

# **Maricopa County Manufactured and RV Homes: Raising Awareness about Extreme Heat, Safety Tips, and Available Community Resources**



## **HEALTHY URBAN ENVIRONMENTS PRE-HEAT SEASON (JULY) SURVEY RESULTS 2020**



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# EXECUTIVE SUMMARY



## KEY TAKEAWAYS

- Each year, 100 residents on average die from heat and more than 1,700 residents suffer heat-associated injuries. **In the last five years (2016-2020), this average has climbed to 207 deaths and 2,000 heat-associated injuries.** Nearly 26% of these heat deaths occur indoors **with 30% of them occurring in mobile home communities.**
- In 2020, MCDPH and partners **initiated a campaign to raise awareness about extreme heat, safety tips, and available community resources among residents living in a select mobile home community.** The campaign consisted of distribution of the *Heat Toolkit* to the selected community, which provided information on heat illness, heat safety tips, and community resources.
- **The first phase of this project (pre-heat season) includes [Heat Toolkits](#) and [survey](#) distribution to residents living in the mobile home community.** For detailed information on this initiative following post-heat season, refer to the following reports: **Pre-Heat Season (July) Survey Results report**, Post-Heat Season (October) Survey Results report, and Evaluation report. 144 surveys were distributed in July, and 103 pre-heat season surveys were completed (66% response rate).
- **Most residents (85%) feel at risk of heat-related illnesses**, yet 93% stay home and take no action when they feel ill.
- **Only 5% of residents never feel hot in their home**, while most residents feel hot at temperatures of 80 degrees Fahrenheit and above (94%).
- Most residents use window air conditioners (78%) with **49% of these in working condition.**
- **70% of residents limit their home cooling system use in their home - primarily due to cost of electricity (100%) and cost of repairs (62%).**

- Nearly 84% of residents **were unaware of programs that assist with the cost of utility bills**. Only 2% have used these services.
- Most residents (96%) **were unaware of programs that assist with home cooling system repairs**.
- Only 10% of residents have applied to the community programs that assist with the cost of utility bills and home cooling system repairs. **78% did not apply because they were unaware of the programs and 77% did not have the contact information**.
- Only 1% of residents have used a cooling center's services while **88% were unaware of cooling centers**.
- Half of the residents (49%) that **left home to cool off during high temperatures** went to a supermarket (63%) or mall (49%).<sup>1</sup>
- The COVID-19 pandemic has had many effects on the residents, with a key one **being loss of a job (74%), which has made it difficult for residents to pay for essentials such as utilities (28%) and rent (22%)**.<sup>2</sup>

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<sup>1</sup> Pre-heat season was originally intended to take place in April but was extended to July due to the pandemic.

<sup>2</sup> This report discusses the post-heat season survey results from July



The Greater Phoenix area is one of the largest urban areas to experience extreme heat. **Extreme heat is a threat to human health, with mobile home communities being disproportionately impacted.** Maricopa County Department of Public Health seeks to discover why the impact on heat is higher in mobile home communities.

## OBJECTIVE

The objective of this survey (objective 3) is to **gain a better understanding of mobile home residents' heat perception, knowledge of heat illness, coping mechanisms during heat events, barriers faced to cooling, knowledge and use of community resources, and effects of the COVID-19 pandemic.**

- 94% felt hot at temperatures of 80 degrees Fahrenheit and above.

## METHODS

To learn more about trailer/mobile home residents in relation to extreme heat, a community survey was designed and implemented. The survey will be carried out in two phases: 1) pre-heat season (July), and 2) post-heat season (October). Residents who completed the survey did so over the phone with a Community Health Worker (CHW).

During pre-heat season, resources in the form of a [Heat Toolkit](#) were provided to residents along with the pre-heat season [survey](#).

The October Survey Results report will discuss the results of both the July participants and the October participants, and the Evaluation report will compare the behavioral changes between the participants.

## RESULTS

The results described below are from the pre-heat season survey conducted in July.

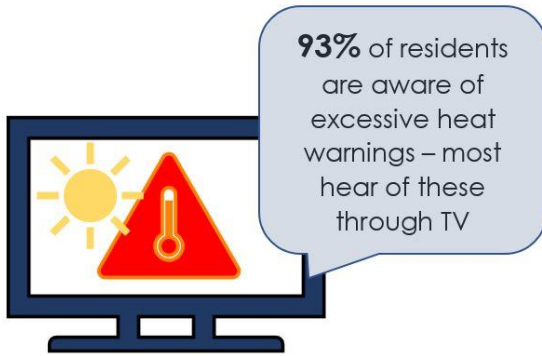
### Heat Perception

- **85% of respondents felt at risk of heat-related illness.**
- Only 5% never felt too hot inside their homes during summer months.



### Knowledge of Heat and Illness

- Residents are aware of excessive heat warnings (93%). Most residents hear of these warnings through TV (91%).
- **Most residents could name heat symptoms.** The most common symptom listed was dehydration (61%).
- 73% of participants reported experiencing heat-related illness.
- **The most common outcome of experiencing a heat-related illness was staying home and not taking action (93%).**



## Coping Mechanisms

- More than 3/4 (78%) of residents used window air-conditioners; however, only 49% of these were in working condition.
- Most participants used their home cooling units all day and all night (85%). Only 1% did not use A/C at all.
- **Half of the participants leave home to cool off during high summer temperatures.**
- Supermarkets were the most popular places to go to cool off.
- **Very few participants have used a cooling center's services (1%).**

$\frac{1}{2}$  of participants leave home to cool off during high summer temperatures – most go to a supermarket



## Barriers Faced Toward Cooling

- Although home cooling systems were commonly used among the residents, **most reported limitations to their use (70%).**
- All residents reported the **cost of electricity** as the primary reason for limiting the use of their home cooling systems.




### Cost of electricity

was the most common reason for limiting home cooling system use



## Knowledge and Use of Community Resources

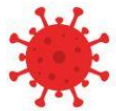
- Most participants were **unaware of the community programs offered to help with the cost of utility bills (84%),** and only 2% have used the services.
- Almost all of the residents surveyed were **unaware of community programs to assist with home cooling repairs (96%).**
- Very few residents have applied to any community programs that assist with the cost of utility bills and cooling system repairs (11%).
- Over 3/4 (77%) reported a **lack of contact information as the main reason for not applying to assistance programs.**



**Lack of contact information** was the main reason for not applying to utility assistance programs

## Effects of COVID-19

- **74% of households experienced job loss** from at least one household member.
- **28% of households were unable to pay utilities and 22% were unable to pay their rent or mortgage.**
- 16% of residents had at least one household member that had been diagnosed with COVID-19.



**74%** of households experienced job loss during the COVID-19 pandemic





# BACKGROUND



The Greater Phoenix area is one of the largest urban areas to experience extreme heat. Extreme heat is a threat to human health and preventing heat-associated morbidity and mortality is a public health priority in Maricopa County. The Maricopa County Department of Public Health (MCDPH), Office of Epidemiology is responsible for monitoring health trends and behavioral risk factors among its 4.5 million residents. MCDPH has been conducting heat surveillance since 2006 and, over the years, has surveyed community members to understand how they cope with extreme heat during the summer.

Every year, our populous county experiences continuous and long stretches of extreme heat and is home to many disproportionately impacted subpopulations. While all residents and visitors are affected by extreme heat, the elderly, those with underlying health conditions, people of color, outdoor workers, small children, and those living in poverty are among those most at risk. Exposure to extreme high temperatures can cause serious health complications such as dehydration, heat cramps, heat-stroke, respiratory illness, cardiovascular illness, and even death.

Each year, 100 residents on average die from heat and more than 1,700 residents suffer heat-associated injuries. In the last five years (2016 - 2020), this average has climbed to 207 deaths and 2,000 heat-associated injuries. Nearly 26% of these heat deaths occur indoors. Most of the indoor deaths occur in residential units including single-family homes (50%), trailer/RV/mobile homes (30%), and apartments/condos (16%). Ninety-four percent of all heat-associated deaths occurring within mobile homes were among individuals 50 years and older. Furthermore, it is known that at time of death these individuals were not using their air-conditioning for several reasons, including not using AC (16%), having a non-functioning AC system (70%), or not having electricity (7%). For more information on heat-associated deaths by type of housing, refer to [Appendix V](#). Mitigation efforts from local government agencies and community-based organizations have included hydration stations and cooling centers. The purpose of cooling centers is to provide an air-conditioned public space to temporarily prevent the negative effects of extreme heat. This MCDPH initiative is focused on raising awareness about *Extreme Heat, Safety Tips, and Available Community Resources Among Mobile Home Communities*.

# INTRODUCTION



In Maricopa County (MC), extreme heat is a public health emergency. During the summer, some areas of Arizona, such as MC, can endure over 126 days of extreme heat with temperatures of more than 100°Fahrenheit. In 2020, MC endured 145 days of extreme heat, higher than average in the past years and rising. Extreme heat can impact daily life by hindering the ability to do things such as play outside, participate in outdoor recreational activities, grocery shopping, and use public transportation. Heat can also cause increased utility expenses, illnesses, and even death. These impacts are even greater among disproportionately impacted communities, such as mobile home communities. Knowing this, MCDPH initiated a project to learn more about impact of heat among residents in mobile home community. Through this initiative, Office of Epidemiology seeks to gain a better understanding of mobile home residents' heat perception, knowledge about heat illness, coping mechanisms used during heat events, barriers faced to cooling, knowledge and use of community resources, and the effects COVID-19 has had on the community. Also, this initiative is a great opportunity to raise awareness and provide education to improve the knowledge about heat illness and heat resources among residents. To implement this initiative, the Office of Epidemiology staff partnered with the community partners who helped with distribution of heat resources and data collection by interviewing residents living in a selected mobile home community. Initial collaboration was established within MCDPH between offices, including Office of Epidemiology and the Office of Nutrition and Active Living. The Office of Nutrition and Active living had been working with Community Health Workers who had an existing connection with residents of mobile home communities. Connection between public health offices led to a partnership with the community-based organization (COB)-Salud en Balance.

The Office of Nutrition and Active Living has been closely working with a faith-based organization, Iglesia Episcopal San Pablo, on a *Shared Use* funding opportunity. This funding opportunity is designed to support MCDPH's goal of increasing the number of spaces/facilities that will provide new or expanded access to physical activity and/or healthy eating opportunities at very little or no cost to community residents. Iglesia Episcopal de San Pablo has formed a six-member team of Community Health Workers, Salud en Balance (Health in Balance) which is led by Ms. Teresa Sosa, and are lending office and classroom space to serve as a community center for neighborhood residents. The conversation and connection with both the Office of Nutrition and Active Living and Salud en Balance staff, culminated in a longstanding partnership, which is still ongoing. The team agreed that a project on raising heat awareness would complement the existing initiative by MCDPH to promote the wellbeing of the residents of a mobile home community.

In July of 2020, MCDPH in partnership with the Salud en Balance staff initiated a campaign to provide educational heat materials including information about extreme heat, safety tips and available community resources in a mobile home community.

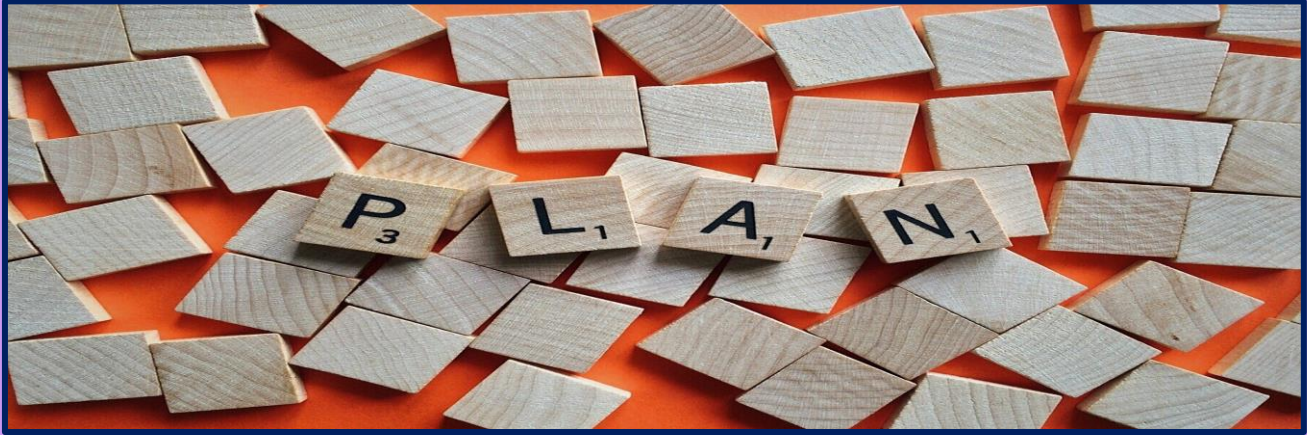
The purpose of this initiative, in addition to providing information, was to assess the community's knowledge about heat exposure, heat illness, available community heat resources, the ways residents cope with the heat, and how COVID-19 has affected their household's daily life. In order to learn more from residents about these experiences, MCDPH, in collaboration with Salud en Balance, designed a survey which was implemented and distributed to the residents of the mobile home community by the Community Health Workers at Salud en Balance along with a *Heat Toolkit* (see [Appendix IX](#)).





# GOAL AND OBJECTIVES

See [Appendix I](#)



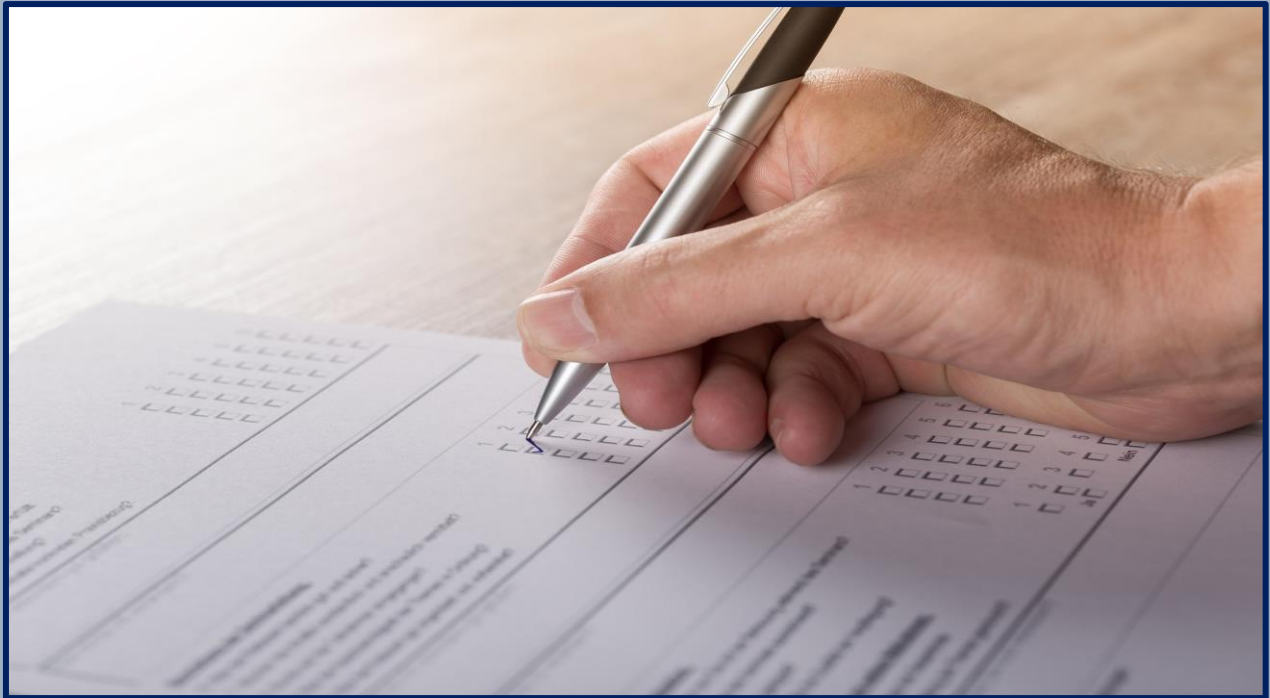
## OVERARCHING GOAL:

Reduction of heat deaths and illness in MC residents living in trailer/ mobile home communities by raising awareness about extreme heat, safety tips, and available community resources

- **Objective 1:** Provide information and resources related to heat – develop [Heat Toolkit](#)
- **Objective 2:** Train residents and Community Health Workers – *conduct workshops*
- **Objective 3:** Gain a better understanding of trailer/mobile home residents' heat perception, knowledge, coping mechanisms, barriers faced toward cooling, and knowledge and use of community resources – *administer [survey](#) in pre-heat/post-heat season.*
- **Objective 4:** Capture and identify behavior modification in relation to heat exposure, safety tips, use of heat resources; measure the changes that occur throughout the summer – *administer survey in post-heat season*
- **Objective 5:** Compare information obtained from both surveys (during pre/post-heat season) – *analyze and evaluate data to learn if any behavioral changes has occurred regarding use of heat resources*
- **Objective 6:** Communicate information to residents and Community Health Workers – *plan next steps*

\*This pre-heat season (July) report specifically addresses 1, 2, and 3 objectives. Refer to the October Survey Results report and Evaluation report for more information following post-heat season.

# METHODS AND DATA COLLECTION STRATEGIES



In April 2020, MCDPH staff partnered with Salud en Balance and ASU to form a project team. The project team used the Community Health Assessment Toolkit from the Association for Community Health Improvement, 2017 as a model for this study (see [Figure 1](#)). This framework provides a nine-step pathway for identifying and analyzing community health needs and assets, prioritizing needs, and developing and implementing plans to address significant needs. In addition, this assessment tool focuses on community engagement, designing interventions, and implementing interventions. The ASU Institutional Review Board declared this assessment exempt based on not collecting personally identifiable information and being strictly intended for program implementation. Members of the assessment team completed training through the Collaborative Institutional Training Initiative (CITI) Human Research Curriculum.



**Figure 1. Community Health Assessment Toolkit (Association for Community Health Improvement, 2017)**



In order to learn about the community's needs about heat and provide information about available resources, the study team utilized the following steps:

#### **Step 1: Reflect and Strategize:**

**How can we raise awareness about extreme heat, safety tips and available resources among residents living in a mobile home community?**

Based on knowledge that approximately 94% of all heat-associated deaths occurring within mobile homes were among individuals 50 years and older and knowing that at the time of death these

individuals were not using their air-conditioning for several reasons, including not having AC (23%), not using their AC (16%) having a non-functioning AC system (70%), or no electricity (7%), the project plan was centered around individuals living at the mobile home community (see [Appendix IV](#) for a comparison of heat deaths in the 85008 zip code, the zip code where the mobile home community is located, vs Maricopa County).

Project goals were focused on solutions that fall under themes, including training, demonstration, and evaluation. The plan was to organize two half-day workshops: one at the beginning of the heat season (early April) and the second one at the end of the heat season

(end of October). Workshops were attended by mobile home community residents, ASU staff, volunteers (college students), and other community partners. These workshops serve to connect with residents to talk about heat, answer their questions, provide educational resources collected in the packet – *The Heat Toolkit* (see [Appendix IX](#)). In order to assess the knowledge about heat exposure, heat illness, available community heat resources, and ways residents cope with the heat, surveys were administered in both workshops. Information provided through the survey at the beginning of the season (pre-heat season) provided an understanding of how much residents know about heat exposure and types of heat illness; heat resources; and what coping mechanisms they use. At the second workshop, through the second survey (post-heat season), the objective is to capture and identify behavior modifications and measure the changes that occur throughout the summer. Mobile home residents asked we add in the October survey, a new section, “resources and potential solutions” which will provide an opportunity for resident’s voices to be heard about potential solutions. An evaluation report will be generated, and the team will have a better sense of where to focus efforts and how to engage more community members. It is strongly believed that this whole process will help raise awareness and open communication with the community about knowledge, barriers, resources, and solutions.

## **Step 2: Identify stakeholders and partnerships with community**

### **What are the resources and how we can fulfil our plan to raise the awareness about heat among residents living in a mobile home community?**

In March of 2020, Healthy Urban Environments at the Arizona State University (ASU) selected MCDPH’s proposed project and provided funding. In April of 2020, MCDPH had initiated a conversation about the project with Salud en Balance. Since then, weekly meetings were conducted, which are attended by the project HUE team, (Salud en Balance, the Office of Nutrition and Active Living, and the Office of Epidemiology staff). Other partners included the residents of the mobile home community where the project took place; Knowledge Exchange for Resilience (KER), who helped with project design and to obtain the IRB approval; and the Arizona Association of Manufactured Home and RV Owners (AAMHO), who provided support for the project. Due to the COVID-19 pandemic, the course of the project changed. Initially, plans were in place for in-person half day meetings with the community residents and stakeholders participating. These plans were replaced with virtual meetings and no community resident participation. Only Community Health Workers were able to participate (6 members of the Salud en Balance team) virtually as well as an interpreter. [Table 1](#) describes the partners by type and role they played for this project.

**Table 1. List of Stakeholders Involved in HUE Survey 2020**

Partners	Type	Role Involved	Individuals (N)
Mobile Home Community	Community Members	Survey respondents	156
Iglesia Episcopal San Pablo, Salud en Balance	Community Partner	Supportive role in the study	6
		Distributed surveys	
		Organized incentive plan	
		Assisted in planning and implementing project	
Maricopa County Department of Public Health (MCDPH): Office of Nutrition and Active Living	Local Public Health Department	Supportive role in the study	1
		Implementation	
		Consultation	
Healthy Urban Environments (HUE) Initiative	Community Partner	Provided funding for project	4
Arizona State University (ASU): Knowledge Exchange for Resilience	Academic Institution	Study design	1
		Implementation	
Maricopa County Department of Public Health (MCDPH): Office of Epidemiology, Climate and Health	Local Public Health Department	Study design	6
		Implementation	
		Assessment	
		Dissemination of study results	
The Arizona Association of Manufactured Home and RV Owners	Community Partner	Supportive role in the study	1

**Step 3: Define the Community:**

This assessment focused on the residents of a mobile home community with whom Salud en Balance already had an existing relationship. The mobile home community is located in Phoenix, Maricopa County in the zip code 85008 and consists of 109 mobile homes. Within a quarter mile or walking distance, there is a bus route and a park. Within one mile of their homes, they have access to three supermarkets, one hospital, four public schools, one private school and three charter schools. The mobile home community is predominately

Hispanic (based on the survey in July, 98.0%). According to the 2018 Census, the Hispanic population of Maricopa County is 31.3%, yet the Hispanic population in the zip code 85008, where the mobile home community is located, is 57.6%. The percentage of people living below poverty for the zip code 85008 is 29.0% compared to the percentage of people living in Maricopa County below poverty level of 12.1%. The labor force is also higher in the zip code 85008 at 73.1% compared to MC at 64.6%, yet the unemployment rate is higher in 85008 at 6.3% compared to MC at 4.6%.

