

# Responding to the Increasing Threats of Heat Related Illness

---

VIRGINIA EXECUTIVE INSTITUTE, SPRING 2019

TEAM 2: PARHAM JABERI, PATRICIA MCCULLAGH, CATHERINE O'BRIEN,  
TOM SAWYER, BRENDA SCAIFE, DANNY TAYLOR



# Background

---

Heat waves have become more frequent and intense, and cold waves have become less frequent.

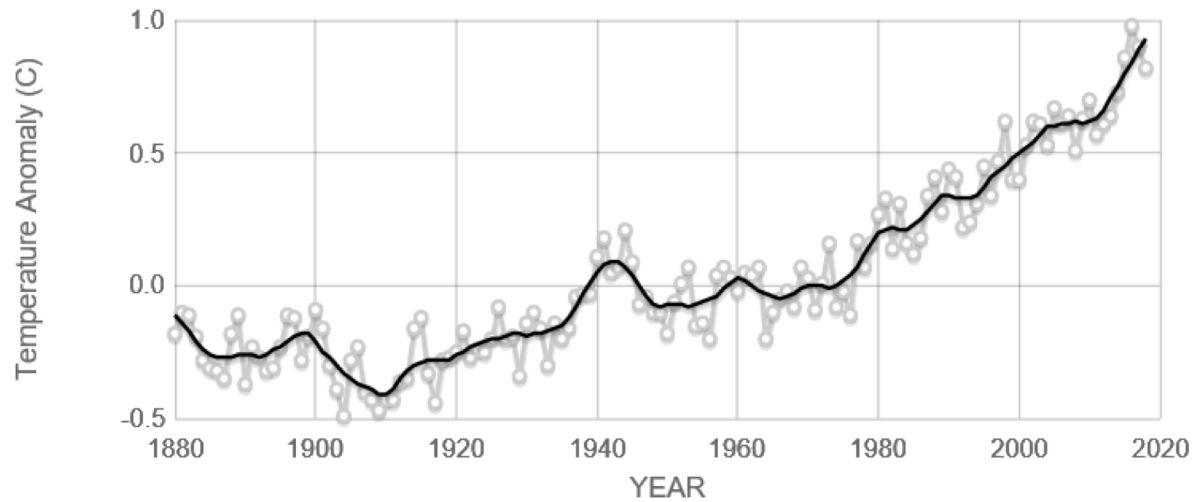
U.S. average temperatures have increased by 1.3°F to 1.9°F since record keeping began in 1895.

As a result, the Commonwealth must address the resulting public health and economic burden associated with high heat events.

SOURCES: NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES, 2017  
MCMICHAEL & LINDGREN, 2011

