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

Maricopa County Public Health
WeArePublicHealth.org

Healthy Urban Environments Initiative Evaluation Report

Maricopa County Department of Public Health (MCDPH)
Office of Epidemiology
Climate and Health
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The Maricopa County Department of Public Health (MCDPH), Office of Epidemiology: Climate and Health would like to thank the following for their contributions to the Healthy Urban Environment (HUE) Project:

- Mobile Home Community, Phoenix AZ
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- Iglesia Episcopal San Pablo, Salud en Balance
  - Community Health Workers (includes 6 Community Leaders)
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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 injuries. Nearly 26% of these heat deaths occurred indoors, and 30% of the indoor deaths occured in trailer/RV/mobile homes.
- 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 a *Heat Toolkit* to the selected community, which provided information on heat illness, heat safety tips, and community resources.
- Two community surveys were carried out in two phases: 1) pre-heat season survey in July, and 2) post-heat season in October. An evaluation report was completed based on results from both surveys. For detailed information on this initiative, refer to the following reports: July Survey Results report, October Survey Results report, and Evaluation report.
- Evaluation results based on the Healthy Environments Initiative find that chronic heat in Maricopa County remains a persistent challenge for the mobile home community. The data collected show numerous types of barriers the residents face when it comes to staying safe during extreme heat. These include process barriers for applying to and utilizing assistance programs, financial barriers, medical barriers, and awareness barriers.
    - Process barriers include but are not limited to lack of computer access, not having program contact information, the process being complicated, and the process being in a different language.
    - Financial barriers include barriers such as high costs of electricity, repairs, cooling systems, and medical services.
    - Medical barriers include not having health insurance, lack of access to low-cost clinics and medical check-ups, and being unsure of how to respond to heat illness.
    - Awareness barriers include not all residents being aware of cooling centers and utility cost and repair assistance programs.
- For both October and July participants, around 90% reported staying home and taking no action in response to experiencing heat-related illness (most reported a lack of health insurance as the reason for this).

- 62% of participants felt too hot inside of their home most of the time or always.
- Over ⅔ of participants had limitations to using their home cooling systems (cost of electricity and cost of repairs).
- Most participants had never applied to utility assistance programs, either due to being unaware of these programs or not qualifying (or assuming they do not qualify) for assistance.
- The COVID-19 pandemic had household and personal effects on participants, such as loss of a job, not being able to pay utilities, fear of getting sick, and increased anxiety.
- There was a 74% increase in the number of participants that were aware of programs to help with the cost of utility bills from pre-heat season (July) to post-heat season (October).
- There was a 76% increase in the number of participants that were aware of programs to help with the cost of cooling system repairs from pre-heat season to post-heat season.
- There was a 65% increase in the number of participants that were aware of cooling centers from pre-heat season to post-heat season.
- Residents were asked about potential solutions, and many requested more information as well as free and discounted services for cooling system repairs and medical check-ups.
- Goals for recommendations were created based on the barriers highlighted by the results of the surveys. These are: 1) increase use of cooling centers and utility assistance programs, 2) increase use of medical services, and 3) reduce repair (cooling system and mobile home), cooling system, and medical expenses.
- To accomplish the above goals, recommendations include 1) implementation of classes and workshops, 2) implementation of a mobile clinic program, 3) develop and implement a peer case worker program, and 4) advocate for policy change.
- The results of this project should be viewed in light of several limitations. These fall into two categories, non-COVID-19-related limitations, and COVID-19-related limitations. Non-COVID-19-related limitations include methods/instruments used to collect data, lack of fluency in a language, lack of qualitative data analysis software, and sample selection. COVID-19-related limitations include the inability to complete various aspects of the project in-person, being short-staffed during points of the project, and the project timeline being different than planned.
- Numerous lessons were learned through this initiative. These include:
    - Partnerships are invaluable (collaboration, coordination, communication, and cooperation)
    - Sharing information and research findings can spur new ideas and projects
    - The importance of listening to the community
    - The value of in-person meetings and trainings
    - The importance of well-thought-out survey design
    - The importance of pilot-testing surveys
    - The importance of cultural responsiveness
    - The impact language barriers can have on a project
    - The need to be flexible and adaptive to external factors (the COVID-19 pandemic)

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 (MCDPH) seeks to discover why the impact of heat is greater in mobile home communities.

OBJECTIVE

The objective of this evaluation report is to **compare information obtained from both surveys (during pre/post-heat season) and to analyze and evaluate this data to learn if any changes in knowledge and perceptions, heat-related illness, use of home cooling systems, awareness and use of utility assistance programs and neighborhood resources, and the effect of COVID-19 on the household occurred**. This report also addresses objective 6: communicate information to residents and Community Health Workers - *plan next steps.*

METHODS

The evaluation for this project focuses on 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 within the mobile home community. These have been measured both pre and post-heat season.[1] Analysis has been conducted to see if any changes have occurred from pre to post-heat season. Recommendations have been developed based on the results of this analysis as well as the results described in the July Survey Results report and October Survey Results report. Evaluation for this project also discusses completion of project deliverables. This report shares the results of the analysis described above as well as the developed recommendations.

[1] Pre-heat season project activities were originally intended to take place in April but were moved to July due to the COVID-19 pandemic.

RESULTS

The results described below include process results (resident and Community Health Worker involvement and whether the project was completed as designed) and impact results (measures of any potential changes from pre-heat season to post-heat season).

Process

- The project was completed as designed and had excellent resident and Community Health Worker involvement.
- The project distributed the Heat Toolkit to 156 households.
- The project had a response rate of 66% for July (103/156 households completed the pre-heat season survey) and 96% for October (150/156 households completed the post-heat season survey).
- Six Community Health Workers from Salud en Balance attended both the pre-heat season and post-heat season workshops.

Impact

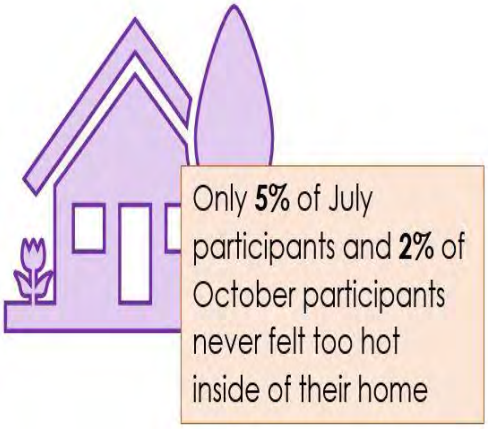
The discussion below speaks to the results of the July survey in comparison to the results of the October survey, specifically the results of repeat participants (those who took the survey in both July and October; n = 91).

Knowledge of Heat and Illness

- 93% of July participants vs. 100% of October participants remembered hearing weather warnings about excessive heat.
- 73% of July participants reported that a household member had experienced heat illness. 78% of October participants reported that a household member had experienced heat illness.
- In response to experiencing heat illness, 12% of July participants reported doing something other than staying home while 22% of October participants reported doing something other than staying home.

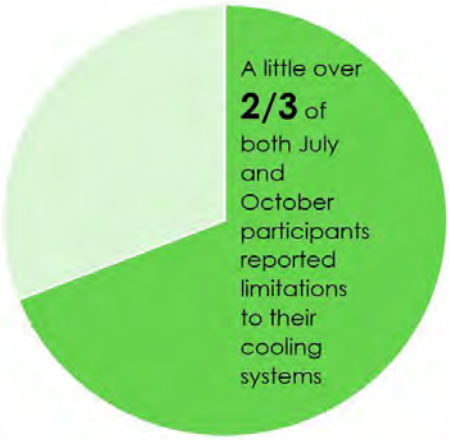
Perceptions about Heat

- 85% of July participants vs. 96% of October participants felt their health is at risk due to high summer temperatures.
- Only 5% of July participants reported never feeling too hot inside of their home during the summer. Only 2% of October participants reported never feeling too hot inside of their home during the summer.



Home Cooling Systems

- 14% of July participants and 17% of October participants reported using their air-conditioning for only part of the day (afternoon only, evening only, or afternoon and evening only).
- 70% of July participants and 68% of October participants reported having limitations to using their home cooling systems (cost of electricity and cost of repairs).

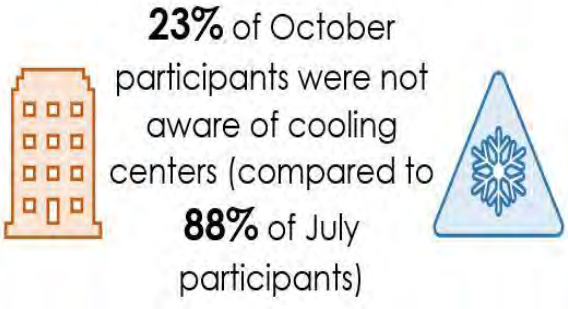


Utility Assistance Programs

- 84% of July participants vs. only 10% of October participants were not aware of programs to assist with the cost of utility bills.
- 96% of July participants and 20% of October participants were not aware of programs to assist with cooling system repairs.
- 76% of July participants and 78% of October participants had never applied to utility assistance programs.

Neighborhood Resources

- 50% of July participants reported never leaving their home to cool off while only 25% of October participants reported never leaving their home to cool off.
- 88% of July participants vs. only 23% of October participants reported not being aware of cooling centers in Maricopa County.



Effects of COVID-19

- 22% of July participants and 15% of October participants were unable to pay rent or mortgage.
- 74% of July participants and 42% of October participants stated that a household member lost a job.
- 19% of July participants vs. 33% of October participants felt lonely.
- Fewer October participants (25%) than July participants (35%) could not sleep.

Resources and Potential Solutions

- Residents would like more information on heat alerts, heat illness symptoms, medical assistance, home cooling and mobile home maintenance and repairs, and discounted home cooling systems.
- Residents would like training and workshops on first aid and home cooling system maintenance.
- Residents would like guidance or an easier process when it comes to applying for assistance programs for discounted utility bills and repairs.
- Residents would also like resources, preferably in Spanish, to help them understand about utility cost and repair programs and how to apply to these services.

DISCUSSION

The results of this initiative highlight **four main contributors to heat illness and deaths in the Maricopa County mobile home community**. These are: **1) barriers related to awareness, 2) barriers related to program processes, 3) financial barriers, and 4) medical barriers**. These should be considered when designing and implementing activities to reduce heat illness and deaths and illness in the mobile home community.

RECOMMENDATIONS

Recommendations were created to address three goals: 1) increase use of cooling centers and utility assistance programs, 2) increase use of medical services, and 3) reduce expenses related to repairs, cooling systems, and medical. The recommendations are to implement classes and workshops, implement a mobile clinic program, develop and implement a peer case worker program, and advocate for policy change. These recommendations are intended to increase awareness and provide information on utility assistance programs, cooling centers, heat illness, and medical services. They are also intended to address identified program process barriers such as requiring documents, need for computer access, complicated processes, qualification for programs, need for transportation or location issues, and lack of resources in Spanish. Furthermore, they are intended to address policy concerns such as qualification for programs and services, medical services that require health insurance, and cost-related concerns (such as costs of mobile home and cooling system repairs, costs of electricity, and costs of medical services).

LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

The results of this project are subject to several limitations. These limitations fall into two categories: 1) Non-COVID-19-related limitations and 2) COVID-19-related limitations. Non-COVID-19-related limitations include methods/instruments used to collect data, lack of fluency in a language, lack of qualitative data analysis software, and sample selection. For example, since the surveys were administered over the phone and filled-out on printed versions (as opposed to the digital version where the skip logic cannot be ignored), the skip logic on the surveys was sometimes ignored resulting in some survey responses that did not make sense. This could possibly be avoided in future research by administering the surveys in-person, administering the surveys using the digital version, or by editing the surveys to make the skip logic and questions easier to follow. Another example is seeing as the project team only surveyed one Maricopa County mobile home community, the results may not necessarily be generalizable to other Maricopa County mobile home communities. Future research may lessen the impact of this limitation by repeating the data collection process in additional mobile home communities or by conducting a literature review or obtaining secondary data on additional mobile home communities to complement the primary data from the surveys.

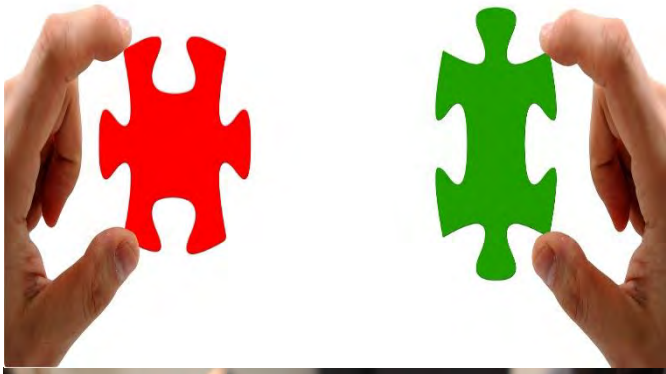
The COVID-19 pandemic had a significant impact on the project. It affected project staffing, the project's timeline, and various other aspects of the project. Due to the COVID-19 pandemic, the project team was unable to deliver Community Health Worker trainings in-person. This may have affected the impact and effectiveness of these trainings as well as the ability to build relationships with the Community Health Workers. Additionally, due to the COVID-19 pandemic, the timeline of the

project had to be adjusted and ended up being different than initially planned. The project's initial workshop and survey and toolkit distribution were intended to occur during pre-heat season (April) but ended up occurring during heat season (July). This likely affected the impact the project had on the mobile home community as the information provided by the project was meant to prepare community members for heat season and help eliminate heat illness, utility issues, and other problems during heat season. Both of the limitations described above as well as other COVID-19-related limitations could likely be resolved by repeating the project once the pandemic will no longer affect the project or by specifically repeating the aspects of the project that were directly impacted by the pandemic.

LESSONS LEARNED

Throughout this project, many valuable lessons were learned such as the value of partnerships and sharing information with partners, the importance of community input, and the challenges associated with implementing a project during a pandemic.

Sharing information between partners led to new ideas and potential new projects. The community's input was one of the most important aspects of the entire initiative. Listening, adjusting to language barriers, and allowing changes to survey questions to be culturally responsive were also highlighted as important. Through implementing a project during a pandemic, a lot was learned about the need to be flexible and adaptive to keep a project going. Additionally, the value of in-person meetings and training became obvious when they were no longer an option. Other lessons that were learned include the importance of well-thought-out survey design and pilot-testing surveys.



INTRODUCTION

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.

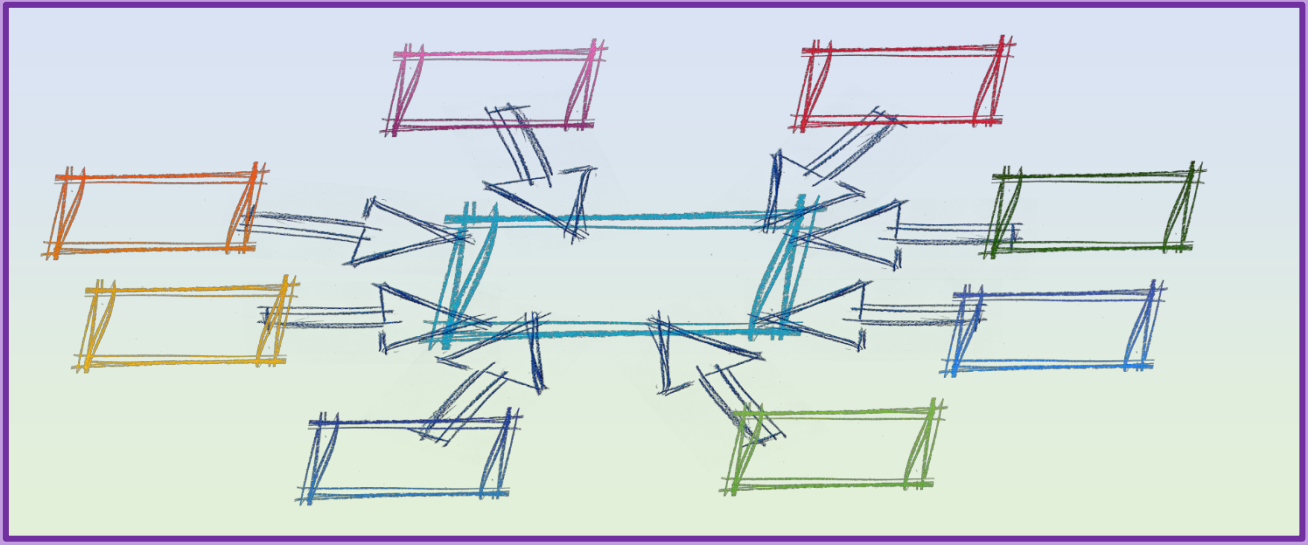
Every year, our populous county experiences continuous and long stretches of extreme heat and is home to many disproportionately impacted subpopulations. While all residents and visitors are affected by extreme heat, older adults, those with underlying health conditions, people of color, outdoor workers, 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 injuries. Nearly 26% of these heat deaths occurred indoors. Most of the indoor deaths occurred 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 A/C system (70%), or not having electricity (7%). For more information on heat-associated deaths by housing type, see 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 was focused on raising awareness about Extreme Heat, Safety Tips, and Available Community Resources among communities living in mobile home parks.

In April of 2020, the Office of Epidemiology connected with the Office of Nutrition and Active Living at MCDPH to explore an opportunity to collaborate with the program. The Office of Nutrition and Active Living has been closely working with the Faith-Based Organization, Iglesia Episcopal San Pablo, on a Shared Use funding opportunity. The project Shared Use funding opportunity, with the help of Iglesia, has been taking place in a mobile home community. Iglesia Episcopal de San Pablo has a six-member team of community health workers, Salud en Balance (Health in Balance) which is led by Ms. Teresa Sosa. 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 initiated a project to raise heat awareness to promote the well-being of residents of a mobile home community that encompasses 109 mobile homes.

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. To learn more from residents about these experiences and challenges, MCDPH designed two surveys (see Appendices VI - IX) which were implemented by the Salud en Balance Team. One survey was distributed in the pre-heat season and one was distributed in the post-heat season (see Appendix II for Definitions). During the pre-heat season, a Heat Toolkit (see Appendix XV) was distributed to residents with the help of Community Health Workers. **This project evaluation will assess whether there have been any changes in heat knowledge and awareness among the residents of the mobile home community from the pre-heat season to the post-heat season (address project objectives 5-6 mentioned on the next page).**

GOAL AND OBJECTIVES

(SEE APPENDIX I)



OVERARCHING GOAL:

Reduction of heat deaths and illness in MC residents living in 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 to 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) - a*nalyze and evaluate data to learn if any behavioral changes have occurred regarding use of heat resources*
- Objective 6: Communicate information to residents and Community Health Workers – *plan next steps*

METHODS AND DATA COLLECTION STRATEGIES

The evaluation for this project focuses on 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 within the mobile home community. These have been measured both pre- and post-heat season (see Appendix II for definitions). Project implementation and impact have been objectively evaluated based on provided objectives and indicators.

The methods used for evaluation consisted of both quantitative and qualitative data collection. Quantitative data collection included tracking of Heat Toolkit distribution numbers; number of pre and post-heat season surveys completed; recording of workshop attendance numbers; and recording of changes in levels of knowledge of heat and illness, home cooling system use and barriers to use, awareness and use of utility assistance programs, awareness and use of neighborhood resources, effect of COVID-19 on the household and individual, and perceptions about heat. Qualitative data collection tied to some of the process objectives and indicates whether various project deliverables have been completed. Qualitative data collection also consisted of open-ended questions on the post-heat season surveys. SAS and Microsoft Excel were used to analyze the quantitative data and coding and generation of themes was used to analyze the qualitative data.

Objectives and Indicators

The process objectives described below informed the team if the project was completed as designed. These objectives also informed the team of resident and Community Health Worker involvement. The impact objectives provided the team with baseline (pre-heat season) and post-heat season measurements on individual and household 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. They also informed the team of potential changes in knowledge and perceptions, heat-related illness, use of home cooling systems, awareness and use of utility assistance programs and neighborhood resources, and the effect of COVID-19 on the household post-heat season.

Table 1. ***Objectives and Indicators***

#	Objective	Evaluation Level	Corresponding Indicator (Measure)	Evaluation Questions
1	Develop and distribute Heat Toolkit to households	Process	# of households Heat Toolkit distributed to	How many households was the Heat Toolkit distributed to?
2	Develop and administer pre-heat season survey	Process	# of pre-heat season surveys completed	How many pre-heat season surveys were completed?
3	Conduct pre-heat season workshops to train residents/Community Health Workers	Process	# of residents/Community Health Workers trained	How many residents/Community Health Workers were trained? (completed the pre-heat season workshop)
4	Analyze pre-heat season surveys	Process	Yes/No analysis complete	Were the pre-heat season surveys analyzed?
5	Summarize information from the pre-heat season in the form of an infographic and produce a report	Process	Yes/No infographic and report produced	Was an infographic produced? Was a report produced?
6	Develop and administer post-heat season survey	Process	# of post-heat season surveys completed	How many post-heat season surveys were completed?
7	Conduct post-heat season workshop with Community Health Workers	Process	# of Community Health Workers in attendance at post-heat season workshop	How many Community Health Workers attended the post-heat season workshop?

8	Analyze post-heat season surveys	Process	Yes/No analysis complete	Were the post-heat season surveys analyzed?
9	Summarize information from the post-heat season and produce an October report/infographic and evaluation report/infographic	Process	Yes/No October report/infographic and evaluation report/infographic produced	Was an October report produced? Was an October infographic produced? Was an Evaluation report produced? Was an Evaluation infographic produced?
10	Communicate and discuss next steps with community, funder, and partners	Process	Yes/No communicated and discussed next steps with community, funder, and partner	Was there communication and discussion of next steps with community, funder, and partners?
11	Measure pre-heat season knowledge of heat and illness	Impact	Knowledge of heat and illness (pre-heat season)	What is the current level of knowledge of heat and illness?
12	Measure post-heat season knowledge of heat and illness	Impact	Knowledge of heat and illness (post-heat season)	Did the level of knowledge of heat and illness increase from pre-heat season to post-heat season?
13	Measure pre-heat season perceptions about heat	Impact	Perceptions about heat (pre-heat season)	What are the current perceptions about heat?
14	Measure post-heat season perceptions about heat	Impact	Perceptions about heat (post-heat season)	Did perceptions about heat change from pre-heat season to post-heat season to reflect an increase in knowledge of heat and illness?
15	Measure pre-heat season home cooling system use and barriers to use	Impact	Home cooling system use and barriers to use (pre-heat season)	What does current home cooling system use look like and what are the barriers to use?
16	Measure post-heat season home cooling system use and barriers to use	Impact	Home cooling system use and barriers to use (post-heat season)	Did home cooling system use increase and barriers to use decrease from pre-heat season to post-heat season?
17	Measure pre-heat season awareness and use of utility assistance programs	Impact	Awareness and use of utility assistance programs (pre-heat season)	What is the current level of awareness and use of utility assistance programs?
18	Measure post-heat season awareness and use of utility assistance programs	Impact	Awareness and use of utility assistance programs (post-heat season)	Did awareness and use of utility assistance programs increase from pre-heat season to post-heat season?

19	Measure pre-heat season awareness and use of neighborhood resources	Impact	Awareness and use of neighborhood resources (pre-heat season)	What is the current level of awareness and use of neighborhood resources?
20	Measure post-heat season awareness and use of neighborhood resources	Impact	Awareness and use of neighborhood resources (post-heat season)	Did awareness and use of neighborhood resources increase from pre-heat season to post-heat season?
21	Measure pre-heat season effect of COVID-19 on the household	Impact	Effect of COVID-19 on the household (pre-heat season)	What is the current effect of COVID-19 on the household?
22	Measure post-heat season effect of COVID-19 on the household	Impact	Effect of COVID-19 on the household (post-heat season)	Has the effect of COVID-19 on the household changed from pre-heat season to post-heat season?
23	Measure whether heat materials provided to participants were helpful	Impact	Whether participants found heat materials helpful or not	Did participants find the heat materials provided helpful?
24	Assess what tools, resources, or services would be most helpful in ensuring that individuals and households have knowledge of heat and heat-related illness	Impact *(qualitative)*		What tools, resources, or services would be most helpful in ensuring that individuals and households have knowledge of heat and heat-related illness?
25	Assess what would be most helpful to individuals and households when assistance is needed to manage health conditions related to extreme heat	Impact *(qualitative)*		What would be most helpful to individuals and households when assistance is needed to manage health conditions related to extreme heat?

26	Assess what would be most helpful to keep participants' homes cool during the extreme heat	Impact *(qualitative)*		What would be most helpful to keep participants' homes cool during the extreme heat?
27	Assess what would increase individual and household use of home cooling systems, utility assistance programs, and cooling centers	Impact *(qualitative)*		What would increase individual and household use of home cooling systems, utility assistance programs, and cooling centers?

Table 2. ***Indicators and Data Collection Methods***

	Indicators	Collection Method
1	# of households Heat Toolkit distributed to	Heat Toolkit Distribution Numbers
2	# of pre-heat season surveys completed	Number of completed pre-heat season surveys collected
3	# of residents/Community Health Workers trained (pre-heat)	Workshop Attendance
4	Yes/No analysis complete (pre-heat)	*Yes/No analysis complete (pre-heat)*
5	Yes/No infographic and report produced (pre-heat)	*Yes/No infographic and report produced (pre-heat)*
6	# of post-heat season surveys completed	Number of completed post-heat season surveys collected
7	# of Community Health Workers in attendance at post-heat season workshop	Workshop Attendance
8	Yes/No analysis complete (post-heat)	*Yes/No analysis complete (post-heat)*
9	Yes/No October report/infographic and evaluation report/infographic produced	*Yes/No October report/infographic and evaluation report/infographic produced*
10	Yes/No communicated and discussed next steps with community, funder, and partner	*Yes/No communicated and discussed next steps with community, funder, and partner*
11	Knowledge of heat and illness (pre-heat season)	Pre-heat Season Survey
12	Knowledge of heat and illness (post-heat season)	Post-heat Season Survey
13	Perceptions about heat (pre-heat season)	Pre-heat Season Survey
14	Perceptions about heat (post-heat season)	Post-heat Season Survey
15	Home cooling system use and barriers to use (pre-heat season)	Pre-heat Season Survey
16	Home cooling system use and barriers to use (post-heat season)	Post-heat Season Survey
17	Awareness and use of utility assistance programs (pre-heat season)	Pre-heat Season Survey
18	Awareness and use of utility assistance programs	Post-heat Season Survey

	(post-heat season)	
19	Awareness and use of neighborhood resources (pre-heat season)	Pre-heat Season Survey
20	Awareness and use of neighborhood resources (post-heat season)	Post-heat Season Survey
21	Effect of COVID-19 on the household (pre-heat season)	Pre-heat Season Survey
22	Effect of COVID-19 on the household (post-heat season)	Post-heat Season Survey
23	Whether participants found heat materials helpful or not	Post-heat Season Survey
24	Assess what tools, resources, or services would be most helpful in ensuring that individuals and households have knowledge of heat and heat-related illness	Post-heat Season Survey
25	Assess what would be most helpful to individuals and households when assistance is needed to manage health conditions related to extreme heat	Post-heat Season Survey
26	Assess what would be most helpful to keep participants' homes cool during the extreme heat	Post-heat Season Survey
27	Assess what would increase individual and household use of home cooling systems, utility assistance programs, and cooling centers	Post-heat Season Survey

RESULTS

Process

Based on the results of the process objective questions (see Table 3), one can conclude that the project was completed as designed and that it had excellent Community Health Worker involvement (Salud en Balance Community Health Workers were critical to the project's success). The project distributed the Heat Toolkit to a total of 156 households. Out of these 156 households, 103 completed the pre-heat season (July) survey (response rate = 66%) and 150 completed the post-heat season (October) survey (response rate = 96%). Six Community Health Workers from Salud en Balance attended both the pre-heat season and post-heat season workshops. Data analysis, report development, and infographic production has been completed for both phases of the project (pre-heat season and post-heat season). Communication and discussion of next steps with the community, funder, and partners have been ongoing throughout the duration of the project.

