Community Assessment for Public Health Emergency Response – 2017 Hurricane Recovery

29 OCTOBER, 2019

U.S. Virgin Islands

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Executive Summary

Two Category 5 storms hit the U.S. Virgin Islands (USVI) within 13 days of each other: Irma on 6 September 2017 followed by Maria on 19 September 2017. Both storms led to widespread destruction to homes, businesses, and the healthcare infrastructure, leaving the island without power and potable water for months. To assist with response efforts, the USVI Department of Health (DoH) conducted two Community Assessments for Public Health Emergency Response (CASPERs) to assess the experience and health of residents before, during, and after the hurricanes in November 2017. CASPER is an epidemiologic technique designed to provide household-based information about a community's needs in a timely, inexpensive, and representative manner. To help assess the ongoing recovery efforts, and identify any new or changing needs, the USVI DoH conducted follow-up CASPERs in February 2018, November 2018, May 2019, and October 2019.

USVI DoH used the standard 30x7 CASPER multistage cluster sample methodology for the previous response and recovery CASPERs. For the October 2019 CASPER, we piloted a modified design. In the first stage, we selected 21 clusters (census blocks) proportional to the number of households in each cluster and, in the second stage, ten households per cluster were systematically selected.

The October 2019 CASPER specifically aimed to (1) identify ongoing recovery needs within the community and gauge the continuing community recovery process, (2) describe perceived physical health and behavioral health effects associated with the storms, (3) identify information gaps and preferred communication strategies for the hurricane response and recovery efforts, (4) assess household characteristics associated with vector control, and (5) pilot test the modified CASPER 21x10 design. We updated the May 2019 questionnaire based on current recovery status and territorial priorities (e.g., vaping). As with previous CASPERs, for the final five questions on the questionnaire that were specific to the survey respondent rather than the household, we modified the CASPER methodology to a three-stage design to randomly select an individual within the household.

USVI DoH CASPER leads provided a two-hour just-in-time training to interview teams prior to conducting interviews. Interview teams completed a total of 185 household interviews. We conducted weighted cluster analysis to report the projected percent of households in USVI for specific responses to questions. All results presented in the narrative are the weighted percentages.

Based on the analysis of the data collected during the CASPER, the following suggestions were made to USVI Department of Health leadership and the Virgin Islands Territory Emergency Management Agency (VITEMA) for consideration:

1. Consider a follow-up study on mental health status.
2. Continue to provide public health messaging through modified routes.
3. Further promote emergency supply kits and household preparedness.
4. Share CASPER findings with recovery partners to promote data-driven recovery efforts.
5. Complete the final recovery CASPER in March 2020.

Background

The 2017 hurricane season was one of the most active seasons on record with 10 consecutively-named hurricanes in as many weeks; the first time that had occurred since 1893.[1] Two Category 5 storms hit the U.S. Virgin Islands (USVI) within 13 days of each other: Irma on 6 September 2017 followed by Maria on 19 September 2017. Both storms led to widespread destruction to homes, businesses, and the healthcare infrastructure, leaving the island without power and potable water for months.[2-4] The loss of power, poor living conditions (e.g., homes with no roofs), continued rain and standing water, and infrastructure damage to critical areas such as transportation, potable water, and health care has led to major potential public health concerns among island residents.

The USVI DoH conducted two Community Assessment for Public Health Emergency Response (CASPERs) in November 2017 to assess the experiences and health of residents before, during, and immediately after the hurricanes. CASPER is an epidemiologic technique designed to provide household-based information about a community's needs in a timely, inexpensive, and representative manner. The information generated can be used to initiate public health action; facilitate disaster planning, response, and recovery activities; and assess new or changing needs during the disaster recovery period.[5] To help assess the ongoing recovery efforts related to the hurricanes, and identify any new or changing needs, the USVI Department of Health conducted follow-up CASPERs in February 2018, November 2018, May 2019, and October 2019. As there were no major differences among the islands in the initial November response CASPERs, to aid in conserving resources and increase the ability to successfully complete a CASPER, one CASPER was conducted for the USVI territory as a whole for all of the recovery CASPERs. This report is from the most recent CASPER in October 2019. The specific objectives of the CASPER were the following:

CASPER is designed to provide household-based information about a community's needs in a *timely*, *inexpensive*, and *representative* manner

- Identify ongoing recovery needs within the community
- Gauge the continuing community recovery process
- Describe perceived physical and behavioral health effects associated with the storms
- Identify information gaps and preferred communication strategies for the hurricane response and recovery efforts
- Assess household characteristics associated with vector control
- Pilot a modified CASPER (21x10) design



Methods

USVI DoH used the standard 30x7 CASPER multistage cluster sample methodology for the previous response and recovery CASPERs (November 2017, February 2018, November 2018, and May 2019). For the October 2019 recovery CASPER, we piloted a modified design. While the 30x7 design has been successful in most areas of the continental U.S., the territories have found it difficult because of limited resources. In the first stage, we used the Geographic Information Systems (GIS) CASPER toolbox to select 21 clusters (census blocks) proportional to the number of households in each cluster and, in the second stage, ten households per cluster were systematically selected. Like the traditional CASPER, our target number of surveys remained 210.

We applied this modified CASPER design during 21-25 October 2019 to select a representative sample of households to be interviewed. Like the previous CASPERs, the sampling frame was defined as all occupied households (n=43,214) within USVI according to the 2010 U.S. Census (Appendix A). The questionnaire was an updated version of the May 2019 questionnaire based on current recovery status and territorial priorities such as e-cigarette use. The ~20 minute survey included questions on household demographics and experiences since the hurricanes such as preparedness, communications, vector concerns, behavioral health status, and household needs (Appendix B). As with the previous CASPERs, the final five questions on the questionnaire were specific to the survey respondent rather than the household and required an additional modification to incorporate a three-stage design to randomly select an individual within the household.

Two-person interview teams were assigned one to two clusters on each island, provided with detailed maps and driving directions, and instructed to approach every *n*th household (where *n* is the total number of households in the cluster divided by ten) to select the ten households per cluster to interview. Teams comprised of USVI DoH and CDC staff, University of Michigan Public Health Action Student Team (PHAST) members, and nursing students from the University of Virgin Islands. We generated multiple street level, topographical, and Google Earth paper and electronic maps of each of the selected clusters to aid interview teams in navigating clusters. Teams made three attempts at each selected household before replacement.

On Monday, 21 October 2019, we provided a two-hour just-in-time training to the interview teams on the overall purpose of the CASPER and reviewed household selection methods, questionnaire content, interview techniques, safety, and logistics. Interview teams collected data on both paper and electronic (tablet) format. There were a total of 7 teams on 21-22 October in St. Croix, 7 interview teams on 23 October in St Thomas and 1 team in St Croix, and 8 teams on 24 October in St. Thomas/St John and 1 team in St Croix. Teams conducted interviews between approximately 2:00 pm and 6:30 pm Eastern Time on all days. All potential respondents approached were given a copy of the consent sheet containing contact telephone numbers for USVI DoH. Eligible respondents were 18 years of age or older and resided in the selected household. Teams were instructed to interview the adult with the next birthday for the final five questions on individual mental health and to complete confidential referral forms whenever they encountered urgent physical or behavioral health needs.

We conducted weighted cluster analysis to report the projected number and percent of

households with a particular response in the sampling frame. The weight was calculated to account for the probability that the responding household was selected. To assess mental health, we asked five questions at to individual respondents at the end of the survey:

1. CDC's national Behavioral Risk Factor Surveillance System (BRFSS) Quality-of-life question
2. Patient Health Questionnaire-2 (PHQ-2)
3. Generalized Anxiety Disorder-2 (GAD-2)

Responses for both the PHQ-2 and GAD-2 are scored from zero (not at all) to 3 (nearly every day), and a combined score is calculated by use of the two questions within each module. PHQ-2 scores of ≥3 have a sensitivity of 83% and a specificity of 92% for major depression; GAD-2 scores of ≥3 have a sensitivity of 92% and a specificity of 76% for generalized anxiety disorder, and a sensitivity of 65% and a specificity of 88% for any anxiety disorder. For these questions, we calculated an individual weight to account for the probability that the individual was selected within the household.

We conducted all data analysis in EpiInfo 7.2.3.1 to calculate the unweighted frequencies, weighted frequencies, and weighted percentages with 95% confidence intervals. Comparable to previous reports, weighted analysis and confidence intervals were only calculated for cells with ≥5 observations as shown in the tables. We compared results from the current CASPER to the previous CASPERs when possible. Significance was determined based on non-overlapping 95% confidence intervals. We calculated differences in response percentages using percent change, with baseline as the earlier CASPER.

$$\frac{\%\ of\ HH_{current} - \%\ of\ HH_{previous}}{\%\ of\ HH_{previous}}$$

For all results the data in the text represent weighted percentages.



Results

Response Rates and Demographics

The interview teams conducted 185 interviews for a completion rate of 88.1% (Table 1). Teams completed interviews in 40.7% of the households approached. Of the households with an eligible participant answering the door, 65.1% completed an interview. These results are comparable to those from the previous CASPERs. Teams double-checked all surveys prior to uploading via tablet into the database. After all data were digitally uploaded, surveys were checked for any missing data or data entry errors by comparing to paper form.

Approximately 70.2% of households lived in single family homes (Table 2). The majority of households (75.8%) had one or more members aged 18−64 years. Seven percent (7.1%) of households on had one or more children under two years of age, and roughly 38% of households had one or more members aged 65 years or older. The mean number of household members was 2.9, with a minimum of 1 and maximum of 30 people living in a household. The primary language spoken within the household was English (89.7%) followed by Spanish (7.6%) and Creole (2.8%). No significant differences were found between the current CASPER and the previous response and recovery CASPERs.

Household Recovery Status

Half (54%) of households reported they were either damaged or destroyed and 7.8% felt their home was unsafe in which to live (Table 2). These results represent a 46.6% decrease in feelings of unsafety from the first CASPERs conducted in November 2017. Roughly 39% of households (38.8%) stated their homes as somewhat repaired while 11.7% said their home was not repaired at all (Table 3). While significantly more households reported being completely repaired compared to last year (November 2017), after over 2 years, only half of households were either completed repaired (33.9%) or never damaged (15.6%).

- **~12% said their homes were not repaired at all**
  - **Top barriers are money, skilled labor, and finding materials**
- **~17% have no replaced any damaged household items**
- **Current greatest needs include household repair/cleanup and money**

When asked about barriers to home repair, the top three responses were money, including waiting on insurance, out of pocket expenses, and waiting on FEMA funds or loans (19.7%); the availability of contractors or skilled labor (15.0%), and finding materials or supplies (Figure 1). Approximately two-thirds of households (66.1%) reported all debris or waste removed. While this represents a 39.7% increase from the initial recovery CASPER in February 2018, it remains fairly stable from the previous two CASPERs (7.5% and 0.3% increase, respectively). Nineteen percent (19.2%) of households reported some debris and waste removed and less than 10% had no removal of debris or waste from their property.

Approximately 17% of households (16.8%) have yet to replace any damaged household items such as furniture, clothing, and toys and 38% replaced some items. Twenty-two percent (21.8%) replaced all items representing a 169% increase from the first recovery CASPER in February 2018. The current household greatest needs include household repair, cleanup, or household items (20.8%) and money (16.3%); 44% of household reported not needing anything at this time (Table 4; Figure 2).

Household Preparedness

More than half of households reported being either somewhat worried (39.0%) or very worried (20.7%) about the current (2019) hurricane season (Table 5). However, few households (6.5%) said they would go to a shelter if a hurricane were headed toward the territory. Thirteen percent (13.2%) reported they may go depending on the situation (e.g., storm strength, homes current condition, as a last resort if no other option). Two storms, Dorian and Karen, approached the territory during the 2019 hurricane season. Almost all households (98.7%) reported not going to the open shelters. Most (80.9%) saw no need to go, while 2.8% said it was inconvenient and 17.7% reported other reasons such as concern about leaving their home, lack of trust, heard they were full and/or overcrowded, did not know they were available and open, or not wanting to leave their pets behind.

Seventy percent (70%) of households reported they had an emergency supply kit. While not significant, this represents an increase (12.4%–29.6%) from the previous CASPERs conducted. When asked about days of supplies on hand, few households had less than a 3-day supply of water (2.6%) and food (24.7%) (Table 6). However, while most household reached the previous national recommendations that suggested a 3-day supply of food and water, more recently, authorities began suggesting a 10-day supply. As of October 2018, less than 45% of households had enough water (38.7%) or food (41.4%) to last 10 days. This is consistent with the previous CASPERs. Less than 10% of households that needed prescription medications had less than a 7-day supply.

- **70% of households have an emergency supply kit**
- **38.7% have a 10+ day supply of water**
- **41.4% have a 10+ day supply of food**

If a storm were headed toward the territory, households reported they would purchase food (78.0%), water (76.8%), batteries (48.8%), gasoline (45.1%), medical supplies (31.3%), and propane (30.4%). When asked what they would do differently to prepare for future storms, 23.7% said they would board up their windows, 23.2% reported they would buy emergency supply kit supplies, and 22.6% said they would purchase food and/or water; 15.4% reported they wouldn't do anything different.

Communications

Radio remained the most commonly preferred source of communication (39.6%) followed by television (24.6%), social media (22.6%), and the Internet (21.2%) (Table 7). Almost 60% of households (57.6%) reported hearing no messages from the Department of Health (Table 8). Messages heard included immunizations (8.8%), hurricane preparedness (6.7%), and mosquito or vector control (5.5%). Less than 5% of households heard messages regarding other DoH services, mental health, diabetes control, e-cigarettes, domestic violence, DoH studies, and other health messages. Of those that heard messages, half (50.5%) were heard on the radio.

Vectors and Pets

Since the hurricanes, 26.6% of households noticed an increase in rats or mice (Table 9). Approximately 67% of households reported they were either very concerned (37.5%) or somewhat concerned (29.7%) about contracting mosquito-borne diseases. These results are consistent with the previous CASPERs. Dengue was the top disease of concern (45.6%).

Households reported engaging in mosquito prevention behaviors with 87.5% cutting shrubs/grass and 85.8% cleaning their yard and/or removing garbage (Table 10). More than half of households reported they sprayed or fumigated for mosquitoes (58.1%), with over a third of households (36.6%) relaying they did so on a weekly basis (Table 11). A quarter (27.4%) of households reported they clean clogged roof gutters a few times a year with 7.5% cleaning them weekly. Forty-two percent (41.9%) said they keep cover(s) on their water source(s). Approximately 37% of households empty standing water on a weekly basis. Less than 10% of households reported they use larvicides or mosquito dunks.

