

KAUAI EMERGENCY PREPAREDNESS CASPER



FINAL REPORT



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**KAUAI EMERGENCY PREPAREDNESS CASPER
FINAL REPORT**

Table of Contents	2
Introduction.....	3
Methods.....	5
Results.....	8
Discussion	22
Appendix A : Questionnaire	24
Appendix B : Forms.....	26

INTRODUCTION

Hawaii is one of the most isolated island chains in the world. As such, it will take longer for assistance to arrive and for our infrastructure to be re-established after a disaster, especially if the state's main port, Honolulu Harbor, is impacted by the event. Due to these unique vulnerabilities, our public health threats and preparedness recommendations are different from those of the mainland United States. For example, in comparison to the three days' worth of recommended supplies on the mainland, the Hawaii Emergency Management Agency (HI-EMA) advises all state residents to maintain 14 days' worth of emergency supplies (including water, non-perishable food, and essential medications) at all times. Further, Hawaii hosts approximately nine million tourists each year, which makes us vulnerable to global health threats while also adding an additional 216,000 people, with minimal to no emergency supplies, to our total population at any one time.¹ This vulnerable group will require additional assistance from county, state and non-governmental agencies during an emergency and drain an already short supply of available resources.

Due to the factors enumerated above, significant emphasis is placed on personal preparedness in the State of Hawaii. However, residents face many barriers in their attempts to meet these recommendations. Further, minimal data on resident preparedness is available to emergency managers to inform state and county planning efforts. In order to address this knowledge gap, the Department of Health's Kauai District Health Office conducted a community assessment for public health emergency response (CASPER) in July 2018 on the island of Kauai. CASPER methodology was developed by the Centers for Disease Control and Prevention (CDC) to enable public health practitioners to rapidly collect data from a community preparing for, responding to, or recovering from a disaster. CASPER is a two-stage cluster sampling methodology, which allows field teams to interview a relatively small number of households while still drawing conclusions about the broader community. CASPER methodology is relatively inexpensive, quick, and scalable, making it ideal for quickly giving public health practitioners situational awareness in a wide variety of disaster situations, or in preparation for emergencies. The information gathered through a CASPER can help public health practitioners identify community needs, knowledge gaps, communication best practices, and ways to strengthen emergency preparedness efforts of local residents.

The original goal of Kauai's CASPER was to assess resident preparedness and health-related needs for natural disasters and other emergencies. However, during the planning process Hawaii experienced a state of emergency when torrential rainfall resulted in flooding across four counties in Hawaii from April 13-16, 2018. On Kauai, the storm caused localized flooding across the island, washing homes off of their foundations, opening sinkholes that made several roads impassable, and triggering multiple landslides that isolated entire communities from the rest of the island. Local and state response efforts were supplemented through federal disaster assistance provided by the Federal Emergency Management Agency (FEMA). In response to this

¹ Based on Hawaii Tourism Authority's average daily census count from 2016

**KAUAI EMERGENCY PREPAREDNESS CASPER
FINAL REPORT**

event, the Kauai CASPER objectives were expanded to include an assessment of impact and ongoing needs related to the flood. The primary objectives of the 2018 Kauai CASPER were:

1. Assess emergency supplies and evacuation plans
2. Assess current health status and medical supplies
3. Assess disaster communication preferences
4. Assess public perception of state and county departments as well as familiarity with their emergency preparedness resources
5. Assess impact of recent April 2018 flood
6. Assess resident use of mosquito repellent and baseline efforts to eliminate mosquito breeding sites

METHODS

CASPER Sampling Methodology

CASPER is a validated two-stage cluster sampling methodology developed by the Centers for Disease Control and Prevention (CDC) to rapidly obtain information about the health and resource needs of a community that is generalizable to the entire area of interest. The first step involves the selection of a sampling frame, meaning the entire area from which you select your sample and to which you will generalize the data to.

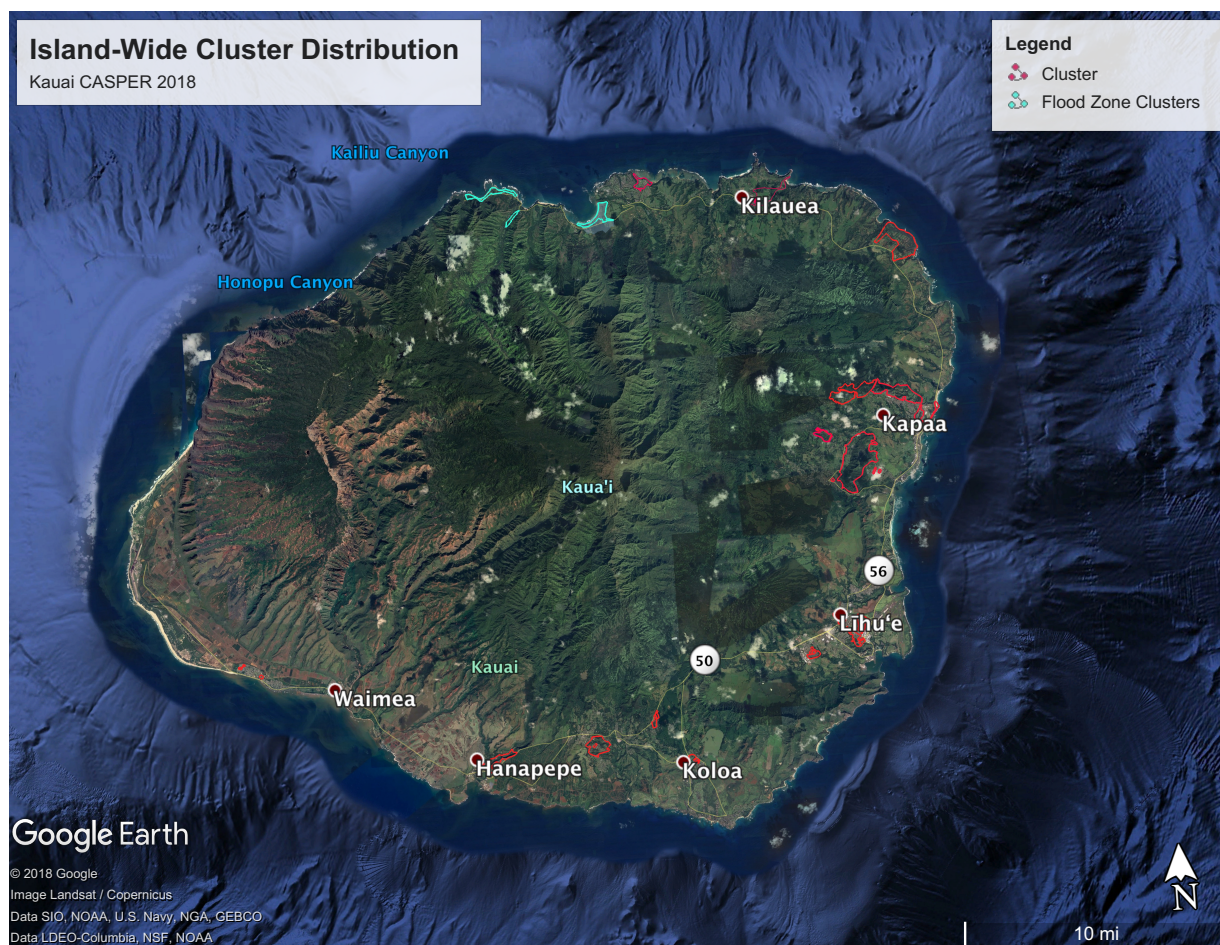
Once the sampling frame is determined, the first sampling stage involves the random selection of thirty census blocks, which are then termed “clusters”. The probability of a census block being selected is proportional to the number of housing units located within it. Once the thirty clusters are selected, the second stage of sampling is completed by the survey teams in the field and involves systematic selection of seven households per cluster. These homes are selected systematically by dividing the total number of housing units in the cluster by seven to determine your “n” and attempting to interview every “nth” house.

For the purposes of this assessment, the sampling frame was the County of Kauai. 2010 census block data was used to select thirty clusters via random number generation. Kauai has a total of 2,975 census blocks, 29,793 total housing units, 23,240 occupied housing units and an estimated population of 72,000. As a major tourist destination, many household units are not occupied by residents and are classified as “vacant” in census data. Since visitors were not part of the target population and would impact cooperation and contact rates, the selection of clusters for the 2018 Kauai CASPER was completed using occupied housing data rather than total housing data. This decision was informed by previous experience conducting a CASPER on Kauai in August 2017. After the selection of thirty random clusters, it was noted that none of them were located in the area most heavily impacted by the April 2018 flood. In order to collect data from this important target population, three random census blocks from the flood impact area were selected via random number generation. Weighting was done separately for these clusters and are referred to as “flood clusters” throughout this report. Data from the flood zone clusters is only generalizable to that sampling frame (Hanalei to Wainiha) rather than being representative of the entire island as with the standard clusters. Please see Figure 1 below for a map of the selected clusters.

KAUAI EMERGENCY PREPAREDNESS CASPER FINAL REPORT

Figure 1: Island-wide Cluster Distribution

The 30 selected clusters are outlined in red. Due to the fact that no clusters were selected in the area most impacted by the 2018 flood, an additional three clusters were selected via random number generation between Hanalei and Haena and are outlined in teal. These clusters were assessed separately and are termed “flood clusters” throughout this document.



Questionnaire

The 2018 Kauai CASPER questionnaire was developed by the Public Health Preparedness program of the Department of Health’s Kauai District Health Office, with input from our District Health Officer, Vector Control Program, and the Kauai Emergency Management Agency. The form included questions that addressed basic household information, health status, emergency supplies, evacuation plans, mosquito activity, communication preferences and impact from the April 2018 flood. All questions were worded in order to collect household-level data. Forms were not translated to other languages but survey teams were informed of the available translation services as well as request procedures from the operations team.

Training and Survey Teams

Survey teams were comprised of Department of Health staff with support from the Kauai Emergency Management Agency, American Red Cross, and Kauai Medical Reserve Corps. All team members were required to attend an in-person training. Alternatively, they received just-in-time training and were paired with a more experienced team member. Between July 20-23, a total of twenty-two survey teams were deployed to conduct door-to-door surveys in the thirty-three randomly selected clusters. Within each cluster, seven households were systematically selected for participation with an ultimate target of 231 completed surveys (30 traditional clusters + 3 flood clusters x 7 surveys per cluster). Survey teams provided selected households with a letter from the Kauai District Health Officer introducing the goals of the CASPER and obtained verbal consent before proceeding. To be eligible to participate, respondents had to reside on island at least six months per year and be over the age of 18. Upon request, participants were provided a copy of the introduction and consent form. Survey participants were given drawstring backpacks, first aid kits, waterproof bags for storage of important documents as well as educational materials on emergency preparedness, tsunamis, hurricanes, flood insurance, hurricane insurance, ballistic missile guidance, mental health resources, rat lungworm disease, leptospirosis, and mosquito-borne diseases. Households that refused to participate in the survey also received the waterproof bags for storage of important documents and all educational materials. Translation services were available via telephone but were not requested by any selected households.

