Maricopa County Public Health
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Community Assessment for Public Health Emergency Response (CASPER)
Heat Vulnerability and Emergency Preparedness Needs Assessment
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Executive Summary

Maricopa County experiences extreme heat every year from May through October, with temperatures rising over 110 degrees Fahrenheit. The almost four million residents are at an increased risk for heat-associated morbidity and mortality during these months making environmental heat a significant public health concern, especially because it is preventable. From 2006 to 2014, Maricopa County experienced 691 heat-associated deaths with an average of 77 deaths per year. Thirty-seven percent (258) of these deaths occurred indoors. The risk of heat-associated death in those performing outdoor activities is understood, but risk-factors associated with indoor deaths as well as other heat-vulnerability factors are not well understood in Maricopa County. To further understand these risk factors and gain additional information about preparedness barriers and emergency risk perceptions, Maricopa County Department of Public Health (MCDPH) and partners conducted a heat vulnerability and emergency preparedness survey, using the Community Assessment for Public Health Emergency Response (CASPER) methodology.

CASPER is an epidemiologic technique designed to provide household-based information about a community in a timely and representative manner. From March 25, 2015 to March 28, 2015, MCDPH conducted two CASPERS, using the two-stage cluster sampling methodology described in the CASPER Toolkit Version 2.0. The sampling frames for the two CASPERS were defined as zip codes in Maricopa County with high incidence of heat-related hospitalizations (a total of 142,935 households) and zip codes in Maricopa County with low incidence of heat related hospitalizations (a total of 1,429,116 households). High and low incidence were defined as non-tribal zip codes with greater than or less than 100 heat-related hospitalizations per 100,000 population in Maricopa County, respectively.

Sixty four volunteers received training and were assigned to a geographical area closest to their residence zip code. Field teams administered 168 surveys (5 Spanish, 163 English) in the high incidence sample frame, and 169 surveys (8 Spanish, 161 English) in the low incidence sample frame, a completion rate of over 80% in each sampling frame. Data collected were entered into Epi Info7 and weighted frequencies were computed using SAS 9.1. The key themes are as follows:

- High incidence households had a higher proportion of adults that did not speak English compared with low incidence households.
- About one quarter of the households reported at least one member working outdoors, for both high and low incidence area, of which the majority worked the day shift between 7:30am and 3:30pm.
- For both high and low sample frames, extreme heat, power outages, and haboobs/dust storms were the top three emergencies reported to most likely affect their households.
- In the event of an emergency evacuation, over one- third of the households for both high and low incidence reported they would be “likely” or “somewhat likely” to need a provided shelter.
- One-third of the respondents reported having some type of disability.

- Over half of the households reported owning pets that they would take with them during an evacuation.

- In both high and low incidence sample frames, television, radio and internet were the main sources of information for households, regarding emergency events and excessive heat warnings.

- Approximately 10% of households in both high and low incidence areas reported, “always” or “most of the time”, feeling hot inside their homes.

- Both high and low incidence households reported using their air conditioning in both the day and evening, and the vast majority (72%) indicated that there is nothing that prevents them from using their air conditioning in both high and low incidence households.

- One quarter of Maricopa households in low and high incidence areas reported that cost of electricity was a barrier to using air conditioning and properly cooling their homes;

    - However, less than half of these households are aware of utility assistance programs.
    - Of those that were aware of utility assistance programs, only 20% have ever applied.

- In both high and low incidence sample frames, the majority reported not knowing about Heat Refuge Stations.

Based on these findings, MCDPH has established future directions outlined in the full report below.

Background

Maricopa County experiences extreme heat every year from May through October, with temperatures rising over 110 degrees Fahrenheit. These almost four million residents are at an increased risk for heat-associated morbidity and mortality during these months making environmental heat a significant public health concern, especially because it is preventable. From 2006 to 2014, Maricopa County experienced 691 heat-associated deaths with an average of 77 deaths per year. Thirty seven percent (N=258) of these heat-associated deaths occurred indoors. The risk of heat-associated death in those performing outdoor activities is understood, but risk-factors associated with indoor deaths as well as other heat-vulnerability factors are not well understood in Maricopa County. The number of heat-associated deaths in the past five years is concerning and highlights the need for public health and community partners to collaborate and respond to the needs of the community.

To address these concerns, Maricopa County Department of Public Health (MCDPH) has been conducting heat surveillance since 2006. Surveillance data are used to identify the demographic characteristics and risk factors for heat-associated mortality and design interventions to prevent heat-associated deaths among populations at risk.

MCDPH has also made efforts to assess the community needs and resources related to heat vulnerability. One such resource, currently available in the community, is Cooling Centers which are cool indoor locations, throughout Maricopa County, providing heat refuge and other resources for the community. These have been established since 2015 in response to concern about heat morbidity and mortality in Maricopa County. In summer 2014, MCDPH conducted a Cooling Center evaluation, where facility managers and visitors were surveyed regarding facility utilization, costs, systems and visitor related information. The results from the evaluation were very informative as to the usage of the centers as well as potential areas for expansion of locations and/or services to meet community needs. However, the assessment only provided mostly qualitative information on a small proportion of the county population- those who know about and utilize Cooling Centers.

In order to assess community-wide heat vulnerability, MCDPH identified a need to conduct a more generalizable quantitative assessment to gather emergency preparedness information for long-term planning. MCDPH had previously received training on Community Assessment for Public Health Emergency Response (CASPER), an epidemiologic technique designed to provide household-based information about the community's needs in a timely, inexpensive, accurate and reliable manner. CASPER has been most commonly performed in emergency settings, but the methodology is also applicable to non-emergency settings. After some consideration of this and other survey methodologies, the CASPER was chosen to survey the Maricopa County population on heat vulnerability in a non-emergency setting. This also provided an excellent opportunity to collect information on general preparedness barriers and emergency risk perceptions in Maricopa County. In addition, CASPER implementation would provide direct field experience and build staff capacity, increasing our jurisdiction preparedness for CASPER implementation in emergency events.

During the planning phase, it was decided to divide the population into two groups based on their risk for heat related illness and determine the heat vulnerability and preparedness needs for high risk and low risk communities separately. Thus, two CASPER's were conducted simultaneously.

The purpose of this report is to outline the findings regarding risk perception, heat knowledge, community preparedness and barriers, from two different sample frames within Maricopa County. The report will discuss the significance of the results, limitations as well as future directions.

Methods and Materials

CASPER Methodology

Survey data are collected through door-to-door, household level, interviews using a standardized questionnaire. Data collected can then be used to generate estimates and assess public health needs during a disaster response or within a non-emergency setting.

A two-stage cluster sampling methodology is used for the assessment. In the first stage, 30 clusters (census blocks) are selected within the CASPER sampling frame, with their probability proportional to the estimated number of housing units in each cluster. In the second stage, seven housing units are systematically selected per cluster by selecting every *n*th household (where 'n' is the total number of households in the cluster divided by seven). Due to the nature of the cluster sampling frame as well as the weighting process, we are not able to statistically compare the two clusters. However, meaningful interpretations can be inferred from the values and confidence intervals.

Data Collection

In Maricopa County, two CASPERS were conducted simultaneously, using the two-stage cluster sampling methodology described in the CASPER Toolkit Version 2.0. The sampling frames for the two CASPERS were defined as zip codes in Maricopa County with high incidence of heat related hospitalizations (a total of 142,935 households) and zip codes in Maricopa County with low incidence of heat related hospitalizations (a total of 1,429,116 households). High incidence was defined as non-tribal zip codes with greater than or equal to 100 heat-related hospitalizations per 100,000 population in Maricopa County. Low incidence was defined as non-tribal zip codes with less than 100 heat-related hospitalizations per 100,000 population in Maricopa County. The cutoff of 100 hospitalizations per 100,000 population was the midpoint of the heat related hospitalization distribution (50% of zip codes were below and 50% were above). Due to the large geographical expanse of Maricopa County, several distant regions were excluded from the sampling frames purely for logistical reasons.

In the first stage of CASPER sampling, 30 census blocks (clusters) were selected for each, high and low, incidence sampling frame (a total of 60 clusters) and street level maps were generated using Geographic Information System (GIS) (Appendix A). The probability of a census block being selected was proportional to the number of households in the census block. The 60 clusters were divided into 7 groups based on geographical location. Each group was assigned a group number, team leader and English and Spanish speaking team members. CDC onsite technical assistance personnel provided a

three- hour team leader training and three, three-hour team member trainings prior to field work. The trainings covered the overall purpose of the CASPER, household selection methods, questionnaire content, interview techniques, volunteer safety, team leader and team member duties and logistics. Initially, three field interview days were selected: Wednesday, March 25 and Thursday, March 26 from 2:00pm to 8:00pm and Saturday, March 28 from 10:00am to 6:00pm. A fourth day, Friday, March 27 from 2:00pm to 8:00pm, was later added to interview the number of households needed.

Each morning, the team leaders met at the Incident Command Center (ICC) for a briefing, to collect materials and to return completed interviews from the prior day for data entry into Epi Info 7. The team leaders then met with their team members in their assigned geographic area (group) to disseminate information, cluster assignments and supplies. The team members were split into two-person field interview teams and assigned two to three clusters. These field interview teams completed the second stage of CASPER sampling. They systematically selected seven housing units per cluster by selecting every *n*th household (where 'n' is the total number of households in the cluster divided by seven). After three failed attempts to conduct an interview or a refusal, teams were instructed to replace the household with an additional household within the cluster. A tracking form was used to keep track of all contacted households and contact outcome (Appendix B).

Teams attempted to conduct seven interviews from each cluster in high and low incidence areas for a total goal of 420 interviews (210 in high and 210 from low incidence households). Eligible household respondents were 18 years of age or older and resided in Maricopa County during the summer season. When approached, all potential respondents were read a consent form which described the purpose and contents of the questionnaire and included MCDPH agency information (Appendix C, D). Upon verbal consent from the respondent, the interview was conducted. Educational information regarding heat and county-offered services was provided to each respondent after the interview and upon request to others (Appendix E). Referral forms were also completed when the household expressed a need for services in Maricopa County (Appendix F). At the end of each day, the team members returned all materials and completed questionnaires to their team leader.

MCDPH chose the team leader organization structure to efficiently use resources, and maximize volunteer convenience. A total of 64 volunteers served over the four days. Volunteers primarily consisted of Maricopa County Department of Public Health (MCDPH) employees, Arizona Department Health Services (ADHS), local university faculty and students and local health care organizations; however, they resided in different parts of Maricopa County. To minimize travel distance and time for the volunteers, they were assigned to a team lead and group closest to their residence. This allowed for reduced costs and increased efficiency.

Data Collection Instrument

A standard two page, front and back, paper questionnaire was developed in English and Spanish (Appendix G, H). The questionnaire included 39 questions regarding the following topics: (1) 10 questions regarding household characteristics and demographics; (2) 8 questions regarding emergency preparedness; and (3) 21 questions regarding heat knowledge and preparedness. Questions were

formatted as multiple choice questions, polar questions, open ended questions, and Likert scale questions. All questions were targeted to capture household level data and modified from previous CASPER surveys completed by other jurisdictions, the Maricopa County Cooling Center Evaluation Visitor Survey, the National Center for Atmospheric Research, the ADHS Phoenix Pilot Project Survey and the Maricopa County Department of Emergency Management Preparedness Survey. The questions were compiled internally with assistance from CDC personnel.

