

**PROJECT TITLE:** Post-Disaster Access to Reproductive Healthcare in Southeastern Louisiana

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## **BACKGROUND AND METHODS**

The Gulf Coast region has seen six disasters in 7 years, leading with the 2005 hurricane season bringing Katrina and Rita that left a fragile Southeastern Louisiana healthcare system in its wake. Years later, still struggling to support vulnerable populations and provide access to quality healthcare, Hurricanes Gustav, Ike, and Isaac would strike with specific damage to much of the lower bayou parishes. The susceptibility felt by these communities reached an all-time high as Hurricane Isaac hit the region while the Deepwater Horizon Oil Spill recovery efforts were ongoing.

The Tulane investigative team was awarded funding through the Centers for Disease Control and Prevention (CDC) to administer the Reproductive Health Assessment After Disaster (RHAD) to examine how prepared the Southeastern Louisiana region was in meeting the post-disaster health needs of women of reproductive age, specifically the needs of pregnant and postpartum women. The Tulane team partnered with the Louisiana Department of Health and Hospitals to allow recruitment and enrollment in WIC and family planning clinics throughout the targeted region. Although 18 parishes were deemed disaster-affected by the Federal Emergency Management Agency (FEMA), this study focused its efforts on the following seven parishes because they were the most critically impacted by wind, flooding and displacement; St. Bernard, St. Charles, St. John, St. Tammany, Jefferson, Orleans and Plaquemines.

Additionally, the research team, consisting of five interviewers, was limited by the time and resources necessary to travel to all 18 disaster-affected parishes. Originally, St. Charles and Orleans were not included in the study because they did not sustain the same level of damage as other parishes. However, they were added in a January 2013 IRB amendment, based on recommendations from the community that those parishes, while perhaps not sustaining the same level of damage to home and property, were nonetheless faced with evacuation, loss of electricity and other stressors. The Tulane team had the benefit of already-existing relationships with clinics in the disaster-affected areas of Orleans and St. Charles and, after receiving approval of the amended institutional review board package, were able to include women in those areas as well. With the help of 3 additional community health workers, greater geographic coverage was possible

Tulane staff spent the month of October 2012 preparing a package for IRB approval to launch the project in the targeted areas. Also during that time, the team made contact with the various clinics and their staff, first to establish a working relationship with clinic staff and then to determine best times to recruit and enroll during clinic hours. While the Tulane team had prior relationships with some of the clinics, several geographic locations outside of the staff's typical target region were included, namely in St. John and St. Tammany parishes.

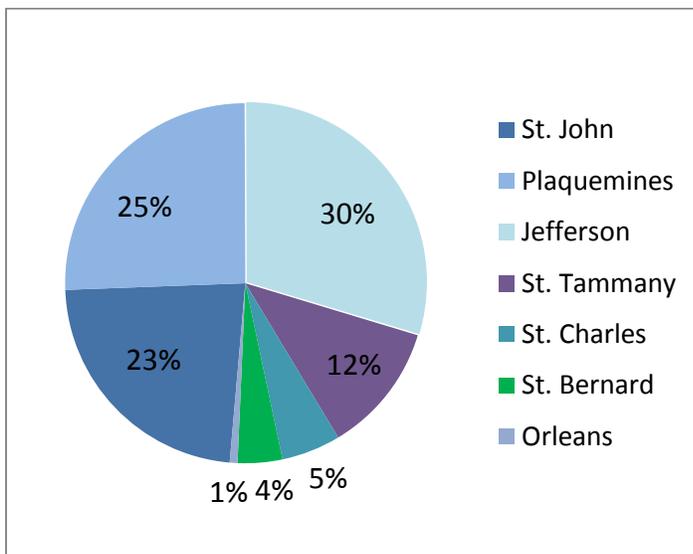


Figure 1, Participants by Parish of Residence

Enrollment for the study began on November 29<sup>th</sup>, 2012 and concluded February 28<sup>th</sup>, 2013. The Tulane team was present in WIC clinics and community events at peak times determined by clinic staff and community members, see Table 1. Using convenience sampling, women were recruited to participate if they were between ages 18-45, lived in one of the 7 targeted parishes as of August 28<sup>th</sup>, 2012 and were either pregnant during the disaster or had given birth within the six months prior to the disaster.