Table 3. ***Process Evaluation Questions and Results***

#	Evaluation Questions	Results
1	How many households was the Heat Toolkit distributed to?	*156*
2	How many pre-heat season surveys were completed?	*103* *Response rate (103/156) – 66%*
3	How many residents/Community Health Workers were trained? (completed the pre-heat season workshop)	*6*
4	Were the pre-heat season surveys analyzed?	*Yes*
5	Was an infographic produced? Was a report produced?	*Yes* *Yes*
6	How many post-heat season surveys were completed?	*150* *Response rate (150/156) – 96%*
7	How many Community Health Workers attended the post-heat season workshop?	*6*
8	Were the post-heat season surveys analyzed?	*Yes*
9	Was an October report produced? Was an October infographic produced? Was an evaluation report produced? Was an evaluation infographic produced?	*Yes* *Yes* *Yes* *Yes*
10	Was there communication and discussion of next steps with community, funder, and partners?	*Yes (ongoing)*

Impact

TABLE

Table 4. ***Impact Evaluation Questions and Results***

#	Evaluation Q	Survey Q	Measure/ Response	Results July	Oct	Positive increase/decrease?
12	**Did the level of knowledge of heat and illness increase from pre-heat season to post-heat season?**	*Do you or other members of your household remember hearing weather warnings about excessive heat in the summer of 2019?*	*% Yes*	93%	100%	YES
		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?	*% Yes*	73%	78%	NO
		What was the outcome of this heat-related illness?	*% that did NOT select "stayed home and did nothing"*	12%	22%	YES
14	**Did perceptions about heat change from pre-heat season to post-heat season to reflect an increase in knowledge of heat and illness?**	*Do you feel that your health is at risk because of high summer temperatures?*	*% Yes*	85%	96%	YES
		Did you or members of your household ever feel too hot inside your home during this summer?	*% Never*	5%	2%	NO
16	**Did home cooling system use increase and barriers to use decrease from pre-heat season to post-heat season?**	*If your household used central air conditioning /window air conditioning this summer, when did you use it?*	*% Afternoon Only, Evening Only, OR Afternoon Only and Evening Only*	14%	17%	NO

		Does anything limit you from using your cooling system when there are high temperatures?	*% Yes*	70%	68%	Yes (not significantly)
18	**Did awareness and use of utility assistance programs increase from pre-heat season to post-heat season?**	*Are you aware of community programs or services to help you with the **cost of utility bills**?*	% No	84%	10%	YES
		*Are you aware of community programs or services to help you with home **cooling system repairs**?*	% No	96%	20%	YES
		*Have you or a member of your household ever applied for these **utility assistance programs (cost of utility bills or for cooling system repairs?***	*% No, I was not aware of any utility assistance programs*; *No, I assumed I did not qualify for utility assistance*; or *No, I was told I did not qualify for utility assistance*	76%	78%	No (not significantly)
20	**Did awareness and use of neighborhood resources increase from pre-heat season to post-heat season?**	*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?*	*% No*	50%	25%	YES
		*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)**?*	*% No*	88%	23%	YES

22	**Has the effect of COVID-19 on the household changed from pre-heat season to post-heat season?**	*How is COVID-19 affecting your household's daily life? (Select all that apply)*	*% that did NOT select "COVID-19 has not affected my household"*	13%	12%	Yes (not significantly)
		How is COVID-19 affecting you personally? (Select all that apply)	*% that did NOT select "COVID-19 is not affecting me personally"*	24%	43%	NO
23	**Did participants find the heat materials provided helpful?**	*Maricopa County provided you with materials in July, did you find these materials helpful?*	*% Yes*	99%		YES

A printed survey was used to assess individual and household 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 within the mobile home community. Seeing as this survey was implemented twice, once during pre-heat season (July) and again during post-heat season (October), it was also used to inform the team of potential changes in knowledge and perceptions, heat-related illness, use of home cooling systems, awareness and use of utility assistance programs and neighborhood resources, and the effect of COVID-19 on the household post-heat season. Survey questions were developed by the project team consisting of MCDPH staff and Salud en Balance staff. The same survey instrument was used during both phases of the project with only slight modifications to it for the second phase of the project (see Appendices VI – IX). This was done to capture ideas from participants for potential solutions. The survey was made available in both Spanish and English and was distributed to residents by Salud en Balance Community Health Workers. Participants were able to complete the survey over the phone with the Salud en Balance Community Health Workers who recorded the participants' answers. The completed surveys were then provided to MCDPH staff for data entry and analysis.

For phase one of the project (July), 103 completed surveys were received. For phase two of the project (October), 150 completed surveys were received. The discussion below speaks to the results of the July survey in comparison to the results of the October survey, specifically the results of repeat participants (those who took the survey in both July and October; n = 91).

Knowledge of Heat and Illness

Participants were asked whether they remembered hearing weather warnings about excessive heat. While only 93% of July participants remembered hearing these warnings about excessive heat, 100% of October participants reported hearing these warnings (Graph 1). Participants were also asked whether they or a household member had experienced heat-related illness. Seventy-three percent of July participants responded *yes* to this question and 78% of October participants responded *yes* to the question (Graph 2). This is unexpected as the project team expected the resources provided to participants to result in a decrease in the amount of reported heat illness. One potential reason for the increase could be because participants were now aware of what constitutes a heat-related illness and therefore more could have realized that what they previously did not know was a symptom of heat illness indeed was. Lastly, those who reported experiencing heat-related illness were asked what they did in response to experiencing heat-related illness. Twelve percent of July participants reported doing something other than staying home and taking no action and 22% of October participants reported doing something other than staying home and taking no action (Graph 3).

Perceptions about Heat

Participants were asked if they felt their health is at risk during high summer temperatures. Eighty-five percent of July participants responded *yes* to this question and 96% of October participants responded *yes* to this question (Graph 4). This reported increase in the number of *yes* responses is what the project team expected as the materials provided to participants were meant to illustrate how dangerous the effects of heat could be when it comes to health. Additionally, participants were asked if they ever felt too hot inside their home during the summer. Only 5% of July participants reported *never* feeling too hot inside their home during the summer and only 2% of October participants reported *never* feeling too hot inside their home during the summer (Graph 5). The project team had expected the number of participants reporting *never* feeling too hot inside their home to increase as the materials provided to participants included information on home cooling system repairs and resources.

Home Cooling Systems

Regarding home cooling systems, participants with central air-conditioning were asked how often they used their air-conditioning throughout the day during the summer. Fourteen percent of July participants and 17% of October participants reported using their air-conditioning *in the afternoon ony, evening only, or afternoon only and evening only* (Graph 6). The project team expected this percent to decrease as information on utility assistance programs was provided to participants (which could help lower utility costs, potentially allowing for participants to use their cooling systems more often throughout the day). Participants were also asked if anything limits their use of their home cooling system when there are high temperatures. Seventy percent of July participants and 68% of October participants responded *yes* to this question (Graph 7). This difference of only 2% (2% = about 2 participants) was not considered significant.

Utility Assistance Programs

Participants were asked multiple questions about their awareness and use of utility assistance programs, with the first question asking whether they are aware of or

have used assistance programs to help with the cost of utility bills. Eighty-four percent of July participants said they are not aware of these programs and only 10% of October participants said they are not aware of these programs (Graph 8). Similarly, participants were asked whether they are aware of or have used assistance programs to help with cooling system repairs. Ninety-six percent of July participants and 20% of October participants responded *no* to this question (Graph 9). This change in percentage of participants that are not aware of or have not used programs to help with cooling system repairs and the change in percentage of participants that are not aware of or have not used programs to help with cost of utility bills are what the project team expected seeing as the Heat Toolkit provided to participants had information on how to connect with these services. Lastly, participants were asked if they had ever applied to one of these utility assistance programs. The percentage of July participants that said no was 76% and the percentage of October participants that said no was 78% (Graph 10). This small change of 2% (2% = about 2 participants) was not considered significant.

Neighborhood Resources

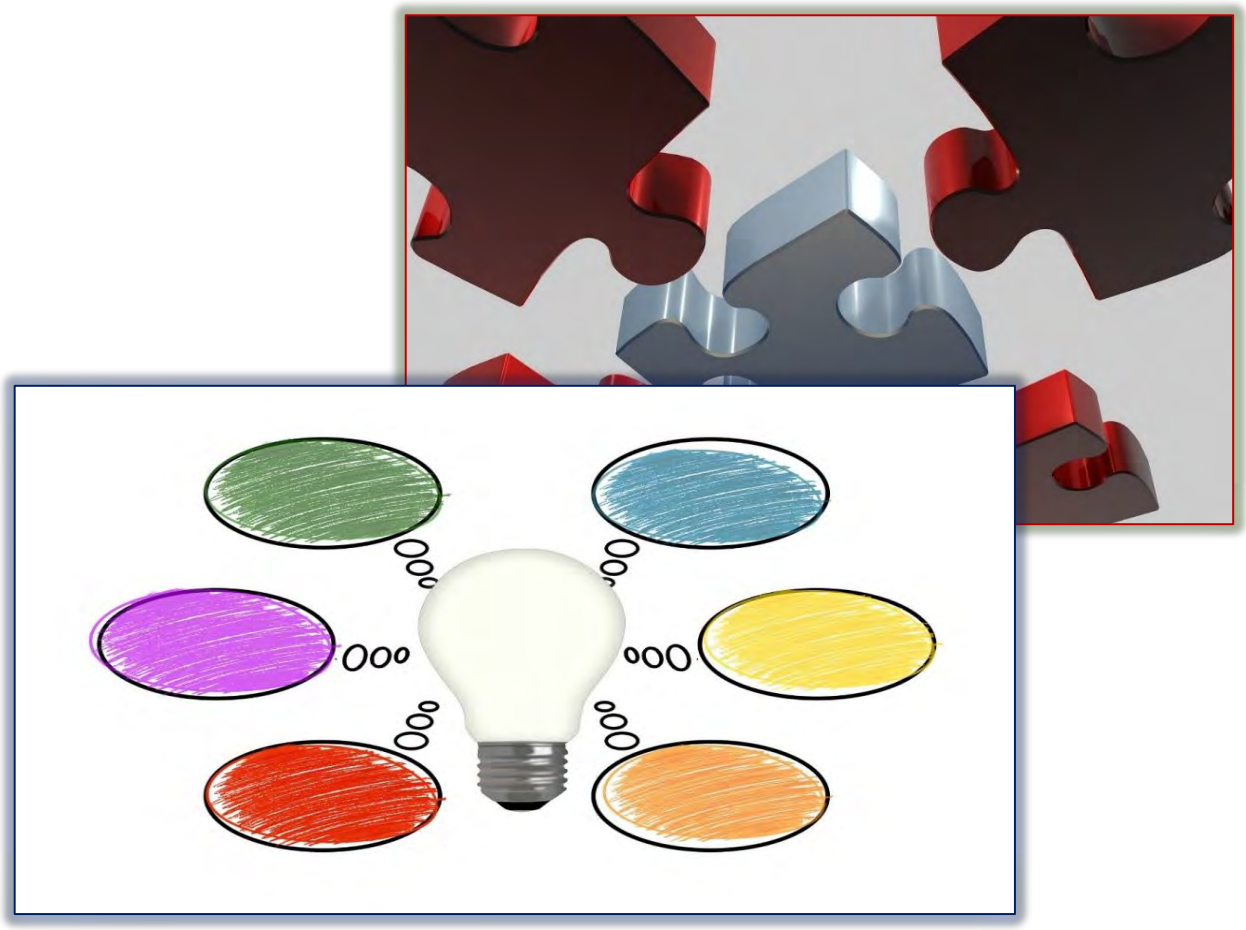
Regarding neighborhood resources, participants were asked if they ever leave their home to go to an air-conditioned place to cool off. Fifty percent of July participants responded *no* to this question while only 25% of October participants responded *no* to this question (Graph 11). In addition to this, participants were asked if they are aware of cooling centers in Maricopa County. Eighty-eight percent of July participants reported not being aware of cooling centers in Maricopa County and 23% of October participants reported not being aware of cooling centers in Maricopa County (Graph 12). For both questions described above, the changes in percentages were in the direction that was expected, seeing as participants were given information about cooling centers in the Heat Toolkit.

Effects of COVID-19

Participants first answered a question about how COVID-19 is affecting their household's daily life (Graph 13). The percentages for most of the answer choices were similar for July and October participants. The answer choices where the percentages had a more notable difference between July and October participants were: *unable to help children with school* (1% of July participants selected this; 20% of October participants selected this); *unable to pay rent/mortgage* (22% of July participants selected this; 15% of October participants selected this); *household member hospitalized* (2% of July participants selected this; 7% of October participants selected this); *household member diagnosed with COVID-19* (16% of July participants selected this; 30% of October participants selected this); and *household member lost a job* (74% of July participants selected this; 42% of October participants selected this). Participants also answered the question "*How is COVID-19 affecting you personally?*" (Figure 1). The percentages for the answer choices *I fear getting sick* and *I feel anxious* were similar for July and October participants. The percentages for answer choices *other*, *I can't sleep*, and *I feel lonely* differed between July and October participants. More October participants (43% selected *other*; 33% selected *I feel lonely*) selected *other* and *I feel lonely* than July participants (24% selected *other*; 19% selected *I feel lonely*). Fewer October participants than July participants selected *I can't sleep*.

Resources and Potential Solutions

Participants were first asked whether they thought the heat materials provided to them during the project were helpful. Only repeat October participants answered this question, with 99% responding *yes* that they thought the provided materials were helpful (Graph 15). One participant (1%) did not answer, stating that they had not received the materials. Participants then answered multiple open-ended questions, with the first one being "*What tools, resources, or services would be most helpful in ensuring that you and your household have knowledge of heat and heat-related illness?*". Answers to this question had an overall theme of wanting more information. The second open-ended question participants answered was "*What would be most helpful to you and your household when assistance is needed to manage health conditions related to extreme heat?*". The overarching themes from the responses to this question include 1) information, 2) medical, 3) home cooling, and 4) program assistance processes. Next, participants answered the question "*What would be most helpful to keep your home cool during the extreme heat?*". Two overall themes were identified from the responses to this question: 1) home cooling, and 2) financial help. The last open-ended question participants answered was "*What would increase individual and household use of home cooling systems, utility assistance programs, and cooling center?*". Responses to this question had the two main themes: health and energy use.

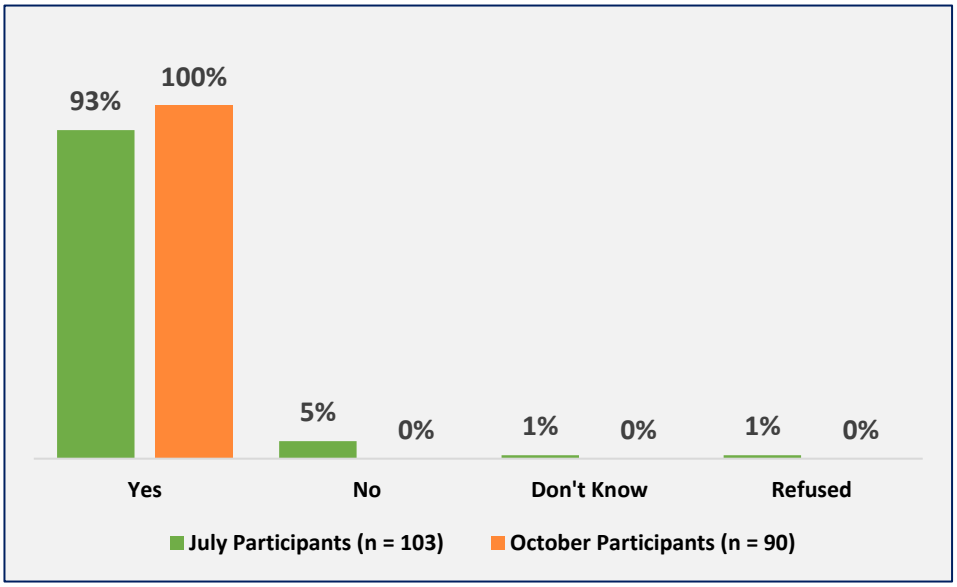


GRAPHS

Eval Q12: Did the level of knowledge of heat and illness increase from pre-heat season to post-heat season?

Graph 1. ***Knowledge and Awareness of Excessive Heat Warnings***

100% of October Participants remembered hearing weather warnings about excessive over the summer while 93% of July Participants remembered hearing these warnings

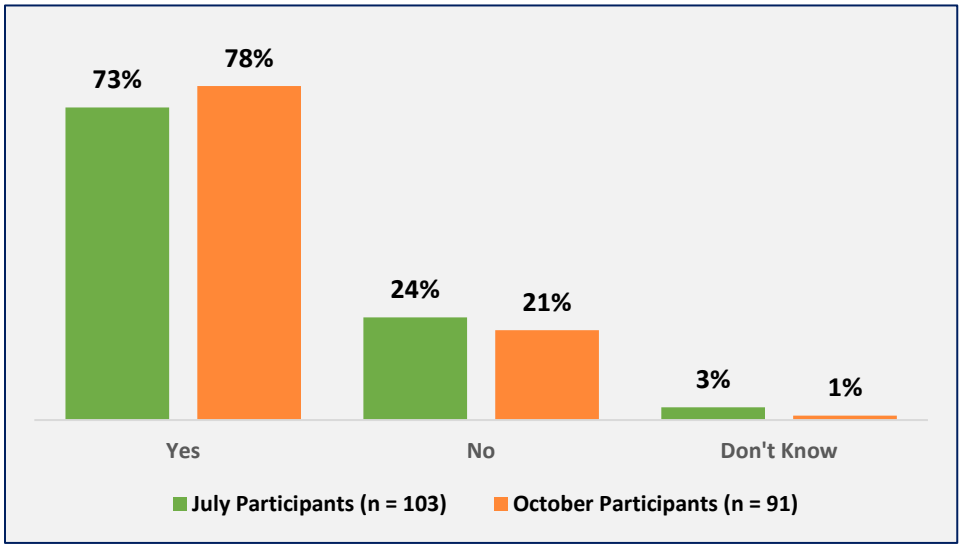


Survey Q11:

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

Graph 2. ***Experiencing Heat-Related Symptoms***

For both July and October participants, over 2/3 of households had a member that had experienced symptoms related to the heat

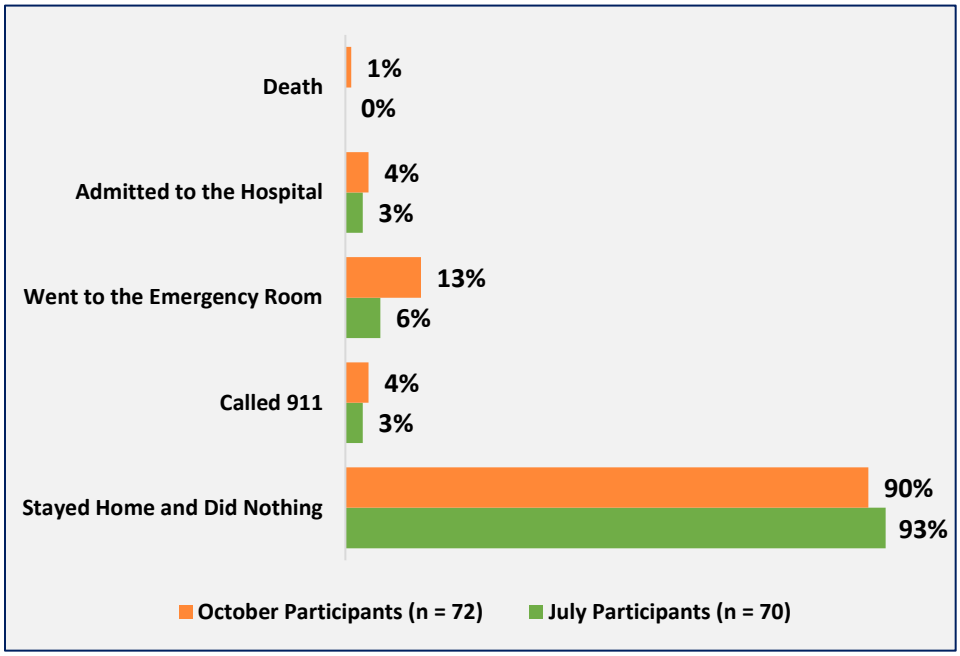


Survey Q15:

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?

Graph 3. ***Outcomes of Heat-related Illness***

93% and 90% reported staying home and taking no action in response to experiencing heat-related illness for July participants and October participants respectively



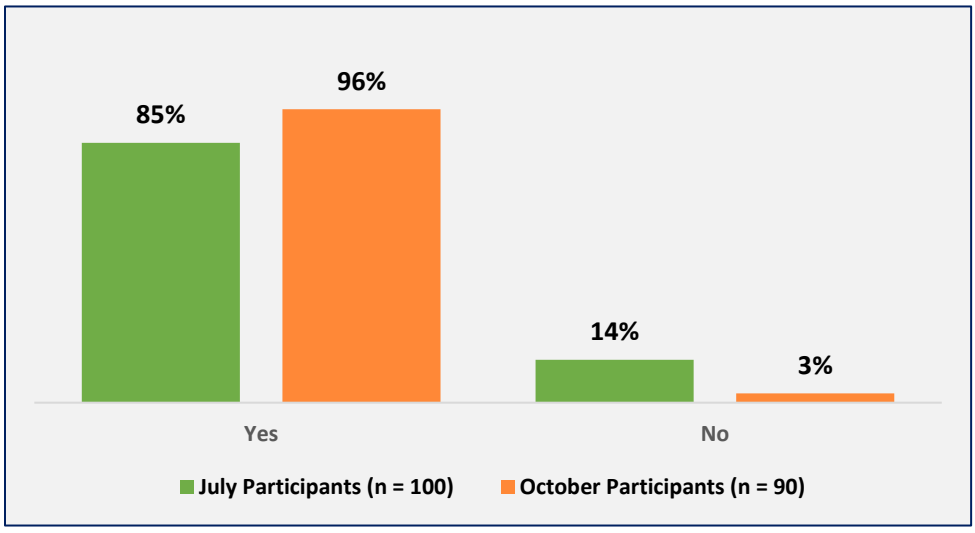
Survey Q16:

What was the outcome of this heat-related illness?

Eval Q14: Did perceptions about heat change from pre-heat season to post-heat season to reflect an increase in knowledge of heat and illness?

Graph 4. ***Feel that Health is at Risk During High Temperatures***

The majority of both July and October participants felt that their health is at risk because of high summer temperatures

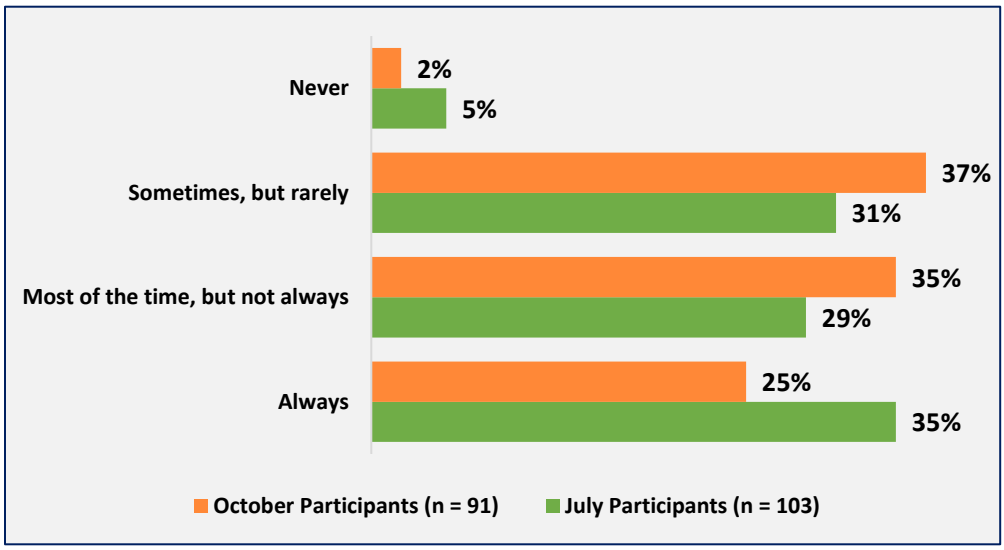


Survey Q18:

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

Graph 5. ***Perception of Heat Within the Home***

60% of October participants and 64% of July participants felt too hot inside of their home most of the time or always



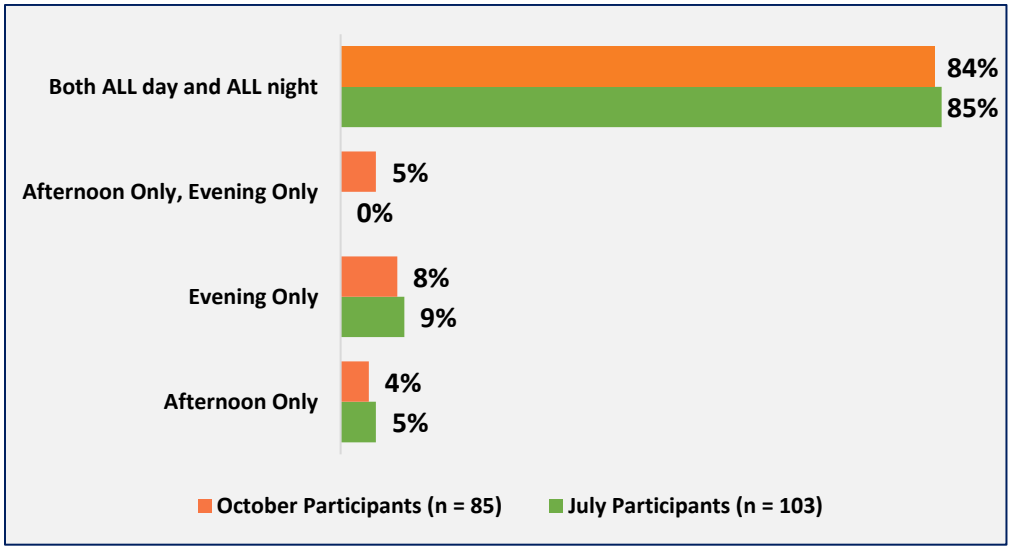
Survey Q20:

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

Eval Q16: Did home cooling system use increase and barriers to use decrease from pre-heat season to post-heat season?

Graph 6. ***Cooling System Use Throughout the Day***

Around 16% of July and October participants reported that their households use their cooling system for only part of the day.

