Beat the Heat: A Multi-Stakeholder Approach with CDC's New Heat and Health Initiative

American Public Health Association, the National League of Cities and WEACT for Environmental Justice

July 18, 2024

Ambarish Vaidyanathan, PhD
Senior Health Scientist, CDC's Climate and Health Program, National Center for Environmental Health

Laura Seeff, MD
Senior Medical Advisor, CDC's National Center for Environmental Health

Heat: A Public Health Priority

- Heat has significant impacts on public health in the United States

- Deaths and illnesses associated with heat exposure are a continuing public health concern as climate change results in longer, hotter, and more frequent episodes of extreme heat.

Centers for Disease Control and Prevention
MMWR
Morbidity and Mortality Weekly Report
Weekly / Vol. 73 / No. 15
April 18, 2024

Heat-Related Emergency Department Visits — United States, May–September 2023

Ambarish Vaidyanathan, PhD[1]; Abigail Gates, MSPH[2]; Claudia Brown, MDP[1]; Emily Prezzato, MPH[1]; Aaron Bernstein, MD[3]

Abstract

Unprecedented heat waves can affect all persons, but some are more sensitive to the effects of heat, including children and adults with underlying health conditions, pregnant women, and outdoor workers. Many regions of the United States experienced record-breaking high temperatures in 2023, with populations exposed to extremely high temperatures for prolonged periods. CDC examined emergency department (ED) visits associated with heat-related illness (HRI) from the National Syndromic Surveillance Program and compared daily HRI ED visit rates during the warm-season months (May–September) of 2023 with those during 2018–2022. In the 2023 warm-season months, daily HRI ED visit rates peaked in several regions and remained elevated for a prolonged duration. More males than females sought care in EDs for HRI, especially males aged 18–64 years. CDC issued multiple public health alerts using the Epidemic Information Exchange system to bring attention to increases in ED utilization for HRI. Deaths and illnesses associated with heat exposure are a continuing public health concern as climate change results in longer, hotter, and more frequent episodes of extreme heat. Near real-time monitoring of weather conditions and adverse health outcomes can guide public health practitioners' timing of risk communication and implementation of prevention measures associated with extreme heat.

Hot weather conditions can affect all persons; however, for certain specific populations, exposure and health risks are compounded by adverse physiologic, behavioral, demographic, or socioeconomic factors that result in their being disproportionately affected by extreme heat (*1*). Populations at highest risk typically include older persons, children and adolescents, persons with preexisting health conditions, pregnant women, outdoor workers, persons with limited access to cooling resources, and persons living in low-income communities.[§] Further, exceptionally hot conditions can increase the demand for medical services and strain health systems (e.g., a surge in persons seeking emergency department [ED] care) (*2*).

