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Haitian Women's Experiences of Recovery from Hurricane Matthew

Athena Kolbe, Marie Puccio, Sophonie M. Joseph, Robert Muggah and Alison Joersz





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Haitian Women's Experiences of Recovery from Hurricane Matthew

Athena Kolbe¹, Marie Puccio², Sophonie M. Joseph³, Robert Muggah⁴ and Alison Joersz⁵

Abstract

On 4 October 2016 Haiti was struck by a category five hurricane, the strongest such storm in over 50 years. Hundreds were killed and over 1.4 million made homeless. A household survey of 2,792 households was undertaken between 11-21 October 2016. Repeat surveys were taken with a selection of households in December 2016 and February 2017. The survey demonstrated that Haitians were severely affected by the storm, with more than 67% claiming to be made homeless or forced to temporarily relocate. The survey also underlined the importance of food security, particularly among female respondents. A worrying sign is that more than 50% of the respondents were not aware that the storm was coming and less than 6% evacuated beforehand. This assessment offers critical insight into the dynamics of emergency and the impacts of the aid effort.

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Introduction

On October 4, 2016, a category five hurricane made landfall in Haiti's Tiburon Peninsula near the small provincial town of Les Anglais. Hurricane Matthew had winds that were estimated at 230 km/h (145 mph), making it the strongest storm to hit Haiti in over 50 years. During Matthew's passage, high winds and heavy rainfall battered Haiti's southern coast. Communication networks and road systems were compromised. After the hurricane washed away the Petit Goave Bridge, southwestern Haiti was temporarily unreachable from the remainder of the country, which slowed the distribution of emergency aid.

The human costs of the natural disaster were considerable. The final count of those killed in the disaster varied from 271 to "more than 1000" people.⁶ The storm affected more than a million people across the country, leaving 1.4 million homeless and generating US\$1.89 billion in damages. The Haitian government requested technical and financial assistance. The United Nations launched an emergency appeal for nearly US\$120 million in aid, and donors provided money, supplies, and logistical support. Before and after the hurricane's landfall, non-governmental organizations (both local and foreign) supplemented aid and security services which were also being provided by the United Nations Mission in Haiti and the Haitian government.

Within days of the hurricane, a team of researchers associated with the Igarapé Institute and the *Enstiti Travay Sosyal ak Syans Sosyal* (Institute of Social Work and Social Science) traveled to the affected area to administer a rapid household survey assessing post-disaster needs. A total of 2,792 households, including 17,515 individuals, participated in the study. The response rate for the survey was 91.6%. This report, which presents the initial findings of that survey, was prepared by a team of Haitian, American, and Canadian researchers. The survey focused on a wide range of issues including food security, access to water, medical concerns, psychological problems, attitudes toward service providers, and crime. This initial report was prepared with the goal of informing the Haitian government as it worked together with multilateral and bilateral donors and non-governmental organizations in meeting post-disaster needs.

6 Joseph Edgard Celestin of Haiti's Civil Protection Authority initially claimed that the number of Haitians killed was 336 people. This figure was based on an initial count conducted by local protection authorities the day after the storm. In the same report, another 221 were reported missing. On the same day, the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) reported that 271 people were killed. In the following days, estimates of "more than 1000" killed were reported by Reuters, based on statements issued by government officials. A final verified death toll was never established, though considerable reporting on the disaster - including by non-governmental and international organizations - continue to cite the higher, but unsubstantiated, figure provided by Reuters. For more reporting on the death toll in Haiti, see Ansari, A. (2016) Haiti death toll rising after Hurricane Matthew. CNN. October 8; OCHA (2016) Haiti: Hurricane Matthew - Situation Report No. 03, 7 October 2016; Ruck, J. (2016) "Hurricane Matthew Devastation in Haiti", The Guardian, October 12; Harrup, A. and de Córdoba, J. (2016) "Hurricane Matthew's Death Toll in Haiti Climbs to at Least 283", Wall Street Journal, October 6; Henderson, B. et al (2016) "'Monster' Hurricane Matthew: Haiti Death Toll Reaches 842 and Four Dead in US as Storm Heads Towards Georgia", The Telegraph, October 7; Al Jazeera News (2016) "Haiti Death Toll from Hurricane Matthew passes 1,000", October 10.

The key findings of the survey indicate that:

The hurricane dramatically impacted people's housing situation.

An estimated 67.3% of all respondents claimed to have been homeless or used temporary housing following the cyclone. Just 64.3% reported that their home was safe for habitation in the week after the hurricane.

There was significant variation in displacement patterns.

Two months after the hurricane, 27% of Nippes residents, 33% of Grand Anse residents, and 36.1% of Sud residents were still relocated away from their homes. Women were significantly more likely than men to have reported ongoing displacement.

The housing type and location invariably shaped vulnerability to displacement.

Houses made of mud, straw and other non-durable materials, as well as thatch roofs were more likely to be damaged or destroyed. Women reported less access to stable housing and four months after the hurricane they were significantly more likely than male respondents to live in a makeshift dwelling.

The timing of hurricane Matthew exacerbated food insecurity.

The cyclone made landfall at a key moment during the harvest. An estimated two thirds of the households in the three departments have access to land for productive purposes but nearly 85% of households said their plots were severely damaged by the storm and about half of all households (47%) said they did not have sufficient tools and equipment to continue their business.