**Step 4: Collect and analyze data:**

In April - July of 2020, the team developed an instrument, the *Healthy Urban Environments (HUE)* survey (see Appendices [VI](#) and [VII](#)) through Qualtrics, a web-based survey tool that assists in creating and collecting survey responses as well as managing data. This survey included 31 questions separated into the following topics (see [Figure 2](#)). The survey was pilot tested before it was distributed to residents. Due to the COVID-19 pandemic,

adjustments had to be made to the project which included administration of the surveys over the phone rather than in-person. Furthermore, questions specific to the impact of the pandemic were added to the survey. The team also designed a *Heat Toolkit*, which included different heat resources including information about extreme heat, types of heat illness, safety tips to stay cool, and available community resources (see [Appendix IX](#)).

**Figure 2. Survey Topics**

<b>Demographics</b>	<ul style="list-style-type: none"> <li>•Questions 1-8</li> <li>•Age, Ethnicity, Employment Status</li> </ul>
<b>Knowledge of Heat and Illness</b>	<ul style="list-style-type: none"> <li>•Questions 9-13</li> <li>•Heat Warnings, Symptoms of Illness</li> </ul>
<b>Perceptions about Heat</b>	<ul style="list-style-type: none"> <li>•Questions 14-16</li> <li>•Heat Inside Home</li> </ul>
<b>Home Cooling Systems</b>	<ul style="list-style-type: none"> <li>•Questions 17-21</li> <li>•Types of Home Cooling Systems</li> </ul>
<b>Access to Resources</b>	<ul style="list-style-type: none"> <li>•Questions 22-25</li> <li>•Awareness of Community Programs to Assist in Repairs and Utilities</li> </ul>
<b>Neighborhood Resources</b>	<ul style="list-style-type: none"> <li>•Questions 26-29</li> <li>•Cooling Centers and Air-Conditioned Places</li> </ul>
<b>COVID-19 Questions</b>	<ul style="list-style-type: none"> <li>•Questions 30-31</li> <li>•Effects of COVID-19 on Household</li> </ul>

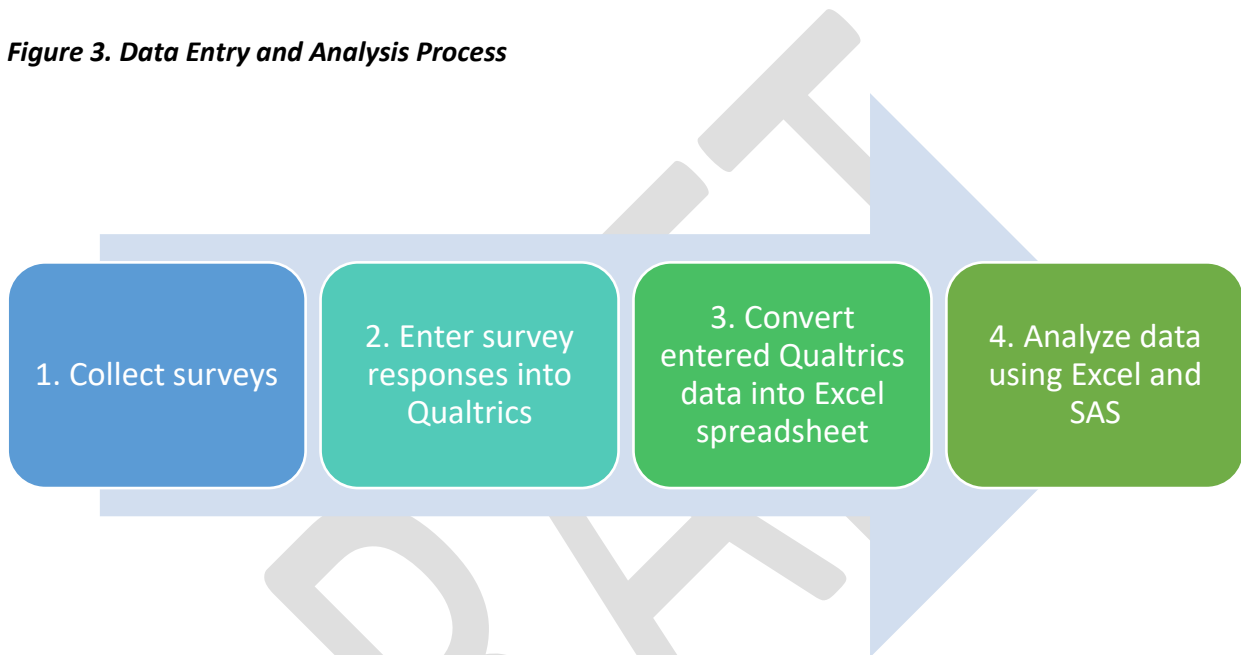
The last two weeks in July were used by the Community Health Workers for administering the surveys to residents and distributing incentive cards (Walmart cards of \$50/each for those who participated in the survey). Surveys were completed mainly over the phone or in-person. The Community Health Workers kept records of completed surveys and distributed the incentive cards. These records were provided to the team at MCDPH.

The data entry and analysis process are described in [Figure 3](#). First, completed surveys were collected and submitted to the Office of Epidemiology at MCDPH. The team leaders at Iglesia Episcopal San Pablo were instrumental in collecting surveys, with efforts to remove any duplicates or incomplete surveys. Surveys were then entered into Qualtrics, one survey at a time. After this, the raw Qualtrics data were exported to an Excel file. The data on this Excel

file were then cleaned and tallied, resulting in a new Excel file that was used for analysis. SAS was also used for data analysis and quality control. Analysis included generating statistics such as percentages and values which corresponded to individual survey questions. Graphical displays such as tables, pie charts, and bar graphs were also produced using Excel.

Quantitative data were summarized with descriptive statistics and qualitative data were reviewed and incorporated into the appropriate fields. Data entry, quality control, and analyses were all completed using Qualtrics, SAS, and Microsoft Excel.

**Figure 3. Data Entry and Analysis Process**

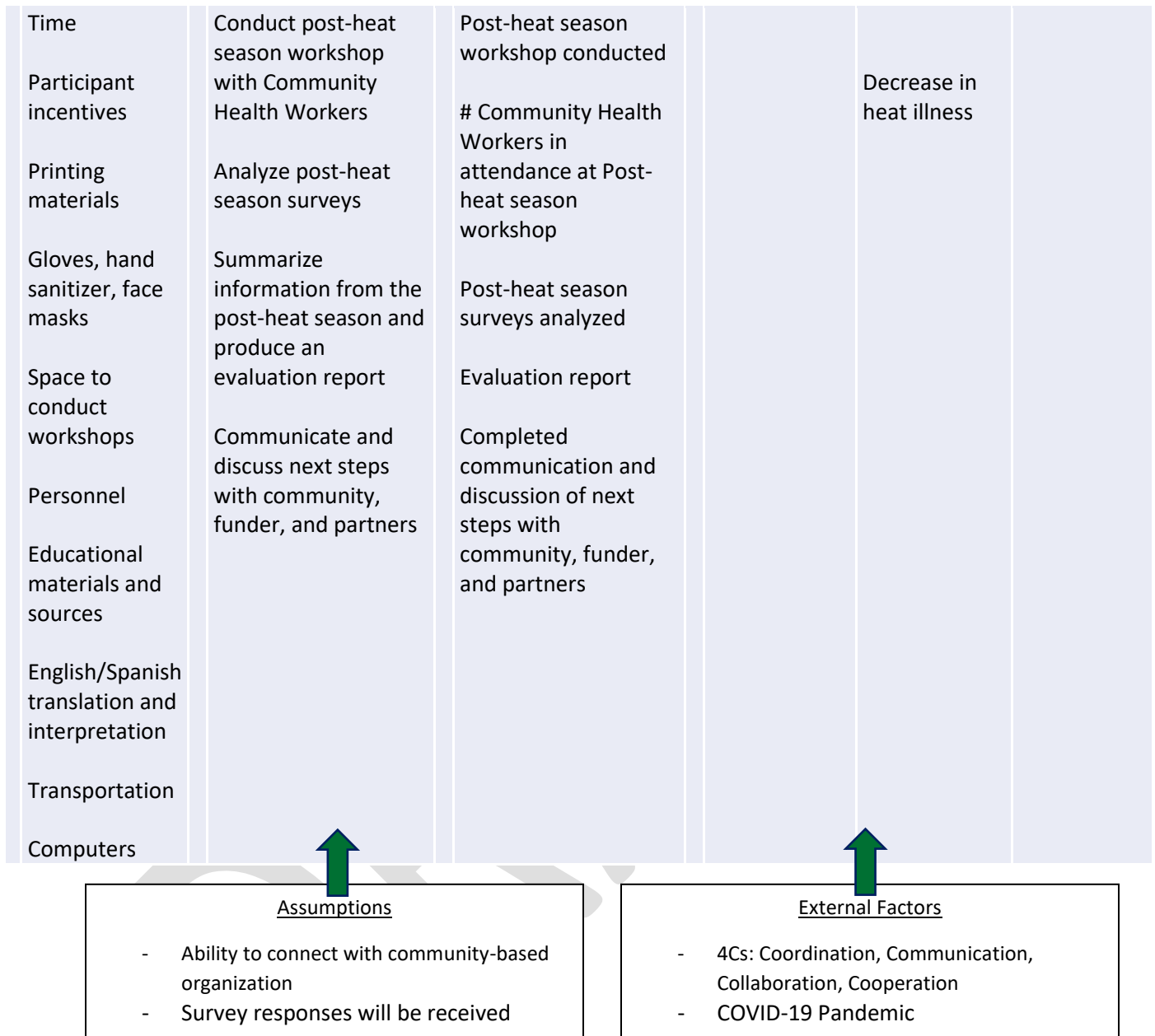


Activities and outcomes were summarized in a logic model that was shared with others involved in the study (see [Appendix III](#) for the HUE logic model with its accompanying narrative).



Table 2. HUE Logic Model

HUE Logic Model					
Purpose: Reducing Heat Deaths and Illness in Maricopa County Mobile Home Communities					
Situation: Heat Deaths and Illness adversely affect Maricopa County Mobile Home Communities					
INPUTS	ACTIVITIES	OUTPUTS	OUTCOMES		
			Short Term	Intermediate	Long Term
<b>Partners</b> Mobile Home Community  Salud en Balance  Iglesia Episcopal San Pablo  ASU Knowledge Exchange for Resilience  HUE Initiative  The Arizona Association of Manufactured Home and RV Owners  Maricopa County Department of Public Health	Develop and distribute Heat Toolkit to households  Develop and administer pre-heat season survey  Conduct pre-heat season workshops to train residents/Community Health Workers  Analyze pre-heat season surveys  Summarize information from the pre-heat season in the form of an infographic and produce a report  Develop and administer post-heat season survey  Develop post-heat season survey definition card  Develop 3 posters that are a compilation of resources found in the Heat Toolkit	Heat Toolkit  # Households Heat Toolkit distributed to  Pre-heat season survey  # Pre-heat season surveys completed  Pre-heat season workshop conducted  # Residents/Community Health Workers trained  Pre-heat season surveys analyzed  Pre-heat season results infographic and report  Post-heat season survey  Post-heat season survey definition card  # Post-heat season surveys completed  Heat Toolkit resource posters	Increase community's knowledge of heat  Change perceptions about heat  Decrease barriers to use of home cooling systems  Increase awareness of utility assistance programs  Increase awareness of neighborhood resources  Decrease effect of COVID-19 on the household and individual	Better understanding of trailer/mobile home residents' heat perception, knowledge, coping mechanisms used, barriers faced toward cooling, and knowledge and use of community resources  Increase trailer/mobile home residents' knowledge of heat  Increase trailer/mobile home residents' use of existing cooling services  Increase use of home cooling systems	Reduction of heat deaths and illness in MC mobile home communities
<b>Resources</b> HUE Funding  Qualtrics, Excel, Word, Canva Heat Data					



### Step 5: Prioritize community health issues:

The Maricopa County Department of Public Health's mission is *"To make healthy lives possible"* and vision is *"A healthy, safe, and thriving community."* In order to prevent heat-related deaths and illnesses, MCDPH focused on individuals that experience limitations to their home cooling systems or lack awareness of available programs to assist with the cost of utilities and repairs. MCDPH began this

initiative to increase the knowledge of available assistance programs and to improve accessibility of these programs. This is an initial step to mitigating heat-related deaths among these residents as it is important to note that other factors also influence limitations to home cooling systems and use of resources, such as eligibility criteria.

## Step 6. Document and Communicate Results

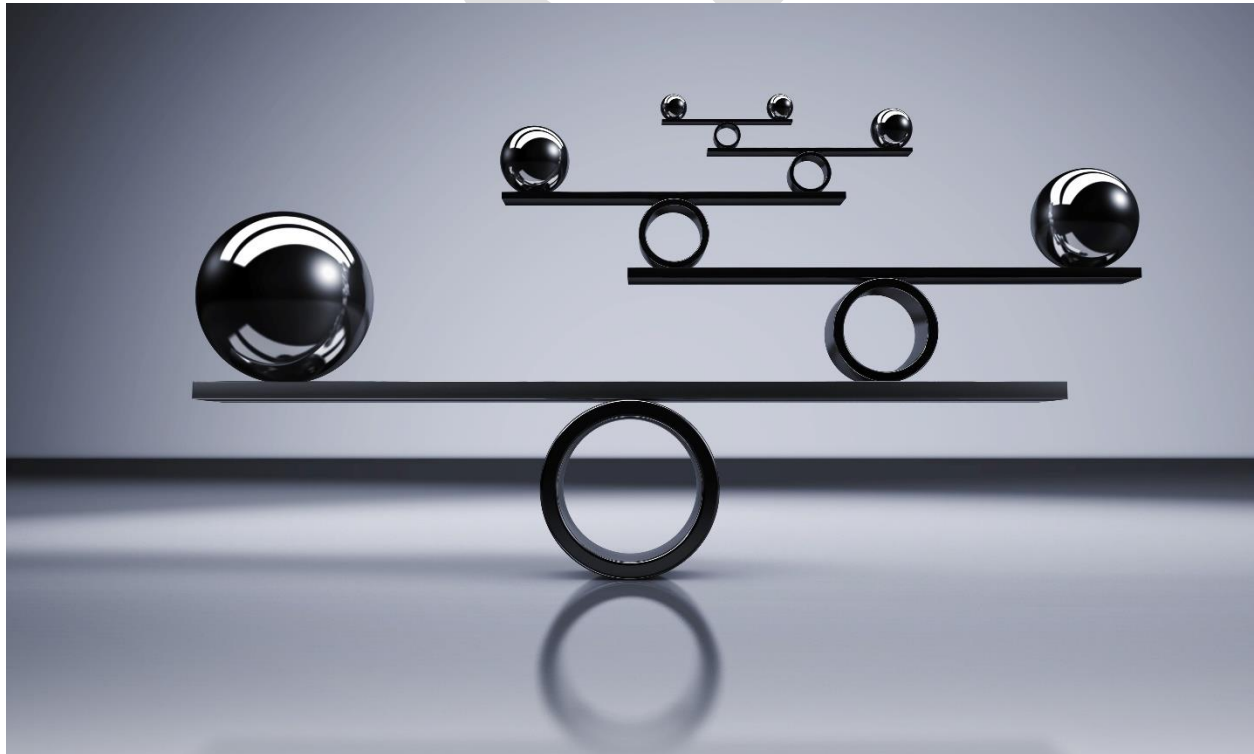
**Are there knowledge gaps about extreme heat, heat illness, safety tips and available resources?**

**Is heat a priority for these residents?**

During weekly meetings with the HUE team, initial findings were reported, and ideas were discussed for how to provide information to the residents regarding community resources. MCDPH project staff were very interested in hearing from other HUE team members about questions to be included on the survey. Further, based on the feedback, the HUE team decided to include another section “resources and potential solutions” in the second survey to provide space for residents to share their thoughts on potential solutions.

On October 27, 2020, MCDPH staff had a virtual meeting with the Salud en Balance team to share findings from the July survey and to prepare for the second phase, which included the post-heat season survey. The team also discussed the project evaluation plan and the production of a recommendation report.

Strategies and plans for the last three steps of the project: “*Step 7. Plan Implementation Strategies, Step 8. Implement Strategies, Step 9. Evaluate progress*” will continue to be discussed in the future after implementing the second survey in October, completing the project evaluation. The team will continue to develop a recommendation report and possible plans for how to implement these recommendations.



# SURVEY RESULTS



The results displayed below represent the survey responses of the pre-heat season survey conducted in July. The survey was distributed to 144 households and 103 completed surveys were returned (response rate = 66%).

**66% Response Rate**



## Demographics



Most of the survey respondents were Hispanic (98%) and lived in households with one or more members who do not speak English (84%). Most survey respondents had 6 or more household members (16% had 6 household members, 18% had 7 household members, and 20% had 8 household members). The most common household age group was ages 5-19 (78%), followed by both ages of 20-34 (58%) and ages 35-49 (57%).

As for the number of household members employed, having one employed household member was the most common response (60%). Having two employed household members was the second most popular response at 30%. **However, 7% of household members responded the entire household was currently unemployed.**

Many respondents (62%) reported that they had received less than high school education while 34% reported having a High School Diploma or GED. Of the households surveyed, over half stated that they rented the land or their home.

The respondents answered questions about their household transportation. Participants stated that they had a personal vehicle (78%), used Public Transportation (42%), and/or walked (29%). Other participants responded that they would get rides from neighbors and friends (9%) or take a taxi (6%) to get to their destination.



**Table 3. Demographics and Characteristics of Respondents**

Demographics	N (%)
<b>How Many People Live in Your Home? (N=103)</b>	
2	11 (11%)
3	21 (20%)
4	25 (24%)
5	21 (20%)
6+	25 (24%)
<b>What are the Age Groups in Your Household? (N= 103) *267 is the total number of responses (Percentage does not add to 100)</b>	
Ages less than 4	33 (32%)
Ages 5- 19	80 (78%)
Ages 20- 34	60 (58%)
Ages 35- 49	59 (57%)
Ages 50- 64	31 (30%)
Ages 65+	4 (4%)
<b>How Many Household Members are Employed? (N= 98) *Excludes 5 respondents who did not answer</b>	
0	7 (7%)
1	59 (60%)
2	29 (30%)
3	2 (2%)
4+	1 (1%)
<b>What Language is Spoken at Home? (N =103)</b>	
English	9 (9%)
Other	87 (84%)
Refused	7 (7%)
<b>Ethnicity (N=103)</b>	
Hispanic	102 (98%)
American Indian/ Alaska Native	1 (1%)
<b>Do You Own or Rent Your Home (N= 103) * 142 responses were recorded for those that answered both</b>	
Own	60 (58%)
Rent	82 (80%)

\*Survey question 6 is in reference to whether participants own or rent their *mobile home*. Residents rent and make payments for the land their mobile home occupies.

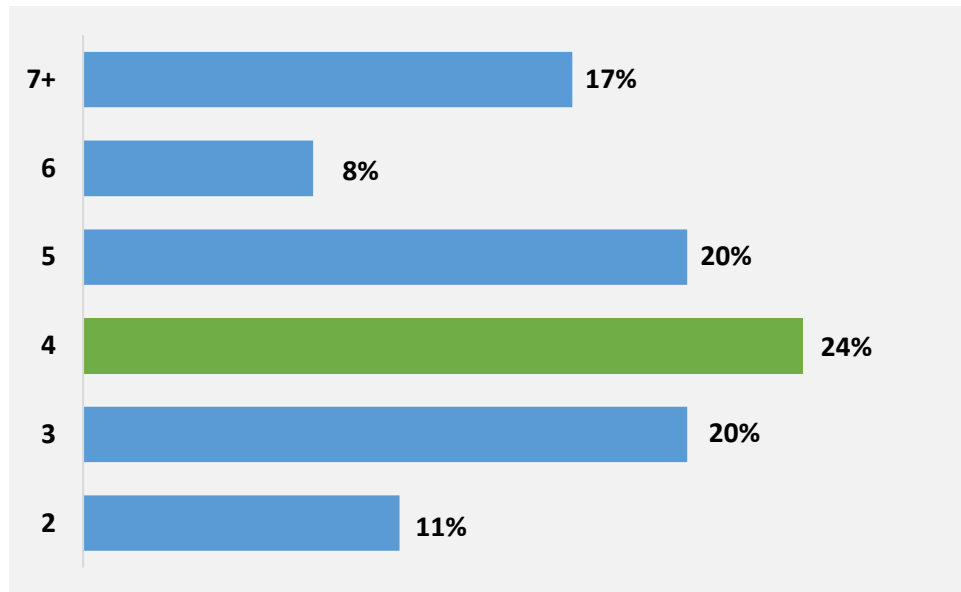
## Demographics

### Survey Questions:

- 1.) How many people live in your household?
- 2.) What are the age groups in your household?
- 3.) How many are employed in your household?
- 4.) Is there any adult who does not speak English? (language spoken at home)
- 5.) What is your race and that of members of your household?
- 6.) Does your household own or rent this residence?