Data Entry and Analysis

Data were entered into Epi Info 7 and quality checked in Excel. Because the survey was done on paper and skip patterns were used, data were cleaned using SAS 9.1 for hierarchical questions. Weighted cluster analysis was performed using SAS 9.1 to report the estimated percent of households and 95% confidence intervals for each response within each sampling frame. This was done by applying a weight for each surveyed household, calculated using the following equation:

$$Weight = \frac{Total\ number\ of\ housing\ units\ in\ the\ sampling\ frame}{(Number\ of\ housing\ units\ interviewed\ within\ cluster\ *\ Number\ of\ clusters\ selected\ )}$$

Results

The field interview teams completed 168 interviews (5 Spanish, 163 English) in the high incidence sample frame, a completion rate of 80% (Table 1). The 168 interviewed households were a sample of the 142,935 total households in high incidence areas in Maricopa County. Fifty-four percent of the households at which contact was made, were eligible and willing to participate in the survey. Of the households at which contact was attempted, 34.6% agreed to complete an interview.

For the low incidence sample frame, 169 interviews (8 Spanish, 161 English) were completed, a completion rate of 80.5% (Table1). The 168 interviewed households were a sample of 1,429,116 total households in low incidence areas in Maricopa County. Forty-nine percent (49.0%) of the households at which contact was made, were eligible and willing to participate in the survey. Of the households at which contact was attempted, 31.3% agreed to complete an interview.

Table 1. Questionnaire Response Rates

	High Incidence Area n= 168		Low Incidence Area n=169	
Questionnaire Response	**(%)**	**Rate**	**(%)**	**Rate**
Completion	80.0	168/210	80.5	169/210
Cooperation	54.2	168/310	49.0	169/345
Contact	34.6	168/486	31.3	169/540

All following results are weighted percentages that allow for community-wide estimates, using the method previously described. A comprehensive list of all survey questions can be found in the attached tables.

Household Characteristics and Demographics (Table 2 and Table 3)

Characteristics of the two sample frames including structure type, ownership, household residents, demographics, and working conditions are included in tables 2 and 3. A majority of the households were single family structures (73.0% high and 70.7% low); however, a slightly greater proportion of low incidence responders owned their homes (70.1% vs. 57.0%). Over two-thirds of the household residents, for both high and low areas, were white (75.0% and 83.1% respectively); however, low incidence households had a slightly higher proportion of Hispanic/Latino residents (31.1% vs. 28.7%). Alternatively, high incidence households had a higher proportion of adults that did not speak English (15.8% vs. 8.2%).

Table 2. Household Characteristics

	High Incidence Area n= 138,171	Low Incidence Area n=1,429,116
	Weighted % (95% CI)	**Weighted % (95% CI)**
Structure (High n= 133,406, Low n=1,391,687)		
Single family	73.0 (56.8-89.1)	70.7 (55.0-86.5)
Multiple unit	23.2 (9.0-37.3)	19.8 (5.6-34.1)
Mobile home	2.4 (0-5.7)	8.1 (0-17.7)
Other	1.5 (0-3.3)	1.3 (0-3.3)
Home ownership		
Own	57.0 (44.0-70.1)	70.1 (57.1-83.0)
Rent	43.0 (30.0-56.0)	28.9 (16.1-41.6)
Don't know/refused to answer	—	1.0 (0-2.5)
Number in household (Low n=1,422,311)		
One	18.6 (8.3-28.8)	17.0 (7.8-26.2)
Two	30.7 (21.4-40.0)	29.1 (21.8-36.4)
Three	14.5 (7.1-21.9)	14.0 (8.8-19.3)
Four	15.0 (6.8-23.2)	18.1 (11.5-24.7)
Five	10.6 (5.3-15.9)	14.1 (7.8-20.3)
Six or more	10.6 (3.2-18.0)	7.7 (3.3-12.1)

Table 3. Household Member Demographics and Characteristics

	High Incidence Area n= 138,171	Low Incidence Area n=1,429,116
	Weighted % (95% CI)	**Weighted % (95% CI)**
Age (Low n=1,415,505)		
Less than 2 years	8.1 (3.3-12.8)	8.8 (3.5-12.8)
2-17 years	38.7 (25.7-51.6)	43.2 (32.5-54.0)
18-64 years	82.6 (74.6-90.6)	87.4 (78.6-96.1)
65-84 years	23.2 (14.7-31.8)	21.3 (12.2-30.4)
85 or older	2.6 (0-5.3)	3.5 (0-7.4)
Don't know/refused to answer	—	0.5 (0-1.6)
Any adults in the household that do not speak English (High n=134,448, Low n=1,408,700)		
Yes	15.8 (6.6-25.1)	8.2 (1.8-15.1)
No	83.7 (74.4-92.9)	91.6 (84.9-98.2)
Don't know/refused to answer	0.5 (0-1.5)	—
Race of household members		
American Indian/Alaska Native	2.6 (0-5.4)	7.3 (1.7-12.8)
Black or African American	7.9 (0.7-15.1)	5.4 (1.1-9.8)
Native Hawaiian or Other Pacific Islander	1.5 (0-3.2)	—
Asian	4.6 (0-9.5)	1.8 (0.1-3.6)
White	75.0 (64.7-85.4)	83.1 (75.5-90.7)
Don't know/refused to answer	10.5 (5.5-15.6)	4.7(1.2-8.2)

Table 3. Household Member Demographics and Characteristics *(cont.)*

	High Incidence Area n= 138,171	Low Incidence Area n=1,429,116
	Weighted % (95% CI)	**Weighted % (95% CI)**
Ethnicity of household members (High n=136,582 Low n=1,422,311)		
Hispanic or Latino	28.7 (18.3-39.1)	31.1 (20.1-42.1)
Don't know/refused to answer	1.7 (0-3.7)	0.6 (0-1.7)
Highest level of education household members		
Less than high school	3.6 (0.3-7.0)	2.5 (0-5.3)
High school or GED	14.3 (7.1-21.5)	16.7 (8.7-24.8)
Some college	21.5 (14.5-28.6)	27.8 (17.3-38.3)
College graduate or more	61.0 (48.6-71.5)	53.0 (38.4-67.5)
Don't know/refused to answer	0.5 (0-1.5)	—
Any household members that work outdoors		
Yes	27.0 (19.4-33.9)	29.2 (20.7-37.7)
No	66.2 (57.1-75.3)	66.1 (57.4-74.8)
Both, indoor and outdoor	6.7 (2.0-11.3)	4.7 (0-9.6)
Don't know/refused to answer	0.5 (0-1.5)	—
Working outdoors shift (High n= 45,989, Low n= 484,198)		
Day shift (7:30am-3:30pm)	87.3 (76.6-97.9)	88.3 (79.4-97.2)
Evening shift (3:30pm-11:30pm)	18.6 (7.9-29.3)	12.6 (2.3-23.0)
Night shift (11:30pm-7:30am)	10.9 (1.8-20.0)	4.2 (0-10.5)
Don't know/refused to answer	6.4 (0-13.7)	3.3 (0-10.0)
Any household member that works indoors without AC (High n=135,788, low n=1,403,596)		
Yes	11.0 (4.7-17.3)	6.4 (2.4-10.4)
No	87.3 (80.9-93.6)	93.7 (89.6-97.7)
Don't know/refused to answer	1.7 (0-4.2)	—

Risk Perception and Preparedness Barriers (Table 4)

Household risk perception and preparedness barriers including sheltering needs, transportation, and emergency contacts are included in Table 4. For both high and low sample frames, extreme heat (63.5% and 64.4%), power outages (63.0% and 62.5%) and haboobs/dust storms (51.7% and 54.4%), were the top three emergencies perceived as most likely to impact households. In the event of an emergency evacuation, less than half of the households reported being "likely" or "somewhat likely" to need a provided shelter for both high (44.1%) and low (33.6%) sample frames,. Over half of the households, in both high and low incidence sample frames, reported having pets and large animals (57.4% and 62.7% respectively) and in an emergency evacuation, the majority reported they would take their pets with them (93.7% and 87.5% respectively). In both high and low incidence sample frames, about two thirds of the households use TV (65.3% and 70.8% respectively) as their main source of information regarding disaster or emergency events. Internet was also a popular source for both high (40.9%) and low (38.6%) incidence households.

Table 4. Risk Perception and Preparedness Barriers

	High Incidence Area n= 138,171	Low Incidence Area n=1,429,116
	Weighted % (95% CI)	**Weighted % (95% CI)**
Top three emergencies or hazards most likely to impact household		
Chemical release	12.0 (6.3-17.6)	12.0 (5.1-18.9)
Earthquakes	3.9 (0.7-7.2)	4.8 (0.8-8.8)
Tornadoes	5.2 (1.9-8.5)	2.9 (0.7-5.2)
Wild fires	13.4 (7.5-19.3)	17.3 (8.0-26.5)
Extreme heat	63.5 (54.3-72.7)	64.4 (55.2-73.6)
Flood/flash flood	21.0 (14.5-72.7)	19.4 (13.9-24.9)
Cyber-attacks	7.8 (3.0-12.7)	11.6 (4.6-18.7)
Terrorist attacks	9.9 (5.2-14.5)	8.6 (3.3-13.9)
Haboob/dust storm	51.7 (42.5-60.9)	54.4 (45.3-63.5)
Epidemic/pandemic	11.3 (4.9-17.7)	13.3 (7.4-19.2)
Power outage	63.0 (52.8-72.7)	62.5 (52.4-72.6)
Other	8.4 (3.2-13.5)	2.9 (0.7-5.0)
Don't know/refused to answer	2.8 (0-5.8)	1.4 (0-3.1)
Household member disability or illness diagnosed by a healthcare professional		
Physical Disability	19.4 (12.0-27.0)	18.0 (8.6-27.4)
Psychosocial/Mental Illness	8.1 (3.3-12.9)	4.6 (1.5-7.6)
Developmental Disability	5.3 (0.9-9.8)	3.1 (0.4-5.9)
Hearing Disability	10.3 (4.6-15.9)	8.1 (4.1-12.2)
Vision Disability	9.8 (3.3-16.3)	11.0 (5.1-17.0)
None	61.2 (52.1-70.2)	66.0 (55.8-76.1)
Don't know/refused to answer	0.9 (0-2.2)	1.4 (0-3.1)
Likelihood the household needs a provided shelter in event of an emergency evacuation (High n=137,490, Low n=1,422,311)		
Very likely	18.5 (10.7-26.4)	18.0 (11.6-24.4)
Somewhat likely	25.6 (16.8-34.3)	15.6 (9.0-22.1)
Somewhat unlikely	15.0 (8.1-21.7)	19.6 (12.7-26.4)
Not at all likely	41.0 (30.7-51.3)	44.6 (36.4-52.7)
Don't know/refused to answer	—	2.3 (0-4.8)
Pets or large animals in the household (High n=137,490, Low n=1,422,311)		
Yes	57.4 (48.0-66.7)	62.7 (52.2-73.2)
No	42.6 (33.3-52.0)	37.3 (26.8-47.8)
Pets or animals during household evacuation (High n=78,881, Low n=891,496)		
Take them with	93.7 (87.5-99.9)	87.5 (80.2-94.8)
Find a safe place for them	1.7 (0-4.2)	0.8 (0.0-2.3)
Leave them behind with food or	4.7 (0-11.1)	7.4 (0.8-14.0)
Would not evacuate because of pets or animals	0.9 (0-2.6)	2.9 (0-6.3)
Would not evacuate for other reasons other than pets/large animals	—	0.8 (0-2.3)
Other	—	0.8 (0-2.3)
Households primary means of transportation		
Personal Vehicle	93.7 (87.5-99.9)	91.5 (85.5-97.0)
Walk	0.9 (0-2.2)	2.3 (0-4.5)
Bike	0.5 (0-1.5)	0.5 (0-1.5)
Public Transportation	3.0 (0-6.6)	2.5 (0-5.3)
Taxi	0.4 (0-1.3)	1.9 (0-4.1)
Agency Pickup	0.5 (0-1.5)	1.0 (0-2.3)
Get a ride from friends/ family	1.0 (0-2.4)	0.5 (0.0-1.5)
Nearest person whom household can call in an emergency		
Next door	28.8 (19.5-38.2)	33.9 (23.9-43.8)
In the neighborhood	25.5 (18.7-32.4)	30.2 (20.8-39.6)
Other part of the city	34.8 (25.4-44.0)	30.2 (21.8-38.7)
Other	9.9 (5.2-14.6)	4.1 (1.1-7.0)
Don't know/refused to answer	1.0 (0-2.4)	—