The proportion of household expenditures devoted to food were higher for women than for men.

Four months after the hurricane, women reported spending 80% of the household budget on food while men were closer to the pre-disaster average at 62% of the household budget dedicated to food. Higher proportions of food expenditures are a proxy for poverty, indicating that households with female respondents were more at risk for poverty.

Respondents reported relying heavily on survival strategies to cope with food insecurity.

Most commonly, households opted to consume less expensive food or borrow food from family or friends. Families also reduced the amount of food consumed and the frequency of meals.

Access to clean drinking water was limited after the hurricane.

Before the storm, almost 65% of urban households in the three departments had access to improved water sources. After the storm, the situation was reversed with 73% of households using unimproved sources.

Rising demand for basic good, services and building materials exacerbated vulnerability.

The growing demand for tarps, sheets of roofing tin, and other repair materials also led to an increase in prices for those items in the three departments during the weeks and months following the hurricane.

Many citizens did not have access to adequate information before or after the hurricane.

More than half of all respondents said they had no idea a hurricane was coming. Just 15% of respondents heard about the impending storm from radio, school and church announcements, community loudspeakers, social media and text messages while most (32%) heard by word of mouth, family, or friends. And just 5.7% of households evacuated before the cyclone made landfall.

The types of livelihood priorities signaled by residents shifted over time.

In the immediate aftermath, respondents emphasized food security (39.2%), access to clean water (29%), and helping people to return to work (19.7%). Four months later, the focus was on income generation (54.5%), clean water (19.9%) and help building and repairing homes (10.5%).

A comparatively modest number of Haitians received international or domestic assistance.

Less than 1% of Haitians claim that emergency assistance had been distributed in their village or neighborhood. Not surprisingly, it was more common in urban settings than in mountainous and hilly areas. Women were more likely to say that aid was not getting to those needing it most.

Crime is not common, though more likely to be reported by women.

Less than 1% of respondents claimed to have been victimized while 4% said that a household member had been a victim in the previous four month. The most commonly reported forms of crime included threats of violence, physical assault, and property crime. Even so, there are risks for sexual violence given the limited forms of security infrastructure – including doors, locks and other forms of surveillance in damaged and temporary housing.



Photo: UNEP Haiti

Methodology

A multistage process was used to sample locations within communal sections, households, and respondents. The sample was drawn from all communal sections located within the three geographic departments identified by the Haitian Civil Protection Authority as most adversely impacted by Hurricane Matthew. The sample represented both urban and rural areas. The most recent estimated population figures were from 2012 and were based on projections from the national census, published by the national statistics institute (IHSI, 2012). These figures were used to calculate sample size.

In calculating sample size, a 1.96 level of confidence measure was assumed (for a 95% confidence interval); the value of the margin of error was set at 0.05, the baseline level of the indicators was assumed to be 0.5 (this was a conservative value as no previous data was available to estimate the %age of households impacted by the hurricane at the communal section level), the design effect was 2.5, and the expected response rate was 90%.

Survey sampling in rural Haiti is challenging; there are few marked roads and most homes have no address or house number. There are no set lists of residents from which to draw a sample. The lack of roads or paved paths in rural areas inhibits the possibility of sampling roads and crossroads. Instead, RGCS (Random GPS Coordinate Sampling) was used to generate coordinates in the three departments. Invalid coordinates (those landing on water or on impassible areas) were eliminated using satellite photographs and additional coordinates were generated to replace those eliminated coordinates until a final list of ten locations was identified within each communal section.

During the next phase of sampling, the research team visited the GPS coordinates in person. After arriving at the coordinate, the travelled direction was chosen using a spin the pen method. Spin the pen is a standard approach adopted in multi-stage cluster sampling. The enumerator then walked in the indicated direction until he or she reaches the *n*th home (the number of households was randomly chosen using a Kish number table and provided to the enumerator). The research team continued in this manner until nine homes had been sampled or until a pre-determined distance had been reached, whichever came first.

A total of 3,048 dwelling locations were identified in the 41 communal sections located within the Sud, Grand Anse and Nippes departments. Each home was visited and informed by a research team member of the survey and its importance; whenever possible, a return date and time for the interview was then scheduled. If the household had relocated, neighbors were asked for contact information or possible locations of the household so they could be tracked down and interviewed.

Fielding for the baseline survey began on 11 October 2016 and concluded ten days later. Selected households were visited up to four times before the house was labeled a non-responder. The adult who had most recently had a birthday was selected as the primary

respondent⁷ and was invited to participate in the study.⁸ In total, 2,792 households participated in the study, giving a response rate of 91.6% (see table 1). Of the remaining households, an adult resident could not be located after multiple attempts (n=129), the household location was inaccessible (n=71), or the selected household member refused to participate in the study (n=56).

A comprehensive interview lasting approximately 40 minutes was completed with each participant; interviews were completed using a computer aided interviewing software program on android and apple devices. For 221 households, interviews were completed using paper and pencil surveys as sufficient electricity was unavailable to charge batteries for the data collection devices. This data was entered twice and compared for data entry errors. SPSS v.21 was used for data entry and analysis.