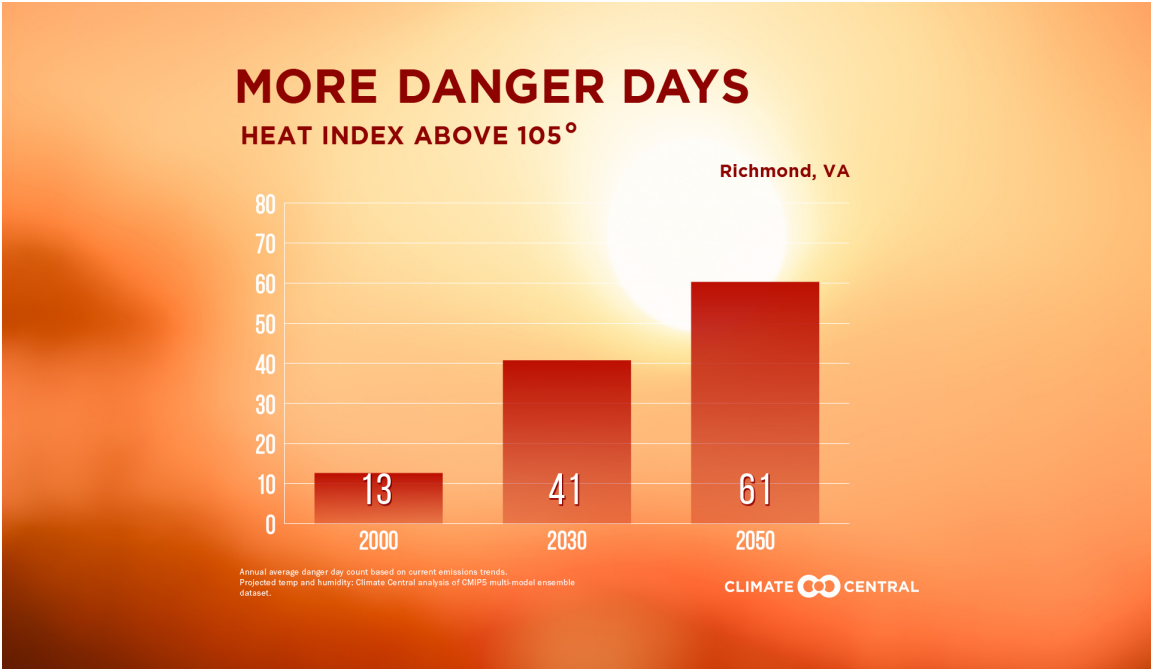
# Increasing Global Temperatures

---



Source: [climate.nasa.gov](https://climate.nasa.gov)

# Heat Index Predictions- More Dangerous Days



SOURCE: <https://statesatrisk.org/virginia/all>

# Health Impacts of Increasing Temperatures

---

Extreme high air temperatures contribute directly to deaths from cardiovascular and respiratory disease, including heat exhaustion and heat stroke.

More than 600 deaths per year in the United States are due to extreme heat according to the Centers for Disease Control.

Extreme heat causes many people to visit the emergency room or be admitted to the hospital.

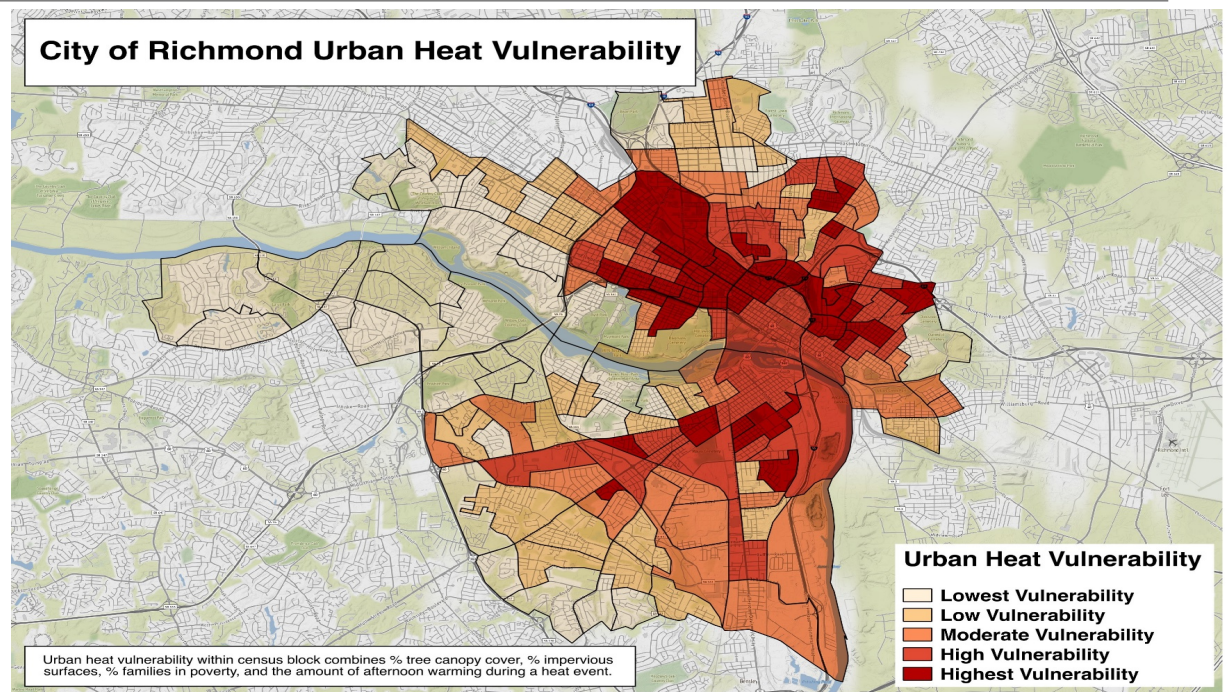
As temperatures rise and extreme heat events increase in frequency, we can expect to see more heat-related illnesses and mortality.

