

# Climate Change and Health in Philadelphia

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DVRPC Climate Adaptation Forum  
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# Presentation Overview

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Background

Climate hazards and health impacts in Philadelphia

PDPH planning and outreach activities

# Climate Change and Health

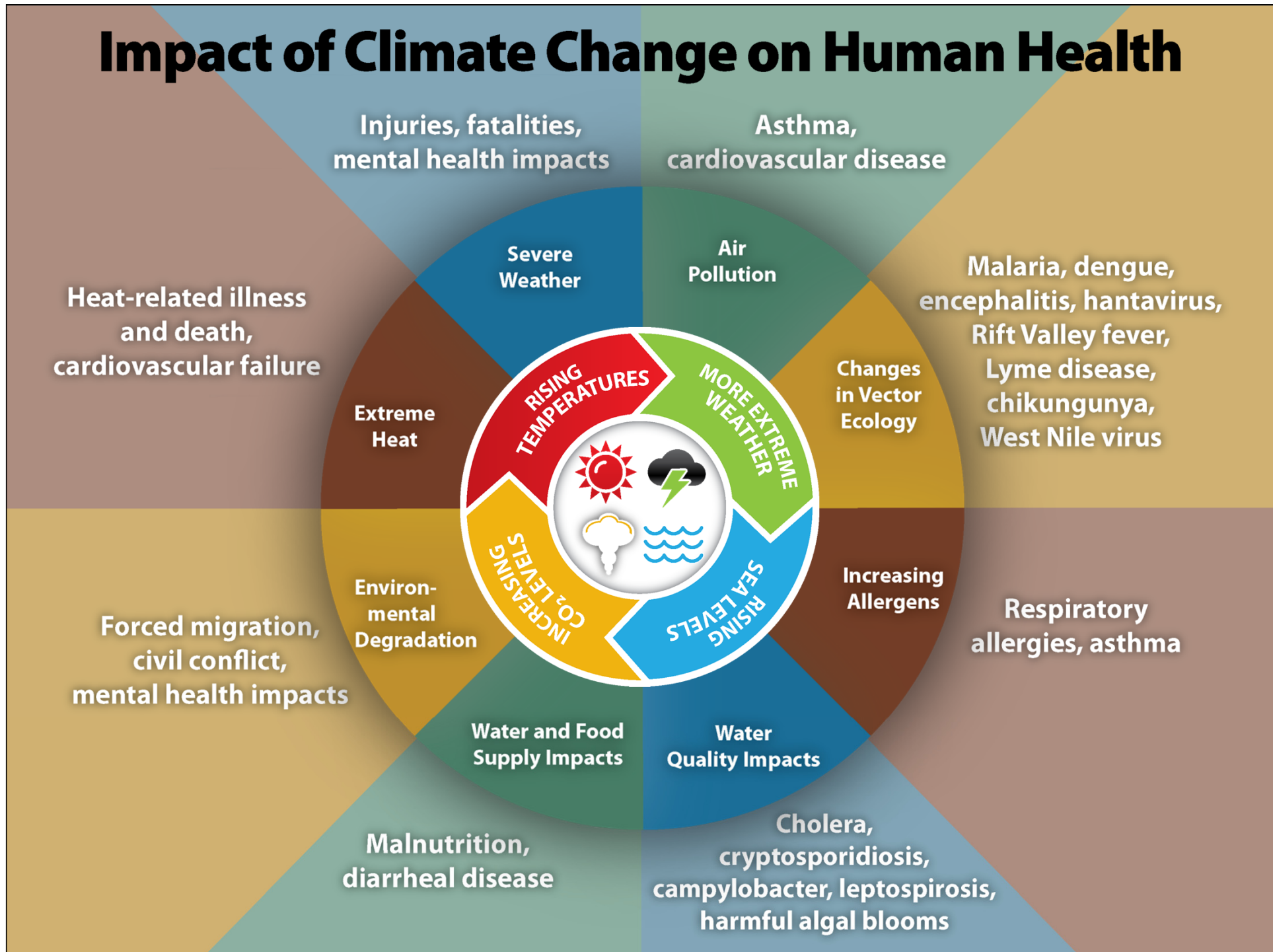
Climate change is a public health emergency

Climate change will disproportionately affect people who are already vulnerable to public health emergencies