Table 1: Survey Participation by Department

	Grand Anse	Nippes	Sud	Total
Participated in Study	808 (28.9%)	790 (28.3%)	1194 (42.8%)	2792 (91.6%)
Inaccessible	11 (15.5%)	20 (28.2%)	40 (56.3%)	71 (2.3%)
Not home	22 (26.5%)	17 (20.5%)	44 (53.0%)	83 (2.7%)
No adult home	13 (28.3%)	11 (23.9%)	22 (47.8%)	46 (1.5%)
Declined to participate	10 (17.9%)	7 (12.5%)	39 (69.6%)	56 (1.8%)
Total	864 (28.3%)	845 (27.7%)	1339 (43.9%)	3048 (100%)

At the conclusion of the survey, respondents were asked if they were willing to be contacted for follow up interviews in the future. All but eight of the respondents agreed and provided contact information to the interview team. Follow up interviews were conducted with these respondents between 18 December 2016 and 23 December (8 weeks post-Matthew) and 7 February 2017 to 14 February 2017 (16 weeks post-Matthew). Response rates were 88.55% (8 weeks post-Matthew)⁹ and 85.17% (16 weeks post-Matthew).¹⁰

7 For information on the recent-birthday method as a random selection tool for household surveys, see Olson, K., Stange, M., & Smyth, J. (2014). Assessing within-household selection methods in household mail surveys. *Public Opinion Quarterly*.

8 This individual completed a short informed consent process before being interviewed. This was the final phase of sampling. In the event that the selected adult refused to participate, the home was labeled a "non-responder"; no other individual in the home was selected in that individual's place.

9 96.6% of those households surveyed at baseline were included at T2. 71.4 (n=2175) were interviewed in person, 2.6% (n=80) could not be located, and 7 (0.2%) declined to participate when contacted for the follow up interview.

10 1,402 (46.0%) respondents were interviewed in person, 1194 (39.2%) were interviewed by phone, 180 (5.9%) could not be located, three (0.1%) declined to participate when contacted for the second follow up interview.

Demographics

The surveyed population reflects the diversity of Haitian society and is, in general, what would be expected of a household survey in this region. The only exception is that of gender (table 2). Typically, survey research in rural Haiti yields slightly more female than male respondents at a rate of 51% female. In Nippes and Grand Anse, a higher percentage of male respondents participated in the survey than expected. The mean household size is slightly above the national average of 5.8 individuals, but is consistent with prior research in the Sud and Grand Anse departments.¹¹ Slightly less than half of survey respondents lived in mountainous or hilly areas, usually located inland, while about 14% resided on the coasts and ten percent lived in cities. The remaining third of respondents lived in valleys or on plains or plateaus, often in areas that rely on agriculture as the main income-generating activity.

Table 2: Demographics

	Grand Anse	Nippes	Sud	Total
Male respondent	50%	55%	49%	51%
Female respondent	50%	45%	51%	49%
Mean household size	6.23 SD: 2.602	6.18 SD: 2.691	6.18 SD: 2.544	6.20 SD: 2.604
Mean age	31.63 years SD: 12.027	29.51 years SD: 10.758	28.55 years SD: 9.862	29.73 years SD: 10.686
Lives in a hilly or mountainous area	50.6%	45.1%	42.0%	45.3%
Lives on a plain, plateau, or in a valley	34.6%	37.5%	22.3%	30.1%
Lives on the coast	10.6%	11.2%	17.7%	13.8%
Lives in a city or village center	4.2%	6.2%	18.1%	10.7%

¹¹ Historically there has been more variation in household size in the Nippes department.



Photo: UNEP Haiti

Housing and Displacement

During the initial survey, only two-thirds (64.3%) of respondents reported that their home was safe for habitation and slightly more than two-thirds (67.3%) were homeless or living in temporary housing. More than 90% of households reported that water entered their home during the hurricane. Two months after the hurricane, women were significantly more likely than male respondents to report that their household had been forced to relocate (table 3) with more than half living away from home during the first follow up survey. Women were less likely to relocate within their communal section and were more likely to relocate further from home, including moving to a new geographic department. Notably, female respondents accounted for nearly all of the 7.4% of households which relocated to a new department.

There were also variations in displacement within geographic departments and by the type of terrain in which the household was located (table 4). Less than a third (27%) of Nippes residents had relocated either within or outside of their communal section 8 weeks after Hurricane Matthew while 36% of Sud residents and a third (33%) of Grand Anse residents had relocated. Most of those households who were displaced two months post-hurricane were still displaced four months after Matthew, even when some individual household members had returned to their original area to work, farm, fish, or rebuild their homes. Individuals who lived on plains, in valleys, and on plateaus were least likely to report ongoing displacement after the hurricane while those living in mountainous or hilly areas were most likely to be displaced.