[§] https://www.cdc.gov/disasters/extremeheat/index.html

National Weather Service Tools to Assess Heat

Heat Index

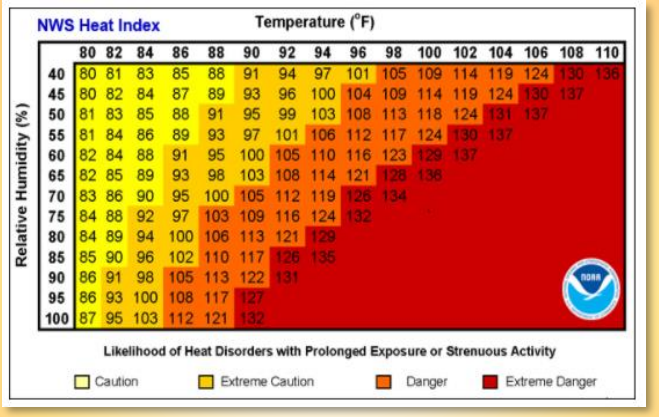


Photo Credit: NOAA/NWS

Heat stress in context for **general public**

Wet Bulb Globe Temperature

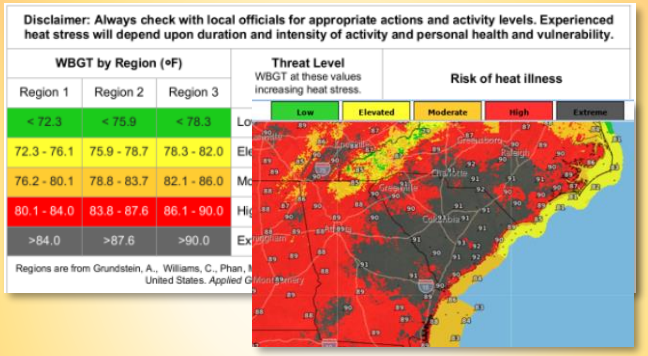


Photo Credit: NOAA/NWS

Heat stress in context for **healthy, active outdoor** communities

HeatRisk

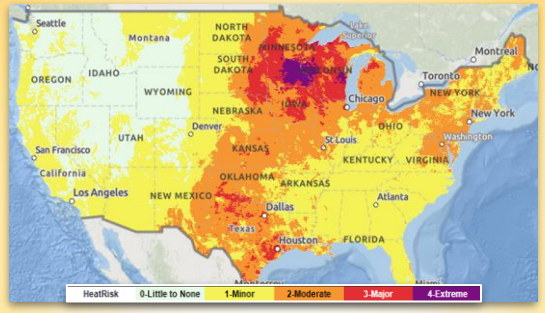


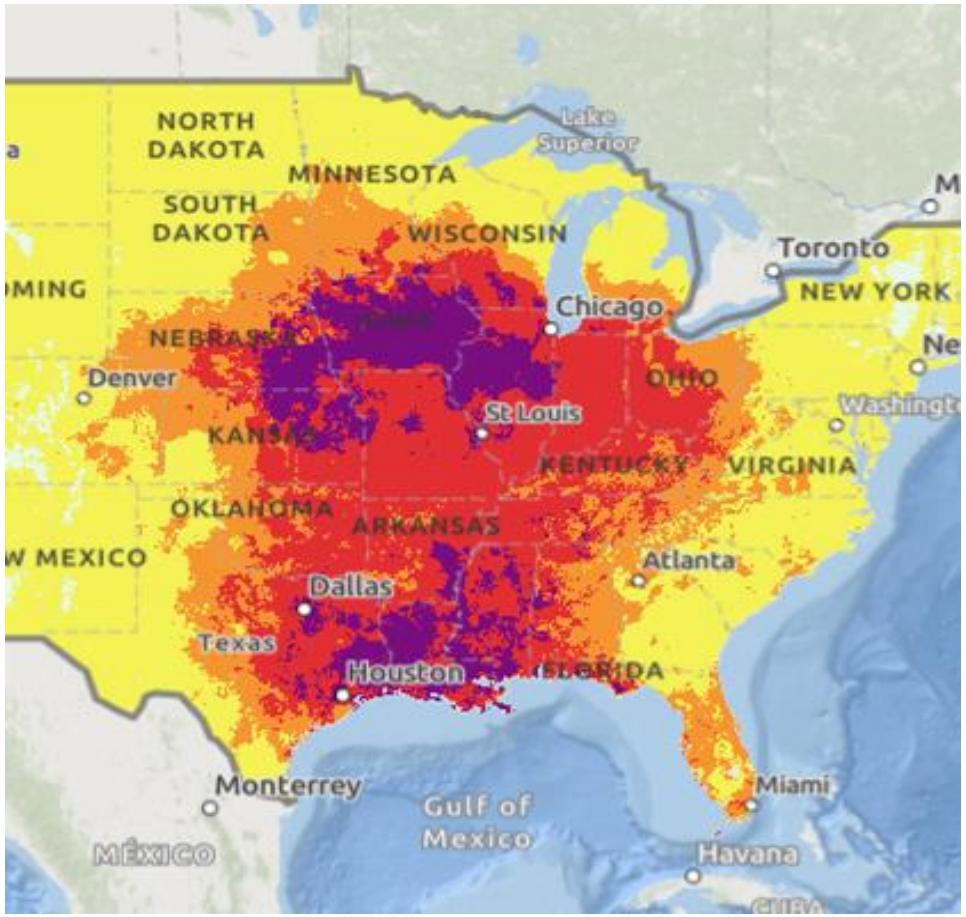
Photo Credit: NOAA/NWS

Heat forecasts in a **climatological context** with local epidemiological evidence

What is NWS HeatRisk?