RESULTS

Survey data was entered and analyzed using Epi Info 7 software. In the traditional thirty clusters, survey teams attempted to contact 398 households, spoke with a resident at 290 households, and ultimately completed a total of 190 interviews. In the flood clusters, survey teams attempted to contact 30 households, spoke with a resident at 17 households, and ultimately completed a total of 13 interviews. Please see calculated response rates for traditional and flood clusters below.

Response Rates	Traditional Clusters (n=190)	Flood Clusters (n=13)
Completion rate: represents how close we came to collecting the target # of interviews (# of completed surveys / target # of surveys)	90.5%	61.9%
Cooperation Rate: represents the willingness of the community to participate (# of completed surveys / # of households where contact was made)	63.1%	76.5%
Contact Rate: represents the proportion of households where contact was attempted and an interview completed (# of completed surveys / # of households where contact was attempted)	46.0%	43.3%

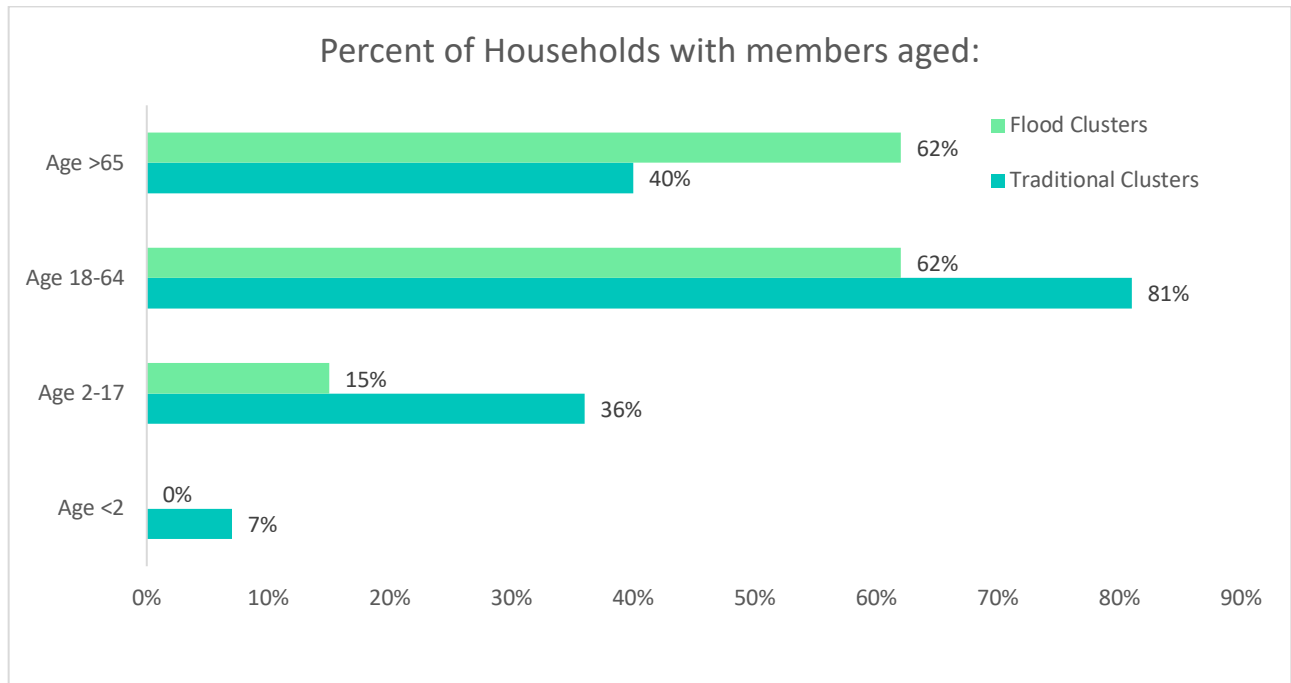
During analysis, each completed interview was assigned a weight based on the likelihood of that household to have been selected for participation. Weighted and unweighted data as well as 95% confidence intervals are provided for both the traditional clusters and the flood clusters throughout this report. Data for the traditional clusters is presented side-by-side to that of the flood clusters for easy comparison purposes. However, the data points discussed throughout this report refers to weighted data from the traditional clusters since this is what should be used when making observations and drawing conclusions regarding the entire population of Kauai. Survey results are grouped by subject matter and summarized in data tables on the following pages.

Basic Household Information

Most of the housing units surveyed were owner-occupied (67%) single family homes (75%). The mean and median of household size were 3.26 and 3 respectively. Only 2% of households reported having a household member who was pregnant and 1% reported having a non-English speaking adult. 11.5% of households reported having a family member who has serious difficulty hearing and 8% had a member who has serious difficulty seeing even when wearing glasses. Half of Kauai households (49%) reported having a family member trained in first aid, CPR, or community emergency response team (CERT) in the past five years.

**KAUAI EMERGENCY PREPAREDNESS CASPER
FINAL REPORT**

	Standard Clusters					Additional Flood Zone Clusters				
	Frequency	% of HH	Projected HH	Weighted %	95% CI	Frequency	% of HH	Projected HH	Weighted %	95% CI
What type of structure is this?										
Single Family	145	76.32	17447.64	75.58	75.02-76.13	12	92.31	483.56	94.44	92.11-96.12
Multiple Unit	45	23.68	5636.63	24.42	23.87-24.98	1	7.69	28.44	5.56	3.88-7.89
Mobile Home	0	0.00	0.0	0.00	--	0	0.00	0.0	0.00	--
Do you own or rent this residence?										
Own	128	67.37	15358.29	66.53	65.92-67.14	8	61.54	369.78	72.22	68.19-75.93
Rent	58	30.53	7281.87	31.54	30.95-32.15	4	30.77	113.78	22.22	18.84-26.02
Other	4	2.11	444.11	1.92	1.75-2.11	1	7.69	28.44	5.56	3.88-7.89
DK	1	0.53	110.67	0.48	0.40-0.58	0	0.00	0	0.00	--
Does anyone in your household have serious difficulty hearing?										
Yes	21	11.05	2648.62	11.47	11.07-11.89	1	7.69	28.44	5.56	3.88-7.89
No	168	88.42	20241.98	87.69	87.26-88.10	12	92.31	483.56	94.44	92.11-96.12
DK	1	0.53	193.67	0.84	0.73-0.97	0	0.00	0	0.00	--
Does anyone in your household have serious difficulty seeing, even when wearing glasses?										
Yes	13	6.84	1840.76	7.97	7.63-8.33	1	7.69	28.44	5.56	3.88-7.89
No	175	92.11	21003.73	90.99	90.61-91.35	12	92.31	483.56	94.44	92.11-96.12
DK	2	1.05	239.78	1.04	0.92-1.18	0	0.00	0	0.00	--
In the past 5 years, have you or anybody in your household taken training in first aid, CPR, or community emergency response team (CERT)?										
Yes	94	49.47	11372.84	49.27	48.62-49.91	3	23.08	85.33	16.67	13.69-20.14
No	95	50.00	11600.76	50.25	49.61-50.90	9	69.23	398.22	77.78	73.98-81.16
DK	1	0.53	110.67	0.48	0.40-0.58	1	7.69	28.44	5.56	3.88-7.89



**KAUAI EMERGENCY PREPAREDNESS CASPER
FINAL REPORT**

Health Status

In order to determine the percentage of households with a family member who might need additional assistance during an emergency, information was collected on mobility issues, durable medical equipment needs, mental health concerns and medication needs. 47% of households surveyed had a member with at least one of the following health conditions: asthma, COPD, emphysema, diabetes, developmental disability, hypertension, heart disease, immunosuppression, physical disability, mental illness, seizure disorder or epilepsy. 16% of households surveyed had a member with at least one of the following medical needs: medication that requires refrigeration, dialysis, home health care, oxygen supply, wheelchair, cane, walker, or other type of specialty care. 64% of households had at least one family member who requires daily medication.

	Standard Clusters					Additional Flood Zone Clusters				
	Frequency	% of HH	Projected HH	Weighted %	95% CI	Frequency	% of HH	Projected HH	Weighted %	95% CI
Asthma/COPD/Emphysema										
Yes	44	23.16	5372.47	23.27	22.73-23.83	3	23.08	85.33	16.67	13.69-20.14
No	144	75.79	17427.76	75.50	74.94-76.05	10	76.93	426.67	83.33	79.86-86.13
DK	2	1.05	284.04	1.23	1.10-1.38	0	0.00	0	0.00	--
Diabetes										
Yes	42	22.11	5357.71	23.21	22.67-23.76	1	7.69	28.44	5.56	3.88-7.89
No	146	76.84	17486.78	76.79	76.51-76.30	12	92.31	483.56	94.44	92.11-96.12
DK	2	1.05	239.78	1.04	0.92-1.18	0	0.00	0	0.00	--
Developmental Disability										
Yes	7	3.68	818.93	3.55	3.32-3.79	1	7.69	28.44	5.56	3.88-7.89
No	180	94.74	21870.62	94.74	94.45-95.02	12	92.31	483.56	94.44	92.11-96.12
DK	3	1.58	394.71	1.71	1.55-1.89	0	0.00	0	0.00	--
Hypertension/Heart Disease										
Yes	56	29.75	6993.73	30.30	29.71-30.89	4	30.77	256	50.00	45.69-54.31
No	132	69.47	15850.76	68.66	68.06-69.26	9	69.23	256	50.00	45.69-54.31
DK	2	1.05	239.78	1.04	0.92-1.18	0	0.00	0	0.00	--
Immunosuppression										
Yes	4	2.11	575.47	2.49	2.30-2.70	1	7.69	28.44	5.56	3.88-7.89
No	181	95.26	21918.58	94.95	94.66-95.23	12	92.31	483.56	94.44	92.11-96.12
DK	5	2.63	590.22	2.56	2.36-2.77	0	0.00	0	0.00	--
Physical Disability										
Yes	19	10.00	2445.73	10.59	10.20-11.00	2	15.38	56.89	11.11	8.67-14.13
No	170	89.47	20509.42	88.85	88.43-89.25	11	84.62	455.11	88.89	85.87-91.33
DK	1	0.53	129.11	0.56	0.47-0.66	0	0.00	0	0.00	--
Psychosocial/Mental Illness										
Yes	11	5.79	1280.04	5.55	5.26-5.85	2	15.38	56.89	11.11	8.67-14.13
No	178	93.68	21675.11	93.90	93.58-94.20	11	84.62	455.11	88.89	85.87-91.33
DK	1	0.53	129.11	0.56	0.47-0.66	0	0.00	0	0.00	--
Seizure Disorder/Epilepsy										
Yes	8	4.21	973.87	4.22	3.97-4.49	0	0.00	0	0.00	--
No	181	95.26	21981.29	95.22	94.94-95.49	13	100	512	100	100-100
DK	1	0.53	129.11	0.56	0.47-0.66	0	0.00	0	0.00	--