Table 3: Percentage of respondents displaced 8 weeks after Hurricane Matthew

	Male	Female	Total
Not Displaced	85.3	48.3	67.3
Displaced within my communal section	9.6	8.3	9.0
Displaced outside my communal section but inside my commune	2.8	13.6	8.1
Displaced outside my commune but in the same department	1.4	15.5	8.2
Displaced outside of my department	0.9	14.3	7.4

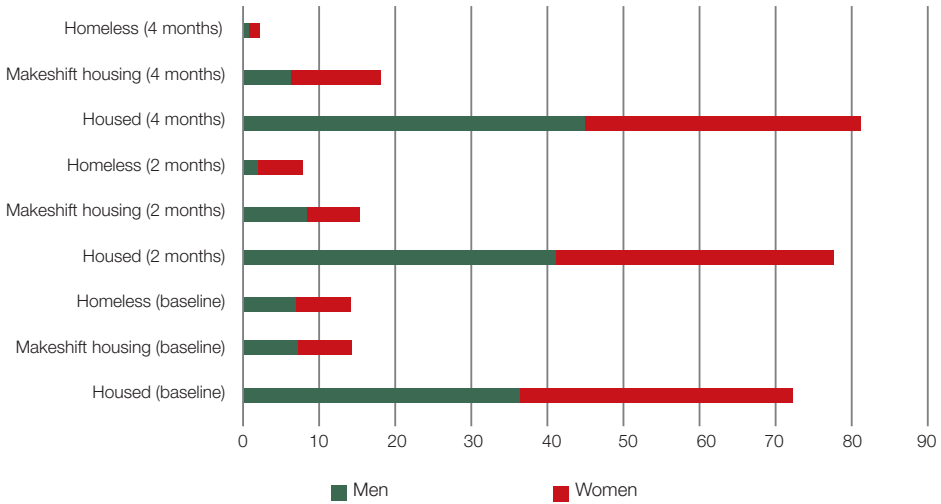
Table 4: Percentage of respondents displaced 8 weeks after Hurricane Matthew by terrain type

	Mountain, hilly area	Plain, valley, plateau	Coastal area	City, village center	Total
Not Displaced	54.8	85.0	71.4	63.9	67.3
Displaced within my communal section	15.1	2.5	1.8	11.1	9.0
Displaced outside my communal section but inside my commune	9.7	2.3	7.6	19.3	8.1
Displaced outside my commune but in the same department	12.0	3.5	10.2	2.8	8.2
Displaced outside of my department	8.4	6.7	9.0	2.9	7.4

Displacement was determined by housing type, the amount of damage to the home, and reports of water entering the home. Homes made of mud, straw, and other non-durable materials were significantly more likely to be damaged or completely destroyed in the hurricane. Similarly, homes with straw or thatch roofs were more likely to be damaged or completely destroyed than homes with concrete roofs. Homes with reinforced metal roofs fared better than those where the tin or metal shingles were nailed directly to the wooden crossbeams of the roof. A week after the hurricane, only two thirds of the respondents were living in permanent homes compared to 87.9% who lived in houses or apartments before the storm. Other types of housing used after the hurricane included shipping containers, temporary dwellings made of natural or found materials such as thatch, tents, caves, and emergency shelters such as schools and churches operated by charities and civil protection authorities.

Female respondents were more likely than male respondents to report on-going homelessness after the storm. Women reported less access to stable housing and four months after the hurricane they were significantly more likely than male respondents to live in a makeshift dwelling (figure 1). While respondents of both genders reported moving to temporary and permanent dwellings during the four months after the hurricane, women reported transitioning to more secure housing in lower numbers. Four months after the hurricane, 45.2% of male respondents reported living in permanent housing while only 35.8% of female respondents reported living in an apartment or house.

Figure 1: Percentage of Housed and Non-Housed Respondents



Access to Food and Water

The hurricane struck at a key moment in agricultural production for the region, straddling the spring/summer crop harvest and planting for the winter season. Hurricane Matthew interrupted winter crop preparation of beans, peas, and millet, as well as harvesting of bananas, plantains, sweet potatoes, and other staples of the Haitian diet. The hurricane caused the loss of stocks, seedlings, standing crops and seeds. Two thirds of the households in the three departments have access to land for productive purposes but nearly 85% of households said their plots were severely damaged by the storm and about half of all households (47%) said they did not have sufficient tools and equipment to continue their business. This was particularly severe in some communities: in Grand Anse, eight out of eleven communes reported damage to 80% or more of agricultural plots, this was also true for ten of eleven communes in Nippes and twelve of 18 in the Sud department.¹²

Access to clean drinking water was limited after the hurricane. Before the storm, almost 65% of urban households in the three departments had access to improved water sources. After the storm, the situation was reversed with 73% of households using unimproved sources.

¹² It is important to note that in the Grand Anse department, three communes (Roseaux, Dame Marie and Chambellan) reported damage to 95% or more of the agricultural lands used by households. In Nippes, four communes (Petit Trou, Arnaud, Grand Bouchan, and Baradères) reported that 95% or more of the household agricultural plots were damaged, and in the Sud, three communes reported similar figures (Torbeck, Les Cayes, and Cavaillon). Though this level of damage wasn't consistent across all departments, other communes reported high percentages of damaged gardens at 80% or more of the plots damaged or destroyed: these included Roseaux and Moron (Grand Anse) as well as two communes in Nippes, and Torbeck, Port Salut, Chantal, Chardonnières in Sud.

This gap was smaller in rural areas. Treatment to make water safe for drinking, was unevenly used by households after the hurricane. In the immediate aftermath of the storm, only 6.9% of households assured that water was always treated before drinking (figure 2). Four months later, after a number of localized outbreaks of water-borne diarrheal disease, this increased with nearly a third of households reporting use of potable drinking water. However, there was a clear gender gap in these numbers; women were significantly more likely to report that their household could not afford to treat water before consuming it.

