

Linking Complex Science to Policy for Heat-Health Decision-Making

Shubhayu Saha

Climate and Health Program
Centers for Disease Control and Prevention

SIMMER workshop, 2013

Climate and Health Program at CDC

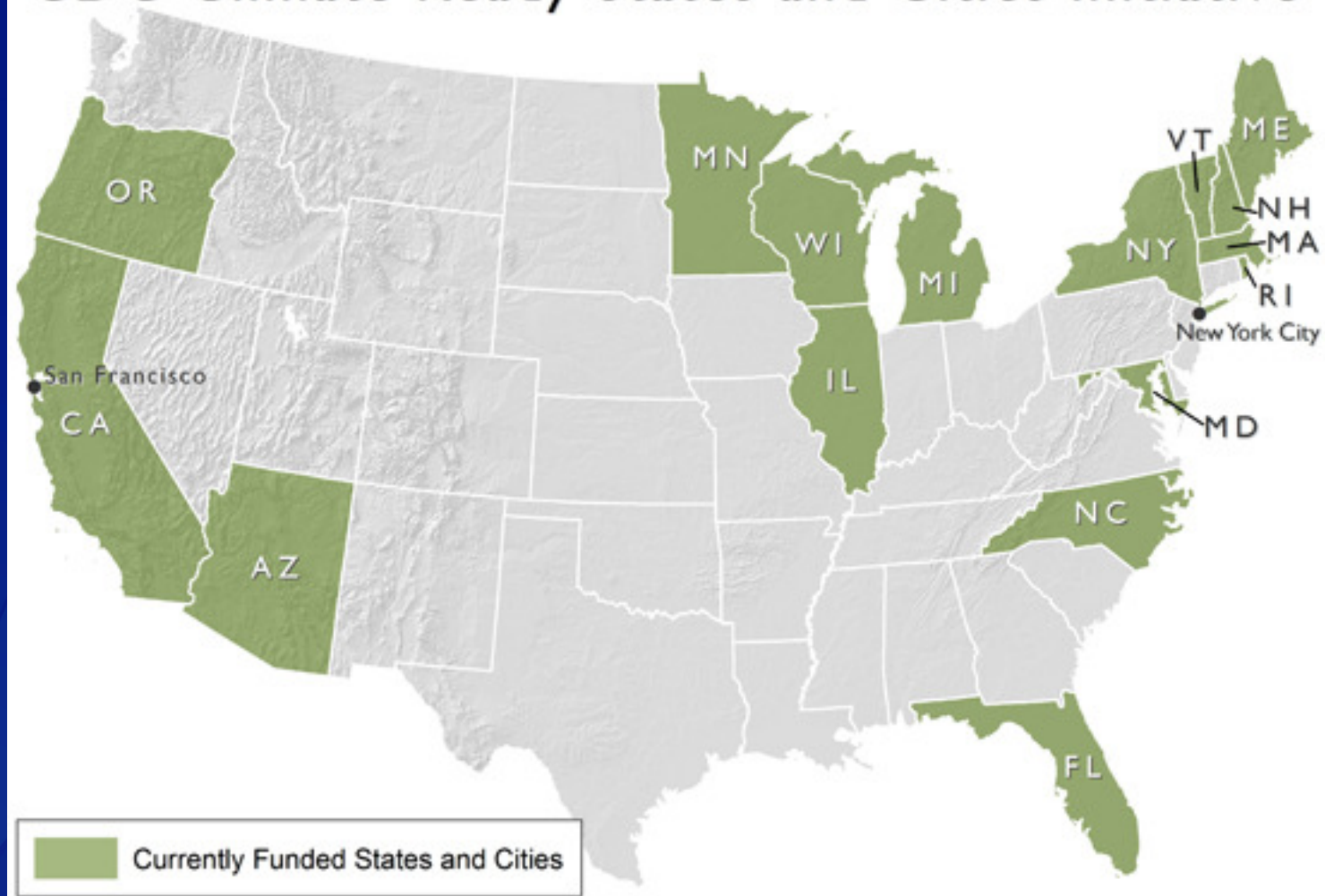
The mission:

- 1) Identify vulnerable populations to climate change
- 2) Prevent and adapt to current and anticipated health impacts
- 3) Assure that systems are in place to detect and respond to current and emerging health threats

3 core functions:

- 1) Translate climate change science to inform health departments and communities
- 2) Create decision support tools to build capacity to prepare for climate change
- 3) Assist in planning for the public health impacts of climate change

CDC Climate Ready States and Cities Initiative



Building Resilience Against Climate Effects

1. Forecasting
Climate Impacts
and Assessing
Vulnerabilities

2. Projecting the
Disease Burden

3. Assessing
Public Health
Interventions

4. Developing and
Implementing a
Climate and Health
Adaptation Plan

5. Evaluating
Impact and
Improving Quality
of Activities

Climate and Health Program, National Center for Environmental Health

The focus on extreme heat...

- Common environmental exposure in popular perception
- Extreme heat is the primary cause of weather-related mortality
- Widely assessed as an important threat by local health agencies
- Availability of exposure data at varying spatial and temporal scales
- Robust epidemiologic research linking ambient temperature and health



Access to exposure data

Vulnerability assessment

The National Environmental Public Health Tracking Network


*** Step 1: Select Your Content ?**

Climate Change ▾

Extreme Heat Days and Events ▾

Dates of extreme heat days ▾

☐ Show only data about children


trackingsupport@cdc.gov

*** Step 2: Choose Geography & Time ?**

▼ One County ▲

▼ Alabama

☒ Autauga

☐ Baldwin

☐ Barbour

☐ Bibb

☐ Blount

☐ Bullock

☒ 2003

☐ 2004

☐ 2005

☐ 2006

☐ 2007

☐ 2008

☐ 2009

☒ 2010

☒ Show Counties

Clear Geography

Clear Time

Step 3: Advanced Options ?

▼ Advanced Options (Required)

▼ Heat Metric

☒ Daily Maximum Temperature

☐ Daily Heat Index

▼ Advanced Options (Select One)

► Absolute Threshold

► Relative Threshold

Clear Options

*** Step 4: Submit ?**

Run Query

Climate Change | Extreme Heat Days and Events | Dates of extreme heat days | Alabama, Georgia | 2010 | Heat Metric: Daily Maximum Temperature | Relative Threshold: 90th Percentile

The network provides data on:

- Extreme heat days and events
- Heat vulnerability
- Health effects associated with extreme heat

<http://ephtracking.cdc.gov/showHome.action>

Map View

Chart View

Table View

About These Data

First Time User?