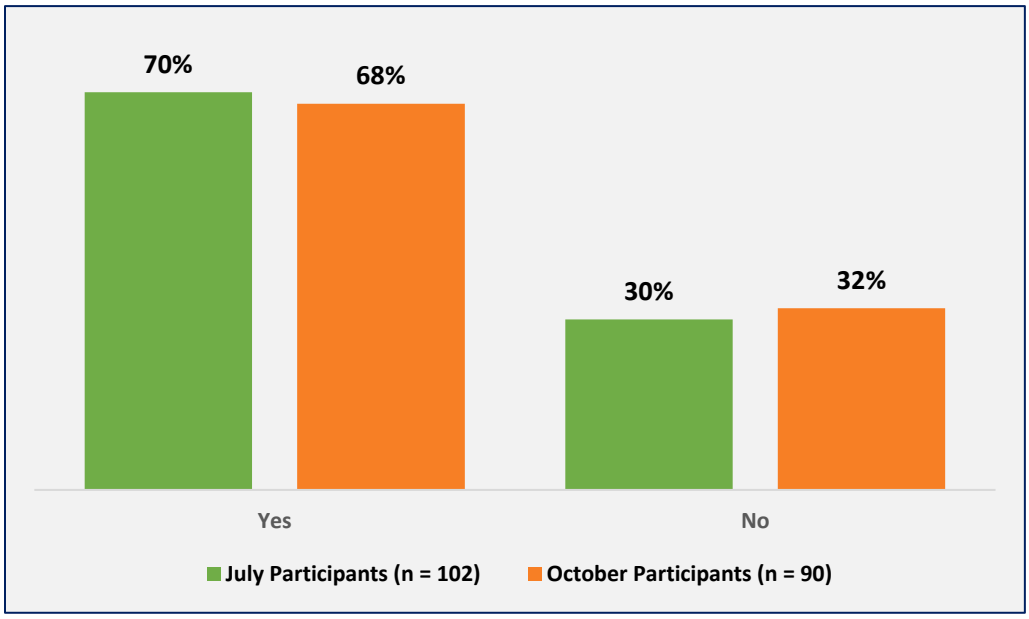


Survey Q23:

If your household used central air conditioning /window air conditioning this summer, when did you use it?

Graph 7. ***Limitations of Cooling System***

Over 2/3 of participants (both July and October) had limitations to using their home cooling system



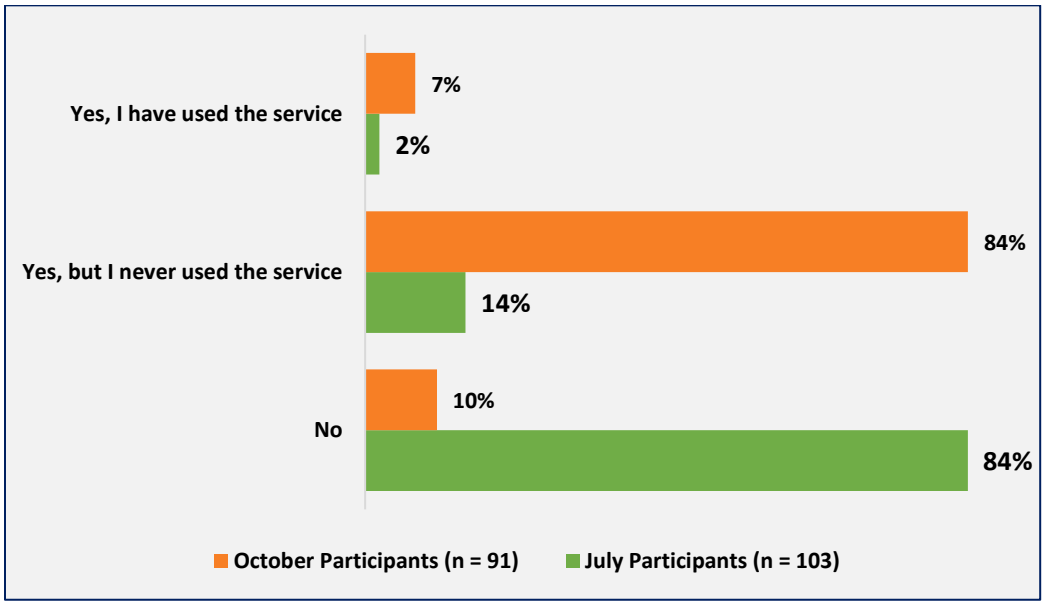
Survey Q25:

Does anything limit you from using your cooling system when there are high temperatures?

Eval Q18: Did awareness and use of utility assistance programs increase from pre-heat season to post-heat season?

Graph 8. ***Awareness of Resources to Help with Cost of Utilities***

Only 10% of October participants were unaware of programs or services to help with the cost of utility bills while 84% of July participants were unaware of these services

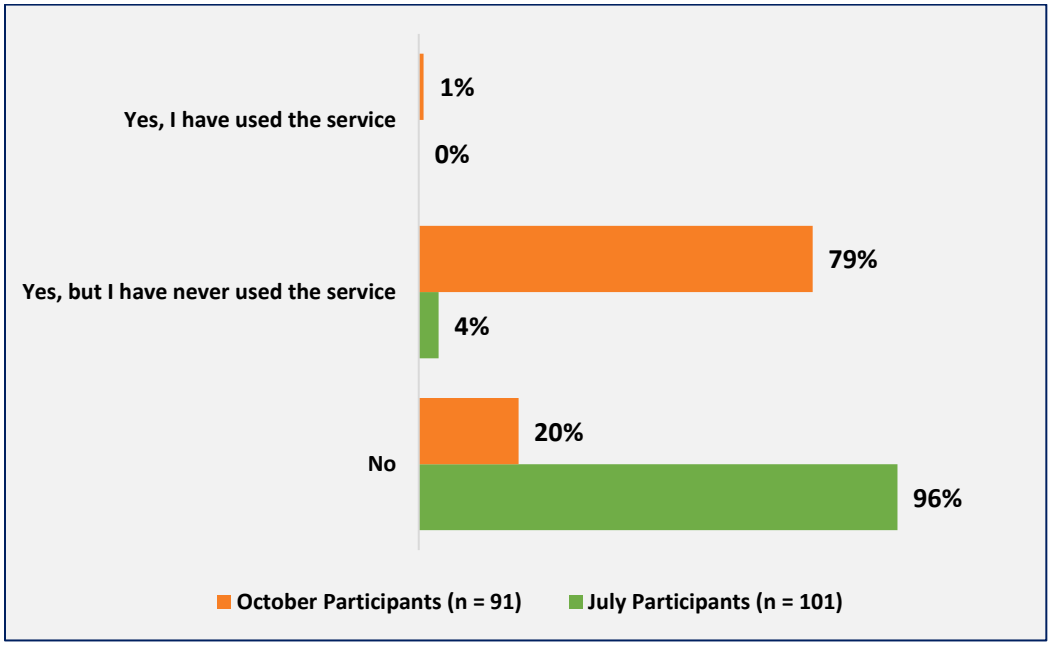


Survey Q27:

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

Graph 9. ***Awareness of Resources to Help with Cost of Cooling System Repairs***

Only 20% of October participants were unaware of programs or services to help with the cost of cooling system repairs while 96% of July participants were unaware of these services

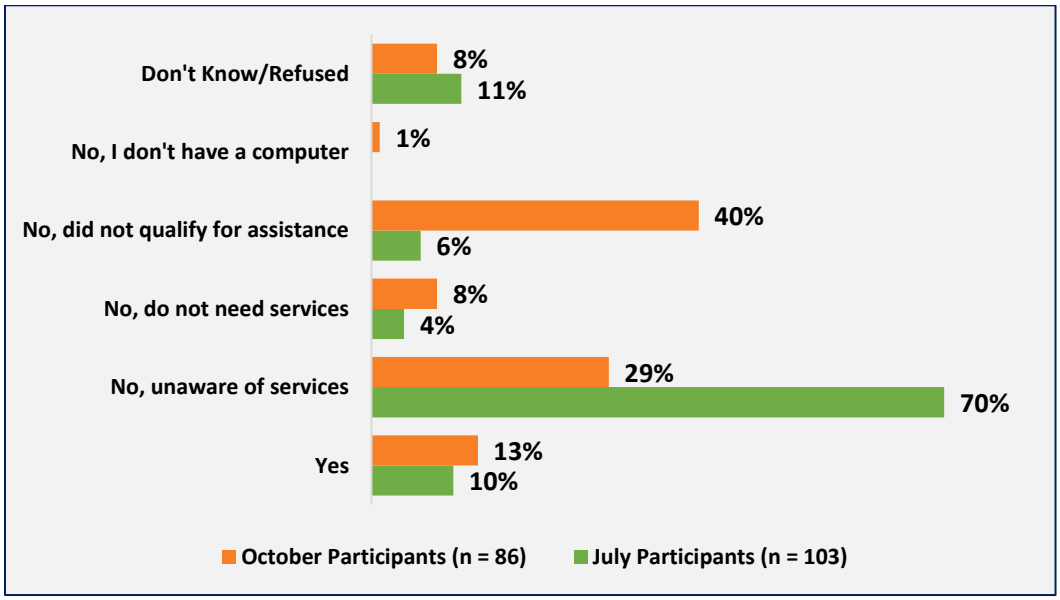


Survey Q28:

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

Graph 10. ***Application to Community Programs and Services***

The majority of both July and October participants had never applied to utility assistance programs, either due to being unaware of these programs or not qualifying for assistance



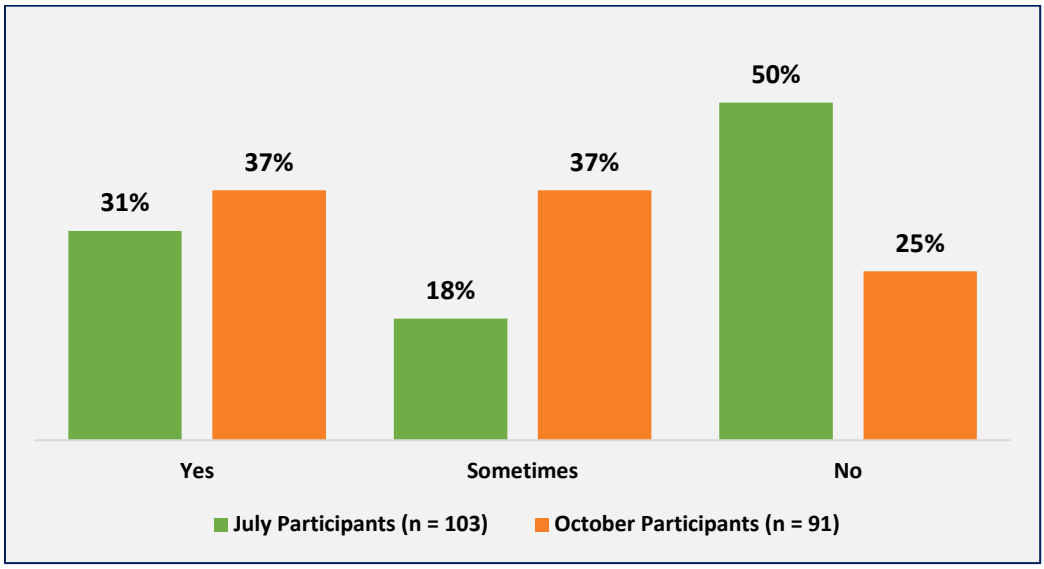
Survey Q30:

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

Eval Q20: Did awareness and use of neighborhood resources increase from pre-heat season to post-heat season?

Graph 11. ***Leaving Home to Cool Off***

25% fewer October participants reported not leaving their home to cool off

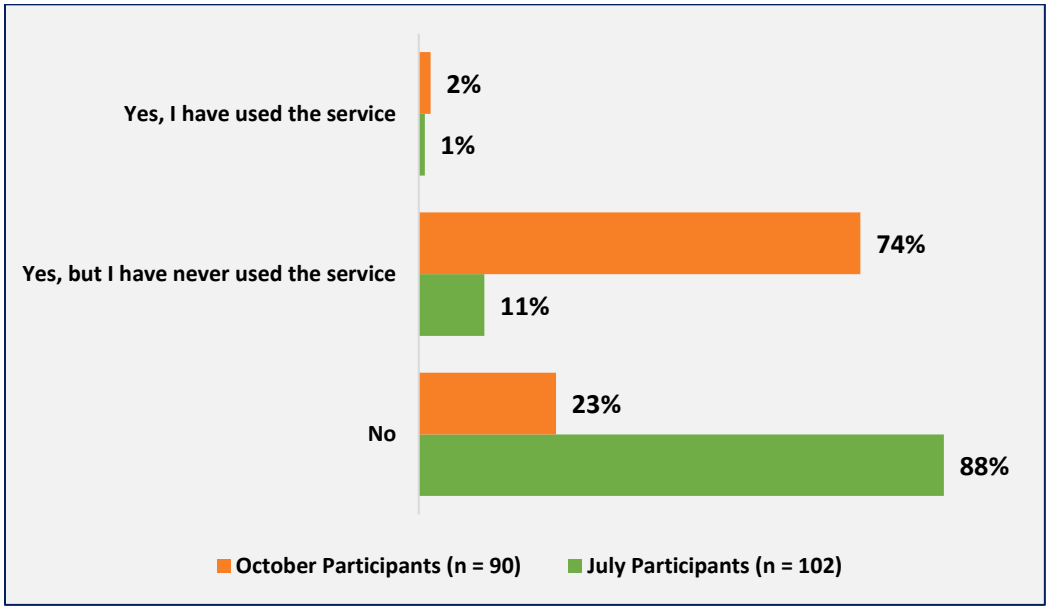


Survey Q31:

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

Graph 12. ***Knowledge of Cooling Centers in Maricopa County***

The majority of July participants were unaware of cooling centers while only 23% of October participants were unaware of cooling centers



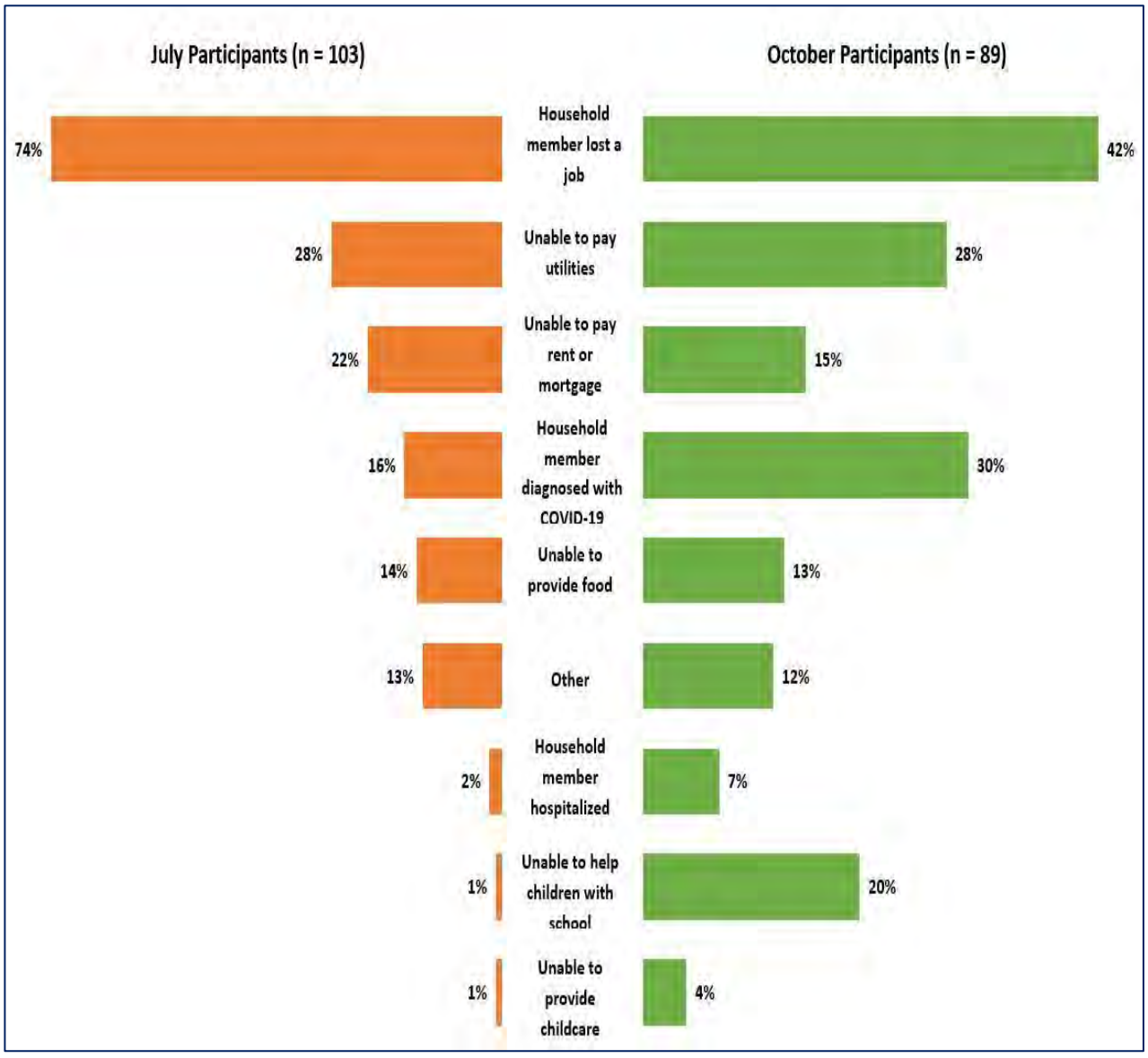
Survey Q34:

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)****?*

Eval Q22: Has the effect of COVID-19 on the household changed from pre-heat season to post-heat season?

Graph 13. ***Effects of COVID-19 on Households***

Some effects of COVID-19 on households differed between July and October participants (such as household member lost a job and unable to help children with school) while others did not

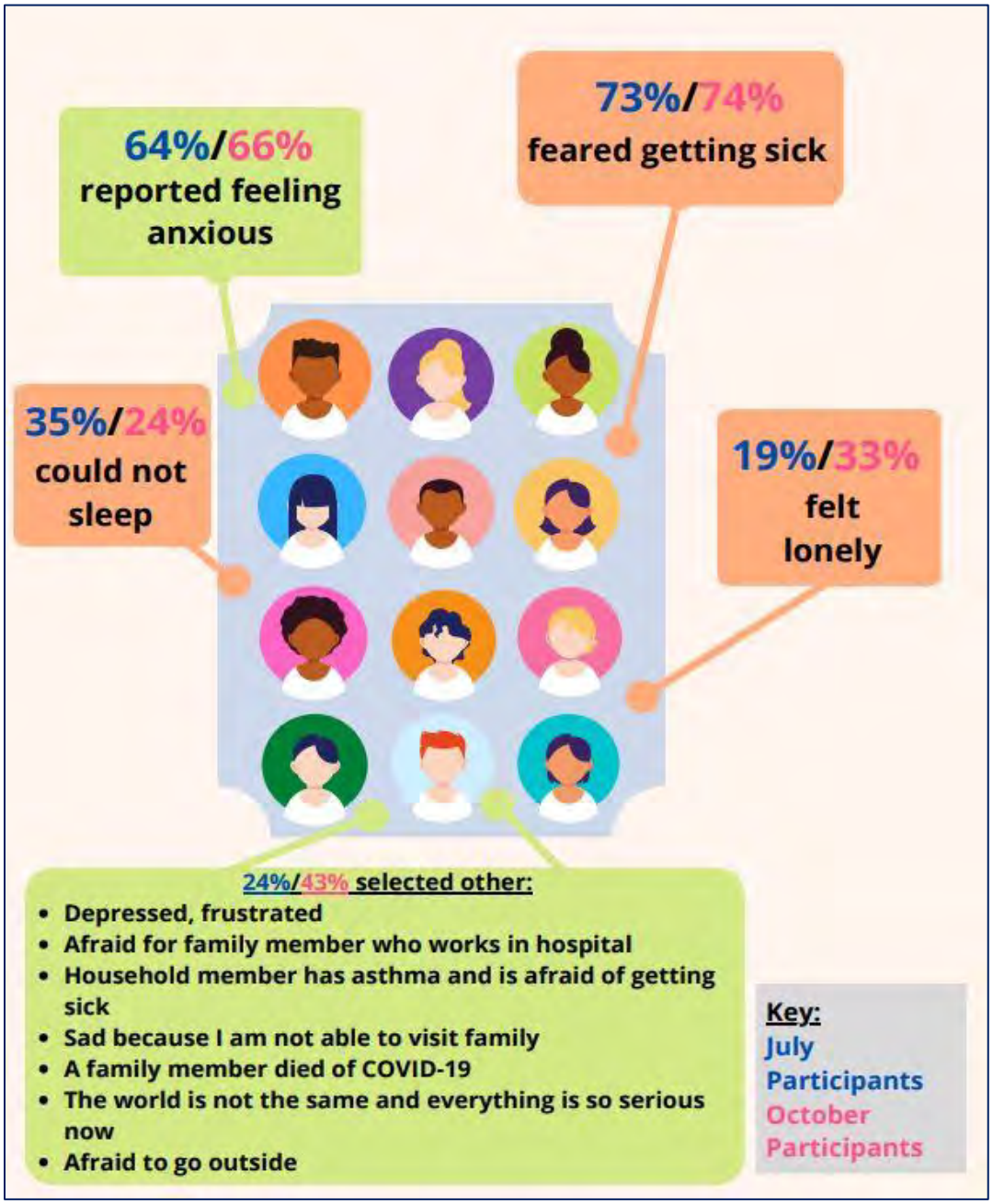


Survey Q36:

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

Figure 1. ***Personal Effects of COVID-19***

Some personal effects of COVID-19 differed between July and October participants (such as not being able to sleep and feeling lonely) while others did not



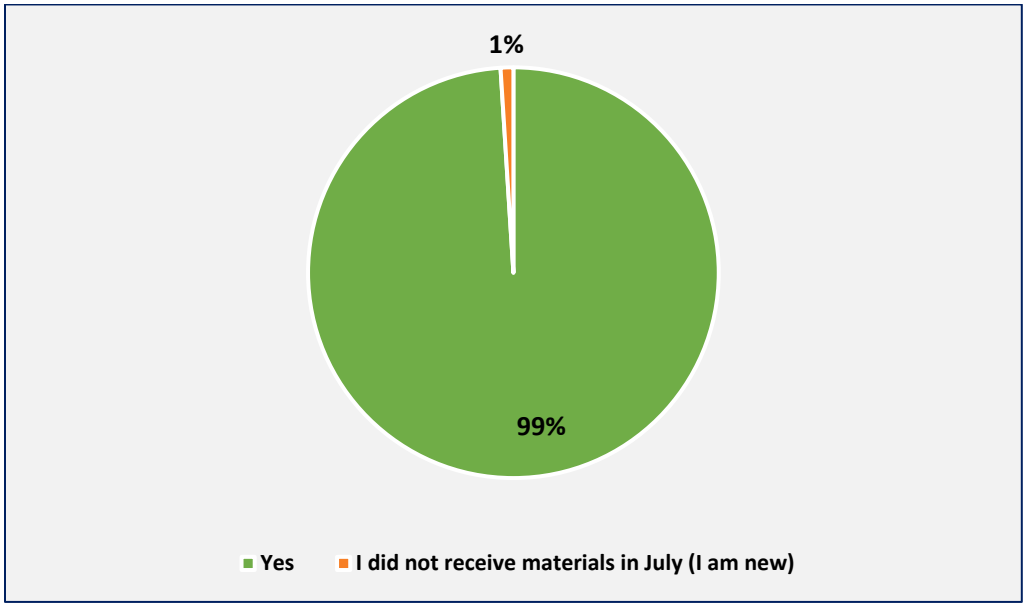
Survey Q37:

How is COVID-19 affecting you personally? (Select all that apply)

Eval Q23: Did participants find the heat materials provided helpful?

Graph 14. ***Found Provided Heat Materials Helpful (n = 91)***

All participants who had received the heat materials found these materials helpful



Survey Q41:

Maricopa County provided you with materials in July, did you find these materials helpful?

Eval Q24: What tools, resources, or services would be most helpful in ensuring that individuals and households have knowledge of heat and heat-related illness?

Responses to this question had an **overall theme of wanting more information** (see Figure 2 below). Participants requested information on cooling centers, numbers to call for both emergencies and non-emergencies, home cooling maintenance and repairs, mobile home maintenance and repairs, heat, heat illness symptoms, low-cost health clinics and places to get health screenings, and heat alerts. In terms of cooling centers, participants specifically would like to know where to go and where cooling centers are located. Regarding maintenance and repairs, participants would specifically like information on air-conditioning maintenance, mobile home maintenance, insulation, and repairs for walls, doors, and windows. For heat and heat illness, participants identified an interest in learning how to identify heat illness and treat the symptoms. In terms of heat alerts, participants wanted to know in advance of excessive heat days. For ways participants would like to receive information, commonly reported methods included TV, texts, phone calls, and radio (specific to heat alerts); workshops, trainings, and health fairs (specific to learning about heat and heat symptoms as well as maintenance and repairs); and brochures, posters, and fliers (specific to general heat information and assistance phone numbers). Participants also requested that more information be available in Spanish.

Eval Q25: What would be most helpful to individuals and households when assistance is needed to manage health conditions related to extreme heat?

Several overarching themes were identified in the responses to this question. These include **1) information, 2) medical, 3) home cooling, and 4) program assistance processes** (see Figure 3 below). Under the theme of information, participants requested information on where to go during heat waves, cooling centers, heat illness symptoms, and first aid. Participants would like this information to be provided through brochures and fliers, hotlines, and workshops and trainings. As for the theme of medical, participants mentioned more accessible medical assistance, longer doctor appointments, learning how to treat heat symptoms, free and low-cost health screenings, and help with hospital bills. Participants also brought up learning to know when to go to the ER, phone lines to call for emergencies and non-emergencies for health issues related to heat, staying hydrated and having water in the house, being prepared, and feeling safe. Regarding home cooling, participants mentioned low-cost utility bills and bills according to income; discounted maintenance, repairs, and home cooling systems; mobile home and home cooling system repairs; use of shady areas such as tree coverage; keeping home cooling systems on; and house stays cool and feels cooler. Under the theme of program assistance processes, participants requested an easier application process, better phone assistance, guidance and help through processes, Spanish speakers on the phone, and that application processes do not require a computer, ID, or documents.

Eval Q26: What would be most helpful to keep participants' homes cool during the extreme heat?

Two overall themes emerged from the responses to this question: **1) home cooling, and 2) financial help** (see Figure 4 below). As for home cooling, participants brought up better and newer air-conditioner, A/C works well to cool the entire home, A/C does not break down, fans that work and are placed throughout the home, and planting trees for shade. Under the theme of financial help, participants requested free or low-cost maintenance and repairs, specifically regarding A/C units, mobile homes, insulation, and windows and doors. Participants also mentioned discounts on home cooling units and energy bills, as well as lower utility bills. The idea of raffling off home cooling systems was also mentioned.

Eval Q27: What would increase individual and household use of home cooling systems, utility assistance programs, and cooling centers?

This question appeared to be interpreted in a different way by most participants. It is believed that some participants interpreted the question as "*If the household's use of home cooling systems, utility assistance, or cooling centers increased or improved, how would you and your household benefit?*" Responses to this question had two main themes: **1) health, and 2) energy use** (see Figure 5 below). The theme of health was further broken down into the themes of protection from heat, physical health, and emotional and social health. Under the theme of protection from heat, participants mentioned heat illness prevention, preventing suffering

from heat, and heat death prevention. Under the theme of physical health, participants discussed improved quality of life, increased safety, improved hydration, and avoidance of illness. As for the theme emotional and social health, participants brought up decreased frustration and worry, stress relief, spending more time with family and friends, and the ability to do activities while staying cool. Regarding the theme energy use, participants mentioned saving money through using a cooling center, turning off the A/C when not at home, and reducing energy use. Participants also talked about reducing their energy bills and receiving help with utilities.