Figure 2: Reasons for Not Treating Water Before Drinking

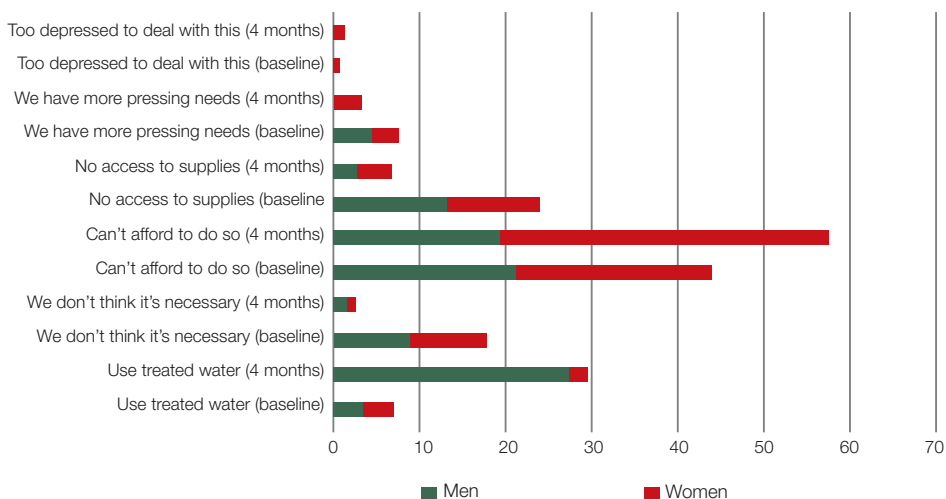


Table 5: Mean Proportion of Household Expenditures Devoted to Food

	One Week	Two Months	Four Months
Men	53.0 (SD: 25.61)	57.6 (SD: 24.89)	61.1 (SD: 24.00)
Women	51.6 (SD: 26.10)	77 (SD: 20.50)	80.1 (SD: 23.23)
All Respondents	52.6 (SD: 25.86)	67.1 (SD: 24.83)	70.4 (SD: 25.47)

Access to food was also a challenge for households after the hurricane. A week after the hurricane, slightly more than half of household expenditures were devoted to food (table 5). No substantial differences were observed among the three departments. The proportion of food expenditure is a proxy indicator of poverty; a week after the hurricane this was much lower than in previous surveys in the area.¹³ A possible explanation is the

¹³ Typically, in this area of the country, food accounts for about two thirds of household's total expenditures. See, for instance, L. Latino & I. Musumeci (2016) Haiti Market Assessment. Rome: World Food Program and D. Rose (2012) Assessing Food Security at WFP: Towards a Unified Approach. New Orleans: Tulane.

increase in essential non-food items such as water (which took up an average of 9% of a household's budget) and materials used to repair homes (12% of the average household budget one week after Matthew). Water infrastructure was damaged throughout the three departments, forcing many households to purchase water they were previously able to obtain free of charge from rivers, public water fountains, and local springs or wells. The growing demand for tarps, sheets of roofing tin, and other repair materials also led to an increase in prices for those items in the three departments during the weeks and months following the hurricane; increased costs for essential items could account for their large share of average household expense relative to food.¹⁴

The proportion of household expenditures devoted to food increased and then surpassed pre-storm levels in all three time periods included in the survey. A gender disparity is clearly apparent (table 5). While both male and female respondents reported an increased proportion of household expenditures devoted to food, these figures were higher for women than for men, at both 8 and 16 weeks post-hurricane. This indicates that households with female respondents may be more food insecure, and may face higher levels of post-disaster poverty when compared to households of male respondents. Four months after the hurricane, women reported spending 80 % of the household budget on food while men were closer to the pre-disaster average at 62% of the household budget dedicated to food.

Both men and women reported relying on survival strategies to cope with food insecurity: most commonly, households opted to consume less expensive food or borrow food from family or friends. Families also reduced the amount of food consumed and the frequency of meals. While both genders reported engaging in crisis survival strategies such as selling household goods, withdrawing children from school, and selling tools or items used for transport, four months after the storm, women were more likely than men to report these crisis survival behaviors. Women were also significantly more likely to report borrowing money or food, selling female (child-bearing) animals, and reducing money spent on non-food essentials such as medication. Though families may feel that survival strategies are necessary (and indeed, doing so may be the only way that a head of household can feed their family), these adaptations to the temporary crisis of food insecurity can have long-lasting impacts on a household's ability to recover and in terms of future financial stability. As women are disproportionately represented, the long-term effect of economic recovery on female-headed households will require particular attention by policymakers.

14 The authors wish to thank the World Food Program's VAM unit who provided current assessment instruments used to measure food security to the research team and who did an initial analysis of this data for rapid dissemination to policy makers and relief professionals in the month after Matthew.

Access to Information and Evacuation Decisions

Information about impending disasters and specific instructions about how to respond to those disasters, including evacuation instructions and aid sources, are a key protective factor for mitigating the negative impacts on safety, security and well-being. However, it appears that many citizens did not have access to adequate information before or after the hurricane (figures 3-4). More than half of all respondents said they had no idea a hurricane was coming. There was some success in getting information out in advance via announcements at schools and churches, mass text messages, social media, community loudspeakers, and via radio. Nearly 15% of respondents heard about the impending storm via these methods; this is notable because in previous disasters, such means of alerting the public were less successful.