Table 4. Risk Perception and Preparedness Barriers *(cont.)*

	High Incidence Area n= 138,171	Low Incidence Area n=1,429,116
	Weighted % (95% CI)	**Weighted % (95% CI)**
Two main sources of information regarding disaster or emergency events		
TV	65.3 (55.4-75.2)	70.8 (63.6-78.0)
Radio	23.5 (15.8-31.3)	28.4 (19.8-37.1)
Text message	25.4 (17.1-33.7)	26.2 (18.7-33.7)
Automated call	6.7 (1.0-12.3)	3.3 (0.3-6.4)
Local newspaper	1.5 (0-3.2)	3.0 (0-6.8)
Neighbor/Friend/Family/Word of Mouth	10.9 (5.9-16.0)	13.5 (7.0-20.0)
Poster/flyer	—	—
Church or other groups	1.5 (0-3.2)	3.2 (0-6.4)
Internet	40.9 (30.5-51.3)	38.6 (28.7-48.4)
Social Media	13.3(7.1-19.4)	5.5 (1.2-9.7)
Other	2.8 (0-5.8)	3.5 (0.6-6.4)

Knowledge of Heat Stress (Table 5)

Household knowledge of heat warnings, methods of receiving information and experiences with heat illness are included in Table 5. In the summer of 2014, MCDPH issued three excessive heat warnings. Seventy-two percent of the households in the high incidence sample frame reported hearing about at least one excessive heat warning from summer 2014, while 77.9% of low incidence survey respondents indicated they had heard of at least one excessive heat warning. The two most popular sources of information for excessive heat warnings for both high and low incidence households were television (71.7% and 76.9% respectively) and radio (33.1% and 35.7% respectively). Thirty-two percent of the high incidence households and 41% of the low incidence households reported experiencing symptoms related to heat or high temperatures in the prior summer. Of those that experienced heat-related symptoms, the majority of the high (82.5%) and low (76.8%) incidence households reported managing their symptoms in their homes. The rest of the respondents sought medical attention and 3.8% of the low and 5.1% of the high reported admission to the hospital for treatment.

Additionally, there was an open ended question asking about the health problems the survey taker (or any of their household members) can get from exposure to heat. The responses to this question were categorized “correct” or “incorrect” based on known heat symptoms. The high incidence households were able to list at least one “correct” symptoms of heat illness 64% of the time, compared to low incidence households which were able 81% of the time. Common responses were dehydration, dizziness, headache, cramping, asthma, shortness of breath, sunburns (burns, and blisters), heat stroke, heat exhaustion and skin problems, such as skin cancer.

Table 5. Knowledge of Heat Stress

	High Incidence Area n= 138,171	Low Incidence Area n=1,429,116
	Weighted % (95% CI)	**Weighted % (95% CI)**
Household recalls hearing weather warnings about excessive heat in summer of 2014 (High n=136,214)		
Yes	72.2 (64.3-80.2)	77.9 (69.4-86.5)
No	25.1 (17.6-32.5)	18.2 (10.5-25.9)
Don't know/refused to answer	2.7 (0.0-5.9)	3.9(0.0-9.1)
Two primary sources of information for weather warnings about excessive heat (High n= 98,410, Low n= 1,113,520)		
TV	71.7 (59.9-83.6)	76.9 (69.3-84.6)
Radio	33.1 (23.5-42.7)	35.7 (26.7-44.7)
Text Message	22.5 (12.4-32.6)	13.3 (6.5-20.2)
Automated Call	1.4 (0.0-3.4)	2.4 (0.0-4.7)
Local Newspaper	3.7 (0.4-7.1)	1.9 (0-4.7)
Neighbor/Friend/Family/Word of mouth	10.4 (3.7-17.0)	8.3 (0.0-17.8)
Poster/Flyer	0.7 (0-2.1)	—
Church or other groups	—	0.6 (0-1.9)
Internet	22.1 (12.3-31.9)	19.9 (11.7-28.2)
Social Media	6.1 (2.1-10.1)	3.2 (0.0-6.4)
Other	—	4.9 (1.8-8.0)
Don't know/refused to answer	—	0.6 (0-1.9)
Household members had symptoms this past summer related to heat or high temperature		
Yes	31.5 (23.8-39.1)	41.0 (32.0-50.0)
No	67.8 (60.0-75.7)	57.6 (49.4-65.9)
Don't know/refused to answer	0.7 (0-2.1)	1.4 (0.0-3.1)
Outcome of this heat illness episode (High n= 42,812, Low n= 561,325)		
Stayed at home	82.5 (72.2-92.8)	76.8 (67.9-85.6)
Called 911	1.6 (0-4.9)	5.1 (0.2-9.9)
Only visited ER	6.6 (0.2-13.0)	12.9 (5.3-20.6)
Admitted to hospital	3.8 (0.0-9.3)	5.1 (0.4-9.7)
Death	—	—

Coping Mechanisms (Table 6)

Coping mechanisms for the heat season involve behaviors to remedy feeling too hot, such as the use of air conditioning. This section of the survey assessed what measures the surveyed households take, and if they experience any barriers to staying cool during the high summer temperatures. The majority of households in both high and low incidence areas never or rarely felt too hot inside their homes (92.2% and 89.7% respectively). Ninety-seven percent of high incidence households, and 95% of low incidence households reported using central air conditioning as their main source of cooling, followed by fans (73.6% and 72.1 % respectively), and trees or plants (25.6% and 18.3% respectively).

Of the households using central air conditioning, both high and low incidence households reported using their air conditioning in both the day and evening (85.5% and 89.0% respectively). Additionally, approximately 72% indicated there is nothing that prevents them from using their air conditioning in both high and low incidence households; however, 24.0% of high incidence households and 21% of the low incidence households reported that cost of electricity was a barrier. When asked about utility assistance programs in the county available to assist with the cost of electricity, only 41.8% of the high incidence households and 47.8% of the low incidence households reported having knowledge of the existence of these programs. Of the households that reported awareness, only 24% of the high incidence and 15.5% of the low incidence households reported applying for the program. Approximately

one-third of the households in both high (30.0%) and low (28.2%) incidence areas reported experiencing barriers when applying for the utility assistance program.

Table 6. Coping Mechanisms/Access to Resources

	High Incidence Area n= 138,171	Low Incidence Area n=1,429,116
	Weighted % (95% CI)	**Weighted % (95% CI)**
Do you or members of your household ever feel too hot inside your home during the past summer? (Low n= 1,415,505)		
Always	2.5 (0-5.4)	3.0 (0.2-5.9)
Most of the time, but not always	4.7 (1.6-7.7)	6.8 (1.4-12.3)
Sometimes, but rarely	30.6 (21.2-40.1)	24.3 (16.3-32.2)
Never	61.6 (51.8-71.3)	65.4 (56.4-74.4)
Don't know/refused to answer	0.7 (0-2.1)	0.5 (0.0-1.5)
Which of the following did your household use to cool your house this past summer?		
Central Air Conditioning	96.9 (94.0-99.8)	95.0 (90.6-99.4)
Window Air Conditioning	3.1 (0.0-6.4)	6.3 (1.7-10.9)
Swamp or Evaporative Cooler	3.4 (0.0-7.6)	8.2 (2.9-13.5)
Fans	73.6 (66.2-81.0)	72.1 (64.0-80.1)
Misters	5.4 (1.7-9.0)	6.6 (3.1-10.0)
Trees or plants	26.1 (14.1-38.0)	17.8 (10.3-25.3)
None	—	—
Other	5.4 (0.7-10.1)	5.9 (1.3-10.5)
If your household used air-conditioning this past summer, when did you use it? (High n= 135,176, Low n= 1,357,093)		
Nighttime only	10.8 (5.0-16.5)	5.6 (1.2-10.0)
Daytime only	2.5 (0.4-4.7)	5.8 (1.7-10.0)
Day and night	86.2 (80.4-92.0)	88.5 (83.0-95.0)
Don't know/refused to answer	0.5 (0-1.6)	—
Does anything prevent your household from using air-conditioning? (High n=136,809, Low n=1,392,367)		
Cost of electricity	24.0 (15.7-32.2)	21.0 (11.8-30.2)
Doesn't work	2.0 (0.1-4.0)	5.4 (0.0-11.2)
Cost of repairs	1.0 (0-2.5)	2.4 (0.4-4.5)
Noise	0.5 (0.0-1.5)	—
I have a swamp cooler	0.5 (0.0-1.5)	1.0 (0.0-2.4)
Medical reasons	0.5 (0.0-1.5)	—
I don't have an air conditioner	0.5 (0.0-1.5)	0.5 (0.0-1.5)
No, nothing prevents me from using it	72.4 (63.7-81.1)	72.7 (62.9-82.5)
Other	1.6 (0-3.4)	3.9 (0.7-7.1)
Are you or members of your household aware of the utility assistance program in the area? (Low n= 1,422,311)		
Yes	41.8 (33.0-51.0)	47.8 (40.0-56.2)
No	56.4 (48.1-64.8)	51.7 (43.4-59.9)
Don't know/refused to answer	1.7 (0.0-5.3)	0.5 (0.0-1.5)
Have you or a member of your household ever applied for utility assistance program (High n=56,442, Low n = 667,261)		
Yes	24.0 (12.5-36.0)	15.5 (5.4-25.5)
No, I was not aware of any utility assistance programs	6.4 (0.6-12.1)	6.9 (1.3-12.5)
No, I did not need utility assistance	51.5 (39.0-64.3)	50.6 (35.1-66.1)
No, I did not qualify for utility assistance	13.1 (6.0-20.4)	24.2 (10.2-38.3)
Don't know/refused to answer	5.0 (0.5-9.6)	2.8 (0.0-6.8)
Did you or members of your household experience any barriers when applying for utility assistance program? (High n= 12,184, Low n= 96,409)		
Yes	30.0 (0.0-60.1)	28.2 (0.0-63.0)
No	70.2 (39.9-100.0)	71.8 (37.2-100.0)

Neighborhood/Access to Resources (Table 7)

Similar to coping mechanisms, this section of the survey assessed if individuals in the surveyed households leave their homes in order to avoid high temperatures. The questions inquire where these individuals go, how they travel there, and how long they stay.

