type of storm where many more people feel in danger, so there is no reason the Ivan experience would affect risk perception in a Category 3.

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[1] Exceptions are Plaquemines – 36%, Assumption – 46%, and St. Charles – 58%.
[2] In three parishes income had no relationship to risk perception, and in Assumption, the non-poor (those with more than $25,000 annual income) feel less safe.

Willingness to Evacuate When Recommended

- Sixty percent or more of residents in all twelve parishes *say* they would leave their home for a safer place if evacuation were recommended by public officials (Table 2). Because these answers are exaggerated by social desirability bias, a more reliable estimate is those who responded that they would "definitely" evacuate, not those who merely said they would "probably" evacuate. Those who say "definitely" ranged from a low of 27% in Jefferson to a high of 52% in St. Charles, averaging 34% across the twelve parishes.

- ***In all of the parishes the perception of risk in a Category 3 storm is the best predictor of intention to evacuate.*** This may seem somewhat obvious, but it illustrates why educating citizens as to their risk is important. As long as so many residents do not perceive much risk, they will not be inclined to leave their homes in a Category 3 storm, even with an official recommendation.

Actual Evacuation in Last Recommended Evacuation

As we might expect, in nearly all of the parishes the number of people who actually leave their home after an official recommendation is much lower than the number who *say* they would leave.[3] In fact, the percentage that left their home in the last recommended evacuation varied considerably across these twelve parishes (Table 2) depending partly on actual risk (the location of the parish relative to the coast, parish elevation, the severity and direction of the storm), and the perception of risk.

- Among the four parishes where Lili was the last recommended evacuation, evacuation levels ranged from a low of 13% in southern St. Tammany to a high of 53% in Plaquemines. A similar pattern emerged in parishes where Georges was the last recommended evacuation; St. James had the lowest percent evacuating (21%), and Jefferson was the highest (46%). Again in the post-Ivan parishes the effect of geography was apparent with southern Tangipahoa having the lowest percent evacuating (17%) and St. Charles the highest (71%).

- Evacuation north of Lake Ponchartrain, in the areas south of I-12 in St. Tammany and Tangipahoa, is a relatively new phenomenon. As a result, these residents have felt protected by geography from hurricanes; 65% in St. Tammany south of I-12 and 74% in Tangipahoa south of I-12 say they are safe in their homes in a Category 3 storm. This perception is the primary barrier to evacuation.

- In ten of the twelve parishes, the perception of risk in a Category 3 storm is the single best predictor of actually leaving home in the last recommended evacuation.[4]

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[3] The exception is St. Charles where 71% actually left their homes in Ivan.
[4] Exceptions are Jefferson, where the best predictor of evacuation in Georges is being female, and St. James where the best predictor of evacuation in Ivan is perceived risk in a Category 4.

Citizen Focus on Storm Category

- In every parish *citizens focus on the severity or category of the storm and how much threat they think it means in deciding whether or not to leave*. In open-ended questions about why people left in the last recommended evacuation, storm severity was always the first or second response (Table 3).

- Storm severity is also cited often as a reason not to leave, i.e. "it was not severe enough". This focus on storm category is why citizen cooperation with a recommended evacuation depends on their awareness of what category is dangerous for them.

Types of People Are Most/Least Likely to Evacuate (Table 4)

- In eight of the twelve parishes *females* are more likely than males to cooperate with an official recommendation to evacuate during a hurricane.[5] This pattern has been repeatedly found in studies of evacuation in other areas of the country. Females are more likely to take responsibility for children and the elderly, and generally more likely to be cautious. In no parish are males significantly more likely to evacuate.

- In six of the twelve parishes, *people who have lived in a home damaged by a hurricane* are more likely to heed the official recommendation to evacuate.[6] As mentioned above, they are more likely to feel they are at risk. In these six parishes, an average of less than half (42%) of the residents have ever experienced hurricane damage. In some ways southern Louisiana is now a victim of its past good luck; most residents have not experienced damage, and lack of prior hurricane experience promotes a feeling of safety and thus resistance to evacuation.

- In six of the twelve parishes, *people who have lived in southern Louisiana more than thirty years* are less likely to evacuate.[7] Long-term residents have lived through many hurricane threats, and since most of those hurricanes have not directly hit southern Louisiana, these residents are less likely to feel that they should leave their homes. An average of 74% of the residents in these six parishes have lived in southern Louisiana more than thirty years. In no parish were long-term residents significantly more likely to evacuate.

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[5] Parishes in which males and females left their homes in nearly equal proportions are Orleans, Plaquemines, southern St. Tammany, and Tangipahoa.

[6] Parishes are Assumption, Lafourche, St. Bernard, St. James, Terrebonne, and St. John.

[7] Parishes are Assumption, Jefferson, Plaquemines, St. Charles, Terrebonne, and Tangipahoa.

The Role of Income

- The role of income is not simple. If we are referring to *leaving one's home*, income has no consistent relationship to evacuation. In Lafourche, Plaquemines and southern Tangipahoa lower income residents were more likely to evacuate than higher income residents. But in Orleans, the higher income residents were more likely to evacuate, and in Assumption and St. James, the non-poor (over $25K income) were more likely to evacuate. Furthermore, in six parishes income bore no relationship to evacuation.