Only 5.7% of households evacuated before Matthew made landfall. Those who chose not to evacuate gave a variety of reasons including not knowing about it beforehand or not having enough advance notice to take action (56.0%), not wanting to lose property and/or animals (24.0%), not believing the storm would be as bad as predicted (9.6%), lacking a safe place to evacuate to (4.1%), lacking transportation (3.4%), lacking the assistance needed to evacuate due of age or disability (1.6%), or because they believed God would protect them (0.8%).

Figure 3: Responses to “How did you hear about Hurricane Matthew?”

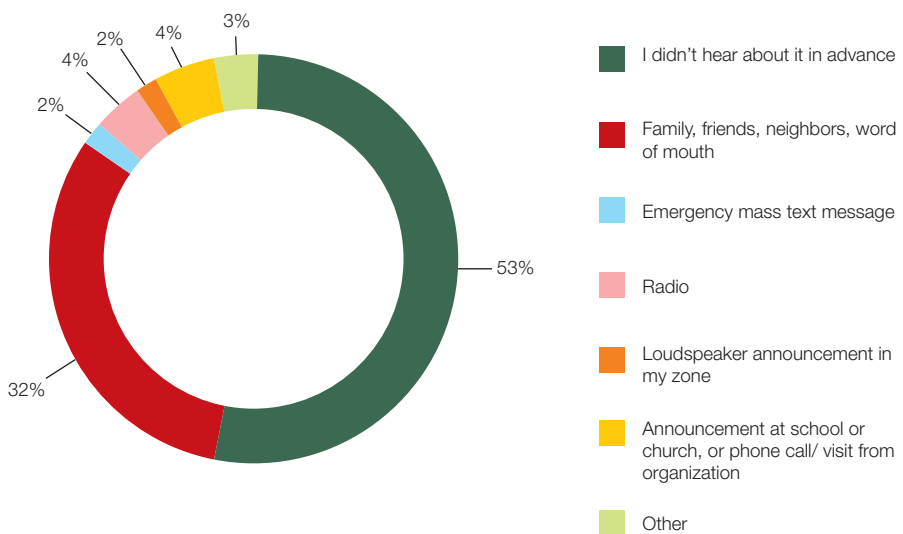
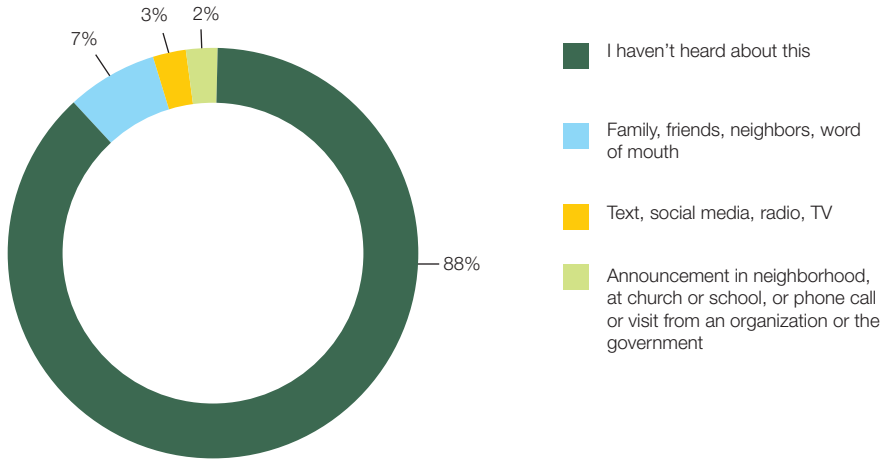


Figure 4: Responses to “Where are you getting information about relief efforts in your area?”



In the immediate aftermath, residents stated that the government should focus efforts on food security (39.2%), access to clean water (29%), and helping people return to work, family businesses, farming, and/or fishing (19.7%). These priorities shifted in the four months after the disaster with more than half of respondents (54.5%) prioritizing a return to income generating activities, and one out of five households (19.9%) prioritizing access to clean water. Clean water access was more often cited as a priority for those who living in mountainous or hilly areas. The third highest priority included the desire for help in rebuilding or repairing homes (10.5%). Four months after Matthew, only a tenth of respondents reported that emergency aid or charitable assistance had been distributed in their village, area, or neighborhood. Aid was more common in urban areas and less common in mountainous and hilly areas.

Respondents generally felt very or somewhat safe from crime (figure 5) though there were differences in this perception based on gender. When asked if they or a household member had been a victim of a crime, less than 1% of respondents said they have been victimized while 4% said that a household member had been a victim of a crime. The most commonly reported crimes were threats of violence, physical assaults, and property crimes. Respondents were also asked if they had a way to secure their belongings from theft, a common concern after disasters and the reason cited by nearly a quarter of the respondents who did not evacuate before the hurricane. Half of all respondents (51.3%) said that all or some of their belongings were stored in a secure location while half said that they had no way to secure their property to protect from theft. Residents said that doors and locks had been lost in the storm and that property was stored in open areas such as in tents, under tarps, in partially destroyed homes, and in the homes of friends and neighbors.