The majority of high incidence and low incidence households (71.5% and 79.5% respectively) reported not leaving their homes to go to a cool location when the weather was very hot. Of the households that did leave their homes (20.3% for high and 15.0% for low), common places visited were the mall, movie theater, and library. When asked about Heat Refuge Stations (Cooling Centers), household respondents in both high and low incidence areas (76.1% and 79.5% respectively) reported being unaware of them. Those that reported awareness of Cooling Centers (20.8% and 15.0% respectively) reported that they were not aware of their locations (17.9% and 17.8%) and that they had never used one (16.5% and 17.8%, respectively).

Lastly, the survey respondents were given the opportunity to discuss anything else related to heat. In general, high incidence households remarked on the high temperatures in Arizona, and the high cost of their electric bills in the summer months. Low incidence households mentioned wanting more education on heat and cooling centers.

Table 7. Neighborhood/Access to Resources

	High Incidence Area n= 138,171	Low Incidence Area n=1,429,116
	Weighted % (95% CI)	**Weighted % (95% CI)**
Do you or members of your household ever leave your home and go to an air conditioned place to cool off? (Low n= 1,413,237)		
Yes	20.9 (15.2-26.5)	15.6 (9.9-21.2)
No	73.4 (66.7-80.1)	78.3 (71.5-85.0)
Sometimes	5.8 (1.8-9.8)	5.6 (1.4-9.9)
Don't know/refused to answer	—	0.5 (0.0-1.5)
Where do you or members of your household go to cool off? (High n= 35,161 Low n=299,604)		
Mall	51.9 (38.9-64.9)	52.2 (36.0-68.5)
Church	8.5 (0-18.8)	13.7 (2.7-24.8)
Community Center	13.7 (1.1-26.3)	2.3 (0.0-7.0)
Library	30.8 (12.1-49.2)	30.6 (13.8-47.5)
Supermarket	26.1 (13.5-38.8)	22.8 (7.6-38.1)
Shelter	—	—
Cooling Center	—	—
Movie theater	35.8 (19.5-52.1)	48.0 (29.3-66.7)
Friends/Neighbors	30.0 (14.6-45.4)	20.3 (9.2-31.3)
Museum	3.9 (0-9.5)	—
Other	32.9 (15.9-49.9)	36.9 (21.5-52.3)
How long do you or your household members usually stay at the air conditioned place or cooling center? (High n= 35,161 Low n=292,799)		
<1 hour	16.7 (4.9-28.4)	7.0 (0.0-17.4)
1-4 hours	75.6 (62.9-88.3)	71.7 (56.9-86.4)
4+ hours	7.7 (0-17.0)	16.7 (4.0-29.3)
Don't know/refused to answer	—	4.7 (0.0-11.6)
How does your household normally travel to the air conditioned place? (High n=35,842, Low n=292,799)		
Personal Vehicle	84.2 (70.5-97.9)	88.4 (75.7-100.0)
Walk	19.1 (6.6-31.6)	7.4 (0-15.5)
Bike	8.2 (0-18.6)	—
Public Transportation	7.6 (0-16.6)	7.4 (0-15.5)
Taxi	—	2.32 (0-7.2)
Agency Pickup	—	—
Get a ride from friends/family	1.9 (0-5.8)	7.0 (0-15.3)
Other	—	—
Don't know/refused to answer	—	—
Is there anything that prevents you or a household member from going to an air conditioned place to cool off? (High n=136,582, Low n=1,417,207)		
Time of day	1.9 (0-4.3)	1.4 (0.0-3.1)
Disability	0.5 (0-1.5)	1.0 (0-2.3)
Distance from home	1.0 (0-2.4)	0.9 (0.0-2.3)
Lack of Transportation	1.5 (0-3.2)	2.9 (0.3-5.5)
Personal Safety	0.5 (0-1.5)	—
Cannot bring pets	0.9 (0-2.3)	2.3 (0.0-5.0)
Nothing prevents me	84.4 (77.1-91.7)	87.6 (82.6-92.6)
Other	2.3 (0.1-4.5)	3.5 (0.7-6.3)
Don't know/refused to answer	0.4 (0.0-1.3)	—
Have you or members of your household heard of Heat Refuge Stations (Cooling Centers)? (High n= 136,809, Low n= 1,415,505)		
Yes	20.8 (14.5-27.1)	17.0 (9.9-24.1)
No	78.7 (72.3-85.2)	83.0 (76.0-90.1)
Don't know/refused to answer	0.5 (0-1.5)	
Do you or members of your family know where a nearby Heat Refuge Station (Cooling Center) is located? (High n=28,411, Low n=241,078)		
Yes	12.8 (0.0-26.1)	5.6 (0-13.6)
No	87.2 (73.9-100.0)	88.7 (75.2-100.0)
Don't know/refused to answer	—	5.6 (0.0-8-7.9)
Have you or members of your household ever used a Heat Refuge Station (Cooling Center)? (High n= 25,008, Low n = 220,662)		
Yes	2.7 (0.0-8.6)	—
No	90.9 (77.9-100)	100.0 (0.0-100.0)
Don't know/refused to answer	6.4 (0.0-18.6)	—

Discussion

These data represent the CASPER surveys conducted in areas of high and low incidence of heat related hospitalizations within Maricopa County. The results of this assessment provide important information regarding community risk perception, emergency preparedness, heat knowledge and vulnerability. They also highlight successes and areas of improvement for Maricopa County services and resources.

Risk perception and preparedness

Survey results indicated that households in both high and low incidence communities perceive extreme heat, power outages and dust storms as the top three emergencies. Interestingly, epidemics/pandemics were not perceived as likely to impact households, despite the relatively recent influenza pandemic in 2009, the annual flu epidemic and frequent infectious disease outbreaks in the county publicized by the media.

When an emergency does occur, close to half of the high incidence households and one-third of the low incidence households reported needing a provided shelter for evacuation. Based on these results, Maricopa County plans should reflect strategies to accommodate all residents that anticipate needing a shelter, as well as educate residents on how to prepare to shelter in place for up to 72 hours. Approximately one-third of the respondents reported having some type of disability and over half of the households reported owning pets that they would take with them during an evacuation. According to the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288 and the Post-Katrina Emergency Management Reform Act, Public Law 109-295, shelters need to be able to accommodate persons with access and functional needs and this Maricopa County specific information will assist with assuring that the number and type of access and functional needs are accommodated. Shelter accommodation for evacuees with pets is critical, which was a valuable lesson learned during Hurricane Katrina when many residents refused to evacuate without their pets (Hurricane Katrina: Perception of the Affected, Fritz Institute, 2006).

The majority of households in both areas reported having a personal vehicle as the main source of transportation, however, if most individuals plan to evacuate with personal vehicles, it will be critical to consider the volume of vehicles when managing traffic and roadways in a disaster. The results also indicate that majority of Maricopa households use television, radio and internet as their main source of information regarding disasters or emergencies. Messaging should be further tailored to be delivered through these sources, however since all of these media require electricity, education of the public regarding a back-up plan to receive public messaging during a prolonged power outage such as a hand-crank radio is critical.

Heat knowledge and vulnerability

The survey results highlight several opportunities to decrease the vulnerability of Maricopa County residents to heat-related morbidity and mortality. During the summer of 2014, despite the issuance of

three excessive heat warnings, approximately one in four household respondents from both high and low incidence areas, do not recall hearing about any of these warnings. From those who did hear about the excessive heat warnings, the most popular sources were television, radio, text message and internet. Further focus should be placed on these sources for heat relating messaging; however, more information is needed to determine the best strategies to reach the remaining 25% of households.

The results of this investigation identified some knowledge gaps among Maricopa County residents regarding the symptoms associated with heat-related illness, which highlights the need for increased education and messaging. Messaging should also include specific information on when to seek medical attention for heat-related symptoms in order to decrease potential morbidity and mortality.
The majority of the households for both low and high incidence areas reported using air conditioning, day and night to cool their home without any barriers. However, approximately 10% of households reported feeling hot inside their homes always or most of the time. With 37% of heat-associated deaths occurring indoors over the last eight years, it is important to connect households that fall in this category with resources to assist with adequate cooling of their homes, including but not limited to utility assistance programs. A quarter of Maricopa households, in low and high incidence areas, reported that cost of electricity was a barrier to using air conditioning and properly cooling their homes; however, less than half of these households are aware of utility assistance programs. Of those who were aware, only 1 in 5 have ever applied for assistance. These results suggest a need for more education about the existence of these programs and exploring potential barriers to accessing them.

Another resource available to Maricopa County residents is Refuge Stations (Cooling Centers). These are air-conditioned locations available to the public throughout the county, where residents can seek refuge from the high temperatures and access water and other resources. CASPER results suggest that less than 20% of both high and low incidence households were aware that this resource is available to them. Although 20% of high and 15% of low incidence households reported leaving their home to go to an air conditioned place during the summer, none listed the Cooling Centers as a destination to get out of the heat. These results are consistent with the results of a prior Maricopa County evaluation of its cooling centers in the summer of 2014. This evaluation also suggested that the majority of Maricopa County residents were unaware of the existence of cooling centers. The results of both investigations highlight the need to further educate Maricopa residents about programs and resources available in the community to help prevent heat-related morbidity and assure they are easily accessible to those who need them.

Limitations and Challenges

Maricopa County covers 9,224 sq. miles and is the fourth most populous county in the country. Due to the large geographical expanse of the county and conducting two CASPER's simultaneously, MCDPH faced several logistical challenges. First, a large number of volunteers were needed to implement the survey, and were recruited from various agencies. This recruitment strategy would have been more successful if the process had started earlier, allowing more time to train, prepare and ensure attendance. Some volunteers were not able to attend trainings, or were unable to administer the

survey on all three days. This made it challenging to achieve the required number of interviews in the given timeframe and may have added to the variability of interviews, although the same process was followed for all households. Additionally, field staff had different partners each day requiring them to adjust to different dynamics. Field staff also walked door-to-door administering the survey during the day's peak temperatures. Although precautions were taken to alleviate heat-related illness, the CASPER design requires prolonged outdoor exposures, which is challenging in the summer months in Arizona. This will be an important factor to consider if CASPER implementation and field work is going to be conducted in an emergency or non-emergency setting during the heat season in Arizona. The process may require more time and volunteers to allow for shorter shifts and minimize risk to participants.

Another challenge encountered by surveyors was gated communities. The fact that field staff were unable to gain entry to these communities, which are typically associated with higher socioeconomic status, may have resulted in a less representative sample for the assessment. MCDPH had contacted the communities in advance to gain access; however, some communities denied access to their households. Additionally, some communities had many transient residents, which were not able to participate in the survey. This also resulted in sampling challenges and low response rates for the first two days of the survey. Consequently, an additional day was added to meet our response goals.

Survey design also presented some limitations. A paper survey, as opposed to an electronic survey, was administered which led to increased surveyor error, especially for questions that required skip patterns. Correcting these errors required additional data management and quality checks. Lastly, there were some limitations to data reliability associated with self-reports and recall bias, particularly for questions regarding heat in the 2014 season. Further, the possibility of underreporting exists for sensitive questions such as those regarding mental health and disability.