SOURCES: NATIONAL INSTITUTE OF ENVIRONMENTAL  
HEALTH SCIENCES, 2017; USGCRP, 2016  
EPA\_HEAT-ILLNESS-2016.PDF

# Disproportionate Health Impacts on Select Areas and Populations

High concentrations of buildings and asphalt in urban areas cause **urban heat island effect**, generation and absorbing heat, making the urban center several degrees warmer than surrounding areas.

Susceptible populations are also disproportionately impacted.



SOURCE: VDH ESSENCE (UCC/ED DATA), RICHMOND AMBULANCE AUTHORITY (AMBULANCE RESPONSES), AND NOAA (TEMPERATURE DATA), COMPILED BY JEREMY HOFFMAN AT SCIENCE MUSEUM OF VIRGINIA

# Economic Impact of Heat Related Health Events


---

From 2002 through 2009, the health related costs of heat waves in the United States was \$5.3 billion.

In 2016, health related costs in the United States were \$3.3 trillion.

By the year 2028, it is predicted that heat waves and other climate change effects will add \$360 billion per year in heat impact costs. Much of this is due to health costs.

SOURCE: NATURAL RESOURCES DEFENSE COUNCIL ECONOMIC BURDEN OF HOSPITALIZATIONS FOR HEAT-RELATED ILLNESSES IN THE UNITED STATES, INT J ENVIRON RES PUBLIC HEALTH, 2016 SEP.  
[HTTPS://WWW.NCBI.NIM.NIH.GOV/PMC/ARTICLES/PMC5036727/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5036727/)



# Economic Impact of Heat Related Health Events

---

According to the Red Cross, in recent years, excessive heat has caused more deaths than all other weather events, including floods.

For every 10 degree Fahrenheit increase above mean ambient temperature some states have seen:

- 393% increase in hospitalization for heat exposure
- 3% increase in ischemic stroke hospitalizations
- 15% increase in acute renal failure hospitalizations

On an individual/family level impacts include:

- Illness of a family member, loss of income,
- Medical bills
- Worsening of certain medical conditions (i.e. asthma)

SOURCES: ECONOMIC BURDEN OF HOSPITALIZATIONS FOR HEAT-RELATED ILLNESSES IN THE UNITED STATES, INT J ENVIRON RES PUBLIC HEALTH, 2016 SEP. [HTTPS://WWW.NCBI.NIM.NIH.GOV/PMC/ARTICLES/PMC5036727/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5036727/), <https://www.redcross.org/get-help/how-to-prepare-for%20emergencies/types-of-emergencies/heat-wave-safety.html>



# Developing a Heat Emergency Response Plan

Though Virginia has an Emergency Operations Plan (“EOP”) to address various emergencies, there is opportunity to further develop a more robust *heat* emergency response plan within this EOP.


Other states may be a resource for how the Commonwealth may want to address this heat response plan (i.e. North Carolina, California).

Potential stakeholders in this heat response plan include:

- State agencies
- Local Governments and Municipalities
- Local Emergency Management/First Responders

# Proposed Plan Components

---

- Determine Parameters for Plan Activation and Termination
  - Identify the Lead Agency and Supporting Agencies
  - Establish Communication Strategy and Prevention Messages
  - Consideration for Opening Cooling Shelters/Hydration Stations
  - Establish Necessary Training
  - Measurement of Plan Activation Success and Post Event Plan Revisions
- 

# Summary

---

Addressing heat related events will benefit both public health and economics in the Commonwealth.

The group recommends that a coordinated heat response plan be incorporated into existing platforms and tools.

Stakeholders should be identified and allowed to discuss and implement methods that will best address the needs and interests affected.



Questions?