**KAUAI EMERGENCY PREPAREDNESS CASPER
FINAL REPORT**

	Standard Clusters					Additional Flood Zone Clusters				
	Frequency	% of HH	Projected HH	Weighted %	95% CI	Frequency	% of HH	Projected HH	Weighted %	95% CI
Medication that requires refrigeration										
Yes	15	7.89	1934.82	8.38	8.03-8.75	0	0.00	0	0.00	--
No	172	90.53	20754.73	89.91	89.51-90.29	13	100	512	100	100-100
DK	3	1.58	394.71	1.71	1.55-1.89	0	0.00	0	0.00	--
Dialysis										
Yes	0	0	0	0.00	--	0	0.00	0	0.00	--
No	1	0.53	22844.49	99.44	99.33-99.53	13	100	512	100	100-100
DK	188	99.47	129.11	0.56	0.47-0.67	0	0.00	0	0.00	--
Home health care										
Yes	7	3.68	818.93	3.55	3.32-3.79	0	0.00	0	0.00	--
No	182	95.79	22136.22	95.89	95.63-96.14	13	100	512	100	100-100
DK	1	0.53	129.11	0.56	0.47-0.66	0	0.00	0	0.00	--
Oxygen supply										
Yes	5	2.63	597.60	2.59	2.39-2.80	0	0.00	0	0.00	--
No	184	96.84	22357.56	96.85	96.62-97.07	13	100	512	100	100-100
DK	1	0.53	129.11	0.56	0.47-0.66	0	0.00	0	0.00	--
Wheelchair/cane/walker										
Yes	15	7.89	1940.36	8.41	8.05-8.77	1	7.69	28.44	5.56	3.88-7.89
No	174	91.58	21014.80	91.04	90.66-91.40	12	92.31	483.56	94.44	92.11-96.12
DK	1	0.53	129.11	0.56	0.47-0.66	0	0.00	0	0.00	--
Other type of special care										
Yes	1	0.53	110.67	0.48	0.40-0.58	0	0.00	0	0.00	--
No	188	98.95	22844.49	98.96	98.82-99.08	13	100	512	100	100-100
DK	1	0.53	129.11	0.56	0.47-0.66	0	0.00	0	0.00	--

Emergency Supplies

The majority of Kauai residents have an emergency supply kit (79%) and a first aid kit (86%). However, only 29% have an emergency generator. 64% of households had at least one family member who takes prescribed medication. Of these, 72% had the recommended 14-day supply of all prescription medication. Most residents have a 3-day supply of non-perishable food (92%) and water (74%). However, these percentages go down dramatically when it comes to the recommended 14-day supply of non-perishable food (41%) and water (20%). Only 14% of Kauai households reported having a 14-day supply of both food and water. Even though most Kauai residents don't have the recommended supply of food and water, 84% reported believing it was very important to have emergency supplies on hand for disaster preparation. This inconsistency might be partially explained by the fact that only 31% of households indicated that they were aware of the recommendation that all Hawaii residents maintain a 14-day supply of food and water. In order to further understand why families do not have emergency kits while expressing belief that it was important or very important to be prepared for emergencies, households were asked about the main barrier that prevented them from putting together an emergency kit. Although some households reported financial issues (11%), storage space issues (14%), or time constraints (17%) as their main barrier, the majority of households simply hadn't gotten around to putting together a kit and did not perceive any barriers (44%).

**KAUAI EMERGENCY PREPAREDNESS CASPER
FINAL REPORT**

	Standard Clusters					Additional Flood Zone Clusters				
	Frequency	% of HH	Projected HH	Weighted %	95% CI	Frequency	% of HH	Projected HH	Weighted %	95% CI
An emergency supply kit										
Yes	150	78.95	18296.49	79.26	78.73-79.78	10	76.92	426.67	83.33	79.86-86.31
No	39	20.53	4677.11	20.26	19.75-20.78	3	23.08	85.33	16.67	13.69-20.14
DK	1	0.53	110.67	0.48	0.40-0.58	0	0.00	0	0.00	--
A first aid kit										
Yes	164	86.32	19834.36	85.92	85.47-86.36	9	69.23	256	50.00	45.69-54.31
No	25	13.16	3120.80	13.52	13.08-13.97	4	30.77	256	50.00	45.69-54.31
DK	1	0.53	129.11	0.56	0.47-0.66	0	0.00	0	0.00	--
An emergency generator										
Yes	54	28.42	6760.93	29.29	28.70-29.88	3	23.08	85.33	16.67	13.69-20.14
No	129	67.89	15447.22	66.92	66.31-67.52	10	76.92	426.67	83.33	79.86-86.31
DK	7	3.68	876.11	3.80	3.56-4.05	0	0.00	0	0.00	--
Smoke detectors										
Yes	164	86.32	20099.96	87.07	86.86-87.50	7	53.85	341.33	66.67	62.47-70.61
No	24	12.63	2744.54	11.89	11.48-12.31	6	46.15	170.67	33.33	29.39-37.52
DK	2	1.05	239.78	1.04	0.92-1.18	0	0.00	0	0.00	--
A fire extinguisher										
Yes	132	69.47	16247.31	70.38	69.79-70.97	5	38.46	142.44	27.78	24.07-31.81
No	55	28.95	6586.51	28.53	27.95-29.12	8	61.54	369.78	72.22	68.19-75.93
DK	3	1.58	250.44	1.08	0.96-1.23	0	0.00	0	0.00	--
Enough drinking water for the next 3 days (1gal./person/day)										
Yes	141	74.21	17075.07	73.97	73.40-74.53	9	69.23	256	50.00	45.69-54.31
No	47	24.74	5787.87	25.07	24.52-25.64	4	30.77	256	50.00	45.69-54.31
DK	2	1.05	221.33	0.96	0.84-1.09	0	0.00	0	0.00	--
Enough drinking water for 7 days										
Yes	76	40.21	9537.22	41.51	40.88-42.15	7	53.85	199.11	38.89	34.76-43.18
No	110	58.20	13104.38	57.04	56.40-57.68	6	46.15	312.89	61.11	56.82-65.24
DK	3	1.59	332	1.45	1.30-1.61	0	0.00	0	0.00	--
Enough drinking water for 14 days										
Yes	38	20.11	4645.76	20.22	19.71-20.75	5	38.46	142.44	27.78	24.07-31.81
No	146	77.25	17608.51	76.65	76.10-77.19	8	61.54	369.78	72.22	68.19-75.93
DK	5	2.65	719.33	3.13	2.91-3.36	0	0.00	0	0.00	--
Enough non-perishable food for the next 3 days										
Yes	174	91.58	21136.53	91.56	91.20-91.91	13	100	512	100	100-100
No	16	8.42	1947.73	8.44	8.09-8.80	0	0.00	0	0.00	--
DK	0	0.00	0.00	0.00%	--	0	0.00	0	0.00	--
Enough non-perishable food for 7 days										
Yes	136	71.58	16709.87	72.39	71.81-72.96	7	53.85	199.11	38.89	34.76-43.18
No	48	25.26	5710.40	24.74	24.18-25.30	6	46.15	312.89	61.11	56.82-65.24
DK	6	3.16	664	2.88	2.67-3.10	0	0.00	0	0.00	--
Enough non-perishable food for 14 days										
Yes	76	40.21	9408.11	40.95	40.32-41.59	7	53.85	199.11	38.89	34.76-43.18
No	105	55.56	12578.71	54.75	54.11-55.40	6	46.15	312.89	61.11	56.82-65.24
DK	8	4.23	986.78	4.30	4.04-4.57	0	0.00	0	0.00	--
A 7-day supply of medication for each person who takes prescribed medication										
Yes	121	63.68	14848.82	64.32	63.70-64.94	8	61.54	369.78	72.22	68.19-75.93
No	44	23.16	5236.38	22.68	22.15-23.23	4	30.77	113.78	22.22	18.84-26.02
DK	2	1.05	221.33	0.96	0.84-1.09	0	0.00	0	0.00	--
N/A	23	12.11	2777.73	12.03	11.62-12.46	1	7.69	28.44	5.56	3.88-7.89
A 14-day supply of medication										
Yes	108	57.14	13410.16	58.37	57.73-59.01	6	46.15	170.67	33.33	29.39-37.53

KAUAI EMERGENCY PREPAREDNESS CASPER FINAL REPORT

No	54	28.57	6343.04	27.61	27.04-28.19	5	38.46	142.22	27.78	24.07-31.81
DK	4	2.12	442.67	1.93	1.76-2.11	1	7.69	170.67	33.33	29.39-37.53
N/A	23	12.17	2777.73	12.09	11.68-12.52	1	7.69	28.44	5.56	3.88-7.89
Hawaii Emergency Management Agency increased the recommended amount of emergency supplies for all Hawaii residents from 7 days to 14 days' worth. Have you heard about this change?										
Yes	60	31.58	7150.11	30.97	30.38-31.57	3	23.08	85.33	16.67	13.69-20.14
No	126	66.32	15491.49	67.11	66.50-67.71	10	76.92	426.67	83.33	79.86-86.31
DK	4	2.11	442.67	1.92	1.75-2.10	0	0.00	0	0.00	--

	Standard Clusters					Additional/Flood Zone Clusters				
	Frequency	% of HH	Projected HH	Weighted %	95% CI	Frequency	% of HH	Projected HH	Weighted %	95% CI
How important do you think it is to have emergency supplies on hand for disaster preparation?										
Very Important	159	83.68	19260.73	83.44	82.95-83.91	11	84.62	312.89	61.11	56.82-65.24
Somewhat Important	29	15.26	3602.20	15.60	15.14-16.08	2	15.38	199.11	38.89	34.76-43.18
Not Important	0	0.00	0.0	0.00	--	0	0.00	0.0	0.00	--
DK	2	1.05	221.33	0.96	0.84-1.09	0	0.00	0.0	0.00	--

	Standard Clusters					Additional Flood Zone Clusters				
	Frequency	% of HH	Projected HH	Weighted %	95% CI	Frequency	% of HH	Projected HH	Weighted %	95% CI
Emergency Kit Barrier										
Financial	21	11.11	2501.07	10.83	10.49-11.30	2	16.67	56.89	11.76	9.19-14.94
Storage space	28	14.81	3312.62	14.35	13.97-14.88	1	8.33	28.44	5.88	4.11-8.35
Lack of knowledge regarding what we need	12	6.35	1372.27	5.94	5.67-6.29	0	0.00	0	0.00	--
Lack of time to put emergency supplies together	33	17.46	3936.04	17.05	16.65-17.63	1	8.33	28.44	5.88	4.11-8.35
Nothing	81	42.86	10142.2	43.94	43.51-44.79	8	66.67	369.78	76.47	72.49-80.03
DK	13	6.88	1515.73	6.57	6.28-6.93	0	0.00	0	0.00	--
Refused	1	0.53	193.67	0.84	0.73-0.97	0	0.00	0	0.00	--

Evacuation Plans

A majority of households have an emergency communication plan (60%), designated meeting place outside their home (51%) and copies of important documents in a safe location (69%). However, only 20% of households had all of the recommended emergency plans. If asked to evacuate due to a hurricane or other emergency, most households said they would shelter with friends/family (49%), evacuate to a public shelter (27%), or choose not to evacuate (14%). The main barriers identified that might prevent households from evacuating when asked to do so included: concern about leaving property (15%), concern about leaving pets/livestock (10%), and uncertainty about where to go (11%). 38% of households did not identify a barrier to evacuation.