**Graph 1. Number of People in Household (N=103)**

*Most participants lived in a household with 4 or more people*



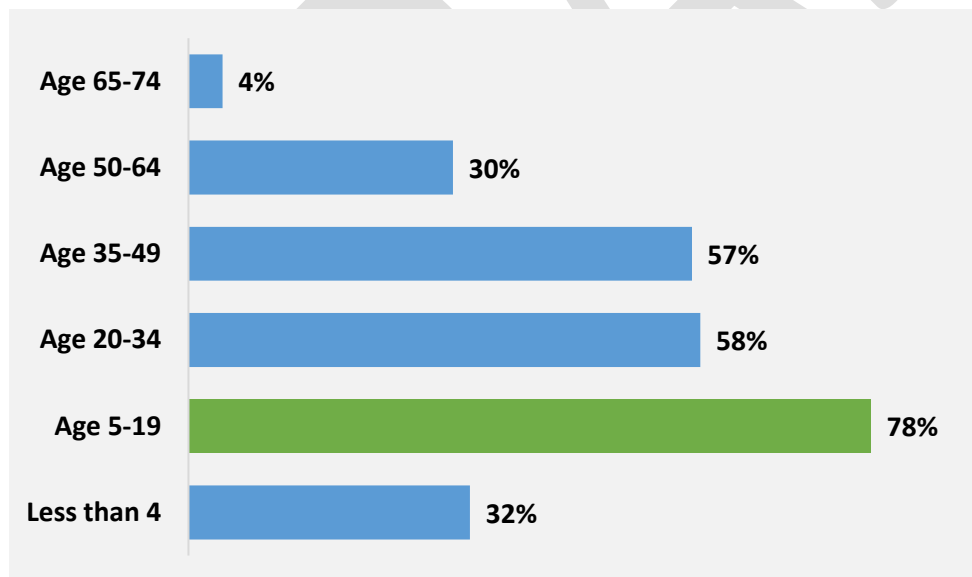
**Graph 1.**

Survey question 1:

How many people live in your household?

**Graph 2. Age Range of Household Members (N=103)**

*The most common age range of household members was ages 5-19*



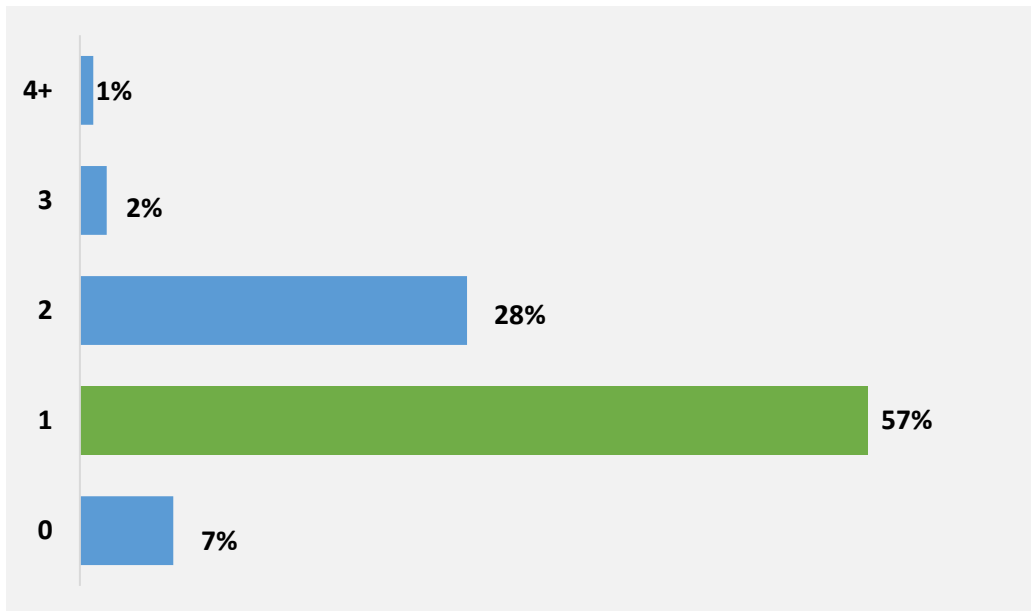
**Graph 2.**

Survey question 2:

How many people in your household between the ages of:

\* 103 respondents answered for every individual in the household with 267 responses; therefore, percentages add to more than 100%.

**Graph 3. Employment Status of Households (N=103)**  
*Most households had one employed person*

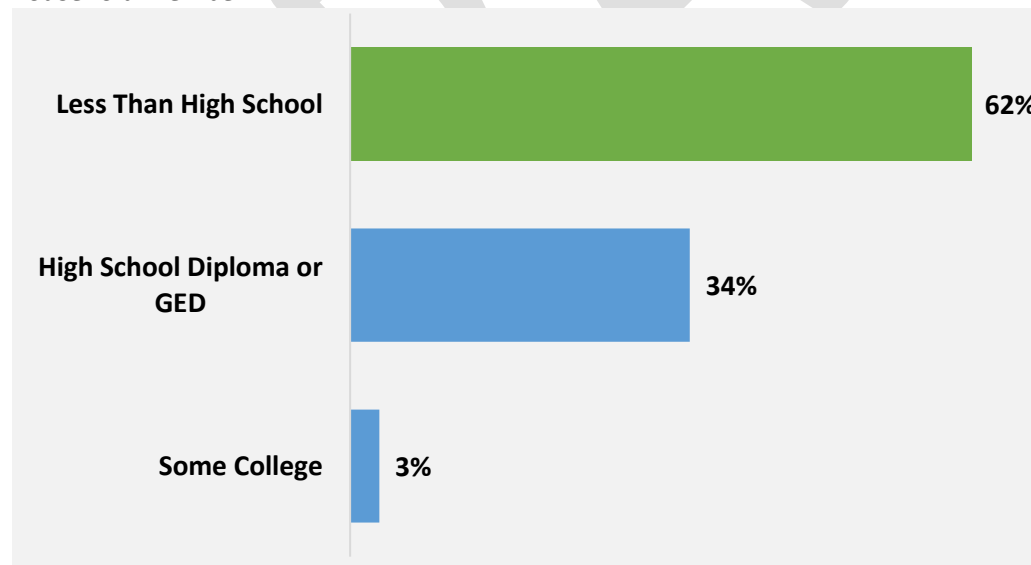


**Graph 3.**

Survey question 3:

How many people are employed in your household?

**Graph 4. Education Level of Community Members (N=103)**  
*Most households selected "less than high school" for highest level of education achieved by a household member*



**Graph 4.**

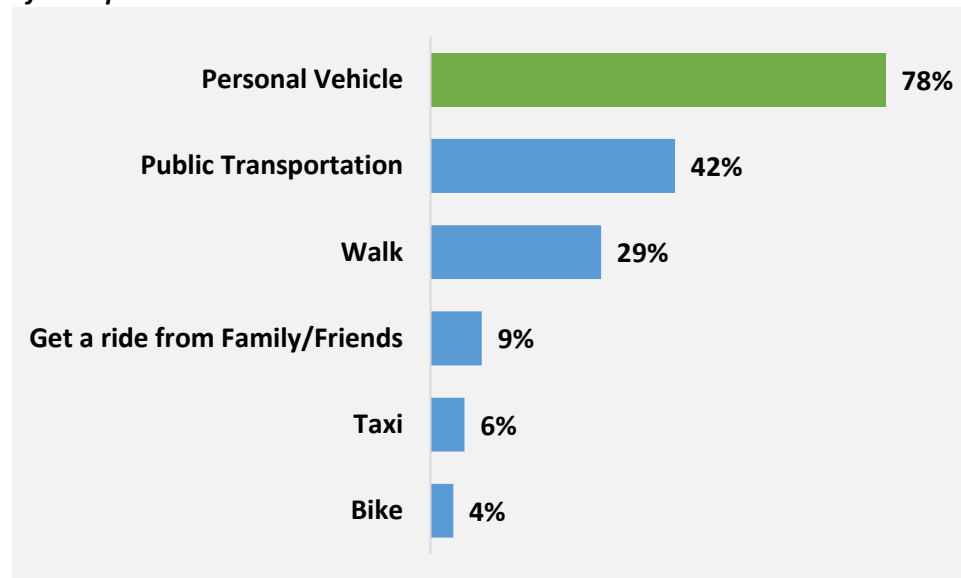
Survey question 7:

What is the highest level of education achieved by a member of your household?

\*Excludes one participant who refused to answer.

**Graph 5. Transportation Methods of Households (N=103)**

**Most households selected “personal vehicle” as their household’s primary means of transportation**



**Graph 5.**

Survey question 8:

What is your household's primary means of transportation?

\*174 responses were recorded. Survey respondents were able to choose more than one option; percentages add to more than 100%.

## **Perception of Heat**



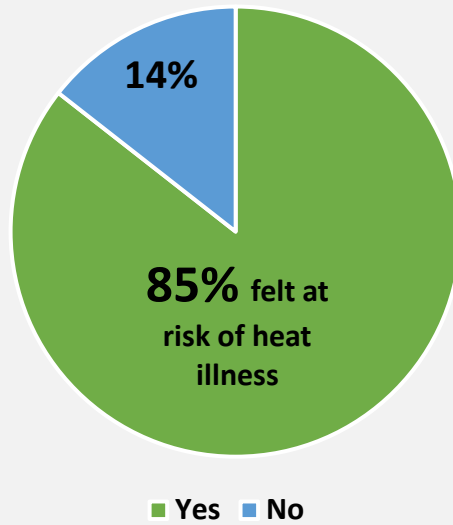
**The participants were questioned if they felt they were at risk of heat-related illnesses and most respondents answered “yes” (85%). Only 14% believed that they were not at risk of any heat-related illnesses.**

**Of the households, 35% stated that their homes were always too hot while others stated that their homes were too hot most of the time (29%) or sometimes, but not often (31%).** Twenty-four households (38%) responded that they felt hot inside their homes at temperatures of 100 degrees Fahrenheit or hotter. This was followed by the range of 80-84 degrees Fahrenheit (33%) and 85-89 degrees Fahrenheit (14%).



**Graph 6. Outcomes of Heat-related Illnesses (N=100)**

**Most participants felt that their health is at risk because of high summer temperatures**



**Graph 6.**

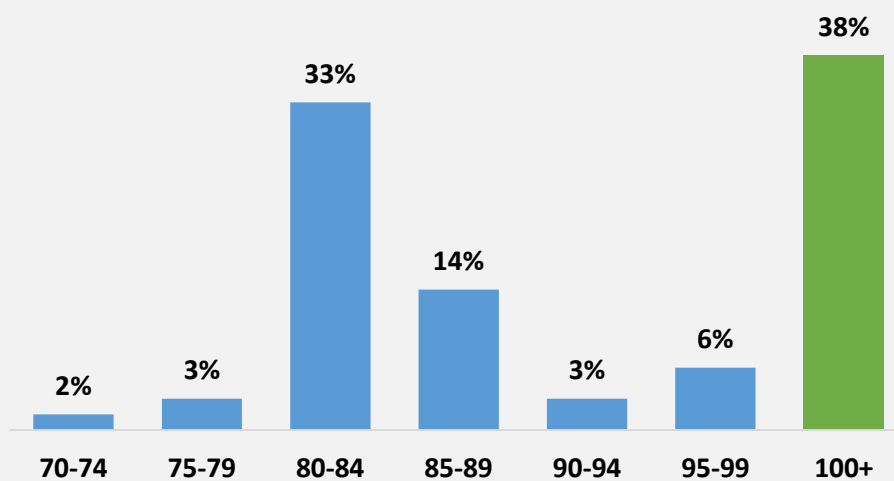
Survey question 14:

Do you feel that your health is at risk because of high summer temperatures?

\*Excludes 2 participants who did not respond and 1 participant who refused or had no opinion.

**Graph 7. Perception of Heat at Degrees Fahrenheit (N=63)**

**Participants felt too hot inside their homes at temperatures of 100 degrees Fahrenheit and above**



**Graph 7.**

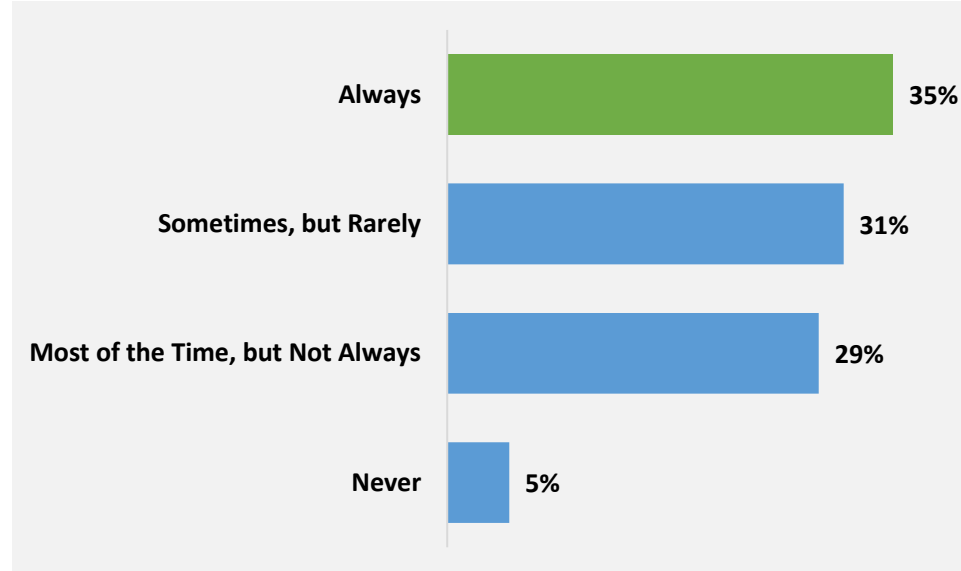
Survey question 15:

At what temperature do you start to feel hot inside your home?

\*Excludes 40 participants who put "no" or left their responses blank for Question 14.

**Graph 8. Perception of Heat Within the Home (N=103)**

Only 5% never felt too hot inside their home

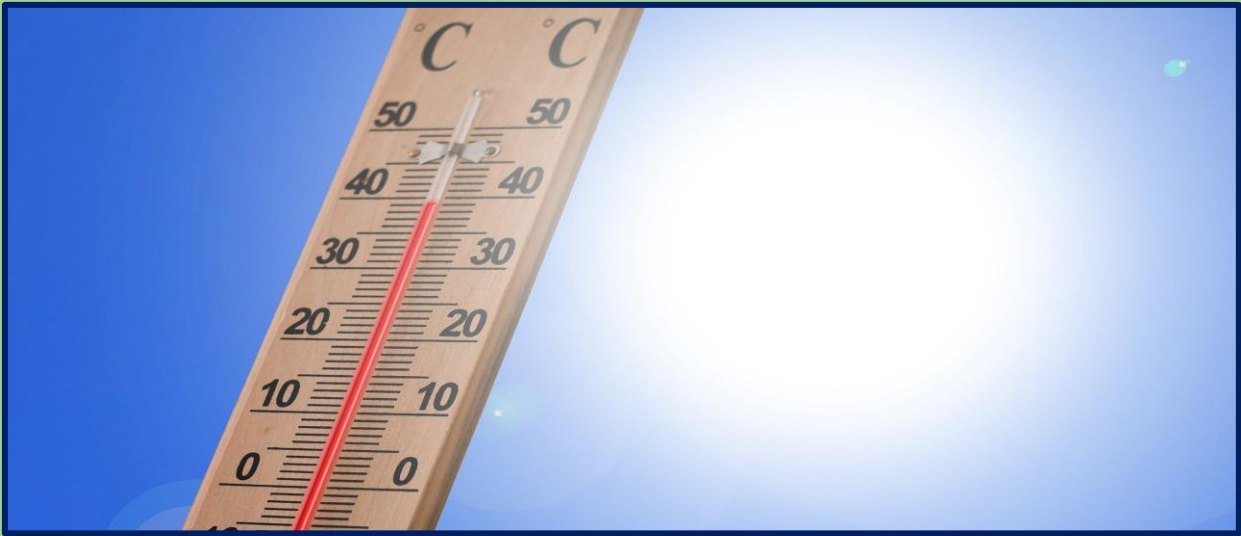


**Graph 8.**

Survey question 16:

Did you or members of your household ever feel too hot inside your home during the past summer?

## Knowledge of Heat and Illness

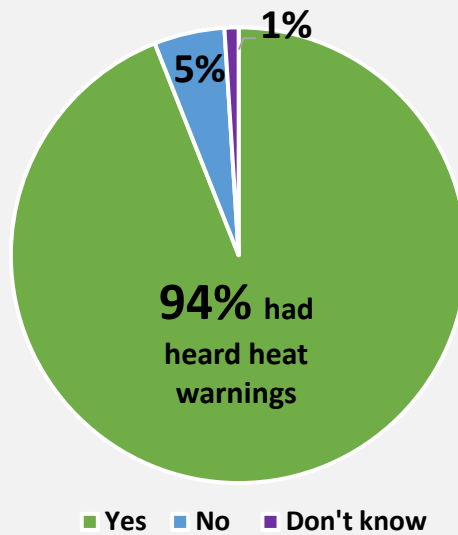


**Most of the respondents were aware of heat warnings (94%) while only 5% were not aware of heat warnings.** Many of the participants learned of heat waves through television, radio broadcasts, text messages, social media, and Internet access, with very few learning of them through word of mouth from neighbors, friends, and churches.

**When asked to name health problems one could get from exposure to heat, dehydration, dizziness, and headaches were the most common responses.** More than half of the participants involved in the survey knew that dehydration is a symptom of exposure to heat (61%), while 16% knew that dizziness is a symptom, and 7% knew that headaches are a symptom.

The participants were asked if they had ever experienced any illnesses caused by heat and 75 participants out of the **103 (73%) surveyed reported experiencing a heat-related illness.** Only 24% reported not experiencing a heat-related illness. There were a few respondents that were unsure if they had experienced heat-related illness.

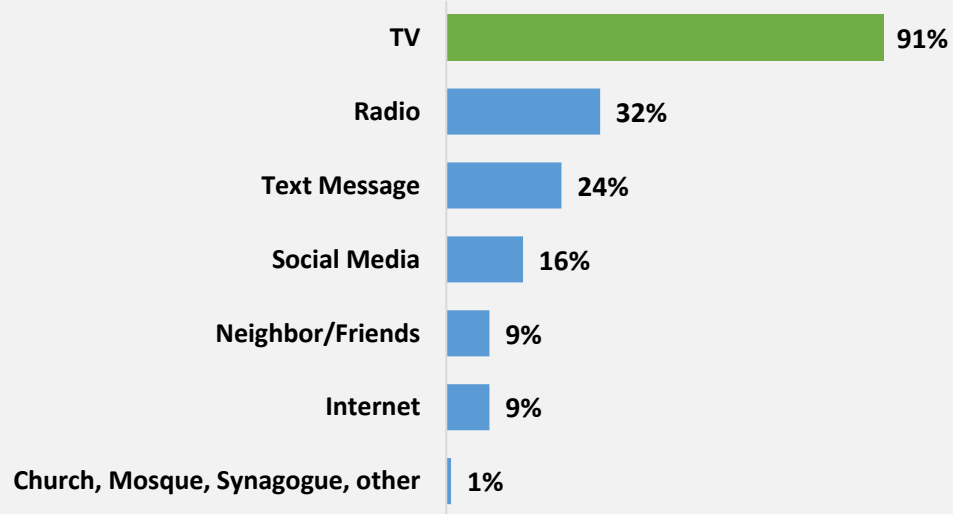
The respondents were asked what they did after they experienced symptoms, and **93% stated that they stayed home and took no action,** while 6% went to the emergency room or doctor's office, 3% called 911 for assistance, and 3% were admitted to a hospital. Fortunately, no deaths were reported by the community.

**Graph 9. Knowledge and Awareness of Excessive Heat Warnings (N=102)****Most households remembered hearing weather warnings about excessive heat****Graph 9.**

Survey question 9:

Do you or other members of your household remember hearing weather warnings about excessive heat in the summer of 2019?

\*Excludes 1 participant who refused to respond.

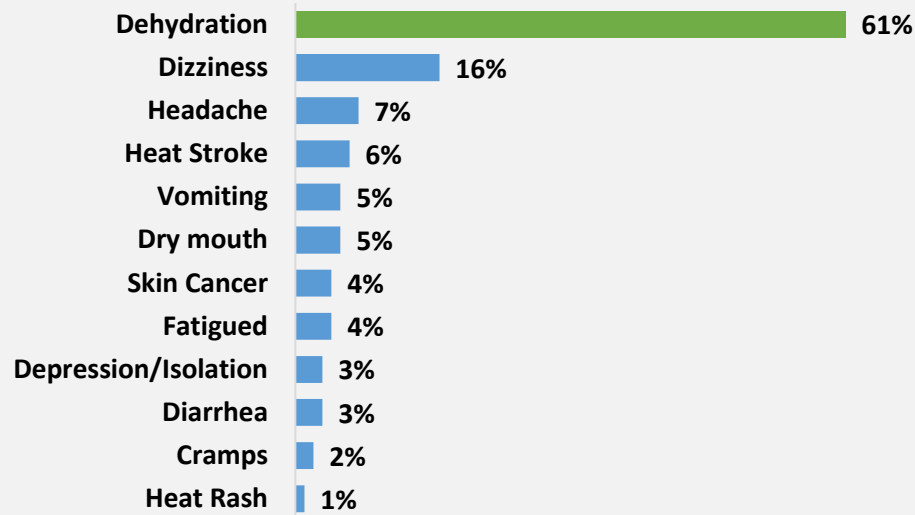
**Graph 10. Sources of Heat Warnings (N=96)****TV was the primary source for hearing weather warnings about excessive heat****Graph 10.**

Survey question 10:

If yes, what is your primary source of information?

\*176 responses from participants who checked multiple forms of heat warnings; percentages add to more than 100%.