Climate change will introduce new problems to new areas and populations

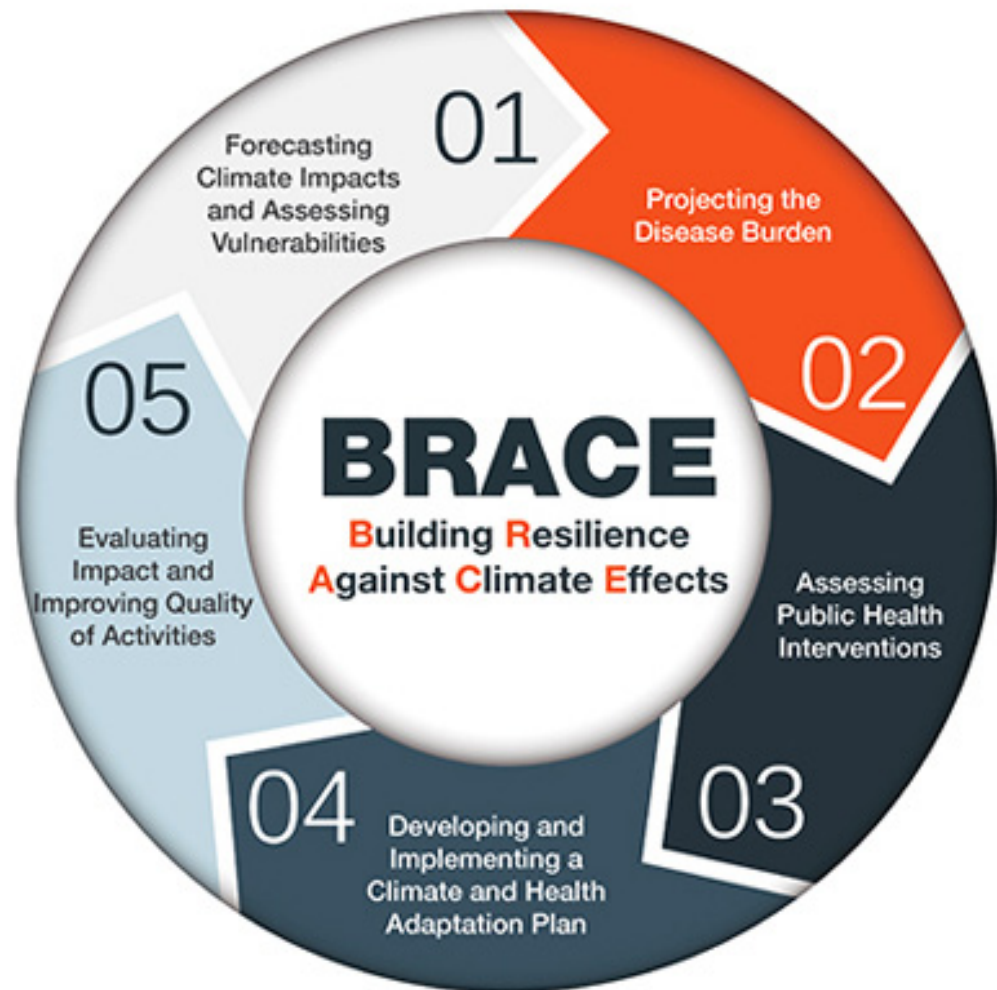
Individuals, communities and organizations can take steps to facilitate adaptive capacity