View Query Panel

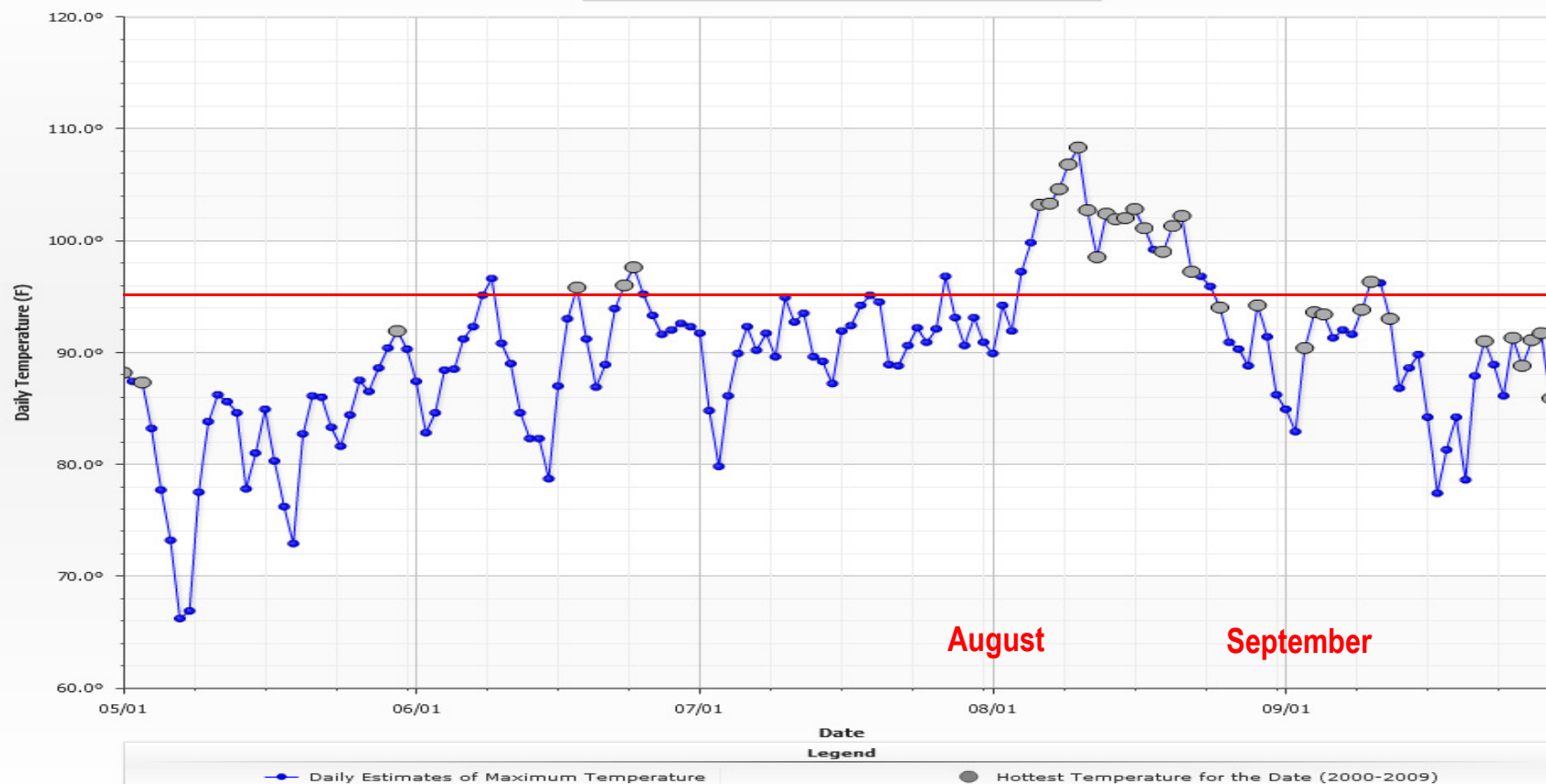
Change | Temperature Distribution | Daily Estimates of Maximum Temperature | South Carolina | 2007

Query Details | Print | Share | CSV

Options & Info

Daily Estimates of Maximum Temperature by County

State: South Carolina County: Aiken Year: 2007



National Center for Environmental Health



The National Environmental Public Health Tracking Network

*** Step 1: Select Your Content ?**

Climate Change

Heat Vulnerability

Percent of forest canopy

Age-adjusted, estimated percent of adults ≥ 20 years with diagnosed diabetes

Percent of cultivated crop land use

Percent of developed land use

Percent of forest canopy

Percent of Population ≥ 5 years with a disability

Percent of population aged 65 years and over living alone

Percent of population below the poverty line

Percent of population of a race other than white

Population density

Rate of hospitalization for heart disease among Medicare beneficiaries ≥ 65 years, (

*** Step 2: Choose Geography & Time ?**

☒ All Counties

☒ Alabama

☒ Arizona

☒ Arkansas

☒ All Available Years

☒ 2001

Step 3: Advanced Options ?
No Advanced Options

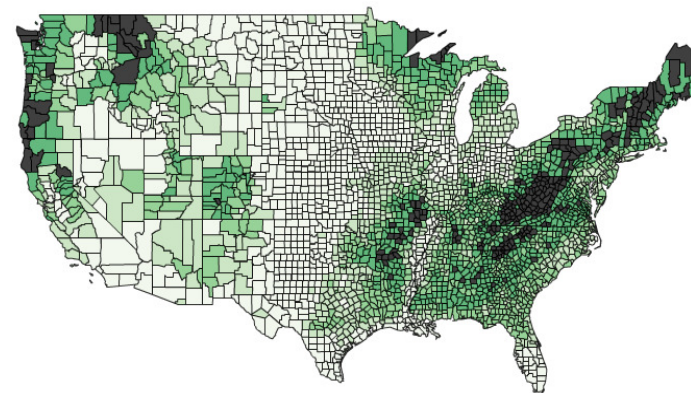
Clear Options

Climate Change | Heat Vulnerability | Percent of forest canopy | Multiple Geo | 2001