- **However, in six of the nine parishes surveyed prior to Ivan, residents with lower incomes were more likely than those with higher incomes to either evacuate within their parish or go to another nearby evacuating parish** (Table 5)**.**[8] Many of these evacuees probably went to friends' or relatives homes, or to a place of employment, where they felt safer than in their own homes.

- In the stronger storm, Ivan, low income evacuees tended to go to safe areas.[9]

- Thus, although income is not related in any consistent way to leaving one's home during a recommended evacuation, income is related to the distance traveled, especially if the storm is below a Category 4.

- The number of low income residents who remain in harm's way illustrates the need for both education about the need to travel far enough and providing evacuation assistance to those without means.

The "Ivan Effect"?

- Ivan was the largest evacuation experienced by southeastern Louisiana, but from our research, there does not appear to be either a positive or negative effect on willingness to evacuate in the future.

  - Willingness to evacuate in the hypothetical evacuation scenario is nearly identical in the pre- and post-Ivan parishes.
  - Residents in the parishes surveyed after Ivan perceive no more or less risk in a Category 3 hurricane than residents in the parishes surveyed prior to Ivan.
  - An average of 86% of Ivan evacuees in the four post-Ivan parishes say they would do the same thing under similar circumstances. This is quite similar to the responses after Georges and Lili.

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[8] The exceptions to this pattern are Plaquemines where people went to a safe regardless of income, Terrebonne, where evacuees did not go to a safe place regardless of income, and St. Tammany where an evacuee could remain within their parish and still be safe.

[9] The exception is St. James in Ivan, where the low income residents were much less likely to go to a safe place.

- The percentage of people saying they have an evacuation plan is the same in the post-Ivan parishes and the pre-Ivan parishes.
- Those who spent the most time on the road were no less willing to evacuate in the future.

The Role of Family and Friends

- The process of deciding to evacuate during a hurricane is not just a matter of waiting for the official recommendation. Friends and relatives play an important role in an individual's decision about what to do in two ways:

  - People receive advice from friends and relatives.
  - People evacuate due to concern for a friend or relative.

- In three of the four parishes surveyed after Ivan, one or both of the factors above were mentioned spontaneously second only to the severity of the storm as a response to the question, "What convinced you to go someplace else" (Table 3).[10]

Evacuation Planning

- In nine of the twelve parishes 41 – 49% *say* they have a definite evacuation plan (Table 1). These numbers are probably inflated by social desirability, but having a plan is related to actual evacuation in Ivan. Of course, planning is also a consequence of a person's intention to evacuate, so these two behaviors mutually reinforce each other.

- Having an evacuation plan, like evacuation itself, is related to risk perception. People who believe they are at risk in a Category 3 hurricane are more likely to have a definite plan. So we return full circle to the importance of knowing one's actual risk.

Sources of Information and Advice

- In every parish, the TV meteorologists are the most important source of information, which is not surprising given the saturating nature of weather coverage during a hurricane. However, the meteorologists are utilized more as sources of *information* about the category and projected path of the storm, rather than *advice about what to do*. Residents rely on their own perceptions of risk, past experiences, public officials, family, and friends in making an evacuation decision.

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[10] We cite the post-Ivan parishes here because answers to questions about reasons for evacuation in Ivan are more reliable than answers about behavior in previous storms.

Table 1
Risk Perception, Past Experiences, and Having a Plan

Parish	% Feel Safe in a Category 3 Storm	% Feel Safe in a Category 4 Storm	% Living in South La. 30+ Years	% Never Having Lived in a Damaged Home	% Living in South La. 30+ Years *and* Never Having Lived in a Damaged home	% Having a Definite Plan
Pre-Ivan						
Assumption	46	---[a]	81	62	47	41
Jefferson	63	---	65	66	38	45
Lafourche	75	---	76	57	41	41
Orleans	62	---	61	65	36	48
Plaquemines	36	15	70	48	26	62
St. Bernard	65	---	74	52	36	43
St. James (half)	60	33	77	72	52	46
So. St. Tammany	65	30	57	60	26	49
Terrebonne (southern region)	60	---	81	47	40	58
Post-Ivan						
St. Charles	58	21	72	64	43	57
St. James (half)	63	35	77	70	50	41
St. John	65	27	62	72	42	46
So. Tangipahoa	74	40	73	68	49	42

[a] This question was not asked in these parishes.

Table 2
Evacuation Behavior

Parish	% that Would Evacuate in the Hypothetical Scenario[a]	% that Would **Definitely** Evacuate in the Hypothetical Scenario	% that Evacuated in the Last Recommended Evacuation	% of Evacuees who Evacuated to a Safe Area
Pre-Ivan				
Assumption	80	41	35 (Lili)	52
Jefferson	70	27	46 (Georges)	80
Lafourche	69	31	28 (Georges)	42
Orleans	70	30	36 (Georges)	68
Plaquemines	80	41	53 (Lili)	85
St. Bernard	66	30	46 (Georges)	76
St. James (half)	73	43	21 (Georges)	37
So. St. Tammany	70	31	13 (Lili)	---[b]
Terrebonne (southern region)	73	41	42 (Lili)	31
Post-Ivan				
St. Charles	78	52	71 (Ivan)	94
St. James (half)	73	30	32 (Ivan)	65
St. John	60	32	42 (Ivan)	93
So. Tangipahoa	67	28	17 (Ivan)	---[b]

[a] Includes "probably" and "definitely" would evacuate if recommended by public officials in parish.
[b] These figures are omitted because someone could evacuate within St. Tammany or Tangipahoa parish by going north and still be safe.