# Impact of Climate Change on Human Health



# CDC's BRACE Framework

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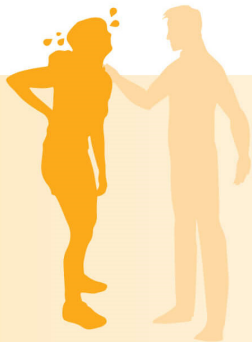
Hazard	Environmental Impact	Human Health Impact	Populations Most Affected
<p><b>More days of extreme heat; more consecutive “extremely hot” days per year</b></p>	<ul style="list-style-type: none"> <li>• Urban heat island effect</li> <li>• Decreased air quality due to increases in ground-level ozone</li> </ul>	<ul style="list-style-type: none"> <li>• Heat-related illness, including dehydration and heat stroke</li> <li>• Heat-related mortality</li> <li>• Respiratory disease exacerbations</li> </ul>	<ul style="list-style-type: none"> <li>• Seniors</li> <li>• Children</li> <li>• People with chronic diseases, including diabetes, cardiovascular and respiratory conditions</li> <li>• Low socioeconomic status</li> <li>• Outdoor occupations</li> <li>• Homeless</li> </ul>
<p><b>Increased mean temperature; fewer days below freezing</b></p>	<ul style="list-style-type: none"> <li>• Increases in ground-level ozone, airborne allergens and other pollutants</li> <li>• Changes in vector ecology</li> </ul>	<ul style="list-style-type: none"> <li>• Respiratory disease exacerbations (COPD, asthma, allergic rhinitis, bronchitis)</li> <li>• Vector-borne disease increases/changes</li> </ul>	<ul style="list-style-type: none"> <li>• Seniors</li> <li>• Children</li> <li>• People with respiratory conditions</li> <li>• Various</li> </ul>
<p><b>Extreme weather events (e.g., hurricanes)</b></p>	<ul style="list-style-type: none"> <li>• Flooding <ul style="list-style-type: none"> <li>○ Damage to infrastructure and residences</li> <li>○ Mold and mildew</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Injuries</li> <li>• Displacements</li> <li>• Asthma exacerbations</li> <li>• Vector- and water-borne diseases</li> <li>• Mental health</li> </ul>	<ul style="list-style-type: none"> <li>• Residents in low-lying areas</li> <li>• People with respiratory conditions</li> <li>• Low socioeconomic status</li> </ul>
<p><b>Increased precipitation</b></p>	<ul style="list-style-type: none"> <li>• Flooding <ul style="list-style-type: none"> <li>○ Mold and mildew</li> </ul> </li> <li>• Decreased drainage</li> <li>• Changes in vector ecology</li> </ul>	<ul style="list-style-type: none"> <li>• Injuries</li> <li>• Displacements</li> <li>• Asthma exacerbations</li> <li>• Vector- and water-borne diseases</li> </ul>	<ul style="list-style-type: none"> <li>• Residents in low-lying areas</li> <li>• Low socioeconomic status</li> <li>• Various</li> </ul>

# Climate Hazards & Health Impacts in Philadelphia

## HEAT CRAMPS

### SYMPTOMS

- Heavy sweating
- Painful muscle cramps or spasms



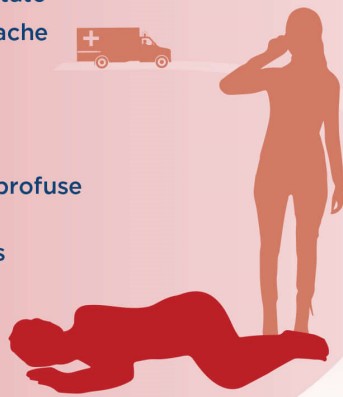
## HEAT EXHAUSTION

- Heavy sweating
- Weakness
- Fatigue
- Headache
- Dizziness
- Nausea or vomiting
- Fainting
- Irritability
- Thirst
- Decreased urine output



## HEAT STROKE

- Very high body temperature
- Altered mental state
- Throbbing headache
- Confusion
- Nausea
- Dizziness
- Hot, dry skin or profuse sweating
- Unconsciousness



Source: CDC, 2012<sup>11</sup>

## Extreme Heat Events

- Heat-related illness, including dehydration and heat stroke
- Heat-related mortality
- Respiratory disease exacerbations

## Increased Mean Temperature

- Respiratory disease exacerbations (COPD, asthma, allergic rhinitis, bronchitis)
- Vector-borne diseases



## Climate Hazards & Health Impacts in Philadelphia

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### Severe Storms

- Injuries
- Displacements
- Asthma exacerbations
- Vector- and water-borne diseases
- Mental health

### Increased Precipitation

- Injuries
- Displacements
- Asthma exacerbations
- Vector- and water-borne diseases



# Climate Change, Health & Equity

## Who's most affected by **poor air quality**?

► People who have:

- Asthma
- Heart disease
- COPD (a long-term lung disease)



## Sensitivity

- Children
- Seniors
- People with chronic health conditions (e.g., respiratory disease, cardiovascular disease)
- Lower socioeconomic status

## Exposure

- Persons experiencing homelessness
- Persons with outdoor occupations
- Athletes
- Lower socioeconomic status

PDPH  
Planning &  
Outreach

Planning and Response for  
Extreme Weather Events

Climate Change and Health  
Advisory Group

Climate Change and Health  
Adaptation Plan

Community Engagement  
and Outreach



## Extreme Heat

### PDPH Heat Response Levels and Thresholds

Level	Timeframe	Short Duration and Heat Index	Long Duration and Heat Index
<b>Heat Caution</b>	May 1 – June 30	2 consecutive days of 95-100	3 or more days of 93-97
	July 1 – September 30	2 consecutive days of 98-105	3 or more days of 95-102
<b>Heat Health Emergency</b>	May 1- June 30	2 consecutive days of 101-105	3 or more days of 98-102
	July 1 – September 30	2 consecutive days of 106+	3 or more days of 103+