Over half of households (52.3%) have pets, mostly dogs (76.7%, average 2.2 per household) and cats (32.3%, average 2.6 per household). Of households with pets (excluding fish, turtles, chickens, iguanas, and rabbits), 65.6% have vaccinated their pet for rabies. Approximately 6% of pets have ever brought a dead mongoose or bat into their house/yard.

Household Health and Behavioral Health

E-cigarette products, including devices, liquids, refill pods, and cartridges for nicotine, THC, and CBD have been a current issue of concern on the territory. Approximately 12% of households (11.7%) reported at least one member having ever used an e-cigarette product (Table 13). Of those, approximately a quarter (23.2%) have quit in the past two months (since September 2019 when CDC's Emergency Operations Center officially activated and USVI held several press conferences).

- **12% reported use of e-cigarette products**
- **Of those, 23.2% have quit since September**

Since the storms, 16.9% of households reported that at least one household member had experienced difficulty concentrating (Table 14; Figure 3). While not significant, this represents a decrease of 30.2% since the initial response CASPERs two years ago (November 2017). However, it is a 32% increase from the most recent CASPER in May 2019. Other reported behavioral health indicators included trouble sleeping (15.1%), agitated behavior (14.9%), loss of appetite (10.7%), witnessing firsthand violence or threats of violence (11.1%), increased alcohol consumption (7.8%), and increased drug use (2.7%). No significant differences were found between the previous CASPER (May 2019) and the current CASPER, however, some percentages increased; a change from the previous trend. Approximately 40% of households reported at least one member experiencing at least one of the aforementioned behavioral health indicators of potential acute mental health issues. This is a similar percentage to the CASPER conducted in one year ago in November 2018.

40% of households reported at least one member experiencing at least one behavioral health indicators

We asked how the storm has affected household employment (Figure 4). Roughly two-thirds of households said it has remained the same, while a 31% reported a decrease in employment and 5.9% reported an increase. Almost a quarter of households (23.5%) reported that the storm has worsened their recreational life (Table 15; Figure 5).

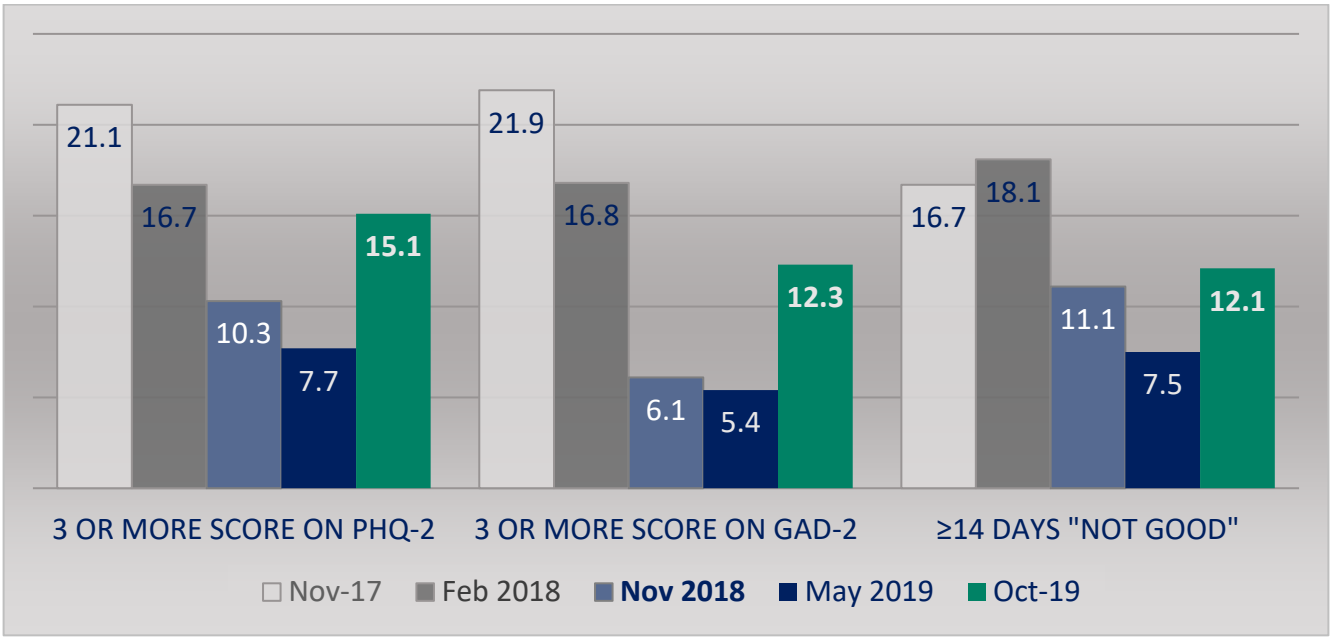
When asked if any member of the household received services for behavioral health from sources such as counselor, pastor, therapist, social worker, or the SAMHSA hotline, most (87.9%) stated that there was no need for any services, 8.9% said they received services, and 3.2% reported they could not get the services they needed.

Individual Mental Health

We asked the individual respondent both the Patient Health Questionnaire (PHQ)-2 and Generalized Anxiety Disorder (GAD)-2 screening questions. Both scales have a cut off score of 3 indicating the probability of depression or anxiety. Fifteen (15.1%) of respondents had a score of 3 or more on the PHQ-2 depression scale and 12.3% had a score of 3 or more on the GAD-2 anxiety scale (Figure 6). These scores represent a decrease of 28.4% and 43.8%, respectively, since the storms two years ago (November 2017), however an increase of 49% and 128%, respectively, since the CASPER in May 2019. Twelve percent (12.1%) of respondents indicated their mental health, which includes stress, depression, and problems with emotions, was "not good" for 14 or more days in the past month. Again, representing a decrease (27.5%) from two years ago (November 2017) but an increase (61.3%) from five months ago (May 2019).

- **15.1% scored 3+ on GAD-2**
- **12.3% scored 3+ on PHQ-2**
- **12.1% reported 14+ days "not good" in the past**

Figure 6. Comparison of Individual Mental Health



Discussion

Five themes formed the basis of this CASPER:

1. **Household recovery status**
2. **Household preparedness**
3. **Household communications**
4. **Vector concerns and prevention**
5. **Health and behavioral health**

Household Demographics

We compared demographic data from this CASPER to the most recent U.S. Census estimates for USVI.[6] Where appropriate, we compared CASPER results to the previous hurricane response and recovery CASPERs conducted in November 2017, February 2018, November 2018, and May 2019.

The average number of persons per household were similar, with recent census data showing an average of 3.1 persons per household, previous CASPERs finding an average of 2.7-2.9 persons per household, and the current CASPER reporting an average household size of 2.9 persons. According to the U.S. Census estimates from 2010, persons 65 years and over make up 33.3% of the population in USVI. The results from this survey show a potential overrepresentation of this age group as 38.2% of households reported at least one resident at least 65 years of age. This is consistent with previous CASPERs conducted in the territory. The residents of the interviewed households may include an older, possibly retired resident more likely to be home and willing to participate during daylight hours when the CASPER was conducted. As the sampling frame for all the CASPERs conducted in USVI are the same (St Croix, St Thomas, St John), and the demographics (e.g., age, language) and other key indicators (e.g., type of structure) remain analogous, this allows for comparison of results.

Household Recovery Status & Needs

At two years since the storms, only half of homes have either been completely repaired or never damaged. And, over 3,000 households (roughly 8%) still did not feel safe within their homes. While many household have begun repair to their homes, 12% still have not repaired them at all. Barriers for household repair remain mostly financial, with availability of contractors or skilled labor and finding materials and supplies also top issues. Thus, even when families have the means to repair their homes, difficulties still remain to get the work completed even two years after the storms.

More than half of households have not fully replaced damaged household items such as furniture, clothing, and toys. Therefore, while there seems to be improvement on the surface with almost all households (90.7%) removing some, all, or not having debris or waste to remove outside their homes, there remains a need for cleanup and repair to the household structure and interior. While this represents an increase from the initial recovery CASPER in February 2018, it remains fairly stable from the previous two CASPERs. This information can be used to gauge ongoing household support needs as they seem to have stalled.

While household greatest needs evolved between the initial response and recovery CASPERs, as the recovery process has continued, the needs seem to remain more consistent with household repair and money being the top two needs and almost half of households reporting not needing anything.

Household Preparedness

The 2019 hurricane season saw two hurricanes, Dorian and Karen, impact the territory. More than half of households reported being worried about the season yet few said they

would go, or went to, open shelters. Most saw no need to go while others found shelters to be inconvenient, had concerns about safety or leaving their pets, and perceived negative rumors about the shelters (e.g., heard they were full or overcrowded, unsafe, not trustworthy, not open). This information is helpful in terms of messaging and shelter preparedness and more detailed follow up could provide greater insight into the mentioned barriers.

When asked about household preparedness, 70% of households reported having an emergency supply kit. While not significant, this represents an increase from the results in previous CASPERs. It seems as though more households report having an emergency kit in the fall rather than other times of the year. This could be because October/November is during peak hurricane season when the need for a kit is more acute.



Preparedness levels are not static within the community and could be improved upon; especially as the traditional FEMA recommendation to maintain a 3-day supply of food and water and 7-day supply of medications has recently been suggested as potentially inadequate, especially for island territories where getting supplies can be challenging after a disaster. Currently, less than half of households have enough food and/or water for the updated guidelines of 10 days. However, of the households who need prescription medications, many have a long-term (minimum 14 day) supply. These data could guide targeted messaging for hurricane and other emergency response preparedness. This information is important for planning efforts for the next hurricane season.

Communications

With regards to messaging, while radio remained a top form of communication, it continues on a decreasing trend. Television, social media, and the Internet were all indicated as top communication sources. This is important for the continue recovery effort as effective communication is an important aspect in managing the ongoing recovery efforts.

The Department of Health continues to push many messages to community. Unfortunately, more than two-thirds of households could not recall any messages heard. Less than 10% of households heard messages related to immunizations, hurricane preparedness, and mosquito or vector control. As limited households reported hearing these messages, there remains a need for ongoing and evolving communication strategies. Similar to their preference, of the household who heard messages, radio, television, and social media were the top sources. Although phone (via text, automated call, etc.) was also a top mechanism.

This information can be used to improve *and* modify current communication and outreach plans to meet the evolving community information needs. The data suggest the need to encourage messaging via multiple sources to getting information to the community, with radio remaining the best option. USVI can use this information to target delivery of continued recovery messages and to help with future messaging for emergencies.

Vector Concerns, Prevention, & Pets

When it comes to vector control and prevention, a quarter (26.6%) of households noticed an increase in rats or mice since the storms. While this represents a 20% decrease from the previous CASPER, this remains a potential public health concern as rodents can spread disease, trigger asthma attacks or allergic

reactions in some people, contaminate food and destroy property.[7]

Vector controls remains an important issue in the community. This is evident through the consistent results of roughly two-thirds of households being either somewhat or very concerned about contracting mosquito-borne diseases such as dengue, Zika, and chikungunya and that most households take actions to prevent mosquito breeding sites around their homes.

Over half of households own pets, many of which (65.9%) had been vaccinated for rabies. An estimated 1,300 households have experienced their pet bringing a dead mongoose or bat into their yard. While this is not a large percentage (6%), it is a potential public health concern as these animals can spread disease.

Household Health & Behavioral Health

The current outbreak of lung injury associated with e-cigarette use (vaping) is a national concern.[8-9] USVI has reported cases in this ongoing investigation and, therefore, included two questions about e-cigarette use as part of the CASPER. Almost 12% of households reported that one or more persons have ever used an e-cigarette product. Because of the current outbreak, USVI government agencies, including the DoH, actively urged residents to stop vaping in September 2019. Of those household who reported e-cigarette use, a quarter of them have quit in the past two months; most have no changed their behaviors. This is important in terms of ongoing messaging for the current lung injury epidemic.

As far as behavioral health, 40% of households reported at least one or more members experiencing at least one behavioral health indicator of a potential acute mental health issue. While not significant, this represents at 38.8% increase from the previous CASPER in May. This could potentially be because the current CASPER was conducted during hurricane season, which may bring up memories of hurricanes Irma and Maria.

Roughly 15% of households also continue to report one or more members experiencing trouble concentrating, trouble sleeping or nightmares, and/or agitated behavior. Other behavioral health indicators reported among some households included loss of appetite, witnessing firsthand violent behavior or threats, increased alcohol use, and increased drug use.



In addition, a third of households reported a decrease in employment status. This information can be used to approximate economic-associated sequelae. And, while most households reported that the storms have had no effect on their life, several households stated that recreational activities, work, and home life has worsened.

These data indicate the continued need for services in USVI to address the ongoing potential mental health needs. However, when asked if members of the household received services for behavioral health from sources such as counselor, pastor, therapist, social worker, or the SAMHSA hotline, few households said yes; the majority of households indicated they had no need for services. This may suggest some behavioral health resiliency within the community, poor awareness of the benefits of behavioral health resource, or a potential stigma associated with receiving behavioral health services. More in-depth information regarding the current status of mental health in the community, potential barriers to receiving services, and promotion of the benefits of receiving behavioral health services would be valuable.

Individual Mental Health

We asked individual respondents both the PHQ-2 and GAD-2 screening questions. Both tools are not meant to establish final diagnosis or to monitor depression or anxiety, but rather to be a "first step" screening approach. The PHQ-2 is a commonly used and validated depression screening tool for adults and inquires about the frequency of depressed mood and anhedonia (i.e., the inability to feel pleasure) over the past two weeks. The GAD-2 has been justified in the literature as a brief screening tool for generalized anxiety and possibly for panic disorder. Around 15% of respondents had a score of 3 or more on the PHQ-2 depression scale indicating a positive predictive value (PPV) of 75.0 for any depressive disorder and, additionally, roughly 12% of respondents had a score of 3 or more on the GAD-2 anxiety scale indicating a 5.1 likelihood ratio of generalized anxiety disorder.[10-11] These show an increase, albeit insignificant, as compared to May 2019 and November 2018.

In addition, we asked respondents the Behavioral Risk Factor Surveillance System (BRFSS) mental health question. Approximately 12% indicated that their mental health, which includes stress, depression, and problems with emotions, was "not good" for 14 or more days in the past month. Again, this shows a slight increase from May 2019, but is comparable to November 2018 results; it also remains a significant increase from the 3% of respondents in the 2016 BRFSS data in USVI. As with the household behavioral health results, these data indicate the continued need for, and promotion of, mental health services on the islands as well as potential area of further research.