Table 3
Free Response Reasons for Leaving Home in Last Recommended Evacuation

Parish	#1 Reason Convincing People to Evacuate	#2 Reason Convincing People to Evacuate
Pre-Ivan		
Assumption	Concern about Severity/ Category of Storm	Structure of Home not Safe
Jefferson	Concern about Severity/ Category of Storm	Concerned about Direction of Storm
Lafourche	Concern about Severity/ Category of Storm	Concern Regarding Family
Orleans	Concern about Severity/ Category of Storm	Advice from Friend or Relative
Plaquemines	Concern about Severity/ Category of Storm	Concern Flooding Would Cut Off Roads
St. Bernard	Concern about Severity/ Category of Storm	Advice from Friend or Relative
St. James (half)	Concern about Severity/ Category of Storm	Structure of Home not Safe
So. St. Tammany	Concern About Severity/ Category of Storm	Concern Flooding Would Cut Off Roads
Terrebonne (southern region)	Concern about Severity/ Category of Storm	Concern Flooding Would Cut Off Roads
Post-Ivan		
St. Charles	Advice or Order by Elected Officials/ Mandatory Evacuation	Concern about Severity/ Category of Storm
St. James (half)	Concern about Severity/ Category of Storm	Advice from Friend or Relative
St. John	Concern about Severity/ Category of Storm	Concern Regarding Family or Friend
So. Tangipahoa	Concern about Severity/ Category of Storm	Concern Regarding Family or Friend

Table 4
Types of People Who Evacuated
(Entries are percent evacuating in last recommended evacuation)

Parish	Male	Female	Having Lived in a Damaged Home	Never Having Lived in a Damaged Home	Living in Southern Louisiana less than 30 Years	Living in Southern Louisiana more than 30 Years	Feeling Safe in a Category 3 Storm	Not Feeling Safe in a Category 3 Storm
Pre-Ivan								
Assumption	29	44	46	31	59	31	17	57
Jefferson	46	56	50	52	60	47	49	55
Lafourche	23	38	40	24	34	30	23	59
Orleans	45	40	44	42	47	40	37	54
Plaquemines	53	60	58	54	67	51	31	72
St. Bernard	42	56	55	43	43	51	40	65
St. James (half)	22	23	30	19	29	20	12	42
So. St. Tammany	12	18	15	14	13	16	9	30
Terrebonne (southern region)	34	50	53	30	51	40	25	69
Post-Ivan								
St. Charles	64	79	74	70	80	68	64	82
St. James (half)	24	41	30	33	36	31	18	60
St. John	38	48	52	39	45	41	38	50
So. Tangipahoa	15	21	20	17	26	15	10	41

Table 5
Percent Evacuating to a Safe Area by Income

Parish	Poor (Income below $25,000)	Non-Poor (Income above $25,000)
Pre-Ivan		
Assumption	41	80
Jefferson	57	87
Lafourche	29	54
Orleans	58	74
Plaquemines	83	85
St. Bernard	67	78
St. James (half)	27	57
So. St. Tammany	---[a]	---[a]
Terrebonne (southern region)	25	34
Post-Ivan		
St. Charles	89	96
St. James (half)	50	80
St. John	87	95
So. Tangipahoa	---[a]	---[a]

[a] These figures are omitted because someone could evacuate within St. Tammany or Tangipahoa parish by going north and still be safe.

Table 6
The Ivan Evacuees, Hours on the Road and When Left Home

	Hours on Road			When Left Home						
	0-5	6-10	10+	Monday or prior	Tuesday AM	Tuesday PM	Wednesday AM	Wednesday PM	Don't Know	N
St. Charles	44%	35	21	10%	22	31	19	9	9	283
St. James (half)	63%	24	13	4%	20	33	20	22	---	80
St. John	39%	32	29	7%	22	35	21	9	5	168
So. Tangipahoa	61%	29	10	11%	16	17	23	26	6	70

Appendix

Parish	Area of Parish Surveyed	Number of Interviews
Assumption	Entire Parish	401
Jefferson	Entire Parish	404
Lafourche	Entire Parish	406
Orleans	Entire Parish	400
Plaquemines	Entire Parish	401
St. Bernard	Entire Parish	405
St. Charles	Entire Parish	401
St. James	Entire Parish	223 pre-Ivan, 252 post, Ivan
St. John	Entire Parish	402
So. St. Tammany	Only Residents South of I-12	400
So. Tangipahoa	Only Residents South of I-12	400
Terrebonne	Parish divided into two regions, the Houma region and the southern region	149 from Houma region and 302 from the southern region