EESI
Environmental and Energy Study Institute

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CONGRESSIONAL BRIEFING
Living with Climate Change:
Extreme Heat
Policies to Anticipate Threats and Build Preparedness

Friday, June 24, 2022

About EESI

EESI
Environmental and Energy Study Institute

Non-partisan Educational Resources for Policymakers

A bipartisan Congressional caucus founded EESI in 1984 to provide non-partisan information on environmental, energy, and climate policies

Direct Assistance for Equitable and Inclusive Financing Program

In addition to a full portfolio of federal policy work, EESI provides direct assistance to utilities to develop “on-bill financing” programs

Commitment to Diversity, Equity, Inclusion, and Justice

We recognize that systemic barriers impede fair environmental, energy, and climate policies and limit the full participation of Black, Indigenous, people of color, and legacy and frontline communities in decision-making

Sustainable Solutions

Our mission is to advance science-based solutions for climate change, energy, and environmental challenges in order to achieve ***our vision of a sustainable, resilient, and equitable world***.

Policymaker Education

Briefings and Webcasts

Live, in-person and online public briefings, archived webcasts, and written summaries

Climate Change Solutions

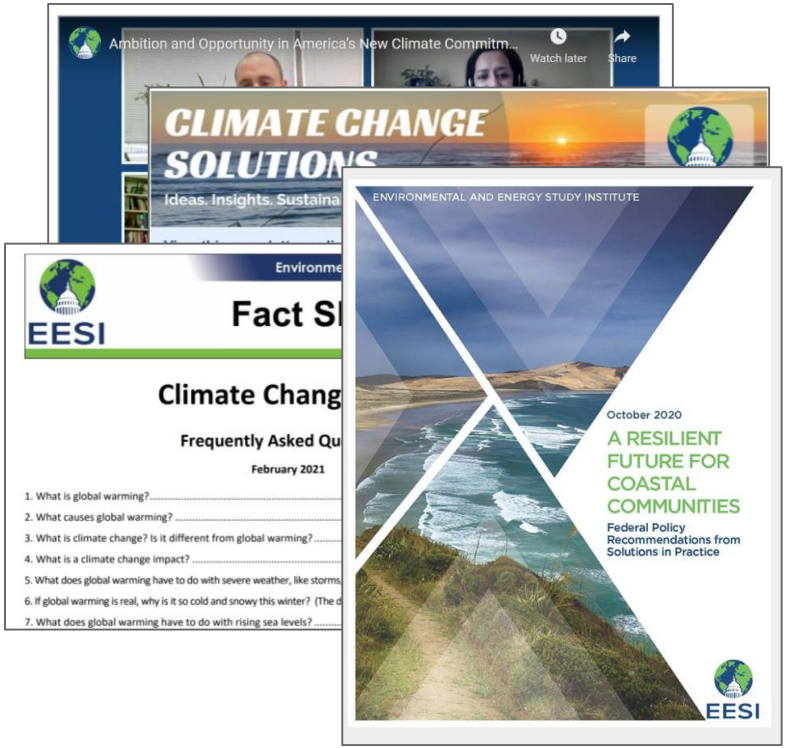
Bi-weekly newsletter with everything policymakers and concerned citizens need to know, including a legislation and hearings tracker

Fact Sheets and Issue Briefs

Timely, objective coverage of environmental, clean energy, and climate change topics

Social Media (@EESIOnline)

Active engagement on Twitter, Facebook, LinkedIn, and YouTube



Upcoming Briefings & Series

EESI Environmental and Energy Study Institute

Living with Climate Change

Polar Vortex – April 13

Sea Level Rise – May 18

Wildfires – June 13

Extreme Heat – June 24

Scaling Up Innovation to Drive Down Emissions

Green Hydrogen – April 27

Direct Air Capture – May 25

Electric Vehicle Charging – June 02

Offshore Wind Energy – June 29

Planning for Urban Heat Resilience

Ladd Keith, Ph.D.
Assistant Professor of Planning
Chair of Sustainable Built Environments

EESI Living with Climate Change:
Extreme Heat

June 24, 2022

ladd@arizona.edu
@LaddKeith

Planning for Urban Heat Resilience

Ladd Keith & Sara Meerow

Chapter 1 | Urban Heat: A Growing Risk

Chapter 2 | Understanding the Complexities of Urban Heat

Chapter 3 | Equity and Urban Heat

Chapter 4 | Urban Heat Resilience Planning Framework

Chapter 5 | Heat Mitigation Strategies

Chapter 6 | Heat Management Strategies

Chapter 7 | Planning Tools for Urban Heat Resilience

Chapter 8 | Advancing Urban Heat Resilience

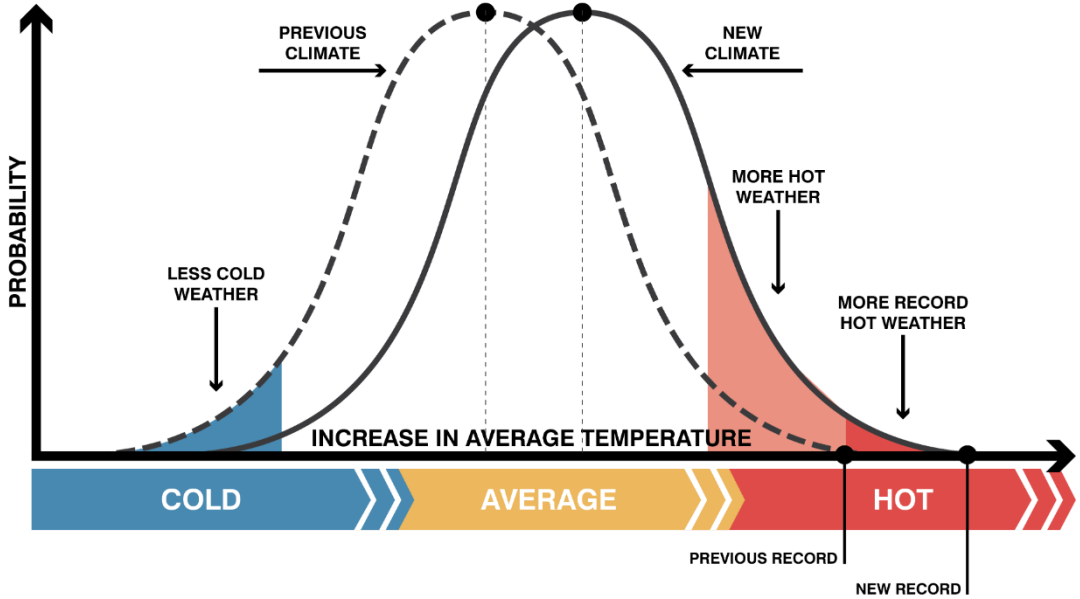
@LaddKeith

Planning for Urban Heat Resilience

Urban heat: A growing risk

Continued rise in average temperatures *and* increases in the intensity, duration, and frequency of extreme heat events