Considerations

Based on the analysis of the CASPER data, we suggest the following for consideration:

1. **Consider a follow-up study on mental health status.** While seemingly decreasing, the CASPER data continues to show the prevalence of indicators of potential behavioral and mental health issues. More in-depth information is needed to inform next steps and interventions.
2. **Continue to provide public health messaging through modified routes**. Continued message promotion is vital to aid the community in the recovery process and to spread information on new and evolving issues (e.g., e-cigarettes) within the community. However, currently, limited households are receiving these messages. Working together to develop a modified communication plan that will further target the population can be of great benefit.
3. **Further promote emergency supply kits and household preparedness**. While many households report being prepared in terms of emergency supply kits, improvement can still be made, especially with the recent promotion of a longer period of self-sufficiency from 3 to 10 days.
4. **Share CASPER findings with recovery partners to promote data-driven recovery efforts**. CASPER measures were previously developed in conjunction with response and recovery partners. These data can serve to inform coordinated, interagency recovery efforts.
5. **Complete the final recovery CASPER in March 2020.** While many of the responses have become steady, there still remains some fluctuation within the community in some respects and certain areas (e.g., mental health) remain of concern. A final recovery CASPER will allow USVI Department of Health, and other response agencies, to continue to gain the critical information needed for continued recovery efforts.

Limitations

The data generated by the CASPER represent a snapshot in time, which should be considered when interpreting the results of ongoing recovery efforts. The age distribution of the sample population may be skewed, with a greater proportion of individuals aged 65 years and older represented in the CASPER than reported by the U.S. Census. In addition, estimates are based on 2010 U.S. Census data and may not accurately reflect the current population. Therefore, survey responses may not be representative of USVI as a whole. As with all CASPERs, these results are self-reported by one (or more) individual(s) representing an entire household, therefore bias may occur as the interviewee may not know everything about all household members they are representing. However, these limitations and data are comparable to the previous CASPERs conducted in USVI and, therefore, allow for comparison.

Conclusion

The ongoing hurricane recovery CASPERs in USVI continue to help characterize the status and needs of residents after the devastating 2017 hurricanes. The findings illustrate the evolving needs of the community and progression of the recovery process. At two years after the storms' impact, many results have stabilized. However, there remains some key issues of potential concern among the island residents. These results should be used to improve the efficiency of the current recovery efforts among multiple agencies and partners as well as strengthen the emergency preparedness capacity of USVI.

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Tables

Table 1. Questionnaire response rates, Hurricanes Irma/Maria Recovery, USVI Oct 2019

Questionnaire response	Percent	Rate	Description
Completion[1]	88.1	$\frac{185}{210}$	$\frac{Total\ completed}{210}$
Cooperation[2]	65.1	$\frac{184}{284}$	$\frac{Total\ completed}{Total\ contact\ made}$
Contact[3]	40.7	$\frac{184}{455}$	$\frac{Total\ completed}{Total\ selected}$

[1] Percent of surveys completed compared to the goal of 210
[2] Percent of surveys completed compared to total number of contacted households that were eligible and willing to participate
[3] Percent of surveys completed compared to all randomly selected households

Table 2. Household (HH) demographics – Hurricanes Irma/Maria, USVI 2017–2019

	November 2017 (n=387)			February 2018 (n=200)			November 2018 (n=169)			May 2019 (n=184)			October 2019 (n=185)		
	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI
Number of HH with members in each age category															
Less than 2 years	3,168	7.3	4.5–10.1	2,552	5.9	2.8–9.0	1,835	4.4	1.5–7.2	2,140	5.0	1.7–8.3	**3,057**	**7.1**	**2.8–11.3**
2-17 years	14,742	34.1	27.9–40.3	13,026	30.1	24.3–35.9	10,714	25.6	16.7–34.6	10,622	24.7	18.2–31.2	**10,997**	**25.4**	**15.3–35.6**
18-64 years	32,408	75.0	69.5–80.5	33,107	76.6	70.2–83.0	28,761	68.9	59.8–77.9	31,800	73.9	67.3–80.6	**32,758**	**75.8**	**69.7–81.9**
65 years or older	18,218	42.5	36.9–47.4	18,236	42.2	32.5–51.9	22,900	54.8	46.1–63.5	18,781	43.7	33.6–53.7	**16,534**	**38.2**	**31.4–45.1**
Primary language spoken at home															
English	39,014	90.3	86.9–93.6	39,287	90.9	85.3–96.6	35,514	85.0	78.1–91.9	40,251	93.6	89.7–97.5	**38,742**	**89.7**	**84.0–95.3**
Spanish	3,077	7.1	4.4–9.8	3,121	7.2	1.8–12.6	5,573	13.3	6.8–19.9	2,346	5.5	1.5–9.4	**3,266**	**7.6**	**2.3–12.8**
Creole	697	1.6	0.2–3.1	–	–	–	–	–	–	–	–	–	**1,205**	**2.8**	**0.0–5.6**
Type of structure															
Single family home	26,282	62.2	54.6–69.8	27,832	64.4	52.0–76.8	29,097	69.7	56.1–83.2	26,614	61.9	47.5–76.2	**30,327**	**70.2**	**56.8–83.6**
Multiple unit	15,756	37.3	29.7–44.9	14,765	34.2	21.7–46.8	10,872	26.0	13.0–39.1	12,896	30.0	16.7–43.2	**10,925**	**25.3**	**12.7–37.8**
Other	–	–	–	–	–	–	1,804	4.3	0.0–10.1	3,498	8.1	0.4–15.8	**1,962**	**4.5**	**0.0–9.3**
Damage to home															
None/minimal	16,373	37.9	32.5–43.3	14,302	33.1	24.6–41.6	14, 233	34.1	24.8–43.3	20,592	47.9	5.3–37.0	**18,884**	**43.7**	**33.6–53.8**
Damaged	24,821	57.4	52.9–62.0	26,906	62.3	54.2–70.2	25,366	60.7	51.4–70.0	17,704	41.2	29.5–52.8	**19,866**	**46.0**	**36.4–55.6**
Destroyed	2,021	4.7	1.5–7.8	2,006	4.6	1.9–7.4	2,174	5.2	2.0–8.4	3,327	7.7	0.5–15.0	**3,452**	**8.0**	**3.2–12.8**
Feels home safe in which to live															
Yes	36,885	85.4	80.8–89.9	38,087	88.1	83.1–93.2	38,128	91.3	86.3–96.2	38,858	90.4	84.6–96.1	**39.828**	**92.1**	**87.4–96.9**
No	6,329	14.6	10.1–19.2	4,476	10.4	5.8–14.9	2,912	7.0	3.0–11.0	3,944	9.2	3.9–14.4	**3,386**	**7.8**	**3.1–12.6**

– indicates question not asked or cell size less than 5

Table 3. Household (HH) repair status – Hurricanes Irma/Maria Recovery, USVI 2018–2019

	February 2018 (n=200)			November 2018 (n=169)			May 2019 (n=184)			October 2019 (n=185)		
	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI
Home (excluding landscape) repair status												
Not repaired at all	13,369	30.9	22.2–39.6	5,398	12.9*	7.5–18.4	4,970	11.6**	5.4–17.7	**5,064**	**11.7**	**5.2–18.2**
Somewhat repaired	21,751	50.3	41.9–58.7	23,943	57.3	48.1–66.5	17,399	40.5	30.5–50.4	**16,759**	**38.8**	**29.1–48.4**
Completely repaired	4,596	10.6	5.0–16.2	6,859	16.4	10.4–22.4	14,775	34.5*	23.6–45.1	**14,667**	**33.9****	**23.9–44.0**
Never damaged	3,498	8.1	2.9–13.3	--	--	6.8–18.9	4,219	9.8	4.1–15.5	**6,725**	**15.6**	**7.9–23.3**
Barriers to home repair[1]												
Money	18,339	42.4	33.1–51.7	8,382	20.1*	11.6–28.6	7,895	18.4**	10.2–26.5	**8,518**	**19.7**	**13.5–25.9**
waiting on insurance claim	*7,528*	*17.4*	*9.8–25.0*	*2,092*	*5.0*	*1.3–13.7*	*1,399*	*3.3***	*0.4–6.1*	***3,327***	***7.7***	***2.9–12.5***
out of pocket/expensive	*3,275*	*7.6*	*2.6–12.5*	*3,135*	*7.5*	*1.3–13.7*	*2,792*	*6.5*	*2.3–10.7*	***3,285***	***7.6***	***3.2–12.0***
waiting on FEMA funds	*7,449*	*17.2*	*10.1–24.4*	*2,744*	*6.6*	*2.5–10.6*	*4,150*	*9.7*	*2.3–17.0*	***2,666***	***6.2***	***1.7–10.6***
waiting on a loan	*3,721*	*8.6*	*3.5–13.7*	–	–	–	–	–	–	***1,623***	***3.8***	***0.7–6.8***
Availability of contractors/labor	7,367	17.0	10.2–23.9	13,280	31.8	22.0–41.6	4,568	10.6*	5.7–15.5	**6,499**	**15.0**	**4.6–25.5**
Finding materials/supplies	4,760	11.0	6.0–16.0	5,470	13.1	7.8–18.4	2,874	6.7	2.0–11.4	**4,853**	**11.2**	**0.6–21.9**
Waiting on landlord/authority	2,504	5.8	1.7–9.9	3,039	7.3	0.4–14.2	4,836	11.2	2.7–19.7	**3,675**	**8.5**	**0.0–17.0**
Time	5,145	11.9	7.2–16.6	4,802	11.5	5.3–17.7	2,840	6.6	3.1–10.1	**3,232**	**7.5**	**3.9–11.1**
Other[2]	1,218	2.8	0.3–5.3	3,413	8.2	4.0–12.4	4,918	11.4	3.4–19.5	**2,832**	**6.6**	**2.1–11.0**
No barriers	7,545	17.5	9.8–25.1	9,003	21.6	11.2–31.9	9,061	21.1	12.4–29.7	**5,238**	**12.1**	**6.5–17.8**
No repairs needed	3,498	8.1	2.9–13.3	4,853	11.6	5.3. –17.9	5,536	12.9	5.2–20.5	**19,059**	**44.1***	**32.3–55.9**
Replacement of household items												
Haven't replaced any items	15,180	35.5	25.8–45.1	9,428	22.6	14.0–31.2	7,384	17.2**	11.0–23.4	**7,256**	**16.8**	**10.3–23.3**
Replaced some items	17,128	40.0	34.0–46.1	19,693	47.0	39.0–55.3	16,339	38.0	28.1–47.9	**16,414**	**38.0**	**27.7–48.3**
Replaced all items	3,481	8.1	4.2–12.1	2,898	6.9	3.0–10.9	9,733	22.6*	14.9–30.3	**9,410**	**21.8****	**13.8–29.7**
No need to replace items	7,014	16.4	13.2–19.6	9,754	23.4	16.7–30.0	8,852	20.6	13.2–27.9	**10,134**	**23.4**	**13.3–33.6**
Removal of debris/waste from property												
All removed	20,541	47.3	38.2–56.4	25,702	61.5	50.6–72.4	28,360	65.9	56.0–75.8	**28,546**	**66.1**	**56.8–75.3**
Some removed	19,354	44.8	34.4–55.2	11,836	28.3	17.6–39.0	9.524	22.1**	15.3–29.0	**8,310**	**19.2**	**14.1–24.4**
None removed	1,934	4.5	1.2–7.8	–	–	–	1,955	4.5	0.0–9.0	**4,021**	**9.3**	**0.0–19.7**
No need/nothing to remove	1,475	3.4	1.1–5.8	3,344	8.0	2.8–13.1	1,729	4.0	1.1–7.0	**2,338**	**5.4**	**2.6–8.2**
Don't know/missing	–	–	–	–	–	–	1,441	3.3	0.4–6.8	–	–	–

– indicates cell size less than 5

**Indicates significant difference from previous CASPER; ** indicates significant difference from 2 CASPERs prior*

[1]*Households could choose more than one response*

[2]*Other includes waiting on programs (Envision, etc.), paperwork, building plans, etc.*

Figure 1. Comparison of household barriers to cleanup – Hurricanes Irma/Maria Recovery, USVI 2018–2019