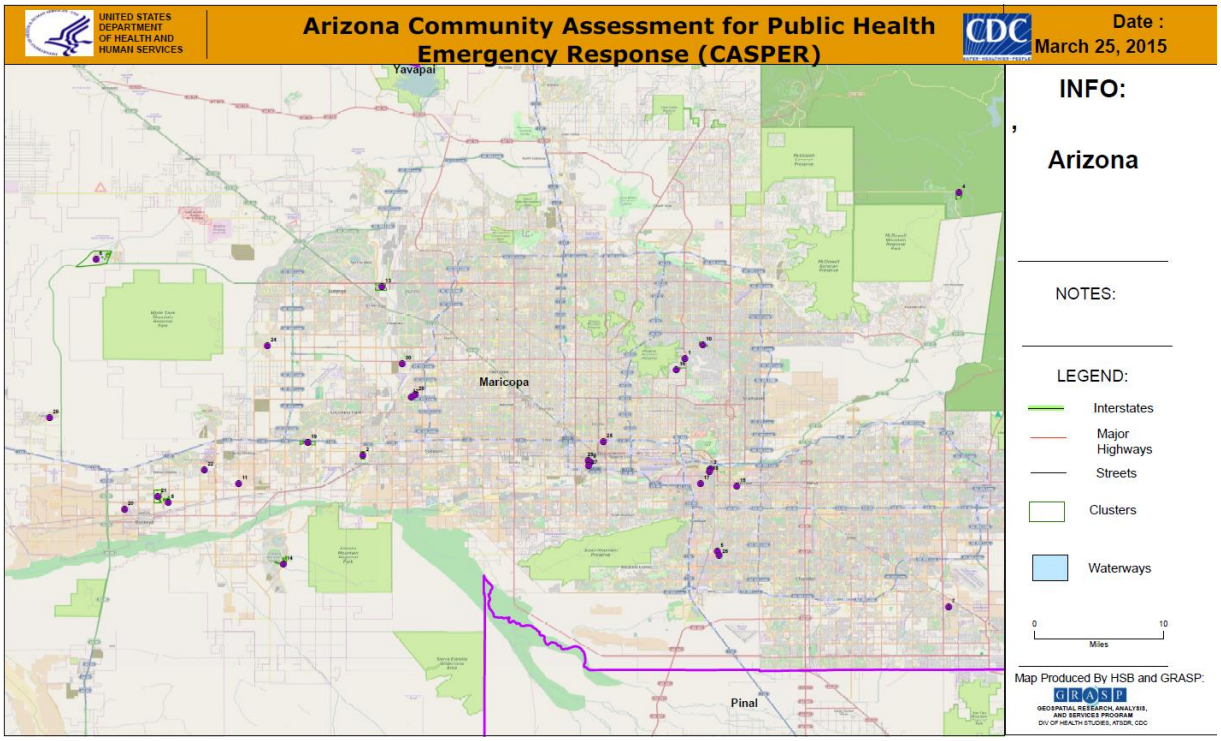
Future Directions

The results from these CASPER surveys highlight areas where community outreach and education are needed to ensure our population at risk of heat related morbidity is aware of existing services and resources available. MCDPH plans to further analyze these results by stratifying the questions based on demographic factors to identify specific target populations for outreach. Additionally, there appears to be knowledge gaps regarding the signs and symptoms of heat-related illness in all areas of the County. We plan to reinvigorate our educational efforts to the community to ensure that people can identify the early signs of heat illness, take the appropriate precautions to alleviate those symptoms and know what resources are available to them to adverse outcomes. Proposed outreach targets include schools, student athletic associations, workers' unions, outdoor clubs/groups, parks and recreation employees, and other at risk populations.

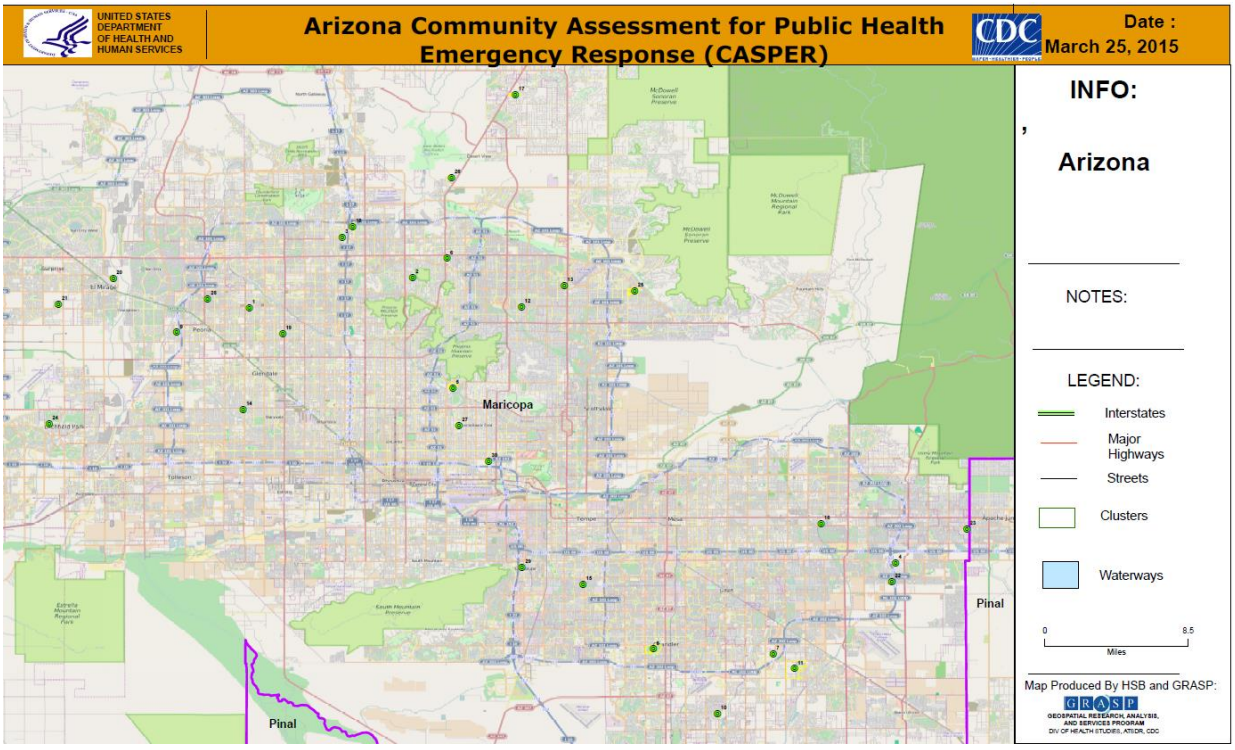
Lastly, we will use the information gained from this investigation to inform planning for shelters and evacuation in emergencies, with a focus on access and functional needs and ensuring pets are included in the plans.

Appendix A. Maricopa County CASPER cluster maps

30 High Clusters



30 Low Clusters



Appendix B. Maricopa County CASPER tracking form

CASPER Household Sampling Tracking Form Team number _____ Team member initials _____

Cluster vist date(s)_____ City_____ Cluster # (1-30)_____ # of Houses in the cluster_____

	1 - ACCESS			2 - TYPE OF DWELLING						3 - CONTACT				4 - INTERVIEW						
Sampled Housing Unit Number	House Accessible	House Inaccessible (gate, physical obstacles)	Unsafe environment (dogs, damage)	No housing structure	Mobile Home	Single Family Home	Duplex/Triplex	Apartment or Condo	Other	VISIT NUMBER	Appears vacant	Nobody home or door not answered	DOOR WAS ANSWERED	Non-resident	No adult over 18 years old	Refused to Participate	Language Barrier	Interview begun, not finished	Interview Completed	SURVEY NUMBER (1-7) from Completed Questionnaire
1	☐	☐	☐	☐	☐	☐	☐	☐	☐					Language						
	Description									1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
										2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
										3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
2	☐	☐	☐	☐	☐	☐	☐	☐	☐					Language						
	Description									1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
										2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
										3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
3	☐	☐	☐	☐	☐	☐	☐	☐	☐					Language						
	Description									1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
										2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
										3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
4	☐	☐	☐	☐	☐	☐	☐	☐	☐					Language						
	Description									1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
										2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
										3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
5	☐	☐	☐	☐	☐	☐	☐	☐	☐					Language						
	Description									1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
										2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
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6	☐	☐	☐	☐	☐	☐	☐	☐	☐					Language						
	Description									1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
										2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
										3	☐	☐	☐	☐	☐	☐	☐	☐	☐	
7	☐	☐	☐	☐	☐	☐	☐	☐	☐					Language						
	Description									1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
										2	☐	☐	☐	☐	☐	☐	☐	☐	☐	
										3	☐	☐	☐	☐	☐	☐	☐	☐	☐	

Appendix C. Maricopa County CASPER introduction and consent document: English

Hello, we are _____ and _____ with The Maricopa County Department of Public Health and we are here to conduct a survey. We would like your assistance in improving our public services which will help us to prepare for environmental health hazards in our community.

We hope to gather some basic information about your household in regards to the extreme heat experienced in Maricopa County so that we can gain a better idea of what kind of help people need. 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 and questions about certain kinds of environmental hazards. The survey should take no more than 25 minutes to complete. We will keep your answers private. Your decision to complete this survey is voluntary. You can refuse to take part in the survey or refuse to answer any of the questions. Nothing will happen to you or your household if you choose not to take part in the survey.

You may have questions about this survey. If so, you can ask anyone here right now. We will also leave you with our contact information in case you have any questions after we leave. We would be happy to provide you a phone number to call to verify.

Are you willing to participate in this survey?
[WAIT FOR RESPONDENT TO CLEARLY ANSWER YES OR NO].

YES or NO

Thank you very much for your time.

Appendix D. Maricopa County CASPER introduction and consent document: Spanish

Hola. Somos _____ y _____ con el Departamento de Salud Pública del condado de Maricopa y estamos aquí para realizar una encuesta. Le pedimos su ayuda para mejorar nuestros servicios públicos y así preparamos para enfrentar riesgos ambientales a la salud en nuestra comunidad.

Esperamos recoger datos básicos de su hogar con respecto al calor extremo en el condado de Maricopa, con el fin de entender qué tipo de ayuda necesita la gente. Su hogar es uno de muchos seleccionados al azar para participar en la encuesta. Si usted consiente participar, le haremos preguntas generales sobre su hogar y las personas que viven aquí, además de preguntas sobre ciertos tipos de riesgos ambientales. La encuesta no debe durar más de 25 minutos. Sus respuestas serán confidenciales y su participación en la encuesta es voluntaria. Usted puede negarse a participar o a contestar cualquier pregunta. No habrá ninguna consecuencia para usted o sus familiares si decide no participar en esta encuesta.

A lo mejor usted tiene dudas sobre la encuesta. Si este es el caso, nos puede hacer cualquier pregunta que tenga ahora mismo. Le vamos a dejar información para que nos pueda contactar en caso de que se le ocurra alguna pregunta después de que nos vayamos y con mucho gusto también podemos darle el teléfono de nuestra oficina como verificación.

¿Está dispuesto(a) a participar en la encuesta?

(ESPERE HASTA QUE EL ENCUESTADO(A) CONTESTE CLARAMENTE QUE SÍ O NO)

SÍ ó NO

Muchas gracias por su tiempo.

Appendix E. Maricopa County CASPER leave-behind materials

Maricopa County Department of Public Health
Office of Epidemiology
4041 North Central Avenue Suite 600
Phoenix, AZ 85012

WHO ARE WE: We are with the Maricopa County Department of Public Health (MCDPH)

What is our Mission: To protect and promote the health and well-being of Maricopa County residents and visitors.

Why did we survey your household? We are working on developing a plan to help keep our community safe in the event of a heat emergency. During the week of March 25-28, 2015 we surveyed select households throughout Maricopa County to learn more about their experience(s) with extreme heat. Your feedback will help us better understand the needs of the community in case of a county-wide emergency.