U.S. (2001)

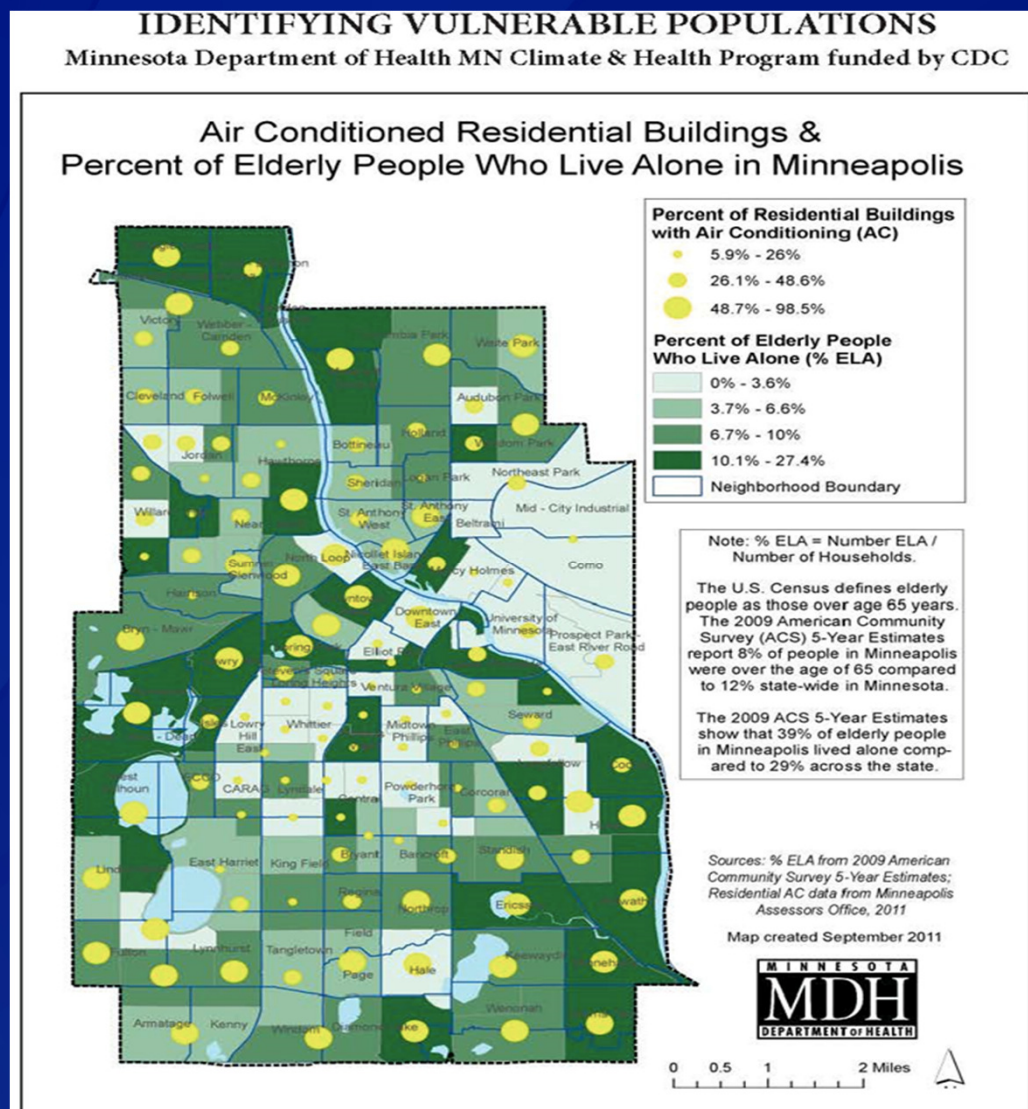


AK
HI



<http://ephtracking.cdc.gov/showHome.action>

Vulnerable neighborhoods during heat wave

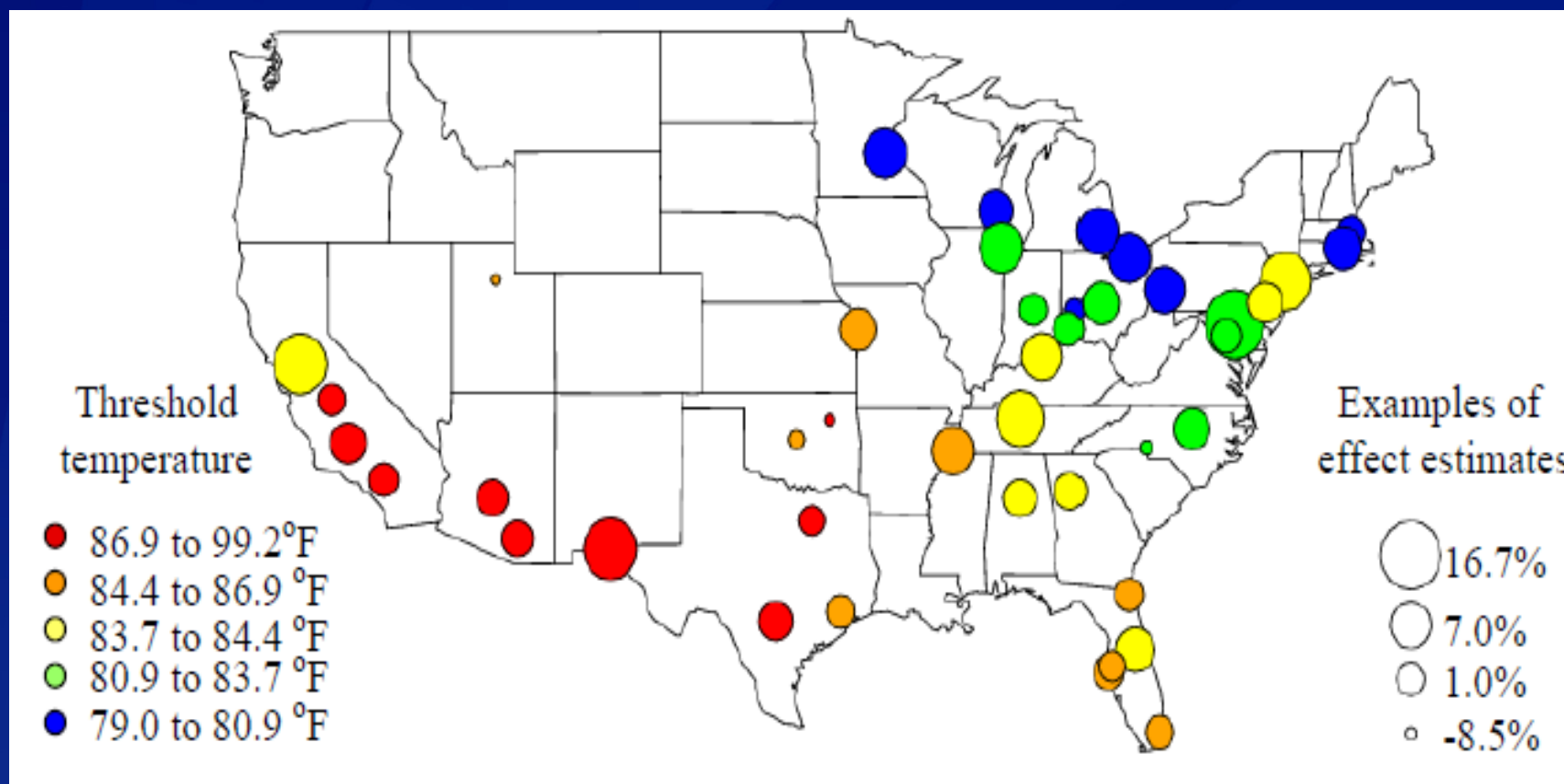


Estimating the burden of disease

CDC, National Center for Environmental Health



Mortality risk from heat waves



Andersen and Bell, 2011, Environmental Health Perspectives

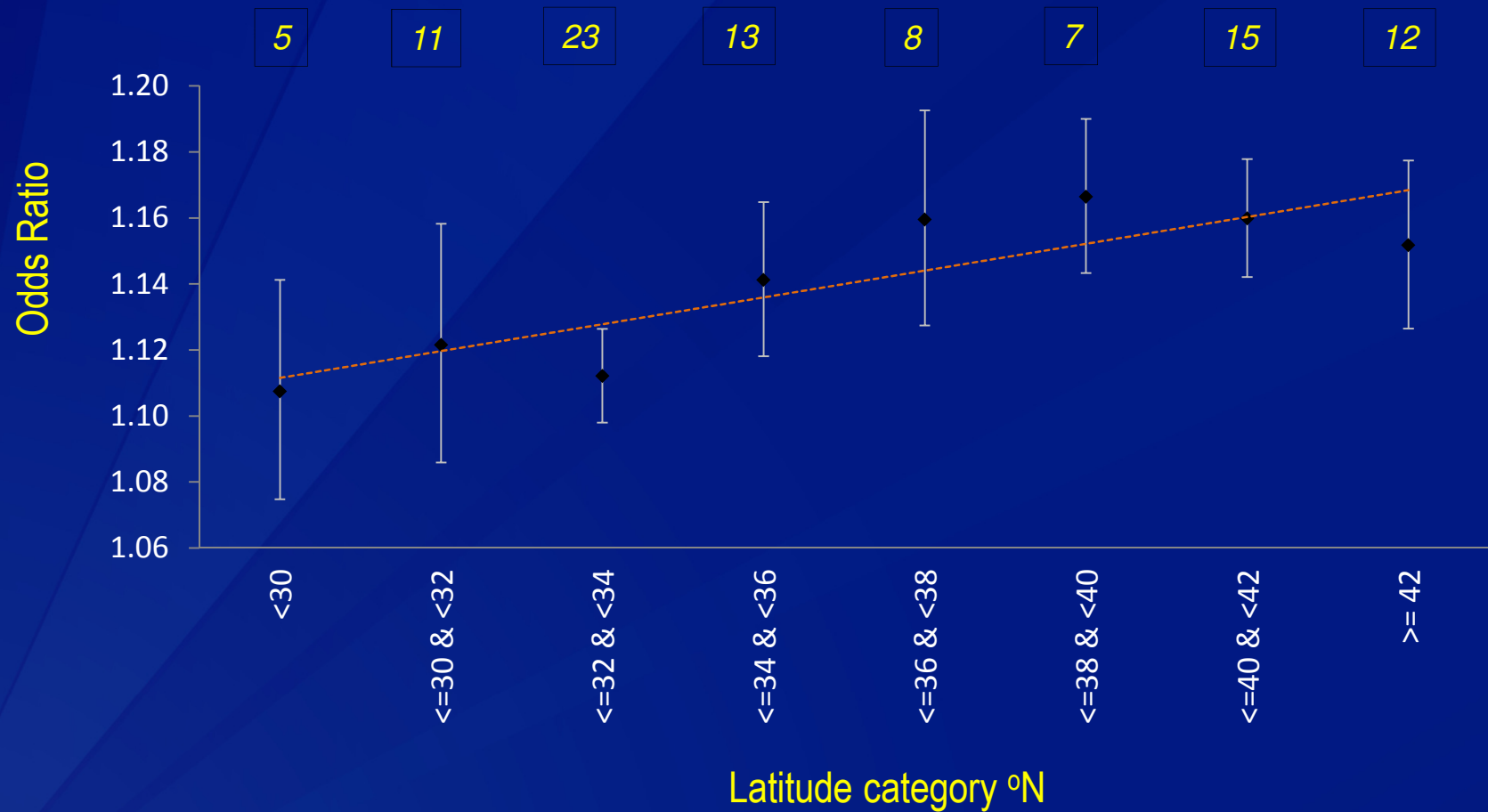
Temperature profile on ED visit days change by place



Saha et al., (in press)

Latitude category °N

Odds ratio of ED visit associated with extreme heat by Latitude




Saha et al., (*in press*)

Building capacity for health interventions

CDC, National Center for Environmental Health




CDC's New Extreme Heat Webpage

CDC Home
 Centers for Disease Control and Prevention
 CDC 24/7: Saving Lives. Protecting People.™

A-Z Index [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#) <#>

Extreme Heat and Your Health

Heat-related deaths and illness are preventable, yet annually many people succumb to extreme heat. An important goal of this web site is to provide easily accessible resources for members of the public, local health departments and other organizations, assisting ongoing outreach efforts to those most vulnerable to extreme heat events.