- Climate change
- Urban heat island (UHI) effect



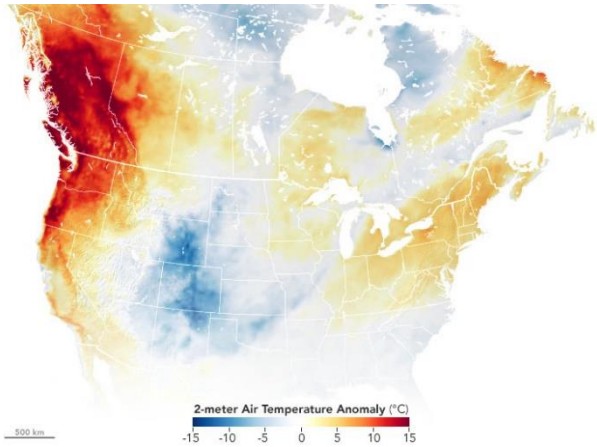
(Keith & Meerow, 2022, adapted from U.S. EPA)

Planning for Urban Heat Resilience

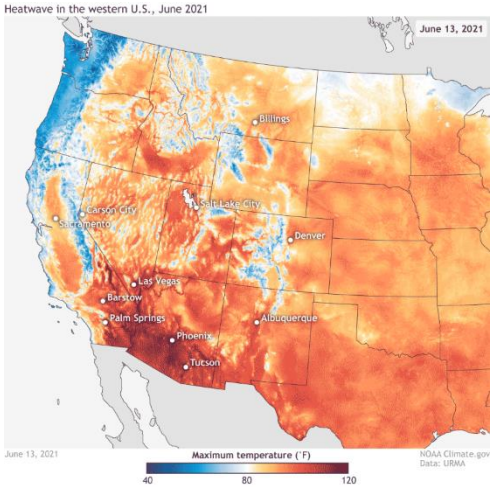
Urban heat: A growing risk

- Social
  - Public health
  - Quality of life
- Economic
  - Labor
  - Economic productivity
- Environmental
  - Landscapes and ecology
- Infrastructure
  - Energy and water usage

2021 Pacific Northwest Heatwave



2021 Southwest Heatwave



(U.S. NOAA)

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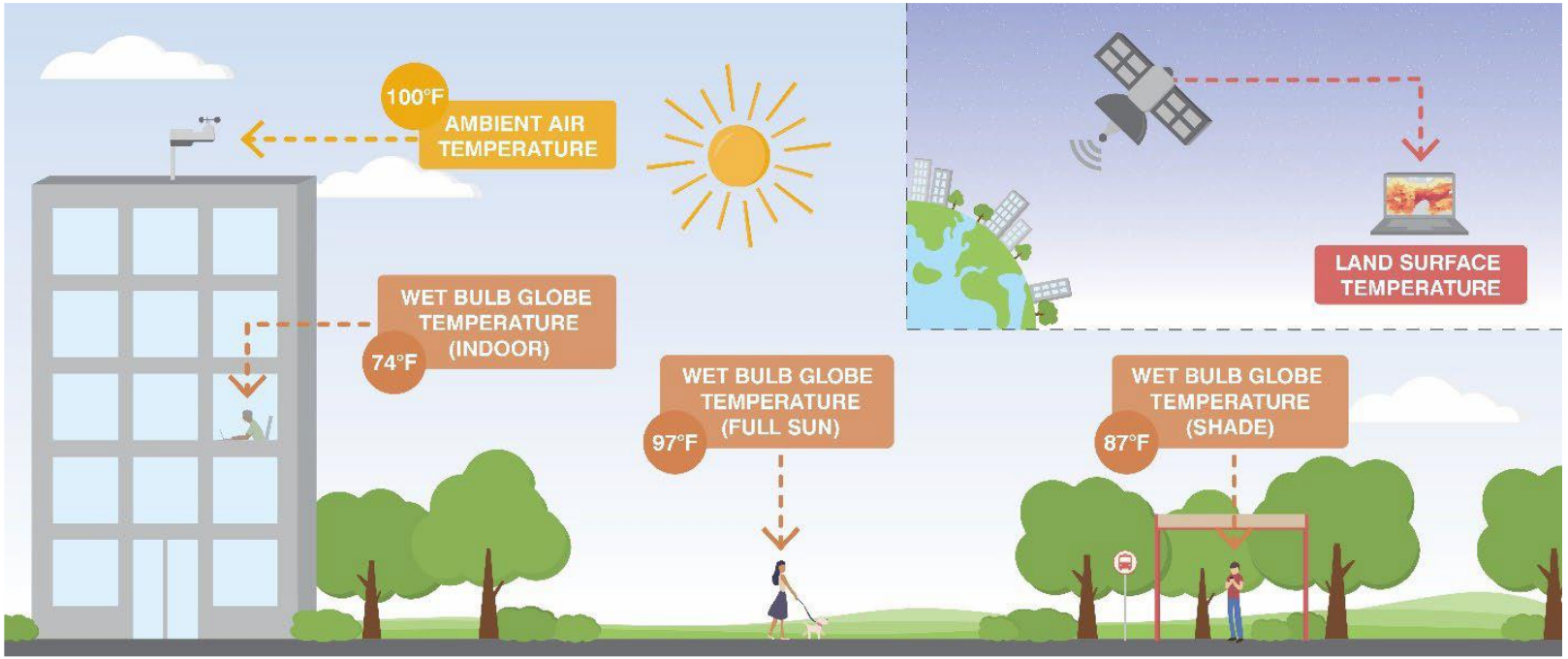
Planning for Urban Heat Resilience

Understanding the complexities of urban heat



(Keith & Meerow, 2022)

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Planning for Urban Heat Resilience

Equity and urban heat

- Inequitable distribution of heat severity
  - Legacy of racist land use practices (redlining)
  - Continued community disinvestment
- Systematic inequities
  - Housing and indoor cooling
  - Workplace and school environments
  - Transportation
  - Healthcare
  - Exclusion from decision-making

(C.J. Gabbe)

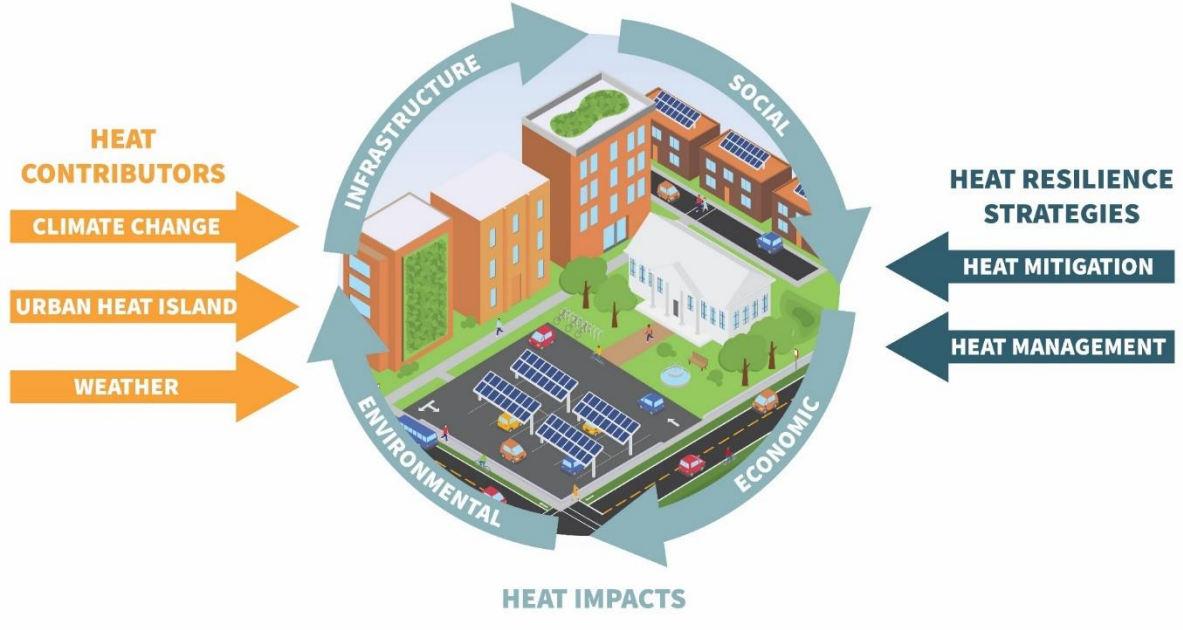
(Adam Thomas)