**Graph 11. Knowledge of Symptoms from Exposure to Heat (N=103)**  
**Dehydration was the most common response**



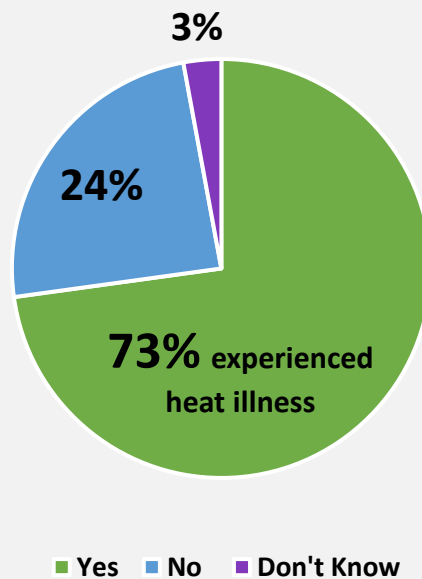
**Graph 11.**

Survey question 11:

Can you tell me any health problems you or a household member can get from exposure to heat?

\*Survey participants were able to write more than one answer. 112 responses were recorded; percentages add to more than 100%.

**Graph 12. Experiencing Heat-related Symptoms (N=103)**  
**Over 2/3 of households had a member that had experienced symptoms related to the heat**



**Graph 12.**

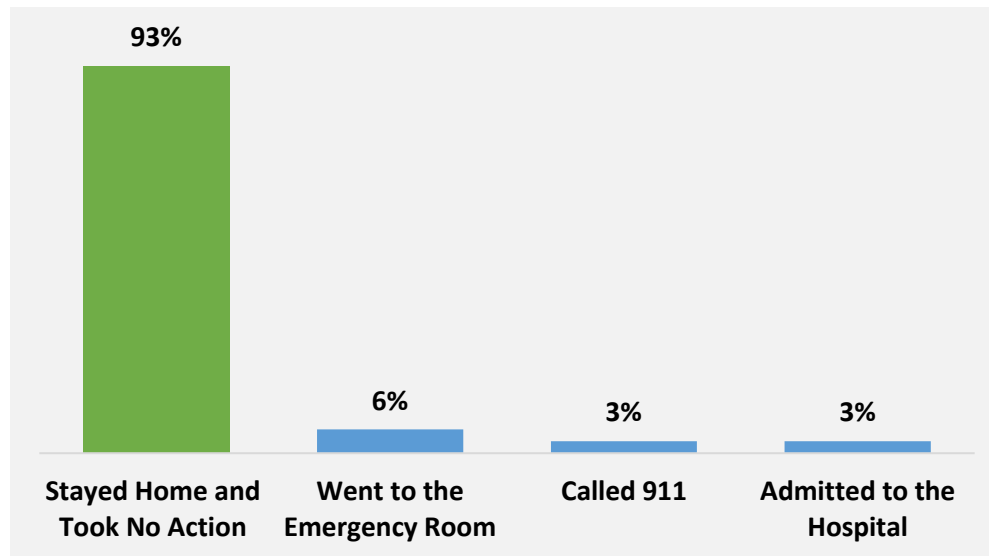
Survey question 12:

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, rapid heartbeat, or hallucinations?



**Graph 13. Outcomes of Heat-related Illness (N=70)**

**Most reported staying home and taking no action in response to experiencing heat-related illness**



**Graph 13.**

Survey question 13:

What was the outcome of this heat-related illness?

\*Excludes respondents who did not answer "yes" to Q12 and those who put "refused" or left the response blank for Q13. A total of 73 responses were recorded (excludes 3 who refused or left blank responses).

## **Coping Mechanisms**

Coping mechanisms include home cooling systems as well as ways people avoid the heat, such as leaving home to cool off.

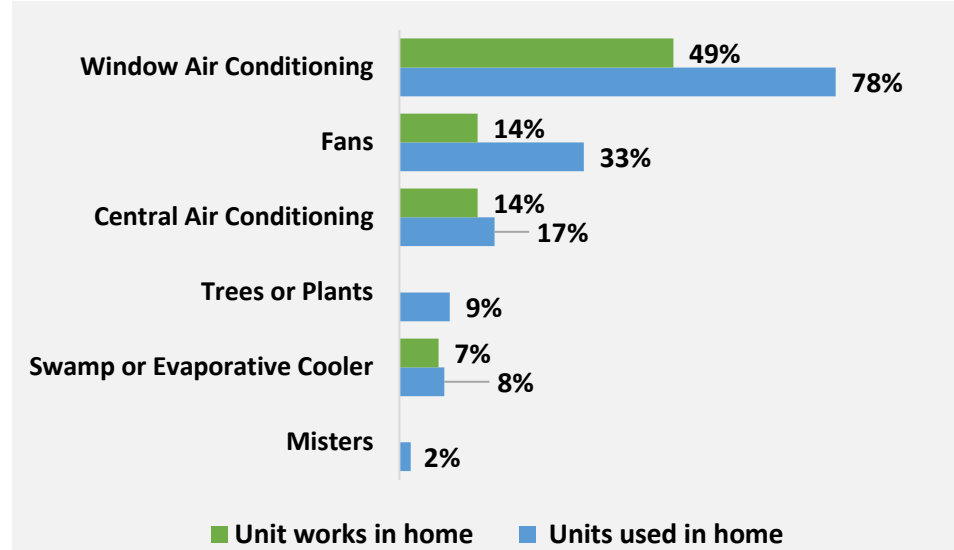


**More than three-quarters (78%) of the population surveyed stated that they used window air-conditioners; however, 49% of window air-conditioners were reported as functional.** Central air-conditioners were used by 17% of participants, with 14% of participants reporting central-air conditioners as functional in their home. Some participants reported use of fans, misters, and trees or plants. It is important to note that here in Maricopa County, where there is extreme heat, that these three types of cooling systems are not sufficient by themselves, and often need to be supplemented with at least one of the other types of cooling systems. Most households responded that they use their cooling system both all day and all night (85%), while 9% reported using theirs during the evening only, and 5% reported using theirs in the afternoon only.

The community members who participated in the study were asked if they leave their home to go to an air-conditioned place to cool down. Half of the participants stated that they did not leave home to get to a place with A/C, however, 31% of participants responded that they do leave home to get to a place with A/C, and 18% stated that they sometimes leave home to get a place with A/C. Participants were then asked where they are more likely to go to get A/C when they leave home and most households reported going to the supermarket (63%) and/or the mall (49%), or visiting a friend or neighbor (29%).

Community members were asked about their method of transportation to leave home to get to an air-conditioned place. Many of the households, (55%), used a personal vehicle to get to their preferred air-conditioned destination. Other households reported walking (41%), using public transportation (35%), or getting a ride from a friend (14%).

**Graph 14. Cooling System Used in Home and its Working Condition (N=103)**  
**The majority of households used window air-conditioning**



\*This graph shows each cooling unit used in the household (154 responses) vs their working condition in the household (85 responses). The responses received were out of 103 participants; percentages add to more than 100.

#### Graph 14

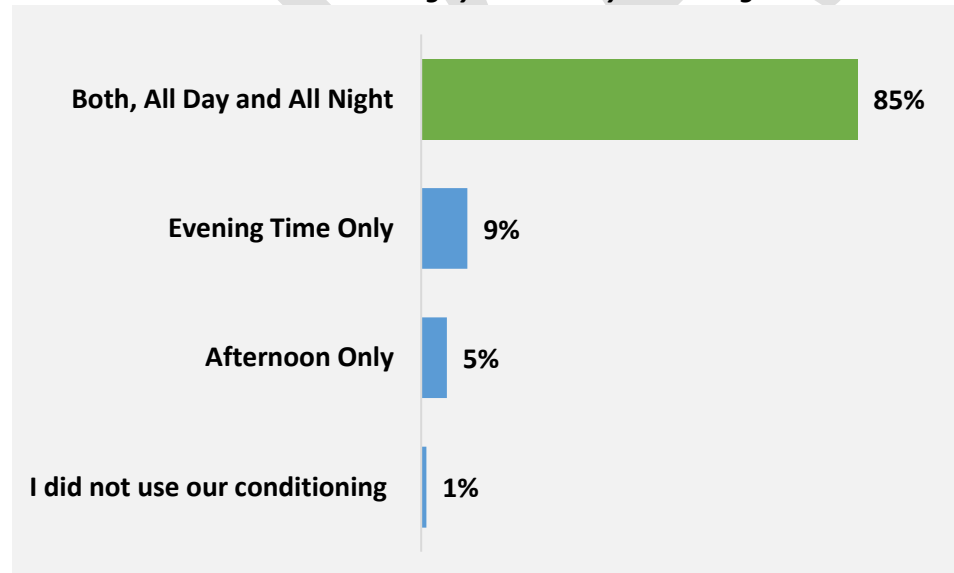
This figure combines questions 17:

Which of the following did your household use to cool your house this past summer?

And 19:

Which cooling system works in your home?

**Graph 15. Cooling System Use Throughout the Day (N=103)**  
**Most households used their cooling system all day and all night**



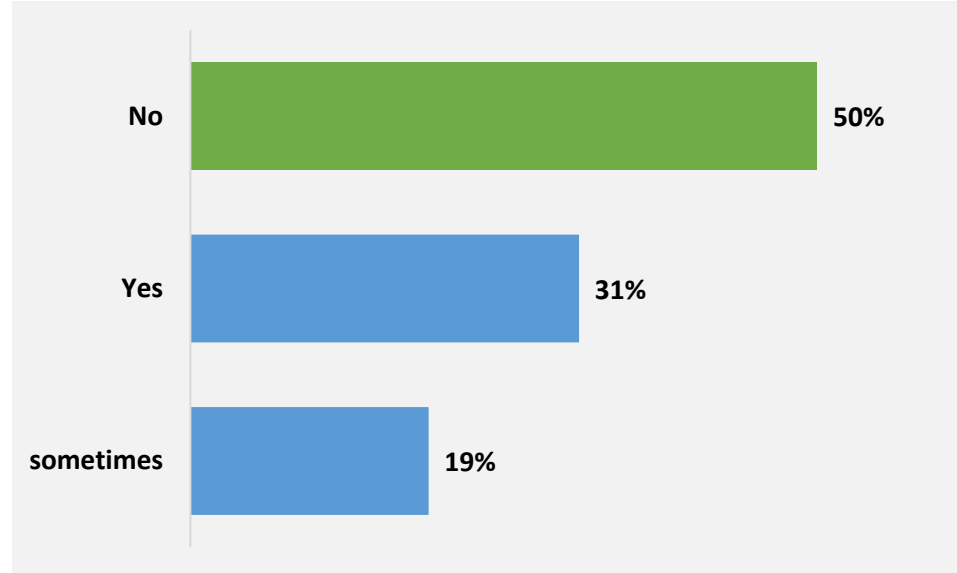
#### Graph 15.

Survey question 18:

If your household used air conditioning this past summer, when did you use it?

**Graph 16. Leaving Home to Cool Off (N=102)**

*About 1/2 would leave their home to go to an air-conditioned place to cool off*



**Graph 16.**

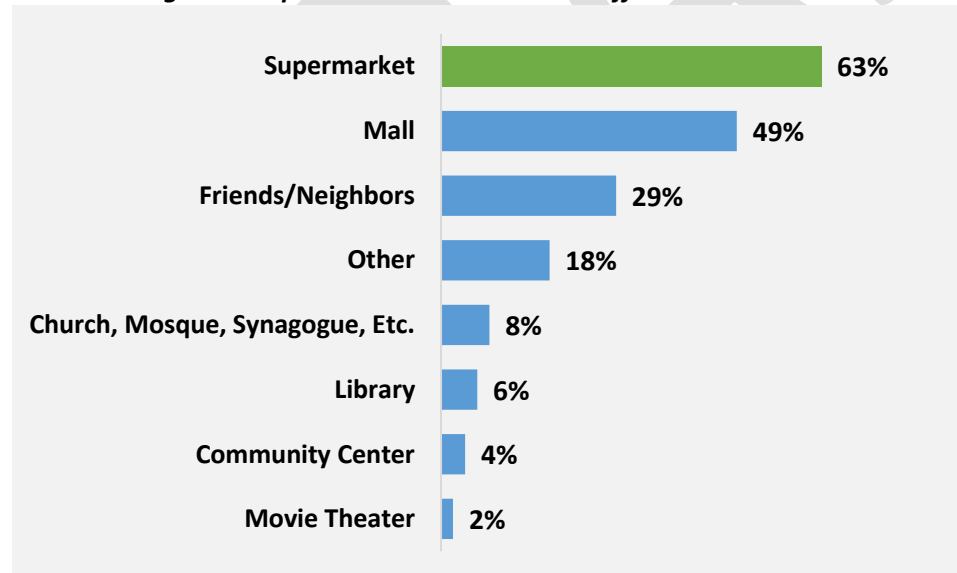
Survey question 27:

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

\*Excludes 1 respondent who refused to answer.

**Graph 17. Locations Participants Go to Cool Off (N=51)**

*Most would go to a supermarket or mall to cool off*



**Graph 17.**

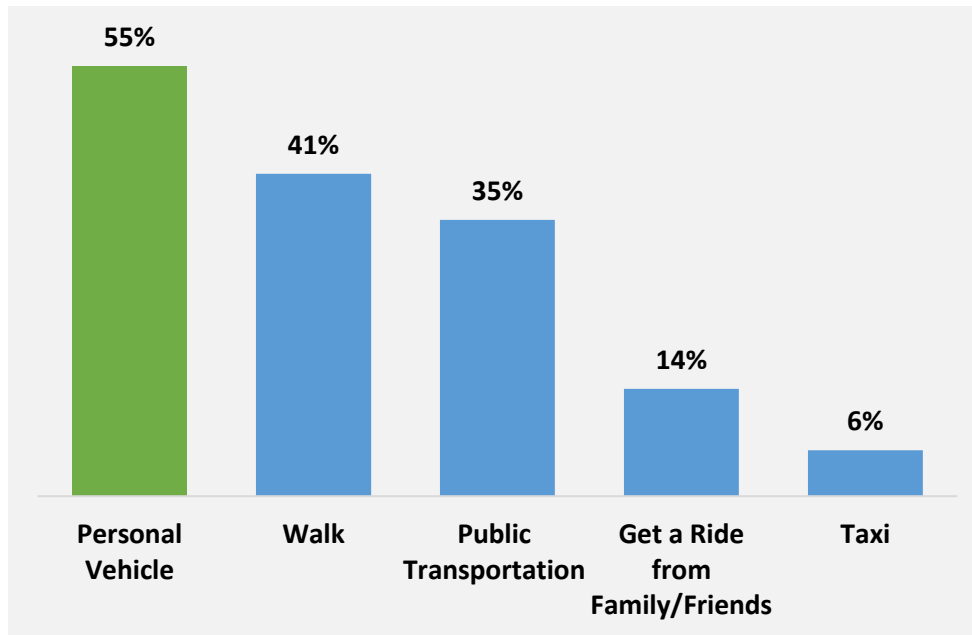
Survey question 28:

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

\*Excludes 52 participants who did not leave home to cool off. Multiple (91) responses from 51 participants were able to choose more than one option; Percentages will add to more than 100%.

**Graph 18. Mode of Transportation to Air-conditioned Locations (N=51)**

*Most either used a personal vehicle or walked to get to an air-conditioned place*



**Graph 18.**

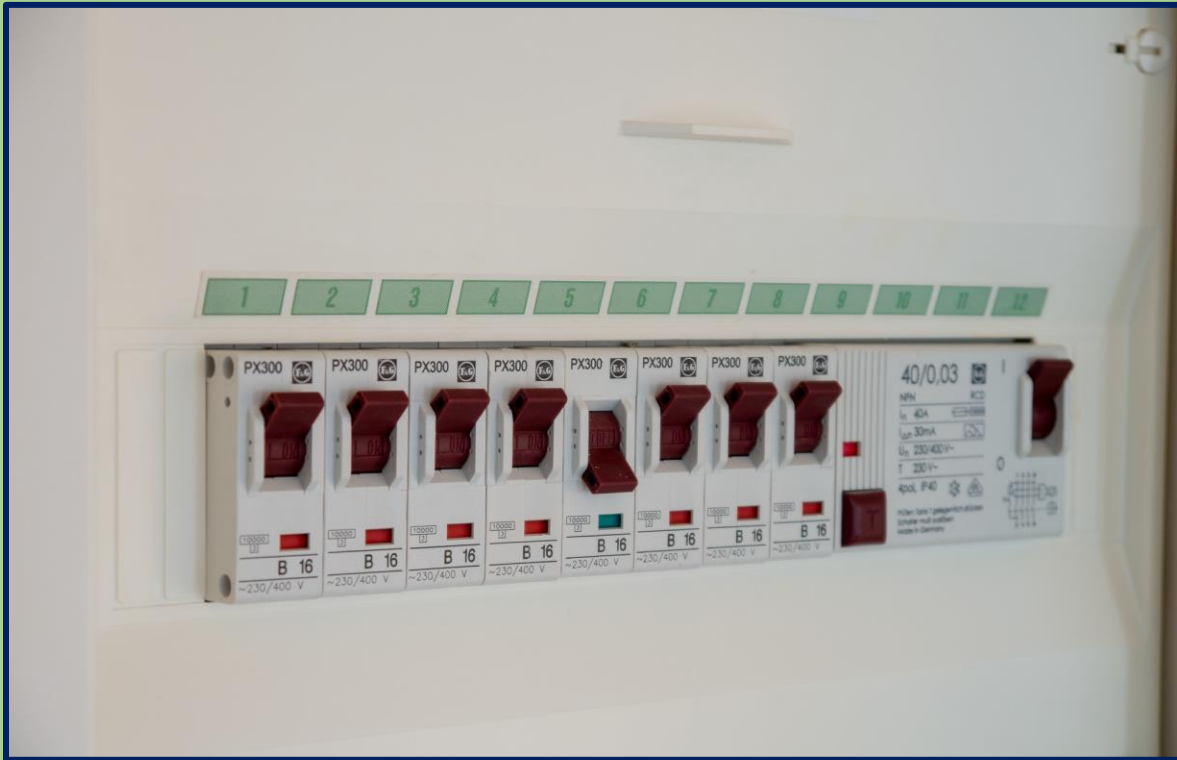
Survey question 29:

How does your household normally travel to the air-conditioned place?

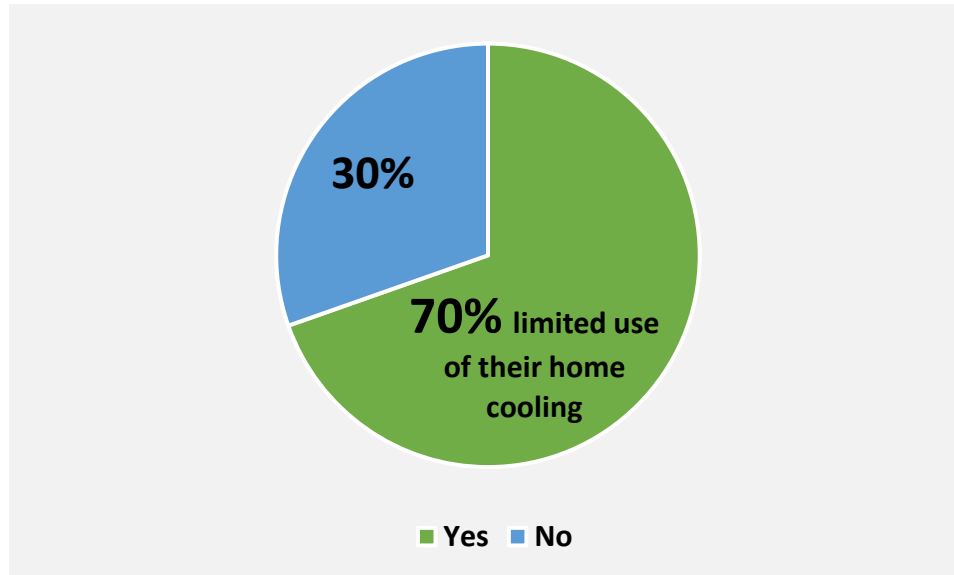
\*Excludes 52 participants who left this section blank. A total of 77 responses were recorded; 51 participants were able to choose multiple answers.



## Barriers Faced To Cooling



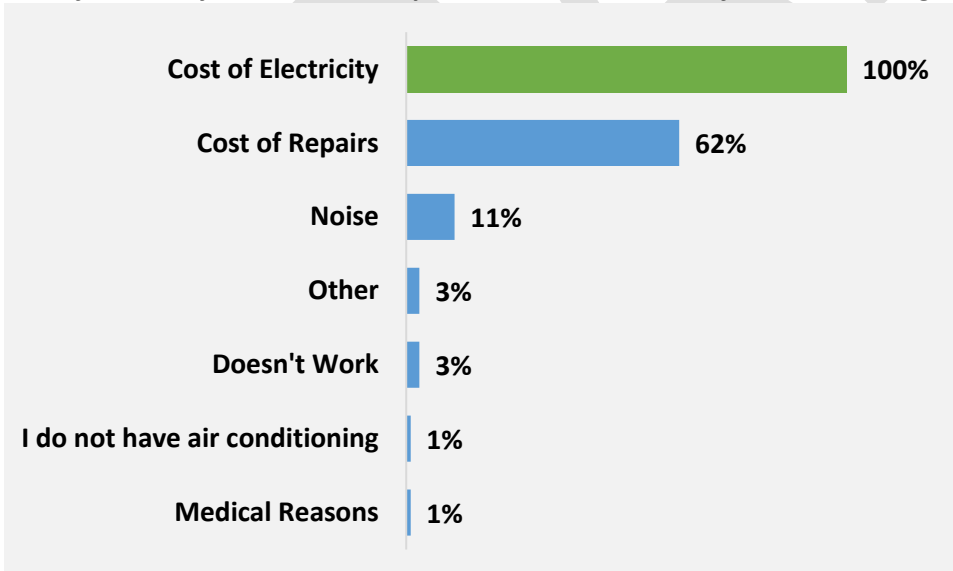
Although home cooling systems were commonly used among the participants, most reported limitations on their use. **Out of the 103 surveys received, 71 households (70%) said they limited their home cooling.** Of those 71 households, **100% responded that they limited home cooling due to the cost of electricity and 62% responded that they limited use due to the cost of repairs.** Over one-quarter of households (30%) did not have limitations to using their home cooling systems.