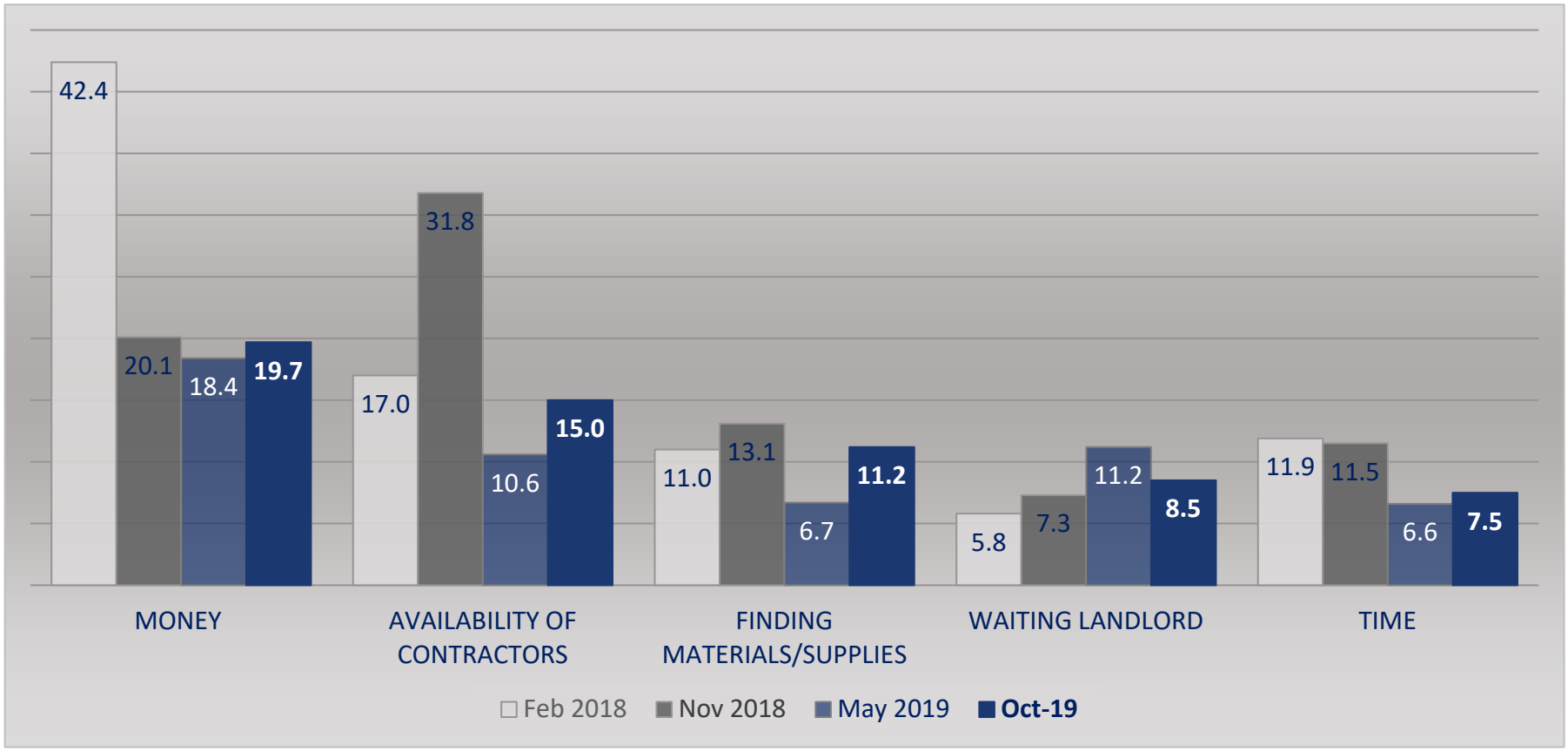


Table 4. Household (HH) needs – Hurricanes Irma/Maria, USVI 2017–2019

	November 2017 (n=387)			February 2018 (n=200)			November 2018 (n=169)			May 2019 (n=184)			October 2019 (n=185)		
	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI
Current household greatest need[1]															
Repair/clean, HH items	8,833	20.4	14.9–25.9	16,799	38.8*	30.2–47.5	14,226	34.1	21.8–46.4	9,596	22.3**	14.7–29.9	**8,988**	**20.8**	**12.5–29.1**
Money	3,491	8.1	4.7–11.5	5,244	12.1	7.7–16.6	5,882	14.1	5.5–22.6	2,744	6.4	2.4–10.4	**7,045**	**16.3**	**4.9–6.1**
Basic needs	20,399	47.2	40.5–53.9	4,507	10.4*	6.8–14.1	4,459	10.7	5.0–16.4	3,512	8.2	3.7–12.6	**2,952**	**6.8**	**3.8–9.8**
Health-related	1,480	3.4	1.7–5.1	1,029	2.4	0.4–4.4	1,269	3.0	0.7–5.3	–	–	–	**–**	**–**	**–**
Vector control	3,217	7.4	4.6–10.3	–	–	–	–	–	–	–	–	–	**–**	**–**	**–**
Other[2]	5,845	13.5	10.1–17.0	5,316	12.3	7.1–17.5	6,324	15.1	5.7–24.5	3,203	7.4	2.6–12.3	**6,318**	**14.6**	**10.0–19.3**
Nothing/Don't know	5,374	12.4	8.6–16.3	13,852	32.1*	24.2–39.9	14,278	34.2	24.3–44.1	23,130	53.8*	44.3–63.2	**18,998**	**44.0**	**33.9–54.0**

– indicates cell size less than 5 (no weighted analysis performed)

**Indicates significant difference from previous CASPER; ** indicates significant difference from 2 CASPERs prior*

[1]Households could identify more than one need

[2]Other includes Internet, TV, phone service, construction materials, etc.

Figure 2. Comparison of household greatest needs – Hurricanes Irma/Maria Recovery, USVI 2018–2019

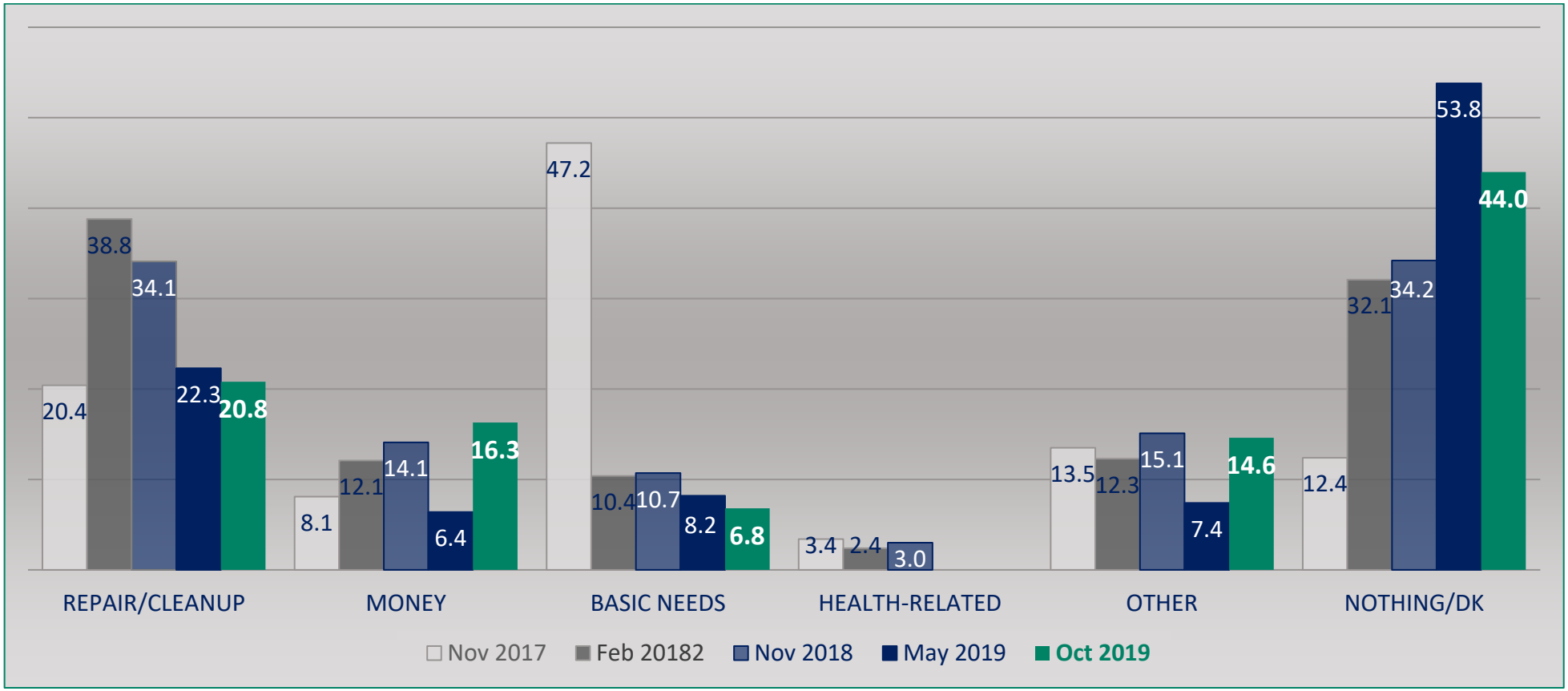


Table 5. Household (HH) emergency preparedness for 2019 Hurricane Season – Hurricanes Irma/Maria, USVI 2019

	October 2019 (n=185)		
	Estimate	% of HH	95% CI
Household worried about hurricane season			
Not at all	**17,429**	**40.3**	**31.5–49.2**
Somewhat worried	**16,845**	**39.0**	**28.6–49.3**
Very worried	**8,941**	**20.7**	**15.4–26.0**
Household plans to go to shelter			
Yes	**2,794**	**6.5**	**2.7–10.2**
No	**34,512**	**79.9**	**72.7–87.1**
Depends[1]	**5,701**	**13.2**	**5.8–20.6**
Household went to shelter during 2019 hurricane season (Dorian, Karen)			
Yes	**–**	**–**	**–**
No[2]	**42,663**	**98.7**	**96.9–100**
No need to go	***34,519***	***80.9***	***75.7–86.1***
Inconvenient	***1,191***	***2.8***	***0.4–5.1***
Other[3]	***7,541***	***17.7***	***10.5–24.8***

– indicates cell size less than 5 (no weighted analysis performed)

[1]Reasons include storm strength, house condition, and if last resort could identify more than one reason

[2]Households could identify more than one reason

[3]Other includes heard full, concern about leaving property, didn't want to go, don't trust, none available, didn't know open, too many people, didn't want to leave pets, etc.

Table 6. Household (HH) emergency supply kits – Hurricanes Irma/Maria Recovery, USVI 2018–2019

	February 2018 (n=200)			November 2018 (n=169)			May 2019 (n=184)			October 2019 (n=185)		
	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI
Household has emergency supply kit												
Yes	25,606	59.3	50.2–68.3	25,894	62.3	52.3–72.3	23,205	54.0	43.9–64.0	**30,263**	**70.0**	**62.3–77.8**
No	17,608	40.7	31.7–49.2	15,674	37.7	27.7–47.7	19,177	44.4	33.8–55.1	**12,951**	**30.0**	**22.2–37.7**
Days of drinking water												
Less than 3 days	–	–	–	7,919	19.0	12.5–25.4	5,837	13.6	9.4–17.8	**7,813**	**2.6***	**0.0–5.2**
3-7 days	–	–	–	9,600	23.0	13.4–32.5	7,779	18.1	11.2–24.9	**9,505**	**22.0**	**11.6–32.4**
7-14 days	–	–	–	10,385	24.9	17.6–32.1	14,864	34.6	28.3–40.8	**10,649**	**24.6**	**15.4–33.9**
14+ days	–	–	–	12,669	30.3	22.3–38.3	13,842	32.2	23.6–40.8	**14,129**	**32.7**	**18.9–46.5**
Don't know	–	–	–	–	–	–	–	–	–	**1,117**	**2.6**	**0.0–5.2**
Days of food												
Less than 3 days	–	–	–	10,577	25.3	17.1–33.5	10,046	23.4	15.7–31.0	**10,694**	**24.7**	**15.3–34.2**
3-7 days	–	–	–	4,356	10.4	5.8–15.1	7,312	17.0	9.2–24.8	**3,996**	**9.2**	**4.9–13.6**
7-14 days	–	–	–	12,117	29.0	20.1–37.3	12,261	28.5	20.7–36.3	**10,914**	**25.3**	**15.7–34.8**
14+ days	–	–	–	12,926	30.9	21.9–40.0	12,978	30.2	20.1–40.2	**15,930**	**36.9**	**24.8–48.9**
Don't know	–	–	–	–	–	–	–	–	–	**1,681**	**3.9**	**0.4–7.4**
Days of prescription medicine												
Less than 7 days	–	–	–	4,987	11.9	5.7–18.1	5,042	11.7	6.9–16.6	**3,628**	**8.4**	**3.8–12.9**
7-14 days	–	–	–	4,044	9.7	1.8–17.6	3,032	7.0	3.3–10.8	**–**	**–**	**–**
14+ days	–	–	–	20,811	49.8	41.9–57.7	20,678	48.1	38.5–57.6	**22,108**	**51.2**	**42.4–59.9**
Don't know	–	–	–	–	–	–	–	–	–	**1,418**	**3.3**	**0.3–6.2**
No prescriptions	–	–	–	11,074	26.5	19.2–33.8	13,352	31.0	22.6–39.4	**15,257**	**35.3**	**25.6–45.0**
Purchase for Incoming storm[1]												
Food	–	–	–	34,849	83.4	76.8–90.0	34,750	80.8	73.2–88.4	**33,714**	**78.0**	**69.6–86.4**
Water	–	–	–	32,483	77.8	68.0–87.5	33,138	77.0	67.5–86.6	**33,177**	**76.8**	**69.4–84.2**
Batteries	–	–	–	23,092	77.8	68.0–87.5	23,126	53.8	41.2–66.4	**21,086**	**48.8**	**37.0–60.6**
Gasoline	–	–	–	20,413	48.9	38.0–59.8	22,379	52.0	42.0–62.1	**19,474**	**45.1**	**34.1–56.0**
Medical supplies/medications	–	–	–	14,501	34.7	24.0–45.4	16,751	38.9	27.9–50.0	**13,548**	**31.3**	**22.2–40.5**
Propane	–	–	–	14,161	33.9	21.8–46.0	14,772	34.3	23.1–45.6	**13,138**	**30.4**	**19.7–41.1**
Other	–	–	–	12,004	28.7	18.9–38.6	7,182	16.7	11.2–22.2	**8,607**	**19.9**	**11.7–28.1**
Do differently to prepare for future storms[1]												
Board windows/Shutters	8,495	19.7	14.5–24.9	9,480	22.7	15.6–29.7	6,331	14.7	8.8–20.6	**10,228**	**23.7**	**16.4–30.9**
Buy supply kit supplies	3,855	8.9	5.0–12.9	5,638	13.5	7.0–20.0	2,089	4.9	1.7–8.0	**10,033**	**23.2***	**12.8–33.6**
Buy water/food	4,459	10.3	4.0–16.7	9,106	21.8	14.9–28.7	9,950	23.1	16.4–29.8	**9,775**	**22.6**	**12.5–32.8**
Fix/Stronger roof or house	7,185	16.6	10.4–22.9	3,653	8.7	3.9–13.6	4,177	9.7	4.7–14.7	**4,673**	**10.8**	**5.7–16.0**
Buy generator	2,294	5.3	2.0–8.6	1,677	4.0	1.2–6.9	1,605	3.7	0.8–6.7	**2,923**	**6.8**	**2.6–10.9**
Leave island	3,944	9.1	4.4–13.9	4,815	11.5	6.0–17.0	4,836	11.2	5.4–17.1	**1,646**	**3.8**	**0.1–7.5**
Buy/Better insurance	1,440	3.3	1.0–5.6	–	–	–	–	–	–	**–**	**–**	**–**
Other	7,782	18.0	12.0–24.0	8,684	20.1	13.6–28.0	6,033	14.0	8.3–19.8	**7,756**	**17.9**	**9.6–26.3**
Nothing different	8,403	19.4	12.2–26.7	6,311	15.1	6.2–24.0	6,811	15.8	7.8–23.8	**6,633**	**15.4**	**7.3–23.4**
Don't know	6,671	15.4	7.9–23.0	4,750	11.4	3.3–19.4	3,529	8.2	4.0–12.4	**2,975**	**6.9**	**3.9–9.9**

– indicates question not asked OR cell size less than 5

[1]Households could report more than one response

Table 7. Household (HH) communication sources– Hurricanes Irma/Maria, USVI 2017–2019