When it came to accessing emergency aid in meeting basic needs, gender again presented as an on-going point of vulnerability (table 6). Women were more likely than men to believe that it is important for women to be part of the decision-making process regarding community disaster recovery. The gender gap increased over four months, as women were more likely to believe that aid was not getting to those who needed it most, that women and girls had become more vulnerable to crime as a result, and that transactional sex was necessary for women and adolescent girls to access aid or meet their basic needs.

Figure 5: How safe do you feel from crime right now?

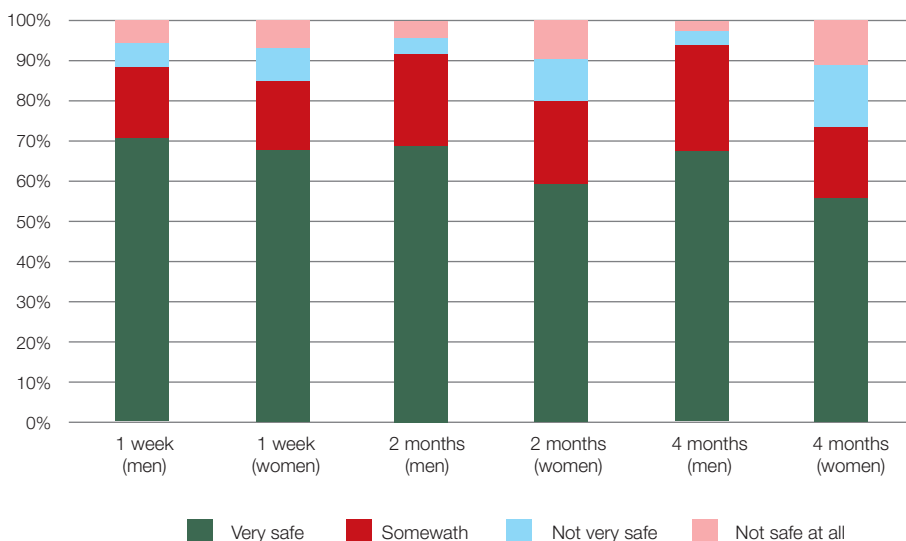


Table 6: Agreement, by gender, to the statements about gender equity after the hurricane¹⁵ where (1) is strongly agree that this is true, (3) is neutral, and (5) is strongly disagree that this is true.

	1 week		2 months		4 months	
	Men	Women	Men	Women	Men	Women
It's important for women to be part of the decision-making process in our community as we decide how to recover from this disaster.	4.4 SD: 1.0	2.2 SD: 1.4	4.5 SD: 0.9	2.0 SD: 1.2	4.5 SD: 1.0	1.8 SD: 1.4
Aid is getting to the people who need it most	4.5 SD: 0.9	4.5 SD: 0.9	4.6 SD: 1.0	4.7 SD: 0.5	4.7 SD: 0.8	4.9 SD: 0.3
When food and other aid is delivered it is taken first by the young, healthy men so that older people, women, and vulnerable people don't receive help.	2.5 SD: 1.5	2.0 SD: 1.3	3.0 SD: 1.2	1.5 SD: 0.8	3.9 SD: 1.5	1.2 SD: 0.7
In my area, women and girls have become more vulnerable to crime since the hurricane.	4.2 SD: 1.3	3.9 SD: 1.5	4.4 SD: 1.0	3.5 SD: 1.1	4.5 SD: 0.9	3.1 SD: 1.8
If a woman or a teenage girl wants to get disaster relief aid, she will need to give sex to the men distributing the aid.	4.2 SD: 1.2	4.1 SD: 1.2	4.2 SD: 0.8	3.5 SD: 1.0	4.3 SD: 0.9	3.0 SD: 1.6
Because they have no money, some women and teenage girls in our area are having sex in exchange for the things they need to survive.	4.2 SD: 1.1	4.1 SD: 1.2	4.3 SD: 1.7	3.9 SD: 1.5	4.3 SD: 1.6	3.6 SD: 1.5

¹⁵ Respondents were asked: "Please use this scale on the card to tell me how much you agree or disagree that these statements are true. There's no one right response, just tell me your opinion." The scale options were 1 = I strongly agree that this is true; 2 = I agree somewhat; 3 = Mixed; I'm in the middle; Neutral; 4 = I disagree somewhat; 5 = I strongly disagree that this is true.

Reflections

This household survey highlights a range of risks and vulnerabilities confronting Haitians in the departments most adversely impacted by Hurricane Matthew, particularly women and those individuals residing in remote areas. The assessment emphasizes the differential impacts of the disaster between urban and rural regions, but also the ways in which effects are segmented by gender. Such data can be used to help shape baselines and set short-term priorities, but also to measure and evaluate whether needs are being met in the medium- to long-term.