@LaddKeith

Planning for Urban Heat Resilience

Urban heat resilience planning framework

"Proactively mitigating and managing urban heat across the many systems and sectors it affects."

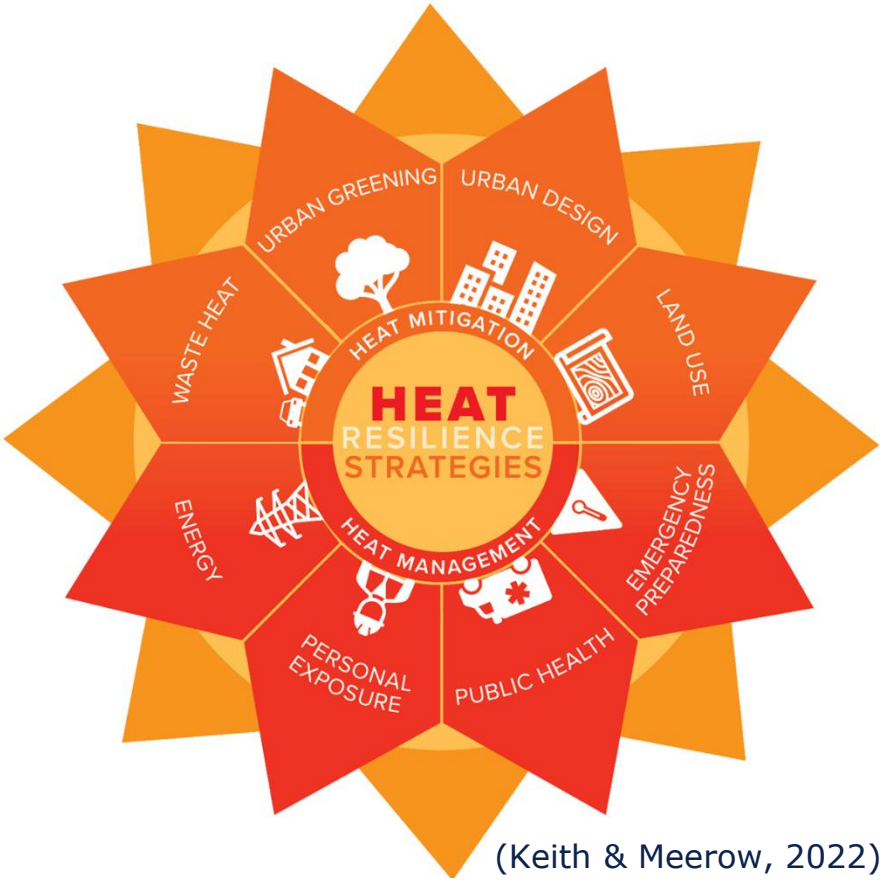


(Keith & Meerow, 2022)

Planning for Urban Heat Resilience

Heat resilience strategies

- Heat mitigation
  - Land use
  - Urban design
  - Urban greening
  - Waste heat
- Heat management
  - Energy systems
  - Personal exposure
  - Public health
  - Emergency preparedness



(Keith & Meerow, 2022)

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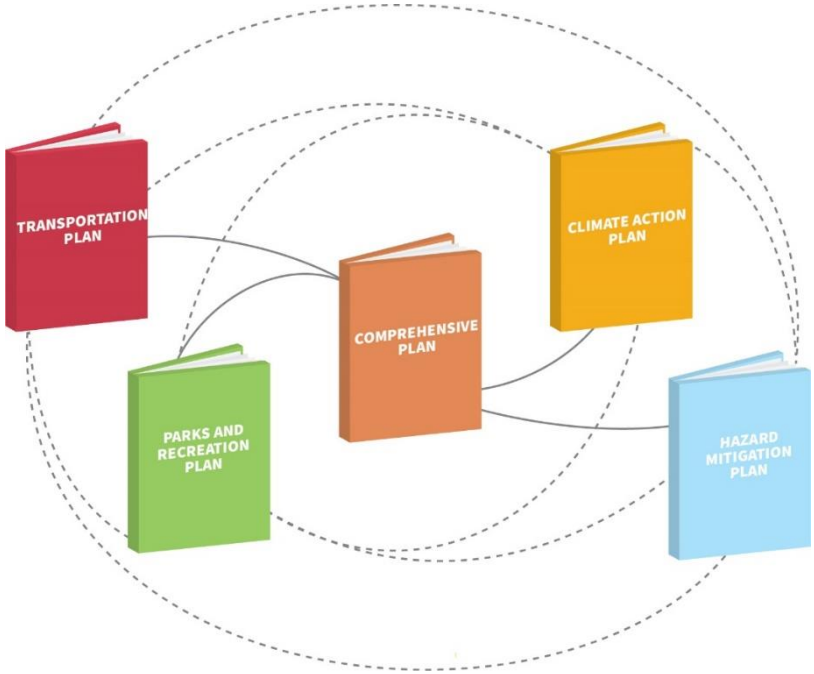
Planning for Urban Heat Resilience

Planning tools for heat mitigation

"Network of plans"



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(Keith & Meerow, 2022)

- ❑ Community visioning and engagement
- ❑ Plans and policies
  - ❑ Comprehensive plan
  - ❑ Hazard mitigation plan
  - ☑ Climate action plan
- ❑ Regulations and project review
  - ❑ Zoning and land use regulations
  - ❑ Streetscape design guidelines
  - ❑ Building codes
  - ❑ HOA regulations and CC&Rs
- ❑ Public investments
  - ☑ Parks, open space, and connections
  - ❑ Flood management infrastructure
  - ❑ Transportation and transit infrastructure
  - ❑ Public buildings

Deploy Heat Officers, Policies and Metrics

Ladd Keith, Sara Meerow, David M. Hondula & James C. Arnott

Heat governance

"The actors, strategies, processes, and institutions that guide decision-making for mitigating and managing heat as a hazard."

Six guiding principles

- Advance heat equity
- Mitigate heat
- Manage heat
- Develop metrics
- Coordinate initiatives
- Build heat institutions

@LaddKeith

nature

Setting the agenda in research

Comment

In June, residents in Portland, Oregon, fill a cooling centre to escape record-breaking temperatures.