300 women were interviewed, although some were later deemed to be ineligible because they were more than 6 months post-partum at the time of the disaster (n=22). Two certified patient navigators were part of the interview team throughout the entire study and 3 community health workers were added in January 2013, with approximately 250 field hours in total. All the patient navigators and community health workers were trained broadly in women's health issues and specifically, how to administer the RHAD toolkit.

Table 1, Recruitment by site and parish

Site	Parish	#	%
Plaquemines WIC-Belle Chasse	Plaquemines	38	12.7%
Toys for Tots Event-Braithwaite	Plaquemines	24	8.0%
Davant WIC	Plaquemines	7	2.3%
Edgard Health Fair	St. John	1	0.3%
Crescent City WIC-Gretna	Jefferson	73	24.3%
St. Charles Community Health Center-Luling	St. Charles	16	5.3%
Metairie WIC	Jefferson	1	0.3%
NOELA Community Health Center	Orleans	2	0.7%
Toys for Tots Event-Gretna	Jefferson	15	5.0%
Port Sulphur WIC	Plaquemines	8	2.7%
St. Bernard WIC-Chalmette	St. Bernard	12	4.0%
St. John WIC-Reserve	St. John	68	22.7%
St. Tammany WIC-Slidell	St. Tammany	35	11.7%
		300	

## PRELIMINARY DATA AND FINDINGS

After removing 22 cases due to ineligibility, the total N equaled 278 women. There were a small number (n=6) of women who were 0-6 months post-partum and were also pregnant, and thus were accounted for in both categories. The study population was predominantly African American (n = 164, 59%), all participants were women of reproductive age with the mean age of participants being 26.3 (SD = 5.32) years and only 7.6% of women (n=21) were 35 or older. Participants for the most part were from low-income households with 99 women (35.6%) reporting a current monthly income of less than \$800 and only 37 (13.3%) reporting monthly incomes of \$2000 or more. Accordingly, about two-thirds of the study participants identified Medicaid as their health insurance provider (n=179, 64.4%) and another 43 women (15.5%) had no health insurance at all. Although 70 women (25.2%) were married, the majority of participants were unmarried (n=164, 59%). About one-quarter of women had not completed high school (n=71, 25.5%) and 105 women (37.7%) had completed some college or a 4 year college degree.

25.9% of women reported no damage at all to their homes and another 55.4% had minor damage. 15.5% had major damage, rendering parts of the home unlivable and 2.5% of women reported that their homes were completely destroyed, totaling 18% of women with significant damage to their homes. This experience, along with 7 others from the Family Stressors section, was used in a post-Katrina study to create a high hurricane exposure category (Harville et al 2009). The experiences include feeling one's life was in danger at the time of disaster, experiencing an illness or injury of self or household member (2 items), walking through floodwater or debris, being without electricity for one week or longer, seeing someone die or having a loved one die. Using the same cutoff as previous studies, a high hurricane exposure is categorized as having experienced 3 or more of these events. 73 women (26.3%) belong to the high hurricane exposure group. The full range of family stressors can be seen in Figure 2.