Women are at particular risk following disasters.¹⁶ They tend to be more economically vulnerable than men. Often men in developing countries such as Haiti have access to formal employment while women work in the informal economy or within a family business.¹⁷ In post-disaster scenarios where there are income interruptions, women find themselves dependent on the ability of men to recover quickly and return to full income-earning status. In the areas most impacted by Matthew this was evidenced, for example, in households of fisherman. Pre-Matthew these families had a set schedule where the adolescent and adult males fished during the day while the female household members cared for the home and worked as street merchants, often selling fish. If the male breadwinner is injured or dies, women must shoulder the entire burden of caring for the household under difficult circumstances. In the case of fisherman, men were not just injured or ill, they were also unable to work because boats were damaged in the storm or because they were needed at home to make repairs or build a new living structure. In some areas increased silt in the water and other ecological changes related to hurricane adversely impacted fishing, making those men who tried to work unable to secure enough fish to continue as the primary breadwinners in the family. Households who relied on subsistence farming reported similar difficulties post-storm and changes in the breadwinner status of males in the household.

An additional challenge for women is that women tend to be responsible in caring for the needs of the family. Children, who are unable to care for themselves, are the responsibility of woman. Thus, women are forced to attend not only to their own needs, but also the needs of the household's dependents. Women also have difficulty accessing adequate health services for injuries, infections, and disaster-related illnesses.¹⁸ Women are more likely to die of treatable conditions and are more susceptible to illness when epidemics strike, with the cholera epidemic representing a significant example in post-earthquake Haiti. Illness, impacts not only the health of the individual adult, but also the adult's ability to work and care for other household members.

¹⁶ Horton, Lynn. (2012) After the earthquake: gender inequality and transformation in post-disaster Haiti. *Gender & Development*: 295-308.

¹⁷ See, for instance, Lundahl, M. (2015). *Peasants and Poverty (Routledge Revivals): A Study of Haiti*. Routledge and Ayoya, M. A., Heidkamp, R., Ngnie-Teta, I., Mamadouitaibou, A., Daniel, E. F., Durandisse, E. B., & Stoltzfus, R. J. (2014) Précis of nutrition of children and women in Haiti: analyses of data from 1995 to 2012. *Annals of the New York Academy of Sciences*, 1309(1), 37-62.

¹⁸ Bloem C. M., Miller A. C. (2013) Disasters and Women's Health: Reflections from the 2010 Earthquake in Haiti. *Prehospital Disaster Medicine*, 28(2):1-5.



Photo: UNEP Haiti

Another point of vulnerability for women is the risk of sexual violence and exploitation. As reported in this study, there is the perception that women and girls must engage in transactional sexual activity in order to access post-disaster aid. Though this survey did not ask about specific personal experiences of being forced to engage in transactional sex, the perception that it is necessary for women and teenage girls to access needed disaster relief and to meet basic needs is clear. For persons who are displaced or living in makeshift or temporary housing, there is often insufficient security infrastructure for monitoring and preventing violence against women.¹⁹ With few physical barriers, like doors or locks, perpetrators of violence can enter women's living spaces unencumbered.

Even outside of the context of organized camps for internally displaced persons (of which there were few after hurricane Matthew), women remain more vulnerable in post-disaster settings. Police infrastructure may be damaged in the disaster and police may be preoccupied with other types of crime. In this way, women face increased vulnerability when policy capacity is compromised or limited. While few Haitians were housed in camps and other facilities for internally displaced persons during and after the hurricane, and only 1% were victims of theft, crime was still perceived as a concern.²⁰ The possibility of theft, in particular, prevented some households from evacuating before Matthew made landfall, and more than half of all households lacked sufficient access to secure storage for their belongings after the hurricane.

It is crucial that organizations and governmental entities find ways to prioritize the equitable distribution of resources to women after disasters.²¹ The multiple vulnerabilities of women are compounded by the fact that men have an easier time accessing the

19 See, for instance, Clermont, C, Sanderson, D., Sharma, A. Sparos, H (2011) *Urban disasters- lessons from Haiti: Report for the Disasters Emergency Committee*. <https://www.beta.dec.org.uk/sites/default/files/pdf/dec-haiti-urban-study.pdf> and Kolbe, A.R., Shannon H, Levitz N, Muggah R, Hutson RA, James L, Puccio M, Trzcinski E, Noel JR, Miles B (2010) *Assessing Needs after the Quake: Sexual Violence, Property Crime and Property Damage*. Geneva: Small Arms Survey.

20 This is significantly lower than the crime rate after both the 2010 earthquake and the 2004 coup. However, the perception of crime as a possible problem still impacts the behavior of respondents (for instance, by refusing to evacuate before the storm), and this is an issue that needs to be addressed by policymakers and service providers.

21 Padgett A; Warnecke, T. (2011) Diamonds in the Rubble: The Women of Haiti: Institutions, Gender Equity and Human Development in Haiti. *Journal of Economic Issues*, 45(3): 527-588.

distribution of aid and associated infrastructure. Men, particularly those who are young and strong, may be better able to access aid during chaotic and physically challenging aid distributions, particularly when limited supplies are being tossed out of trucks to waiting crowds or when supplies are dropped at a distribution point and then grabbed by those who are nearest the location. By prioritizing aid distribution directly to women, it would be easier to ensure the wellbeing of women and families without relying on an indirect transfer of resources via male family members.

This study highlighted the importance that women put on being part of the decision-making process during recovery from a disaster. Male and female respondents had widely divergent views on the integration of women in community leadership and decision making during disaster relief efforts. The challenges that women expressed in accessing aid can be overcome, in part, by allowing and honoring the participation of women in community planning before and after disasters.

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