Deploy heat officers, policies and metrics

Ladd Keith, Sara Meerow, David M. Hondula, V. Kelly Turner & James C. Arnott

Thank You

Ladd Keith, Ph.D.

ladd@arizona.edu
@LaddKeith

Planning for Urban Heat Resilience
tinyurl.com/urbanheatresilience

Deploy heat officers, policies and metrics
tinyurl.com/heatgovernance

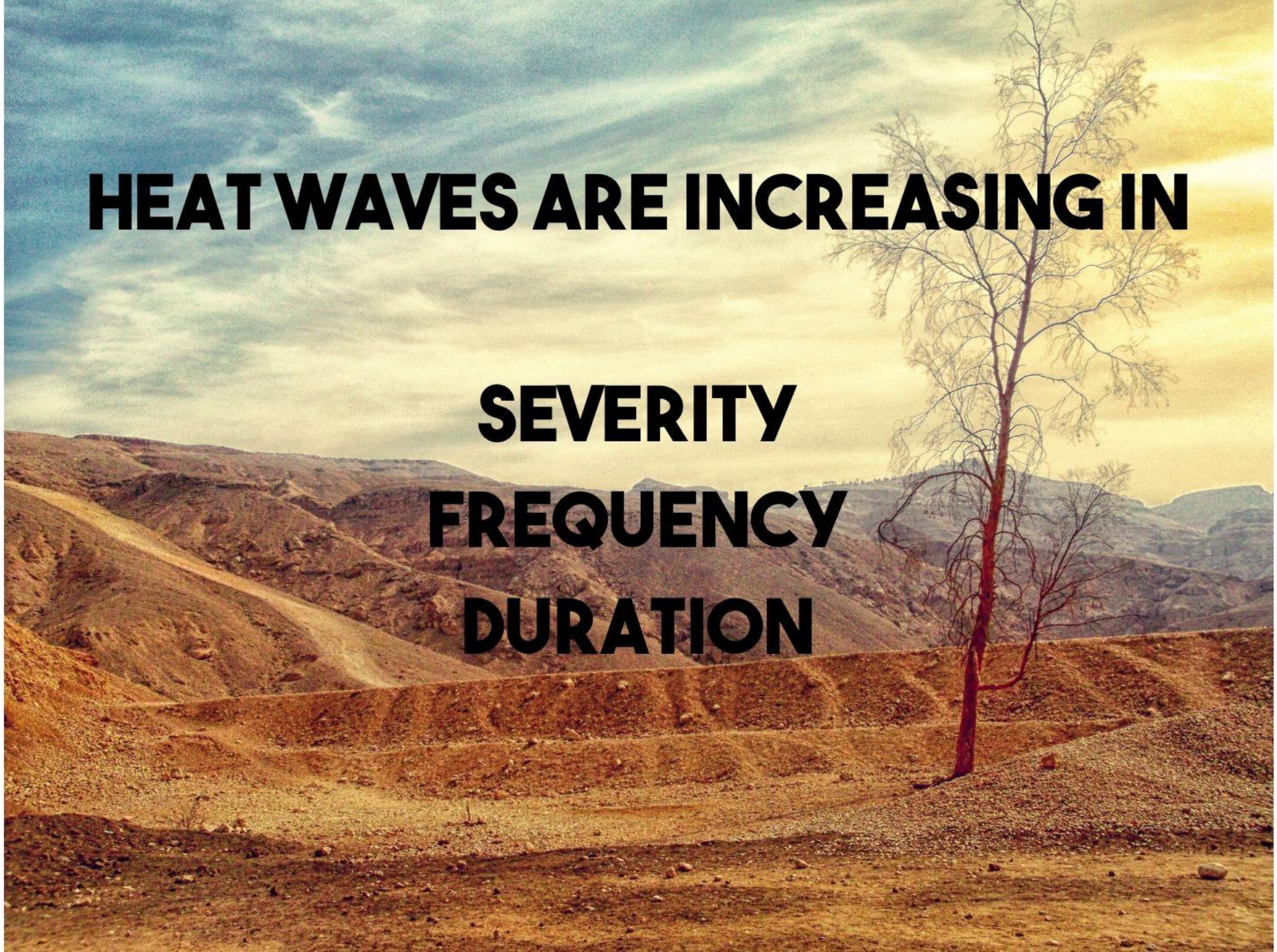
Planning for Urban Heat Resilience was supported by the U.S. NOAA Climate Program Office's Extreme Heat Risk Initiative, Cooperative Agreement NA21OAR4310148.