Figure 2. ***Survey Q45: What tools, resources, or services would be most helpful in ensuring that you and your household have knowledge of heat and heat-related illness?***

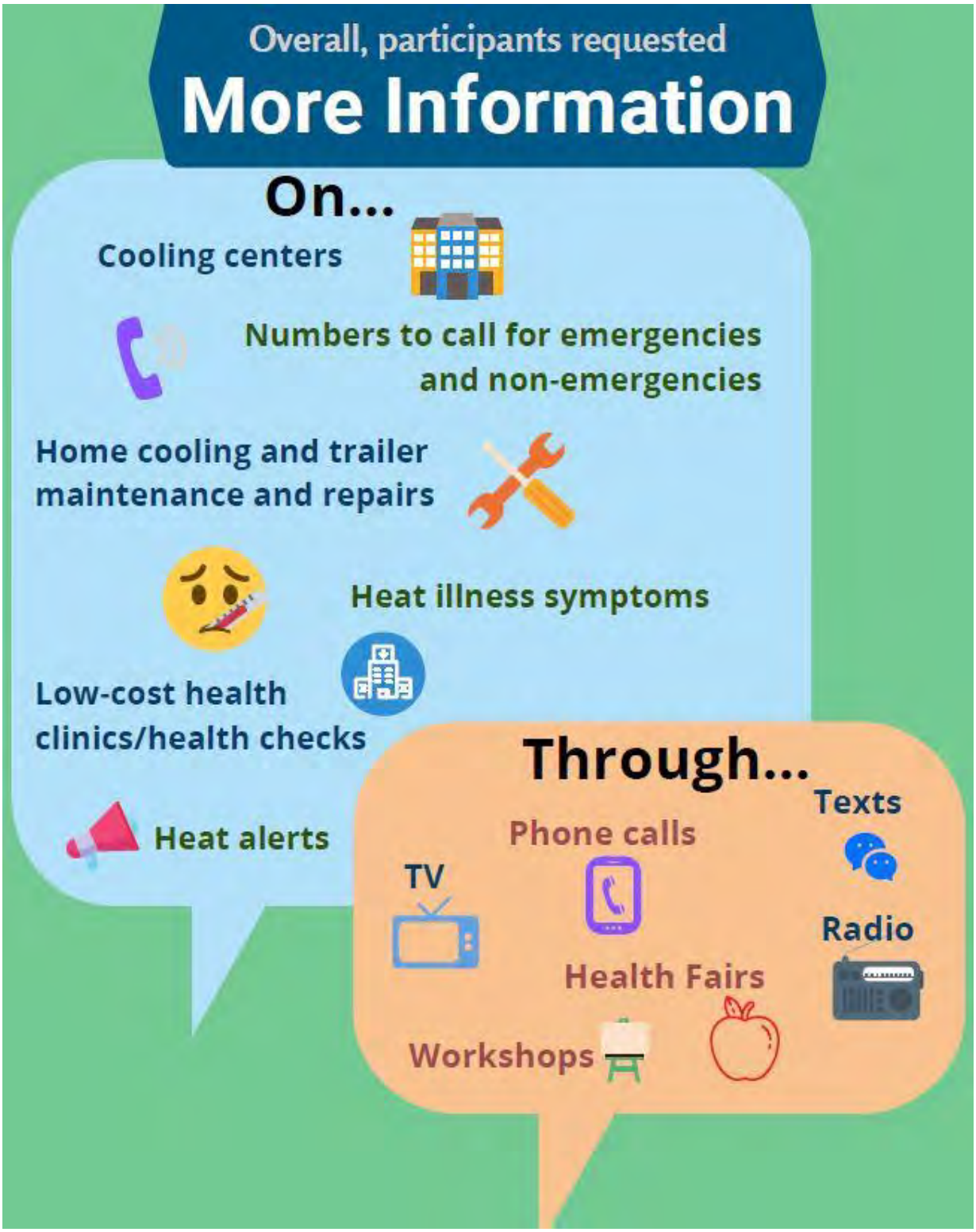
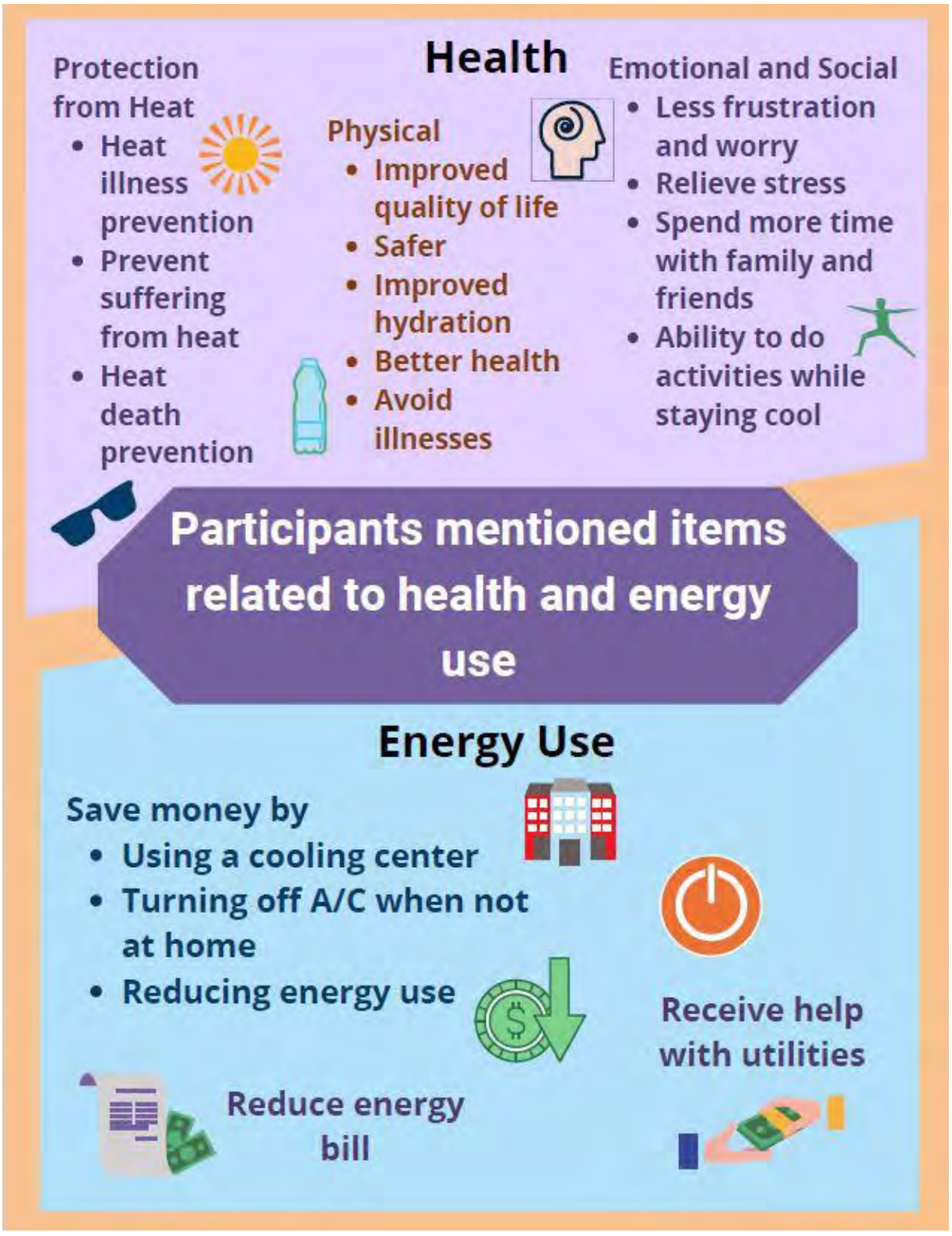


Figure 3. ***Survey Q46: What would be most helpful to you and your household when assistance is needed to manage health conditions related to extreme heat?***

Figure 4. ***Survey Q47: What would be most helpful to keep your home cool during the extreme heat?***

Figure 5. ***Survey Q48: What would increase you and your household's use of home cooling systems, utility assistance programs, or cooling centers?***



Demographics

Table A. ***Demographics and Characteristics of Repeat Survey Participants***

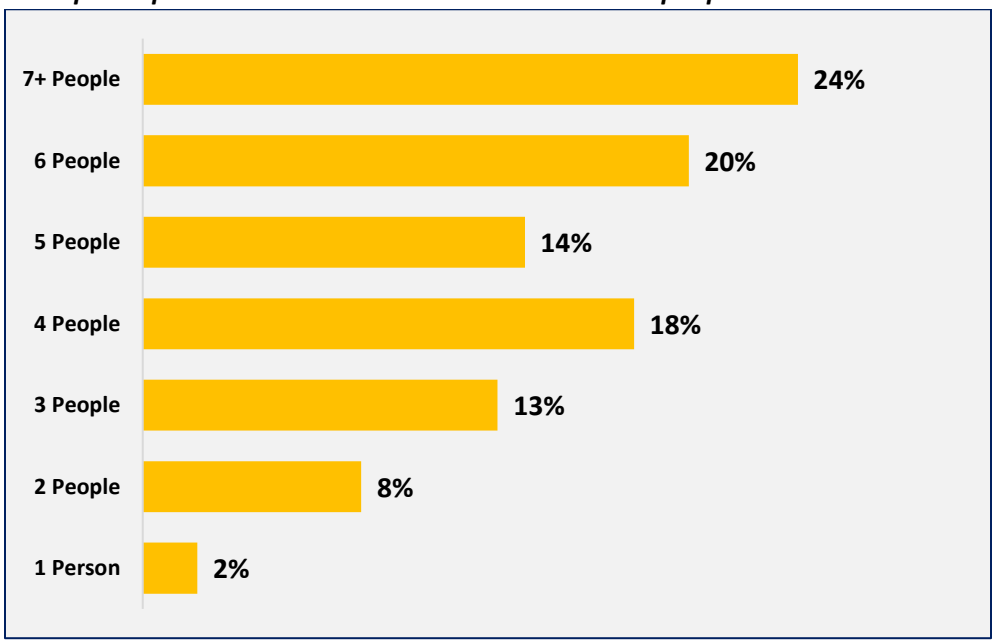
DEMOGRAPHICS	N (%)
How Many People Live in Your Home? (N=91)	
1	2 (2%)
2	7 (8%)
3	12 (13%)
4	16 (18%)
5	13 (14%)
6	18 (20%)
7+	23 (24%)
What are the Age Groups in Your Household? (N=91) *91 responses add to 260 to include all family members of participants (Percentage does not add to 100)	
Ages less than 4	34 (37%)
Ages 5- 19	64 (70%)
Ages 20- 34	53 (58%)
Ages 35- 49	59 (65%)
Ages 50- 64	38 (42%)
Ages 65+	12 (13%)
How Many Household Members are Employed? (N=91)	
0	4 (4%)
1	60 (66%)
2	23 (25%)
3	3 (3%)
4+	1 (1%)
Family Member Does Not Speak English (N=91)	
Yes	76 (84%)
No	15 (16%)
Race (N=91)	
White	78 (86%)
Don't Know	13 (14%)
Ethnicity (N=91)	
Hispanic	91 (100%)
Not Hispanic	0 (0%)
Do You Own or Rent Your Home (N=91)	
Own	53 (58%)
Rent	30 (33%)
Rent and Own	7 (8%)
Refused	1 (1%)

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.) What is your ethnicity and that of members of your household?
7.) Does your household own or rent this residence?

Graph A. ***Number of People in Household (N=91)***
Most participants lived in a household with 3 or more people

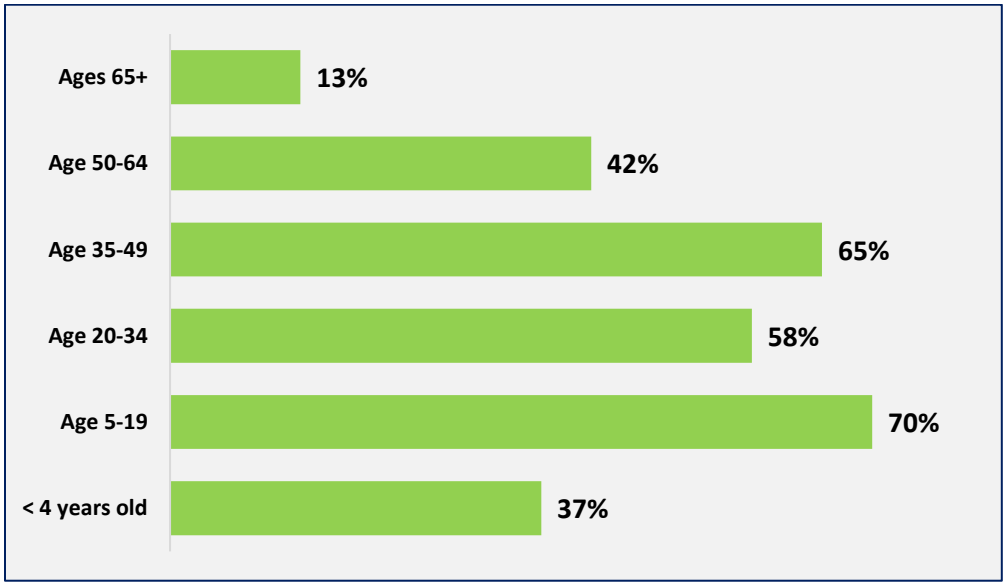


Graph A.

Survey question 1:

How many people live in your household?

Graph B. ***Age Range of Household Members (N=91)***
The most common age range of household members was ages 5-19



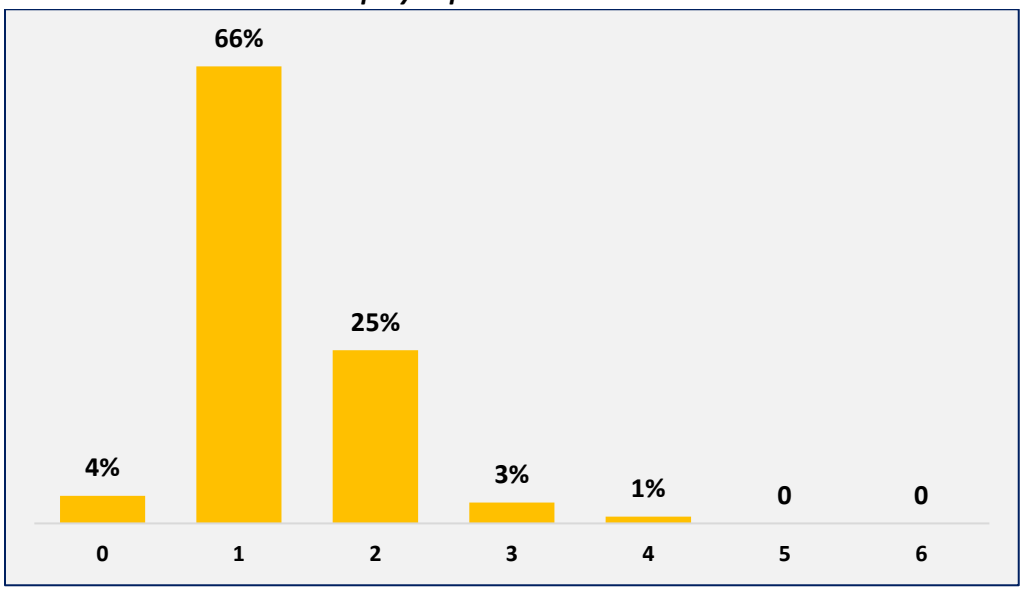
Graph B.

Survey question 2:

How many people in your household between the ages of:

* 91 participants answered for every individual in the household, totaling 260 responses; percentages add to more than 100%

Graph C. ***Employment Status of Household (N=91)***
Most households had one employed person

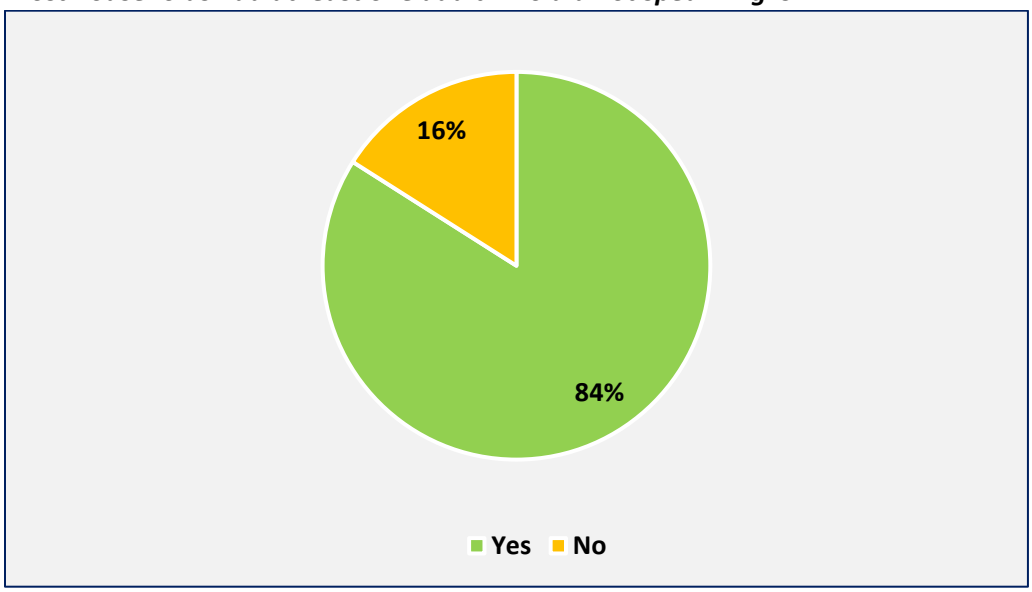


Graph C.

Survey question 3:

How many people are employed in your household?

Graph D. ***Household Language (N=91)***
Most households had at least one adult who did not speak English



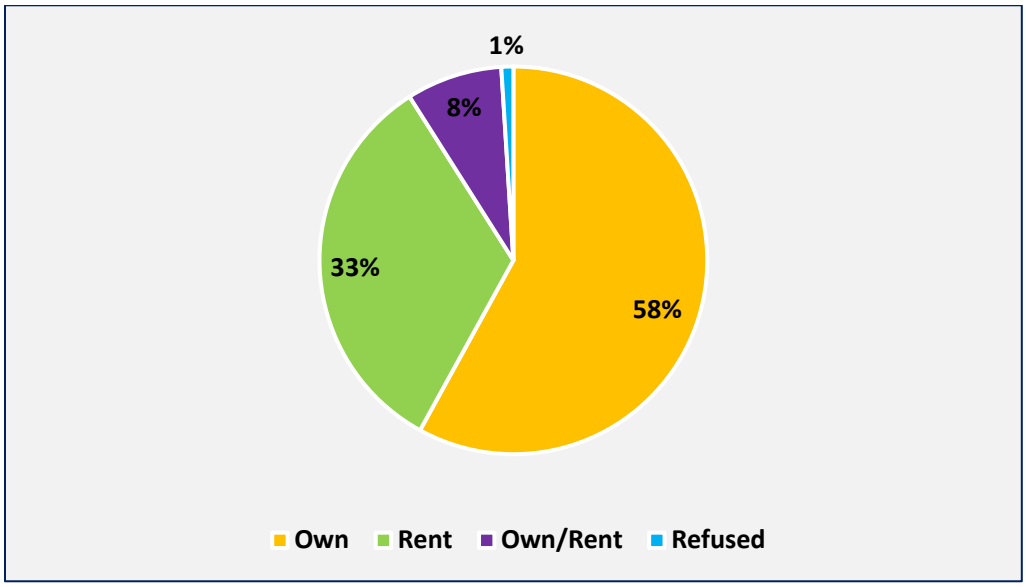
Graph D.

Survey question 4:

Is there any adult who does not speak English? (language spoken at home)

Graph E. ***Household Property (N=91)***

Most households own their mobile home



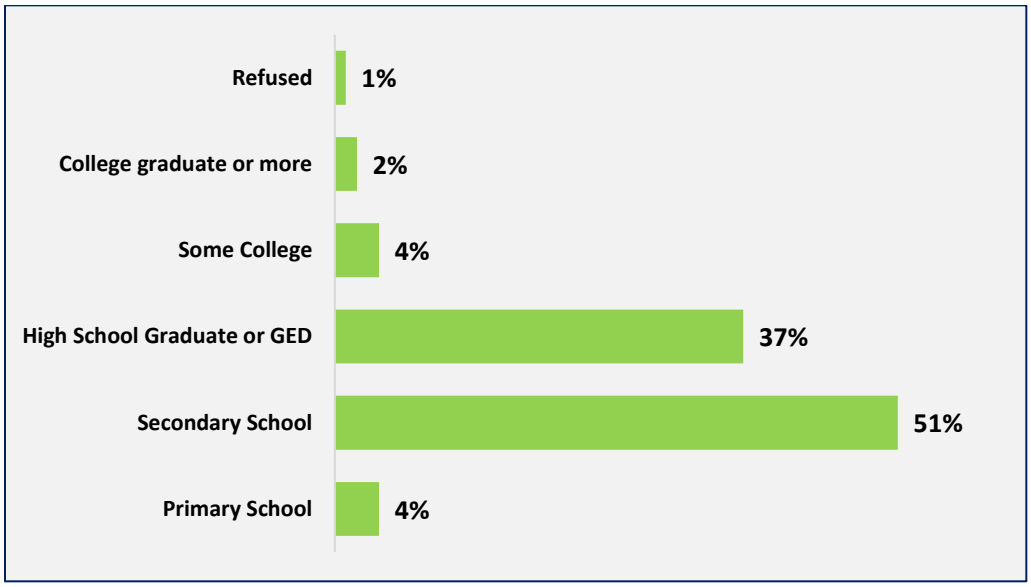
Graph E.

Survey question 7:

Does your household own or rent this residence?

Graph F. ***Household Education (N=90)***

Most households selected "secondary school" for the highest level of education achieved by a household member



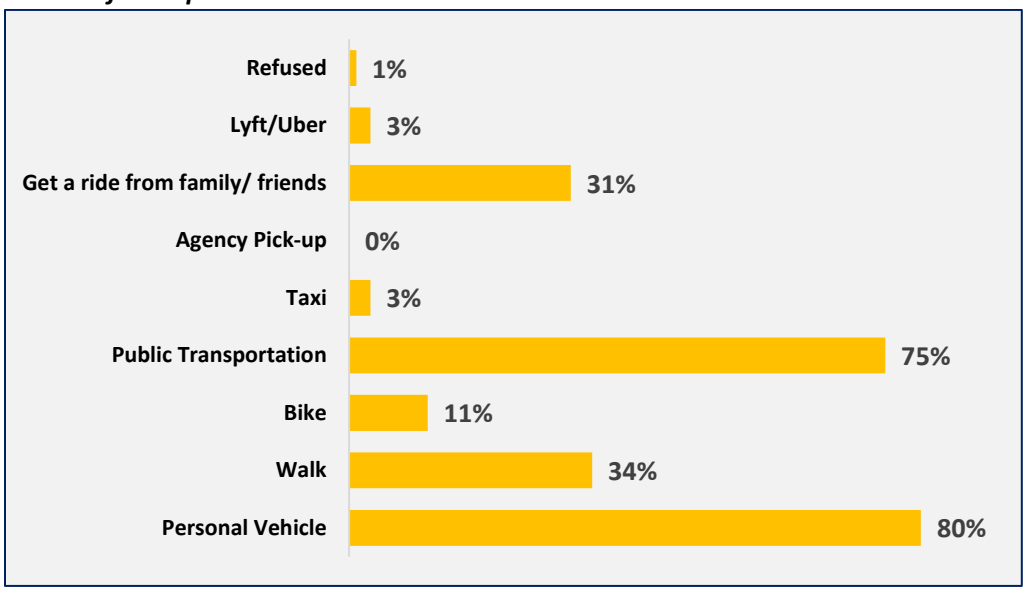
Graph F.

Survey question 8:

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

Graph G. ***Household Transportation Methods (N=91)***

Most households selected "personal vehicle" or "public transportation" as their household's primary means of transportation



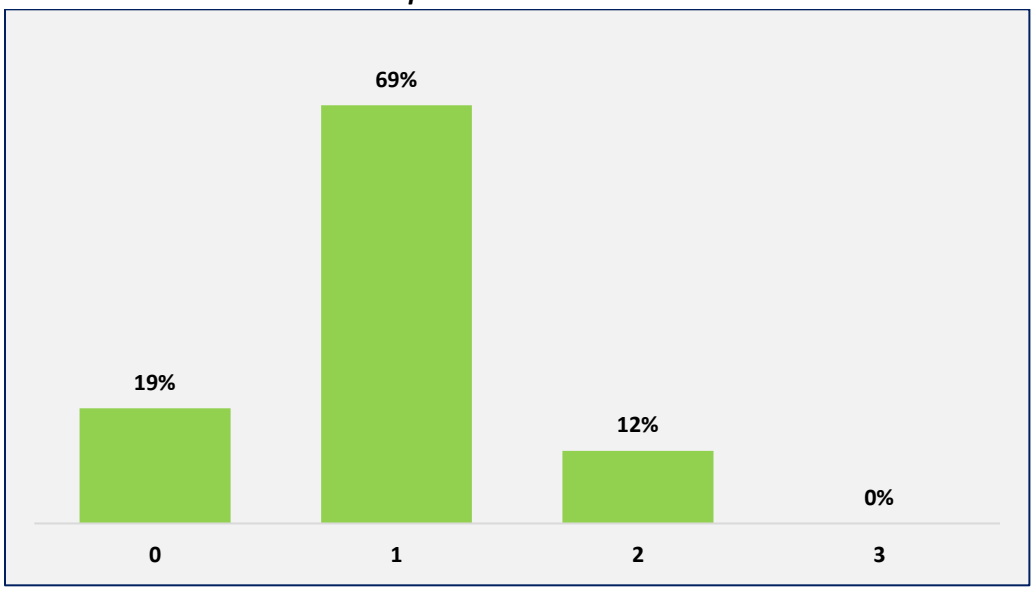
Graph G.

Survey question 9:

What is the household's primary means of transportation?

Graph H. ***Personal Vehicle Access (N=91)***

Most households had access to 1 personal vehicle



Graph H.

Survey question 10:

If personal vehicle was selected, how many vehicles does the household have the ability to use?

