Southeast Florida Climate Compact: Workshop on Heat and Climate Change

From Heat Surveillance To Community Empowerment & Engagement

Climate and Health Program
Office of Epidemiology
Maricopa County Department of Public Health

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Heat is Public Health Concern in Maricopa County

One of the largest urban centers to experience the nation’s most extreme heat

| Environmental temperatures $\geq 100^\circ F$ | Start: mid-May  
End: 1st week October  
110 days (average)  
144 days – 2020 |
| Days where max. temp $\geq 110^\circ F (119^\circ F)$ | 26 days (average)  
53 days – 2020  
15 days (115°F) or higher |
| Days where min. temp $\geq 90^\circ F (95^\circ F)$ | 13 days (average)  
28 nights - 2020 |
Vision: “A healthy, safe and thriving community”

Mission: “To make healthy lives possible”

Guiding Principles: Accountability, Collaboration, Community, Equity, Maximum Impact
2015 – Present
Climate and Health Program

2006 - Heat Surveillance Program

DATA

Partnership
Collaboration
Funding
Connecting
Networking
MCDPH IMPLEMENTED A SYSTEM FOR TRACKING HEAT-ASSOCIATED DEATHS IN 2006

- Exceptionally high temperatures
- Media Reports:
  - “Many heat deaths may go uncounted”
  - “Heat deaths catch officials off-guard”
  - “Heat wave claims 18 lives in 5 days”
- No surveillance system for heat-associated deaths in place
Heat surveillance begins in May and continues through the end of October.
DATA SOURCES

1. Office of the Medical Examiner (OME)
2. Local Hospitals (ED and IPs) & HDD
3. Death Certificates (OVR)
4. Syndromic Surveillance Data (Essence Data)
5. Media Reports
**ICD-10 Codes for Heat Caused and Heat Related Deaths**

<table>
<thead>
<tr>
<th>Corresponding Definition</th>
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<tbody>
<tr>
<td>Exposure to excessive natural heat</td>
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<tr>
<td>Effects of heat and light</td>
</tr>
<tr>
<td>Environmental hyperthermia of newborn</td>
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**Key Phrases:**
- HEAT EXPOSURE
- ENVIRONM
- EXHAUSTION
- SUN
- HEAT STRESS
- HEAT STROKE
- HYPERTHERMIA

**Collected Info:**

- Demographic information (age, DOB, DOD, place of residence, years living in AZ, others)
- Location of injury and death (urban, rural, indoor, outdoors, others)
- Circumstances surrounding death (work/ recreational activity, working AC, ambient temperature, others)
- Multiple causes of death certification (underlying causes sequence and other contributory but not causal conditions)
- Medical Examiner findings
The Determining Source of Information to Classify the Cases is the **Death Certificate**
DEFINITION AND CLASSIFICATION

1. **Heat caused death** – death due directly to exposure to environmental heat (as mentioned in Part I of the Medical Cause of Death in the death certificate)

2. **Heat related death** - death due to other health condition or disease, to which heat exposure was a contributor (as mentioned in Part II of the Medical Cause of Death in the death certificate)

3. **Pending** - a suspect heat-associated death still being investigated

4. **Ruled Out** – death found not related to environmental heat; not mentioned anywhere on death certificate
Developing Heat Surveillance Program: 2006-2016

- **2006**: Implemented heat-associated death surveillance
- **2007-2011**: Heat-associated illness surveillance initiated using hospital discharge data
- **2012**: Revised surveillance by enhancing process via automation
- **2013**: Initiated retrospective chart review at OME to improve data quality / collection
- **2014**: Syndromic surveillance (ED and inpatient records)
- **2015**: Cooling Center Evaluation
- **2016**: Heat Vulnerability and Emergency Preparedness Needs Assessment
- **2016**: Survey of homebound individuals
Maricopa County had 1,814 heat-associated deaths from 2006 - 2020

12 Excessive Heat Events = 48 days with Excessive heat Warning

2,465 hospital visits
Fifty-two percent of heat-associated deaths occurred on days for which an excessive heat warning has been issued. (N=161)
Sixty-one percent of heat-associated deaths since 2006 have been classified as heat-caused (N=1,814)
AVERAGE DEATHS PER DAY FOR 2016 - 2020 CORRESPONDING TO MIN AND MAX TEMPS

- Max temp (100+) Min temp (range 90-94): 4.2
- Max temp (100+) Min temp (range 85-89): 1.9
- Max temp (100+) Min temp (range 80-84): 1.3
- Max temp (100+) Min temp (range 75-79): 0.7
- Max temp (100+) Min temp (range 70-74): 0.5
SOME COMMUNITY MEMBERS ARE AT HIGHER RISK OF HEAT-ASSOCIATED DEATH

6 in 10 were at least 50 years old

~30% of all heat deaths occurred indoors

Heat-Associated Death Rates

<table>
<thead>
<tr>
<th>Race</th>
<th>Rate</th>
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<tbody>
<tr>
<td>Native American</td>
<td>4.9</td>
</tr>
<tr>
<td>African American</td>
<td>5.3</td>
</tr>
<tr>
<td>White</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Certain races were disproportionately affected

63% had lived in Arizona for 20 years or more

76% of all heat deaths occurred among men

Heat Deaths by ZIP Code – Heat Story Map
HEATMAP OF INDOOR DEATHS BY POVERTY RATE (2006-2018)