WE ACT FOR ENVIRONMENTAL JUSTICE

EXTREME HEAT & PUBLIC HEALTH

SONAL JESSEL, MPH
DIRECTOR OF POLICY


Columbia University


HEAT WAVES ARE INCREASING IN
SEVERITY
FREQUENCY
DURATION

...& WE HAVE THE URBAN HEAT ISLAND EFFECT

FEATURE

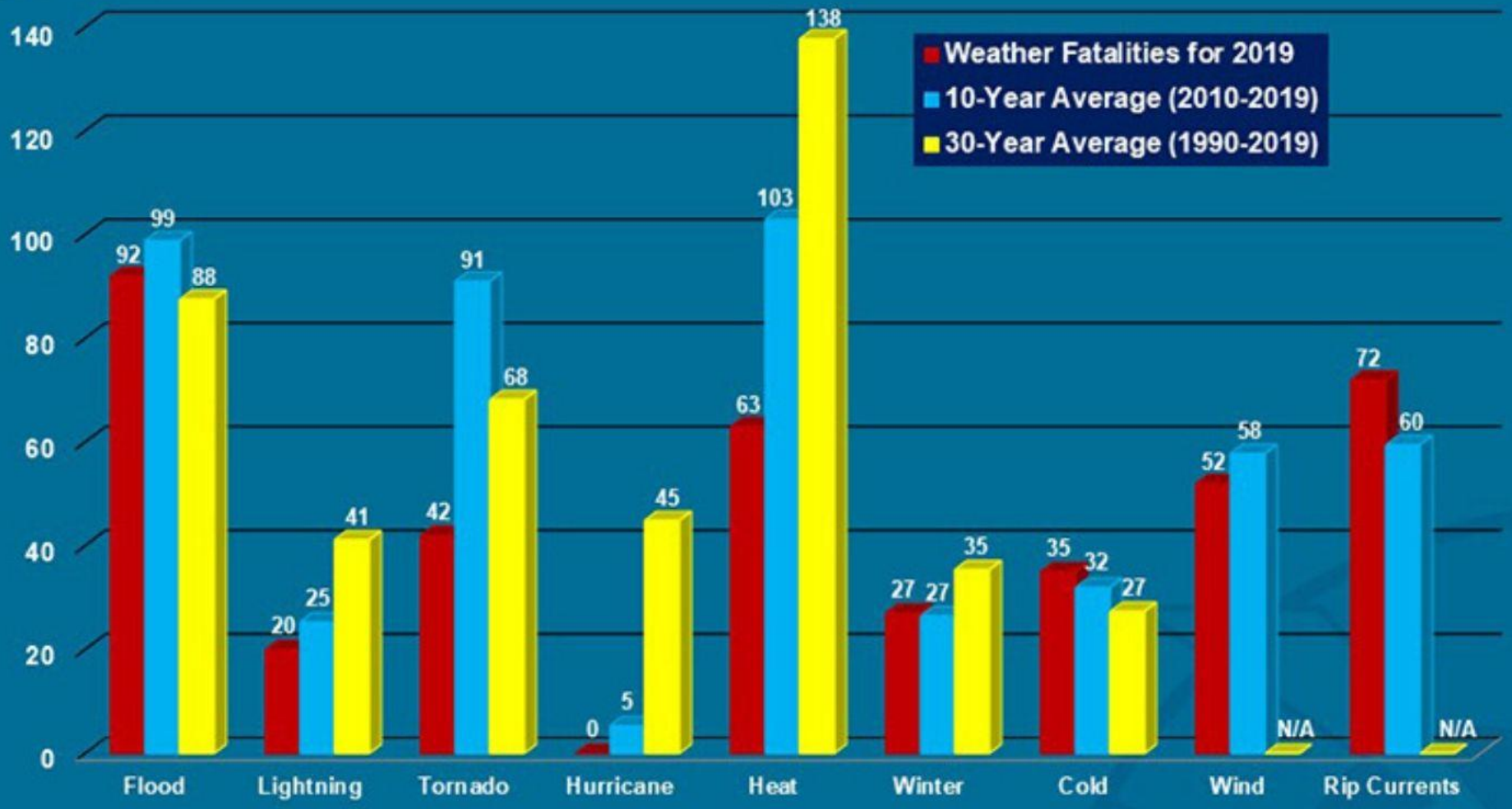
Cooling Season

New York City has set out to protect people — and the planet — from the deadliest disaster: heat.

By Rita Krueger on Aug 13, 2019

"THE ANNUAL MEAN AIR TEMPERATURE OF A CITY WITH 1 MILLION PEOPLE OR MORE CAN BE 1.8–5.4°F (1–3°C) WARMER THAN ITS SURROUNDINGS" (EPA)

Weather Fatalities 2019



THIS GRAPH DOES NOT TELL THE WHOLE STORY!

"WE ARE IN THE SAME STORM, BUT NOT ALL IN THE SAME BOAT"

WHO'S ESPECIALLY AT-RISK TO EXTREME HEAT IMPACTS?

- Older adults
- Children
- People with chronic illness
- Pregnant people
- Outdoor workers

Image from: eclosh.com

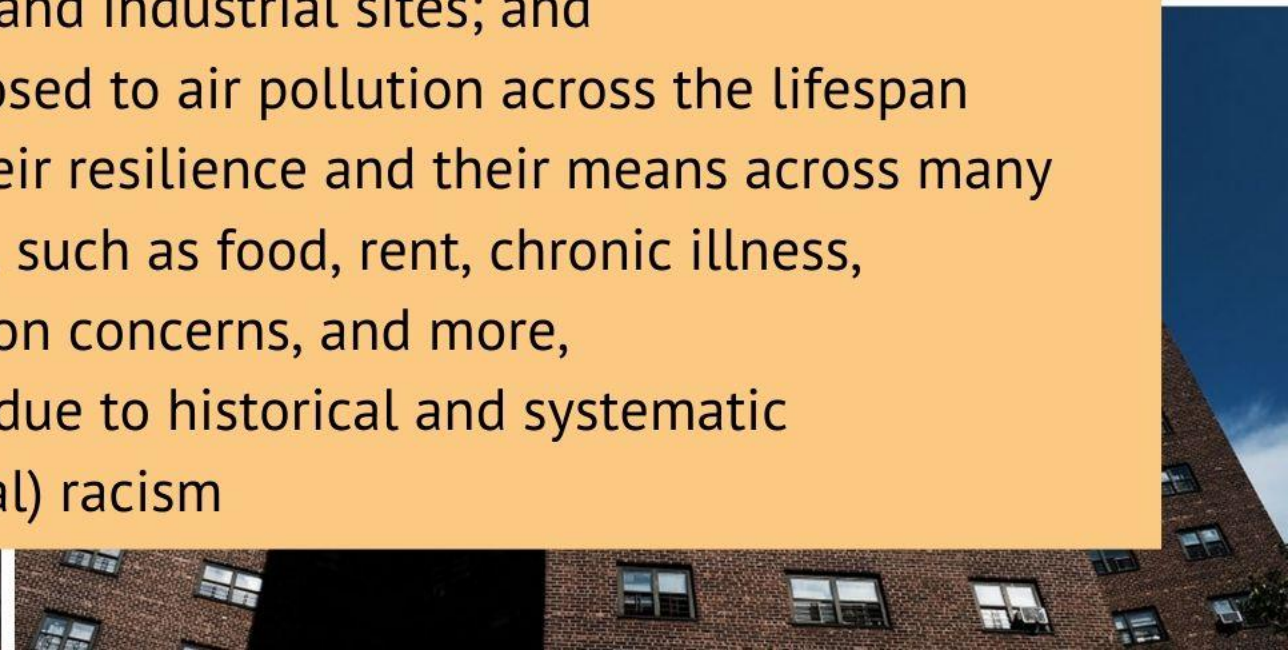
WHO'S ESPECIALLY AT-RISK TO EXTREME HEAT IMPACTS?

- Older adults
- Children
- People with chronic illness
- Outdoor workers

...but also people who

- live in older, poorly maintained apartment buildings;
- live in crowded apartments with intergenerational living;
- live in neighborhoods with less green space access,
- live in neighborhoods with more air pollution from buildings and industrial sites; and
- been exposed to air pollution across the lifespan
- stretch their resilience and their means across many hardships, such as food, rent, chronic illness, immigration concerns, and more,

....and it is all due to historical and systematic (environmental) racism



WE ACT FOR ENVIRONMENTAL JUSTICE

CLIMATE CHANGE
[Extreme heat]

ENVIRONMENTAL RACISM

ENVIRONMENTAL HEALTH IMPACTS

PEOPLE ARE STAYING AT HOME MORE THIS SUMMER.