DISCUSSION

Defining the Problem to be Addressed

A causal map was created based on the information collected in the surveys (see Figure 6). The map identifies four main contributors to heat illness and deaths in the Maricopa County mobile home community:

1) barriers related to awareness,

2) barriers related to program processes,

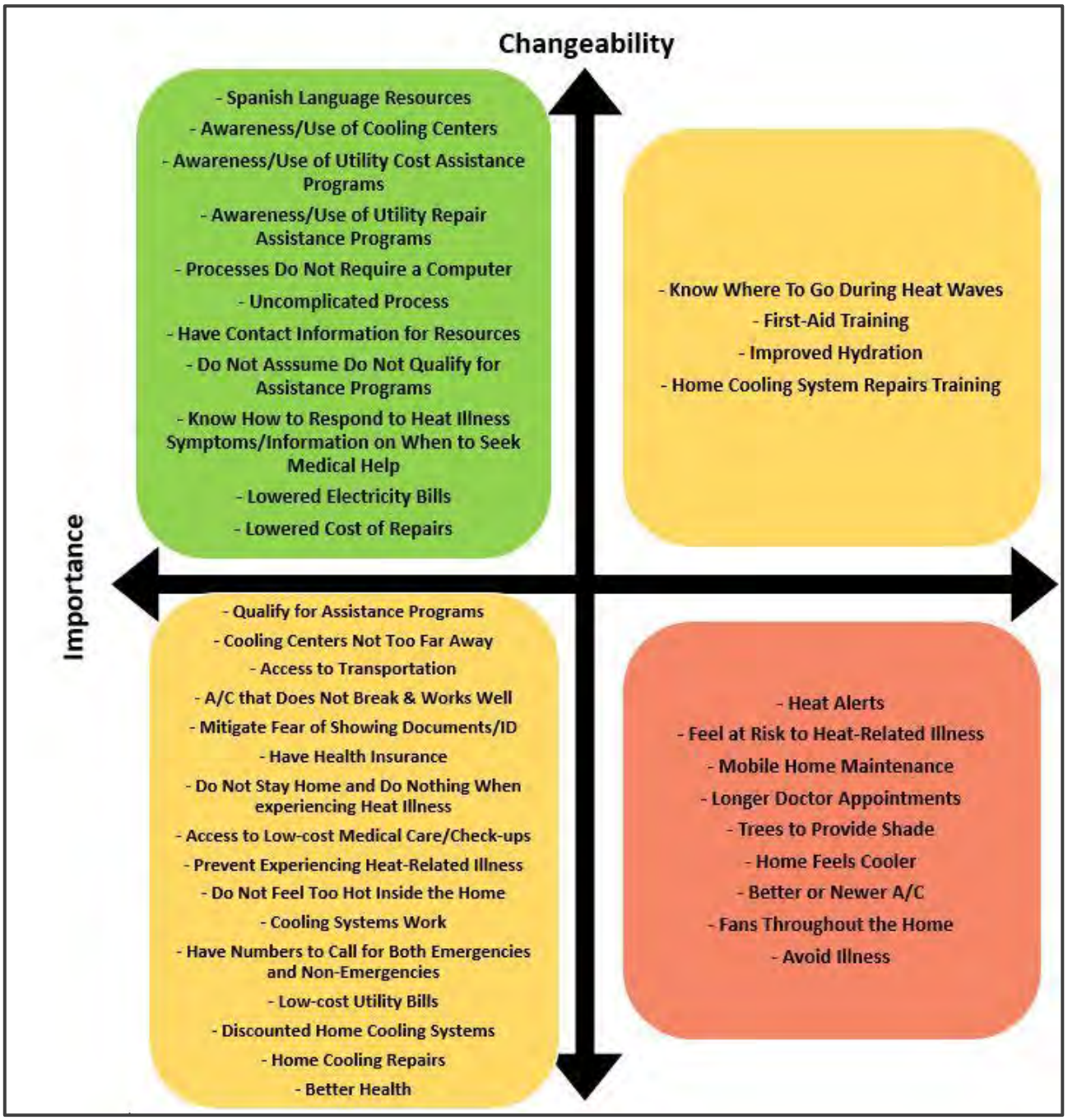
3) financial barriers, and

4) medical barriers

Figure 6. ***Causal Map***

A Changeability matrix on heat-associated illness and deaths in the MC mobile home community was developed based on the results of the surveys (see Figure 7). Specifically, the matrix addresses barriers, concerns, and suggestions for reduction of heat-associated illness and deaths. The items addressed in the changeability matrix are a culmination of the survey responses, especially the responses addressing resources and potential solutions. Items listed in **the top left quadrant** are things that are more important and more easily changeable with regard to heat illness and deaths in the MC mobile home community – these are typically things that are more within the project team, project partners, and community's control. These were also things that appeared to be more important to the community. Items listed in the **top right quadrant** are things that are less important but more easily changeable – these are mostly things that have a more removed impact on reduction of heat illness and deaths. Items listed in the **lower left quadrant** are things that are important in regard to reducing heat illness and deaths but are harder to change – these are typically things that are in the policy sphere, economic sphere, and programmatic sphere. Lastly, items listed in the **lower right quadrant** are things that are less important and less easily changeable – these are things that may have less of a direct impact on reduction of heat illness and deaths in relation to this specific community's needs and may be more difficult to implement. It is important to note that while these items are categorized in terms of importance and changeability that a well-rounded approach that considers all of these items would likely be the most impactful.

Figure 7. ***Changeability Matrix***



Implications

The data collected show numerous types of barriers the MC mobile home community residents face when it comes to staying safe during extreme heat. Many of these barriers fall under program process barriers. These include barriers such as lack of computer access (28% cited this as a barrier in the October survey), not having program contact information (28%), the process being complicated (26%), and the process being in a different language (19%). This emphasizes the

importance of addressing process barriers when developing and implementing solutions to reduce heat illness and deaths in this community. **Financial barriers is another area where many of the residents face challenges**. These include challenges such as high costs of electricity (98% mentioned this as a limitation to using their cooling system in the October survey), repairs (41%), cooling systems, and medical services (67% of October survey respondees cited not having medical insurance and 20% cited not being able to afford an ambulance ride or medical care as reasons for staying home and not taking action in response to experiencing heat illness). This demonstrates how crucial it is to address financial barriers for this community. **Additionally, residents face obstacles that fall under medical barriers**. These include not having health insurance (cited as a reason for staying home and taking no action in response to experiencing heat illness), lack of access to low-cost clinics and medical check-ups, and being unsure of how to respond to heat illness symptoms and when to seek medical help. These barriers should also be considered when designing and implementing solutions to mitigate heat deaths in this community. **Lastly, the residents face awareness barriers**. These include not all residents being aware of cooling centers (23% of October survey participants remained unaware of cooling centers) and utility cost and repair assistance programs (10% of October survey participants remained unaware of utility cost assistance programs and 20% remained unaware of cooling system repair assistance programs). This shows that awareness of programs and services is another area that is important to address in any efforts to reduce heat deaths among these residents.

RECOMMENDATIONS AND NEXT STEPS

Recommendations were created to address three goals designed to **reduce heat-associated illness and deaths among the MC mobile home community**. The three goals of these recommendations are to:

1. Increase use of cooling centers and utility assistance programs,
2. Increase use of medical services, and
3. Reduce expenses related to repairs, cooling systems, and medical

Furthermore, the recommendations were developed to address the four areas of the social ecological model:[2]

1. Intrapersonal
2. Interpersonal
3. Organization
4. Policy

[2] The explanation of the social ecological model can be found in Appendix XII: Recommendations under Public Health Model for Recommendations: Social Ecological Model.

The recommendations are supported by survey results that demonstrate barriers related to awareness, barriers related to program processes, financial barriers, and medical barriers (see Figure 6. *Causal Map*).

The first goal of the recommendations is to increase use of cooling centers and utility assistance programs. At the intrapersonal level, this may be accomplished by increasing awareness and providing information on cooling centers and utility assistance programs. At the interpersonal level, this may be achieved by having providers work to increase the awareness of cooling centers and utility services. At the organization level, this goal could be reached by addressing program process barriers to the use of services. Finally, at the policy level, this may be accomplished by addressing policy related to qualification for utility programs and services (see Table 5).

Table 5. ***Recommendations Goal 1***

	Intrapersonal	Interpersonal	Organization	Policy	Recommendations
1) Increase use of cooling centers and utility assistance programs	• Increase awareness and provide information on cooling centers and utility assistance programs	• Providers work to increase awareness of cooling center and utility services and heat illness	• Address process barriers* to use of services	• Address policy related to qualification for programs and services	• Mobile clinic • Workshops • Case workers • Advocate for policy change

* (requiring documents, need for computer access, process that is complicated, ability to qualify for programs, need to transporation or location issues, lack of resources in Spanish)

The second goal of the recommendations is to increase use of medical services. At the intrapersonal level, this could be accomplished by: 1) increasing awareness and providing information on heat illness symptoms, 2) providing information on when to seek medical help, and 3) providing resources and phone numbers for medical help and ways to assess symptoms. At the interpersonal level, this may be achieved by having providers emphasize the importance of getting help when experiencing heat illness and by having community members aware of the importance of medical help and spreading the word about this as well as resources. At the organization level, this goal could be reached by addressing process barriers to use of medical services. Lastly, at the policy level, this goal could be accomplished by addressing policy related to qualification for medical services and policy related to the need for health insurance to access medical services that do not result in high medical bills (see Table 6).

Table 6. ***Recommendations Goal 2***

	Intrapersonal	Interpersonal	Organization	Policy	Recommendations
2) Increase use of medical services	• Increase awareness and provide information on heat illness symptoms • Provide information on when to seek medical help • Provide resources and phone numbers for medical help or ways to assess symptoms	• Providers emphasize the importance of getting help when experiencing heat illness • Neighbors and friends are aware of importance of medical help and spread the word and also spread the word of resources	• Address process barriers* to use of medical services	• Address policy related to qualification for medical services • Address policy related to need for health insurance to access medical services without high medical bills	• Mobile clinic • Workshops • Advocate for policy change

* (requiring documents, need for computer access, process that is complicated, ability to qualify for programs, need to transporation or location issues, lack of resources in Spanish)

The third and final goal of the recommendations is to reduce expenses related to repairs, cooling systems, and medical. At the intrapersonal level, this goal could be reached by community members having knowledge of how to respond to experiencing heat illness and how to repair home cooling systems and mobile homes. At the interpersonal level, this may be accomplished by having community members teach other about heat illness and how to respond to experiencing heat illness and how to repair home cooling systems and mobile homes. At the organization level, this could be achieved by addressing process barriers to the use of services (repairs, cooling systems, and medical), implementing programs for low-cost mobile home and cooling system repair services, and creating ways for people to buy low-cost cooling systems and repair supplies. Finally, at the policy level, this goal may accomplished by 1) addressing policy related to the qualification for programs and services, 2) addressing policy related to the cost of electricity (reduce costs – at least during heat season), 3) addressing policy related to the costs of medical services (reduce costs), and 4) addressing policy related to the cost of repairs for cooling systems and mobile homes (reduce costs) (see Table 7).

Table 7. ***Recommendations Goal 3***

	Intrapersonal	Interpersonal	Organization	Policy	Recommendations
3) Reduce expenses related to repairs, cooling systems, and medical	• Have knowledge of how to respond to experiencing heat illness • Have knowledge of how to repair home cooling systems and mobile home	• Community members teach other about heat illness and how to respond to experiencing heat illness • Community members teach other about how to repair home cooling systems and mobile homes	• Address process barriers* to use of services • Implement programs for low-cost repair services • Ability to buy low-cost cooling systems and repair supplies	• Address policy related to qualification for services and programs • Address policy related to costs of electricity (reduce cost) • Address policy related to cost of medical services (reudce cost) • Address policy related to cost of repairs for cooling systems and mobile homes (reduce cost)	• Workshops • Advocate for policy change

* (requiring documents, need for computer access, process that is complicated, ability to qualify for programs, need to transporation or location issues, lack of resources in Spanish)

The first recommendation is to implement classes and workshops. This would address goal 1 by increasing awareness of cooling centers and utility assistance programs. Goal 2 would be addressed by using the workshops to increase awareness and provide information on heat illness and when to seek medical help as well as resources and phone numbers for medical help and ways to assess heat illness symptoms. Additionally, goal 2 would be addressed by using workshops to develop community leaders who could teach fellow community members about heat illness, when to seek medical help, and resources and phone numbers for medical help and ways to assess heat illness symptoms. The third goal

would be addressed by using the workshops to provide information on how to respond to heat illness and when to seek medical help as well as information on how to repair cooling systems and mobile homes. Goal 3 would also be addressed by using workshops to develop community leaders to teach others about how to respond to heat illness (possibly first aid) and how to repair home cooling systems and mobile homes (if people are able to do these things themselves, this could help to reduce related expenses).

Figure 8. ***Recommendations and How They Address Each Goal***

Classes/Workshops
1.Increase awareness of cooling centers and utility assistance programs
2.Increase awareness and provide information regarding heat illness, when to seek medical help, and resources and phone numbers for medical help and ways to assess symptoms; develop community leaders to teach community members about heat illness, when to seek medical help, and resources and phone numbers for medical help and ways to assess symptoms
3.Provide information on how to respond to heat illness and when to seek medical help; provide information on how to repair cooling systems and mobile home; develop community leaders to teach community members about heat illness and how to respond to experiencing heat illness (possibly first aid); develop community leaders to teach community members how to repair home cooling systems and mobile homes
Mobile Clinic
1.Providers work to increase awareness of heat illness and available services; address barriers related to transportation, complicated process, etc.
2.Providers emphasize importance of help for heat illness emergencies; address process barriers (transportation, etc.); qualification & lack of health insurance not an issue to access medical services
3.Similar to #2
Case Workers
1.Address program process barriers (complicated process, language barriers, etc.); case workers increase awareness of heat illness, cooling centers, and utility programs; community members trained to be peer case workers
2.Address medical use process barriers; community members trained to be peer case workers
3.Help look for programs and apply (similar to #1)
Advocate for policy change
1.Qualification for cooling center and utility programs and services
2.Qualification for medical services; lack of health insurance not an issue or barrier for use of medical services
3.Qualification for services (cooling centers, medical, utility, low-cost bills/cooling systems/repairs); reduced costs for utilities and medical services; reduced repair costs; reduce cooling system costs; help during heat season (reduce cost barriers during heat season)

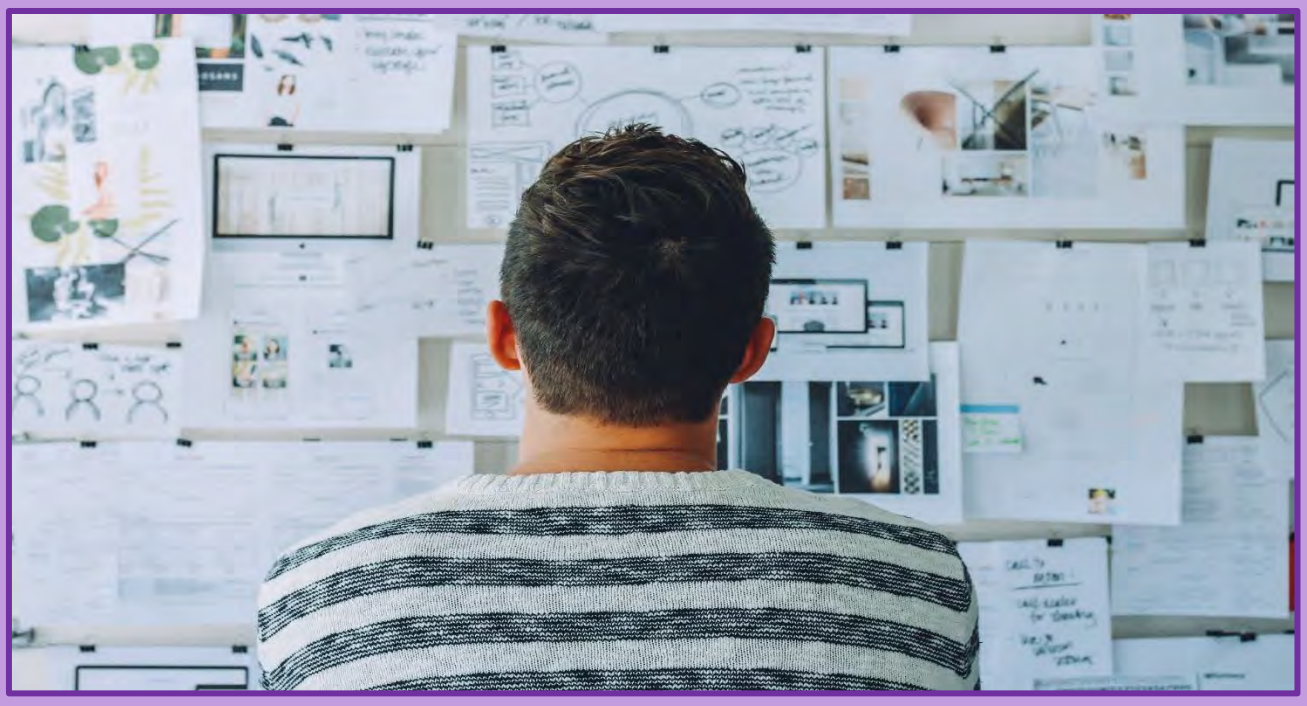
The second recommendation is to implement a mobile clinic program. Goal 1 would be addressed through this recommendation by having the providers working at the mobile clinic strive to increase awareness in the community about heat illness and available services to help reduce heat illness. Goal 1 would also be addressed as the

mobile clinic would reduce barriers to use of services such as need for transportation, it being complicated to use services, etc. Goal 2 would be addressed by having the providers working at the mobile clinic emphasize the importance of seeking medical help for heat illness emergencies. Furthermore, goal 2 would be addressed by using the mobile clinic to mitigate process barriers to medical services (lack of transportation, etc.). The mobile clinic would also address goal 2 by seeing community members without qualification for medical services and lack of health insurance being an issue. Goal 3 would be addressed by this recommendation in a similar way as goal 2.

The third recommendation is develop and implement a case worker program. This program would address goal 1 by working to resolve program process barriers to use of cooling centers and utility assistance programs. Case workers could help community members find services, apply for services, and access transportation. A case worker program would also address goal 1 by having case workers increase awareness of heat illness, cooling centers, and utility assistance programs. Furthermore, community members could be trained to be peer case workers. Goal 2 would be addressed in a similar way as goal 1, where case workers could address process barriers to medical service use and community members could be trained as peer case workers. Goal 3 would also be addressed in a similar way as goal 1 and by having the case workers help community members look for and apply to programs that help reduce cooling, mobile home, and medical expenses.

The fourth and final recommendation is to advocate for policy change. Goal 1 would be addressed by this recommendation by addressing policies that limit the qualification of community members for utility programs and services. As for goal 2, this would be addressed by advocating for policies that do not limit qualification for medical services. Goal 2 would also be addressed by advocating for policy change to make lack of health insurance not an issue or barrier to use of medical services for the community members. Goal 3 would be addressed by addressing policies that affect qualification for services (cooling centers, medical, low-cost bills/cooling systems/repairs), costs for utilities and medical services (want reduced costs), cooling system and mobile home repair costs, cooling system costs, and available help during heat season (reduce cost barriers especially during heat season).

LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH



The results of this project should be viewed in light of several limitations (see Appendix XIII). These limitations fall into two overall categories:

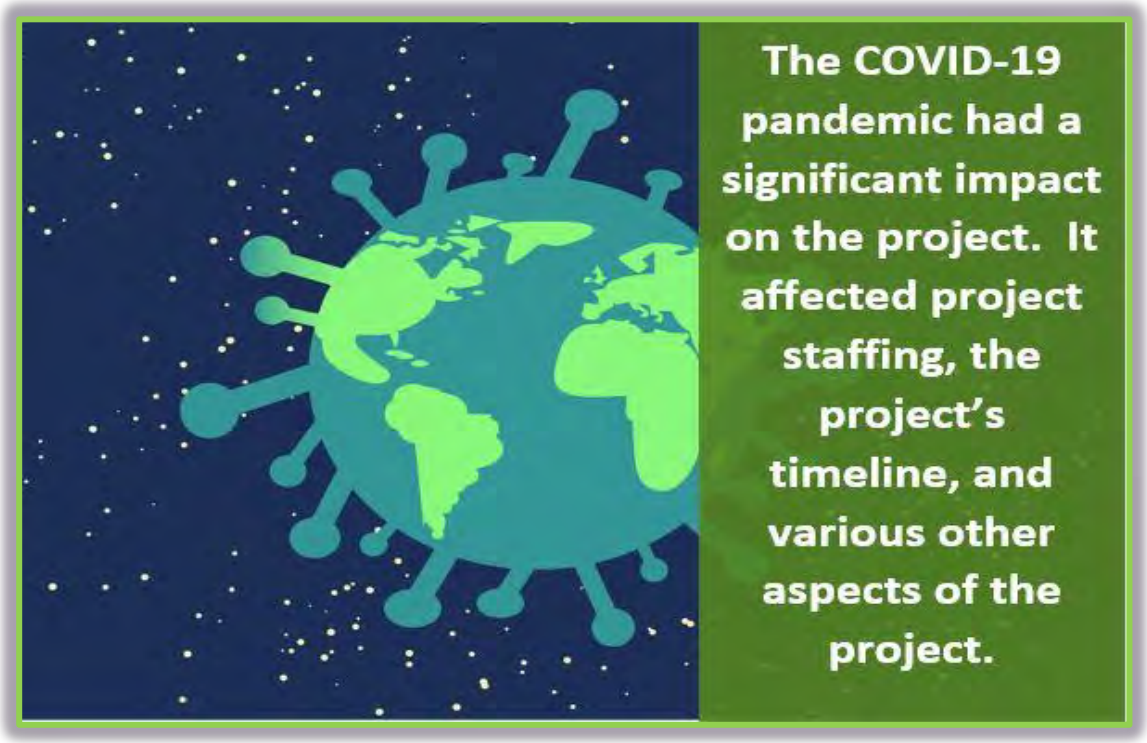
1. Non-COVID-19-related limitations
2. COVID-19-related limitations

The Non-COVID-19-related limitations will be discussed first. First, in some instances the survey skip logic was ignored, or survey responses were provided that did not make sense in the context of the survey question. This is likely due to the fact that the surveys were administered over the phone and filled out on printed versions (as opposed to the digital version where the skip logic cannot be ignored). In the future, this could possibly be avoided by administering the surveys in-person, administering the surveys using tablets or computers so that the digital version of the surveys can be used, or by modifying the surveys to make the skip logic easier to follow and the questions so that one is less likely to receive responses that do not make sense. Secondly, the surveys used self-reported data by the participants. The survey responses were based on self-reported experiences and answers given by the participants. These were taken at face-value and may be subjective. Future research or projects could add objective data measures to complement the self-reported data (self-reported, subjective data is not necessarily a bad thing – it brings a personal nature and people's stories to the table – so having both may strengthen the results and impact of the project). Another limitation is that the responses to the survey's write-in

and open-ended were provided in a different language than what the data analysis team is fluent in. To gain additional clarification or information from participants, some questions provided the opportunity for written-in responses. These written-in responses were often in Spanish, a different language than what the data analysis team is fluent in. A professional translator was not used to translate these responses so there may be some limitations to the accuracy of these translations. This could possibly be better addressed in the future by using a professional translator, by adding someone fluent in the language of the community to the data analysis team, or by having the individuals administering the surveys translate the responses to open-ended questions as they record them. Not having qualitative data analysis software for analysis of responses to open-ended questions is another limitation of the project. Seeing as the data analysis team did not have access to qualitative data analysis software, the responses to open-ended questions were analyzed by hand. This entailed coding the responses into themes and then further categorizing them into meta-themes. The two data analysts checked each other's work throughout this process. The qualitative data analysis process for the project could be repeated in the future with qualitative data analysis software if access to this is obtained. One last non-COVID-19-related limitation is that the project only surveyed residents from one Maricopa County mobile home community, meaning that the survey results may not be generalizable to other Maricopa County mobile home communities. Due to the project team only having the ability to survey a certain number of participants (due to funding to purchase participant incentives and due to the need to have Community Health Workers administer the surveys), only one mobile home community was surveyed. If one wanted results to be generalizable to additional mobile home communities, one could repeat the survey administration process in additional Maricopa County mobile home communities (preferably a representative sample). One could also conduct a literature review or obtain secondary data on additional mobile home communities to complement the primary data obtained on the one mobile home community.

The COVID-19 pandemic had a significant impact on the project. It affected project staffing, the project's timeline, and various other aspects of the project. One limitation that occurred in light of the pandemic was the inability to complete in-person trainings for the Community Health Workers. This likely impacted the effectiveness of these trainings. Furthermore, it impacted the ability to build relationships with the Community Health Workers and Salud en Balance. Another limitation related to the COVID-19 pandemic was the inability for the surveys to be administered in-person. They were administered over the phone instead. This may have affected the Community Health Worker and participant experience during the survey completion process and in turn may have impacted the survey responses. Not being able to frequently pick-up completed surveys was another pandemic-related limitation. Due to this, the data analysis team was unable to periodically check to see if responses on completed surveys made sense. Had the data analysis team been able to more frequently check completed surveys, potential errors could have been caught earlier and possibly corrected. An additional limitation that occurred in light of the pandemic was the project being short-staffed at various points. Some project staff were reassigned to COVID-19 roles and were unable to continue to dedicate time to the project. This caused the project to be short-staffed until additional staff were hired for the project. This affected the completion and timeline of the project. The project's

timeline being different than planned may be viewed as another limitation. Due to the pandemic, the timeline of the project had to be adjusted and ended up being different than initially planned. The project's initial workshop and survey distribution were intended to occur during pre-heat season (April) but ended up occurring during heat season (July). This likely affected the impact the project had on the community members as the information provided by the project was intended to help prepare the community members for heat season and provide resources to help eliminate heat illness, utility issues, and other problems during heat season. All the COVID-19-related limitations described above could be addressed by repeating the project once the pandemic will no longer affect the project. One could also specifically repeat the pieces of the project that were directly impacted by the pandemic, such as survey administration, the workshops, and heat toolkit distribution.



LESSONS LEARNED

Numerous lessons were learned through this initiative. These include:

- Partnerships are invaluable (collaboration, coordination, communication, cooperation)
- Sharing information and research findings can spur new ideas and projects
- The importance of listening to the community
- The value of in-person meetings and trainings
- The importance of well-thought-out survey design
- The importance of pilot-testing surveys
- The importance of cultural responsiveness
- The impact language barriers can have on a project
- The need to be flexible and adaptive to external factors (the COVID-19 pandemic)

One lesson that was learned is that partnerships are invaluable. This project depended on partnerships from its start to finish, and these partnerships continue to exist. The Office of Epidemiology and Data Services partnered with the Office of Nutrition and Active Living, who in turn connected the Office of Epidemiology and Data Services to the mobile home community and community-based organization, Salud en Balance. The core aspects of the project, survey administration and Heat Toolkit distribution, would not have been possible without these partnerships. Furthermore, this project was supported by funding from Arizona State University's (ASU) Healthy Urban Environments Initative, another project partner. The data analysis team also gained a lot of insight about the community through these partnerships. **Related to this, another lesson that was learned is that sharing of information and research findings can spur new ideas and projects**. As a result of sharing findings from this initiative with the Robert Wood Johnson Foundation (RWJF), additional funding was provided by the RWJF to help meet the needs of the community members and Salud en Balance. Findings from this project have also been shared with other researchers and collaborators in the field, which has sparked continuing conversations on how to best address the needs of the community members and who may be best suited to address what.

An additional lesson the team learned is the importance of collecting and listening to community input. The first survey distributed to the community (the July, pre-heat season survey) did not contain space for the participants to provide their feedback as to priority areas of need they would like addressed as well as potential solutions to help address these. The second survey that was administered (the October, post-heat season survey) contained space for this feedback and the information obtained through this was invaluable. The feedback obtained opened the door to so many ideas the project team had not yet thought of. It also became the core of planning for next steps for initiative. **Through this project, the team also learned the importance of cultural responsiveness**. Cultural responsiveness played a role in designing the survey questions, building the heat toolkit, obtaining and listening to feedback from the community, delivering trainings, and much more. **Related to this, the team learned how important it is to consider language barriers when working on a project**. While working on the project, language barriers became identified while translating survey responses that became lost in translation. Working as a team and clarifying translations became an important part of our partnership. Furthermore, the team had to consider the language of the target audience when delivering presentations and designing infographics. A professional interpreter was therefore used for all workshops delivered to the Community Health Workers and residents.

The remaining lessons learned are related to the project's methodology and analysis process. For example, **the team learned the importance and value of in-person meetings and trainings**. The value of these became evident when due to the COVID-19 pandemic in-person trainings and meetings were cancelled and switched to a virtual, online format. This likely impacted the effectiveness of these and the ability to ensure the Community Health Workers and project partners had full understanding of the materials and survey content. This also likely affected the ability to build relationships with the community health workers and project partners. Furthermore, it meant that very few residents of the mobile home community were able to attend these meetings and trainings. **During the project, the team also learned the**

importance of a well-thought-out survey design and pilot-testing surveys. The importance of this became clear when some completed surveys were returned with responses that did not make sense in the context of the questions. In some cases, it appeared that the survey skip logic was missed and in other cases that participants and those administering the surveys did not understand the questions and what sort of responses we were looking for. This could have possibly been avoided by pilot-testing the survey and also by critically analyzing the survey questions to ensure they made sense. Lastly, **the team learned the importance and need to be flexible and adaptive to external factors, in this case, the COVID-19 pandemic**. Due to the COVID-19 pandemic, some project staff were reassigned to COVID-19 roles and were unable to continue to dedicate time to the project. The project was short-staffed until additional staff were hired for the project. This affected the project's timeline, which created the need to adapt the project. Furthermore, the COVID-19 pandemic created the need to adapt the project to a virtual environment. This meant that trainings had to be delivered virtually and that surveys had to be administered over the phone. Overall, adaptation became very important.