Table 1, Description of Study Population

	Pregnant Women n=58		Post-Partum Women (Pregnant during Hurricane Isaac) n=119		Post-Partum Women (Gave birth prior to Hurricane Isaac) n=107		Overall N=278	
	<i>n</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)
<b>Age</b>								
18-25	27	(46.6%)	54	(45.4%)	61	(59.2%)	142	(51.1%)
26-34	26	(44.8%)	56	(47.1%)	34	(33%)	115	(41.4%)
35-45	5	(8.6%)	9	(7.6%)	8	(7.8%)	21	(7.6%)
<b>Ethnicity</b>								
Hispanic/Latina	7	(12.1%)	12	(10.1%)	7	(6.8%)	26	(9.4%)
Not Hispanic/Latina	51	(87.9%)	107	(89.9%)	96	(93.2%)	252	(90.6%)
<b>Race</b>								
White	20	(34.5%)	40	(33.6%)	35	(34%)	96	(34.5%)
Black	34	(58.6%)	72	(60.5%)	59	(57.3%)	164	(59%)
Asian	0	(0%)	2	(1.7%)	3	(2.9%)	5	(1.8%)
Other	4	(7.7%)	5	(4.2%)	6	(5.9%)	13	(4.7%)
<b>Household Income</b>								
Less than \$800	23	(39.7%)	38	(31.9%)	38	(36.9%)	99	(35.6%)
\$800-1199	8	(13.8%)	18	(15.1%)	14	(13.6%)	40	(14.4%)
\$1200-\$1599	8	(13.8%)	14	(11.8%)	15	(14.6%)	36	(12.9%)
\$1600-\$1999	8	(13.8%)	11	(9.2%)	5	(4.9%)	23	(8.3%)
\$2000-\$2999	7	(12.1%)	13	(10.9%)	5	(4.9%)	25	(9.0%)
\$3000-\$3999	0	(0%)	3	(2.5%)	1	(1%)	4	(1.4%)
\$4000 or more	1	(1.7%)	2	(1.7%)	5	(4.9%)	8	(2.9%)
Don't know	3	(5.1%)	20	(16.8%)	20	(19.4%)	43	(15.5%)
<b>Education</b>								
< High school	14	(24.1%)	31	(26%)	24	(23.3%)	71	(25.5%)
High school or GED	16	(27.6%)	44	(37%)	42	(40.8%)	102	(36.7%)
Some college	16	(27.6%)	27	(22.7%)	28	(27.2%)	71	(25.5%)
4 year college	12	(20.7%)	17	(14.3%)	9	(8.7%)	34	(12.2%)
<b>Marital Status</b>								
Married	14	(24.1%)	26	(21.8%)	30	(29.1%)	70	(25.2%)
Divorced	4	(6.9%)	3	(2.5%)	2	(1.9%)	8	(2.9%)
Separated	2	(3.4%)	6	(5%)	4	(3.9%)	12	(4.3%)
Never married	35	(60.3%)	74	(62.2%)	54	(52.4%)	164	(59%)
Unmarried couple	3	(5.2%)	10	(8.4%)	13	(12.6%)	24	(8.6%)