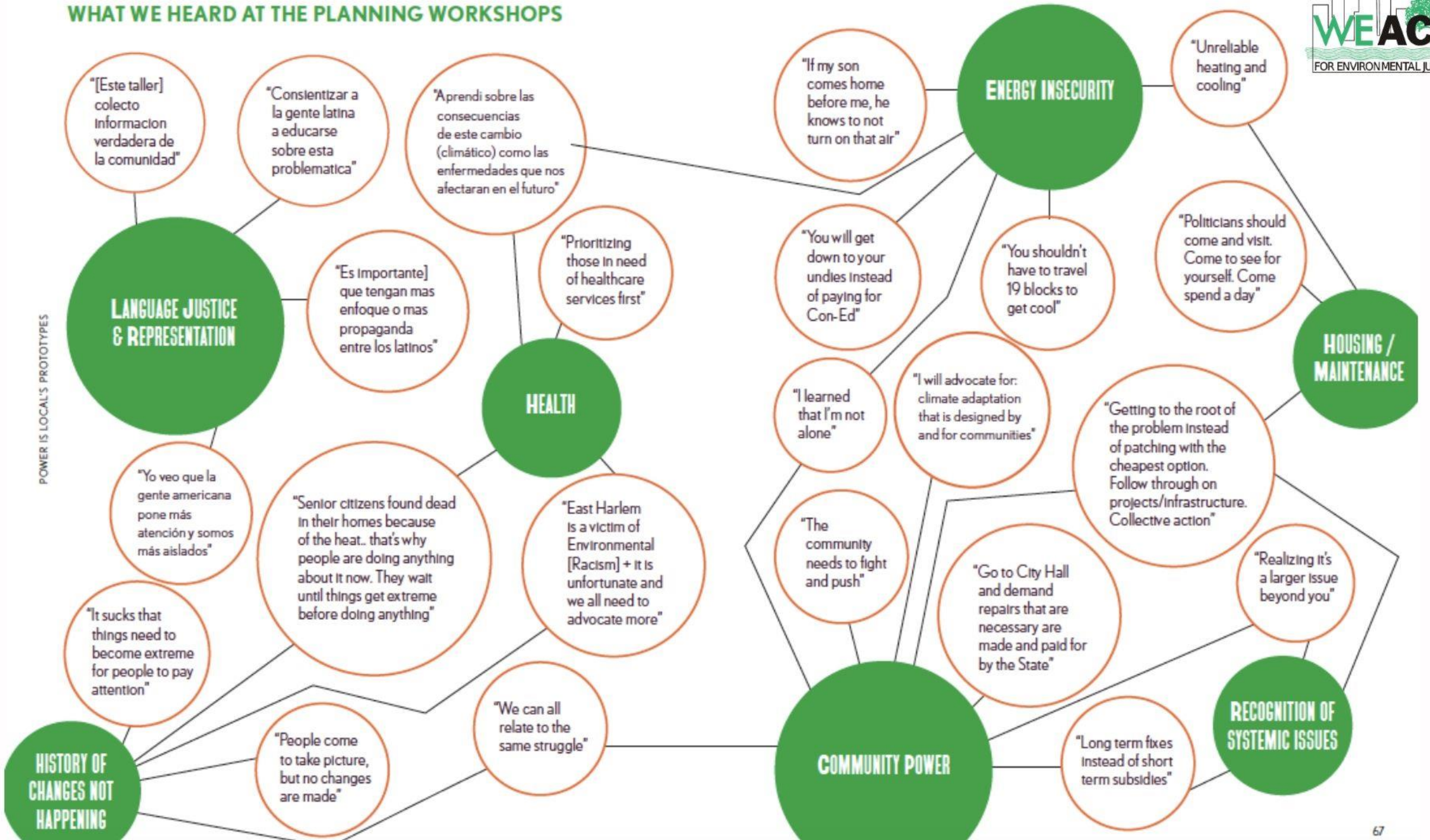
Address energy insecurity

The inability to adequately meet basic household energy needs due to the interplay of physical conditions of housing, household energy costs and energy-related coping strategies.

WE ACT FOR ENVIRONMENTAL JUSTICE

EVERYONE HAS A RIGHT TO A **HEALTHY** & **COOL** HOME

WHAT WE HEARD AT THE PLANNING WORKSHOPS



- Long Term Solutions
- Short Term Solutions & Emergency Response

WE ACT
FOR ENVIRONMENTAL JUSTICE

@Sonal360_

@weact4ej

www.weact.org/heat

THANK YOU

Extreme heat impacts under a changed climate and opportunities for action

Juan Declet-Barreto
Senior Social Scientist for Climate Vulnerability

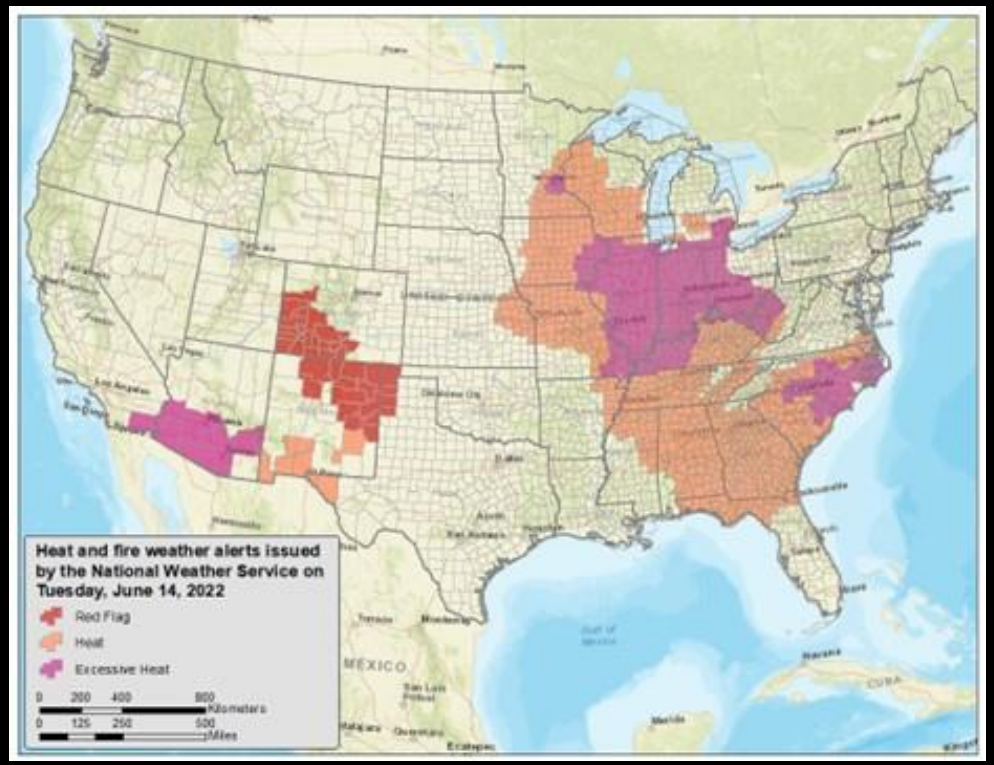
Union of Concerned Scientists

Climate Change has turned summer into a Danger Season

Goodbye, carefree summers—hello, ‘Danger Season’

The AMA has declared the warming climate ‘a public health crisis that threatens the health and well-being of all people’