**Graph 19. Limitations of Cooling System (N=102)****Over 2/3 of participants had limitations to using their home cooling system****Graph 19.**

Survey question 20:

Does anything limit you from using your cooling system when you are hot?

\*Excludes 1 respondent who did not answer.

**Graph 20. Limitations of Cooling System (N=71)****Cost of electricity was the most reported limitation to use of air-conditioning****Graph 20.**

Survey question 21:

What limits your household from using air-conditioning?

\*Excludes 32 participants who did not limit use to their home cooling system. Includes 131 responses from 71 participants who had more than one reason to limit home cooling; percentages add to more than 100%.

## Knowledge and Use of Community Resources



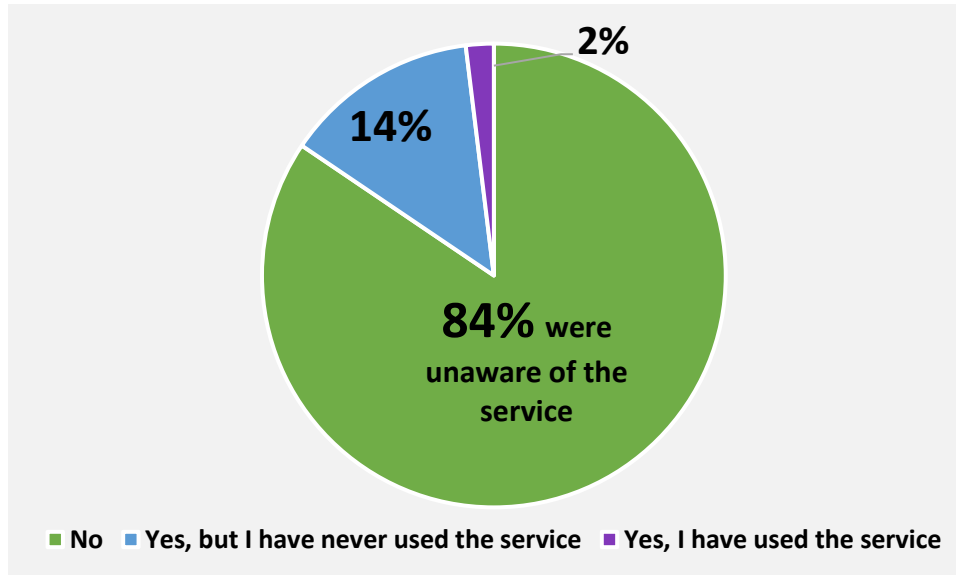
Throughout the project, the community members who agreed to participate were given materials listing resources and community programs available to them. **Most of the participants were unaware of the community programs offered to help them with utility bills.** Although 14% had heard of the service, but never used it, **84% were completely unaware of these utility assistance services.** Only 2% of the households had used the service.

Participants of the study were also given resources to assist with home cooling repairs and **almost all of the households surveyed (96%) were unaware of these repair services provided by the community.** Only a handful of respondents (4%) were aware of the programs but had never used the service.

Of the households who needed utility assistance, **only 11% had applied to the programs for help. Most households (78%) were not aware of any assistance programs, and 6% did not qualify after applying for aid.** Of those who did not use the service, **77% did not have the contact information,** 12% thought the process was too complicated, 10% did not qualify for assistance, 3% had difficulty completing the application, and 1% were not interested.

Community households were asked if they were aware of cooling centers around Maricopa County. **A large percentage of households (80%) responded that they had no knowledge of cooling centers around Maricopa County.** Some households (11%) knew about cooling centers, but had never used the service, and 8% did not know what cooling centers are. Only 1% had used a cooling center's services.

**Graph 21. Awareness of Resources to Help with Cost of Utilities (N=103)**  
**84% were unaware of programs or services to help with the cost of utility bills**

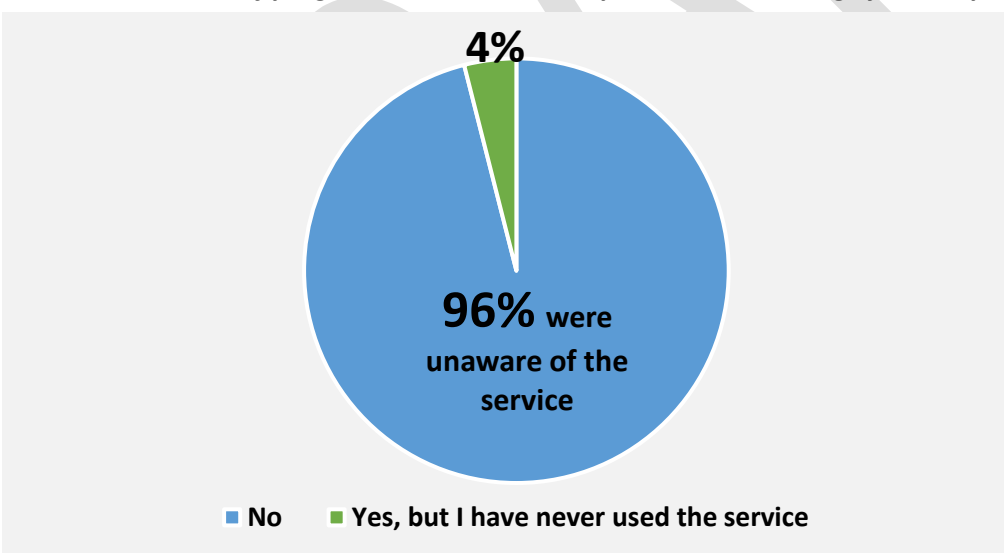


**Graph 21.**

Survey question 22:

Are you aware of community programs or services to help you with the cost of utility bills?

**Graph 22. Awareness of Resources to Help with Cost of Repairs (N=101)**  
**96% were unaware of programs or services to help with home cooling system repairs**

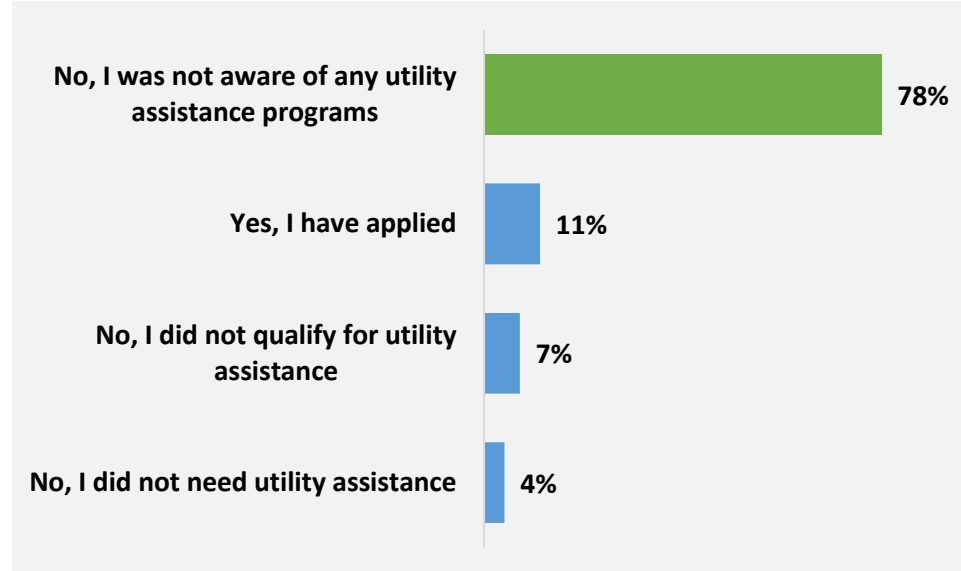


**Graph 22.**

Survey question 23:

Are you aware of community programs or services to help you with home cooling system repairs?

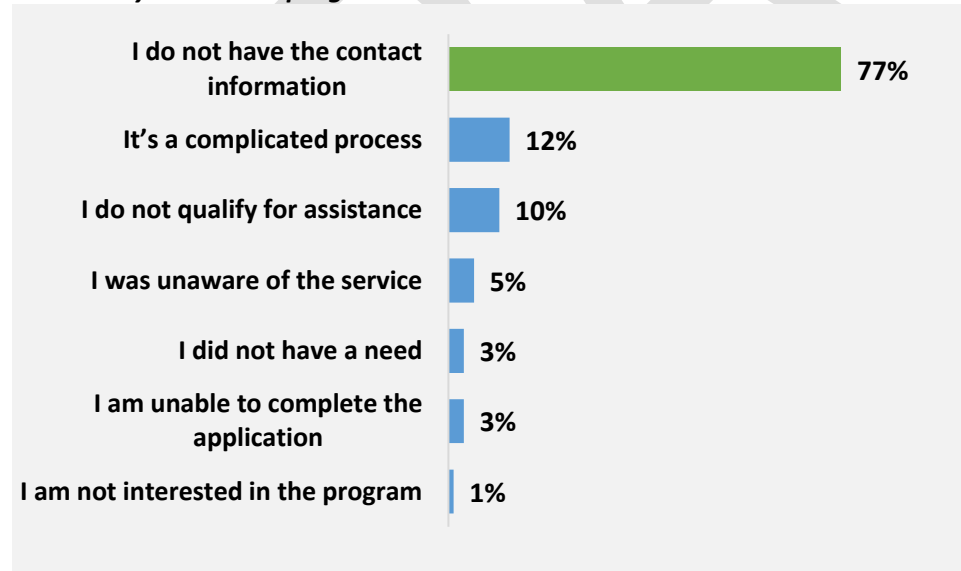
\*Excludes two respondents who did not answer.

**Graph 23. Application to Community Programs and Services (N=92)****70% had not applied to utility assistance programs as they were not aware of these programs****Graph 23.**

Survey question 24:

Have you or a household member ever applied for these utility assistance programs (cost of utility bills or for cooling system repairs)?

\*Excludes 11 people who refused to answer or left the response blank.

**Graph 24. Reasons for Not Using Services (N=103)****Not having the contact information was the most common reason for not having utilized any community assistance programs****Graph 24.**

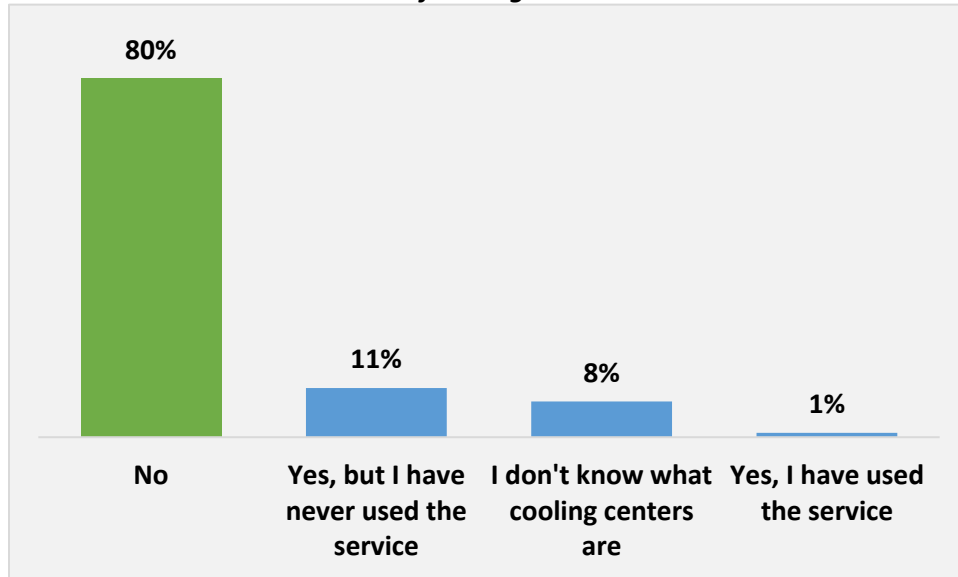
Survey question 25:

If you have not utilized any community assistance programs or resources, please select your reason(s):

\*Includes 113 responses from 103 surveyors who had multiple reasons for not using the services; percentages add to more than 100%.



**Graph 25. Knowledge of Cooling Centers in Maricopa County (N=102)**  
**Most households were unaware of cooling centers**



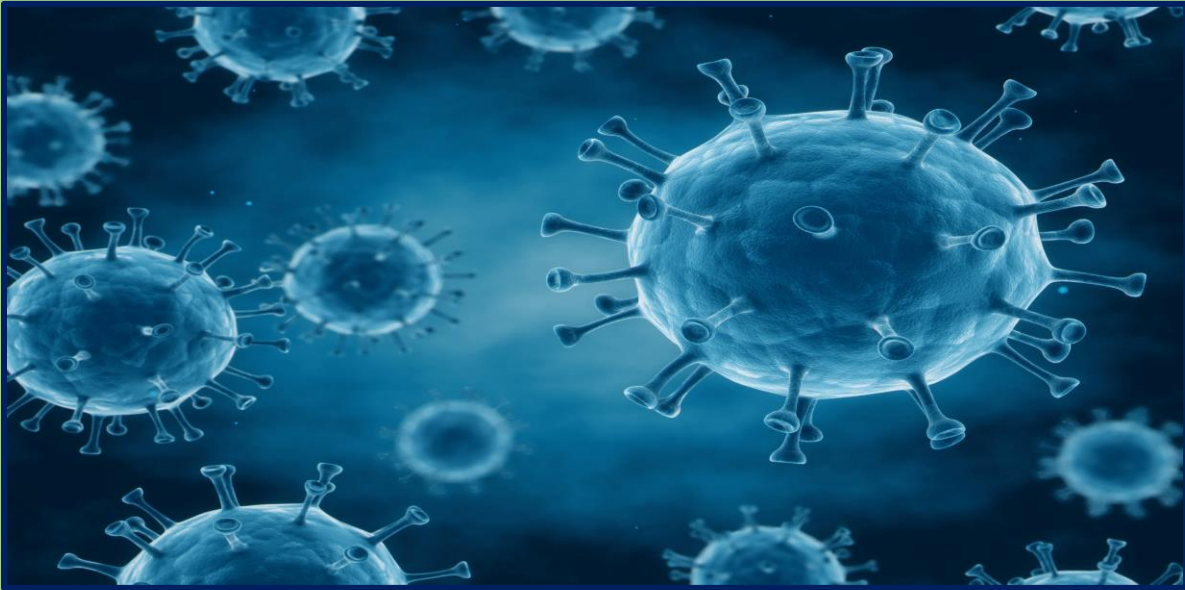
**Graph 25.**

Survey question  
26:

Are you aware of  
the cooling  
centers in  
Maricopa County?

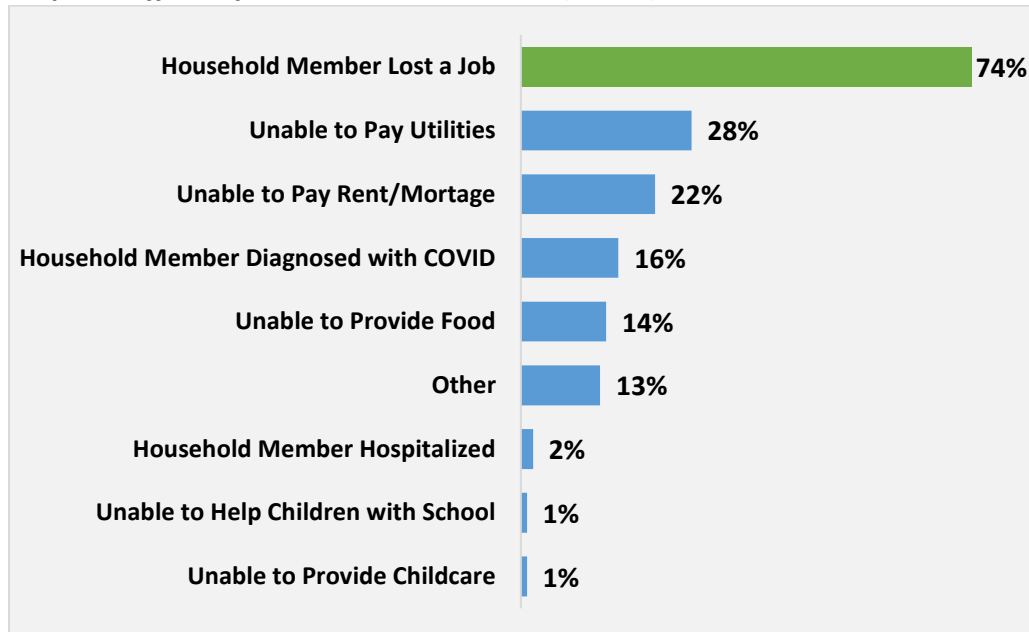
\*Excludes one respondent who did not answer.

## Effects of COVID-19



Many of the community members interviewed were dealing with the effects of COVID-19. In the majority of households **(74%) at least one family member lost a job. Twenty-eight percent of participants were unable to pay utilities, 22% were unable to pay their rent or mortgage, 14% were unable to provide their families with food and other essentials, and 16% of participants had one or more members diagnosed with COVID-19.** Two participants reported that a household member had been hospitalized.

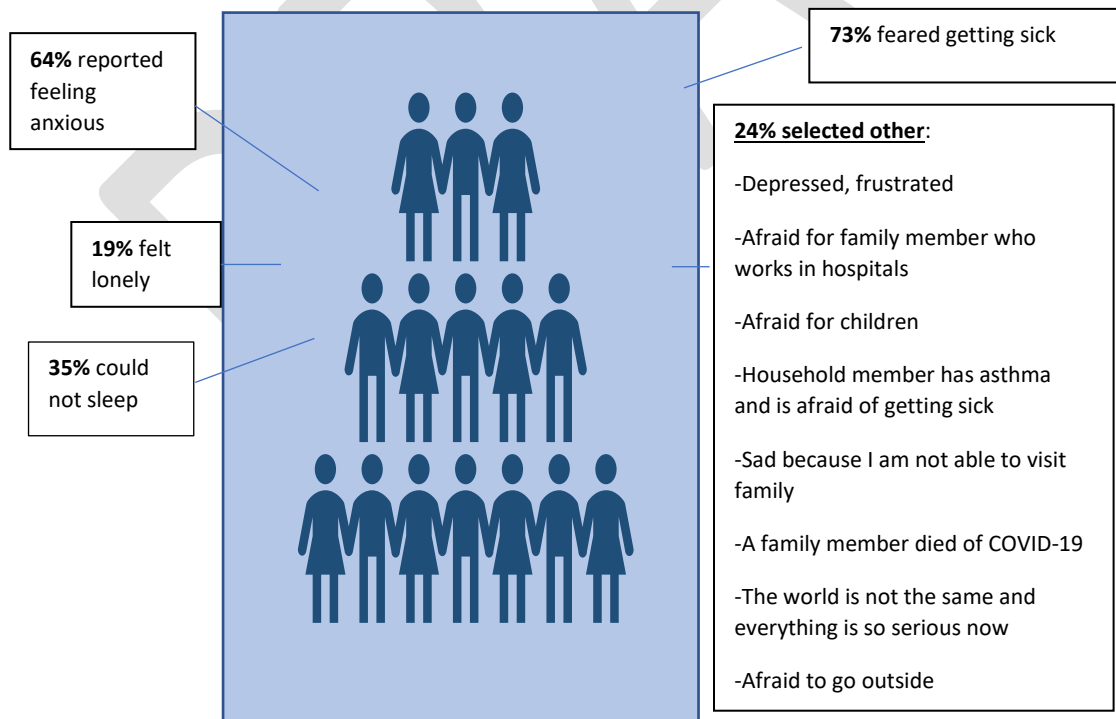
Because of COVID-19, many of the participants feared getting sick (73%), felt anxious (64%), could not sleep (35%), felt lonely (19%), or felt stressed or isolated.

**Graph 26. Effects of COVID-19 on Households (N=103)****Graph 26.**

Survey question 30:

How is COVID-19 affecting your household's daily life?

\*Includes multiple responses (175) from 103 participants who had more than one effect. Percentages will add to more than 100%.

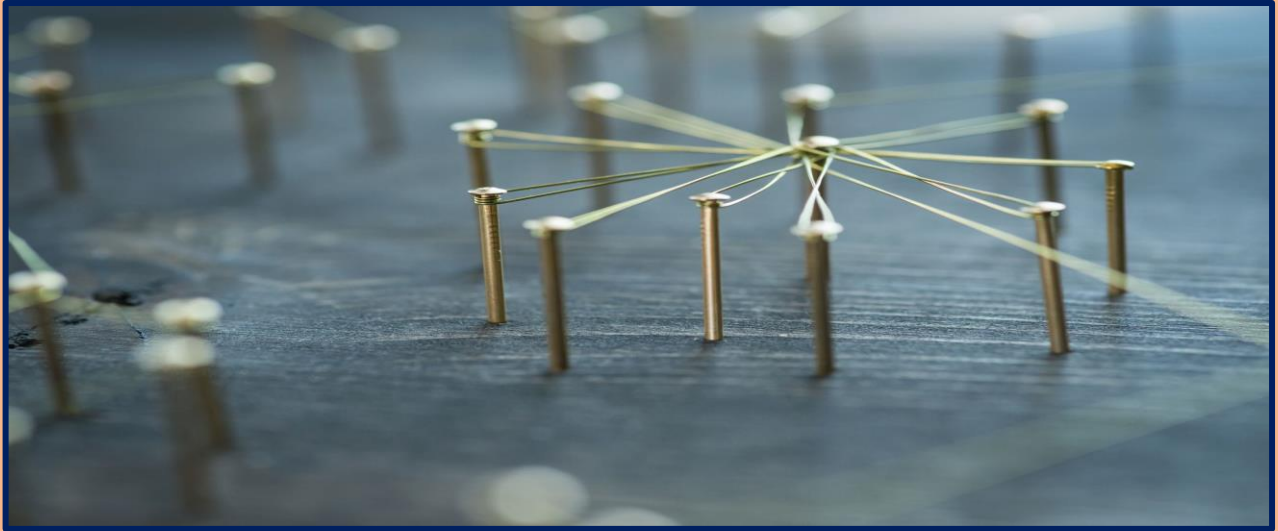
**Figure 4. Personal Effects of COVID-19 (N = 103)****Figure 4.**

Survey question 31:

How is COVID-19 affecting you personally?