CDC e-Learning Course
 Reinforce awareness of heat-related illness **GO»**

Media Toolkit
 Watch for Signs
 e-learning **>>**

Email page link
 Print page
 Get email updates
 Subscribe to RSS
 Listen to audio/Podcast


View page in:
 Español (Spanish)



STAY COOL.

Keep your body temperature cool to avoid heat-related illness.


- Stay in air-conditioned buildings as much as possible.
- Find an air-conditioned shelter.
- Do not rely on a fan as your primary cooling device.
- Avoid direct sunlight.
- Wear lightweight, light-colored clothing.
- Take cool showers or baths.
- Check on those most at-risk twice a day.



STAY HYDRATED.

Because your body loses fluids through sweat, you can become dehydrated during times of extreme heat.

- Drink more water than usual.
- Don't wait until you're thirsty to drink more fluids.
- Drink from two to four cups of water every hour while working or exercising outside.
- Avoid alcohol or liquids containing high amounts of sugar.
- Remind others to drink enough water.




STAY INFORMED.

Stay updated on local weather forecasts so you can plan activities safely when it's hot outside.


- Check local news for extreme heat alerts and safety tips.
- Learn the symptoms of heat illness.
- For more information, please click [here](#).

Extreme Heat Resources


- Climate Change and Extreme Heat Events Guidebook [3.33 MB]
- Excessive Heat Guidebook [710 KB]
- BAM! Body and Mind (Safety Guidance for Kids)
- Tracking Network/Extreme Heat
- Extreme Heat Infographic
- PSAs and Podcast
 - Keep Your Cool in Hot Weather
 - Keeping Cool in a Heat Wave
 - Stay Healthy and Safe in Hot Weather
 - Beat the Heat




People aged 65 and older




People with chronic medical conditions




Outdoor workers



Infants and Children



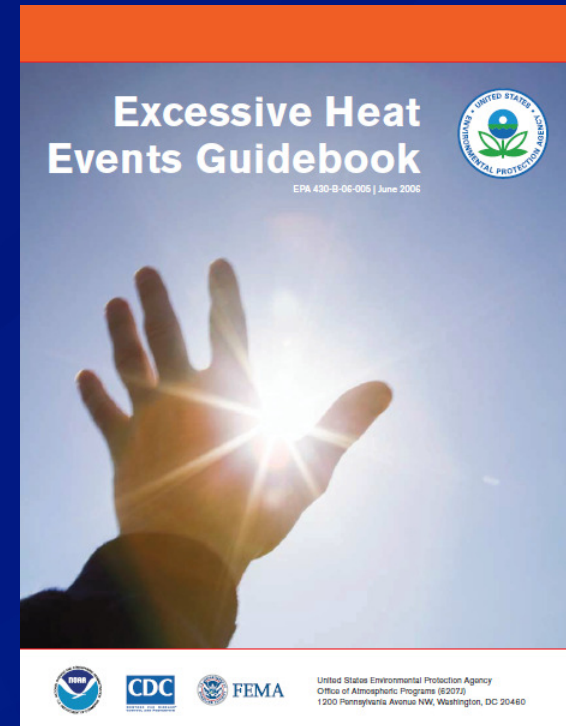
Low income



Athletes

A one-stop shop for CDC extreme heat resources, organized by subject and audience

Guidance for preventing heat-related illness



These guidebooks provide information about:

- Defining and responding to extreme heat events
- Climate change and extreme heat events
- Variables that affect extreme heat events
- The development and implementation of extreme heat event programs (case studies)

Thank you

**Climate and Health program
Centers for Disease Control and Prevention
<http://www.cdc.gov/climateandhealth/>**

**ssaha@cdc.gov
Phone: 770.488.0783**