**KAUAI EMERGENCY PREPAREDNESS CASPER
FINAL REPORT**

	Standard Clusters					Additional Flood Zone Clusters				
	Frequency	% of HH	Projected HH	Weighted %	95% CI	Frequency	% of HH	Projected HH	Weighted %	95% CI
An emergency communications plan such as a list of numbers and designated out-of-town contact										
Yes	111	58.42	13735.18	59.5	58.87-60.13	11	84.62	312.89	61.11	56.82-65.24
No	77	40.53	9127.76	39.4	38.91-40.17	2	15.38	199.11	38.89	32.76-43.18
DK	2	1.05	221.33	0.96	0.84-1.09	0	0.00	0	0.00	--
Designated meeting place immediately outside your home or close by in your neighborhood										
Yes	96	50.53	9915.33	50.85	42.32-43.59	8	61.54	227.56	44.44	40.20-48.77
No	92	49.47	12150.8	48.19	51.99-53.28	5	38.46	284.44	55.56	51.23-59.80
DK	2	1.05	1018.13	0.96	4.15-4.68	0	0.00	0	0.00	--
Designated meeting place outside your neighborhood in case you cannot return home										
Yes	82	43.16	9915.33	42.93	42.32-43.59	11	84.62	312.89	61.11	56.82-65.24
No	100	52.63	12150.80	52.64	51.99-53.28	2	15.38	199.11	38.89	32.76-43.18
DK	8	4.21	1018.13	4.41	4.15-4.68	0	0.00	0	0.00	--
Copies of important documents in a safe location (e.g. waterproof container)										
Yes	130	68.42	15850.36	68.66	68.06-69.26	12	92.31	483.56	94.44	92.11-96.12
No	57	30.00	6901.91	29.90	29.31-30.49	1	7.69	28.44	5.56	3.88-7.89
DK	3	1.58	332.00	1.44	1.29-1.60	0	0.00	0	0.00	--

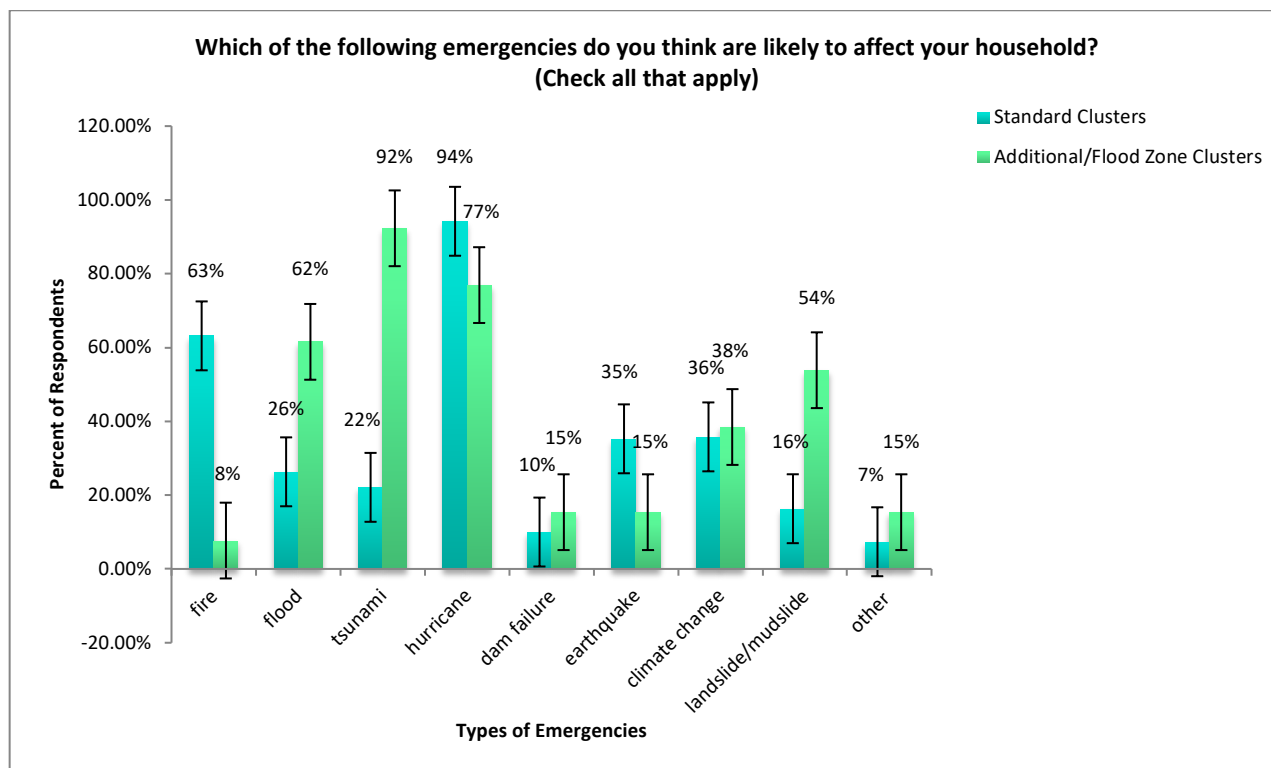
	Standard Clusters					Additional Flood Zone Clusters				
	Frequency	% of HH	Projected HH	Weighted %	95% CI	Frequency	% of HH	Projected HH	Weighted %	95% CI
Evacuation plan										
Friends/family/2 nd home outside your area	92	48.42	11260.33	48.78	48.13-49.42	7	53.86	199.11	38.89	34.76-43.18
Hotel or motel	7	3.68	881.64	3.82	3.58-4.07	0	0.00	0	0.00	--
American Red Cross, church, or community shelter	52	27.37	6274.4	27.18	26.61-27.76	0	0.00	0	0.00	--
Would not evacuate	27	14.21	3251.36	14.08	13.64-14.54	6	46.15	312.89	61.11	56.82-65.24
Other	7	3.68	863.2	3.74	3.50-3.99	0	0.00	0	0.00	--
DK	4	2.11	442.67	1.92	1.75-2.10	0	0.00	0	0.00	--
Refused	1	0.53	110.67	0.48	0.40-0.58	0	0.00	0	0.00	--

	Standard Clusters					Additional/Flood Clusters				
Barrier to Evacuation	Frequency	% of HH	Projected HH	Weighted %	95% CI	Frequency	% of HH	Projected HH	Weighted %	95% CI
Concern about leaving property	28	14.74	3563.47	15.44	14.98-15.91	3	23.08	85.33	16.67	13.69-20.14
Lack of transportation	9	4.74	1173.07	5.08	4.81-5.37	0	0.00	0	0.00	--
Uncertainty about where to go	20	10.53	2427.29	10.51	10.13-10.92	0	0.00	0	0.00	--
Health or mobility issues	7	3.68	907.47	3.93	3.69-4.19	0	0.00	0	0.00	--
Concern about leaving livestock or pets	19	10.00	2235.47	9.68	9.31-10.07	1	7.69	170.67	33.33	29.39-37.53
Inconvenient or expensive	7	3.68	863.20	3.74	3.50-3.99	0	0.00	0	0.00	--
Lack of trust in public officials	9	4.74	1147.24	4.97	4.70-5.26	0	0.00	0	0.00	--
None	75	39.47	8824.87	38.23	37.60-38.86	2	15.38	56.89	11.11	8.67-14.13
DK	6	3.16	708.27	3.07	2.85-3.30	0	0.00	0	0.00	--
Other	0	0.00	0	0.00	--	7	53.85	199.11	38.89	34.76-43.18

KAUAI EMERGENCY PREPAREDNESS CASPER FINAL REPORT

A majority of households (65%) reported having hurricane insurance, while only 26% reported having flood insurance. When asked which emergencies were likely to affect their households, most residents identified hurricanes (94%), fire (63%), climate change (36%), earthquakes (35%), and floods (26%). Since this was asked at the household level and therefore tied significantly to the location of the household which is not tied to the survey data, the usefulness of this question and associated responses is limited.

	Standard Clusters					Additional/Flood Zone Clusters				
	Frequency	% of HH	Projected HH	Weighted %	95% CI	Frequency	% of HH	Projected HH	Weighted %	95% CI
Does your household have flood insurance?										
Yes	47	24.74	5918.02	25.64	25.08-26.20	3	23.08	85.33	16.67	13.69-20.14
No	101	53.16	12322.73	53.38	52.74-54.02	10	76.92	426.67	83.33	79.86-86.31
DK	42	22.11	4843.51	20.98	20.46-21.51	0	0.00	0.0	0.00	--
Does your household have hurricane insurance?										
Yes	125	65.79	15009.29	65.02	64.60-65.63	5	38.46	284.44	55.56	51.23-59.80
No	29	15.26	3939.73	17.07	16.59-17.56	7	53.85	199.11	38.89	34.76-43.18
DK	36	18.95	4135.24	17.91	17.42-18.41	1	7.69	28.44	5.56	3.88-7.89