- In 2017, PDPH developed new heat declaration levels and thresholds based on analysis of local weather and health data from 2006-2015 to identify weather conditions most likely to cause heat-related morbidity and mortality

# Response Actions

## Heat Caution:

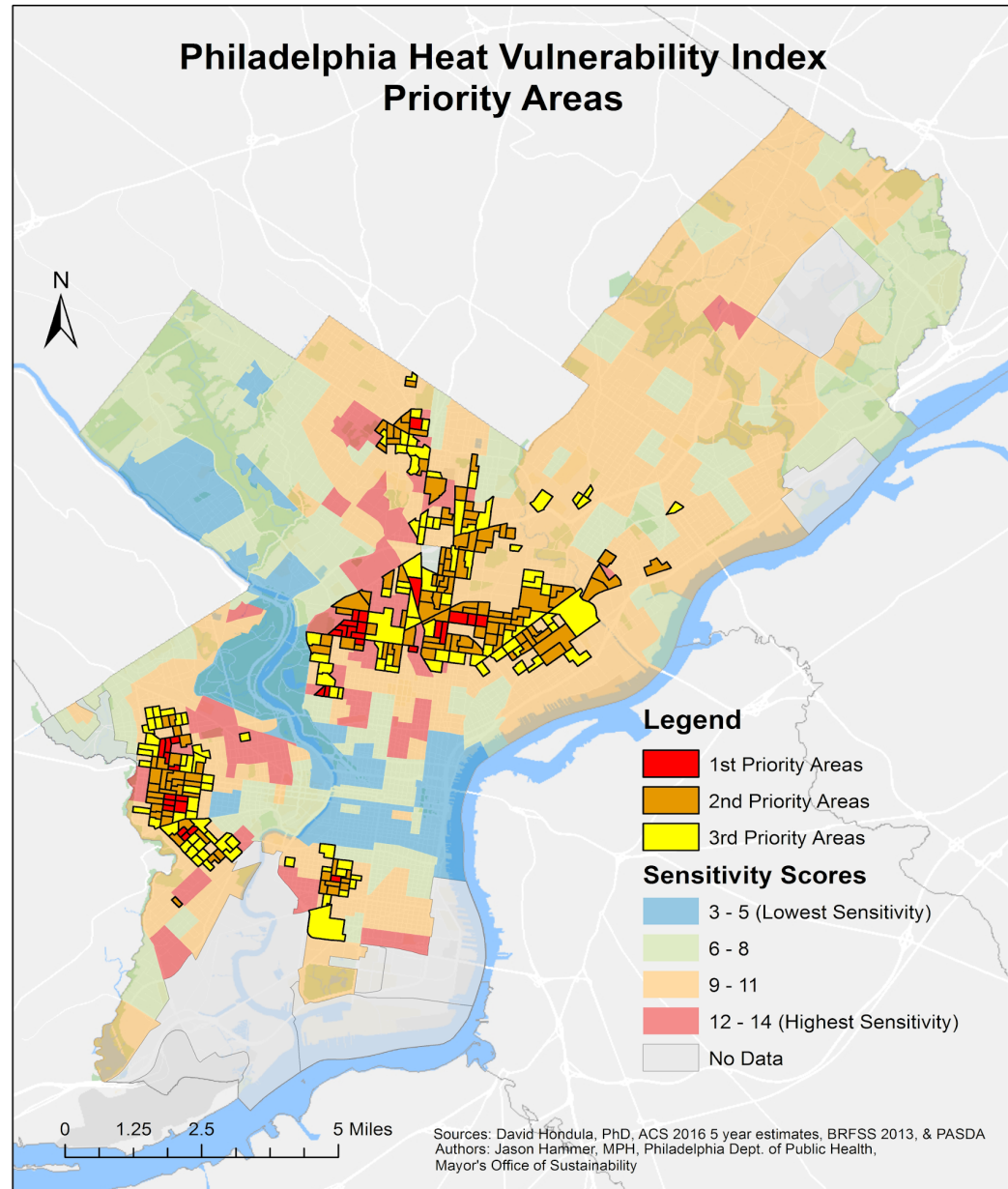
- Notification to heat response agencies
- Public information geared toward at-risk populations
- Outreach to homeless populations should be considered, including potential activation of Code Red