What information did we collect? We collected general information about your households' needs in the case of an emergency. We did NOT collect any identifiable information about you or your household.

Contact Information: If you have any questions or concerns please feel free to contact us.

MCDPH Main Phone Number: 602-372-2605
MCDPH Email Address: epidemiology@mail.maricopa.gov

Epidemiology and Data Services Program Manager: Kate Goodin
Phone Number: 602-527-6502

Senior Epidemiologist: Vjollca Berisha
Phone Number: 602-763-5335

MCDPH Website: www.maricopa.gov/PublicHealth

Resources: Please check out the following websites for more information about heat safety:

www.maricopa.gov/publichealth/Programs/Heat

www.azdhs.gov/phs/oeh/extreme/heat

www.emergency.cdc.gov/disasters/extremeheat

Maricopa County Department of Public Health
Office of Epidemiology
4041 North Central Avenue Suite 600
Phoenix, AZ 85012

¿QUIÉNES SOMOS? Somos personal del Departamento de Salud Pública del condado de Maricopa (MCDPH por las siglas en inglés).

¿Cuál es nuestra misión? Proteger y promover la salud y el bienestar de todo residente y visitante en el condado de Maricopa.

¿Por qué hicimos una encuesta de su hogar? Pretendemos elaborar un plan de seguridad para proteger a la comunidad en caso de una emergencia por el calor. Durante la semana de marzo 25-28, 2015 realizamos una encuesta de ciertos hogares en el condado de Maricopa con fines de aprender más acerca de sus experiencias con el calor extremo. Sus respuestas nos ayudarán a entender más claramente las necesidades de la comunidad en caso de una emergencia afectando a todo el condado.

¿Cuál fue la información recogida? Recabamos información general sobre las necesidades de su hogar en caso de emergencia. NO hemos recogido datos que puedan servir para identificarlo a usted o sus familiares.

Información de contacto: En caso de alguna pregunta o preocupación, no dude en llamarnos:

Oficina principal del MCDPH: teléfono 602-372-2605
Correo electrónico del MCDPH: epidemiology@mail.maricopa.gov

Gerente del Programa de Epidemiología y Servicios de Datos: Kate Goodin, teléfono 602-527-6502

Epidemióloga (preguntas en Español): Aurimar Ayala, teléfono 602-527-0108

Página web del MCDPH: www.maricopa.gov/PublicHealth

Recursos: Vea estos sitios para obtener más información sobre la seguridad en el calor

http://www.maricopa.gov/publichealth/Programs/Heat/pdf/Heat-Flyer-Bilingual.pdf
http://www.cpsaarizona.org/receivingservices/En/Documents/Heat-Brochure_bilingual.pdf
http://www.cdc.gov/extremeheat/espanol/warning_esp.html

Maricopa County Public Health
WeArePublicHealth.org

Heat Fact Sheet

Stay cool. Stay hydrated. Stay informed.

What's the big deal about heat?

Every year about 100 people die from exposure to heat in Maricopa County, over half of which are heat-caused

What is a heat alert?

There are two types of alerts used to help you stay up-to-date on the temperature:

Excessive Heat Warning/Advisory: an excessive heat event is expected in the next 36hrs. The excessive heat poses a threat to life. Stay in an air-conditioned building and avoid direct sunlight.

Excessive Heat Watch: conditions are favorable for an excessive heat event in the next 24 to 72 hours. Stay updated on local weather forecasts so you can plan activities safely.

To check current heat alerts in your area visit: www.weather.com/phoenix

What does heat-related illness look like?

Heat Rash

Symptoms:
skin irritation causing red clusters of pimples or small blisters

Treatment:
move to a cooler, less humid environment and keep the affected area dry

Heat Cramps

(may be sign of heat exhaustion):

Symptoms:
muscles cramp, especially in legs and stomach

Treatment:
stop all activity, sit in a cool place, drink clear juice or a sports drink

Heat Exhaustion

Symptoms:
heavy sweating, cramps, tired, weak, headache, nausea, pale, dizzy, and fainting

Treatment:
go someplace with air-conditioning (A/C), drink cool nonalcoholic beverages, take a cool bath or shower, wear light-weight clothing

Heat Stroke

Symptoms:
high body temperature, red, hot, dry skin, not sweating, throbbing headache, confusion, dizzy, fast and strong heart rate, nausea, unconscious

Treatment:
Call 911, move person to a shady area, cool them down with water, ice packs or cool, wet towels, do not give fluids to someone who is unconscious

For cooling locations or additional resources, visit HeatAZ.com or dial 2-1-1

Top 10 Tips
for Staying Safe in the Arizona Heat

1. Drink plenty of WATER.
Drink plenty of water EVERYDAY even when you are not thirsty.

2. Do NOT rely on a FAN as your primary source of air.
A fan does NOT replace being in an air-conditioned location. It dehydrates your body.

3. Stay cool indoors.
Stay in a cool, air-conditioned location. If you need help paying your electric bill, contact your utility company for possible special programs.

4. Take care of your pets.
Make sure that your pets are provided with plenty of water, shade, and a cool place to rest, since they can become dehydrated as well.

5. Cool down by taking a bath or shower
Taking a shower helps your body cool down. However, DO NOT take a shower immediately after becoming overheated, since your body may cool down too quickly and cause illness.

6. Wear LOOSE clothing
Allow your skin to breathe in the heat. Breathable fabrics like cotton are best.

7. NEVER leave kids in the car
Remember to never leave children, pets or those needing special care in parked cars when the temperature is high - even for just a few minutes!

8. Limit outdoor exercise
Exercise outside during the morning hours; exercise inside in air conditioning the rest of the day.

9. Check on friends and neighbors
Open windows are a sign that a neighbor could be having an air conditioning problem. Check to make sure they are staying cool.

10. Use sunblock
Apply sunscreen that is SPF 15 or higher at least 30 minutes prior to going out and remember to keep reapplying.

Living in the Desert

People who have lived in Maricopa County for a long time often become like teenagers who feel indestructible.

"I've lived here through 40 summers and I don't need to carry extra water or wear a hat. I'm used to this heat."

An attitude like that is why every year, more people are getting sick and even dying from heat in Arizona. Old, young, healthy, sick, homeless and affluent – if you are not prepared, our heat can sneak up on you.

The best way to fight the problems of heat is relatively easy — use common sense and prepare before we experience a heat emergency.

Key things to do to stay safe from heat in the Valley of the Sun include:

- Staying out of the sun during the day
- Wearing a hat and loose clothing
- Drinking lots of water
- Being prepared for a power interruption

Fans are not enough

Fans do help to circulate the air and keep you cool on some hot days, **but fans alone are not enough to prevent heat exhaustion or heat stroke.** In fact, fans can actually dehydrate you if you are not drinking plenty of non-caffeinated beverages (like water) while using a fan.

Remember, some windows or doors must be left open to circulate fresh air if you do not have air conditioning!

Air Pollution

Unfortunately, in the Phoenix area, extreme heat often brings another problem with it – high levels of ozone.

This pollutant can cause a variety of respiratory problems such as coughing, shortness of breath, throat irritation and an aggravation of asthma.

Children and people with respiratory diseases should try to stay inside during the afternoon and early evening hours when ozone levels are high.

For more information, please visit:
www.CleanAirMakeMore.com

For more information on surviving the Arizona heat, please visit

www.HeatAZ.org

Department of Emergency Management
Department of Public Health
Department of Human Services

Arizona Department of Health Services

APS THE POWER TO MAKE IT HAPPEN®

SRP®

Heat Emergency

Dealing with Extreme Heat

Maricopa County

Too Much Heat Can Cause . . .

Heat Exhaustion

Symptoms:
Mild form of shock marked by heavy sweating, weakness, headache, weak pulse, dizziness, exhaustion, fainting, nausea or vomiting, and cold, clammy skin. But the body temperature will seem normal.

Treatment:

- **Call 911 for medical attention.** If heat exhaustion is not treated, it can worsen and lead to heat stroke.
- Move the victim to a cool place.
- Loosen clothing and apply cool, wet cloths to the neck, face and arms.
- If the victim is conscious, have him or her drink water slowly, unless nausea occurs. Give the victim half a glass of water every 15 minutes.
- Under no circumstances should an unconscious person be given anything to drink.
- Watch carefully for changes in the victim's condition.

Heat Stroke (Sunstroke)

Symptoms:
The hallmark of heat stroke is mental status change – headache, dizziness, confusion or unconsciousness. Body temperature can be so high that brain damage or death may occur rapidly if the victim does not receive immediate medical attention.

Treatment:

- **Call 911 immediately for medical help.**
- Bring the victim to a cool place.
- Remove the victim's clothes and cool his or her body by wrapping it in wet sheets and fanning it.
- Watch for signs of breathing problems.
- Keep the victim lying down and as cool as possible.
- **Do NOT give the victim any fluids.**

What is a "Heat Emergency"?

What is it that makes a very hot day a "heat emergency?" It is more than just high temperatures, and these warnings can be as important as those that tell us about impending thunder storms, blizzards and tornadoes. The National Weather Service has studied weather conditions in many areas of the country and has developed a formula that will tell when a potentially life threatening heat emergency will take place.

For information on current weather conditions in the Valley of the Sun, please log on to the National Weather Service at http://www.wrh.noaa.gov/psr/.

Here are the definitions you should know:

HEAT WATCH:	When a life-threatening heat emergency may occur in the next 24-48 hours.
HEAT WARNING:	When a life-threatening emergency exists or is imminent.

Extreme Heat Tips

- **Keep an eye on those at risk** – Check on elderly neighbors, homeless, or mentally ill who may need your help when the weather is dangerously warm.
- **Cars and heat don't mix** – **NEVER** leave children, pets or people needing special care in parked cars when the temperature is high.
- **Remember your pets** – Pets also need water, shade, and a cool place to rest.
- **Drink plenty of water** – Your body needs water to keep cool. Avoid beverages containing alcohol or caffeine.
- **Cover your head** – When you have to be outside in the sun, make sure you and your small children have your heads protected.
- **Keep fresh air circulating** – If you are not in a building with air conditioning, keep some windows or doors open slightly so fresh air can come in.
- **Baths and showers are good** – Cool down with frequent cool baths or showers, but do not take a shower immediately after becoming overheated. You may cool down too quickly and become ill or dizzy.
- **When working outside** – If you must work outside – take precautions - wear proper clothing, take frequent breaks, try and work during the very early morning hours, cover your head, drink plenty of water and slap on sunscreen that is SPF 15 or higher.
- **Stay cool indoors** – Stay inside and, if at all possible, in an air-conditioned place. If your home does not have air conditioning, go to the shopping mall or public library - even a few hours spent in air conditioning can help your body stay cooler when you go back into the heat.

Appendix F. Maricopa County CASPER service referral form

Community Assessment for Public Health Emergency Response
[Disaster name]

Confidential Referral Form

Date: __/__/____ Time: __:__
Cluster No.: _____
Interviewer's Initials: _____

Name: _____

Address: _____

Contact Information:

Home telephone: _____ - _____ - _____

Cell phone: _____ - ____ - _____

E-mail: _____

Summary of Need:

_____
_____
_____
_____
_____
_____
_____

Referral Made: Yes ☐ No ☐

Referred to: _____

Appendix G. Maricopa County CASPER questionnaire: *English*

MCDPH HEAT RELATED CASPER

To be completed by team BEFORE the interview	
Date (MM/DD/YY):	Type of structure: ◻ Single family ◻ Multiple unit
Team Member Initials:	◻ Mobile home ◻ Other _____
Cluster Number:	
Survey Number:	

Demographic Information

First we would like to ask you some general questions about your household and your home. Please respond for all members of your household.