A numeric/color-based heat service that serves as a ***framework*** for leveraging peer-reviewed heat-health science and data consistently across the CONUS

Category	Risk of Heat-Related Impacts
Green 0	Little to no risk from expected heat.
Yellow 1	Minor - This level of heat affects primarily those individuals extremely sensitive to heat, especially when outdoors without effective cooling and/or adequate hydration.
Orange 2	Moderate - This level of heat affects most individuals sensitive to heat, especially those without effective cooling and/or adequate hydration. Impacts possible in some health systems and in heat-sensitive industries.
Red 3	Major - This level of heat affects anyone without effective cooling and/or adequate hydration. Impacts likely in some health systems, heat-sensitive industries and infrastructure.
Magenta 4	Extreme - This level of rare and/or long-duration extreme heat with little to no overnight relief affects anyone without effective cooling and/or adequate hydration. Impacts likely in most health systems, heat-sensitive industries and infrastructure.



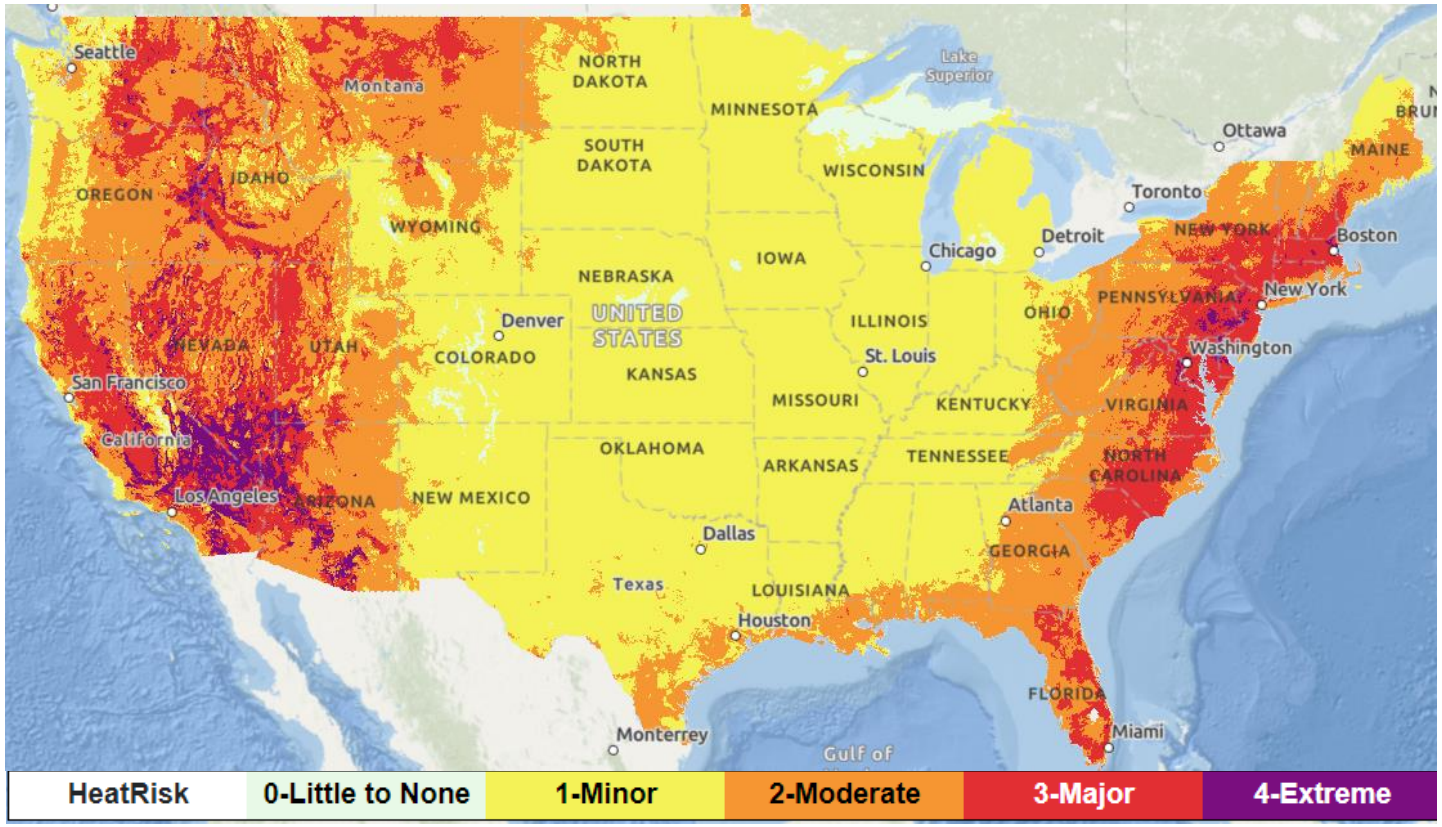
Kind of like AQI…

Simple Numeric/Color System

Excellent Geographical Coverage

But for Heat!

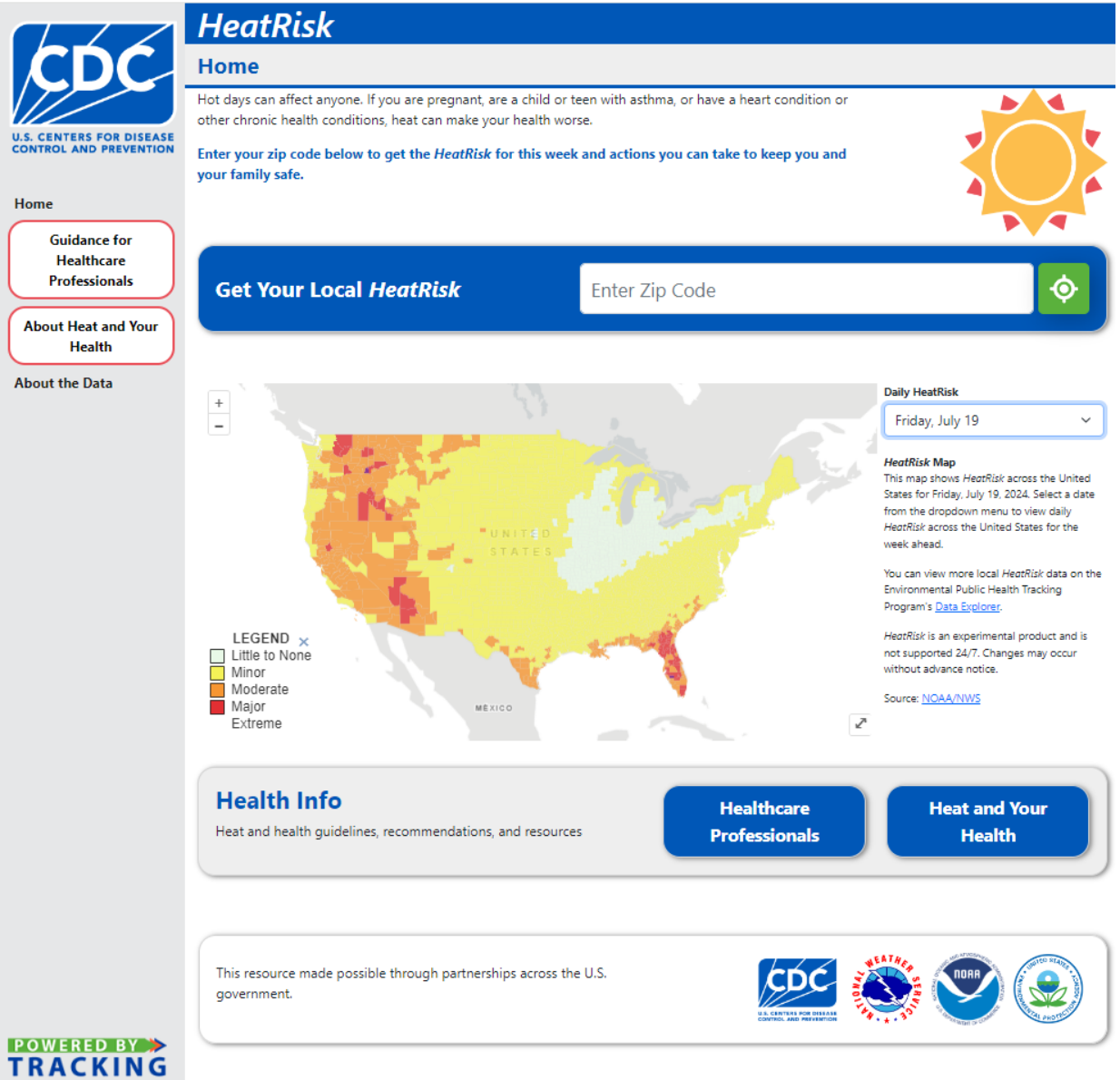
Accessing NWS HeatRisk Forecast Tool



- Available at a 2.5X2.5 KM spatial resolution
- Data available in GeoTIFF and KML files