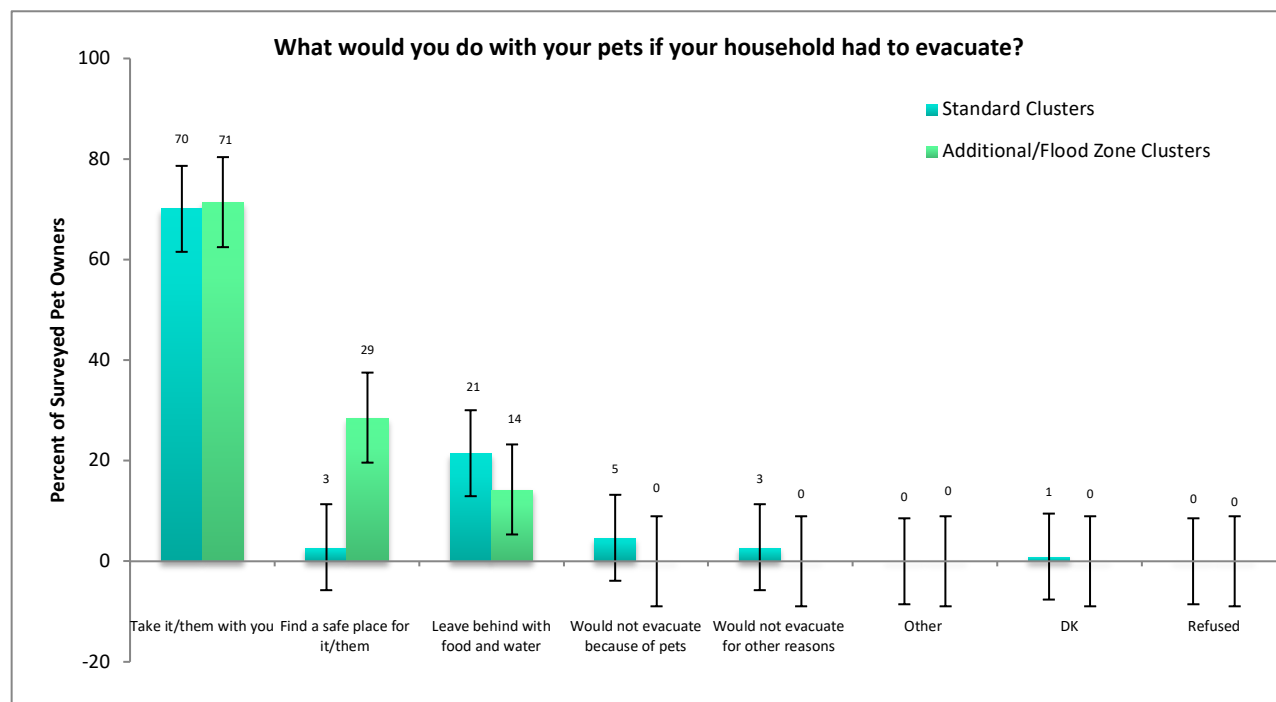


KAUAI EMERGENCY PREPAREDNESS CASPER FINAL REPORT

Pets

Since pet ownership is a known barrier to evacuation and a significant challenge during shelter operations, Kauai households were assessed for pet ownership and pet evacuation plans. 55% of Kauai households reported having pets and most (70%) indicated they would take their pets with them if required to evacuate. However, 31% of these households reported that they did not have supplies for their pets in their emergency kits. For Kauai households with pets, the weighted average was 2.95 pets per household.

	Standard Clusters					Additional Flood Zone Clusters				
	Frequency	% of HH	Projected HH	Weighted %	95% CI	Frequency	% of HH	Projected HH	Weighted %	95% CI
Do you have a pet(s)?										
Yes	107	56.32	12709.67	55.06	54.54-55.70	11	84.62	455.11	88.89	85.87-91.33
No	83	43.68	10374.60	44.94	44.30-45.58	2	15.38	56.89	11.11	8.67-14.13
DK	0	0.00	0.0	0.00	--	0	0.00	0	0.00	--
Do you have supplies for your pet(s) in your emergency kit?										
Yes	73	68.22	8795.76	69.21	68.40-70.00	6	54.55	170.67	37.50	33.17-42.04
No	34	31.78	3913.91	30.79	30.00-31.60	5	45.45	284.44	62.50	57.96-66.83
DK	0	0.00	0.0	0.00	--	0	0.00	0	0.00	--



Communication Preferences

It is important for emergency management officials to understand where their residents go for emergency information. Therefore, the survey instrument included questions regarding emergency communication preferences. 62% of households have signed up for weather and other

**KAUAI EMERGENCY PREPAREDNESS CASPER
FINAL REPORT**

disaster-related alerts but only 31% were familiar with the Kauai Emergency Management Agency's website where they can access preparedness materials to better prepare for emergencies. Most households identified their primary source of disaster-related information as: automated call/message (30%), TV (29%), social media (11%) or other (15%). The most frequently cited 'other' responses included radio and word of mouth. When asked about their primary source of health-related information, most residents identified their doctor/nurse/clinic (73%) followed by the internet (13%).

	Standard Clusters					Additional Flood Zone Clusters				
	Frequency	% of HH	Projected HH	Weighted %	95% CI	Frequency	% of HH	Projected HH	Weighted %	95% CI
Have you or anyone in your household signed up to receive weather and other disaster-related alerts?										
Yes	118	62.11	14247.93	61.72	61.09-62.35	10	76.92	426.67	83.33	79.86-86.31
No	67	35.26	8283.00	35.88	35.27-36.50	3	23.08	85.33	16.67	13.69-20.14
DK	5	2.63	553.33	2.40	2.21-2.60	0	0.00	0	0.00	--
Have you used the Kauai Emergency Management Agency's website where you can access materials to better prepare your family for emergencies?										
Yes	60	31.58	7150.11	30.97	30.38-31.57	3	23.08	85.33	16.67	13.69-20.14
No	126	66.32	15491.49	67.11	66.50-67.71	10	76.92	426.67	83.33	79.86-86.31
DK	4	2.11	442.67	1.92	1.75-2.10	0	0.00	0	0.00	--

	Standard Clusters					Additional Flood Zone Clusters				
	Frequency	% of HH	Projected HH	Weighted %	95% CI	Frequency	% of HH	Projected HH	Weighted %	95% CI
What is your main source of information regarding disaster or emergency events? (Choose only one)										
TV	55	29.10	6646.98	28.93	28.35-29.52	4	30.77	256	50.00	45.69-54.31
Automated call or message	54	28.57	6806.00	29.63	29.04-30.22	0	0.00	0	0.00	--
Internet	16	8.47	1814.93	7.90	7.56-8.26	4	30.77	113.78	22.22	18.84-26.02
Social Media (Facebook, Twitter)	22	11.64	2605.80	11.34	10.94-11.76	0	0.00	0	0.00	--
Mobile App	12	6.35	1602.82	6.98	6.65-7.31	1	7.69	28.44	5.56	3.88-7.89
Other	29	15.34	3386.40	14.74	14.29-15.20	3	23.08	85.33	16.67	13.69-20.14
DK	1	0.53	110.67	0.48	0.40-0.58	1	7.69	28.44	5.56	3.88-7.89

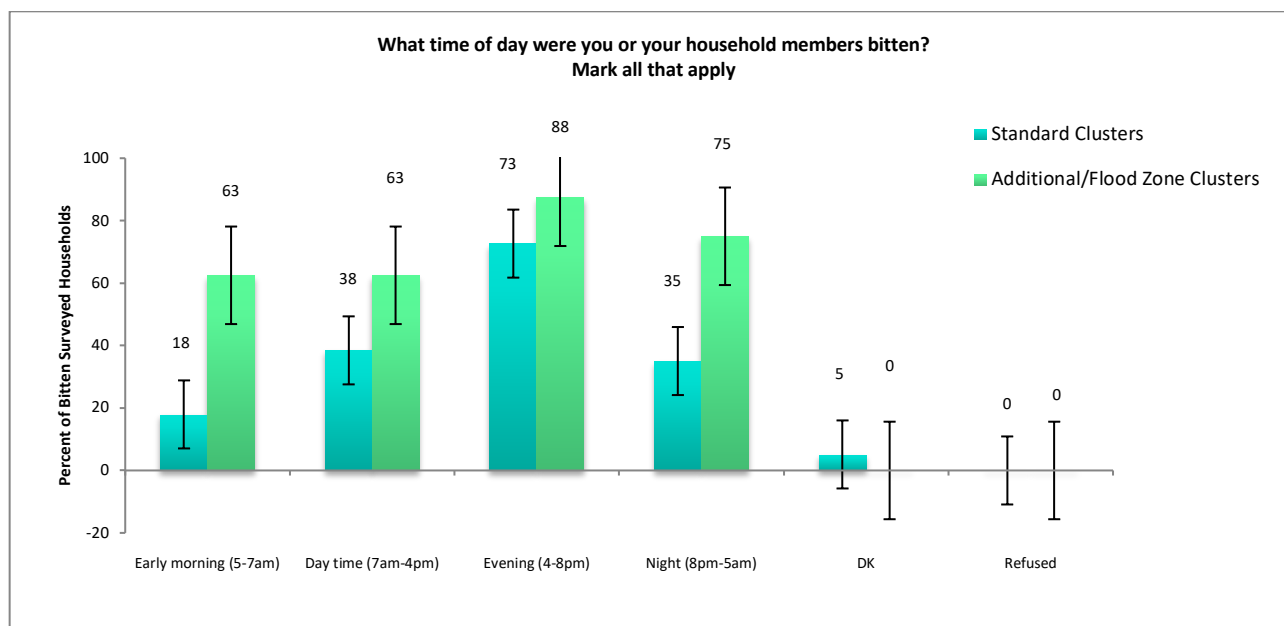
	Standard Clusters					Additional Flood Zone Clusters				
	Frequency	% of HH	Projected HH	Weighted %	95% CI	Frequency	% of HH	Projected HH	Weighted %	95% CI
What is your main source of health-related information? (Choose only one)										
Doctor/Nurse/Clinic	138	72.63	16730.56	72.48	71.90-73.05	5	38.46	284.44	55.56	51.23-59.80
Internet	23	12.11	2901.31	12.57	12.15-13.00	3	23.08	85.33	16.67	13.69-20.14
Friends and family	12	6.32	1582.53	6.86	6.54-7.19	3	23.08	85.33	16.67	13.69-20.14
Hospital	2	1.05	221.33	0.96	0.84-1.09	0	0.00	0	0.00	--
Health Department	4	2.11	442.67	1.92	1.75-2.10	0	0.00	0	0.00	--
Church/community groups	1	0.53	110.67	0.48	0.40-0.58	0	0.00	0	0.00	--
Other	7	3.68	863.20	3.74	3.50-3.99	1	7.69	28.44	5.56	3.88-7.89
DK	3	1.58	232.00	1.01	0.88-1.14	1	7.69	28.44	5.56	3.88-7.89