COMMUNITY PARTNER COLLABORATION

In the original Project Basis/Justification document prepared for ASU, MCDPH stated its intention to collaborate with a community-based organization in the area of the selected mobile home park. It is believed that that the way the collaboration was jointly built and sustained between MCHPH and St. Paul's Episcopal Church's **Salud en Balance** team, was significant in terms of the project outcomes.

1. **MCDPH interoffice leveraging of resources and relationships**

   Dating back to 2017, staff from the Office of Nutrition and Active Living (ONAL) had been supporting Teresa Sosa, the lead community health worker (CHW) on the Salud en Balance team, to secure her CHW certification, and in 2018 began assigning her to work in that capacity at a number of community sites. Staff from the MCDPH ONAL recommended Salud en Balance, to whom they had awarded a shared use grant in 2019 and 2020, as the community partner on this project. The recommendation was a product of the outstanding implementation of their grants, and the fact that community engagement conducted during the shared use projects included outreach to a mobile home park.

2. **Compatibility between community partner and residents**

   The fact that Salud en Balance already had a presence in this mobile home community enabled us to build on existing relationships and trust. The Salud en Balance team members have much in common with the residents of the park, including a shared culture, language, and lived experiences. Again, and again, this affinity enabled the Salud en Balance team to overcome barriers and to provide valuable insights that impacted the planning, design, implementation, and evaluation of each step of the project. Throughout the life of the project and its documentation, MCDPH listened, learned, and consistently integrated into the project this valuable community knowledge and experience.

   The deep identification with and commitment to the community resulted in superior results in terms of survey response rates, which were 66% in

round one and 96% in round two. This reflected the team's determination that every mobile home park resident would have access to extreme heat information that could mitigate its impact and save lives. The commitment was also expressed in the measures taken to assist individual residents, to the extent possible, to overcome numerous barriers in accessing resources to address the extreme heat.

3. Community Health Worker training

Ten basic core competencies guide the practice of Community Health Workers, which shaped the way the six CHWs on the Salud en Balance team professionally implemented this project. Beyond the mere implementation of a survey process, their practice ensured: effective, quality communication; relationship-based support networks, community capacity-building; robust educational efforts; respectful, inclusive outreach; and competent delivery of information.

One manifestation of these competencies in action was reflected in the project design of the survey distribution. Each of the six CHWs was matched with an identified "community leader" in the mobile home park, one resident from each of the six designated zones. These leaders had existing relationships and deep ties with their neighbors, some of whom were family members, which greatly facilitated the building of trust that translated into participation in the survey and the resolution of complicated distribution issues.

Another benefit of a collaboration with CHWs had to do with their public health competencies, which prepared them to function safely, and without incident, during the entire project, including periods when Maricopa County was experiencing its highest levels of viral community spread. Safety protocols were observed at the mobile home park and at the church, ensuring the safety of the residents and the team.

4. Community-building

Residents of the mobile home park valued the information that was shared with them and appreciated being "seen" and heard, as a population that is disproportionately impacted by extreme heat and oftentimes rendered invisible. The fact that they had such a positive experience with the Salud en Balance team produced four unanticipated, satisfying results:

(1) Residents have found the team to be a trusted resource and are reaching out to its members on a regular basis to request a variety of types of information and assistance. This has cemented the presence of the community center on the church property, which has become a valued neighborhood destination and resource.

(2) During the second phase of the HUE project, its credibility and the degree of trust among residents also increased. It is worth noting that Salud en Balance is already receiving calls from residents *from other mobile home parks* who are requesting information on how to apply for utility payment assistance, after being referred by family members or friends that participated in the HUE project.

(3) Despite the isolation and the need to follow the prevention measures promoted by Salud en Balance, relationships between the neighbors

and communication have both increased. To facilitate communication, the residents have learned to use new phone or text messaging systems in order to receive and respond to messages. This has produced new relationships, stronger connections, and a more cohesive, supportive community.

(4) Salud en Balance uses a "community development" and strengths-based approach, and it has been encouraging to hear from residents, both in the survey results and in conversation, of their desire to continue learning about extreme heat and other health-related topics, which positions them to continue to be able to disseminate accurate information within their spheres of influence. It is clear that the residents that took part in this research project should be offered the opportunity to take part in future educational campaigns and in collaborative efforts to act on securing the solutions needed to better ensure that all residents are protected from extreme heat.

(5) As residents have learned of the variety of health- and wellness-promoting activities that Salud en Balance hosts, such as park improvement efforts and Perry Park Neighborhood Association meetings, they are volunteering and actively bringing their family members to participate in a variety of opportunities and contributing to the overall community-building effort. Salud en Balance's committed relationship with this community continues to create ties with *children and youth* who show their gratitude by their excitement and by leading and participating in a variety of activities.

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APPENDICIES

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 to cooling, and knowledge and use of community resources

Table 1. ***Goals and Objectives***

Objectives	Pre-Heat Season (July)	Post-Heat Season (October-November)	Deliverables (completed/to be completed)
Provide information related to heat	Develop *Heat Toolkit** 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 156 households
Train residents/Community Health Workers	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
Analyze and evaluate results from both surveys	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
Communicate and next steps	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
Pre-heat Season	The time of year just before it gets hot that occurs between winter and summer.
Post-heat Season	The time of year following heat season that occurs after the hot summer months.
Cooling Center	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.
Central Air-Conditioning	A cooling system in which air is cooled at a central location and distributed throughout multiple rooms through vents.
Window Air-Conditioning	A simple air-conditioning unit that is mounted on windows to cool the room.
Process Evaluation	Examines the implementation of an intervention and looks at how or why an intervention has achieved or failed to achieve what was expected
Impact Evaluation	Measures the effectiveness of the intervention

Reference

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APPENDIX III: HUE LOGIC MODEL AND NARRATIVE

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**
Partners 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 **Resources** Funding Qualtrics, Excel, Word, Canva	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 to 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	Reduction of heat deaths and illness in MC mobile home communities

Time Participant incentives Printing materials Gloves, hand sanitizer, face masks Space to conduct workshops Personnel Educational materials and sources English/Spanish translation and interpretation Transportation Computers	Conduct post-heat season workshop with Community Health Workers Analyze post-heat season surveys Summarize information from the post-heat season and produce an evaluation report Communicate and discuss next steps with community, funder, and partners	Post-heat season workshop conducted # Community Health Workers in attendance at Post-heat season workshop Post-heat season surveys analyzed Evaluation report Completed communication and discussion of next steps with community, funder, and partners		cooling systems Decrease in heat illness

Assumptions

- Ability to connect with community-based organization
- Survey responses will be received

External Factors

- 4Cs: Coordination, Communication, Collaboration, Cooperation
- COVID-19 Pandemic

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 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 to 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 FOR YEARS 2016 - 2020

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-habitating/Roommate:	14%	Co-habitating/Roommate:	18%
Living Independently:	29%	Living Independently:	33%
Unknown:	21%	Unknown:	11%

- Data pulled from 2006-2018 Heat Database, 2019 Heat Database, and 2020 Heat Database

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

APPENDIX VI: JULY 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 of 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 Q 31)
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: JULY 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 ¿Cuentas a 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 rehuso a contestar? _____

Q3. ¿Cuántas personas trabajan en su hogar? _____

a) Se rehuso a contestar? _____

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

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

Q5. ¿Cúal 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 Pacifico
n) Hispanic
o) No lo sé
p) Se rehuso a contestar

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

e) Propietarios

f) Rentar
g) No lo sé
h) Se rehuso a contester

Q7. ¿Cuál es el nivel más alto de educación alzanzado 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 colegrio o Universidad o un nivel más alto
k) No lo sé
l) Se rehuso a contestar

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

k) Vehículo Personal
l) Caminar
m) Bicicleta
n) Transporte Público (Tren lígero. Camón, 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 rehuso a contestar

Conocimiento sobre el Estres Por Calor

Ahora nos gustaría preguntarle sobre su experiencia con el calor y sobre las cosas que usted puede que sepa sobre las enfermedades relacionadas al color. No hay respuesta correcta o incorrecta. Para las sigientes 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 rehuso a contestar

Q10. Si su repuesta fue si, ¿Cúal 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 groupos
t) Internet
u) Redes Sociales
v) Vecino/amigo/ tercera persona
w) Poster/Volante
x) Otros, especifica_____
y) No lo sé
z) Se rehuso 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 rehuso a contestar

Q12. ¿Ha tiendo usted o algún… miembros de su hogar síntomas relacionados al calor o por las alturas 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 rehuso a contestar

Q13. ¿Cúal 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 rehuso 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 rehuso 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 vesces pero es raro
j) Nunca
k) No lo sé
l) Se rehuso a contester

Sistemas de Rrefrigeración 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) Arboles 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 rehuso 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 límite 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 electrcía o luz
i) No, no necesito asistencia para pagar la luz
j) No, no califico para recibir asistencia para pagar la luz o energía electrcía
k) No lo sé
l) No rehuso 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 informacíon 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 rehuso a contestar

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

a) Centro comercial
k) Iglesia
l) Centro comunitario
m) Biblíoteca
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 lígero, camón, 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 rehuso 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 rehuso a contestar

¡Gracias por tu tiempos!

APPENDIX VIII: OCTOBER SURVEY QUESTIONS – ENGLISH

Healthy Urban Environments (HUE) Initiatives

Survey Questions

Introduction

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. 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 us permission to give you this survey?

- O Yes
- O No

Did you take this survey in July?

- O Yes
- O No

Thank you for taking the time to participate.

End of Block: Introduction

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 (including yourself)?

_____

Q2 How many people living in your household are (should total the number of people listed in question 1):

_____ Less than 4 years old
_____ 5-19 years old
_____ 20-34 years old
_____ 35-49 years old
_____ 50-64 years old
_____ 65-74 years old
_____ 75 years and older
_____ Don't know
_____ Refused

Q3 How many people are employed in your household?

O Write in number: _____

O Refused to answer

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

O Yes

O No

O Don't know

O Refused

Q5 How many people living in your household are: (Should total the number of people in question 1):

_____ White
_____ Black or African American
_____ American Indian or Alaska Native
_____ Asian
_____ Native Hawaiian or Pacific Islander
_____ 2 or more races (mixed race)
_____ Don't know
_____ Refused

Q6 How many people living in your household are: (Should total the number of people in question 1):

_____ Hispanic
_____ Not Hispanic
_____ Don't know
_____ Refused

Q7 Does your household own or rent the trailer/mobile home?

- O Own
- O Rent
- O Don't know
- O Refused

Q8 What is the highest level of education achieved by a member of your household?

- O Primary School
- O Secondary School
- O High School graduate or GED
- O Some college
- O College graduate or more
- O Don't know
- O Refused

Q9 Place a (1) next to your household's primary means of transportation and a (2) next to your household's secondary means of transportation (what is used if the primary means of transportation is unavailable).

_____ Personal vehicle
_____ Walk
_____ Bike
_____ Public Transportation (light rail, bus, etc.)
_____ Taxi
_____ Agency Pick-up (dial-a-ride, shuttle, Veyo, etc.)
_____ Get a ride from family/friends
_____ Lyft/Uber
_____ Other
_____ Don't know
_____ Refused

Go To: Q10 If "Personal vehicle" is listed as primary or secondary means of transportation

Q10 If personal vehicle was selected, how many vehicles does the household have the ability to use (have access to and that work most of the time)?

O 1

O 2

O 3

O 4

O 5 +

End of Block: Demographic Questions

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.

Q11 Do you or other members of your household remember hearing weather warnings about excessive heat this summer?

- O Yes
- O No
- O Don't know
- O Refused

Skip To: Q13 If Q11 does not = Yes

Q12 If yes, select your **primary** source of information:

- O TV
- O Radio
- O Text Message
- O Automated Call
- O Local Newspaper
- O Church, mosque, synagogue, or another religious site
- O Internet
- O Social Media
- O Neighbor/Friends/Word of Mouth
- O Poster/Flyer
- O Other _____
- O Don't know
- O Refused

Q13 Can you tell me any health problems you or a household member can get from exposure to heat?

- O Yes
- O No

Go To: Q14 If Q13 = Yes

Q14 If yes, please specify what health problems a household member can get from exposure to heat?

_____

_____

_____

_____

_____

Q15 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?

O Yes

O No

O Don't know

O Refused

Go To: Q16 If Q15 = Yes

Q16 What was the outcome of this heat-related illness? (Select all that apply)

- ☐ Stayed home and did nothing
- ☐ Called 911
- ☐ Went to the Emergency Room
- ☐ Admitted to the hospital
- ☐ Death

Skip To: Q18 If Q16 does not = Stayed home and did nothing

Q17 If stayed home and did nothing, what was the reason? (Select all that apply)

- ☐ Household did not have medical insurance
- ☐ Household did not have transportation
- ☐ Could not afford an ambulance ride or medical care
- ☐ Do not have a doctor
- ☐ Symptoms improved so care was not needed (felt better)
- ☐ Was unsure of what to do or where to go
- ☐ Other _____

End of Block: Knowledge of Heat and Illness

Perceptions about Heat

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

Q18 Do you feel that your health is at risk because of high summer temperatures?

- O Yes
- O No
- O No opinion
- O Refused

Q19 At what temperature do you start to feel too hot inside your home?

- O Fahrenheit _____
- O Celsius _____
- O Don't know

Q20 Did you or members of your household ever feel too hot inside your home during this summer?

- O Always
- O Most of the time, but not always
- O Sometimes, but rarely
- O Never
- O Don't know
- O Refused

End of Block: Perceptions about Heat

Home Cooling Systems

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

Q21 Which of the following cooling systems does your household have? (Select all that apply)

- ☐ Central air conditioning
- ☐ Window air conditioning
- ☐ Swamp or evaporative cooler
- ☐ Fans
- ☐ Misters
- ☐ Trees or plants
- ☐ Other _____
- ☐ None

Q22 Which of the following was used to cool your household this summer?

- ☐ Central air conditioning
- ☐ Window air conditioning
- ☐ Swamp or evaporative cooler
- ☐ Fans
- ☐ Misters
- ☐ Trees or plants
- ☐ Other _____
- ☐ None

Skip To: Q24 If Q22 does not = Central air conditioning or Window air conditioning

Q23 If your household used central air conditioning/window air conditioning this summer, when did you use it?

- O Morning time ONLY
- O Afternoon ONLY
- O Evening time ONLY
- O Both, ALL day and ALL night

Q24 Which cooling system **works (is functional)** in your home? (Select all that apply)

- ☐ Central air conditioning
- ☐ Window air conditioning
- ☐ Electric fans (ceiling or portable)
- ☐ Swamp cooler
- ☐ Misters
- ☐ Other _____

Q25 Does anything limit you from using your cooling system when there are high temperatures?

- O Yes
- O No

Go To: Q26 If Q25 = Yes

Q26 What limits your household from using your cooling system? (Select all that apply)

- ☐ Cost of electricity
- ☐ Doesn't work
- ☐ Cost of repairs
- ☐ Noise
- ☐ Medical reasons
- ☐ Household doesn't have a cooling system
- ☐ Nothing prevents household from using it
- ☐ Other _____

End of Block: Home Cooling Systems

Access to Resources

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

Q27 Are you aware of community programs or services to help you with the **cost of utility bills**?

- ○ No
- ○ Yes, but I never used the service
- ○ Yes, I have used the service

Q28 Are you aware of community programs or services to help you with home **cooling system repairs**?

O No

O Yes, but I have not used the service

O Yes, I have used the service

Q29 If you have **NOT** utilized any community assistance programs or services, please select your reason(s):

- ☐ I am not interested in this program
- ☐ I don't have the contact information
- ☐ I am unable to complete the application due to not having a computer or access to a computer
- ☐ I am unable to complete the application due to not being able to understand it / it is in a different language
- ☐ I am unable to complete the application for some other reason (please specify) _____
- ☐ I have difficulty hearing on the phone
- ☐ I assumed I don't qualify for this program (if selected, please state why this assumption was made) _____
- ☐ I was told I don't qualify for this program
- ☐ It is a complicated process
- ☐ I was not aware of these services
- ☐ Other _____

Q30 Have you or a member of your household ever applied for these **utility assistance programs (cost of utility bills or for cooling system repairs)?**

- O Yes
- O No, I was not aware of any utility assistance programs
- O No, I did not need utility assistance
- O No, I assumed I did not qualify for utility assistance
- O No, I was told I did not qualify for utility assistance
- O Don't know
- O Refused

End of Block: Access to Resources

Neighborhood Resources

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

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

- O Yes
- O Sometimes
- O No
- O Refused

Skip To: Q34 If Q31 = No

Q32 Where do you or members of your household go to cool off? (Select all that apply)

- ☐ Mall
- ☐ Church, mosque, synagogue, or another religious site
- ☐ Community center
- ☐ Library
- ☐ Shelter
- ☐ Cooling center
- ☐ Movie theater
- ☐ Friends/Neighbors
- ☐ Supermarket
- ☐ Other _____

Q33 How does your household normally travel to the air-conditioned place? (Select all that apply)

- ☐ Personal vehicle
- ☐ Walk
- ☐ Bike
- ☐ Public transportation (light rail, bus, etc.)
- ☐ Agency Pick-up (dial-a-ride, shuttle, Veyo, etc.)
- ☐ Get a ride from family/friends
- ☐ Lyft/Uber
- ☐ Other _____

Q34 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)**?

- ○ No
- ○ Yes, but I never used the service
- ○ Yes, I have used the service

Go To: Q35 If Q34 = No or Yes, but I never used the service

Q35 If you are unaware of or have not used a Cooling Center, why not? (Select all that apply)

- ☐ I was unaware of the service
- ☐ I don't have a way to get there (no transportation)
- ☐ It is too far away
- ☐ I fear being unwelcome
- ☐ I fear being asked to show my ID
- ☐ Other (please specify) _____

End of Block: Neighborhood Resources

COVID-19 Questions

Q36 How is COVID-19 affecting your household's daily life? (Select all that apply)

- ☐ Household member lost a job
- ☐ Job hours were reduced
- ☐ Household member was diagnosed with COVID-19
- ☐ Household member was hospitalized due to COVID-19
- ☐ Household member passed away from COVID-19
- ☐ Unable to provide food for family
- ☐ Unable to pay my rent/mortgage
- ☐ Unable to pay monthly utilities
- ☐ Phone service cut
- ☐ Unable to provide/afford childcare
- ☐ Unable to help my children with their school
- ☐ Other _____
- ☐ COVID-19 has not affected my household
- ☐ Refused

Q37 How is COVID-19 affecting you personally? (Select all that apply)

- ☐ I feel anxious
- ☐ I fear getting sick
- ☐ I feel lonely
- ☐ I can't sleep
- ☐ Other _____
- ☐ COVID-19 is not affecting me personally

Q38 Has your household received any assistance during the COVID-19 pandemic?

- O Yes
- O No

Skip To: Q41 If Q38 = No

Q39 What type of assistance did your household receive? (Select all that apply)

- ☐ Utility assistance
- ☐ Rent assistance
- ☐ Phone service assistance
- ☐ Medical bill assistance
- ☐ Unemployment assistance
- ☐ Transportation assistance
- ☐ Food assistance
- ☐ Supply assistance (gloves, hand sanitizer, face masks, cleaning supplies, etc.)
- ☐ Medical care
- ☐ Educational materials
- ☐ Other (please specify) _____

Q40 Who provided the assistance?

_____

_____

_____

_____

_____

End of Block: COVID-19 Questions

Resources and Potential Solutions

Q41 Maricopa County provided you with materials in July, did you find these materials helpful?

O Yes

O No

O I did not receive the materials in July - I am a new participant

Go To: Q42 If Q41 = Yes

Q42 Which of these materials did you find the most helpful? (Rank these materials from 1-, with 1 being the most helpful)

_____ Community Survey - MCDPH (Maricopa County Department of Public Health) (Spanish & English)
_____ Heat Deaths in Maricopa County 2006-2019 - MCDPH (Spanish & English)
_____ Heat Kills in Maricopa County infographic - MCDPH (Spanish & English)
_____ Heat Deaths in Mobile Homes infographic - MCDPH (Spanish & English)
_____ Frequently Asked Questions (FAQ) About Heat - CDC (Spanish & English)
_____ Climate Change and Extreme Heat infographic - CDC (Spanish & English)
_____ Top 10 Tips for Staying Safe in the Arizona Heat - MCDPH (Spanish & English)
_____ Stay Safe / Signs of Heat Illness card - MCDPH (Spanish & English)
_____ Available Resources by City - MCDPH (Spanish & English)
_____ Resources by Provided Services - MCDPH (Spanish & English)

Q43 Did you share any of the information or materials provided during this project with other people? (Select all that apply)

- ☐ No
- ☐ Yes, with friends
- ☐ Yes, with family members
- ☐ Yes, with neighbors
- ☐ Yes, with coworkers or people I work with
- ☐ Yes, other (please specify) _____

Q44 Please write any additional comments you may have.

_____

_____

_____

_____

_____

Q45 What tools, resources, or services would be most helpful in ensuring that you and your household have knowledge of heat and heat-related illness?

_____

_____

_____

_____

_____

Q46 What would be most helpful to you and your household when assistance is needed to manage health conditions related to extreme heat?

_____

_____

_____

_____

_____

Q47 What would be most helpful to keep your home cool during the extreme heat?

_____

_____

_____

_____

_____

Q48 What would increase you and your household's use of home cooling systems, utility assistance programs, or cooling centers?

_____

_____

_____

_____

End of Block: Resources and Potential Solutions

Thank you for your time!

APPENDIX IX: OCTOBER SURVEY QUESTIONS – SPANISH

Iniciativas de entornos urbanos saludables (HUE)

Preguntas de la encuesta - español

Introducción

El Departamento de Salud Pública del Condado de Maricopa está aprendiendo sobre las necesidades de los residentes que viven en casas prefabricadas y casas rodantes cuando hace calor en Arizona. Los resultados de esta encuesta nos ayudarán a saber si los residentes conocen y utilizan los servicios y recursos comunitarios relacionados con el calor. Su participación en este proyecto es completamente voluntaria. Puede optar por no participar o dejar en blanco cualquier pregunta que no desee responder. Todas las respuestas serán confidenciales. Los resultados de esta encuesta solo se informarán como una respuesta total (sin resultados individuales). Si acepta participar en este proyecto, responda las preguntas de la encuesta lo mejor que pueda.

¿Nos da permiso para hacer esta encuesta?

O Si.

O No.

¿Realizó esta encuesta en Julio?

O Si.

O No.

¡Gracias por su tiempo para participar!

End of Block: Introducción

Preguntas demográficas

Primero, nos gustaría hacerle algunas preguntas generales sobre su familia y su hogar. Responda por todos los miembros de su hogar.

Q1 ¿Cuántas personas viven en su hogar? (incluyéndose a usted mismo)

_____

Q2 ¿Cuántas personas viven en su hogar? (debe sumar el número de personas en la pregunta uno):

_____ menos de 4 años.
_____ 5-19 años.
_____ 20-34 años
_____ 35-49 años.
_____ 50-64 años.
_____ 65-74 años.
_____ 75 años y mas.
_____ No lo se.
_____ Rechazado.

Q3 ¿Cuántas personas viven en su hogar?

O escribe el número _____

O Rechazado.

Q4 ¿Hay algún adulto en su casa que no habla inglés?

O Si.

O No.

O No lo se.

O Rechazado.

Q5 ¿Cuántas personas viven en su hogar?: (debe sumar el número de personas en pregunta uno)

_____ Blanco.
_____ Afro-Americano
_____ Indio americano o Nativo de Alaska
_____ Asiático.
_____ Isleño, nativo hawaiano o pacífico.
_____ Dos o mas razas.
_____ No se.
_____ Rechazado.

Q6 ¿Cuántas personas viven en su hogar? (debe sumar el número de personas en pregunta uno)

_____ Hispanic
_____ No Hispanic
_____ No lo sé.
_____ Rechazado.

Q7 ¿Usted paga renta o es propietario?

- O Propietario.
- O alquila.
- O No lo sé.
- O Rechazado.

Q8 ¿Cuál es el nivel más alto de educación alcanzado por un miembro de su hogar?

- O escuela Primaria.
- O escuela secundaria.
- O Graduado de secundaria o GED.
- O Alguna educación superior.
- O Graduado Universitario o más.
- O No lo sé.
- O Rechazado.

Q9 Coloque un (1) junto al medio de transporte principal de su hogar y un (2) al lado del medio de transporte secundario de su hogar. (segunda opción que usa si el medio de transporte principal no está disponible).

_____ vehículo personal.
_____ caminar.
_____ bicicleta.
_____ transporte público.
_____ taxi.
_____ recogida por agencia (marcar un viaje, transporte, VEYO, etc.)
_____ Obtener un viaje de familiares / amigos.
_____ LYFT/UBER.
_____ Otro.
_____ No lo sé.
_____ Rechazado.

Skip To: Q10 If Q9 [vehículo personal.] >= 1

Q10 Si seleccionó que tiene un vehículo personal, ¿cuántos vehículos tiene disponibles para usar en su hogar (a los que tiene acceso y que funcionan la mayor parte del tiempo)?

O 1

O 2

O 3

O 4

O 5 +

End of Block: Preguntas demográficas

Conocimiento del calor y las enfermedades.

Ahora, nos gustaría preguntarle sobre su experiencia con el calor y otras cosas que quizás sepa sobre las enfermedades relacionadas con el calor. No hay respuesta correcta o incorrecta. Para las

siguientes preguntas, estaremos preguntando sobre eventos que ocurrieron durante este verano, que es de mayo a julio.

Q11 ¿Usted u otros miembros de su hogar recuerdan haber escuchado advertencias meteorológicas sobre el calor excesivo en este verano?

- O sí.
- O no.
- O no lo sé.
- O rechazado.

Ignore Q12 si sen la Q11 fue negativa

Q12 En caso afirmativo, seleccione su principal fuente de información:

- O televisión.
- O radio.
- O mensaje de texto.
- O llamada automatizada.
- O periódico local.
- O Iglesia, mezquita, sinagoga u otro lugar religioso.
- O internet.
- O redes sociales.
- O Vecinos / amigos / boca a boca.
- O póster / volante.
- O otro _____
- O no lo sé.
- O rechazado.

Q13 ¿Puede informarme sobre algún problema de salud que usted o un miembro de su hogar padecieron debido a la exposición del calor?

- O sí.
- O no.

Ignore la Q14 Si la Q13 fue negativo.

Q14 En caso afirmativo, especifique qué problemas de salud puede tener un miembro del hogar debido a la exposición del calor.

_____

_____

_____

_____

_____

Q15 ¿Usted o alguien en su hogar ha tenido síntomas este verano relacionados con el calor o las altas temperaturas, como calambres en las piernas, boca seca, mareos, fatiga, latidos cardíacos rápidos o alucinaciones?

O sí.

O no.

O no lo sé.

O rechazado.

Ignore la Q16 Si la Q15 fue negativa.

Q16 ¿Cuál fue el resultado de esta enfermedad relacionada con el calor? (Seleccione todas las que correspondan)

- [ ] Se quedó en casa y no hizo nada.
- [ ] llamar al 911.
- [ ] Fue a urgencias.
- [ ] ingresado en el hospital.
- [ ] muerte.

Ignore la Q17 si, end la Q16 no se quedó en casa y no hizo nada.

Q17 Si se quedó en casa y no hizo nada, ¿cuál fue la razón? (Seleccione todas las que correspondan)

- [ ] No tenía seguro médico.
- [ ] No tenía transporte.
- [ ] No podía pagar un viaje en ambulancia o atención médica.
- [ ] No tenía doctor.
- [ ] Los síntomas mejoraron, por lo que no se necesitó atención. (me sentí mejor)
- [ ] No estaba seguro de qué hacer ni adónde ir.
- [ ] Otro _____

End of Block: Conocimiento del calor y las enfermedades.