	November 2017 (n=387)			February 2018 (n=200)			November 2018 (n=169)			May 2019 (n=184)			October 2019 (n=185)		
	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI
Preferred source of communication[1]															
Radio	31,047	71.8	66.6–77.1	19,824	45.9*	37.9–53.9	19,213	46.0	35.7–56.3	25,352	58.9	47.5–70.4	**17,104**	**39.6**	**28.2–51.0**
TV	4,825	11.2	7.8–14.5	9,552	22.1*	15.0–29.2	10,563	25.3	14.6–36.0	13,009	30.2	20.4–40.1	**10,635**	**24.6**	**18.3–31.0**
Social media	4,137	9.6	5.8–13.3	7.971	18.4	11.9–25.0	6,444	15.4	8.5–22.4	13,290	30.9	22.1–39.8	**9,788**	**22.6**	**14.2–31.1**
Internet	4,579	10.6	6.3–14.9	8,320	19.3	11.4–27.1	10,162	24.3	15.9–32.8	11,479	26.7	18.0–35.4	**9,146**	**21.2**	**8.4–33.9**
Newspaper	4,471	10.3	7.3–13.4	16,13	36.3*	29.5–45.1	10,006	24.1	13.7–34.5	12,638	29.4	19.3–39.4	**7,510**	**17.4**	**11.4–23.3**
Family/friends/WoM	21,528	49.8	43.3–56.4	9,788	22.7*	13.0–32.3	8,866	21.2	13.2–29.2	8,605	20.0	10.9–29.1	**5,444**	**12.6**	**5.3–19.9**
Church/worship	2,763	6.4	3.6–9.2	7,854	18.2*	10.8–25.5	5,162	12.4	5.7–19.0	6,681	15.5	10.0–21.1	**3,749**	**8.7**	**2.7–14.6**
Other[2]	4,220	9.8	5.4–14.2	9,466	21.9*	14.8–29.0	15,787	37.8	25.6–50.0	9,054	21.1	13.7–28.4	**15,478**	**35.8**	**26.4–45.2**
None	847	4.3	1.1–7.5	1,681	3.9	1.1–6.7	–	–	–	1,317	3.1	0.5–5.7	**1,235**	**2.9**	**0.0–5.8**

– indicates question not asked OR cell size less than 5 (no weighted analysis performed)

**Indicates significant difference from previous CASPER; ** indicates significant difference from 2 CASPERs prior*

[1]Households could report more than one response

[2]Other includes phone, text, email, community center

Table 8. Household (HH) messaging – Hurricanes Irma/Maria, USVI 2019

	October 2019 (n=185)		
	Estimate	% of HH	95% CI
Messages heard[1]			
Immunizations	**3,786**	**8.8**	**0.0–18.8**
Hurricane preparedness	**2,911**	**6.7**	**2.8–10.6**
Mosquito/vector control	**2,398**	**5.5**	**1.4–9.7**
Other DoH service	**1,669**	**3.9**	**0.8–6.9**
Other[2]	**6,542**	**15.1**	**5.2–25.0**
None	**24,883**	**57.6**	**45.9–69.2**
Don't know	**4,503**	**10.4**	**6.1–14.7**
Source of messages[1] (n=55)			
Radio	**7,087**	**50.5**	**29.5–71.5**
TV	**2,397**	**17.1**	**6.0–28.2**
Social media	**1,903**	**13.6**	**5.4–21.7**
Phone	**1,874**	**13.6**	**4.3–22.8**
Family/friends/WoM	**1,286**	**9.2**	**1.2–17.1**
Other[3]	**4,167**	**29.7**	**4.6–54.8**

– cell size less than 5 (no weighted analysis performed)

[1]Households could report more than one response

[2]Other includes mental health, diabetes control, earthquake preparedness, e-cigarettes, domestic violence, healthy eating, HIV, DoH studies (cistern, CASPER, children health), breast cancer, water testing, etc.

[2]Other includes Internet, newspaper, door-to-door, signed up online, church or place of worship, etc.

Table 9. Household (HH) vector concerns – Hurricanes Irma/Maria, USVI 2017–2019

	November 2017 (n=385)			February 2018 (n=200)			November 2018 (n=169)			May 2019 (n=184)			October 2019 (n=185)		
	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI
Noticed increase in rats/mice since the storms															
Yes	–	–	–	16,967	39.3	30.9–47.6	15,734	37.7	28.2–47.2	14,343	33.3	22.9–43.8	**11,478**	**26.6**	**19.4–33.7**
No	–	–	–	26,247	60.7	52.3–61.1	26,038	62.3	52.9–71.8	28,254	65.7	55.1–76.3	**30,339**	**70.2**	**62.1–78.3**
Don't know	–	–	–	–	–	–	–	–	–	–	–	–	**1,397**	**3.2**	**0.8–5.7**
Household current concern about contracting mosquito-borne disease															
Very concerned[1]	18,916	43.8	38.8–48.8	16,764	38.8	30.3–47.3	20,249	48.4	39.9–57.1	11,140	25.9	18.4–33.4	**16,222**	**37.5**	**27.7–47.4**
Somewhat[1]	11,316	26.2	20.2–32.2	12,306	28.5	20.9–36.1	10,759	25.8	16.8–34.7	13,986	32.5	22.8–42.2	**12,848**	**29.7**	**20.3–39.2**
Dengue	*11,994*	*45.0*	*36.2–53.8*	*12,789*	*44.0*	*33.7–54.3*	*9,171*	*29.6*	*19.8–39.3*	*13,383*	*53.2**	*40.0–66.6*	***13,269***	***45.6***	***34.1–57.2***
Zika	–	–	–	*13,640*	*46.9*	*36.6–57.2*	8,969	28.9	18.4–*39.4*	*8,574*	*34.1*	*19.0–49.2*	***10,328***	***35.5***	***21.6–49.5***
Chikungunya	*9,593*	*36.0*	*28.6–43.4*	*8,643*	*29.7*	*20.0–39.5*	*7,168*	*23.1*	*14.7–31.5*	*11,846*	*47.1**	*33.7–60.6*	***8.007***	***27.5***	***19.2–36.0***
Malaria	*3,280*	*12.3*	*8.2–16.4*	*5,803*	*19.9*	*10.7–29.2*	*1,475*	*4.8*	*0.9–8.6*	*4,520*	*18.0*	*7.0–29.0*	***2,220***	***7.6***	***3.0–12.3***
Yellow fever	*1,775*	*6.7*	*2.7–10.6*	*3,018*	*10.4*	*1.8–19.0*	–	–	–	*3,375*	*13.4*	*2.4–24.5*	–	–	–
Other/Don't know[2]	*5,778*	*21.7*	*15.8–27.5*	*6,568*	*22.6*	*14.5–30.7*	*13,777*	*44.4*	*33.0–55.9*	*4,870*	*19.3*	*9.4–29.3*	***4,089***	***14.1***	***7.1–21.1***
Not concerned	12,888	29.8	24.9–34.8	14,144	32.7	25.4–40.0	10,766	25.8	18.1	17,059	39.7	30.6–48.7	**14,143**	**32.7**	**22.1–43.4**

– indicates question not asked OR cell size less than 5 (no weighted analysis performed)

**Indicates significant difference from previous CASPER*

[1]*Subcategory combination of Very and Somewhat concerned; households could report more than one. Note that Response (November 2017) CASPER asked Zika separately*

[2]*Other includes all diseases, Eastern equine encephalitis (EEE), typhoid, HIV, Ebola, flu, west nile virus, etc.*

Table 10. Household (HH) mosquito prevention behavior (Yes/No) – USVI, July 2017 (Zika), May 2019 (Hurricane Recovery)

	July 2017 (n=201)			May 2019 (n=184)			October 2019 (n=185)		
	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI
Cut shrubs/grass									
Yes	34,667	80.2	69.3–91.2	29,440	68.4	57.3–79.6	**37,819**	**87.5**	**76.8–98.3**
Never	–	–	–	3,478	8.1	0.8–15.3	–	–	–
Not applicable	7,641	17.7	6.9–28.5	6,955	16.2	6.0–26.4	**4,461**	**10.3**	**0.0–21.1**
Missing/Blank	–	–	–	2,569	6.0	1.1–10.8	–	–	–
Clean yard/remove garbage									
Yes	36,389	84.2	75.1–93.3	31,234	72.6	60.2–85.0	**37,086**	**85.8**	**74.6–97.0**
Never	1,235	2.9	0.7–5.0	1,523	3.5	0.0–7.9	–	–	–
Not applicable	5,179	12.0	2.4–21.6	4,932	11.5	3.4–19.5	**4,870**	**11.3**	**0.0–22.5**
Missing/Blank	–	–	–	4,105	9.5	0.7–18.4	–	–	–
Spray/fumigate for mosquitoes									
Yes	26,628	61.6	52.9–70.3	23,675	55.0	43.6–66.5	**25,123**	**58.1**	**48.2–68.0**
Never	14,528	33.6	24.6–42.7	8,101	18.8	9.6–28.1	**17,268**	**40.0**	**30.4–49.4**
Don't know	1,029	2.4	0.0–4.9	–	–	–	–	–	–
Not applicable	1,029	2.4	0.0–4.8	4,815	11.2	3.7–18.7	–	–	–
Missing/Blank	–	–	–	5,683	13.2	4.0–22.5	–	–	–
Clean clogged roof gutters									
Yes	26,436	61.2	50.9–71.4	18,256	42.4	31.9–53.0	**20,059**	**46.4**	**35.0–57.9**
Never	4,815	11.1	9.9–31.2	5,220	12.1	6.3–18.0	**11,004**	**25.5**	**15.4–35.6**
Don't know	3,087	7.1	2.7–11.5	2,998	7.0	1.2–12.7	**2,675**	**6.2**	**0.7–11.7**
Not applicable	8,876	20.5	9.9–31.2	10,783	25.1	13.8–36.4	**9,042**	**20.9**	**9.9–31.9**
Missing/Blank	–	–	–	5,752	13.4	1.8–25.0	–	–	–
Empty standing water									
Yes	21,257	49.2	39.4–59.0	15,660	36.4	24.5–48.3	**19,459**	**45.0**	**34.4–55.7**
Never	4,630	10.7	4.2–17.2	6,043	14.1	5.8–22.3	**7,969**	**18.4**	**12.2–24.7**
Don't know	1,029	2.4	0.4–4.4	1,948	4.5	0.5–8.6	–	–	–
Not applicable	16,298	37.7	27.7–47.7	14,840	34.5	24.0–45.1	**14,912**	**34.5**	**22.9–46.1**
Missing/Blank	–	–	–	4,517	10.5	1.1–19.9	–	–	–
Keep cover(s) on water source(s)									
Yes	23,308	54.2	44.5–63.9	12,649	29.4*	21.0–37.8	**18,085**	**41.9**	**28.6–55.0**
Never	5,460	12.7	5.1–20.3	6,458	15.0	9.4–20.6	**7,440**	**17.2**	**10.0–24.4**
Don't know	–	–	–	1,523	3.5	0.0–7.8	**1,552**	**3.6**	**0.8–6.4**
Not applicable	13,828	32.2	20.5–43.8	16,696	38.8	26.1–51.5	**16,137**	**37.3**	**25.2–49.5**
Missing/Blank	–	–	–	5,683	13.2	3.6–22.8	–	–	–
Use larvicides/mosquito dunks									
Yes	4,918	11.4	7.3–15.4	3,491	8.1	4.0–12.3	**4,110**	**9.5**	**5.5–13.5**
Never	28,178	65.2	55.5–75.0	17,004	39.5*	27.2–51.8	**31,079**	**71.9***	**60.7–83.2**
Don't know	1,852	4.3	1.5–7.1	2,531	5.9	0.0–12.1	**2,283**	**5.3**	**1.3–9.2**
Not applicable	8,266	4.3	8.0–30.3	12,841	29.9	19.1–40.6	**5,741**	**13.3**	**2.2–24.4**
Missing/Blank	–	–	–	7,141	16.6	4.8–28.4	–	–	–

– indicates cell size less than 5

**Indicates significant difference*

Table 11. Household (HH) mosquito prevention behavior frequency – USVI, July 2017 (Zika), May 2019 (Hurricane Recovery)

	July 2017 (n=201)			May 2019 (n=184)			October 2019 (n=185)		
	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI
Clean yard/remove garbage									
Weekly	30,799	71.3	61.8–80.7	21,521	50.0	37.9–62.1	**26,041**	**60.3**	**46.7–73.8**
Monthly	5,179	12.0	6.6–17.4	7,470	17.4	9.8–25.0	**10,119**	**23.4**	**11.6–35.2**
Quarterly	–	–	–	2,243	5.2	0.9–9.5	**–**	**–**	**–**
Cut shrubs/grass									
Weekly	11,469	26.5	16.5–36.6	12,385	28.8	16.0–41.6	**17,869**	**41.4**	**29.0–53.7**
Monthly	19,227	44.5	35.3–53.7	14,758	34.3	24.0–44.6	**18,372**	**42.5**	**30.8–54.2**
Quarterly	3,972	9.2	3.1–15.2	2,298	5.3	1.1–9.6	**1,578**	**3.7**	**0.0–7.5**
Keep cover(s) on water source(s)									
Weekly	21,374	49.7	39.4–60.0	7,813	18.2*	11.8–24.6	**17,174**	**39.7***	**25.8–53.7**
Monthly	1,111	2.6	0.0–5.3	2,243	5.2	0.8–9.6	**–**	**–**	**–**
Quarterly	–	–	–	2,593	6.0	1.1–11.0	**–**	**–**	**–**
Empty standing water									
Weekly	18,465	42.7	33.6–51.9	11,565	26.9	17.0–36.7	**15,806**	**36.6**	**26.6–46.5**
Monthly	2,380	5.5	2.5–8.5	2,757	6.4	2.2–10.6	**2,058**	**4.8**	**1.4–8.2**
Quarterly	–	–	–	–	–	–	**1,595**	**3.7**	**0.0–7.9**
Spray/fumigate for mosquitoes									
Weekly	16,771	38.8	28.9–48.7	13,050	30.3	17.7–43.0	**15,539**	**36.0**	**26.8–45.1**
Monthly	5,295	12.3	8.4–16.1	6,544	15.2	6.0–24.4	**4,418**	**10.2**	**5.4–15.1**
Quarterly	4,561	10.6	5.6–15.5	4,081	9.5	4.2–14.8	**3,606**	**8.3**	**4.9–11.8**
Clean clogged roof gutters									
Weekly	2,140	5.0	1.6–8.3	2,264	5.3	1.4–9.1	**3,235**	**7.5**	**2.6–12.4**
Monthly	6,599	15.3	9.2–21.4	4,074	9.5	4.5–14.4	**4,993**	**11.6**	**6.6–16.5**
Quarterly	17,697	41.0	31.1–50.8	11,918	27.7	18.6–36.8	**11,831**	**27.4**	**19.1–35.6**
Use larvicides/mosquito dunks									
Weekly	1,235	2.9	0.3–5.4	1,934	4.5	1.6–7.4	**–**	**–**	**–**
Monthly	1,886	4.4	1.6–7.1	1,063	2.5	0.4–4.5	**1,721**	**5.3**	**1.3–9.2**
Quarterly	1,797	4.2	1.0–7.3	–	–	–	**–**	**–**	**–**