KAUAI EMERGENCY PREPAREDNESS CASPER FINAL REPORT

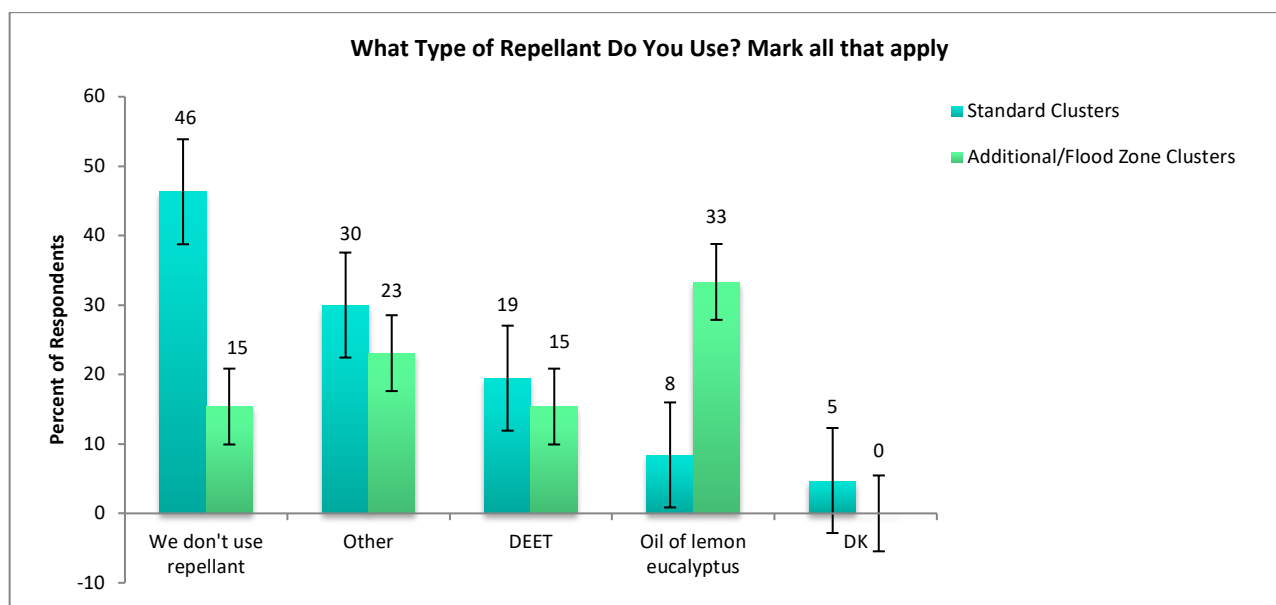
Mosquito Activity

In order to establish baseline data regarding mosquito activity, abatement efforts of Kauai residents, and personal protective measures taken, households were asked a number of questions regarding mosquitoes around their property. A majority of households (62%) reported that a member had been bitten by mosquitoes in or around their property in the past thirty days. Among households where bites occurred, 73% indicated that they occurred in the evening (4-8 p.m.). When asked about mosquito repellent use, most households reported either that they did not use repellent (46%), used products containing DEET (20%) or used products with ‘other’ (30%) active ingredients. When asked whether they believed mosquitoes on Kauai carry disease, 59% of households responded yes. However, survey teams reported that participants had trouble understanding this question and interpreted it in several ways. Due to this confusion, the response data for this question should be used with caution.

	Standard Clusters					Additional/Flood Zone Clusters				
	Frequency	% of HH	Projected HH	Weighted %	95% CI	Frequency	% of HH	Projected HH	Weighted %	95% CI
Have you or any household members been bitten by mosquitoes in or around your home within the past month?										
Yes	117	61.58	14332.78	62.09	61.46-62.71	12	92.31	483.56	94.44	92.11-96.12
No	67	35.26	8087.49	35.03	34.42-35.65	1	7.69	28.44	5.56	3.88-7.89
DK	6	3.16	664	2.88	2.67-3.10	0	0.00	0.0	0.00	--
Does your household believe that mosquitoes on Kauai carry disease?										
Yes	111	58.42	13545.60	58.68	58.04-59.31	6	46.15	170.67	33.33	29.39-37.53
No	58	30.53	7180.42	31.11	30.51-31.71	5	38.46	284.44	55.56	51.23-59.80
DK	21	11.05	2358.24	10.22	9.83-10.61	2	15.38	56.89	11.11	8.67-14.13



KAUAI EMERGENCY PREPAREDNESS CASPER FINAL REPORT



When asked whether they had taken certain actions to prevent mosquito breeding around their property in the past thirty days, a majority of households indicated that they had kept screens and windows in good repair (85%) as well as dumped or covered outdoor containers holding water (75%). However, a much smaller percentage of households indicated that they had cleaned roof gutters (23%), sprayed or fumigated (24%) or applied chemical larvicide/mosquito dunks (8%) within the past thirty days. Finally, households were asked whether they were interested in having the Department of Health's Vector Control program provide a follow-up visit to provide guidance on mosquito abatement. A total of 18 referrals (9.5%) were made upon request.

	Standard Clusters					Additional Flood Zone Clusters				
In the past 30 days, have any of the following actions been done to prevent mosquito breeding around your home?	Frequency	% of HH	Projected HH	Weighted %	95% CI	Frequency	% of HH	Projected HH	Weighted %	95% CI
Cleaned roof gutters										
Yes	43	22.63	5273.27	22.84	22.31-22.39	3	23.08	85.33	16.67	13.69-20.14
No	118	62.11	14480.33	62.73	62.10-63.35	9	69.23	398.22	77.78	73.98-81.16
DK	8	4.21	1062.40	4.60	4.34-4.88	0	0.00	0	0.00	--
N/A	20	10.53	2157.60	9.35	8.98-9.73	1	7.69	28.44	5.56	3.88-7.89
Refused	1	0.53	110.67	0.48	0.40-0.58	0	0.00	0	0.00	--
Dumped or covered outdoor containers holding water										
Yes	139	73.16	17211.96	74.56	74.00-75.12	9	69.23	256	50.00	45.69-54.31
No	49	25.79	5606.71	24.29	23.74-24.85	4	30.77	256	50.00	45.69-54.31
DK	2	1.05	265.60	1.15	1.02-1.30	0	0.00	0	0.00	--
Kept screens on windows and doors in good repair (no holes)										
Yes	160	84.21	19713.02	85.40	84.93-85.85	11	84.62	455.11	88.89	85.87-91.33
No	29	15.26	3260.58	14.12	13.68-14.58	2	15.38	56.89	11.11	8.67-14.13
DK	1	0.53	110.67	0.48	0.40-0.58	0	0.00	0	0.00	--
Sprayed or fumigated for mosquitoes around the home										

**KAUAI EMERGENCY PREPAREDNESS CASPER
FINAL REPORT**

Yes	44	23.16	5537.02	23.99	23.44-24.54	1	7.69	28.44	5.56	3.88-7.89
No	140	73.68	16750.44	72.56	71.98-73.13	12	92.3	483.56	94.44	92.11-96.12
DK	6	3.16	796.80	3.45	3.22-3.70	0	0.00	0	0.00	--
Applied chemical, larvicide, or mosquito dunks directly to water										
Yes	15	7.94	1766.98	7.69	7.35-8.04	0	0.00	0	0.00	--
No	169	89.42	20564.76	89.51	89.11-89.90	13	100	512	100	100-100
DK	5	2.65	641.87	2.79	2.59-3.02	0	0.00	0	0.00	--

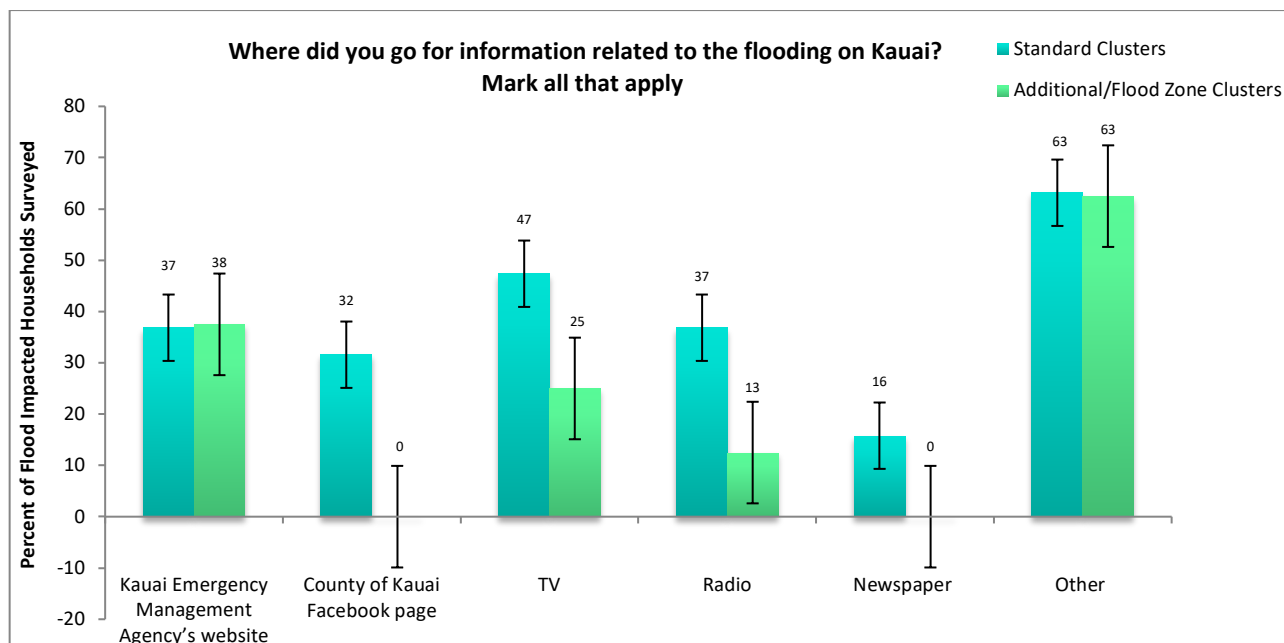
Impact from April 2018 Flood

9% of households reported having a family member who had experienced emotional distress related to the April flood or the volcanic eruption on the Big Island. Of those, 75% indicated that they knew where to seek help if they wanted it. Mental health resources and local contact numbers were provided to all households. 10% of households surveyed in the traditional clusters reported that their household had been affected by the April flood. When these two variables were assessed in a 2x2 table, it was important to note that many of the households that reported emotional distress related to flood did not report that their household was affected. In other words, the impact of the storm on mental health was much more widespread than the physical impacts. Importantly, only 11% of households that were physically affected by the flood indicated that they reported their damage to the County of Kauai, the Federal Emergency Management Agency (FEMA) or the American Red Cross. Most of these households indicated that their reason for not reporting was that they did not believe their damage to be significant enough to report. However, 32% of affected households reported that they had unmet needs related to the flood. For those who were willing to share their contact information, a referral was made to the appropriate agency (3). When asked where residents impacted by the April flood went for information, the most common response was “other” (63%) with the majority of households indicating that their source of information was word of mouth or coconut wireless.

	Standard Clusters					Additional Flood Zone Clusters				
	Frequency	% of HH	Projected HH	Weighted %	95% CI	Frequency	% of HH	Projected HH	Weighted %	95% CI
Have you or anyone in your household experienced emotional distress related to the historic flooding on Kauai or the ongoing volcanic eruption on the Big Island?										
Yes	17	8.95	2087.91	9.04	8.68-9.42	8	61.54	227.56	44.44	40.20-48.77
No	173	91.05	20996.36	90.96	90.58-91.32	5	38.46	284.44	55.56	51.23-59.60
DK	0	0.00	0.0	0.00	--	0	0.00	0	0.00	--
If yes, do you know where to seek help if you want it?										
Yes	13	76.47	1556.71	74.56	72.65-76.38	5	71.43	142.22	71.43	64.57-77.55
No	3	17.65	420.53	20.14	18.48-21.92	2	28.57	56.89	28.57	22.45-35.43
DK	1	5.88	110.67	5.30	4.42-6.35	0	0.00	0	0.00	--
Was your household affected by the historic flood in April?										
Yes	19	10.00	2405.16	10.42	10.03-10.82	12	932.31	483.56	94.44	92.11-96.12
No	170	89.47	20524.18	88.91	88.50-89.31	1	7.69	28.44	5.56	3.88-7.89
DK	1	0.53	154.93	0.67	0.57-0.79	0	0.00	0	0.00	--
If yes, did you report your damage to the County of Kauai, FEMA, or the American Red Cross?										
Yes	2	11.11	221.33	9.84	8.67-11.14	8	66.67	227.56	47.06	42.65-51.51

KAUAI EMERGENCY PREPAREDNESS CASPER FINAL REPORT

No	12	66.67	1523.51	67.70	65.74-69.61	4	33.33	256	52.94	48.49-57.35
DK	1	5.56	129.11	5.74	4.85-6.78	0	0.00	0	0.00	--
N/A	3	16.67	376.27	16.72	15.24-18.32	0	0.00	0	0.00	--
Do you have any unmet needs related to this event?										
Yes	6	31.58	789.42	32.82	30.97-34.72	6	50.00	170.67	35.29	31.17-39.65
No	13	68.42	1615.73	67.18	65.28-69.03	6	50.00	312.89	64.71	60.35-68.83
DK	0	0.00	0.0	0.00	--	0	0.00	0	0.00	--



Crosstabulation (MxN, 2x2)

Were you affected by the April flood?