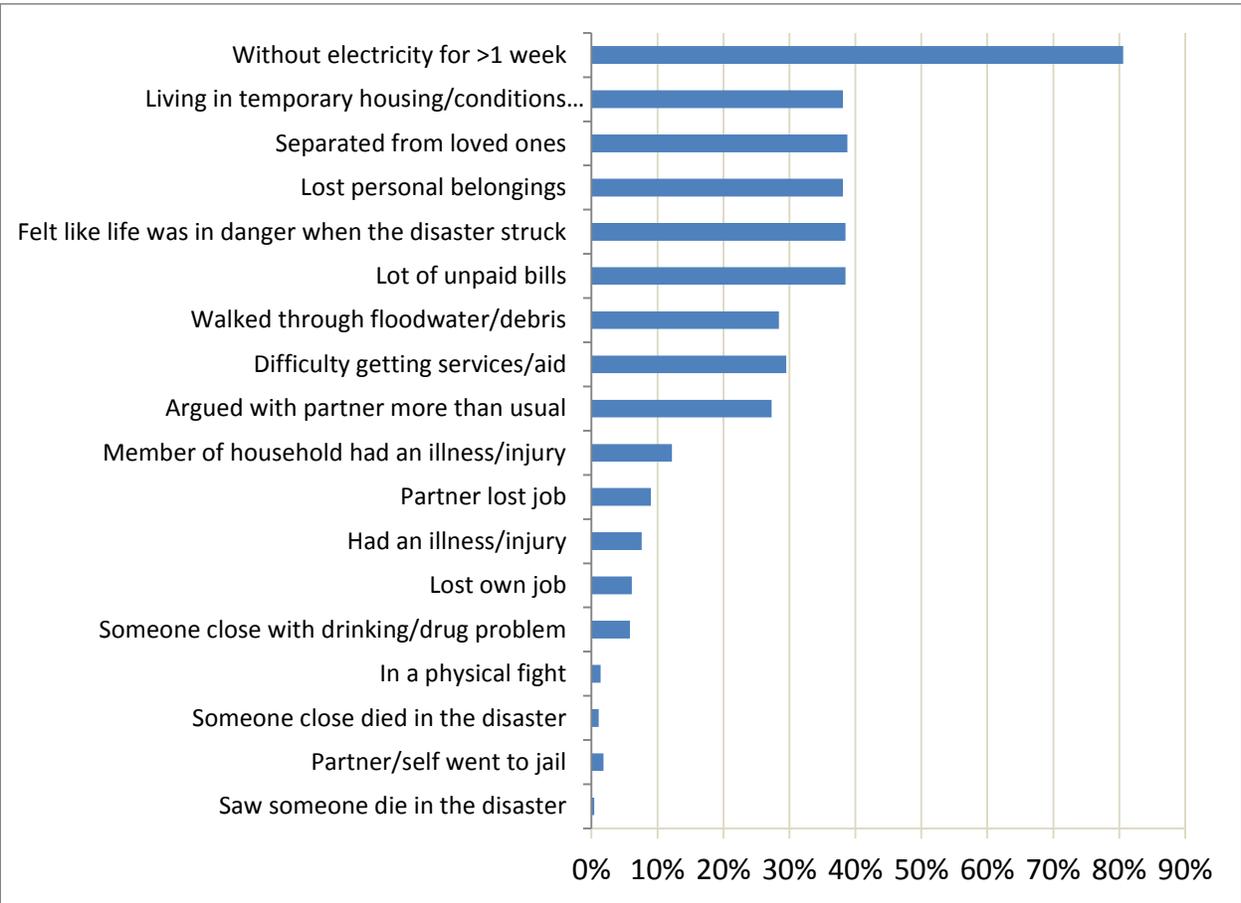


Figure 2, Frequency of experiences

Table 2, Hurricane experiences

	Pregnant Women n=58	Post-Partum Women (Pregnant during Hurricane Isaac) n=119	Post-Partum Women (Gave birth prior to Hurricane Isaac) n=107	Overall N=278
<b>Home Damage</b>				
None	14 (24.1%)	34 (28.6%)	25 (23.4%)	72 (25.9%)
Minor but livable	34 (58.6%)	61 (51.3%)	62 (57.9%)	154 (55.4%)
Major	9 (15.5%)	19 (16%)	17 (15.9%)	43 (15.5%)
Destroyed	1 (1.7%)	4 (3.4%)	2 (1.9%)	7 (2.5%)
Missing	0 (0%)	1 (0.8%)	1 (0.9%)	0 (0%)
<b>Felt like life was in danger</b>				
Yes	40 (69%)	46 (38.7%)	48 (44.9%)	168 (60.4%)
No	18 (31%)	72 (60.5%)	55 (59.1%)	109 (39.2%)
Missing	0 (0%)	1 (0.8%)	0 (0%)	1 (0.4%)
<b>Injury/illness, self</b>				
Yes	3 (5.2%)	8 (6.7%)	10 (9.3%)	21 (7.6%)
No	55 (94.8%)	111 (93.3%)	97 (90.7%)	257 (92.4%)
<b>Injury/illness, household member</b>				
Yes	3 (5.2%)	13 (10.9%)	18 (16.8%)	34 (12.2%)
No	55 (94.8%)	106 (89.1%)	89 (83.2%)	244 (87.8%)
<b>Walked through floodwater/debris</b>				
Yes	22 (37.9%)	28 (23.5%)	30 (28%)	79 (28.4%)
No	36 (62.1%)	91 (76.5%)	77 (72%)	199 (71.6%)
<b>Without electricity 1 week or longer</b>				
Yes	49 (84.5%)	94 (79%)	89 (83.2%)	226 (81.3%)
No	9 (15.5%)	25 (21%)	16 (15%)	50 (18%)
Missing			2 (1.8%)	1 (0.4%)
<b>Saw someone die</b>				
Yes	1 (1.7%)	0 (0%)	1 (0.9%)	1 (0.4%)
No	57 (98.3%)	58 (100%)	106 (99.1%)	277 (99.6%)
<b>Loved one die</b>				
Yes	0 (0%)	0 (0%)	2 (1.9%)	3 (1.1%)
No	58 (100%)	58 (100%)	105 (98.1%)	275 (98.9%)