– indicates question not asked OR cell size less than 5
**Indicates significant difference*

Table 12. Household (HH) rabies control and prevention – Hurricanes Irma/Maria, USVI 2019

	October 2019 (n=185)		
	Estimate	% of HH	95% CI
Household pets			
No	**20,622**	**47.7**	**37.4–58.0**
Yes[1]	**22,592**	**52.3**	**42.0–62.6**
Dog	***17,331***	***76.7***	***68.8–84.7***
Cat	***7,299***	***32.3***	***18.4–46.2***
Other[2]	***4,762***	***21.1***	***4.2–37.9***
Pet vaccinated for rabies (n=88)			
Yes	**14,053**	**65.9**	**54.3–77.5**
No	**7,282**	**34.1**	**22.5–45.7**
Pet brought in dead animal to house/yard			
No	**21,254**	**94.1**	**88.8–99.3**
Yes	**1,338**	**5.9**	**0.7–11.2**
Anyone in HH bitten by animal			
No	**42,368**	**98.0**	**96.2–100**
Yes	**–**	**–**	**–**

– indicates question not asked OR cell size less than 5 (no weighted analysis performed)
[1]Households could report more than one response
[2]Other includes birds, fish, turtles, chickens, iguanas, and rabbits

Table 13. Household (HH) vaping status – Hurricanes Irma/Maria Recovery, USVI 2019

	October 2019 (n=185)		
	Estimate	% of HH	95% CI
HH member ever used e-cigarette products			
No	**38,170**	**88.3**	**82.7–93.9**
Yes	**5,044**	**11.7**	**6.1–17.3**
Use in past 2 months (n=22)			
Increased	**–**	**–**	**–**
Decreased	**–**	**–**	**–**
Quit	**1,169**	**23.2**	**5.2–41.1**
No Change	**3,052**	**60.5**	**12.6–88.2**

– indicates cell size less than 5 (no weighted analysis performed)

Table 14. Household (HH) behavioral health status – Hurricanes Irma/Maria, USVI 2017–2019

	November 2017 (n=387)			February 2018 (n=200)			November 2018 (n=169)			May 2019 (n=184)			October 2019 (n=185)		
	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI
Experienced the following behavioral health indicators since the storms[1]															
Hard concentrating	10,473	24.2	18.9–29.6	9,034	21.0	15.2–26.8	10,289	24.6	17.7–31.5	5,487	12.8	6.7–18.8	**7,301**	**16.9**	**10.2–23.6**
Trouble sleeping	17,885	41.4	37.3–45.5	15,550	36.0	27.5–44.5	9,312	22.3**	14.8–29.8	8,396	19.5**	13.1–25.9	**6,535**	**15.1**	**8.3–21.9**
Agitated behavior	11,580	26.8	21.5–32.1	8,536	19.8	14.1–25.4	8,609	20.6	13.4–27.8	3,910	9.1**	4.8–13.4	**6,448**	**14.9**	**3.9–25.9**
Loss of appetite	9,478	21.9	18.5–25.3	8,248	19.1	13.8–24.4	6,705	16.1	8.9–23.2	2,915	6.8**	3.8–10.0	**4,638**	**10.7**	**4.7–16.8**
Witness violence	5,410	12.5	7.7–17.3	5,316	12.3	7.2–17.4	3,567	8.5	3.0–14.0	2,908	6.8	3.4–10.1	**4,812**	**11.1**	**6.4–15.9**
Increased alcohol	4,620	10.7	7.1–14.3	6,139	14.2	9.0–19.4	1,955	4.7	0.4–8.9	2,366	5.5	1.3–9.7	**3,364**	**7.8**	**3.8–11.8**
Increased drug use	1,456	3.7	0.9–5.8	1,852	4.3	0.5–8.0	823	2.0	0.0–4.4	1,749	4.1	0.2–7.9	**1,169**	**2.7**	**0.0–5.4**
Experienced 1+	26,479	61.3	54.5–68.0	23,061	53.4	45.4–61.3	16,497	39.5**	30.3–48.7	12,525	29.1**	21.8–36.5	**17,455**	**40.4**	**29.5–51.3**
Employment status															
Increased	–	–	–	4,952	11.5	6.6–16.3	3,286	7.9	3.7–12.0	5,501	12.8	6.6–19.0	**2,529**	**5.9**	**1.1–10.6**
Decreased	–	–	–	11,335	26.2	18.7–33.8	9,617	23.0	14.8–31.2	5,830	13.6	8.0–19.1	**13,394**	**31.0**	**18.5–43.5**
Same	–	–	–	26,926	62.3	54.5–70.1	28,871	69.0	60.5–77.7	31,265	72.7	65.1–80.3	**27,291**	**63.2**	**50.7–75.6**
Received mental health services															
Yes	–	–	–	3,327	7.7	3.1–12.3	5,179	12.4	4.2–20.6	2,658	6.2	2.5–9.8	**3,835**	**8.9**	**5.3–12.5**
No – couldn't get	–	–	–	1,852	4.3	0.3–8.3	1,063	2.5	0.4–4.7	–	–	–	**1,374**	**3.2**	**0.8–5.6**
No – no need	–	–	–	38,035	88.0	81.1–94.9	35,532	85.1	76.8–93.3	35,960	83.6	76.3–90.9	**38,005**	**87.9**	**83.8–92.1**
Missing/blank	–	–	–	–	–	–	–	–	–	2,950	6.9	0.0–14.2	**–**	**–**	**–**

– indicates question not asked OR cell size less than 5 (no weighted analysis performed)

**Indicates significant difference from previous CASPER; ** indicates significant difference from 2 CASPERs prior*

[1]*Households could report more than one response*

Figure 3. Household behavioral health indicators – Hurricanes Irma/Maria Recovery, USVI 2019

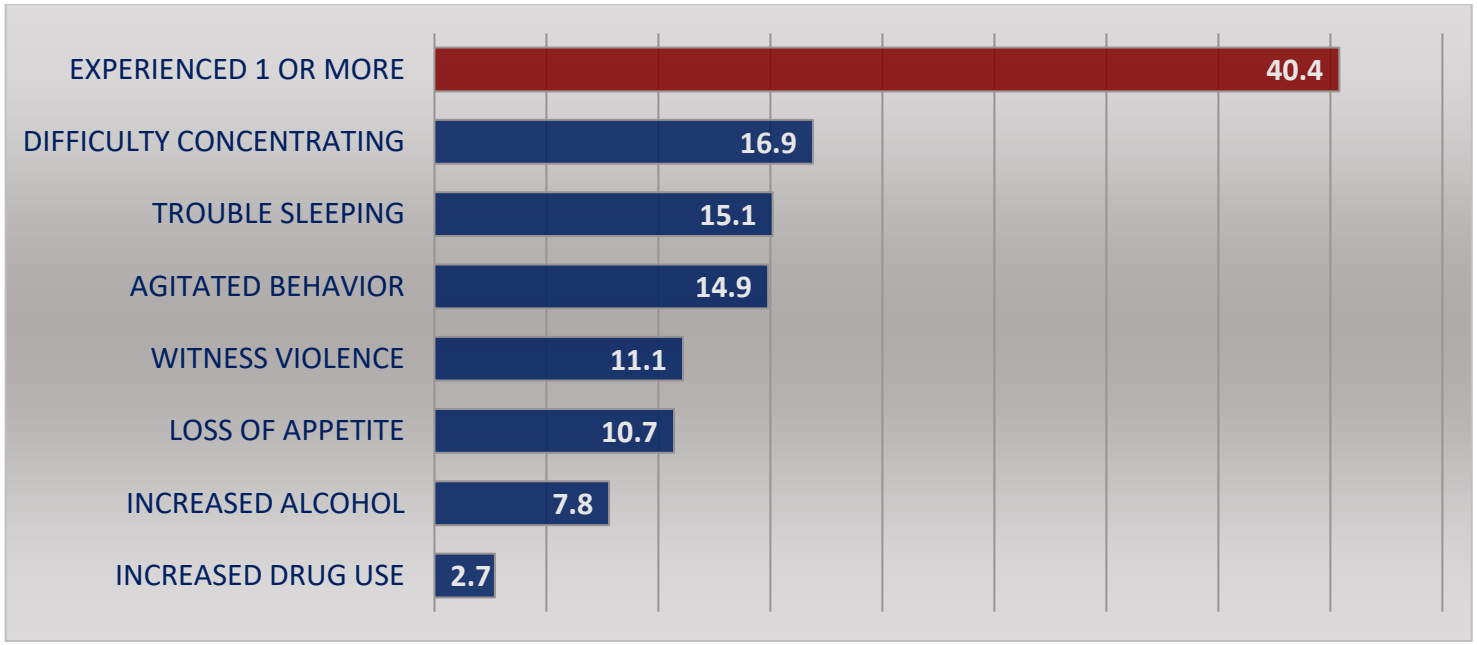


Figure 4. Comparison of household employment status– Hurricanes Irma/Maria Recovery, USVI 2018–2019

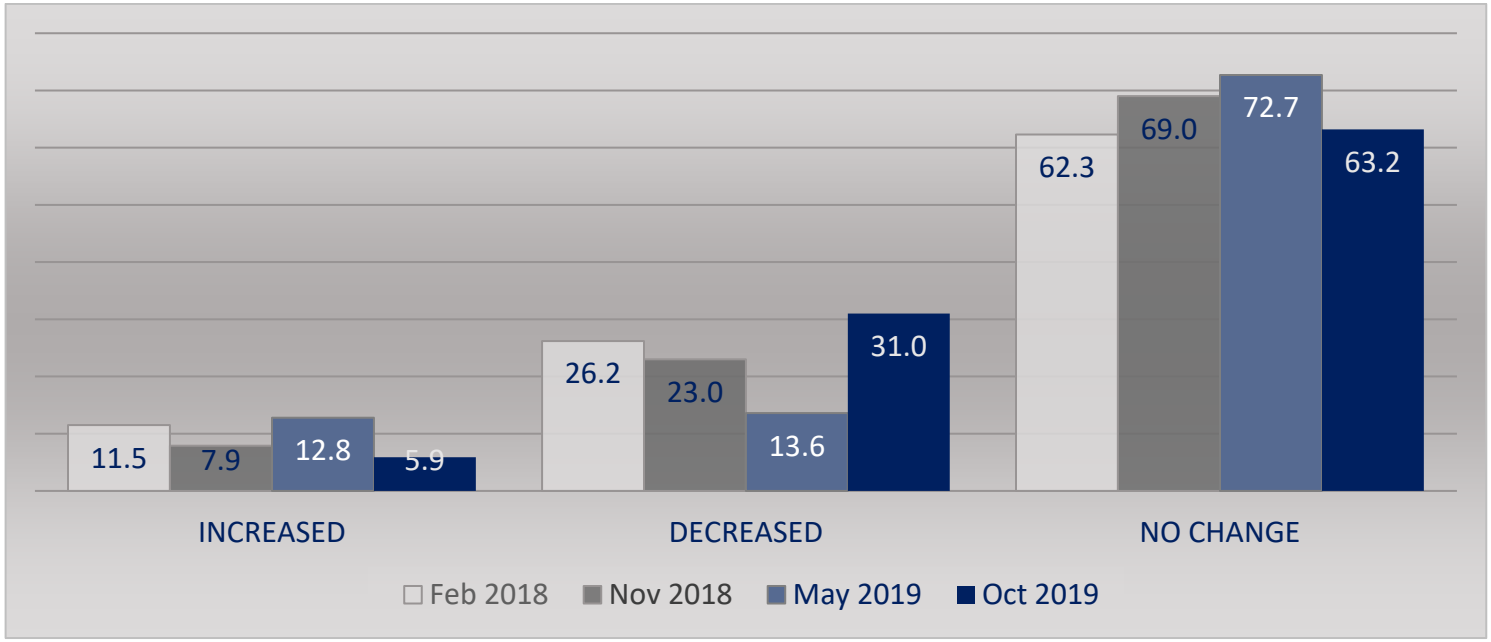


Figure 5. Comparison of household perception of household life/activities – Hurricanes Irma/Maria Recovery, USVI 2019

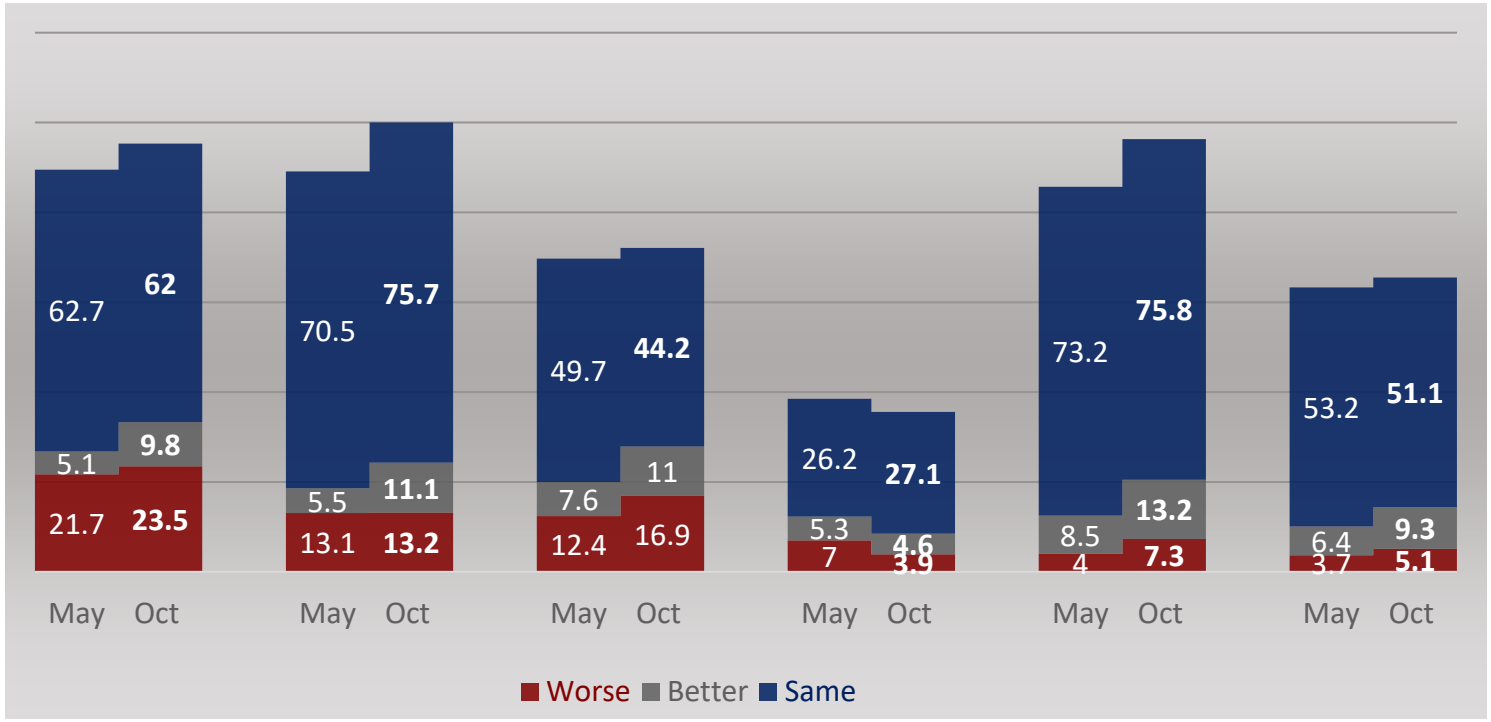


Table 15. Perceived hurricane effect on household (HH) life – Hurricanes Irma/Maria Recovery, USVI 2019

