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

Typical year:
- Environmental temperatures $\geq 100^\circ F$
  - Start: mid-May
  - End: 1\textsuperscript{st} week October
  - 110 days (average)
  - 144 days – 2020

- Days where max. temp $\geq 110^\circ F$ (119°F)
  - 26 days (average)
  - 53 days – 2020
  - 15 days (115°F) or higher

- Days where min. temp $\geq 90^\circ F$ (95°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
MCDPH HEAT SURVEILLANCE SYSTEM

Heat surveillance begins in May and continues through the end of October

DATA COLLECTION

CASE INVESTIGATION & ANALYSIS

CASE CLASSIFICATION

WEEKLY REPORT GENERATION & DISSEMINATION
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>
<th>Key Phrases:</th>
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<tbody>
<tr>
<td>Exposure to excessive natural heat</td>
<td>• HEAT EXPOSURE</td>
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<tr>
<td>Effects of heat and light</td>
<td>• ENVIRONM</td>
</tr>
<tr>
<td>Environmental hyperthermia of newborn</td>
<td>• EXHAUSTION</td>
</tr>
<tr>
<td></td>
<td>• SUN</td>
</tr>
<tr>
<td></td>
<td>• HEAT STRESS</td>
</tr>
<tr>
<td></td>
<td>• HEAT STROKE</td>
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<td>• HYPERTHERMIA</td>
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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
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**: Heat Vulnerability and Emergency Preparedness Needs Assessment
- **2016**: Cooling Center Evaluation
- **2016**: Survey of homebound individuals

Maricopa County Public Health
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.
- 63% had lived in Arizona for 20 years or more.
- 76% of all heat deaths occurred among men.

Certain races were disproportionately affected.

<table>
<thead>
<tr>
<th>Race</th>
<th>Heat-Associated Death 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>

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

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)
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: % of household income spent on energy bills

- 11+% - SEVERE: 67%
- 6-10% - HIGH: 24%
- 3-5% - MODERATE: 8%
- < 3% - LOW: 1%

67% have a SEVERE energy burden
<table>
<thead>
<tr>
<th>Issue</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>
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</table>
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