by Erika Spanger-Siegfried — June 20, 2022 in Influencers



Juan Declet-Barreto
@DecletBarreto

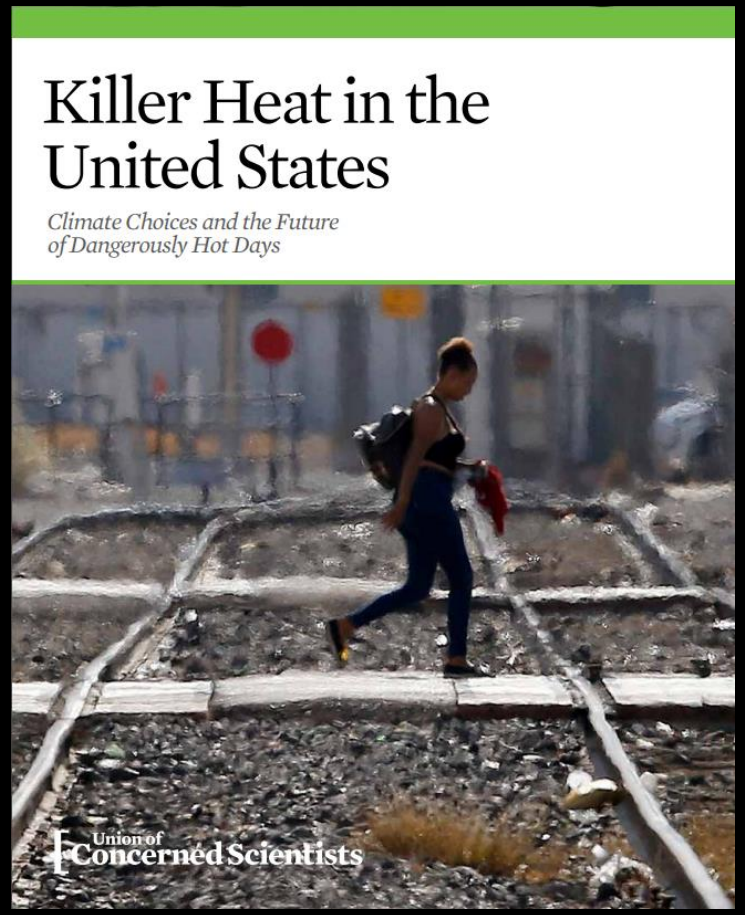
Dangerous heat index (108-112°F) forecast today for Mobile County, AL & nearby counties. @ClimateCentral says made 4 x more likely by #climatechange. More heat is in the forecast. Stay safe! #DangerSeason
weather.gov/mob
climatecentral.org/tools/climate-...

10:01 AM · Jun 23, 2022 · Twitter Web App

INDEPENDENT | The Independent

Scientists warn of summer ‘danger season’ amid fires, floods and heatwaves

Killer Heat in the United States



Heat Index Above 90°F

Outdoor workers become more susceptible to heat-related illness.

Heat Index Above 100°F

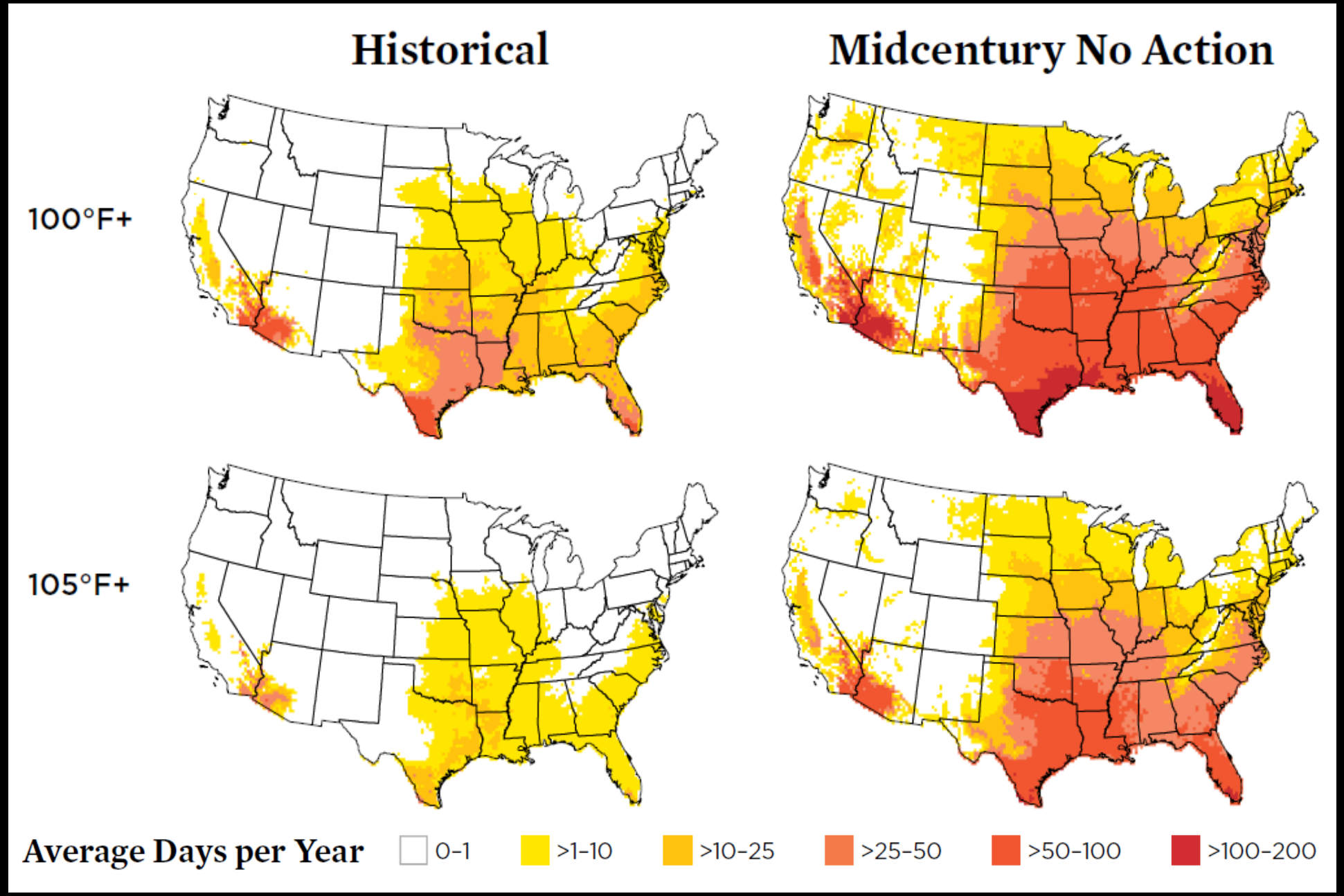
Children, elderly adults, pregnant women, and people with underlying conditions are at heightened risk of heat-related illness.

Heat Index Above 105°F

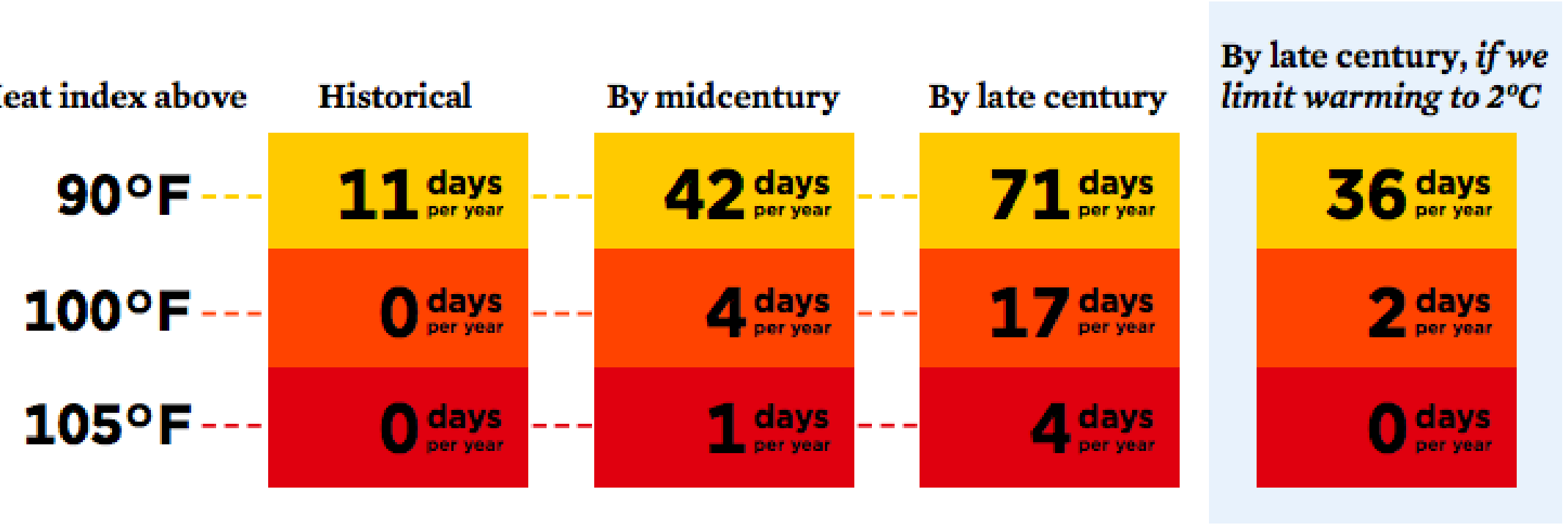
Anyone could be at risk of heat-related illness or even death as a result of prolonged exposure.