Q1. How many people live in your household? _____

Q2. How many people living in your household are *(list number)*
Less than 2 years old? _#_ 2-17 years old? _#_ 18-64 years old? _#_ 65-84 years old? _#_ 85 and older? _#_
◻ DK ◻ Refused

Q3. Is there any adult in your household who does not speak English? ◻ Yes ◻ No ◻ DK ◻ Refused

Q4. What is your race and that of members of your household *(check all that apply)*?
◻ American Indian/Alaska Native ◻ Asian
◻ Black or African American ◻ White
◻ Native Hawaiian or Other Pacific Islander
◻ DK ◻ Refused

Q5. Is anyone in your household Hispanic or Latino?
◻ Yes ◻ No ◻ DK ◻ Refused

Q6. Does your household own or rent this residence?
◻ Own ◻ Rent ◻ DK ◻ Refused

Q7. Do you or does any member of your household work outdoors?
◻ Yes
◻ No (skip to question 9)
◻ Both, indoor and outdoor
◻ DK (skip to question 9) ◻ Refused (skip to question 9)

Q8. If someone in your household works outdoors, how many people work during the (list number):
Day Shift (Typically 7:30am-3:30pm) _#_
Evening Shift (Typically 3:30pm-11:30pm) _#_
Night Shift (Typically 11:30pm-7:30am) _#_
◻ DK ◻ Refused

Q9. Do you or does any member of your household work indoors in a location without air conditioning?
◻ Yes ◻ No ◻ DK ◻ Refused

Q10. What is the highest level of education achieved by a member of your household?
◻ Less than high school
◻ High school or GED
◻ Some college
◻ College graduate or more
◻ DK ◻ Refused

Risk Perception and Preparedness Barriers

Now, we would like to ask you some questions about how your household might prepare for a disaster or emergency. Please respond for all members of your household.

Q11. What are the top three emergencies/hazards that are most likely to affect your household? (check only three) (show form)
◻ Chemical release ◻ Earthquakes ◻ Tornadoes ◻ Wild Fires ◻ Extreme Heat ◻ Flood/Flash Flood
◻ Cyber-Attacks ◻ Terrorist Attacks ◻ Haboob/Dust Storm ◻ Epidemic/Pandemic (e.g., Flu H1N1)
◻ Power Outage ◻ Other, specify_____ ◻ DK ◻ Refused

Q12. Have you or a member of your household ever been told by a healthcare professional that he/she has: (check all that apply)
◻ Physical Disability ◻ Psychosocial/Mental Illness ◻ Developmental Disability ◻ Hearing Disability
◻ Vision Disability ◻ None ◻ DK ◻ Refused

Q13. How likely is your household to need a provided shelter in the event of an emergency evacuation?
◻ Very Likely ◻ Somewhat Likely ◻ Somewhat Unlikely ◻ Not at all Likely ◻ DK ◻ Refused

Q14. Does your household have any pets or large animals? ◻ Yes ◻ No (skip to Q16) ◻ DK ◻ Refused

Q15. If your household were asked to evacuate, what would you do with your pets or animals?
◻ Take them with you
◻ Find a safe place for them
◻ Leave them behind with food or water
◻ Would not evacuate because of pets or animals
◻ Would not evacuate for other reasons other than pets/large animals.
Specify:_____
◻ DK ◻ Refused

Q16. What is your households' primary means of transportation?
◻ Personal Vehicle
◻ Walk
◻ Bike
◻ Public Transportation (light rail, bus, etc.)
◻ Taxi
◻ Agency Pickup (dial-a-ride, shuttle)
◻ Get a ride from friends/family
◻ Other_____
◻ DK ◻ Refused

Now we would like to ask you some questions about your neighborhood, where you live, and how you feel about your community.

Q17. Where is the nearest person whom your household could call in an emergency?
□ Next door
□ In the neighborhood
□ Other part of the city
□ Other, specify_____
□ DK □ Refused

Q18. What is your households' main source(s) of information regarding disaster or emergency events? (check top two) (show Form)
□ TV □ Church or other groups
□ Radio □ Internet
□ Text Message □ Social Media
□ Automated call (e.g., reverse 911)
□ Local Newspaper
□ Neighbor/Friend/Family/Word of Mouth
□ Poster/Flyer
□ Other, specify_____
□ DK □ Refused

Knowledge of Heat Stress

Now, we would like to ask you about your experience with heat and other things you may know about heat related illness. There is no right or wrong answer. For the following questions, I will be asking about events that happened during the past summer, which is between May through September of 2014.

Q19. Do you or other members of your household recall hearing weather warnings about excessive heat in the summer of 2014?
□ Yes □ No (skip to Q21) □ DK □ Refused

Q20. If yes, what was your primary source of information? (check top two) (show Form)
□ TV □ Church or other groups
□ Radio □ Internet
□ Text Message □ Social Media
□ Automated call (e.g., reverse 911)
□ Local Newspaper
□ Neighbor/Friend/Family/Word of Mouth
□ Poster/Flyer
□ Other, specify_____
□ DK □ Refused

Q22. Have you or a member of your household had symptoms this past summer related to heat or high temperatures such as leg cramps, dry mouth, dizziness, fatigue, fainting, rapid heartbeat, or hallucinations?
□ Yes
□ No
□ DK □ Refused

Q21. Can you tell me any health problems you or a household member can get from exposure to heat?
□ DK □ Refused

Q23. What was the outcome of this heat illness episode? (check all that apply)
□ Stayed at home or did nothing
□ Called 911
□ Only visited ER
□ Admitted to hospital
□ Death
□ DK □ Refused

Coping Mechanisms/Access to Resources

Now, we would like to ask some questions about what steps you might take when it is hot outside.

Q24. Do you or members of your household ever feel too hot inside your home during the past summer?
□ Always
□ Most of the time, but not always
□ Sometimes, but rarely
□ Never
□ DK □ Refused

Q26. If your household used air-conditioning this past summer, when did you use it?
□ Nighttime only
□ Daytime only
□ Day and night
□ DK □ Refused

Q25. Which of the following did your household use to cool your house this past summer? (check all that apply)
□ Central Air Conditioning
□ Window Air Conditioning
□ Swamp or Evaporative Cooler
□ Fans
□ Misters
□ Trees and plants
□ None
□ Other, specify_____
□ DK □ Refused

Q27. Does anything prevent your household from using air-conditioning? (check all that apply)
□ Cost of electricity
□ Doesn't work
□ Cost of Repairs
□ Noise
□ I have a swamp cooler
□ Medical reasons
□ I don't have an air conditioner
□ No, nothing prevents me from using it
□ Other, specify_____
□ DK □ Refused

Q28. Are you or members of your household aware of the utility assistance programs in the area (i.e. Low Income Home Energy Assistance Program, LIHEAP)

□ Yes □ No (skip to question 31) □ DK (skip to question 31) □ Refused (skip to question 31)

Q29. Have you or a member of your household ever applied for utility assistance program?

□ Yes

□ No, I was not aware of any utility assistance programs (skip to question 31)

□ No, I did not need utility assistance (skip to question 31)

□ No, I did not qualify for utility assistance (skip to question 31)

□ DK (skip to question 31) □ Refused (skip to question 31)

Q30. Did you or members of your household experience any barriers when applying for utility assistance program?

□ Yes, please explain_____

□ No

□ DK □ Refused

Neighborhood/Access to Resources

Now, we would like to ask some questions about how you deal with the heat.

Q31. When the weather is very hot, do you or members of your household ever leave your home and go to an air conditioned place to cool off?

□ Yes

□ No (skip to question 35)

□ Sometimes

□ DK (skip to question 35) □ Refused (skip to question 35)

Q35. Is there anything that prevents you or a household member from going to an air conditioned place to cool off? (check all that apply)

□ Time of day □ Personal Safety

□ Disability □ Cannot bring pets

□ Distance from home □ Nothing prevents me

□ Lack of transportation

□ Other, specify_____

□ DK □ Refused

Q32. Where do you or members of your household go to cool off?

□ Mall □ Shelter

□ Church □ Cooling Center

□ Community Center □ Movie theater

□ Library □ Friends/Neighbors

□ Supermarket □ Museum

□ Other, specify_____

□ DK □ Refuse

Q36. Have you or members of your household heard of Heat Refuge Stations (Cooling Centers)?

□ Yes

□ No (skip to question 39)

□ DK (skip to question 39) □ Refused (skip to question 39)

Q33. How long do you or your household members usually stay at the air conditioned place or cooling center?

□ Less than an hour

□ One to four hours

□ More than four hours

□ DK □ Refused

Q37. Do you or members of your household know where a nearby Heat Refuge Stations (Cooling Center) is located?

□ Yes

□ No

□ DK □ Refused

Q34. How does your household normally travel to the air conditioned place? (check all that apply)

□ Personal Vehicle

□ Walk

□ Bike

□ Public Transportation (light rail, bus, etc.)

□ Taxi

□ Agency Pickup (dial-a-ride, shuttle)

□ Get a ride from friends/family

□ Other_____

□ DK □ Refused

Q38. Have you or members of your household ever used a Heat Refuge Station (Cooling Center)?

□ Yes

□ No (if not, why?)_____

□ DK □ Refused

Conclusion

Q39. Is there anything else you would like to talk about related to heat?

Appendix H. Maricopa County CASPER questionnaire: *Spanish*

MCDPH HEAT RELATED CASPER

To be completed by team BEFORE the interview	
Fecha (MM/DD/YY):	Tipo de estructura que esta visitando: □ Casa □ Unidad habitacional (apartamentos) □ Casa Mobil □ Otro _____
Iniciales del miembro de equipo:	
Número de Area:	
Número de Encuesta:	

Información Demografica

Primeramente nos gustaría hacerle algunas preguntas generales sobre su casa. Por favor responda tomando en cuenta todos los miembros de su hogar.

Q1 Incluyendolo a usted ¿Cuantas personas viven en su hogar? _____
□ No se □ Se rehuso a contestar

Q2. ¿Cuantas personas que viven en su hogar tienen (lea los grupos de edad)?:
Menores de 2 años_#_ 2-17 años de edad _#_ 18-64 años de edad _#_ 65-84 años de edad _#_ 85 o mayores _#_
□ No se □ Se rehuso a contestar

Q3. ¿Hay algún adulto en su hogar que no hable ingles? □ Si □ No □ No se □ Se rehuso a contestar

Q4. ¿Cúal es su raza y la del resto de los miembros de su hogar? (marque todo lo que corresponda)
□ Indio Nativo Americano o Nativo de Alaska □ Asíatico
□ Afroamericano □ Blanco
□ Hawaiano o de las Islas del Pacifico
□ No se □ Se rehuso a contestar

Q5. ¿Hay alguien en su hogar considerado Hispano o Latino?
□ Si □ No □ No se □ Se rehuso a contestar

Q6. En este hogar, ¿ustedes son propietarios de esta vivienta o es rentada?
□ Propietarios □ Renta □ No se □ Se rehuso a contestar

Q7. ¿Usted o algun miembro de su hogar trabaja al aire libre o a la interperie?
□ Si □ No (pase a la pregunta 9)
□ Trabaja tanto en la sombra como al aire libre (adentro y afuera)
□ No se (pase a la pregunta 9)
□ Se rehuso a contestar (pase a la pregunta 9)

Q8. Si alguien en su hogar trabaja a la interperie, ¿Cuanta gente trabaja durante las siguientes horas? (lea los horarios):
De día (entre las 7:30am-3:30pm) _#_
Por la tarde (entre las 3:30pm-11:30pm) _#_
De noche (entre 11:30pm-7:30am) _#_
□ No se □ Se rehuso a contestar

Q9. ¿Usted o algun miembro de su hogar trabaja dentro de un lugar sin aire acondicionado?
□ Si □ No □ No se □ Se rehuso a contestar

Q10. ¿Cúal es el nivel más alto de educación alzanzado dentro de los miembros de su hogar?
□ No termino la preparatoria (high school)
□ Diploma de preparatoria (High School or GED)
□ Estudio la universidad o colegio pero no se graduo
□ Se graduo de colegio o universidad o un nivel mas alto
□ No se □ Se rehuso a contestar

Percepción de Riesgo y Barreras para la Preparación de Emergencias

Ahora quisieramos preguntarle sobre como en su hogar se preparan para las emergencias o desastres. Por favor conteste por todos los miembros de su hogar.