## **UNANTICIPATED CHALLENGES/LIMITATIONS**

Post-disaster research presents several unique challenges. First, the process involved to obtain institutional review board (IRB) approval, while necessary, poses a complicating factor during time-sensitive, post-disaster research. Disaster episodes necessitate an immediate response and therefore there is a need for a pre-screened protocol with standing IRB approval so that rapid research can be implemented following the declaration of disaster. However, in a region that has been repeatedly visited by disaster, our research team had preemptively reviewed the RHAD toolkit and trained field staff members in the pre-disaster or preparedness phase prior to Hurricane Isaac during the spring of 2012. Thus, the project was prepared to mobilize fairly quickly, mainly due to the investigative team's working knowledge of the RHAD toolkit, as well as the already existing network of relationships between the community health workers and regional reproductive health clinics.

The investigative team was small and the geographic region to cover was fairly large. Costs associated with the study including staff time, mileage to recruitment sites, data entry and analysis, were greater than anticipated.

Limited staff and other resources also led the research team to decide on a convenience sampling strategy. While the RHAD methodology includes instructions on how to implement multi-stage, cluster sampling, it was too costly an endeavor to realistically employ. We were able to collect data from our most vulnerable, low-income women by being present in WIC and family planning clinics. While this may not be representative of the overall disaster experience of all pregnant and post-partum women, we were able to target our data collection to a particularly high-risk population.

Focusing recruitment on the parishes that were most affected excludes women who evacuated and never returned, as they may be residing in parishes or counties outside of our target area. For example, a woman in St. John Parish may have sought refuge with family members in neighboring St. James Parish and has not returned home due to property loss or financial reasons. Since we did not target WIC clinics in St. James Parish, we were unable to collect information on the experiences of these women. This is a common problem in disaster research.

Due to the distinct topography of Southeast Louisiana and the complexities of levee engineering, some towns within a parish were inundated with water while others were unscathed. The implications of this are twofold; while in the field, it became apparent that some women who met the eligibility requirements based on their geographic location (defined by parish of residence at time of the hurricane) had little to no significant hurricane experience. Conversely, some women who had significant disaster experiences were deemed ineligible because their parish of residence at the time of disaster was not included in the study. These exclusions were based on broad geographic assumptions that one parish suffered a more severe hurricane experience than another, yet feedback from the field proved that level of impact could vary by town, neighborhood or even by block. Future studies may benefit from using a more inclusive geographic area and more restrictive screening questions related to disaster experiences. For example, all 18 disaster-declared parishes could have been included from the

beginning of the study and with the addition of 1-2 screening questions about home damage and/or evacuation, ensure that participants had some significant hurricane-related experiences.

Finally, the community health workers who were part of the investigative team serve primarily as a support and referral system to first-time mothers, and their role in the collection of scientific data is limited. As such, there were some data collection errors that resulted. However, their contributions to the project were unrivaled; the community health workers are known and trusted throughout the communities in which they work and they were able to forge relationships with clinics that Tulane had not worked with prior to this project. They were also able to build rapport with the women. Connecting women with community health workers for the interviewing process helped to fill a crucial need in providing informational and emotional support. While the brief interview concluded the formal end of study participation, the community health workers offered support and comfort to disaster-affected women. The overall utility in using community health workers in post-disaster research is predicated upon robust relationships between the navigator, community members and healthcare providers and they should be viewed as the essential link between disaster-affected women and complex, often overwhelmed and fragmented, healthcare systems.

#### **EXPECTED FUTURE ACTIVITIES**

The Tulane team plans to continue examining the data in several ways including; characterizing the impact of disaster on reproductive outcomes on the participants who were pregnant during the disaster but had given birth prior to the interview; determining the need for healthcare and social service needs and testing the relationship between family stressors and home damage.

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