\*Includes 222 responses from participants who had more than one effect; percentages will not add to 100%.

# DISCUSSION



The overarching goal of this study is to reduce heat deaths and illness in MC mobile home communities by raising awareness about extreme heat, providing safety tips and information, and providing information about available resources. The following discussion is specific to the pre-heat season and the survey results from July.

## Demographics

Over 68% of respondents lived in households with four or more people. Many of these households had members with small children, teenagers, and young adults. Nearly 65% of the population ranged from the ages of infant-34 years old while only 35% ranged from the ages of 35-74. Most of the households (92%) had at least one working person, however 7% of households had no working members.

## Heat Perception

Sixty-four percent of participants reported feeling hot inside their homes most of the time or always. Of those that had reported that their houses were too hot, 94% felt hot at temperatures ranging from 80 degrees Fahrenheit to 112 degrees Fahrenheit. **Over 85% of participants stated that they felt at risk of illnesses related to increased temperatures.**

## Knowledge of Heat and Illness

Overall, the participants responded that they were informed of heat waves (93%) but uninformed about resources to assist them with their home cooling systems during heat waves. **The most common form of heat alerts was television (91%), followed by radio (32%) and text alerts (24%).**

Many participants (61%) were able to name dehydration as a symptom of heat-related illness. Of those who felt at risk, 73% had experienced symptoms associated with heat waves. **Ninety-three percent of respondents who had experienced symptoms chose to stay home and take no action** as opposed to other options, such as seeing a doctor.

## Coping Mechanisms

Many residents who felt too hot in their homes used multiple forms of cooling units. Most residents who used window air-conditioning would use their home cooling system both all day and all night (85%). **Most respondents relied on window air-conditioners to cool off in their home, but only 49% were functioning.** Others relied on trees for shade (9%) on a hot day; however, that did not work for any participant in keeping them cool. Many who did not know about cooling centers found themselves driving to the nearest supermarket (63%) or mall (49%) to cool off. Other

respondents found opportunities to cool off at a friend's house (29%), library (6%), or religious building (8%). **This was the preferred method to cope with the heat for most residents as many had never used a cooling center because they were unaware of the services (80%) or did not know what cooling centers are (8%).**

## Barriers Faced To Cooling

Many of the respondents used multiple forms of cooling systems; however, not all systems were working properly. Although many respondents reported that they used at least one form of home cooling system, **it was discovered that over 70% had limitations to the use of these cooling systems. The biggest problem reported for limitations on cooling systems was the cost of electricity (100%) followed by the cost of repairs (62%).**

## Knowledge and Use of Community Resources

Most participants stated that they were not aware of community programs that assisted in the cost of utility bills (84%) or the cost of repairs (96%). Only 14% of respondents knew about the utility bill assistance programs yet had never used them. Only 2% of households surveyed had ever used the service to assist with utility bills and only 4% were aware of the service to assist with the cost of repairs yet had never used them. **Over three-quarters of households (77%) responded that the main reason they did not use these services was because they did not have the contact information.** Of those who knew about the programs, 10% stated that they did not qualify and 12% stated that the process was too long or complicated. This highlights that while lack of awareness is one factor that plays a role in limitations to cooling systems and use of utility



bill and repair assistance programs, other critical factors also exist, such as program qualification requirements and complicated processes that deter program use.

## **Effects of COVID-19**

With COVID-19 hitting many neighborhoods throughout Maricopa County, many respondents were affected by the virus, especially during heat waves. **Seventy-four percent of respondents had a member of the household lose a job. With the lack of work during the pandemic, 28% were unable to pay utilities, such as air-conditioning and water, and 22% were unable to pay the rent or mortgage.** Another 14% of respondents were

unable to provide food or other essentials and 16% had at least one household member diagnosed with COVID-19.

**Because of the stress of the pandemic, two-thirds of the community feared getting sick or felt anxious from stress or other issues.** Many of those who dealt with the effects of COVID-19 also reported a lack of sleep. Many participants wrote that they felt anxious due to financial issues, lack of contact from phones being shut off or isolation from not wanting to leave the house in fear of getting sick.



## CONCLUSION AND NEXT STEPS



The results of the Healthy Urban Environment (HUE) surveys suggest that community outreach and education are needed to ensure these communities are aware of existing programs and services available to them for assistance. They also suggest that the COVID-19 pandemic has had a large impact on the participants' ability to act and utilize various resources. Maricopa County Department of Public Health (MCDPH) plans to continue to work with this community to ensure that they are given proper resources and important information to assist them during extreme heat waves and climate changes.

Phase two of this project includes a post-heat season survey that was distributed in October of 2020. This allows for collection and analysis of data to determine if there are any knowledge and behavior changes following phase one of the project. The funding for this project was from ASU; however, during the summer, there was an opportunity of supplemental funding (\$6,500) from Robert Wood Johnson Foundation to help at-risk communities. The funding was granted to this project to help the community center at the church where Salud en Balance Community Health Workers will continue to assist and support community residents. The plan for the extra funding is to buy the community center a new computer and printer/ copy machine as well as assist with utilities during increased project hours. The remaining of the funding will be used to purchase incentive gift cards of \$25 to distribute directly to each mobile home community household.

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## APPENDICES

### APPENDIX I: GOAL AND OBJECTIVES

Overarching Goal: Reduction of heat deaths and illness in MC mobile home communities

Goal: To gain a better understanding of trailer/mobile home residents' heat perception, knowledge, coping mechanisms used, barriers faced toward cooling, and knowledge and use of community resources

**Figure 1. Goals and Objectives**

Objectives	Pre-Heat Season (July)	Post-Heat Season (October-November)	Deliverables (completed/to be completed)
<b>Provide information related to heat</b>	Develop <i>Heat Toolkit</i> * and distribute to every household  Pre-heat season survey included in the packet	Summarize pre-heat season survey results and produce report and infographics  Administer post-heat season survey	Heat Toolkit including survey distributed to 165 households
<b>Train residents/Community Health Workers</b>	Conduct workshops to train Community Health Workers to administer the survey  Community Health Workers administer the survey & distribute incentive cards	Conduct the second workshop with residents and Community Health Workers  Community Health Workers will administer the survey & distribute incentive cards	First workshop with Community Health Workers held on 7/7/2020  Collected 103 completed surveys
<b>Analyze and evaluate results from both surveys</b>	Analyze the pre-heat season survey	Analyze the post-heat season survey and conduct evaluation	Survey analysis and reports will be completed  Evaluation report will be completed
<b>Communicate and next steps</b>	Communicate information with residents, funder, and partners	Communicate information with residents, funder, and partners	Replicate and implement the same procedures in additional communities as resources permit

\*packet with information on types of heat illness, heat statistics, safety tips, and available resources

## APPENDIX II: DEFINITIONS

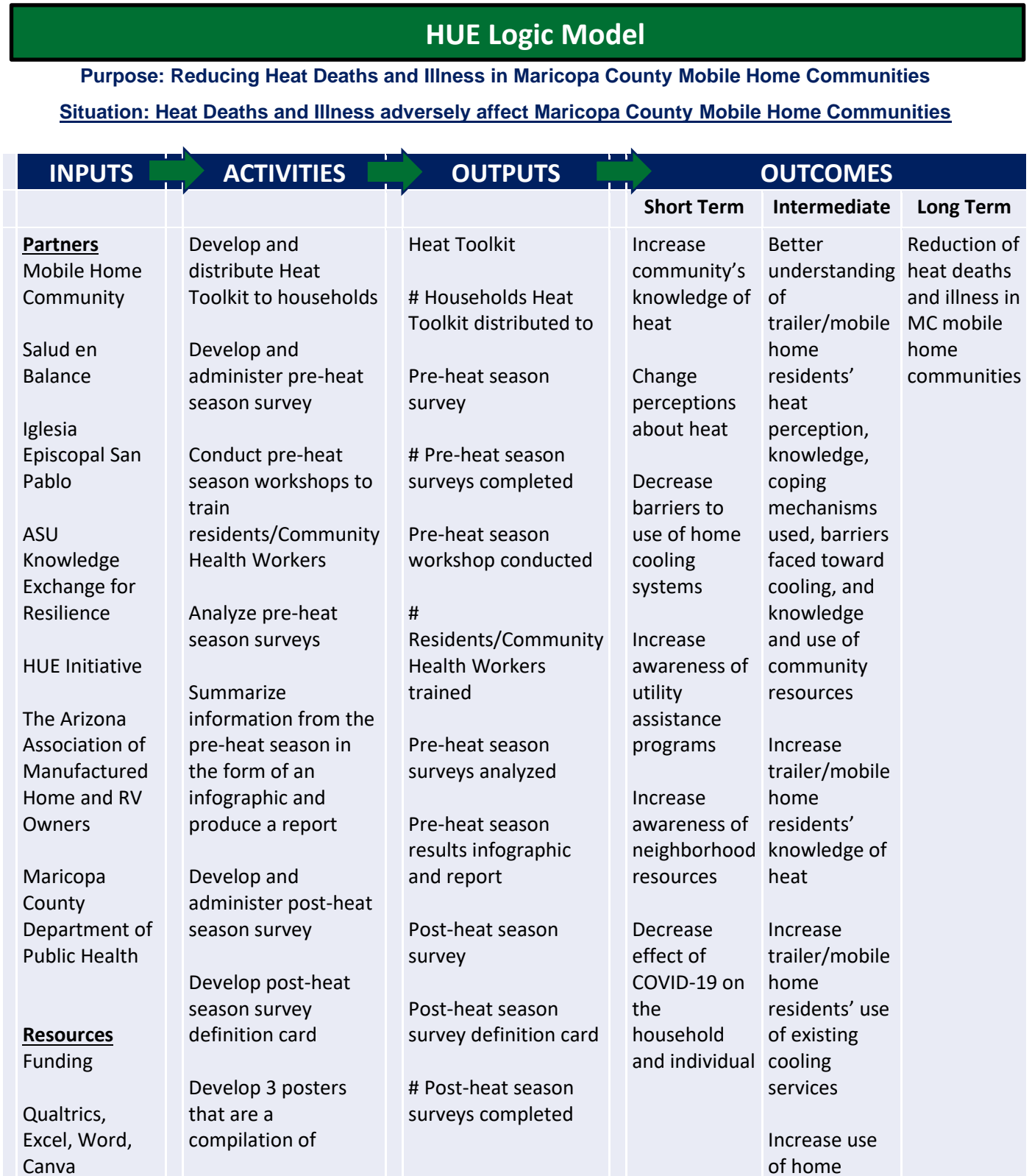
**Table 1. Definitions**

Item	Definition
<b>Pre-heat Season</b>	The time of year just before it gets hot that occurs between winter and summer.
<b>Post-heat Season</b>	The time of year following heat season that occurs after the hot summer months.
<b>Cooling Center</b>	An air-conditioned public space set up by local authorities to temporarily prevent negative health effects of extreme heat or to prevent overheating during heat waves.
<b>Central Air-Conditioning</b>	A cooling system in which air is cooled at a central location and distributed throughout multiple rooms through vents.
<b>Window Air-Conditioning</b>	A simple air-conditioning unit that is mounted on windows to cool the room.

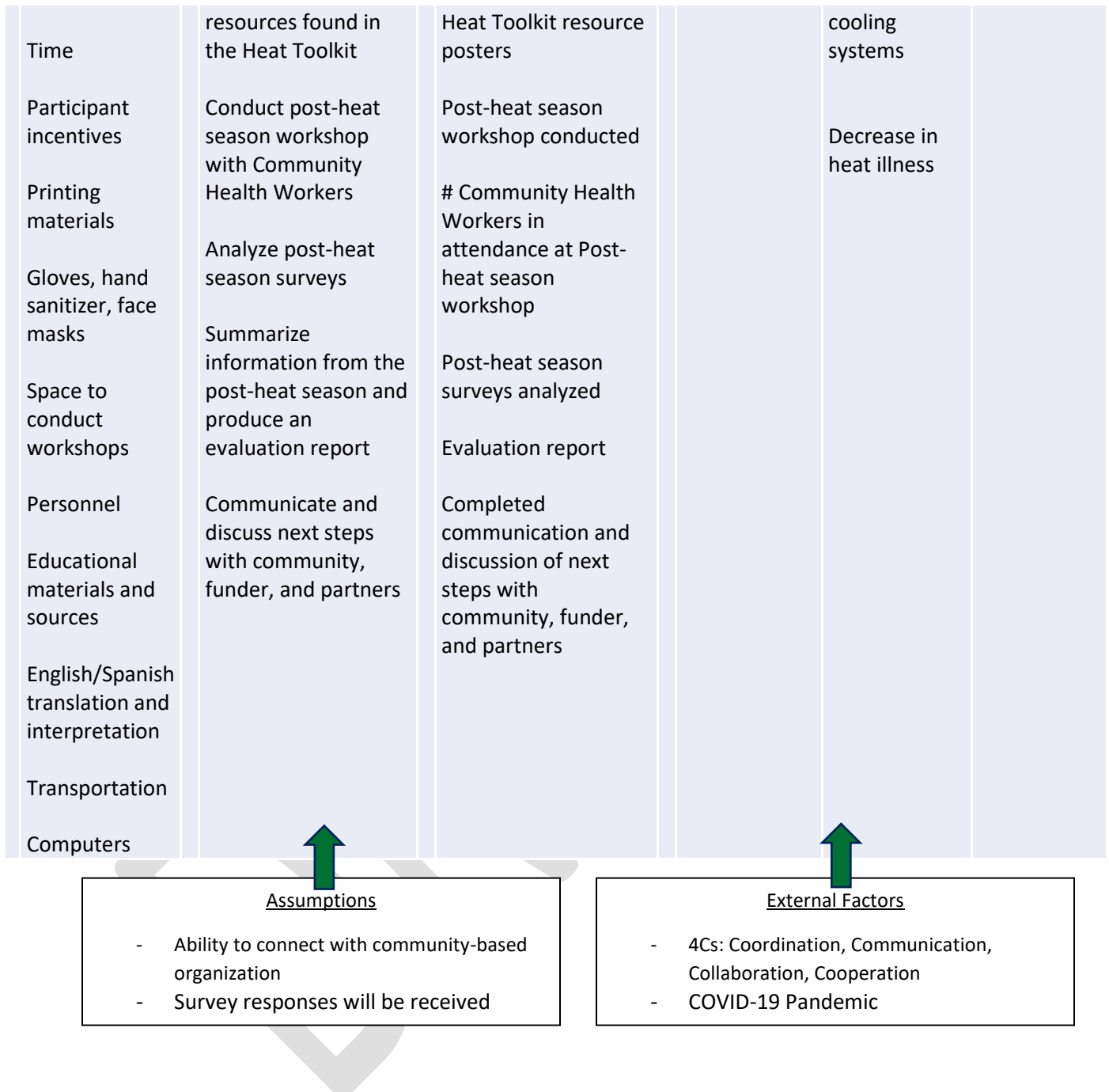


## APPENDIX III: HUE LOGIC MODEL AND NARRATIVE

Figure 1. Logic Model







## Logic Model Narrative

This logic model is built on the assumptions that the project will have the ability to connect and collaborate with a Community-Based Organization and that survey responses will be received from the project's target population. It also considers external factors including the 4Cs (collaboration, communication, coordination, cooperation) and the COVID-19 pandemic.

The outputs described on the logic model will be measured in a variety of ways. For many outputs, such as Heat Toolkit, pre-heat season survey, and evaluation report, the completion of activities will be used for evaluation. Heat Toolkit distribution numbers, attendance numbers, and survey completion numbers will also be used for evaluation to measure how many households received the Heat Toolkit, how many residents and Community Health Workers attended the pre- and post-heat season workshops, and how many pre- and post-heat season surveys were completed. Pre- and post-heat season surveys will be administered to measure participant knowledge of heat and illness, perceptions about heat, home cooling system use and barriers to use, awareness and use of utility assistance programs, awareness and use of neighborhood resources, and the effect of COVID-19 on the household and individual both pre-heat season (pre-intervention) and post-heat season (post-intervention).

Short-term, intermediate, and long-term outcomes are also illustrated in the logic model. Short-term and intermediate outcomes include but are not limited to increasing the community's knowledge of heat, increasing awareness of utility assistance programs, and gaining a better understanding of trailer/mobile home residents' heat perception, knowledge, coping mechanisms used, barriers faced toward cooling, and knowledge and use of community resources. The long-term outcome listed in the logic model is reduction of heat deaths and illness in Maricopa County (MC) mobile home communities.

## APPENDIX IV: HEAT DEATHS IN 85008 ZIP CODE VS MARICOPA COUNTY

**Table 1. Heat Deaths in 85008 Zip Code vs Maricopa County for Years 2016 – 2020**

Zip Code 85008		Maricopa County	
Total # Confirmed Heat-Associated Deaths			
Death rate: 4.5 per 100,000 residents		Death rate: 4.0 per 100,000 residents	
Ages of Those Experiencing Heat-Associated Death (%)			
0-4:	0%	0-4:	1%
5-19:	0%	5-19:	0%
20-34:	7%	20-34:	9%
35-49:	14%	35-49:	20%
50-64:	43%	50-64:	35%
65-74:	21%	65-74:	17%
75+:	14%	75+:	17%
Total Indoor Heat-Associated Deaths			
21%		30%	
A/C Present:	67%	A/C Present:	81%
A/C Non-functioning:	50%	A/C Non-Functioning:	72%
No Electricity:	0%	No Electricity:	5%
Not in Use:	50%	Not in Use:	19%
Total Outdoor Heat-Associated Deaths			
71%		69%	
Place of Injury		Place of Injury	
Urban Area:	50%	Urban Area:	57%
Desert Area/Trail:	10%	Desert Area/Trail:	14%
Residence:	30%	Residence/Garage:	20%
Car:	10%	Car:	6%
Work Site:	0%	Work Site:	1%
Care Facility:	0%	Care Facility:	0%
Unknown:	0%	Unknown:	2%
Living Situation		Living Situation	
Homeless:	36%	Homeless:	38%
Co-habiting/Roommate:	14%	Co-habiting/Roommate:	18%
Living Independently:	29%	Living Independently:	33%
Unknown:	21%	Unknown:	11%

✚ Data only include Maricopa County residents.

✚ Data pulled from “Final Data 2006 – 2018” Heat Database, 2019 Heat Database, and 2020 Heat Database generated by MCDPH

✚ MCDPH conducts heat associated mortality surveillance.

**Table 2. Poverty Level of Zip Code 85008 vs. Maricopa County 2018**

<b>85008 Poverty Level 2018 Total Pop (N=62,436)</b>		<b>Maricopa Poverty Level 2018 Total Pop (N=4,355,605)</b>	
Below Poverty	18,107 (29%)	Below Poverty	531,672 (12.2%)
<b>Hispanic Total Pop</b>	<b>36,071</b>	<b>Hispanic Total Pop</b>	<b>1,363,296</b>
Below Poverty	12,114 (33.6%)	Below Poverty	249,762 (18.3%)
<b>White Total Pop</b>	<b>37,214</b>	<b>White Total Pop</b>	<b>3,430,487</b>
Below Poverty	9,328 (25.1%)	Below Poverty	375,482 (10.9%)
<b>American Indian or Alaska Native Total Pop</b>	<b>1,926</b>	<b>American Indian or Alaska Native Total Pop</b>	<b>88,937</b>
Below Poverty	415 (21.5%)	Below Poverty	22,255 (25%)
<b>Black or African American Total Pop</b>	<b>7,498</b>	<b>Black or African American Total Pop</b>	<b>253,229</b>
Below Poverty	2,960 (39.5%)	Below Poverty	45,974 (18.2%)
<b>Asian Total Pop</b>	<b>774</b>	<b>Asian Total Pop</b>	<b>182,137</b>
Below Poverty	207 (26.7%)	Below Poverty	20,083 (11%)
<b>Native Hawaiian or Pacific Islander Total Pop</b>	<b>185</b>	<b>Native Hawaiian or Pacific Islander Total Pop</b>	<b>10,331</b>
Below Poverty	65 (35.1%)	Below Poverty	444 (4.3%)
<b>Other Race Total Pop</b>	<b>12,589</b>	<b>Other Race Total Pop</b>	<b>221,416</b>
Below Poverty	4,645 (36.9%)	Below Poverty	41,363 (18.7%)

✚ Data pulled from 2018 Census describes the total population and population by race that are below poverty level in Maricopa County and the zip code 85008.

**Table 3. Demographics of Zip Code 85008 vs. Maricopa County 2018 Census**

Zip code 85008 Total Population 2018		Maricopa County Total Population 2018	
Age Range (N=62,992)		Age Range (N=4,410,824)	
Less than 4	5,356 (9%)	Less than 4	279,484 (6%)
Ages 5-19	13,574 (22%)	Ages 5-19	890,280 (20%)
Ages 20-34	19,708 (31%)	Ages 20-34	934,984 (21%)
Ages 35-49	11,980 (19%)	Ages 35-49	858,820 (19%)
Ages 50-64	8,801 (14%)	Ages 50-64	778,057 (18%)
Ages 65+	3,573 (6%)	Ages 65+	669,199 (15%)
Employment (N=47,926)		Employment (N=3,478,309)	
Labor Force	73.10%	Labor Force	64.60%
Employment/ Population Ratio	68.30%	Employment/ Population Ratio	61.50%
Unemployment	6.30%	Unemployment	4.60%
Race (N=62,992)		Race (N=4,410,824)	
Hispanic	36,314 (57.6%)	Hispanic	1,379,637 (31.3%)
American Indian/ Alaska Native	2,509 (4%)	American Indian or Alaska Native	131,157 (3%)
White	38,944 (61.8%)	White	3,614,022 (81.9%)
Asian	1,287 (2%)	Asian	244,080 (5.5%)
Native Hawaiian or Pacific Islander	463 (0.7%)	Native Hawaiian or Pacific Islander	19,568 (0.4%)
Black or African American	8,740 (13.9%)	Black or African American	322,929 (7.3%)
Other Race	13,507 (21.4%)	Other Race	263,648 (6%)
Language (N=57,636)		Language (N= 4,131,340)	
English	25,807 (44.8%)	English	2,986,970 (72.3%)
Other	31,829 (55.2%)	Other	1,144,370 (27.7%)
Households (N= 21,902)		Households (N=1,611,722)	
Own	25%	Own	62.60%
Rent	75%	Rent	37.40%

✚ Data pulled from the 2018 Census describes the demographics of Maricopa County vs the zip code of 85008.