	May 2019 (n=184)			October 2019 (n=185)		
	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI
Recreational (beach, etc.)						
Worse	8,315	21.7	14.9–28.4	**10,136**	**23.5**	**12.5–34.4**
Better	2,174	5.1	1.9–8.2	**4,227**	**9.8**	**5.1–14.5**
Same	26,968	62.7	52.8–72.6	**26,771**	**62.0**	**51.2–72.7**
Not applicable	1,218	2.8	0.0–5.7	**2,081**	**4.8**	**0.3–9.3**
Missing/blank	3,128	7.3	0.0–16.0	–	–	–
Work						
Worse	5,343	12.4	6.9–17.9	**7,286**	**16.9**	**9.6–24.2**
Better	3,727	7.6	3.6–11.6	**4,744**	**11.0**	**5.9–16.1**
Same	21,388	49.7	41.7–57.8	**19,119**	**44.2**	**34.4–54.1**
Not applicable	9,960	23.2	15.0–31.3	**12,065**	**27.9**	**19.4–36.4**
Missing/blank	2,840	6.6	0.0–14.4	–	–	–
Home life						
Worse	5,618	13.1	6.2–19.9	**5,723**	**13.2**	**8.5–18.0**
Better	2,380	5.5	2.4–8.7	**4,784**	**11.1**	**7.7–14.5**
Same	30,318	70.5	59.4–81.6	**32,707**	**75.7**	**69.9–81.4**
Not applicable	–	–	–	–	–	–
Missing/blank	3,663	8.5	0.0–17.2	–	–	–
Family						
Worse	1,729	4.0	0.8–7.3	**3,158**	**7.3**	**3.8–10.9**
Better	3,635	8.5	3.7–13.3	**5,704**	**13.2**	**9.1–17.3**
Same	31,323	73.2	63.9–82.4	**32,772**	**75.8**	**69.6–82.1**
Not applicable	3,138	7.3	2.5–12.2	**1,580**	**3.7**	**1.2–6.1**
Missing/blank	2,771	6.5	0.0–13.0	–	–	–
Church/place of worship						
Worse	1,595	3.7	0.6–6.9	**2,217**	**5.1**	**1.9–8.3**
Better	2,709	6.4	2.4–10.2	**4,020**	**9.3**	**4.8–13.8**
Same	22,859	53.2	43.7–62.6	**22,090**	**51.1**	**41.9–60.4**
Not applicable	11,688	27.2	18.0–36.4	**14,887**	**34.5**	**25.5–43.4**
Missing/blank	3,251	7.6	0.0–15.8	–	–	–
School						
Worse	2,991	7.0	3.4–10.6	**1,669**	**3.9**	**0.8–6.9**
Better	2,264	5.3	0.2–10.4	**1,986**	**4.6**	**1.3–7.9**
Same	11,212	26.2	18.3–34.1	**11,699**	**27.1**	**17.0–37.1**
Not applicable	23,154	54.1	43.2–65.0	**27,860**	**64.5**	**54.2–74.7**
Missing/blank	2,771	6.5	0.0–13.1	–	–	–
Childcare/daycare						
Worse	–	–	–	–	–	–
Better	–	–	–	–	–	–
Same	9,384	21.9	12.3–31.6	**6,056**	**14.0**	**4.0–24.1**
Not applicable	28,984	67.7	55.6–79.8	**36,129**	**83.6**	**73.5–93.8**
Missing/blank	3,200	7.5	0.0–15.9	–	–	–

– indicates cell size less than 5 (no weighted analysis performed)

Table 16. Individual behavioral health status – Hurricanes Irma/Maria Recovery, USVI 2018

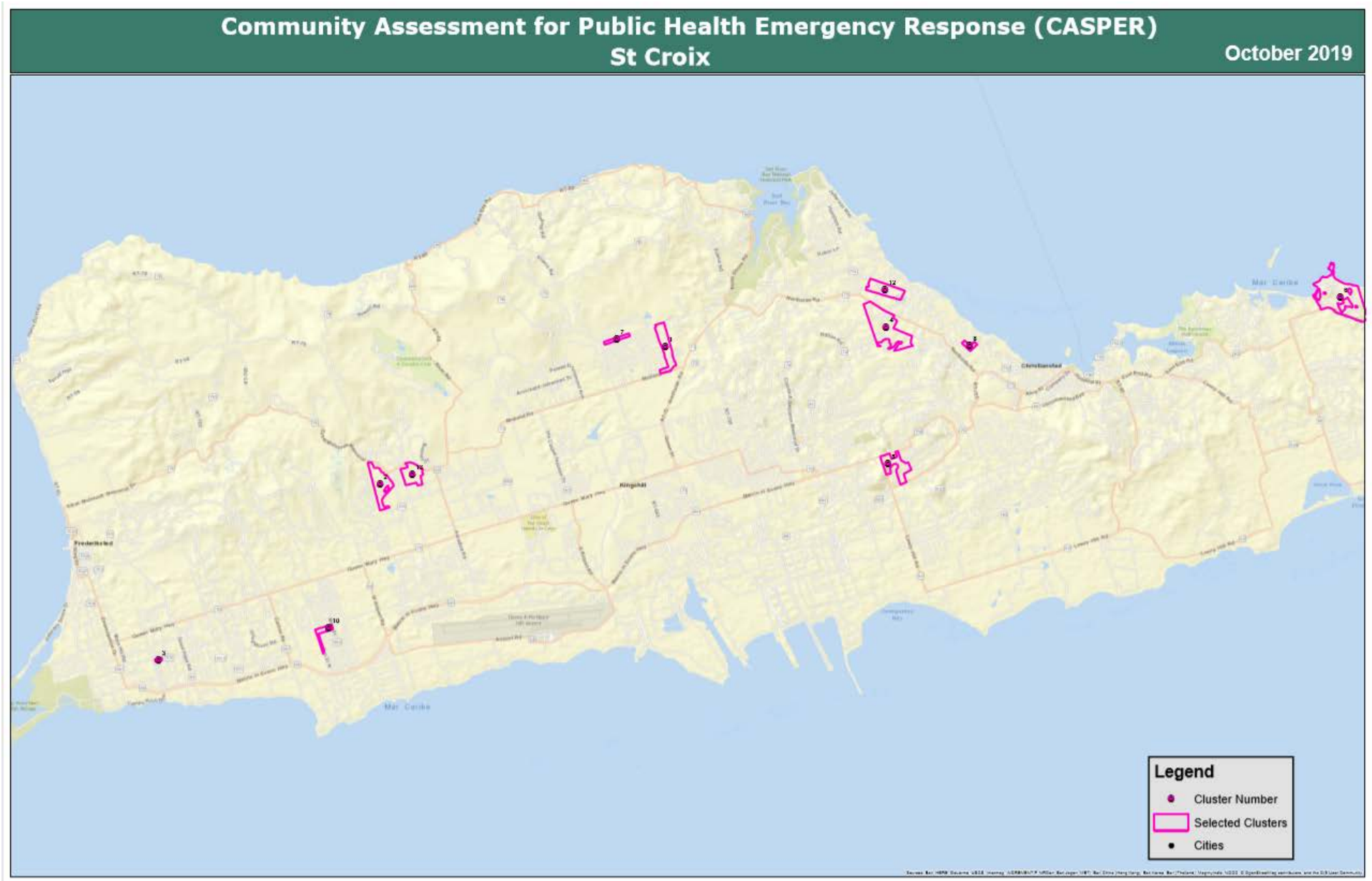
	November 2017 (n=387)			February 2018 (n=200)			November 2018 (n=169)			May 2019 (n=184)			October 2019 (n=185)		
	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI	Estimate	% of HH	95% CI
Over last 2 weeks, had little interest or pleasure doing things															
Not at all	56,167	58.8	52.7–64.9	60.174	65.1	58.2–72.1	66,382	75.9**	68.0–83.8	72,260	79.6	73.2–86.1	**62,058**	**64.0**	**53.0–74.9**
Several days	22,613	23.7	18.2–29.2	17,893	19.4	13.4–25.3	12,978	14.8	8.6–21.0	12,457	13.7	8.4–19.0	**23,136**	**23.9**	**13.3–34.4**
More than half	5,225	5.4	2.7–8.3	5,179	5.6	1.9–9.3	–	–	–	–	–	–	**5,850**	**6.0**	**1.8–10.3**
Nearly every day	11,530	12.1	8.5–15.7	9,123	9.9	5.1–14.6	6,362	7.3	2.4–12.2	3,457	3.8	1.2–6.4	**5,956**	**6.1**	**2.4–9.9**
Over last 2 weeks, felt down, depressed, or hopeless															
Not at all	51,961	54.4	48.4–60.4	63,895	69.2*	62.3–76.0	66,975	76.6	68.2–85.0	71,732	79.0	71.5–86.6	**72,016**	**74.2**	**64.9–83.6**
Several days	28,163	29.5	24.8–34.1	18,068	19.6	12.8–26.3	15,729	18.0	11.0–25.0	15,722	17.3	10.6–24.0	**16,309**	**16.8**	**10.3–23.3**
More than half	6,027	6.3	2.1–10.5	4,561	4.9	1.7–8.2	1,475	1.7	0.0–3.3	–	–	–	**4,410**	**4.5**	**1.1–8.0**
Nearly every day	9,385	9.8	6.5–13.2	5,844	6.3	2.1–10.5	3,292	3.8	0.7–6.9	2,675	2.9	0.6–5.3	**4,292**	**4.4**	**0.0–9.2**
Patient Health Questionnaire 2 (PHQ-2) score															
Less than 3	59,603	62.4	74.2–83.7	76,955	83.3	76.7–89.9	78,468	89.7**	83.7–95.7	83,791	92.3	88.5–96.2	**82,369**	**84.9**	**78.6–91.1**
3 or more	20,138	21.1	16.3–25.8	15,413	16.7	10.1–23.3	9,003	10.3**	4.3–16.3	6,955	7.7	3.8–11.5	**14,658**	**15.1**	**8.9–21.4**
Over last 2 weeks, felt nervous, anxious, or on edge															
Not at all	59,603	62.4	56.0–68.8	65,867	71.3	63.7–78.9	70,082	80.1**	72.8–87.4	77,096	85.0	78.5–91.4	**69,338**	**71.4**	**61.5–81.4**
Several days	21,419	22.4	16.7–28.2	16,270	17.6	10.9–24.3	13,410	15.3	9.4–21.3	11,592	12.8	6.9–18.6	**19,812**	**20.4**	**10.4–30.5**
More than half	3,263	3.4	1.2–5.7	3,903	4.2	1.5–7.0	–	–	–	–	–	–	**4,064**	**4.2**	**0.8–7.6**
Nearly every day	11,250	11.8	8.2–15.4	6,328	6.9	2.9–10.8	3,155	3.6**	0.7–6.5	–	–	–	**3,812**	**3.9**	**0.9–6.9**
Over last 2 weeks, felt unable to stop or control worrying															
Not at all	56,718	59.4	53.2–65.6	61,899	67.0	60.5–73.6	64,835	74.1	65.4–82.8	71,958	79.3	72.1–86.5	**74,868**	**77.2**	**68.9–85.4**
Several days	20,592	21.6	17.7–25.4	16,785	18.2	11.3–25.0	12,861	14.7	8.2–21.2	12,203	13.4	7.4–19.5	**12,311**	**12.7**	**7.4–17.9**
More than half	6,233	6.5	3.0–10.0	4,219	4.6	1.3–7.8	1,029	1.2**	0.0–2.6	–	–	–	**–**	**–**	**–**
Nearly every day	11,993	12.5	8.9–16.2	9,466	10.2	5.7–14.8	8,746	10.0	4.2–15.8	4,116	4.5	1.3–7.7	**6,967**	**7.2**	**0.9–13.4**
Generalized Anxiety Disorder 2 (GAD-2) score															
Less than 3	74,629	78.1	73.7–82.6	76,849	83.2	76.7–89.7	82,155	93.9**	89.9–97.9	85,807	94.6**	91.3–97.8	**85,121**	**87.7**	**80.8–94.7**
3 or more	20,906	21.9	17.4–26.3	15,519	16.8	10.3–23.3	5,316	6.1**	2.1–10.1	4,939	5.4**	2.2–8.7	**11,906**	**12.3**	**5.3–19.2**
Mental health in past 30 days															
<14 days "not good"	78,798	83.3	80.0–86.5	73,405	79.5	73.1–85.9	77,730	88.9	82.6–95.1	79,140	90.8	85.5–96.2	**85,333**	**87.9**	**81.7–94.2**
≥14 days "not good"	15,844	16.7	13.5–20.0	16,699	18.1	12.1–24.0	9,740	11.1	4.9–17.4	6,544	7.5	2.2–12.9	**11,694**	**12.1**	**5.8–18.3**
Don't know	–	–	–	2,264	2.5	0.0–5.7	–	–	–	1,440	1.7	0.0–3.3	**–**	**–**	**–**