https://www.wpc.ncep.noaa.gov/heatrisk/

CDC HeatRisk Dashboard



- Designed for the general public
- Integrates various heat resources in an easy-to-use, mobile-friendly interface
- Provides information on:
  - 7-day outlook for HeatRisk
  - Air quality levels (AQI from EPA's AirNow)
  - Recommended health actions
  - Links to CDC's clinical guidance
- Information searchable by Zip code
- HeatRisk and other related datasets can be downloaded via Tracking's Data Explorer

Photo Credit: CDC

www.cdc.gov/heatrisk

Heat-Health Tracker

U.S. CENTERS FOR DISEASE CONTROL AND PREVENTION

Home

Health Burden

Heat Exposure

Heat and Health Index

HeatRisk

About the Data

Learn More

Climate & Health Program

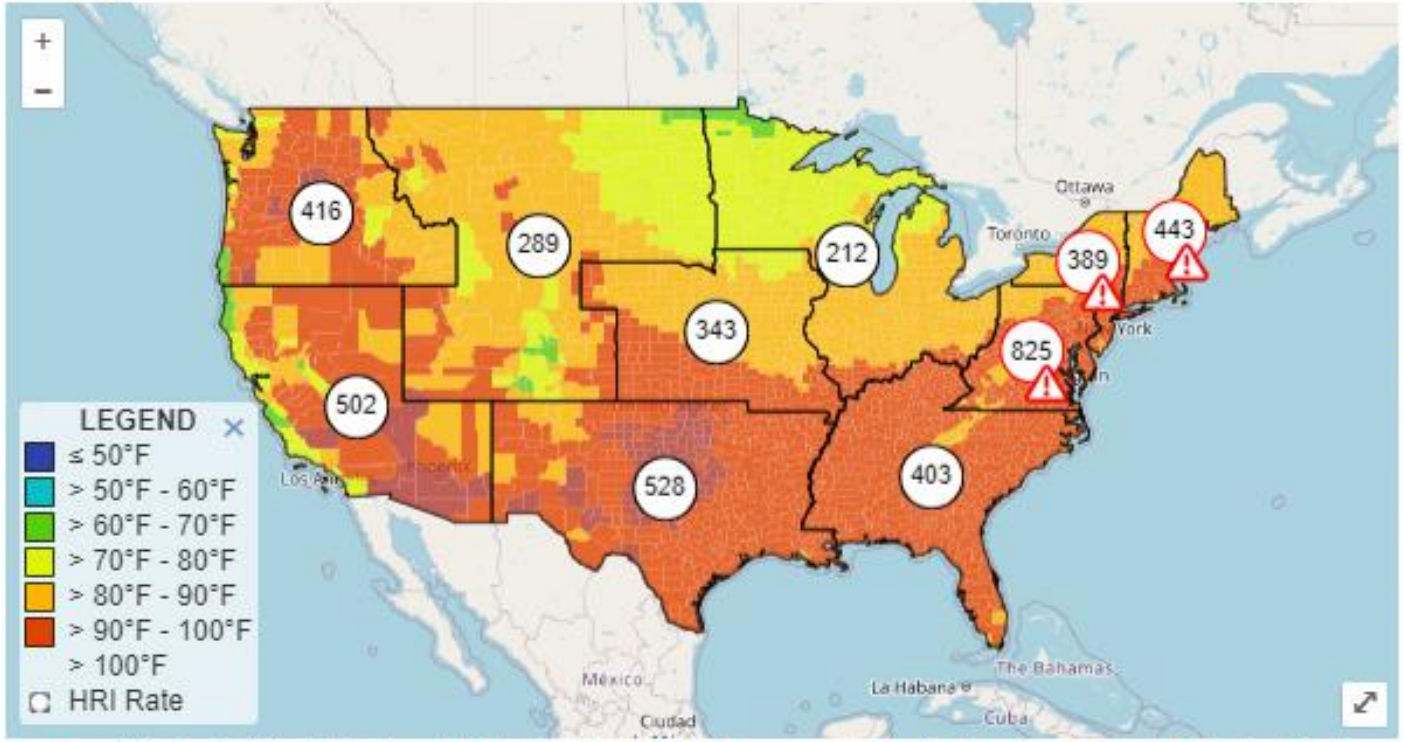
POWERED BY TRACKING

Heat & Health Tracker

Health Burden

Understand the health impacts caused by heat across the nation. The following maps and charts show the current and historic burden of heat. Select different time frames to see the rates of emergency department visits associated with heat-related illness.

Daily Heat-Related Illness



Choose a date
7/16/2024

About the Data

This map shows the rate of emergency department (ED) visits associated with heat-related illness (HRI) per 100,000 ED visits by region. The regions are defined by Health and Human Services for the selected day using data available through the National Syndromic Surveillance Program. Use the above dropdown to change the selected date. The colors on the map show the average maximum temperature by county for the same day and year, using data from the National Center for Environmental Information.

⚠ This icon indicates that extremely high rates of heat-related illness were detected in the region. Extremely high rates of heat-related illness are defined as exceeding the 95th percentile based on data from 2018-2023.