Heat Index Off the Charts

Undetermined: any level of exposure is presumed extremely dangerous for all people and likely to result in heat-related illness or even death


Historical
Midcentury No Action
100°F+
105°F+
Average Days per Year
0–1
>1–10
>10–25
>25–50
>50–100
>100–200

Annual Days of Extreme Heat Per Year in Utah's 2nd District



With no action to reduce global heat-trapping emissions, the average frequency of extreme heat in this district would rise as shown here. Taking rapid action to reduce emissions and cap future global warming at 2°C (3.6°F) would limit the increase in extreme heat days. For more information and detailed data, visit www.ucsusa.org/killer-heat.

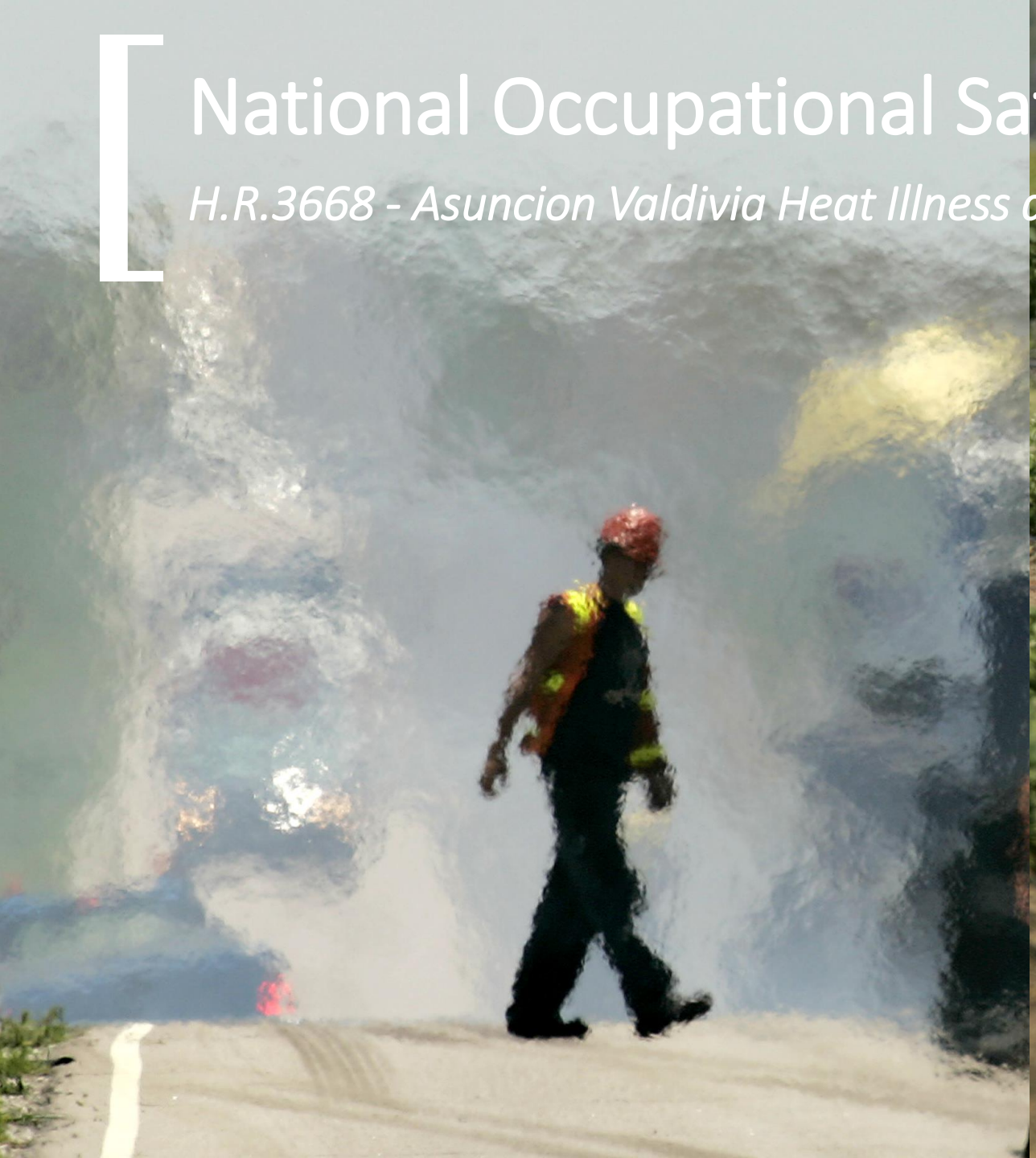
Too Hot to Work

Extreme heat puts outdoor workers' earnings at risk

- By midcentury, outdoor workers' exposure to extreme heat would quadruple, risking $55.4 billion in annual earnings nationwide.
- Disproportionate impacts on outdoor workers of color
- The average outdoor worker risks losing more than **$1,700** in annual earnings, though workers in the 10 hardest-hit counties risk losing nearly $7,000 per year on average.
- Outdoor workers in **construction** and **extraction** occupations are projected to face the highest total earnings at risk at about $14.4 billion annually, followed by those in installation, maintenance, and repair occupations at nearly $10.8 billion annually.

National Occupational Safety Standards for Heat

H.R.3668 - Asuncion Valdivia Heat Illness and Fatality Prevention Act of 2019



Federal and local action to create heat protections

- OSHA/DOL National Emphasis Program on heat illness
- Sen. Markey's (D-MA) Preventing Health Emergencies And Temperature-related (HEAT) Illness and Deaths Act
- Congresswoman Coleman's (NJ-12) Stay Cool Act
- Grijalva's (AZ-3) Asunción Valdivia Heat Illness and Fatality Prevention Act

Questions?

Learn more:

www.ucsusa.org/killer-heat

https://www.ucsusa.org/resources/too-hot-to-work

Union of Concerned Scientists

Thank You!

EESI
Environmental and Energy Study Institute

What did you think of the briefing?

Please take 2 minutes to let us know at:
www.eesi.org/survey

***Materials will be available at*:**
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