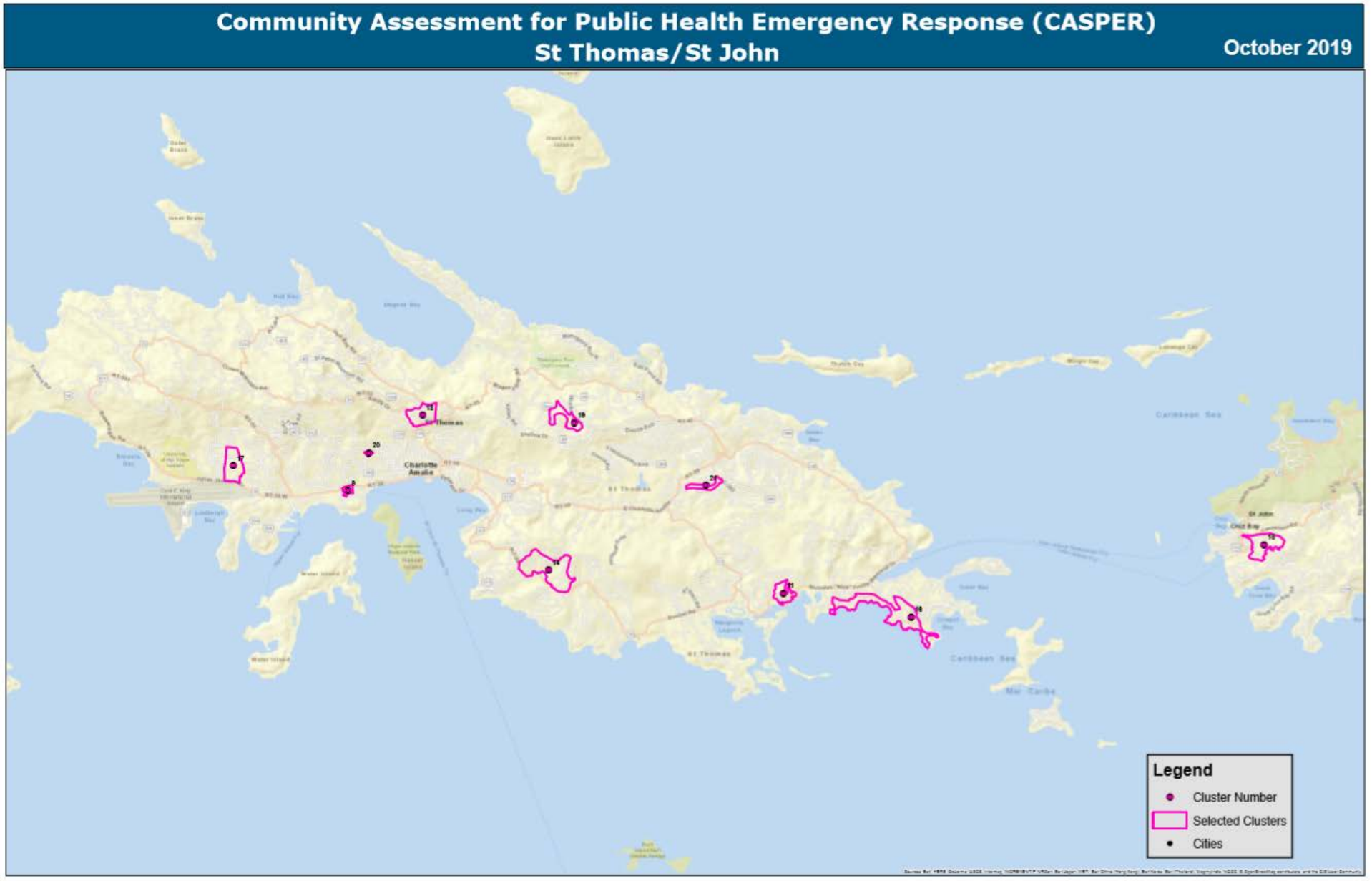
– indicates question not asked OR cell size less than 5 (no weighted analysis performed)

**Indicates significant difference from previous CASPER*

*** indicates significant difference from 2 CASPERs prior*

Appendix A: Sampling Frame




Community Assessment for Public Health Emergency Response (CASPER)
St Thomas/St John
October 2019
Charlotte Amalie
Legend
Cluster Number
Selected Clusters
Cities

Appendix B: Questionnaire

Community Assessment for Public Health Emergency Response (CASPER) – Hurricane Recovery, USVI (Crisis #3)

DK=Don't Know Ref=Refused NA=Not Applicable HH=Household

Date: 10/____/2019 **Cluster Number: _____** **Interview Number: _____** **Team name: _____**

Demographics

COMPLETE BEFORE BEGINNING SURVEY. Type of structure: □ Single family □ Multiple unit □ Other (e.g., duplex) _____

Q1. Including yourself, how many people live in your HH? ____#____

Q2. Including yourself, how many people living in your HH are
<2 yrs old? __#__ 2-17 yrs? __#__ 18-64 yrs? __#__ 65+ yrs? __#__ □ DK □ Ref

Q3. What is the main language spoken in your HH?
□ English □ Spanish □ Creole □ Other_____ □ DK □ Ref

Now we are going to ask about your household's experience since the hurricanes

Q4. Does your household feel your home is safe to live in?
□ Yes □ No □ DK □ Ref

Q5. How would you describe the hurricane damage to your home? *(Check ONE)*
□ None/minimal □ Damaged, but repairable □ Destroyed □ DK □ Ref

Q6. How close is your home (excluding landscape) to being how it was prior to the storms? *(Check ONE)*
□ Completely repaired □ Somewhat repaired □ Not repaired at all □ Never damaged □ DK □ Ref

Q7. What, if any, are barriers to your home repair? *(Check ALL)*
□ Time □ Finding materials/supplies
□ Availability of contractors/skilled labor
□ Working on paperwork
□ Money/Cost – Waiting on insurance claim
□ Money/Cost – Waiting on a loan
□ Money/Cost – Waiting on FEMA funds
□ Other _____
□ None – no barriers □ None – no repairs needed
□ DK □ Ref

Q8. Has your household replaced damaged household items such as furniture, clothing, toys, etc.? *(Check ONE)*
□ All □ Some □ None □ No need □ DK □ Ref

Q9. Has debris and waste been removed from your property? *(ONE)*
□ All □ Some □ None □ No need □ DK □ Ref

Q10. How have the storms affected your household employment? *(Check ONE)* □ Increased □ Decreased □ No change □ DK □ Ref

Q11. How worried was your HH about the recent hurricane season?
□ Not at all □ Somewhat worried □ Very worried DK □ Ref

Q12. Based on your experience, what would your HH do to prepare for future storms? □ DK □ Ref

Q13. Does your HH have any emergency supply kit with items such as food, water, flashlights, and batteries? □ Yes □ No □ DK □ Ref

Q14. How many days of adequate drinking water (besides tap) does your household currently have? (1 gallon/person/day)
__#__ of days □ None □ DK □ Ref

Q15. How many days of non-perishable food (e.g., canned goods, protein bars, nuts) does your household currently have?
__#__ of days □ None □ DK □ Ref

Q16. How many days of medication does your HH currently have, on average, for each person who takes prescribed medication?
__#__ of days □ None □ No prescriptions □ DK □ Ref

Q17. If a hurricane were headed toward the territory, what would your HH buy to prepare for the storms? *(Check all that apply)*
□ Water □ Food □ Medical supplies/medications
□ Batteries □ Gasoline □ Propane
□ Other _____ □ DK □ Ref

Q18. If a hurricane were headed toward the territory, would your HH go to a shelter? □ Yes □ No □ Depends _____ □ DK □ Ref

Q19. During this most recent hurricane season (Dorian, Karen), did your HH go to a shelter? □ Yes □ No *(go to Q19a)* □ DK □ Ref

Q19a. If NO, why not? *(Check all)*
□ Didn't know shelters open/location □ Inconvenient
□ Didn't want to leave pets □ No transportation
□ Concern about property/theft □ No need
□ Other _____ □ DK □ Ref

Q20. What is your household's greatest need at this time?
□ DK □ Ref

COMMUNICATIONS

Q21. How does your HH prefer to receive information from the Department of Health? *(Check all)*
□ Newspaper □ Internet news or other website □ Social media □ TV □ Radio □ Friends/Family/Word of Mouth
□ Church/Place of worship □ Movie theater □ Other _____ □ None □ DK □ Ref

Q22. What health messages has your HH heard from the department of health? ***(DO NOT READ RESPONSES** – Check all that apply)*
□ Hurricane preparedness □ eCigs/Vaping □ Immunizations (measles, flu, etc.) □ Mental health □ Mosquito/vector control
□ CO exposure □ Other DoH services □ Other _____ □ None *(skip to Q24)* □ DK □ Ref

Q22a. *If HEARD ANY MESSAGES,* How did your HH hear those messages from the Department of Health? ***(DO NOT READ** – Check all)*
□ Newspaper □ Internet news or other website □ Social media □ TV □ Radio □ Friends/Family/Word of Mouth
□ Church/Place of worship □ Movie theater □ Other □ DK □ Ref

VECTORS

Q23. Since the hurricanes, have you or members of your HH noticed an increase in rats/mice? □ Yes □ No □ DK □ Ref

Q24. Currently, how concerned are you and members of your HH about getting diseases mosquitoes may carry?
□ Very concerned □ Somewhat concerned □ Not concerned at all □ DK □ Ref

Q24a. *IF VERY or SOMEWHAT,* which disease(s)? ***(DO NOT READ** – Check all that apply)*
□ Zika □ Dengue □ Chikungunya □ Yellow Fever □ Malaria □ Other _____ □ DK □ Ref

Q25. Does your HH have any pets, not including livestock? ◻ Yes *(go to Q25a-c)* ◻ No ◻ DK ◻ Ref

Q25a. If *YES*, what type of pet and how many? *(Check all that apply).* ◻ Dog __#__ ◻ Cat__#__ ◻ Bird __#__ ◻ Other_____ __#__

Q25b. Has any pet in your HH ever been vaccinated for rabies? ◻ Yes ◻ No ◻ DK ◻ Ref

Q25c. Has any pet in your HH ever brought a dead mongoose or bat into your house/yard? ◻ Yes ◻ No ◻ DK ◻ Ref

Q26. Has anyone in your household been bitten by an animal in the past year? ◻ Yes *(go to Q26a-b)* ◻ No ◻ DK ◻ Ref

Q26a. *If YES*, what type of animal? *(Check all that apply)*
◻ Dog ◻ Cat ◻ Mongoose ◻ Bat ◻ Bird
◻ Other_____. ◻ DK ◻ Ref

Q26b. What did they do after being bitten? *(Check all that apply)*
◻ Wash wound with soap and water
◻ Visit hospital for treatment
◻ Call police or file police report
◻ Other treatment/action _____
◻ DK ◻ Ref

Q27. Please tell me how often you or members of your household take any of the following actions to reduce or remove mosquitoes from your house or yard. **NEVER (N), WEEKLY (W), MONTHLY (M), QUARTERLY/FEW TIMES A YEAR (Q), Not Applicable (NA)**

Clean clogged roof gutters	N	W	M	Q	NA	DK	R
Cut shrubs/grass	N	W	M	Q	NA	DK	R
Empty standing water	N	W	M	Q	NA	DK	R
Spray/fumigate for mosquitos	N	W	M	Q	NA	DK	R
Use larvicides/mosquito dunks	N	W	M	Q	NA	DK	R
Clean yard/remove garbage	N	W	M	Q	NA	DK	R
Keep cover(s) on water source(s)	N	W	M	Q	NA	DK	R
Other action _____	N	W	M	Q	NA	DK	R

Health/Behavioral Health

Q28 Have you or any member of your household ever used e-cigarette products including devices, liquids, refill pods, or cartridges, for nicotine, THC, or CBD? ◻ Yes *(go to Q29a)* ◻ No ◻ DK ◻ Ref

Q28a. If *YES*, in the past 2 months (Sept 1), has use of e-cig products.... *(Check all that apply)*
◻ Increased ◻ Decreased ◻ Stopped ◻ No change ◻ DK ◻ Ref

Q29. Since the storms, have you or members of your HH received services from a counselor, pastor/clergy member, therapist, social worker, or SAMHSA hotline for behavioral health concerns? ◻ Yes ◻ No – couldn't get services ◻ No – no need ◻ DK ◻ Ref

Q30. Since the storm, have you or members of your HH had

Difficulty concentrating	◻ Yes	◻ No	◻ DK	◻ Ref
Trouble sleeping/nightmares	◻ Yes	◻ No	◻ DK	◻ Ref
Loss of appetite	◻ Yes	◻ No	◻ DK	◻ Ref
Agitated behavior	◻ Yes	◻ No	◻ DK	◻ Ref
Witnessed firsthand violent behavior/threats	◻ Yes	◻ No	◻ DK	◻ Ref
Increased alcohol consumption	◻ Yes	◻ No	◻ DK	◻ Ref
Increased drug use, including marijuana	◻ Yes	◻ No	◻ DK	◻ Ref
Other _____	◻ Yes	◻ No	◻ DK	◻ Ref

Q31. Have any of the following aspects of your household life changed since the hurricanes?

Recreational (beach, etc.)	◻ Same	◻ Better	◻Worse	◻ NA	◻ DK	◻ Ref	
School	◻ Same	◻ Better	◻Worse	◻ NA	◻ DK	◻ Ref	
Family	◻ Same	◻ Better	◻Worse	◻ NA	◻ DK	◻ Ref	
Child care/Day care	◻ Same	◻ Better	◻Worse	◻ NA	◻ DK	◻ Ref	
Church/Place of worship	◻ Same	◻ Better	◻Worse	◻ NA	◻ DK	◻ Ref	
Work	◻ Same	◻ Better	◻Worse	◻ NA	◻ DK	◻ Ref	
Home life	◻ Same	◻ Better	◻Worse	◻ NA	◻ DK	◻ Ref	
Other _____	◻ Same	◻ Better	◻Worse	◻ NA	◻ DK	◻ Ref	

Now we are going to ask about YOU as an INDIVIDUAL

Q32 Over the last **2 weeks**, how often have you had little interest or pleasure in doing things? *(Check ONE)*
◻ Not at all ◻ Several days ◻ More than half the days ◻ Nearly every day ◻DK ◻ Refused

Q33 Over the last **2 weeks**, how often have you felt down, depressed or hopeless? *(Check ONE)*
◻ Not at all ◻ Several days ◻ More than half the days ◻ Nearly every day ◻DK ◻ Refused

Q34. Over the last **2 weeks**, how often have you felt nervous, anxious, or on edge? *(Check ONE)*
◻ Not at all ◻ Several days ◻ More than half the days ◻ Nearly every day ◻DK ◻ Refused

Q35. Over the last **2 weeks**, how often have you been unable to stop or control worrying? *(Check ONE)*
◻ Not at all ◻ Several days ◻ More than half the days ◻ Nearly every day ◻DK ◻ Refused

Q36. Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the **past 30 days** was your mental health not good? __#__ ◻DK ◻ Refused

Q37. Is there anything else you would like to tell the health department about your household?

◻ No ◻ DK ◻ Ref

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Survey Respondents