Photo Credit: CDC

https://ephtracking.cdc.gov/Applications/heatTracker/

Heat-Health Index

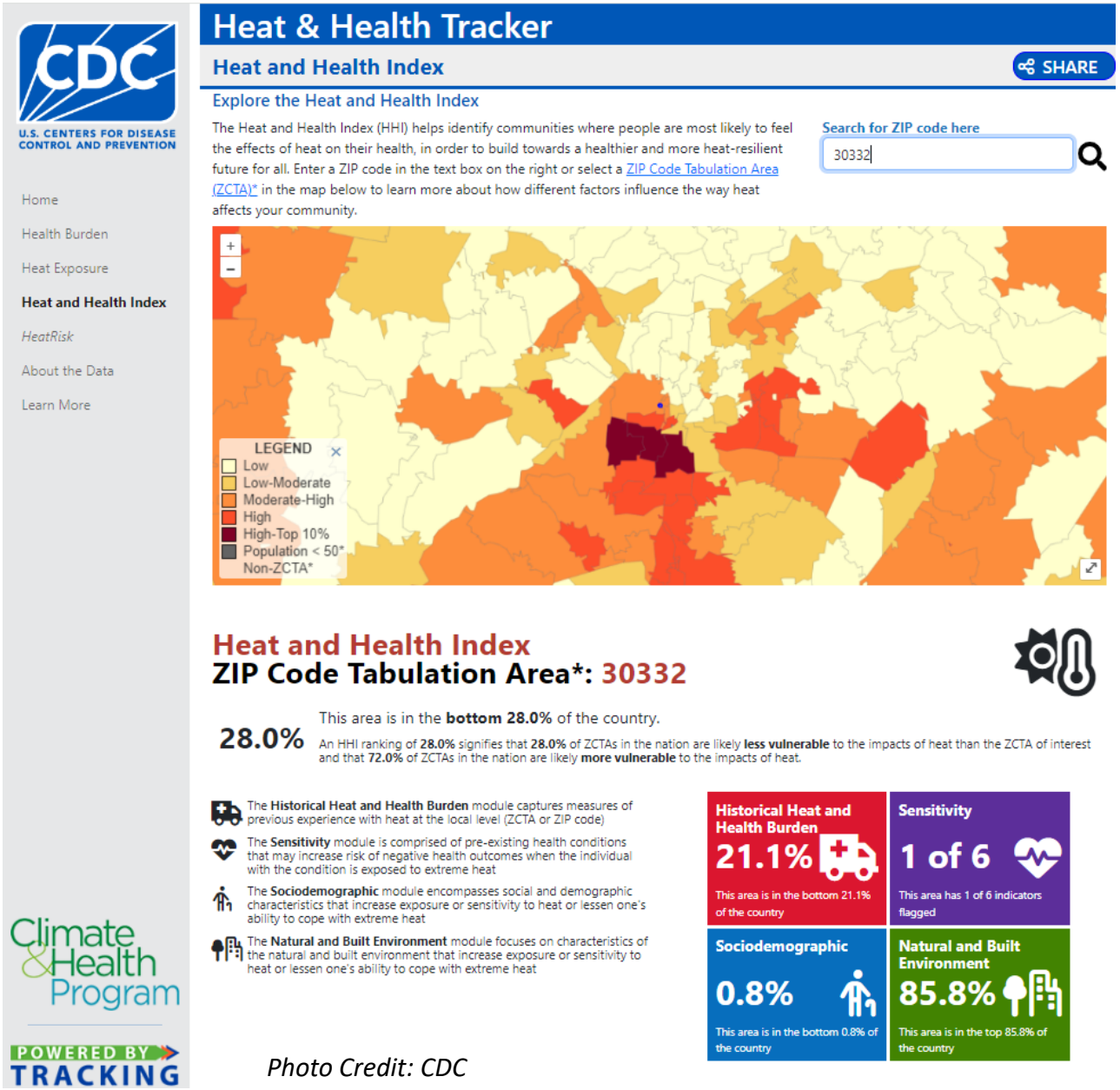


Photo Credit: CDC

- The Heat and Health Index (HHI) incorporates data on various risk factors:
  - Historical heat and health burden
  - Pre-existing health conditions
  - Sociodemographic information
  - Natural and built environment

- HHI provides a community ranking of where people are most likely to experience the effects of heat on their health

https://ephtracking.cdc.gov/Applications/heatTracker/

Heat and Health Guidance

CDC Heat and Health Guidance

Hot and getting hotter

Clinician-patient conversation *before* heat season

Implementation Focus

- Federally Qualified Health Centers
- Children with asthma
- Pregnant women
- Adults with cardiovascular disease
- General public