Story Map About Heat: The Silent Killer
WHY ARE PEOPLE DYING INDOOR?
Air Conditioning Status of Indoor Heat Deaths (2016 -2020)

- Died in a “non-cooled” indoor environment
  - *274 lives or 27%
- Air conditioning present
  - 222 lives or 81%
  - A/C not working
    - 160 lives or 72%
  - A/C turned off
    - 41 lives or 18%
  - No apparent electricity
    - 12 lives or 5%
- No A/C
  - 39 lives or 14%
- *1% of cases are unknown
OF THE TOTAL 274 INDOOR DEATHS FROM 2016 TO 2020, 133 OF THEM OCCURRED IN A HOUSE (N=261).
From 2016-2020, there has been nearly a 140% increase in drug use related to heat deaths.
Living Situation: the Number Of Homeless People Affected By Heat-associated Deaths Has Increased From 2014 To 2020.
PROFILES OF HEAT ASSOCIATED DEATHS AMONG:

- Substance Use
- Living in Cars
- Living in Single Homes
- Living in Apartments or Condos
- Living in Mobile Homes
- Injured Indoor
- Injured Outdoor
- Homeless
- Female
- Individuals 50-64 Years Old
- Youth
- African Americans
- American Indians
- Asian Pacific Islanders
- Hispanics
Funding and Expanding Partnerships

Public Health Institute (2015-2016)

Bridging Climate Change and Public Health (BCCPH) Coalition

The Climate Change and Public Health Learning Collaborative for Urban Health Departments

BRACE GRANT: JUNE 2017
Strategic Plan for Climate and Health

✔ Identified 5 Strategic Directions (Action Team for each direction)

✔ Established Celebrating Success and Champions – Recognition Program

✔ Recognize Nominated Individuals, Organizations, Researcher, Business, and Youth (3rd year)

Program: MC Celebrating Success and Champions
Community Engagement in Mobile Home Community In Central Phoenix

- ASU Healthy Urban Environments Initiative Grant (2019-2020)
- Community Engagement through Community Health Workers (CHW)
- Two surveys administered (preheat season and post heat season)
- Provided Heat Toolkit and Posters with information about heat

Raising Awareness about Extreme Heat, Safety Tips, and Available Community Resources
Energy Insecurity And Public Health: Going Further Through Cross-sector Collaboration

Priorities:
1. Understand the experience and social distribution of energy insecurity among residents in Maricopa County
2. Develop a tool kit-Energy Insecurity Index (EII)-that will be utilized by stakeholders to identify vulnerable communities
3. Advance more collaborative policies and initiatives that increase access to affordable and reliable energy

South Phoenix Community: Unlimited Potential
Community Based Organization (CBO)

- Action Oriented
- Community Engagement
- Equity Focused
ENERGY BURDEN

67% have a SEVERE energy burden

ENERGY BURDEN: % of household income spent on energy bills

- 11+% - SEVERE: 67%
- 6-10% - HIGH: 24%
- 3-5% - MODERATE: 8%
- < 3% - LOW: 1%
## COVID-19 Affects on Household

<table>
<thead>
<tr>
<th>Situation</th>
<th>EI Survey (n=138)</th>
<th>HUE Survey (n=148)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job hours reduced</td>
<td>64%</td>
<td>73%</td>
</tr>
<tr>
<td>Household member was diagnosed with COVID</td>
<td>28%</td>
<td>46%</td>
</tr>
<tr>
<td>Difficulty paying monthly utilities</td>
<td>25%</td>
<td>39%</td>
</tr>
<tr>
<td>Household member lost a job</td>
<td>28%</td>
<td>49%</td>
</tr>
<tr>
<td>Unable to pay rent/mortgage</td>
<td>14%</td>
<td>18%</td>
</tr>
<tr>
<td>Unable to provide food for household</td>
<td>12%</td>
<td>19%</td>
</tr>
<tr>
<td>COVID-19 has not affected my household</td>
<td>1%</td>
<td>11%</td>
</tr>
<tr>
<td>Unable to help my children with their school</td>
<td>10%</td>
<td>12%</td>
</tr>
<tr>
<td>Household member was hospitalized from COVID</td>
<td>7%</td>
<td>5%</td>
</tr>
</tbody>
</table>

*Notes: The data shows the percentage of respondents who experienced each situation based on two surveys: EI Survey (n=138) and HUE Survey (n=148).*
Solutions Proposed by Residents

- **WORKSHOP on How to Maintain Mobile Homes and Cooling Systems**
  - Workshop Held on October 23, 2021

- Energy Insecurity Community Partners Responded Including:
  - Utilities (APS and SRP)
  - Foundation for Senior Living (FSL) Training Center
  - Solari, 2-1-1, Transportation Program
  - Public Health (Climate and Health and Built Environment Staff)
  - Unlimited potential, CBO
  - Salud en Balance, CBO

- **RESIDENTS** from South and Central Phoenix
RESOURCES

Story Map About Heat: The Silent Killer

Contact Information
- Aaron Gettel, Epidemiologist
- Tony Bishop, Epi Data Analyst
- Tianna Baker, Epi Data Analyst
- Vjollca Berisha, Epidemiologist

Bridging Climate and Public Health

heataz.org