	DK	No	Yes	Missing	TOTAL
Yes	0 0.00% 0.00%	12 70.59% 7.14%	5 29.41% 26.32%	0 0.00% 0.00%	17 100.00% 8.95%
No	1 0.58% 100.00%	156 90.17% 92.86%	14 8.09% 73.68%	2 1.16% 100.00%	173 100.00% 91.05%
TOTAL	1 0.53% 100.00%	168 88.42% 100.00%	19 10.00% 100.00%	2 1.05% 100.00%	190 100.00% 100.00%

Chi-square df Probability

8.0017 3 0.0460

DISCUSSION

The 2018 Kauai CASPER collected important information about the island's residents, their health status, and their preparedness levels that will help to inform state and county emergency response plans as well as enable the Department of Health to best meet the community's health needs after a disaster. Further, the 2018 Kauai CASPER enabled us to collect important information regarding impacts from the April 2018 flood and provide referrals to families with ongoing needs. The data clearly shows that additional outreach and education is needed on the importance of maintaining a 14-day supply of food, water, and prescription medications as well as the development of household emergency evacuation plans. It was clear from conversations with survey teams post-CASPER that the question regarding where households would go if asked to evacuate was not specific enough to account for the complex evacuation plans of most residents who often expressed that their plans would depend on the type, direction and strength of the hazard. In order to better inform state and county response plans, the evacuation question should be broken down into several hazard-specific questions.

Mobilizing survey teams requires extensive planning, resources, and training. Through this effort, over fifty DOH staff, partners, and vetted community volunteers have been trained on the CASPER methodology and door-to-door assessments. CASPER proved a valuable training opportunity for our staff and partners as well as an important epidemiological data assessment tool. If resources allow, the Kauai District Health office will conduct annual CASPERs to evaluate the impact of emergency preparedness education on the readiness of our community for hurricanes and other disasters.

Recommendations

Based on the results of the 2018 Kauai preparedness CASPER, the following recommendations are for emergency planners:

- 1) Further emergency preparedness education is needed on:
 - a. The state's recommendation for 14-days' worth of supplies.
 - b. Since a significant number of households identified financial (11%) and storage space (14%) barriers to the development of emergency kits, the state should develop practical recommendations on how Hawaii residents can create an emergency supply kit economically and with minimal storage space.
 - c. HDOH should develop and run ads focused on the importance of emergency supplies of prescription medications, equipment and supplies. If we expect residents to arrive at public evacuation shelters with their medical equipment, supplies, medication and caregiver, this should be communicated pre-event.
 - d. The need for pet owners to consider their pets in the development of their emergency plans and supplies.
 - e. Recommendations on sheltering-in-place versus evacuating to public shelters.
 - f. The importance of property owners in areas with heightened risk of flooding to carry flood insurance in addition to homeowner's insurance. Renters in these

areas should be encouraged to carry renter's insurance that covers their personal property in the event of a flood.

- g. The County of Kauai's emergency alert system as well as KEMA's website and the preparedness resources available there.
- 2) In order to support residents who have electricity-dependent medical equipment and/or prescription medication that requires refrigeration, the CoK, ARC and DOH should prioritize evacuation shelters for emergency generator placement. DOH should consider the purchase of low-wattage generators for use in public shelters to support the electricity-dependent medical needs of Hawaii residents who choose to evacuate to public shelters.
- 3) Re-evaluate current emergency communication methods to account for reported main household sources of information.
- 4) Continue developing and promoting post-disaster behavioral health services. The scope of residents affected by a disaster is not limited to those who are physically impacted, especially when it comes to mental health impacts.
- 5) Where resources allow, a CASPER should be completed annually on Kauai to evaluate the impact of emergency preparedness education on the readiness of our community while simultaneously furthering the development of rapid needs assessment capability of our staff and partners.
- 6) CASPER capability should be developed on each of the Hawaiian islands. Due to our natural hazards and unique vulnerabilities, it is essential that HDOH have the capacity to conduct rapid health needs assessments post-disaster. To facilitate this statewide capability, the Kauai office will develop a Hawaii-specific CASPER toolkit. Additionally, HDOH should procure a statewide cache of tablets to make the CASPER process more efficient through direct data entry.
 - a. Using occupied housing data rather than total housing data improved the CASPER process by minimizing the likelihood of selection of predominantly tourist designated areas. This should be considered a best practice for future Hawaii CASPERs.

Limitations

The data compiled in this report is based on responses from systematically selected households in thirty randomly selected census blocks within Kauai County using 2010 US Census Bureau data. Kauai County has grown significantly since the 2010 census and the weighted analysis provided does not account for new development resulting in changes to the overall number, composition and geographic location of housing units. Further, survey teams had to replace randomly selected households that refused to participate or did not answer after three attempts. Household replacement could have affected the representativeness of the data. Additionally, using census block data to select clusters and households systematically leaves out houseless residents. Houseless residents are likely to have fewer emergency supplies on hand and a higher rate of underlying health concerns. Therefore, emergency planners should account for this when using this data to inform emergency response plans. A limitation unique to the flood cluster data is that the modified methodology and small sample size makes the data less representative of the sampling frame (Hanalei to Haena).

**KAUAI EMERGENCY PREPAREDNESS CASPER
FINAL REPORT**

APPENDIX A: QUESTIONNAIRE

To be completed by team BEFORE the interview			
Date: _____	Cluster #: _____	Survey #: _____	Interviewer Names: _____
First, we are going to ask about basic household information			
Q1. What type of structure is this? <input type="checkbox"/> Single family <input type="checkbox"/> Multiple unit <input type="checkbox"/> Mobile home <input type="checkbox"/> Other _____	Q8. In the past 5 years, have you or anybody in your household taken training in first aid, CPR, or community emergency response team (CERT)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused		
Q2. Do you own or rent this residence? <input type="checkbox"/> Own <input type="checkbox"/> Rent <input type="checkbox"/> Other <input type="checkbox"/> DK <input type="checkbox"/> Refused	Q9. Have you or a member of your household ever been told by a healthcare professional that he/she has: Asthma/COPD/Emphysema <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK Diabetes <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK Developmental disability <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK Hypertension/heart disease <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK Immunosuppression <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK Physical disability <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK Psychosocial/mental illness <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK Seizure disorder/epilepsy <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK		
Q3. How many people living in your household are (list #) Less than 2 years old? ___#___ 2-17 years old? ___#___ 18-64 years old? ___#___ more than 65 years old? ___#___ <input type="checkbox"/> DK <input type="checkbox"/> Refused			
Q4. Is anyone in your household pregnant? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused	Q10. Do you or does any member of your household need: Daily medication <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK Medication that requires refrigeration <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK Dialysis <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK Home health care <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK Oxygen supply <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK Wheelchair/cane/walker <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK Other type of special care <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK		
Q4b. If yes, how many? ___#___			
Q5. Are there any adults in your household who do not speak English? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused	Q11. Does your household have any of the following emergency plans? Emergency communication plan such as a list of numbers and designated out-of-town contact <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK Designated meeting place immediately outside your home or close by in your neighborhood <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK Designated meeting place outside of your neighborhood in case you cannot return home <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK Copies of important documents in a safe location (e.g., water proof container) <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK		
Q5b. If yes, what language(s) do they speak? _____			
Q6. Does anyone in your household have serious difficulty hearing? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused	Q12. Does your household have the following emergency supplies? An emergency supply kit with supplies like water, food, flashlights, and extra batteries <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK A first aid kit <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK Enough drinking water for the next 3 days (1 gallon/person/day)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK If yes, do you have enough for 7 days ? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK If yes, do you have enough for 14 days ? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK Enough non-perishable food (e.g. canned goods, protein bars, dried fruit) for the next 3 days ? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK If yes, do you have enough for 7 days ? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK If yes, do you have enough for 14 days ? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK A 7-day supply of medication for each person who takes prescribed medication <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK If yes, do you have enough for 14 days ? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK An emergency generator <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK Smoke detectors <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK A fire extinguisher <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK		
Q7. Does anyone in your household have serious difficulty seeing, even when wearing glasses? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused			
Now we would like to ask you about your household's emergency and evacuation plans			
Q13. How important do you think it is to have emergency supplies on hand for disaster preparation? <input type="checkbox"/> Very important <input type="checkbox"/> Somewhat important <input type="checkbox"/> Not important <input type="checkbox"/> DK <input type="checkbox"/> Refused	Q15. Which of the following emergencies do you think are likely to affect your household? (Check all that apply) <input type="checkbox"/> fire <input type="checkbox"/> flood <input type="checkbox"/> tsunami <input type="checkbox"/> hurricane <input type="checkbox"/> dam failure <input type="checkbox"/> earthquake <input type="checkbox"/> climate change <input type="checkbox"/> landslide/mudslide <input type="checkbox"/> Other _____		
Q14. What is the main thing keeping your household from putting together an emergency kit? (Mark only one) <input type="checkbox"/> financial <input type="checkbox"/> storage space <input type="checkbox"/> lack of knowledge regarding what we need <input type="checkbox"/> lack of time to put emergency supplies together <input type="checkbox"/> nothing <input type="checkbox"/> DK <input type="checkbox"/> Refused	Q16. If your household were told to evacuate due to a hurricane or other emergency, where would you go? (Mark only one) <input type="checkbox"/> Friends/family/2 nd home outside your area <input type="checkbox"/> Hotel or motel <input type="checkbox"/> American Red Cross, church or community shelter <input type="checkbox"/> Would not evacuate <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Refused		