Percepciones sobre el calor.

Estas preguntas tratan sobre los pasos que puede tomar cuando hace calor afuera.

Q18 ¿Siente que su salud corre peligro por las altas temperaturas del verano?

- O sí.
- O no.
- O sin opinión.
- O rechazado.

Q19 ¿A qué temperatura empieza a sentir demasiado calor dentro de su casa?

- O Fahrenheit _____
- O Centigrados _____
- O no lo sé.

Q20 ¿Alguna vez usted o algún miembro de su hogar sintieron demasiado calor dentro de su casa este verano?

- O siempre.
- O la mayor parte del tiempo, pero no siempre.
- O a veces, pero raramente.
- O nunca
- O no lo sé.
- O rechazado.

End of Block: Percepciones sobre el calor.

Sistemas de refrigeración para el hogar.

Estas preguntas son sobre qué tipo de sistemas de enfriamiento tiene en casa.

Q21 ¿Cuáles son los siguientes sistemas de refrigeración que tiene su hogar? (Seleccione todas las que correspondan)

- ☐ aire acondicionado central.
- ☐ aire acondicionado de ventana.
- ☐ pantano o enfriador evaporativo.
- ☐ ventiladores.
- ☐ nebulizadores de agua.
- ☐ árboles o plantas.
- ☐ otro _____
- ☐ ninguno.

Q22 ¿Cuál de los siguientes se usó para enfriar su hogar este verano?

- ☐ aire acondicionado central.
- ☐ aire acondicionado de ventana.
- ☐ pantano o enfriador evaporativo.
- ☐ ventiladores.
- ☐ nebulizadores de agua.
- ☐ árboles o plantas.
- ☐ otro _____
- ☐ ninguno.

Saltar a: Q24 Si en la Q22 no contesto aire acondicionado central o de ventana.

Q23 Si su casa usó aire acondicionado central / aire acondicionado de ventana este verano, ¿cuándo lo usó?

- O Solo por la mañana.
- O Solo por la tarde.
- O Solo por la tarde.
- O Ambos, todo el día o toda la noche.

Q24 ¿Qué sistema de refrigeración funciona (sirve) en su hogar? (Seleccione todas las que correspondan)

- ☐ aire acondicionado central.
- ☐ aire acondicionado de ventana.
- ☐ ventiladores eléctricos.
- ☐ enfriador de pantano.
- ☐ nebulizadores de agua.
- ☐ otro _____

Q25 ¿Hay algo que limite el uso de su sistema de refrigeración a altas temperaturas?

- O si
- O no

continúe la Q26 Si la Q25 fue Si.

Q26 ¿Qué impide que en su hogar utilice su sistema de refrigeración? (Seleccione todas las que correspondan)

- ☐ costo de la electricidad.
- ☐ no funciona.
- ☐ costo de las reparaciones.
- ☐ ruido.
- ☐ razones médicas.
- ☐ la casa no tiene sistema de enfriamiento.
- ☐ nada impide que los hogares lo usen.
- ☐ otro _____

End of Block: Sistemas de refrigeración para el hogar.

Acceso a recursos.

A continuación, nos gustaría saber si conoce los programas de asistencia y otros recursos comunitarios.

Q27 ¿Conoce los programas o servicios comunitarios que lo ayudarán con el costo de sus facturas de servicios públicos?

O no.

O si, pero nunca he usado el servicio.

O si, he usado el servicio.

Q28 ¿Conoce los programas o servicios comunitarios que lo ayudarán con las reparaciones del sistema de enfriamiento del hogar?

O no

O si, pero nunca he usado el servicio.

O lo sé, he usado el servicio.

Q29 Si NO ha utilizado ningún programa o servicio de asistencia comunitaria, seleccione su (s) motivo (s):

- ☐ no estoy interesado en el programa.
- ☐ no tengo la información de contacto.
- ☐ No puedo completar la solicitud porque no tengo una computadora. o no tengo acceso a una computadora.
- ☐ No puedo completar la solicitud porque no la entiendo / está en otro idioma.
- ☐ No puedo completar la solicitud por cualquier otro motivo (especificar) _____
- ☐ Tengo dificultad para escuchar por teléfono.
- ☐ Asumí que no califico para este programa (si fue seleccionado, indique por qué se hizo esta suposición) _____
- ☐ Me dijeron que no califico para este programa.
- ☐ Es un proceso complicado.
- ☐ no conocía estos servicios.
- ☐ otro _____

Q30 ¿Alguna vez usted o algún miembro de su hogar solicitó estos programas de asistencia de servicios públicos (costo de facturas de servicios públicos o reparaciones del sistema de enfriamiento)?

- O si
- O No, no conocía ningún programa de asistencia de servicio público.
- O No, no necesitaba ayuda con los servicios públicos.
- O No, asumí que no calificaba para recibir asistencia con los servicios públicos.
- O No, me dijeron que no calificaba para recibir asistencia con los servicios públicos.
- O no lo sé.
- O rechazado.

End of Block: Acceso a recursos.

Recursos del vecindario.

Ahora nos gustaría hacerle algunas preguntas sobre cómo maneja el calor.

Q31 Cuando hace mucho calor, ¿usted o los miembros de su hogar alguna vez salen de su casa y van a un lugar con aire acondicionado para refrescarse?

- O sí.
- O algunas veces.
- O no.
- O rechazado.

Saltar a: Q34 Si Q31 = no

Saltar a: Q34 Si Q31 = rechazado

Q32 ¿A dónde van usted o los miembros de su hogar para refrescarse? (Seleccione todas las que correspondan)

- ☐ centro comercial.
- ☐ Iglesia, mezquita, sinagoga u otro lugar religioso.
- ☐ Centro comunitario.
- ☐ biblioteca.
- ☐ refugio.
- ☐ centro de enfriamiento.
- ☐ cine.
- ☐ Amigos / vecinos.
- ☐ supermercado.
- ☐ otro _____

Q33 ¿Cómo viaja normalmente desde su hogar al lugar con aire acondicionado? (Seleccione todas las que correspondan)

- ☐ vehículo personal.
- ☐ caminar.
- ☐ bicicleta.
- ☐ Transporte público (tren ligero, autobús, etc.)
- ☐ Recogida en agencia (dial-a-ride, shuttle, Veyo, etc.)
- ☐ Obtenga un transporte de familiares / amigos.
- ☐ Lyft/Uber
- ☐ otro _____

Q34 ¿Conoce los centros de enfriamiento en el condado de Maricopa (lugares a los que una persona puede ir durante el día para enfriarse durante los días de advertencia de calor extremo)?

- O no.
- O Sí, pero nunca usé el servicio.
- O Sí, he utilizado el servicio.

Saltar a: Q35 Si Q34 = Sí, pero nunca utilicé el servicio.

Saltar a: Q35 Si Q34 = no.

Q35 Si no conoce o no ha utilizado un centro de enfriamiento, ¿por qué no? (Seleccione todas las que correspondan)

- ☐ no estaba al tanto del servicio.
- ☐ No tengo forma de llegar (sin transporte)
- ☐ está muy lejos.
- ☐ me temo que no soy bienvenido.
- ☐ Temo que me pidan que muestre mi identificación.
- ☐ otro _____

End of Block: Recursos del vecindario.

Preguntas sobre COVID-19

Q36 ¿Cómo afecta COVID-19 la vida diaria de su hogar? (Seleccione todas las que correspondan)

- [ ] Miembro del hogar perdió un trabajo.
- [ ] Le redujeron las horas de trabajo.
- [ ] Miembro del hogar fue diagnosticado con COVID-19.
- [ ] Miembro del hogar fue hospitalizado por COVID-19.
- [ ] Miembro del hogar falleció por COVID-19.
- [ ] No puede proporcionar comida a la familia.
- [ ] No puede pagar el alquiler / hipoteca.
- [ ] No puede pagar los servicios públicos mensuales.
- [ ] Corte del servicio telefónico.
- [ ] No puede proporcionar / pagar el cuidado de los niños.
- [ ] No puedo ayudar a mis hijos con la escuela.
- [ ] Otro _____
- [ ] COVID-19 no ha afectado mi hogar.
- [ ] rechazado.

Q37 ¿Cómo le afecta el COVID-19 personalmente? (Seleccione todas las que correspondan).

- ☐ me siento ansioso.
- ☐ Tengo miedo de enfermarme.
- ☐ me siento solo.
- ☐ no puedo dormir.
- ☐ Otro _____
- ☐ COVID-19 no me afecta personalmente.

Q38 ¿Su hogar ha recibido ayuda durante la pandemia de COVID-19?

- O sí.
- O no.

Skip To: End of Block If Q38 = no.

Q39 ¿Qué tipo de asistencia recibió su hogar? (Seleccione todas las que correspondan)

- ☐ Asistencia de servicios públicos.
- ☐ Asistencia de alquiler.
- ☐ Asistencia de servicio telefónico.
- ☐ Asistencia con la factura médica.
- ☐ Asistencia por desempleo.
- ☐ Asistencia de transporte.
- ☐ Asistencia alimenticia.
- ☐ Suministro de asistencia (guantes, desinfectante de manos, mascarillas, artículos de limpieza, etc.)
- ☐ Atención médica.
- ☐ Materiales educativos.
- ☐ Otro _____

Q40 ¿Quién brindó la asistencia?

_____

_____

_____

_____

_____

End of Block: Preguntas sobre COVID-19

Recursos y posibles soluciones.

Q41 El condado de Maricopa le proporcionó materiales en julio, ¿le resultaron útiles estos materiales?

O sí.

O no.

O No recibí los materiales en julio; Soy un nuevo participante.

Saltar a: Q42 Si Q41 = Sí.

Q42 ¿Cuál de estos materiales le resultó más útil? (Clasifique estos materiales de 1 a 1, siendo 1 el más útil)

_____ Encuesta comunitaria- MCDPH (español e inglés)
_____ Muertes por calor en el condado de Maricopa - MCDPH (español e inglés)
_____ El calor mata en el condado de Maricopa infografía- MCDPH (español e inglés)
_____ Infografía sobre muertes por calor en casas móviles - MCDPH (inglés y español)
_____ Preguntas frecuentes sobre el calor (FAQ) - CDC (inglés y español)
_____ Infografía sobre cambio climático y calor extremo - CDC (español e inglés)
_____ Los 10 mejores consejos para mantenerse seguro en el calor de Arizona - MCDPH (español e inglés)
_____ Manténgase seguro / Tarjeta de signos de enfermedad por calor - MCDPH (español e inglés)
_____ Recursos disponibles por ciudad - MCDPH (español e inglés)
_____ Recursos para los servicios prestados - MCDPH (español e inglés)

Q43 ¿Compartió información o materiales proporcionados durante este proyecto con otras personas? (Seleccione todas las que correspondan)

- ☐ no.
- ☐ si, con amigos.
- ☐ si, con familiares.
- ☐ si con vecinos.
- ☐ Sí, con compañeros de trabajo o personas con las que trabajo.
- ☐ Sí, otro (especificar) _____

Q44 Escriba cualquier comentario adicional que pueda tener.

_____

_____

_____

_____

_____

Q45 ¿Qué herramientas, recursos o servicios serían más útiles para garantizar que usted y su hogar estén informados sobre el calor y las enfermedades relacionadas con el calor?

_____

_____

_____

_____

_____

Q46 ¿Qué sería más útil para usted y su hogar cuando se necesita ayuda para manejar las condiciones de salud relacionadas con el calor extremo

_____

_____

_____

_____

_____

Q47 ¿Qué sería más útil para mantener su casa fresca durante el calor extremo?

_____

_____

_____

_____

_____

Q48 ¿Cuáles serían los beneficios para usted y su familia de utilizar los programas de asistencia de servicios públicos o el acceso a los centros de enfriamiento?

_____

_____

_____

_____

End of Block: Recursos y posibles soluciones.

¡Gracias por tu tiempo!

APPENDIX X: SURVEY RESULTS

Infographics

Comparison of July and October Survey Results Infographic

60% of October participants and 64% of July participants felt too hot inside their home most of the time or always

Most July (85%) and October (84%) participants reported that their households use their cooling system all day and all night (despite using these systems all day and all night, this does not mean these systems work well to cool off the household)

Over 2/3 of participants (both October and July) had limitations to using their home cooling systems

Only 10% of October participants were unaware of programs to help with cost of utility bills while 84% of July participants were unaware of these programs

Only 20% of October participants were unaware of programs to help with cost of cooling system repairs while 96% of July participants were unaware of these programs

The majority of both October and July participants had never applied to utility assistance programs, either due to being unaware of these programs or not qualifying for assistance

More October participants (37%) than July participants (31%) reported leaving their home to cool off

The majority of July participants (88%) were unaware of cooling centers while only 23% of October participants were unaware of cooling centers

The COVID-19 pandemic had household and personal effects on both July and October participants, such as loss of a job, unable to pay utilities, fear of getting sick, and increased anxiety

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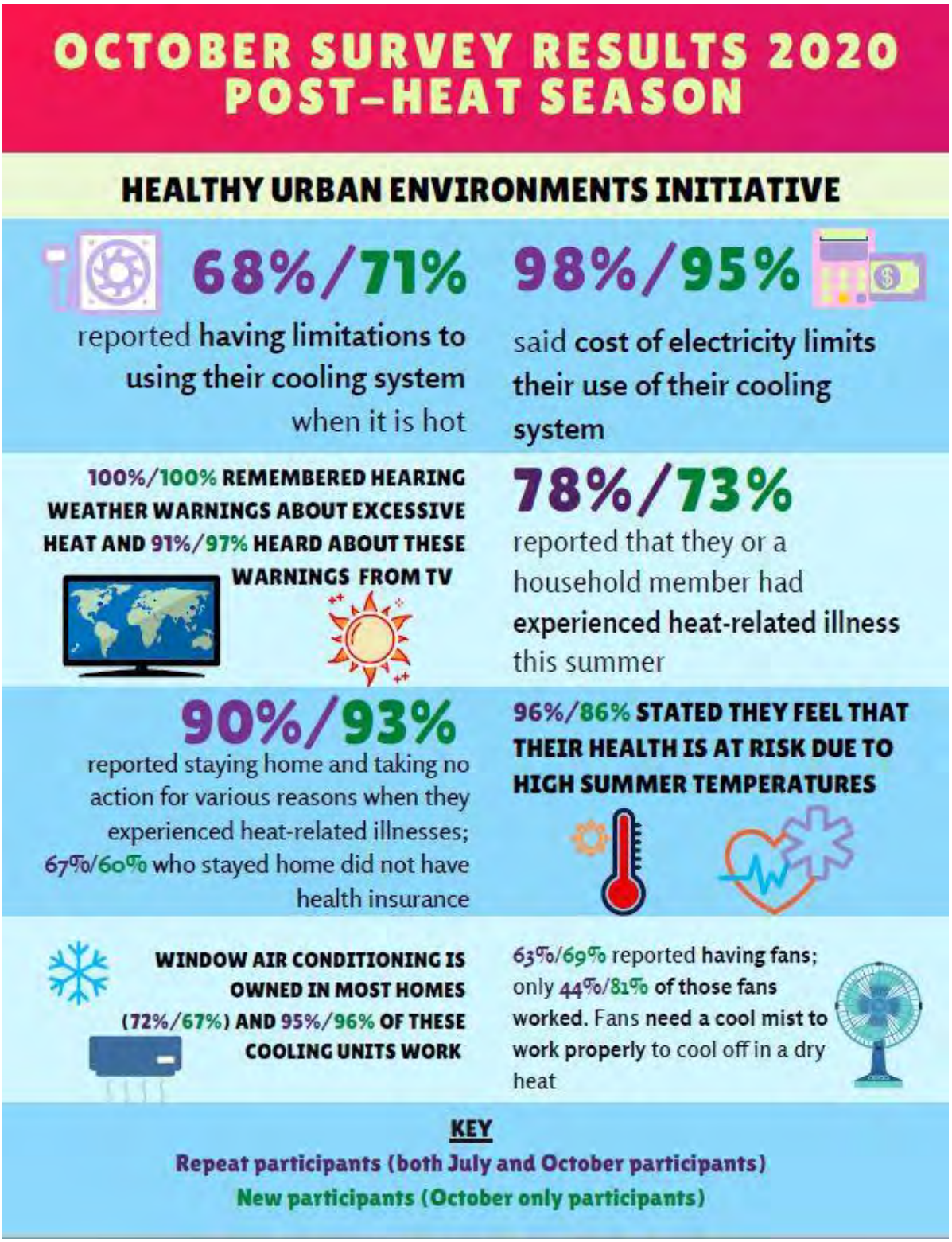
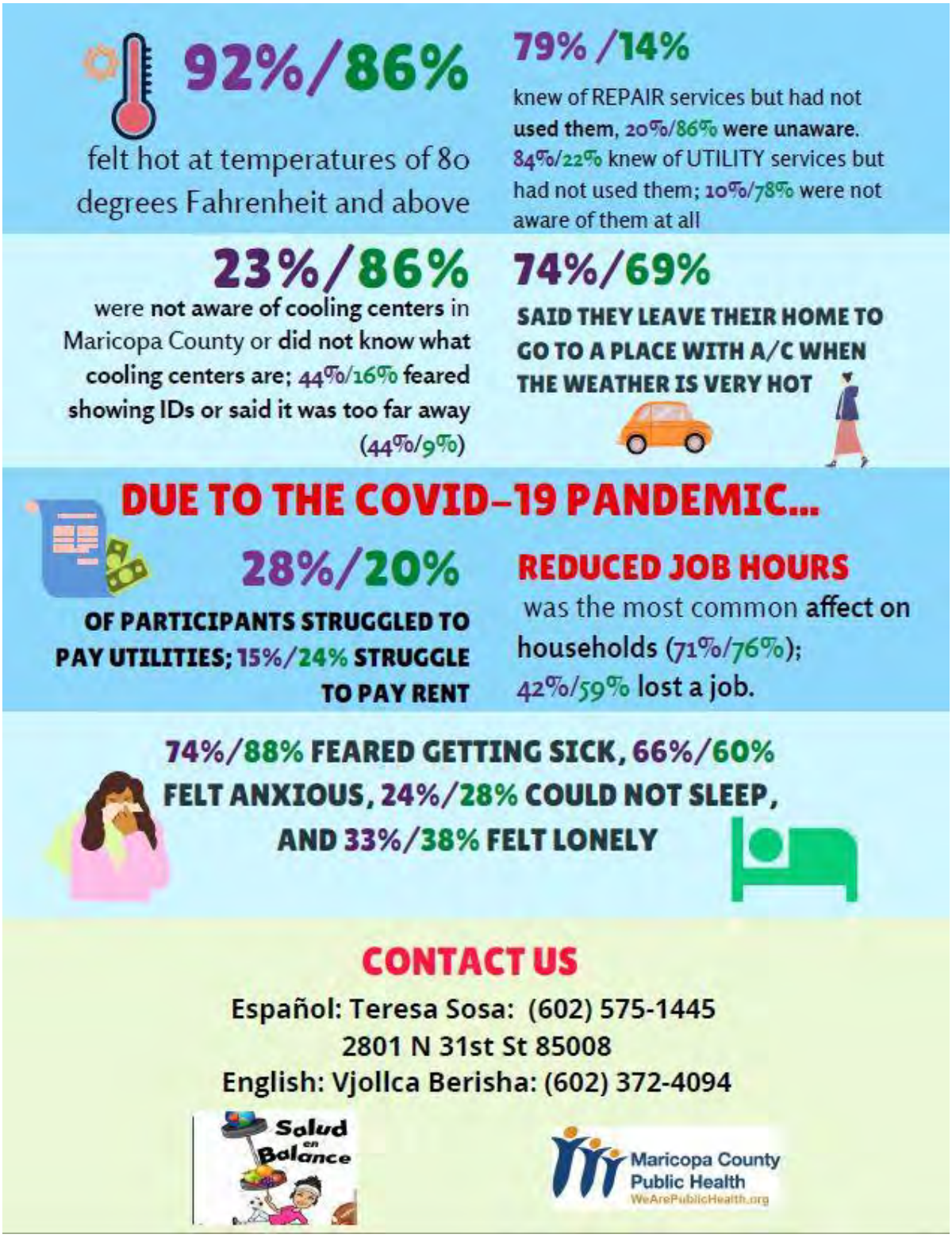
October Survey Results Infographics




92%/86%
felt hot at temperatures of 80 degrees Fahrenheit and above
79%/14%
knew of REPAIR services but had not used them, 20%/86% were unaware. 84%/22% knew of UTILITY services but had not used them; 10%/78% were not aware of them at all
23%/86%
were not aware of cooling centers in Maricopa County or did not know what cooling centers are; 44%/16% feared showing IDs or said it was too far away (44%/9%)
74%/69%
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%/20%
OF PARTICIPANTS STRUGGLED TO PAY UTILITIES; 15%/24% STRUGGLE TO PAY RENT
REDUCED JOB HOURS
was the most common affect on households (71%/76%); 42%/59% lost a job.
74%/88% FEARED GETTING SICK, 66%/60% FELT ANXIOUS, 24%/28% COULD NOT SLEEP, AND 33%/38% FELT LONELY
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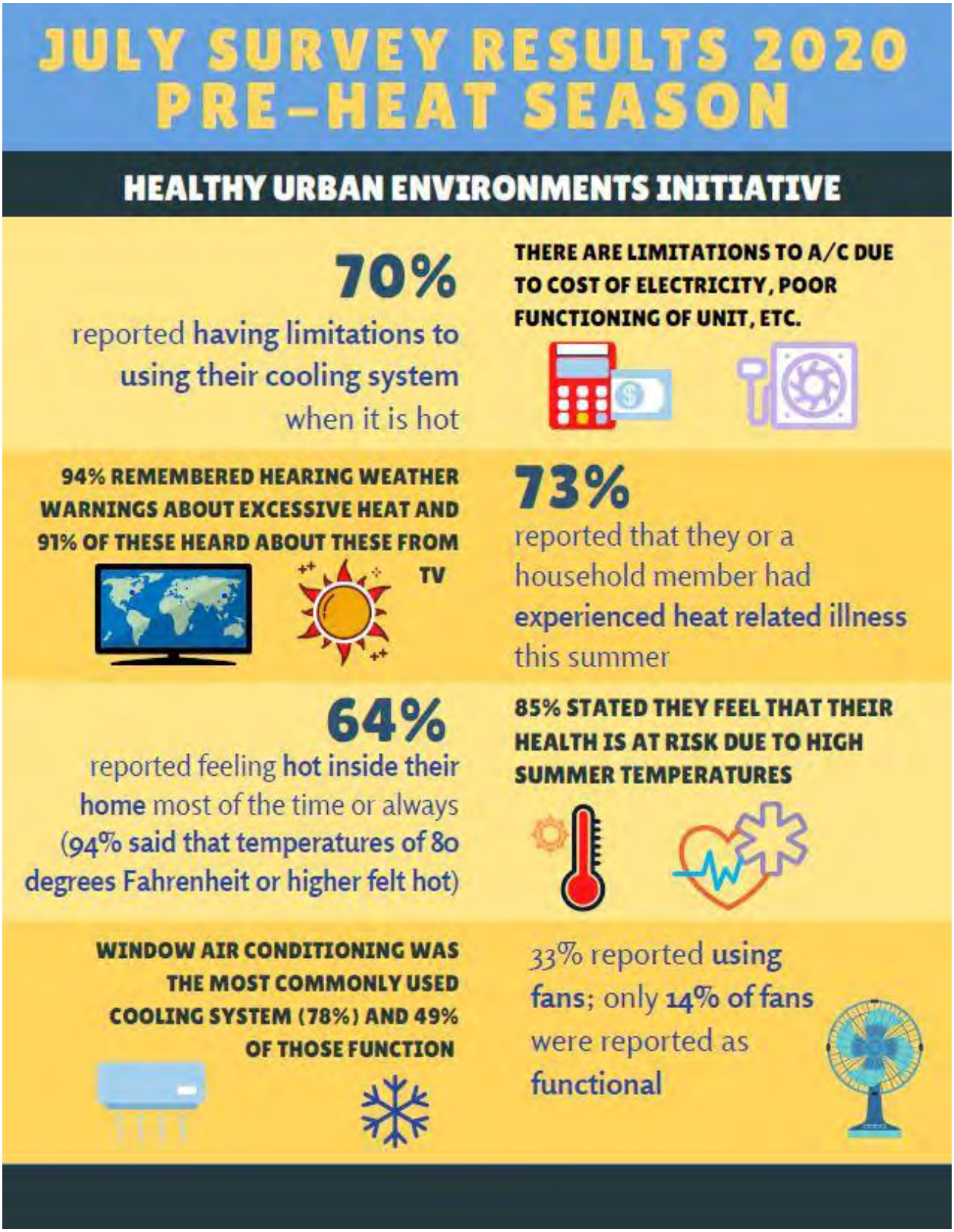
July Survey Results Infographic



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

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APPENDIX XI: CAUSAL MAP AND CHANGEABILITY MATRIX

Figure 1. ***Causal Map***

Figure 2. ***Changeability Matrix***

APPENDIX XII: RECOMMENDATIONS

Table 1. ***Recommendations Goal 1***

	Intrapersonal	Interpersonal	Organization	Policy	Recommendations
1) Increase use of cooling centers and utility assistance programs	• Increase awareness and provide information on cooling centers and utility assistance programs	• Providers work to increase awareness of cooling center and utility services and heat illness	• Address process barriers* to use of services	• Address policy related to qualification for programs and services	• Mobile clinic • Workshops • Case workers • Advocate for policy change

* (requiring documents, need for computer access, process that is complicated, ability to qualify for programs, need to transporation or location issues, lack of resources in Spanish)

Table 2. ***Recommendations Goal 2***

	Intrapersonal	Interpersonal	Organization	Policy	Recommendations
2) Increase use of medical services	• Increase awareness and provide information on heat illness symptoms • Provide information on when to seek medical help • Provide resources and phone numbers for medical help or ways to assess symptoms	• Providers emphasize the importance of getting help when experiencing heat illness • Neighbors and friends are aware of importance of medical help and spread the word and also spread the word of resources	• Address process barriers* to use of medical services	• Address policy related to qualification for medical services • Address policy related to need for health insurance to access medical services without high medical bills	• Mobile clinic • Workshops • Advocate for policy change

* (requiring documents, need for computer access, process that is complicated, ability to qualify for programs, need to transporation or location issues, lack of resources in Spanish)

Table 3. ***Recommendations Goal 3***

	Intrapersonal	Interpersonal	Organization	Policy	Recommendations
3) Reduce expenses related to repairs, cooling systems, and medical	• Have knowledge of how to respond to experiencing heat illness • Have knowledge of how to repair home cooling systems and mobile home	• Community members teach other about heat illness and how to respond to experiencing heat illness • Community members teach other about how to repair home cooling systems and mobile homes	• Address process barriers* to use of services • Implement programs for low-cost repair services • Ability to buy low-cost cooling systems and repair supplies	• Address policy related to qualification for services and programs • Address policy related to costs of electricity (reduce cost) • Address policy related to cost of medical services (reudce cost) • Address policy related to cost of repairs for cooling systems and mobile homes (reduce cost)	• Workshops • Advocate for policy change

* (requiring documents, need for computer access, process that is complicated, ability to qualify for programs, need to transporation or location issues, lack of resources in Spanish)

Figure 1. ***Recommendations and How They Address Each Goal***

Classes/Workshops

1. Increase awareness of cooling centers and utility assistance programs
2. Increase awareness and provide information regarding heat illness, when to seek medical help, and resources and phone numbers for medical help and ways to assess symptoms; develop community leaders to teach community members about heat illness, when to seek medical help, and resources and phone numbers for medical help and ways to assess symptoms
3. Provide information on how to respond to heat illness and when to seek medical help; provide information on how to repair cooling systems and mobile home; develop community leaders to teach community members about heat illness and how to respond to experiencing heat illness (possibly first aid); develop community leaders to teach community members how to repair home cooling systems and mobile homes

Mobile Clinic

1. Providers work to increase awareness of heat illness and available services; address barriers related to transportation, complicated process, etc.
2. Providers emphasize importance of help for heat illness emergencies; address process barriers (transportation, etc.); qualification & lack of health insurance not an issue to access medical services
3. *Similar to #2*

Case Workers

1. Address process barriers (complicated process, language barriers, etc.); case workers increase awareness of heat illness, cooling centers, and utility programs; community members trained to be peer case workers
2. Address medical use process barriers; community members trained to be peer case workers
3. *Help look for programs and apply (similar to #1)*

Advocate for policy change

1. Qualification for cooling center and utility programs and services
2. Qualification for medical services; lack of health insurance not an issue or barrier for use of medical services
3. Qualification for services (cooling centers, medical, utility, low-cost bills/cooling systems/repairs); reduced costs for utilities and medical services; reduced repair costs; reduce cooling system costs; help during heat season (reduce cost barriers during heat season)

Public Health Model for Recommendations: Social Ecological Model

There are four levels to the Social Ecological Model: 1) Intrapersonal, 2) Interpersonal, 3) Organization, and 4) Policy. Level one of the social ecological model **(intrapersonal) relies on the behavior learned by the individual through past experiences, beliefs, motivations, knowledge, etc**. This level of the social ecological model (SEM) relies on the individuals themselves to learn and be aware of their surroundings and resources. The **interpersonal level of the social ecological model describes the health behaviors within an individual that are influenced by social factors in their environment** (1). This can include influences from friends, family, neighbors, coworkers, health professionals, etc. This relies on the spread of communication for behavior changes in their community. The third level **(organization) relies on the communities and organizations surrounding them**. This level of the SEM is important in getting the message out through marketing, local organizations, or even larger organizations or corporations. The final level of SEM **(policy) can have a large-scale impact on individuals, communities, and cities alike** (2). This level can include stakeholders, governments, and large-scale companies with the ability to make policy changes. Changes in policies and/or laws can make great impacts on one's health. These all connect to create the social ecological model, which was designed to implement behavior change.