## APPENDIX V: HEAT ASSOCIATED DEATHS BY HOUSING TYPE 2016-2020

Table 1. Heat-Associated Deaths by Housing Type for Years 2016-2020

Mobile Homes		Single Homes		Apartments/Condos	
30%		53%		16%	
Ages of Those Experiencing Heat-Associated Deaths (%)					
0-4:	1%	0-4:	0%	0-4:	0%
5-19:	0%	5-19:	0%	5-19:	0%
20-34:	1%	20-34:	1%	20-34:	5%
35-49:	4%	35-49:	4%	35-49:	9%
50-64:	34%	50-64:	30%	50-64:	33%
65-74:	33%	65-74:	26%	65-74:	33%
75+:	28%	75+:	38%	75+:	21%
Gender of Those Experiencing Heat-Associated Deaths (%)					
Male:	73%	Male:	56%	Male:	60%
Female:	28%	Female:	44%	Female:	40%
Race/Ethnicity of Those Experiencing Heat-Associated Deaths (%)					
Asian/Pacific Islander:	0%	Asian/Pacific Islander:	1%	Asian/Pacific Islander:	5%
Hispanic:	13%	Hispanic:	9%	Hispanic:	23%
White Non-Hispanic:	75%	White Non-Hispanic:	77%	White Non-Hispanic:	56%
American Indian:	0%	American Indian:	2%	American Indian:	2%
Black/African American:	4%	Black/African American:	8%	Black/African American:	7%
A/C Status (%)					
A/C NOT Present	23%	A/C NOT Present	11%	A/C NOT Present	2%
A/C Present:	71%	A/C Present:	84%	A/C Present:	95%
A/C Non-functioning:	70%	A/C Non-Functioning:	79%	A/C Non-Functioning:	56%
No Electricity:	7%	No Electricity:	5%	No Electricity:	2%
Not in Use:	16%	Not in Use:	14%	Not in Use:	39%
Month of Death (%)					
March:	0%	March:	1%	March:	0%
April:	0%	April:	0%	April:	0%
May:	3%	May:	1%	May:	0%
June:	25%	June:	17%	June:	21%
July:	33%	July:	45%	July:	35%
August:	34%	August:	22%	August:	35%
September:	4%	September:	13%	September:	7%
October:	1%	October:	0%	October:	0%
November:	1%	November:	0%	November:	2%
Living Situation (%)					
Homeless:	9%	Homeless:	4%	Homeless:	0%



Co-habiting/Roommate:	16%	Co-habiting/Roommate:	24%	Co-habiting/Roommate:	7%
Living Independently:	74%	Living Independently:	72%	Living Independently:	91%
Unknown:	1%	Unknown:	0%	Unknown:	2%

DRAFT

## APPENDIX VI: SURVEY QUESTIONS - ENGLISH

### Healthy Urban Environments (HUE) Initiatives

#### Survey Questions

Maricopa County Department of Public Health is learning about the needs of residents living in manufactured and RV homes when it is hot in Arizona. The results of this survey will help us learn if residents know about and use community services and resources related to heat. Your participation in this project is completely voluntary. The survey will take approximately 15-20 minutes to complete. You may choose not to participate or leave blank any questions you don't wish to answer. All responses will be confidential. Results from this survey will only be reported as a total response (no individual results). If you agree to participate in this project, please answer the questions on the survey as best as you can.

Do you give your informed consent to be asked questions and have your answers recorded?

[1] yes

[0] no

This survey will be repeated in October, at the end of the Heat Season. Would you be willing to participate?

[1] yes

[0] no

Thank you for taking the time to participate.

### Demographic Questions

**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:

- a) Less than 4 years old? \_\_\_\_
- b) 5-19 years old? \_\_\_\_
- c) 20-34 years old? \_\_\_\_
- d) 35-49 years old? \_\_\_\_
- e) 50-64 years old? \_\_\_\_
- f) 65-74 years old? \_\_\_\_
- g) 75 years and older? \_\_\_\_
- h) Don't know? \_\_\_\_
- i) Refused? \_\_\_\_

Q3. How many people are employed in your household? \_\_\_\_\_

- a) Refused to answer? \_\_\_\_

Q4. Is there any adult in your household who does not speak English?

- a) Yes
- b) No
- c) Don't Know
- d) Refused

Q5. What is your race and that of members of your household (check all that apply)?

- a) White
- b) Black or African American
- c) Asian
- d) American Indian/Alaska Native
- e) Native Hawaiian or Pacific Islander
- f) Hispanic
- g) Don't know
- h) Refused

Q6. Does your household own or rent this residence?

- a) Own
- b) Rent
- c) Don't know
- d) Refused

Q7. What is the highest level of education achieved by a member of your household?

- a) Less than High school
- b) High school or GED
- c) Some College
- d) College graduate or more
- e) Don't Know
- f) Refused

Q8. What is your household's primary means of transportation?

- a) Personal vehicle
- b) Walk
- c) Bike
- d) Public Transportation (light rail, bus, etc.)
- e) Taxi
- f) Agency Pick-up (dial-a-ride, shuttle)
- g) Get a ride from family/friends
- h) Other \_\_\_\_\_
- i) Don't know
- j) Refused

### Knowledge of Heat and Illness

**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, we will be asking about events that happened during this summer, which is from May through July.**

Q9. Do you or other members of your household remember hearing weather warnings about excessive heat this summer?

- a) Yes (if YES, Go to Q10)
- b) No (if No, Don't Know, or Refused Go to Q11)
- c) Don't Know
- d) Refused

Q10. If yes, what was your primary source of information?

- a) TV
- b) Radio
- c) Text Message
- d) Automated Call

- e) Local Newspaper
- f) Church, mosque, synagogue or another religious site
- g) Internet
- h) Social Media
- i) Neighbor/Friends/ Word of Mouth
- j) Poster/Flyer
- k) Other \_\_\_\_\_
- l) Don't know
- m) Refused

Q11. Can you tell me any health problems you or a household member can get from exposure to heat?

- a) \_\_\_\_\_
- b) Don't know
- c) Refused

Q12. Have you or a member of your household had symptoms this summer related to heat or high temperatures such as leg cramps, dry mouth, dizziness, fatigue, rapid heartbeat, or hallucinations?

- a) Yes (If Yes, Go to question Q13)
- b) No (If No, Don't Know or Refused, Go to Q14)
- c) Don't Know
- d) Refused

Q13. What was the outcome of this heat-related illness? (Check all that apply)

- a) Stayed at home and did nothing
- b) Called 911
- c) Went to the emergency room
- d) Admitted to the hospital
- e) Death

### Perceptions about Heat

**These questions are about what steps you may take when it is hot outside.**

Q14. Do you feel that your health is at risk because of high summer temperatures?

- a) Yes
- b) No
- c) No opinion
- d) Refused

Q15. At what temperature do you start to feel too hot inside your home? \_\_\_\_\_(F)

- a) I don't know

Q16. Did you or members of your household ever feel too hot inside your home during this summer?

- a) Always
- b) Most of the time, but not always
- c) Sometimes, but rarely
- d) Never
- e) I don't know
- f) Refused

### Home Cooling Systems

**These questions are about what type of cooling systems you have at home.**

Q17. Which of the following did your household use to cool your house this summer? (check all that apply)

- a) Central air conditioning (If Air conditioning Go to Q18)
- b) Window air conditioning (If other choices go to Q19)
- c) Swamp or Evaporative Cooler
- d) Fans
- e) Misters
- f) Trees and plants
- g) None
- h) Other \_\_\_\_\_

Q18. If your household used air conditioning this summer, when did you use it?

- a) Morning time only
- b) Afternoon only
- c) Evening time only
- d) Both, All day and All night
- e) I did not use air conditioning

Q19. Which cooling system **works** in your home?

- a) Central air conditioning
- b) Window unit air conditioning
- c) Electric fans ceiling or portable)
- d) Swamp cooler
- e) Other
- f) None of these

Q20. Does anything limit you from using your cooling system when you are hot?

- a) Yes
- b) No

Q21. What limits your household from using air-conditioning? (Check all that apply)



- a) Cost of electricity
- b) Doesn't work
- c) Cost of Repairs
- d) Noise
- e) I have a swamp cooler
- f) Medical Reasons
- g) I don't have an air conditioner
- h) Nothing prevents me from using it
- i) Other \_\_\_\_\_

### [Access to Resources](#)

**Next, we would like to know if you are aware of assistance programs and other community resources**

Q22. Are you aware of community programs or services to help you with the **cost of utility bills**?

- a) No
- b) Yes, but I never used the service
- c) Yes, I have used the service

Q23. Are you aware of community programs or services to help you with home **cooling system repairs**?

- a) No
- b) Yes, but I never used the service
- c) Yes, I have used the service

Q24. Have you or a member of your household ever applied for these **utility assistance programs (cost of utility bills or for cooling system repairs)**?

- a) Yes
- b) No. I was not aware of any utility assistance programs
- c) No, I did not need utility assistance
- d) No. I did not qualify for utility assistance
- e) Don't know
- f) Refused

Q25. If you have not utilized any community assistance programs or resources, please select your reason(s):

- a) I am not interested in this program
- b) I don't have the contact information
- c) I am unable to complete the application
- d) I have difficulty hearing on the phone
- e) I don't qualify for this program
- f) It is a complicated process

g) Other \_\_\_\_\_

### Neighborhood Resources

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

**Q26. Are you aware of the Cooling Centers in Maricopa County (Places where an individual can go during the day to cool down during extreme heat warning days)?**

- a) No,
- b) Yes, but I never used the service
- c) Yes, I have used the service
- d) Don't know what cooling centers are

**Q27. 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?**

- a) Yes (If Yes Go to Q29)
- b) No (If No, Go to Q31)
- c) Sometimes (If Sometimes Go to Q29)
- d) I don't know
- e) Refused

**Q28. Where do you or members of your household go to cool off?**

- a) Mall
- b) Church, mosque, synagogue, or another religious site.
- c) Community Center
- d) Library
- e) Shelter
- f) Cooling Center
- g) Movie Theater
- h) Friends/Neighbors
- i) Supermarket
- j) Other \_\_\_\_\_

**Q29. How does your household normally travel to the air-conditioned place? (check all that apply)**

- a) Personal vehicle
- b) Walk
- c) Bike
- d) Public Transportation (light rail, bus, etc.)
- e) Taxi
- f) Agency Pickup (dial-a-ride, shuttle, etc.)
- g) Get a ride from family/friends

h) Other \_\_\_\_\_

### COVID-19 Questions

Q30. How is COVID-19 affecting your household's daily life (check all that apply)?

- a) Household member lost job
- b) Household member was diagnosed with COVID-19
- c) Household member was hospitalized due to COVID-19
- d) Unable to provide food for family
- e) Unable to pay my rent/mortgage
- f) Unable to pay monthly utilities
- g) Unable to provide/afford childcare
- h) Unable to help my children with their school
- i) Other
- j) Don't know
- k) Refused

Q31. How is COVID-19 affecting you personally (check all that apply)?

- a) I feel anxious
- b) I fear getting sick
- c) I feel lonely
- a) I can't sleep
- b) COVID-19 is not affecting me personally
- c) Other \_\_\_\_\_

Thank you for your time!

## APPENDIX VII: SURVEY QUESTIONS - SPANISH

### Ambiente Urbano Saludable

#### Preguntas de la encuesta

La Oficina de Epidemiología del Departamento de Salud Pública del Condado de Maricopa está evaluando las necesidades de individuos que no pueden salir de casa durante eventos de calor extremo. Los resultados de este estudio ayudaran a determinar el conocimiento y el uso de servicios y recursos existentes para la comunidad. Su participación en este proyecto es completamente voluntaria. La encuesta tomara aproximadamente entre 15-20 minutos en ser completada. Usted puede dejar en blanco cualquier pregunta que no desee contestar. Estas respuestas deben reflejar las opiniones del individuo que se encuentra en casa sin salir. Todas sus respuestas serán confidenciales, y la información recopilada solo será reportada en un toto colectivo combinado. Si desea participar en este proyecto, por favor, responda las siguientes preguntas lo mejor que pueda.

¿Da su consentimiento informado para que se le hagan preguntas y se registren sus respuestas?

[1] Si

[2] No

Esta encuesta se repetirá en octubre, al final de la temporada de calor. ¿Estarías dispuesto a participar?

[1] Si

[2] No

Gracias por tomarse el tiempo de participar

### Información Demográfica

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

Q1. Incluyendo a usted ¿Cuántas personas viven en su hogar? \_\_\_\_\_

Q2. ¿Cuántas personas que viven en su hogar tienen (lea los grupos de edad) ?:

- j) Menores de 4 años? \_\_\_\_
- k) 5-19 años de edad? \_\_\_\_
- l) 20-34 años de edad? \_\_\_\_
- m) 35-49 años de edad? \_\_\_\_
- n) 50-64 años de edad? \_\_\_\_
- o) 65-74 años de edad? \_\_\_\_
- p) 75 o mayores? \_\_\_\_
- q) No lo sé? \_\_\_\_
- r) Se rehusó a contestar? \_\_\_\_

Q3. ¿Cuántas personas trabajan en su hogar? \_\_\_\_\_

- a) Se rehusó a contestar? \_\_\_\_

Q4. ¿Hay algún adulto en su hogar que no hable inglés?

- e) Si
- f) No
- g) No lo sé
- h) Se rehusó a contestar

Q5. ¿Cuál es su raza y la del resto de los miembros de su hogar? (Seleccione todo lo que aplique)

- i) Blanco
- j) Afroamericano
- k) Asiático
- l) Indio Nativo Americano o Nativo de Alaska
- m) Hawaiano o de las Islas del Pacífico
- n) Hispanic
- o) No lo sé
- p) Se rehusó a contestar

Q6. En este hogar, ¿Ustedes son propietarios de esta vivienda o es rentada?

- e) Propietarios
- f) Rentar
- g) No lo sé
- h) Se rehusó a contestar

Q7. ¿Cuál es el nivel más alto de educación alcanzado dentro de los miembros de su hogar?

- g) No termino la preparatoria (high school)
- h) Diploma de preparatoria (High school or GED)
- i) Estudio la Universidad o colegio, pero no se graduo
- j) Se graduo de colegio o Universidad o un nivel más alto
- k) No lo sé
- l) Se rehusó a contestar

Q8. ¿Cuál es el principal medio de transporte en su hogar?

- k) Vehículo Personal
- l) Caminar
- m) Bicicleta
- n) Transporte Público (Tren ligero, Camión, etc)
- o) Taxi
- p) Transporte de Agencia (dial-a-ride, shuttle)
- q) Obtener un paseo de familiares / amigos
- r) Otros, especifica \_\_\_\_\_
- s) No lo sé
- t) Se rehusó a contestar

### Conocimiento sobre el Estrés 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 sobre eventos ocurridos durante el verano, entre los meses de Mayo y Julio.**

Q9. ¿Usted u otros miembros de su hogar recuerdan haber escuchado advertencias climáticas sobre el calor excesivo este verano?

- e) Si (En caso afirmativo, pase a la pregunta 10)
- f) No (Si no, no lo sé, o me niego, pase a la pregunta 11)
- g) No lo sé
- h) Se rehusó a contestar

Q10. Si su respuesta fue si, ¿Cuál fue principal Fuente de información? (Seleccione todo lo que aplique)

- n) TV
- o) Radio
- p) Mensaje Texto
- q) Mensaje grabado del Sistema de emergencia 911 (reverse 911)
- r) Periódico Local
- s) Iglesia o otros grupos
- t) Internet



- u) Redes Sociales
- v) Vecino/amigo/ tercera persona
- w) Poster/Volante
- x) Otros, especifica \_\_\_\_\_
- y) No lo sé
- z) Se rehusó a contestar

Q11. ¿Me pudiera decir algunas de los problemas que usted o los miembros de su hogar pudieran sufrir por estar expuestos al calor?

- d) \_\_\_\_\_
- e) No lo sé
- f) Se rehusó a contestar

Q12. ¿Ha tenido usted o algún... miembros de su hogar síntomas relacionados al calor o por las altas temperaturas como calambre en las piernas, boca seca, mareos, fatiga, desmayo, palpitaciones o alucinaciones?

- e) Yes (En caso afirmativo, pase a la pregunta 13)
- f) No (Si no, no lo sé, o me niego, pase a la pregunta 14)
- g) No lo sé
- h) Se rehusó a contestar

Q13. ¿Cuál fue el resultado de este episodio de enfermedad por el calor? (Seleccione todo lo que aplique)

- f) Se quede en casa y no paso nada
- g) Llamo al numero de emergencia 911
- h) Visito la sala de emergencia
- i) Fue hospitalizado
- j) muerte
- k) No se
- l) Se rehusó a contestar

### Percepción de Calor

**Estas preguntas son sobre los pasos que puede tomar su hogar cuando hace calor afuera**

Q14. ¿Siente que su salud está en riesgo debido a las altas temperaturas del verano?

- e) Si
- f) No lo sé
- g) Sin opinión
- h) Se rehusó a contestar

Q15. ¿A qué temperatura comienza a sentir demasiado calor dentro de su hogar? \_\_\_\_\_(F)

- a) No lo sé

Q16. ¿Alguna vez usted o los miembros de su hogar se sintieron demasiado calientes dentro de su hogar durante este verano?

- g) Siempre
- h) La mayor parte del tiempo, pero no siempre
- i) Algunas veces pero es raro
- j) Nunca
- k) No lo sé
- l) Se rehusó a contestar

### Sistemas de Refrigeración del Hogar

**Estas preguntas son sobre qué tipo de sistema de enfriamiento tienes en casa**

Q17. ¿Cuál de los siguientes utilizó su hogar para enfriar su casa este verano? (Seleccione todo lo que aplique)

- i) Aire acondicionado central (Si tiene aire acondicionado, pase a la pregunta 18)
- j) Aire acondicionado de ventana (Si otras opciones van a la pregunta 19)
- k) Cooler de Vapor
- l) Abanicos
- m) Rociador de agua
- n) Árboles y plantas
- o) Ninguno
- p) Otros, especifica \_\_\_\_\_

Q18. Si su hogar usó aire acondicionado este verano, ¿cuándo lo usó?

- f) Solo en la noche
- g) Solo de día
- h) Día y noche
- i) No lo sé
- j) Se rehusó a contestar

Q19. ¿Qué sistema de enfriamiento **funciona** en su hogar?

- g) Aire acondicionado central
- h) Aire acondicionado de ventana
- i) Cooler de Vapor
- j) Abanicos
- k) Otros, especifica \_\_\_\_\_
- l) Ninguno de esos

Q20. ¿Hay algo que te limite de usar tu sistema de enfriamiento cuando estás caliente?

- c) Si
- d) No

Q21. ¿Hay algo que evite que se use el aire acondicionado en su hogar? (Seleccione todo lo que aplique)

- a) El costo de electricidad
- b) No funciona
- c) Costo de reparaciones
- d) El ruido
- e) Tengo un enfriador de pantano
- f) Razones Médicas
- g) No tengo aire acondicionado
- h) Nada me impide que lo use
- i) Otros, especifica \_\_\_\_\_

[Access a los Recursos](#)

**A continuación, nos gustaría saber si conoce programas de asistencia y otros recursos de la comunidad**

Q22. ¿Conoce los programas comunitarios o servicios para ayudarlo con el **costo de las facturas de servicios públicos**?

- d) No
- e) Sí, pero nunca uso el servicio
- f) Sí, he usado el servicio

Q23. ¿Conoce los programas o servicios comunitarios para ayudarlo con **las reparaciones del sistema de enfriamiento del hogar**?

- a) No
- b) Sí, pero nunca uso el servicio
- c) Sí, he usado el servicio

Q24. ¿Usted o algún miembro en su hogar ha **solicitado asistencia para pagar la energía eléctrica**?

- g) Si
- h) No, no sabía que existía un programa de asistencia para pagar la energía eléctrica o luz
- i) No, no necesito asistencia para pagar la luz
- j) No, no califico para recibir asistencia para pagar la luz o energía eléctrica
- k) No lo sé
- l) No rehusó a contestar

Q25. Si usted no ha utilizado los programas o servicios para la comunidad, por favor, seleccione sus razones:

- h) No interés en estos programas
- i) No tiene información de contacto
- j) No ha podido completar la solicitud

- k) Dificultad para escuchar en el teléfono
- l) No califica
- m) Proceso complicado
- n) Otros, especifica \_\_\_\_\_

### Recursos del Vecindario

#### Ahora nos gustaría hacer algunas preguntas sobre cómo lidiar con el calor

Q26. ¿Conoce los centros de enfriamiento en el condado de Maricopa?

- e) No
- f) Sí, pero nunca uso el servicio
- g) Sí, he usado el servicio
- h) No sé qué son los centros de enfriamiento.

Q27. ¿Cuándo la temperatura está muy caliente usted o los miembros en su hogar salen de su casa para ir a un lugar con aire acondicionado?