## Heat Health Emergency:

- Notification to heat response agencies
- Activation of PCA's Heatline and Ambulatory Health/Environmental Health mobile teams
- Activation of cooling centers
- Nursing and personal care home notifications/inspections
- Outreach to homeless populations
- Tracking and analysis of health outcomes
- Suspension of utility shut-offs for residential non-payment

# Heat Vulnerability Index

- A **Heat Vulnerability Index** summarizes the most important factors associated with the adverse health effects of extreme heat events to help identify areas that are more at risk



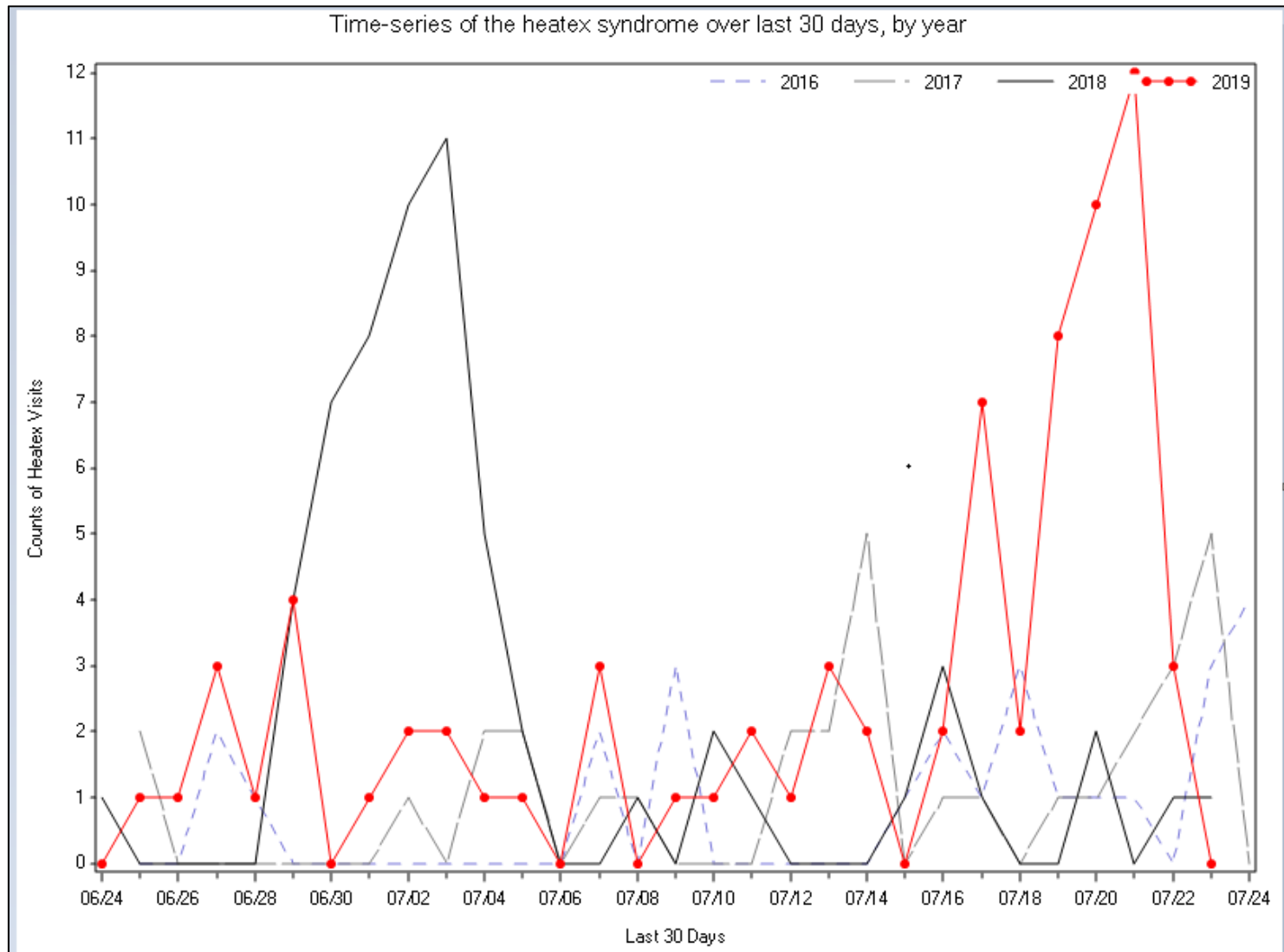
Heat Health  
Emergency  
Data:  
7/17/19-  
7/22/19