References:

1. Glanz K, Rimer BK. *Theory at a Glance: a Guide for Health Promotion Practice*. U.S. Dept. of Health and Human Services, National Cancer Institute; 2005.

2. Centers for Disease Control and Prevention (CDC). The Social-Ecological Model: A Framework for Prevention, (January 2021). Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. https://www.cdc.gov/violenceprevention/about/social-ecologicalmodel.html

APPENDIX XIII: LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

Table 1. ***Limitations and Directions for Future Research***

Limitation	Type of Limitation(s)	Explanation	Directions for Future Research/Alternatives
Survey skip logic ignored; not all survey responses made sense in the context of the question	Methods/instruments used to collect data	Since the surveys were administered over the phone and filled out on printed versions (as opposed to the digital version where the skip logic cannot be ignored), the skip logic on the surveys was sometimes ignored resulting in survey responses that did not always make sense. For the same reason, some of the survey participants answered questions in a way that did not make sense (for example, indicated they did not have a type of cooling system in one question but then indicated this type of cooling system works best for them in another question).	Administer the surveys in-person as opposed to over the phone (when able to – was not able to administer surveys in-person for this project due to the COVID-19 pandemic). Administer the surveys using tablets, computers, or other technology so that the surveys can be filled out using the digital version. Edit the survey to make the skip logic easier to follow and harder to miss. Edit the survey questions to make it less likely to receive responses that do not make sense.
Surveys used self-reported data by participants	Self-reported data	Survey responses were based on self-reported experiences and answers given by the participants (responses may be subjective). Responses had to be taken at face-value.	Add objective data measures to complement the self-reported data (self-reported, subjective data is not necessarily a bad thing so having both may strengthen the results).
Write-in and open-ended question survey responses were in a different language	Fluency in a language	To gain additional clarification or information from participants, some questions provided the opportunity for written-in responses. These written-in responses were often in Spanish, a different language than what the data analysis team is fluent in. A professional translator was not used to translate these responses so there may be	Use a professional translator to translate responses to open-ended questions that are in a different language than what the data analysis team is fluent in. Add someone fluent in the language of the community being surveyed to the data analysis team.

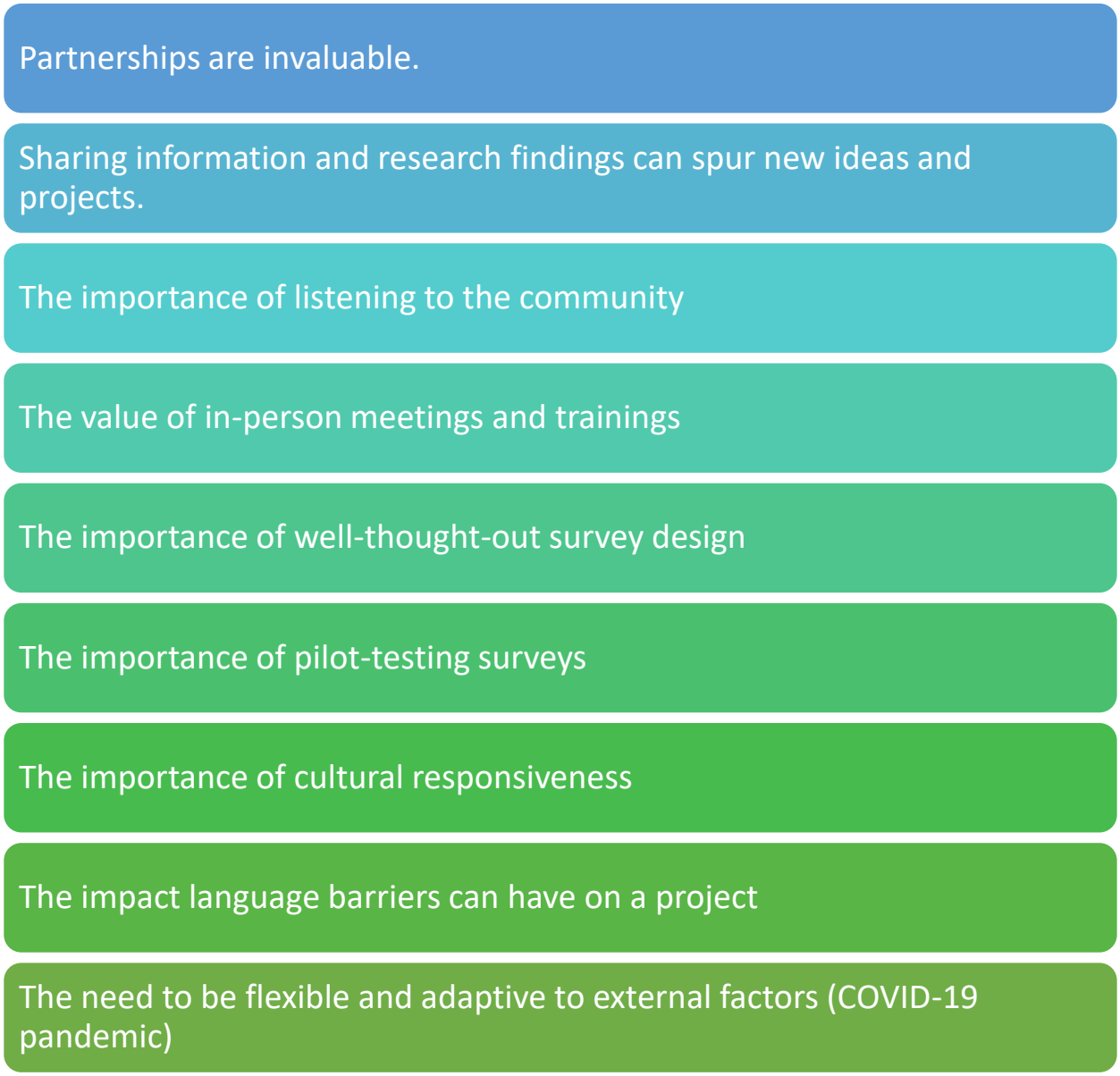
		some limitations to the accuracy of these translations.	Have the individuals administering the surveys translate the responses to open-ended questions as they record the responses.
Did not have qualitative data analysis software to use for analysis of responses to open-ended question	Analysis	Seeing as the data analysis team did not have access to a qualitative data analysis software, the data analysis team analyzed responses to open-ended questions by hand. The responses were coded into themes and then further categorized into meta-themes. The two data analysts verified each other's work throughout this process.	Repeat the qualitative data analysis process with qualitative data analysis software. Look into alternative ways to analyze qualitative data without software than what the data analysis team used for this project.
Only surveyed residents from one Maricopa County mobile home community – results are not necessarily generalizable to other Maricopa County mobile home communities	Sample selection	Since the project team only had the ability to survey a certain number of participants (due to funding to purchase participant incentives and due to the need for Community Health Workers to administer surveys), the team only surveyed one Maricopa County mobile home community. Because of this, the results obtained from these surveys may not necessarily be generalizable to other mobile home communities.	Repeat the data collection process in additional Maricopa County mobile home communities (a representative sample of Maricopa County mobile home communities). Conduct a literature review or obtain secondary data on additional Maricopa County mobile home communities to complement the primary data (survey data) obtained on the one Maricopa County mobile home community.
Unable to complete in-person trainings	Access Project methodology Research conducted during a global crisis	Due to the COVID-19 pandemic, the project team was unable to deliver Community Health Worker trainings in-person. This may have affected the impact and effectiveness of these trainings. This also affected the ability to build relationships with the Community Health Workers and Community Based Organization project partner.	Repeat the project (or at least the Community Health Worker trainings) when the COVID-19 pandemic no longer prevents these from being able to be conducted in-person. Look into alternative ways to effectively deliver trainings without doing so in-person.
Unable to administer surveys in-person	Access	Due to the COVID-19 pandemic, surveys were	Repeat the data collection/survey

	Project methodology Research conducted during a global crisis	unable to be administered in-person and were administered over the phone. This may have affected the participant and Community Health Worker's experience during the survey completion process. This in turn may have affected the survey responses.	administration process when surveys can be administered in-person (when the COVID-19 pandemic no longer prevents this).
Unable to frequently pick-up surveys and check filled-out surveys to ensure responses make sense	Access Project methodology Research conducted during a global crisis	Due to the COVID-19 pandemic, the data analysis team was unable to frequently pick-up filled out surveys and check if the responses make sense. Had the data analysis team been able to more frequently pick-up surveys as they were completed, potential errors in survey responses could have been caught earlier and possibly corrected.	Repeat the data collection/survey administration process when the surveys can be more frequently picked-up (when the COVID-19 pandemic no longer prevents this). Use alternative ways to more frequently receive completed surveys (for example, by having them mailed or by having them directly entered into Qualtrics, a web-based survey tool).
Short-staffed during different points of the project	Project process and staffing Research conducted during a global crisis	Due to the COVID-19 pandemic, some project staff were reassigned to COVID-19 roles and were unable to continue to dedicate time to the project. The project was short-staffed until additional staff were hired for the project. This affected project completion and the project's timeline.	Repeat the project once the COVID-19 pandemic is over or no longer affects the project process.
Project timeline different than planned	Project process and staffing Project methodology Research conducted during a global crisis	Due to the COVID-19 pandemic, the timeline of the project had to be adjusted and ended up being different than initially planned. The project's initial workshop and survey distribution were intended to occur during pre-heat season (April) but ended up occurring during heat season (July). This likely affected the impact the project had on the community	Repeat the project's workshops and toolkit distribution once the COVID-19 pandemic is over or no longer affects the project process so that these can occur during pre-heat season rather than once heat season has already started.

		members (project target population) as the information provided by the project was intended to help prepare the community members for heat season and provide resources to help eliminate heat illness, utility issues, and other problems during heat season.	

Appendix XIV: LESSONS LEARNED

Figure 1. ***Lessons Learned***



APPENDIX XV: HEAT TOOLKIT

a. Toolkit Contents:
   i. 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)
   ii. Heat Kills in Maricopa County Infographic – Maricopa County Department of Public Health (See *Figure 2. Heat Kills in Maricopa County Infographic* below)
   iii. 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)
   iv. Climate Change and Extreme Heat – Centers for Disease Control and Prevention Infographic (See *Figure 4. Extreme Heat Infographic (CDC)* below)
   v. 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)
   vi. Stay Safe and Know Signs of Heat Illness Card – Maricopa County Department of Public Health (See *Figure 6. Heat Illness and Safety Cards* below)
   vii. Cooling Centers/Hydration MAPs – Maricopa Association of Governments (MAG) (See *Figure 7. Map of Emergency Heat Relief and Cooling Centers* below)
   viii. Resources by Services Provided: Maricopa County Department of Public Health (See *Figure 8. List of Resources by Services Provided* below)
b. Survey (both Spanish and English versions):
   -See Appendix VI above for the July English survey
   -See Appendix VII above for the July Spanish survey
   -See Appendix VIII above for the October English survey
   -See Appendix IX above for the October Spanish survey

Figure 1. Heat Deaths in Maricopa County

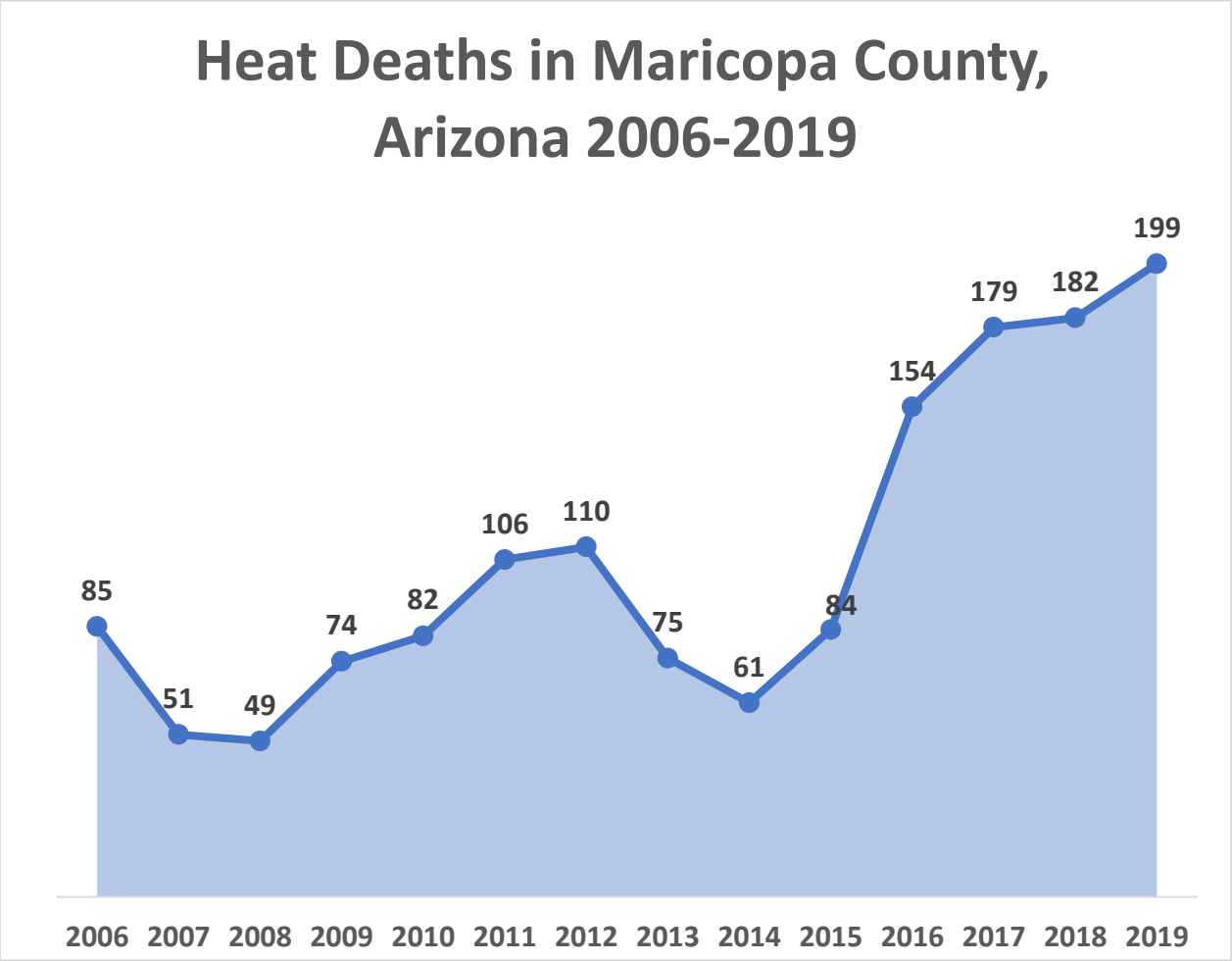


Figure 2. Heat Kills Infographic

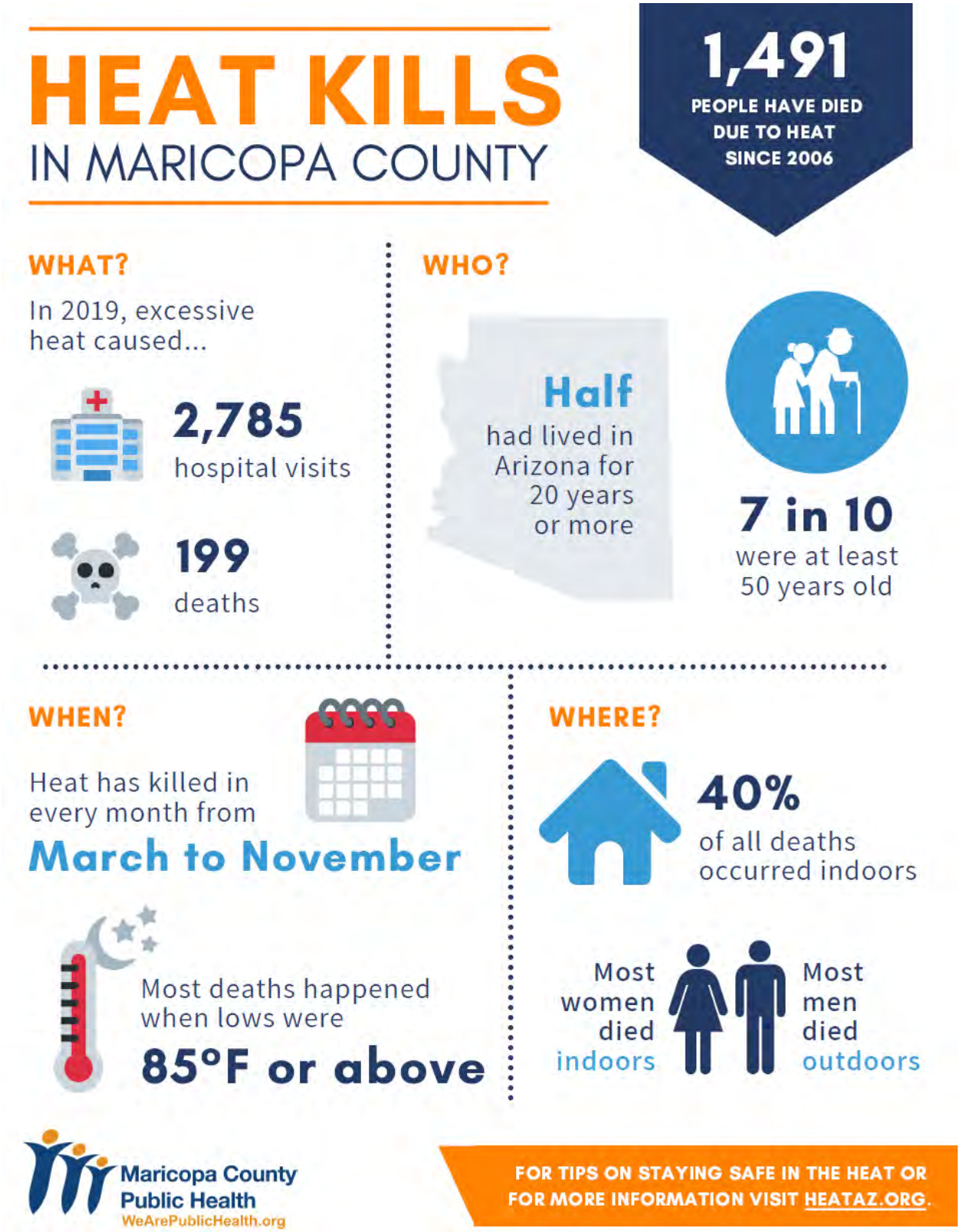


Figure 3. Heat Deaths in Mobile Homes

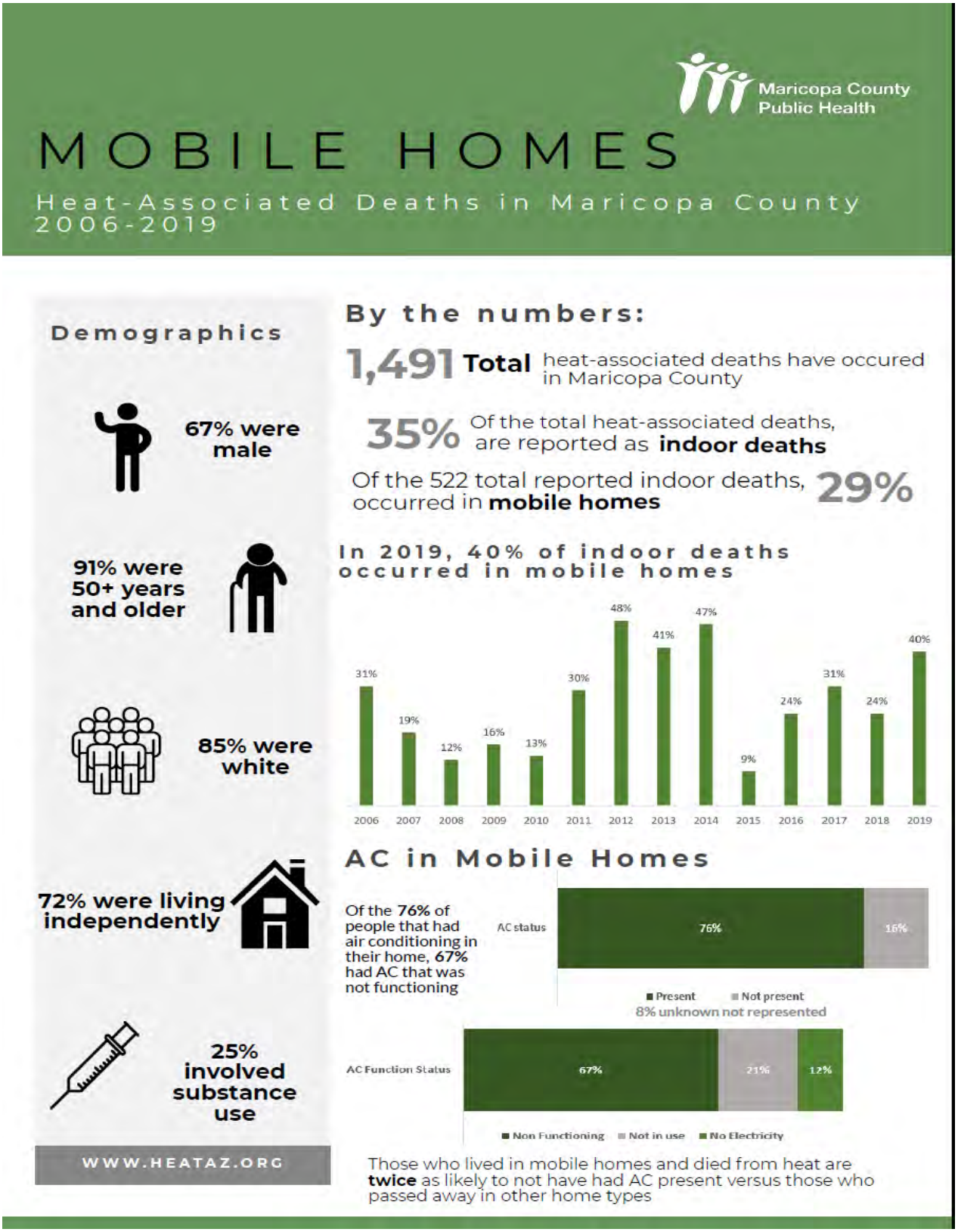


Figure 4. Extreme Heat Infographic (CDC)

Figure 5. Top 10 Tips for Staying Safe in Arizona Heat

Figure 6. Heat Illness and Safety Cards

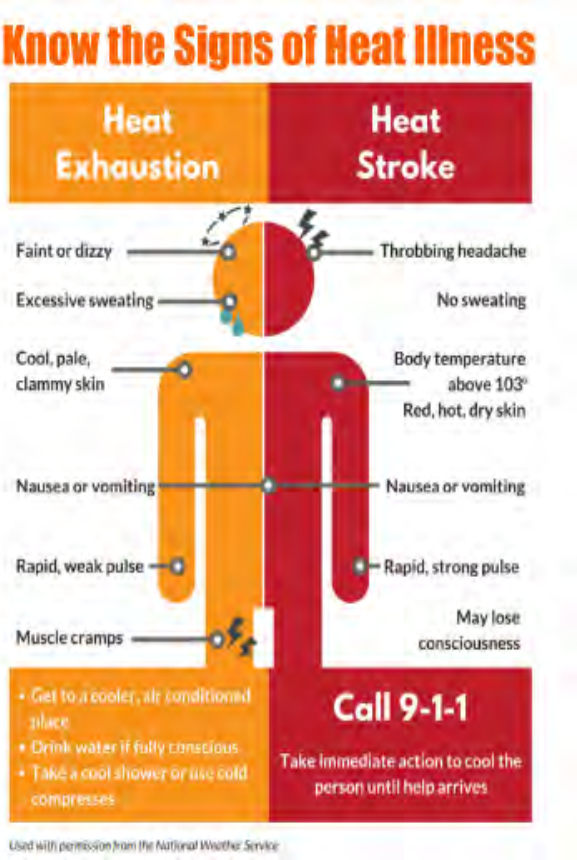
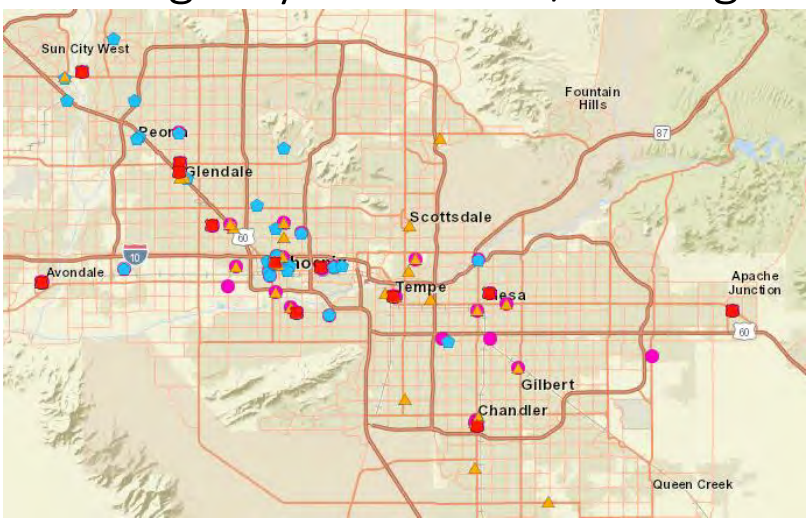


Figure 7. Map of Emergency Heat Relief and Cooling Centers

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 [3]

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

[3] 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