- f) Si (En caso afirmativo, pase a la pregunta 29)
- g) No (Si no, pase a la pregunta 31)
- h) A veces (Si a veces, vaya a la pregunta 29)
- i) No lo sé
- j) No rehusó a contestar

Q28. Si usted o miembros de su hogar salen de casa para ir a un lugar con aire acondicionado, ¿A dónde van? (Seleccione todo lo que aplique)

- a) Centro comercial
- k) Iglesia
- l) Centro comunitario
- m) Biblioteca
- n) Refugio
- o) Centro de enfriamiento
- p) Museo
- q) El cine
- r) Amigos/Vecinos
- s) Supermercado
- t) Otros, especifica \_\_\_\_\_

Q29. ¿Cómo viaja normalmente su hogar al lugar con aire acondicionado? (Seleccione todo lo que aplique)

- i) vehículo personal
- j) Caminar
- k) Bicicleta
- l) Transporte Público (Tren ligero, camión, etc.)
- m) Taxi

- n) Transporte de Agencia (dial-a-ride, shuttle)
- o) Obtener un paseo de familiares / amigos
- p) Otros, especifica \_\_\_\_\_

### Preguntas COVID-19

Q30. ¿Cómo afecta COVID-19 a la vida cotidiana de sus hogares? (Seleccione todo lo que aplique)

- l) Un miembro del hogar perdió su trabajo
- m) Un miembro del hogar fue diagnosticado con COVID-19
- n) Un miembro del hogar fue hospitalizado debido a COVID-19
- o) No puedo mantener a la familia
- p) No puedo pagar mi renta / hipoteca
- q) No puedo pagar mis utilidades mensuales
- r) No puedo proporcionar / pagar cuidado de niños
- s) Unable to provide school support for children
- t) Otros, especifica \_\_\_\_\_
- u) No lo sé
- v) No rehusó a contestar

Q31. ¿Cómo te afecta personalmente COVID-19?

- d) Me siento ansioso
- e) Temo la enfermedad
- f) Me siento solo
- g) No puedo dormir
- h) Otros, especifica \_\_\_\_\_
- i) No lo sé
- j) No rehusó a contestar

¡Gracias por tu tiempos!

## APPENDIX VIII: SURVEY RESULTS

### Survey Results Infographic

# JULY SURVEY RESULTS 2020 PRE-HEAT SEASON

## HEALTHY URBAN ENVIRONMENTS INITIATIVE

### 70%

reported having limitations to  
using their cooling system  
when it is hot

**THERE ARE LIMITATIONS TO A/C DUE  
TO COST OF ELECTRICITY, POOR  
FUNCTIONING OF UNIT, ETC.**



**94% REMEMBERED HEARING WEATHER  
WARNINGS ABOUT EXCESSIVE HEAT AND  
91% OF THESE HEARD ABOUT THESE FROM**



**TV**

### 73%

reported that they or a  
household member had  
experienced heat related illness  
this summer

### 64%

reported feeling hot inside their  
home most of the time or always  
(94% said that temperatures of 80  
degrees Fahrenheit or higher felt hot)

**85% STATED THEY FEEL THAT THEIR  
HEALTH IS AT RISK DUE TO HIGH  
SUMMER TEMPERATURES**



**WINDOW AIR CONDITIONING WAS  
THE MOST COMMONLY USED  
COOLING SYSTEM (78%) AND 49%  
OF THOSE FUNCTION**



33% reported using  
fans; only 14% of fans  
were reported as  
functional



**1/2 OF PARTICIPANTS REPORTED  
THAT THEIR COOLING SYSTEMS ARE  
OPERATIONAL**



**100%**

said cost of electricity  
limited their use of their  
cooling system

**88%**

were not aware of cooling  
centers in Maricopa County  
or did not know what cooling  
centers are

**31%**

**SAID THEY LEAVE THEIR HOME TO  
GO TO A PLACE WITH A/C WHEN THE  
WEATHER IS VERY HOT**



**DUE TO THE COVID-19 PANDEMIC...**

**28%**

**OF PARTICIPANTS STRUGGLED TO PAY  
UTILITIES; 22% STRUGGLED TO PAY  
RENT AS A RESULT OF COVID-19**

**LOSS OF JOB**

was the most common affect  
on households (74%)



**73% FEARED GETTING SICK, 64% FELT  
ANXIOUS, 35% COULD NOT SLEEP, AND 19%  
FELT LONELY IN RESPONSE TO COVID-19**



**CONTACT US**



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## APPENDIX IX: HEAT TOOLKIT

### I. Toolkit Contents:

1. Environmental Heat Deaths in Maricopa County, Arizona 2006-2019 – Maricopa County Department of Public Health Graph (See [Figure 1. Heat Deaths in Maricopa County](#) below)
2. Heat Kills in Maricopa County Infographic – Maricopa County Department of Public Health (See [Figure 2. Heat Kills in Maricopa County Infographic](#) below)
3. Mobile Homes: Heat-Associated Deaths, Maricopa County 2006-2019 infographic – Maricopa County Department of Public Health (See [Figure 3. Mobile Homes: Heat-Associated Deaths in Maricopa County](#) below)
4. Climate Change and Extreme Heat – Centers for Disease Control and Prevention Infographic (See [Figure 4. Extreme Heat Infographic \(CDC\)](#) below)
5. Top 10 Tips for Staying Safe in the Arizona Heat – Maricopa County Department of Public Health (See [Figure 5. Top 10 Tips for Staying Safe Infographic](#) below)
6. Stay Safe and Know Signs of Heat Illness Card – Maricopa County Department of Public Health (See [Figure 6. Heat Illness and Safety Cards](#) below)
7. Cooling Centers/Hydration MAPs – Maricopa Association of Governments (MAG) (See [Figure 7. Map of Emergency Heat Relief and Cooling Centers](#) below)
8. Resources by Services Provided: Maricopa County Department of Public Health (See [Figure 8. List of Resources by Services Provided](#) below)

### II. Survey (both Spanish and English versions):

- See [Appendix VI](#) above for the English survey
- See [Appendix VII](#) above for the Spanish survey

*Figure 1. Heat Deaths in Maricopa County*

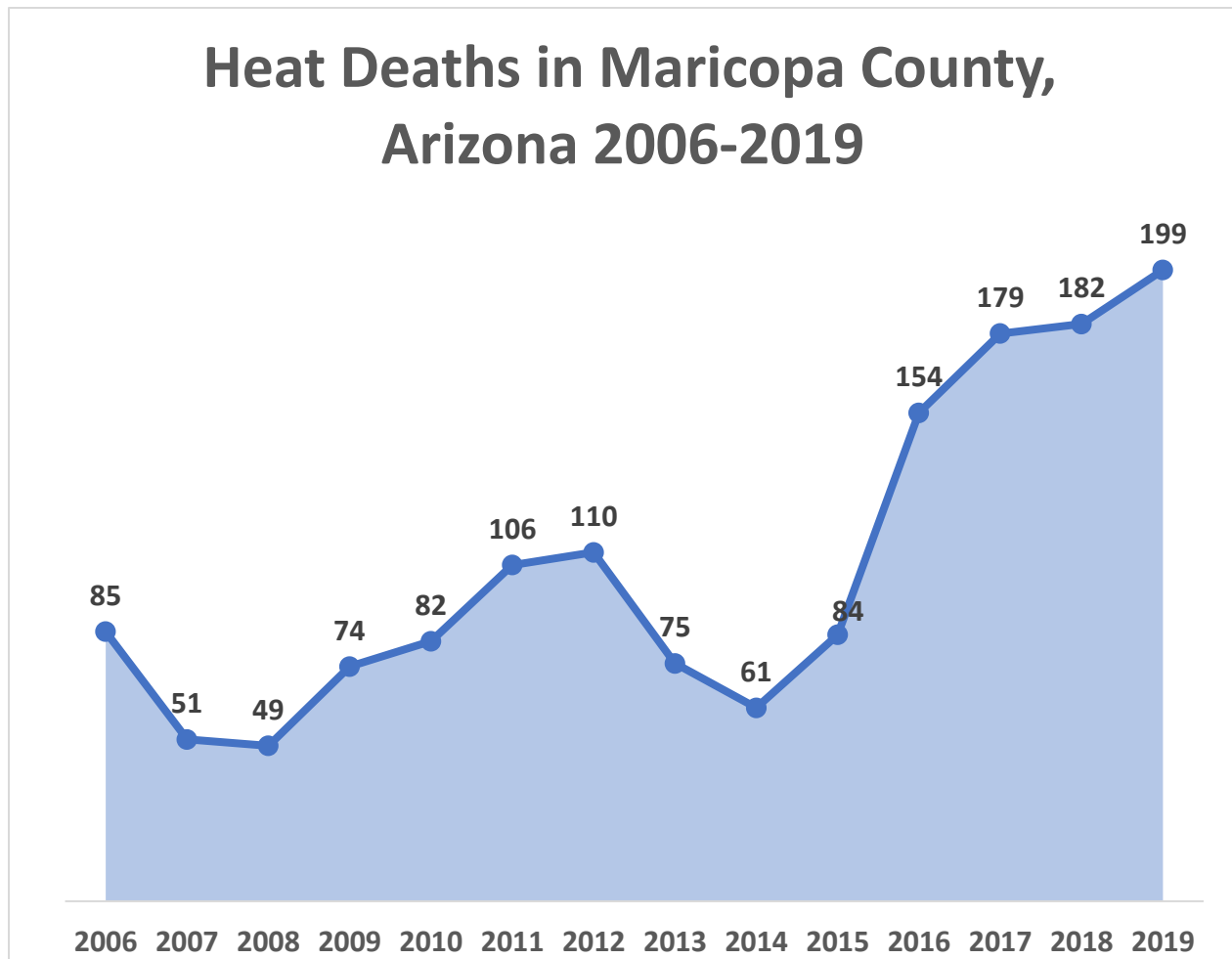


Figure 2. Heat Kills in Maricopa County Infographic

# HEAT KILLS IN MARICOPA COUNTY

**1,491**PEOPLE HAVE DIED  
DUE TO HEAT  
SINCE 2006**WHAT?**In 2019, excessive  
heat caused...**2,785**  
hospital visits**199**  
deaths**WHO?****Half**  
had lived in  
Arizona for  
20 years  
or more**7 in 10**  
were at least  
50 years old**WHEN?**Heat has killed in  
every month from**March to November**Most deaths happened  
when lows were**85°F or above****WHERE?****40%**  
of all deaths  
occurred indoorsMost  
women  
died  
indoorsMost  
men  
died  
outdoors

Figure 3. Mobile Homes: Heat-Associated Deaths in Maricopa County

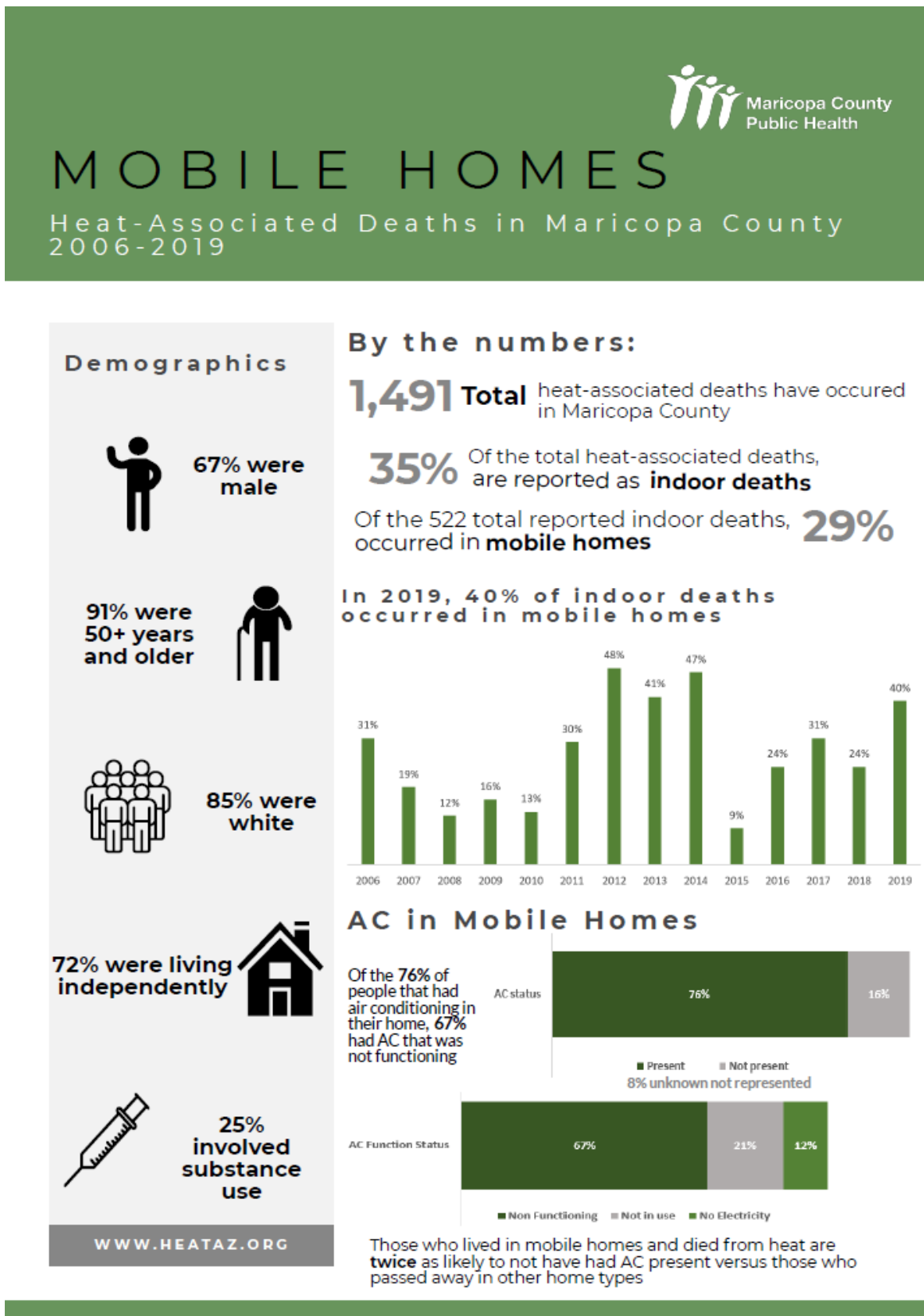


Figure 4. Extreme Heat Infographic (CDC)



Figure 5. Top 10 Tips for Staying Safe Infographic

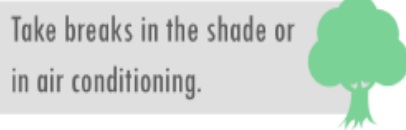
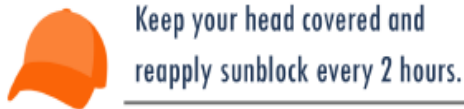


# Top 10 Tips for Staying Safe in the Arizona Heat

- **1. Drink plenty of WATER**  
Drink plenty of water EVERY DAY 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 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. For more information**  
For cooling locations or additional resources, visit [HeatAZ.com](http://HeatAZ.com).

Figure 6. Heat Illness and Safety Cards

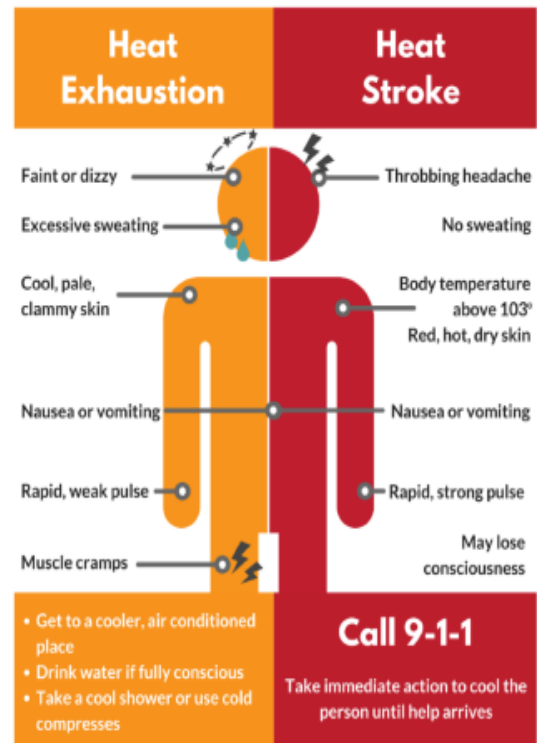
## Stay Safe in the Arizona Heat



Visit [heataz.org](http://heataz.org) or call 211 for information on cooling centers, utility assistance, and more tips on staying cool.



## Know the Signs of Heat Illness

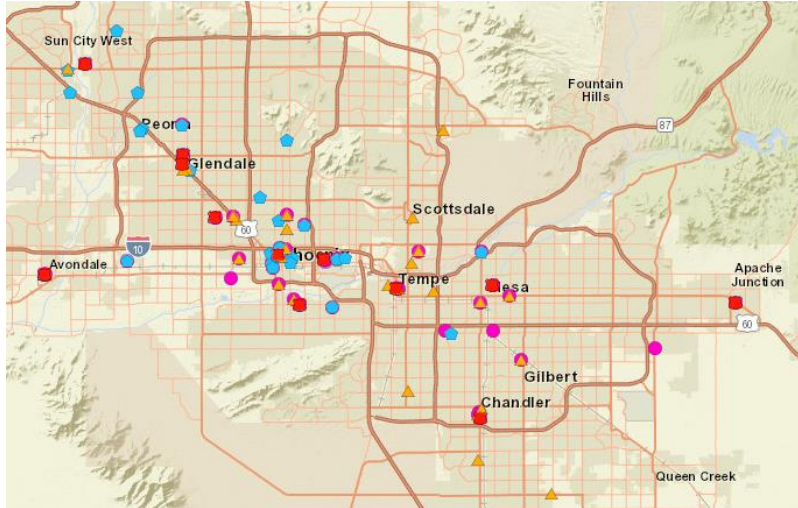


Used with permission from the National Weather Service



Figure 7. Map of Emergency Heat Relief and Cooling Centers

## Map of Emergency Heat Relief/Cooling Centers



**Hydration Stations:** Places where individuals can go to receive bottled water and other collected donated items.

**Heat Refuges:** Cooled indoor locations that provide refuge from the heat during the day. Drinking fountains or bottled water is available.

**Emergency Heat Relief Stations:** Locations offering hydration and heat refuge. Open on days with excessive heat warnings as issued by the National Weather Service. Pets are welcome, but MUST be leashed. Operated by the [Salvation Army](#).

**Collection Sites:** Water bottles can be donated here for use at hydration and refuge locations. Some sites also accept other donations, such as cash; light colored, long-sleeved tee-shirts; socks; underwear; hats; lip balm; sun block; and pre-packaged snacks.

Information provided by the Maricopa Association of Governments Heat Relief Network for more information visit <https://azmag.gov/Programs/Homelessness/Heat-Relief-Regional-Network>

**Figure 8. List of Resources by Services Provided**

## **RESOURCE SERVICES**<sup>3</sup>

### **Utility Assistance**

- City of Phoenix Family Services Centers – 602 534 2433
- A New Leaf / MESA CAN – 480 833 9200
- Avondale Community Action Program – 855 204 7797 or 623 333 2703
- Chandler Community Action Plan – 480 963 1423
- Gilbert Community Action Plan – 480 892 5331
- Friendly House – 602 345 0167
- Glendale Community Action Program – 623 930 2854 x 3
- Guadalupe Community Action Agency – 480 505 5375
- Lutheran Social Services of the Southwest – 480 654 4539
- Maricopa County Human Services Department – 602 506 5911
- Salvation Army, Phoenix Family Services – 602 267 4127
- St. Vincent de Paul – 602 850 6948
- Sun City Community Assistance Network – 623 933 7530
- Tempe Community Action Agency – 480 350 5880
- Tolleson Community Action Program – 623 936 2760
- Wickenburg Community Action Program – 928 684 7894
- APS Energy Support Programs – 602 618 1974
- APS Energy Support with Medical Programs – 602 618 1974
- APS Project SHARE - 602 618 1974
- SRP Residential Rebates and Discounts – 602 236 8888
- SRP Limited Income Weatherization Assistance Programs
  - City of Phoenix – 602 495 0700
  - Mesa Community Action Network – 480 833 9200
  - Maricopa County – outside Phoenix/Mesa – 602 506 5911
  - Pinal County – 520 466 1112
- 2-1-1

### **Rent Assistance**

- Avondale Community Action Program – 855 204 7797 or 623 333 2703
- Chandler Community Action Plan – 480 963 1423
- Gilbert Community Action Plan – 480 892 5331
- Glendale Community Action Program – 623 930 2854 x 3
- Lutheran Social Services of the Southwest – 480 654 4539
- Maricopa County Human Services Department – 602 506 5911

<sup>3</sup> The highlighted lines are services, programs, and/or organizations that are located in Phoenix or near the mobile home community of the report. These services would be the most convenient for them to use, but others are listed as well for those that shared resources in different areas of Arizona.

- Salvation Army, Phoenix Family Services – 602 267 4127
- Tempe Community Action Agency – 480 350 5880
- Tolleson Community Action Program – 623 936 2760
- Wickenburg Community Action Program – 928 684 7894
- 2-1-1

## Weatherization

- City of Phoenix Family Services Centers – 602 534 2433
- Avondale Community Action Program – 855 204 7797 or 623 333 2703
- Glendale Community Action Program – 623 930 2854 x 3
- SRP Limited Income Weatherization Assistance Programs
  - City of Phoenix – 602 495 0700
  - Mesa Community Action Network – 480 833 9200
  - Maricopa County – outside Phoenix/Mesa – 602 506 5911
  - Pinal County – 520 466 1112
- 2-1-1

## Eviction Prevention

- City of Phoenix Family Services Centers – 602 534 2433
- A New Leaf / MESA CAN – 480 833 9200
- Chandler Community Action Plan – 480 963 1423
- Gilbert Community Action Plan – 480 892 5331
- St. Vincent de Paul – 602 850 6948
- Maricopa County Human Services Department – 602 506 5911
- Salvation Army, Phoenix Family Services – 602 267 4127
- 2-1-1