668 calls to Philadelphia  
Corporation for Aging Heatline

2861 visitors to the Free  
Library locations activated as  
cooling centers

42 emergency department  
visits for heat-related illness

# Heat-related ED Visits: 7/17/19-7/22/19



## Everything you need to know about cooling off in Philadelphia's heat wave

by [Bethany Ao](#), Updated: July 19, 2019



ELIZABETH ROBERTSON / STAFF PHOTOGRAPHER

Buckle up, folks. Philly heads into [the hottest weekend of the year](#) Saturday, with the heat index possibly hitting 115 degrees, according to the National Weather Service. The city declared a "heat health emergency" through Monday, which means that cooling centers and community pools will hold special hours for people who need a reprieve.

Here's everything you need to know about how to stay cool this weekend.

NEWSLI  
HEADLI

## Philadelphia declares a heat health emergency; scientists say more to come

By [Catalina Jaramillo](#) · July 17, 2019



📷 Fire hydrants are open around the city during an historic heatwave in Philadelphia. (Kimberly Paynter/WHYY)

# Public Information

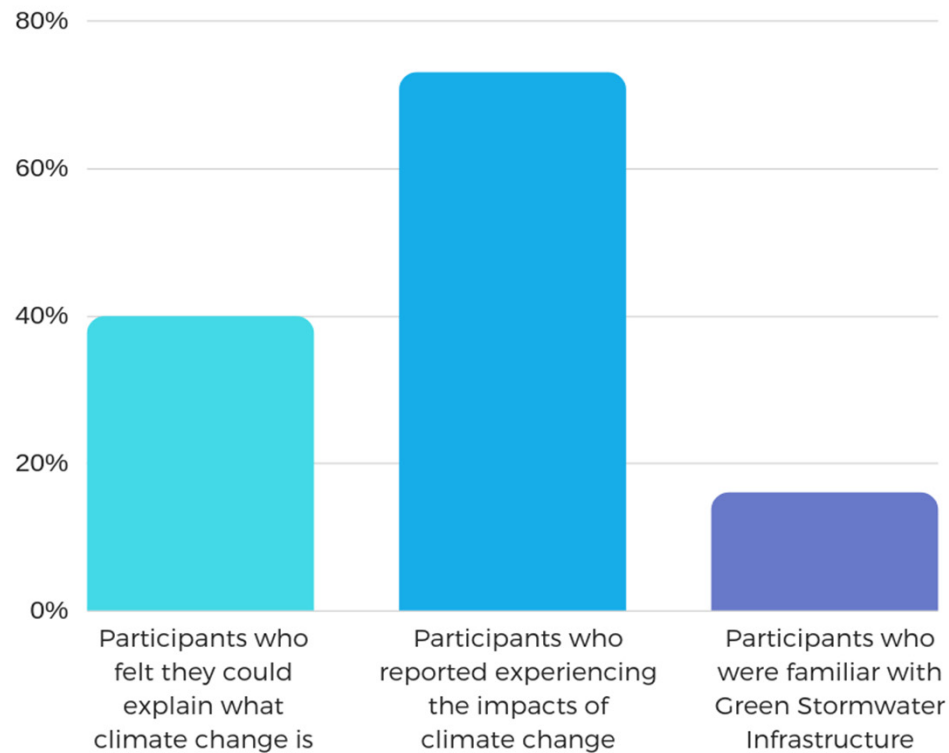


# Climate Change and Health Advisory Group

- PDPH's Climate Change and Health Advisory Group is a collaborative of government, healthcare, community-based, and academic partners that advise PDPH on a number of climate-related initiatives:
  - Identifying health impacts and at-risk populations
  - Developing adaptation strategies
  - Sharing community engagement strategies

# Climate and Health Adaptation Plan





# Climate, Health and Home Workshops

- Climate Urban Systems Partnership project:
  - Drexel University\*
  - National Nurse-led Care Consortium
  - Energy Coordinating Agency
  - Clean Air Council
  - PDPH
- Since 2017:
  - 12 workshops for 300 residents



## Acknowledgements

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- Alexandra Skula, Preparedness Analyst, PDPH
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City of Philadelphia  
DEPARTMENT OF  
PUBLIC HEALTH  
Division of Disease Control

Thank you

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