KAUAI EMERGENCY PREPAREDNESS CASPER FINAL REPORT

<p>Q17. What is the main barrier that might prevent your household from evacuating when asked to do so? <i>(Mark only one)</i></p> <p> <input type="checkbox"/> concern about leaving property <input type="checkbox"/> lack of transportation <input type="checkbox"/> uncertainty about where we would go <input type="checkbox"/> health or mobility issues <input type="checkbox"/> concern about leaving livestock or pets <input type="checkbox"/> inconvenient or expensive <input type="checkbox"/> lack of trust in public officials <input type="checkbox"/> Other _____ <input type="checkbox"/> None <input type="checkbox"/> DK <input type="checkbox"/> Refused </p>	<p>Q19. Does your household have flood insurance?</p> <p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused </p>
<p>Q18. Do you have a pet(s)?</p> <p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused <i>(if NO, please skip to Q19)</i> </p>	<p>Q20. Does your household have hurricane insurance?</p> <p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused </p>
<p>Q18b. If yes, how many? <u> # </u></p>	<p>Q21. Have you or anyone in your household experienced emotional distress related to the historic flooding on Kauai or the ongoing volcanic eruption on the Big Island?</p> <p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused </p>
<p>Q18c. If your household had to evacuate due to a hurricane or other emergency, what would you do with your pet(s)?</p> <p> <input type="checkbox"/> Take it/them with you <input type="checkbox"/> Find a safe place for it/them <input type="checkbox"/> Leave behind with food and water <input type="checkbox"/> would not evacuate because of pets <input type="checkbox"/> would not evacuate for other reasons <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Refused </p>	<p>Q21b. If yes, do you know where to seek help if you want it?</p> <p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused </p>
<p>Q18d. Do you have supplies for your pet(s) in your emergency kit?</p> <p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused </p>	<p>Q22. Was your household affected by the historic flood in April?</p> <p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused <i>(if NO, please skip to Q23)</i> </p>
<p>Q22c. Do you have any unmet needs related to the event?</p> <p> <input type="checkbox"/> Yes _____ <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused </p>	<p>Q22b. If yes, did you report your damage to the County of Kauai, FEMA, or the American Red Cross?</p> <p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused </p>
<p>Now we would like to ask you about your household communication methods</p>	
<p>Q23. What is your main source of information regarding disaster or emergency events? <i>(Mark only one)</i></p> <p> <input type="checkbox"/> TV <input type="checkbox"/> Automated call or message <input type="checkbox"/> Internet <input type="checkbox"/> Social Media (Facebook, Twitter, etc.) <input type="checkbox"/> Mobile App <input type="checkbox"/> Other, _____ <input type="checkbox"/> DK <input type="checkbox"/> Refused </p>	<p>Q25. Hawaii Emergency Management Agency (formerly known as Hawaii Civil Defense) recently increased the recommended amount of emergency supplies for all Hawaii residents from 7 days to 14 days' worth. Have you heard about this change?</p> <p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused </p>
<p>Q24. What is your main source of health-related information? <i>(Mark only one)</i></p> <p> <input type="checkbox"/> Doctor/Nurse/Clinic <input type="checkbox"/> My child's school <input type="checkbox"/> Internet <input type="checkbox"/> Other, _____ <input type="checkbox"/> Friends and family <input type="checkbox"/> DK <input type="checkbox"/> Hospital <input type="checkbox"/> Refused <input type="checkbox"/> Health Department <input type="checkbox"/> Church or other community groups </p>	<p>Q26. Have you or anyone in your household signed up to receive weather and other disaster-related alerts?</p> <p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused </p>
<p>Finally, we are going to ask you a few questions about mosquitoes and mosquito activity around your property</p>	
<p>Q28. Have you or any household members been bitten by mosquitoes in or around your home within the past month?</p> <p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused </p>	<p>Q27. Have you seen / looked at / used the Kauai Emergency Management Agency's website www.kauai.gov/kema where you can access materials to better prepare your family for emergencies?</p> <p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused </p>
<p>Q28b. If yes, what time of day were you or your household members bitten? Check all that apply.</p> <p> <input type="checkbox"/> Early morning (5am-7am) <input type="checkbox"/> Day time (7am-4pm) <input type="checkbox"/> Evening (4pm-8pm) <input type="checkbox"/> Night (8pm-5am) <input type="checkbox"/> DK <input type="checkbox"/> Refused </p>	<p>Q30. Does your household believe that mosquitoes on Kauai carry disease?</p> <p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused </p>
<p>Q29. What type of mosquito repellent does your household use? Check all that apply.</p> <p> <input type="checkbox"/> DEET <input type="checkbox"/> Picaradin <input type="checkbox"/> Oil of lemon eucalyptus <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> We don't use repellent <input type="checkbox"/> DK <input type="checkbox"/> Refused </p>	<p>Q31. In the past 30 days, have any of the following actions been done to prevent mosquito breeding around your home?</p> <p>Cleaned roof gutters</p> <p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused </p> <p>Dumped or covered outdoor containers holding water</p> <p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused </p> <p>Kept screens on windows and doors in good repair (no holes)</p> <p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused </p> <p>Sprayed or fumigated for mosquitoes around the home</p> <p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused </p> <p>Applied chemical, larvicide, or mosquito dunks directly to water</p> <p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused </p>
<p>Q32. Would you like the Department of Health's Vector Control program in Lihue to conduct a follow-up visit to provide guidance on mosquito abatement on your property?</p> <p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Refused <i>(if YES, interviewer should complete Referral Form now)</i> </p>	

Thank you for your time!

APPENDIX B: FORMS

DAVID Y. IGE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF HEALTH
KAUAI DISTRICT HEALTH OFFICE
3040 UMI STREET
LIHUE, HAWAII 96766

BRUCE S. ANDERSON, Ph.D.
DIRECTOR OF HEALTH

JANET M. BERREMAN, M.D., M.P.H., F.A.A.P.
DISTRICT HEALTH OFFICER

Community Assessment for Public Health Emergency Response

Hello, we are _____ and _____ with the Department of Health. We have some information we would like to leave with you related to emergency preparedness.

We are also talking to residents about their current preparedness level for hurricanes and other emergencies. Your house is one of many that have been randomly chosen to be in this survey. If you agree to participate, we will ask you some general questions about your house and the people who live there as well as questions about certain kinds of environmental hazards. The survey should take no more than 15 minutes to complete. We will keep your answers private and will not collect your name or address. You can refuse to be part of the survey or refuse to answer any of the questions.

If you have questions about this survey, please feel free to ask them now. If you would like to confirm that we were sent by the Hawaii State Department of Health, you can call:

Lauren Guest
Hawaii State Department of Health
Public Health Preparedness Planner
Kauai District Health Office
3040 Umi Street
(808)-241-3555

Are you willing to participate in this survey?

[WAIT FOR RESPONDENT TO CLEARLY ANSWER YES OR NO].

[IF NOT, THANK THEM FOR THEIR TIME]. Thank you very much for your time.

**KAUAI EMERGENCY PREPAREDNESS CASPER
FINAL REPORT**

BERNARD P. CARVALHO JR.
Mayor



WALLACE G. REZENTES JR.
Managing Director

COUNTY OF KAUAI

KAUAI EMERGENCY MANAGEMENT AGENCY

News Release

For Immediate Release: July 13, 2018

ELTON USHIO, ADMINISTRATOR
Tel (808) 241-1800
Fax (808) 241-1860

CASPER survey to assess emergency preparedness on Kaua'i

LĪHU'E – The Kaua'i Emergency Management Agency (KEMA) is assisting the Department of Health's (DOH) Kaua'i District Health Office to conduct a Community Assessment for Public Health Emergency Response (CASPER) survey to assess the emergency preparedness level of local residents.

Survey members will go door-to-door from July 20 through July 22, to 30 census tracts that are weighted towards more populated areas within the county. Seven houses within each tract will be systematically selected and surveyed.

Survey teams are comprised of DOH staff with support from KEMA, Kaua'i Medical Reserve Corps, American Red Cross, and the Community Emergency Response Team (CERT) volunteers.

Selected households will be asked about emergency preparedness, communication preferences, health status and evacuation plans following a disaster. Team members will have on vests identifying themselves as part of the DOH survey team and will carry identification cards. All survey responses will be confidential, and survey teams will not be collecting names or addresses.

Survey results will build upon last year's efforts to establish a baseline for the percentage of Kaua'i households that have the supplies necessary to support their families after an

KAUAI EMERGENCY PREPAREDNESS CASPER FINAL REPORT

emergency. This data will help to inform county and state emergency plans, as well as enable DOH to best meet the community's health needs following a disaster.

The CASPER survey methodology was developed by the Centers for Disease Control and Prevention as a way to rapidly assess the health and other resource needs of a community after a disaster. Alternatively, the methodology can also be used in a non-disaster scenario to assess the current preparedness levels of a community.

Kaua'i residents who have questions about the CASPER survey or the survey teams conducting the assessments can call Lauren Guest, DOH public health preparedness planner, at 241-3496.

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**KAUAI EMERGENCY PREPAREDNESS CASPER
FINAL REPORT**



DEPARTMENT OF HEALTH

DAVID Y. IGE
GOVERNOR

BRUCE S. ANDERSON, Ph.D.
DIRECTOR

FOR IMMEDIATE RELEASE

August 7, 2018

18-068

**Kaua'i District Health Office releases preliminary report for
public health emergency response following historic flooding event**

LĪHU'E, KAUA'I – After unprecedented rains caused destructive flooding and landslides this past April, the Hawai'i Department of Health's (DOH) Kaua'i District Health Office conducted an island-wide community assessment for public health emergency response (CASPER) in July 2018. The goal of this assessment was to determine resident preparedness, evacuation plans, health-related needs for natural disasters, and impact from the April 2018 flood.

Preliminary findings are available on the Department of Health's website at <http://health.hawaii.gov/kauai/>. Survey teams collected important demographic information about Kaua'i residents, their health status, preparedness levels, and evacuation plans that will help to inform state and county emergency response plans as well as enable the Department of Health to best meet the community's health needs post-disaster.

"We learned that further action is needed to make our residents more resilient to hurricanes and other emergencies, especially when it comes to preparing emergency kits with a 14-day supply of food, water and prescription medication," said Dr. Janet Berreman, Kaua'i District Health Officer. "This survey enabled us to collect critical information regarding impacts from the April 2018 flood. Survey teams made referrals to appropriate agencies for anyone wanting additional assistance."

Teams conducted household surveys from July 20 through July 23, 2018, at systematically selected homes within 30 randomly selected census blocks. The CASPER methodology, designed by the Centers for Disease Control and Prevention (CDC), provides data that is representative of the entire community.

Survey teams completed a total of 190 interviews with local residents. All responses are confidential, and survey teams did not collect names or addresses. Survey teams were comprised of DOH staff with support from the Kaua'i Emergency Management Agency, Kaua'i Medical Reserve Corps and the American Red Cross.

Berreman added, "Mobilizing survey teams requires extensive planning, resources, and training. Through this effort, more than 50 DOH staff, partners, and vetted community volunteers have

**KAUAI EMERGENCY PREPAREDNESS CASPER
FINAL REPORT**

been trained on the CASPER methodology and door-to-door assessments. The Kaua'i District Health office is excited to have developed this rapid-needs assessment capability on island to conduct future surveys."

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