Q11. ¿Cúales son las 3 principales emergencias o peligros que pudieran afectar su hogar? (marque solo tres de la lista) (muestra hoja)
□ Derrame de químicos □ Temblores □ Tornados □ Incendios Forestales □ Calor Extremo □ Inundaciones
□ Ataque Cibernetico □ Ataques Terroristas □ Tormentas de Polvo o Monsones □ Epidemias/Pandemias (ej: la Gripe H1N1)
□ Apagones Eléctricos Especifique otros peligros_____ □ No se □ Se rehuso a contestar

Q12. Se le ha dicho a usted o a algun miembro de su hogar de parte de un profesional médico que tiene lo siguiente: (marque todo lo que aplique)
□ Discapacidad Física □ Enfermedad mental □ Discapacidad de Desarrollo □ Discapacidad Auditiva
□ Discapacidad Visual □ Ninguna □ No se □ Se rehuso a contestar

Q13. ¿Qué tan probable es que los mienbros de su hogar necesiten un albergue en caso de una evacuación de emergencia?
□ Muy probable □ Algo probable □ No muy probable □ No Necesitamos Albergue □ No se □ Se rehuso a contestar

Q14. Tiene mascotas u otros animales grandes (caballos, ganado) en su hogar? □ Si □ No (pase a la pregunta 16) □ No se
□ Se rehuso a contestar

Q15. Si su hogar tuviera que ser evacuado, ¿Qué haría con sus mascotas o animales?
□ Se los llevaría con usted
□ Encontraría un lugar seguro para ellos
□ Los dejaría en la casa con agua y comida
□ No dejaría mi casa debido a mis mascotas o animales
□ No dejaría mi casa por ninguna razón aunque no tuviera animals.
especifique:_____
□ No se □ Se rehuso a contestar

Q16. ¿Cúal es el principal medio de transporte en su hogar?
□ Vehiculo Personal
□ Caminar
□ Bicicleta
□ Transporte Público (Tren lígero, camión, etc)
□ Taxi
□ Transporte de Agencia (dial-a-ride)
□ Uso transporte con amigos y familiares
□ Otro_____
□ No se □ Se rehuso a contestar

Ahora nos gustaría preguntarle sobre su vecindario y como se siente en su comunidad.

Q17. ¿En que lugar se encuentra la persona más cercana con la que se comunicarían en su hogar en caso de una emergencia?
□ La proxima puerta (vecino cercano)
□ Aqui en mi vecindario
□ Otras partes de la ciudad
□ Otro lugar, especifique _____
□ No se □ Se rehuso a contestar

Q18. ¿Cúal es la principal fuente de infomación de su hogar en caso de emergencias? (seleccione las dos principales) (muestra hoja)
□ TV □ Iglesia u otros grupos
□ Radio □ Internet
□ Mensaje de Texto □ Redes sociales
□ Mensaje grabado del sistema de emergencia 911 (reverse 911)
□ Periódico Local
□ Vecino/amigo/familiar/tercera persona
□ Poster/Volante
□ Otras fuentes, especifique _____
□ No se □ Se rehuso a contestar

Conocimiento sobre el Estres Por Calor

Ahora nos gustaría preguntarle sobre su experiencia con el calor y sobre las cosas que usted puede que sepa sobre las enfermedades relacionadas al calor. No hay respuesta correcta o incorrecta. Para las siguientes preguntas, le estare preguntando sobre eventos ocurridos durante el verano pasado, entre los meses de mayo y septiembre del 2014.

Q19. ¿Usted o los miembros de su hogar recuerdan haber escuchado anuncios sobre el exceso de calor en el verano del 2014?
□ Si □ No (pase a la pregunta 21) □ No se □ Se rehuso a contestar

Q20. Si su respuesta fue si, ¿Cúal fue su principal fuente de información? (marque las dos fuentes principales) (muestra hoja)
□ TV □ Iglesia u otros grupos
□ Radio □ Internet
□ Mensaje de Texto □ Redes sociales
□ Mensaje grabado del sistema de emergencia 911 (reverse 911)
□ Periódico Local
□ Vecino/amigo/familiar/tercera persona
□ Poster/Volante
□ Otras fuentes, especifique _____
□ No se □ Se rehuso a contestar

Q22. ¿Ha tenido usted o algun miembro de su hogar síntomas relacionados al calor o por las altas temperaturas como calambre en las piernas, boca seca, mareos, fatiga, desmayo, palpitaciones o halucinaciones?
□ Si
□ No
□ No se □ Se rehuso a contestar

Q21. ¿Me pudiera decir algunos de los problemas que usted o los miembros de su hogar pudieran sufrir por estar expuestos al calor?

□ No se □ Se rehuso a contestar

Q23. ¿Cúal fue el resultado de este episodio de enfermedad por el calor? (seleccione todo lo que aplique)
□ Se quede en casa y no paso nada
□ Llamó al número de emergencia 911
□ Visitó la sala de emergencia
□ Fue hospitalizado
□ Muerte
□ No se □ Se rehuso a contestar

Como Lidear con el Calor/ Acceso a Recursos

Ahora nos gustaría preguntarle sobre que pasos toma cuando esta al aire libre en las altas temperaturas.

Q24. ¿Usted o los miembros de su hogar alguna vez han sentido el calor muy fuerte dentro de su casa en el verano pasado?
□ Siempre
□ La mayor parte del tiempo pero no siempre
□ Algunas veces pero es raro
□ Nunca □ No se □ Se rehuso a contestar

Q26. Si en su hogar utilizaron el aire acondicionado este verano pasado, ¿Cuando lo usaron?
□ Solo en la Noche
□ Solo de Día
□ Día y Noche
□ No se □ Se rehuso a contestar

Q25. ¿Cúal de los siguientes métodos se utilizaron para enfriar su hogar en el verano pasado? (marque todos los que apliquen)
□ Unidad Central de Aire Acondicionado
□ Unidad de Aire acondicionado de Ventana
□ Cooler de Vapor
□ Abanicos
□ Cortinas, toldos
□ Línea de rocio de agua
□ Arboles y plantas
□ Ninguno
□ Otros, especifique _____
□ No se □ Se rehuso a contestar

Q27. ¿Hay algo que evite que se use el aire acondicionado en su hogar? (marque todas las respuestas que apliquen)
□ El costo de electricidad
□ No Funciona
□ Costo de reparaciones
□ El ruido
□ Tengo una unidad de agua o
□ Razones Médicas
□ No tengo aire acondicionado
□ Nada me impide que lo use
□ Otra razon, especifique _____
□ No se □ Se rehuso a contestar

Q28. ¿Sabe usted o los miembros de su hogar sobre los programas de asistencia para pagar la energía electrica? (ejemplo: Low Low Income Home Energy Assistance Program, LIHEAP)

□ Si □ No (pase a la pregunta 31) □ No Se (pase a la pregunta 31) □ Se rehuso a contestar (pase a pregunta 31)

Q29. ¿Usted o algun miembro en su hogar ha solicitado asistencia para pagar la energía electríca?

□ Si

□ No, No sabía que existía un programa de asistencia para pagar la energía electríca o luz (pase a la pregunta 31)

□ No, no necesito asistencia para pagar la luz (pase a la pregunta 31)

□] No, no califico para recibir asistencia para pagar la luz o energía electríca (pase a la pregunta 31)

□ No Se (pase a la pregunta 31) □ Se rehuso a contestar (pase a pregunta 31)

Q30. ¿Usted o los miembros en su hogar han tenido problemas cuando solicitan asistencia para pagar la energía electríca?

□ Si, por favor explique _____

□ No

□ No se □ Se rehuso a contestar

En su Vecindario/Acceso a Recursos

Ahora, nos gustaría preguntarle sobre como lidea con el calor.

Q31. ¿Cuando la temperatura esta muy caliente usted o los miembros en su hogar salen de su casa para ir a un lugar con aire acondicionado?

□ Si

□ No (pase a la pregunta 35)

□ A veces

□ No Se (pase a la pregunta 35)

□ Se rehuso a contestar la pregunta (pase a la pregunta 35))

Q35. ¿Existe algo que evite que usted o los miembros de su familia vayan a un lugar con aire acondicionado para refrescarse? (marque todas las respuestas que apliquen)

□ Hora del día □ Seguridad Personal

□ Discapacidad □ No poder llevame a las macotas

□ Distancia de la casa □ Nada me evita que asista

□ Falta de transportación

□ Otro, especifíque _____

□ No se □ Se rehuso a contestar

Q32. Si usted o miembros de su hogar salen de casa para ir a un lugar con aire acondiconado, ¿A donde ván? (seleccione todas las que apliquen)

□ Centro comercial □ Refugio

□ Iglesia □ Centro de enfriamiento

□ Centro comunitario □ Cine

□ Biblíoteca □ Amigos/Vecinos

□ Supermercado □ Museo

□ Otro sitio, especifíque _____

□ No se □ Se rehuso a contesta

Q36. ¿Usted o los miembros de su hogar han escuchado sobre las estaciones de refugio por el calor?

□ Si

□ No (pase a la pregunta 39)

□ No Se (pase a la pregunta 39)

□ Se rehuso a contestar la pregunta (pase a la pregunta 39))

Q33. ¿Qué tanto tiempo permanence usted o los miembros de su hogar en el sitio con aire acondicionado?

□ Menos de una hora

□ Una a cuatro horas

□ Más de cuatro horas

□ No se □ Se rehuso a contestar

Q37. ¿Usted o los miembros de su hogar saben donde estan localizadas las estaciones para refrescarse o refugios para evitar el calor?

□ Si

□ No

□ No se □ Se rehuso a contesta

Q34. ¿Cómo se transporta usualmente al lugar para refrescarse con aire acondicionado? (seleccione todas las respuestas que apliquen)

□ Vehiculo Personal

□ Caminar

□ Bicicleta

□ Transporte Público (Tren lígero, camión, etc)

□ Taxi

□ Transporte de Agencia (dial-a-ride)

□ Uso transporte con amigos y familiares

□ Otro_____

□ No se □ Se rehuso a contestar

Q38. ¿Usted o los miembros de su hogar saben donde estan localizadas las estaciones para refrescarse o refugios para evitar el calor?

□ Si

□ No (¿por qué?)_____

□ No se □ Se rehuso a contesta

Conclusion

Q39. ¿Hay algo más que usted quisiera agregar relacionado al calor?