Heat and health guidance paired with HeatRisk forecasts

CDC HeatRisk Dashboard

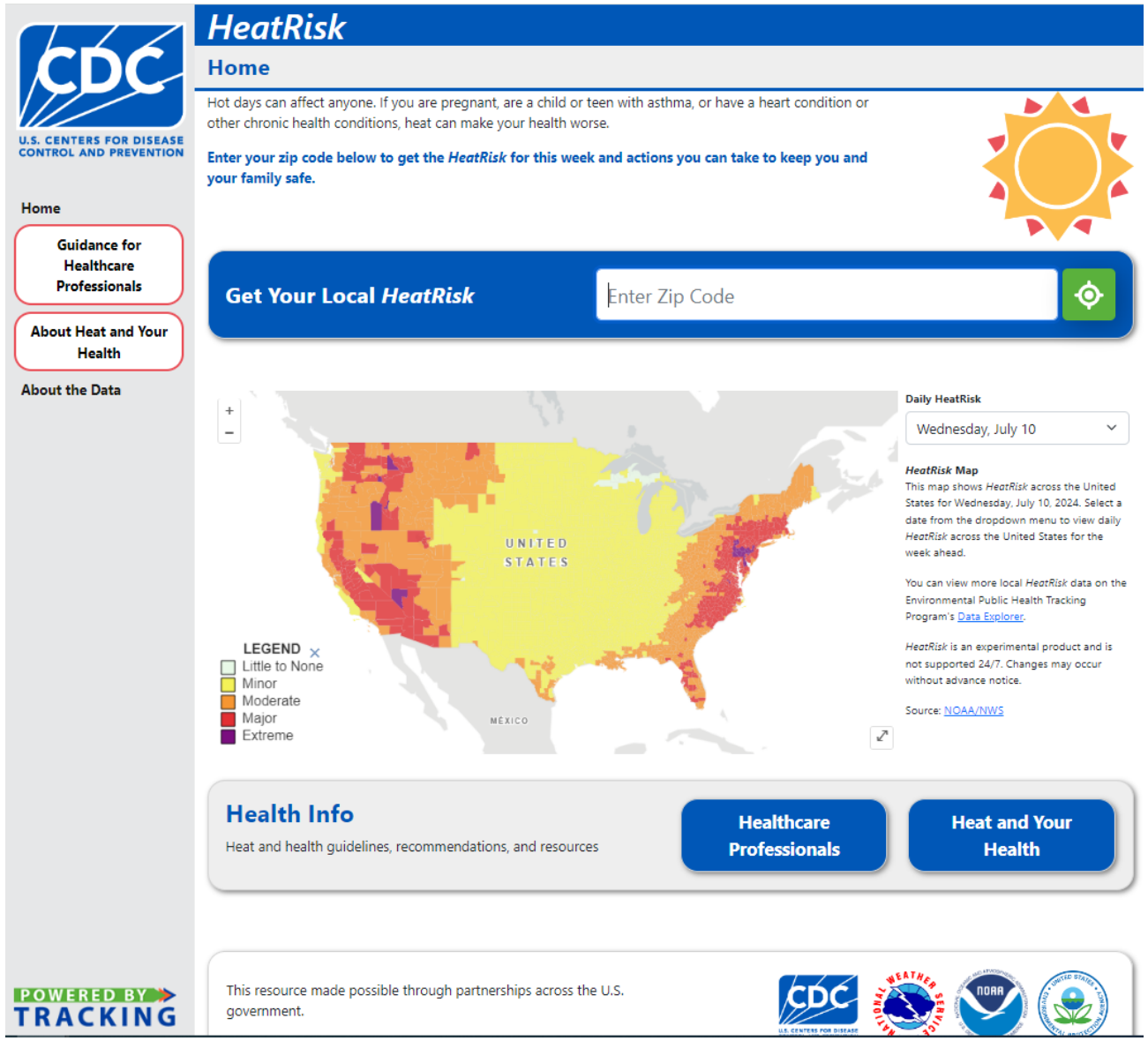


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Photo Credit: CDC

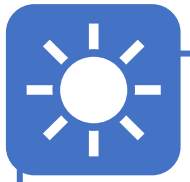
www.cdc.gov/heatrisk

Direct and Indirect Effects of Heat

Guidance for Healthcare Professionals

Clinician Guidance Components

How to Use HeatRisk and AQI



Heat Risk Factor Questionnaire

Heat and Medications

Asthma Clinical Guidance

Pregnancy Clinical Guidance

Cardiovascular Disease Clinical Guidance

5 Clinicians Guidance Elements

- **Assess** patient's risk factors for heat impacts on their health.
- **Educate** patients on how to protect themselves from heat.
- **Educate** patients on how to stay hydrated.
- **Educate** patients on how to reduce air pollution exposure.
- **Review** medications that may interact with heat.

CHILL'D OUT Use this questionnaire with your patients to assess risk factors for health harms from heat or poor air quality. Then, create a Heat Action Plan with your patient. If there is limited time, cover the bolded questions.

Cooling

- **Does your patient have working air conditioning?**
- Can they check and control indoor temperatures where they live?
- Do they have an electric fan?
- Do they know how to locate a cooling center if needed?

Housing

- **Does your patient have stable housing?**
- Do they live on a higher floor of a multi-story building where they may be exposed to more heat?
- Are they regularly exposed to indoor air pollutants such as secondhand smoke or mold?
- Do they have a portable air purifier or a filter in their HVAC system?

Isolation & mobility

- **Does your patient have a neighbor, friend, or family member who can check on them during hot days?**
- Does their mobility limit their ability to seek cooling in their home or elsewhere?

e**L**ectricity

- If **heat leads to a power outage,** does your patient have a plan for refrigerated medications and/or electric medical devices?

Learning

- **Does your patient check the daily and hourly weather forecast to know the hottest time of the day? Can they access the HeatRisk tool?**
- Where does your patient get information about how to protect their health from heat? What measures do they take to do so?

Drugs

- **Does your patient take medications that increase risk from heat exposure?**

Outside

- **How much time does your patient spend outdoors on hot days for work, sports, or recreation?**
- Are they exposed to outdoor air pollution at home, work, or elsewhere, such as a major roadway, construction site, industrial facility, or frequent wildfire smoke?
- Do they have allergies to grass, weeds, and tree pollens?

CHILL'D-Out: A Heat and Health Risk Factor Screening Questionnaire | Heat Health | CDC)
https://www.cdc.gov/heat-health/hcp/clinical-guidance/chill-d-out-screening-questionnaire.html

Heat and Medications

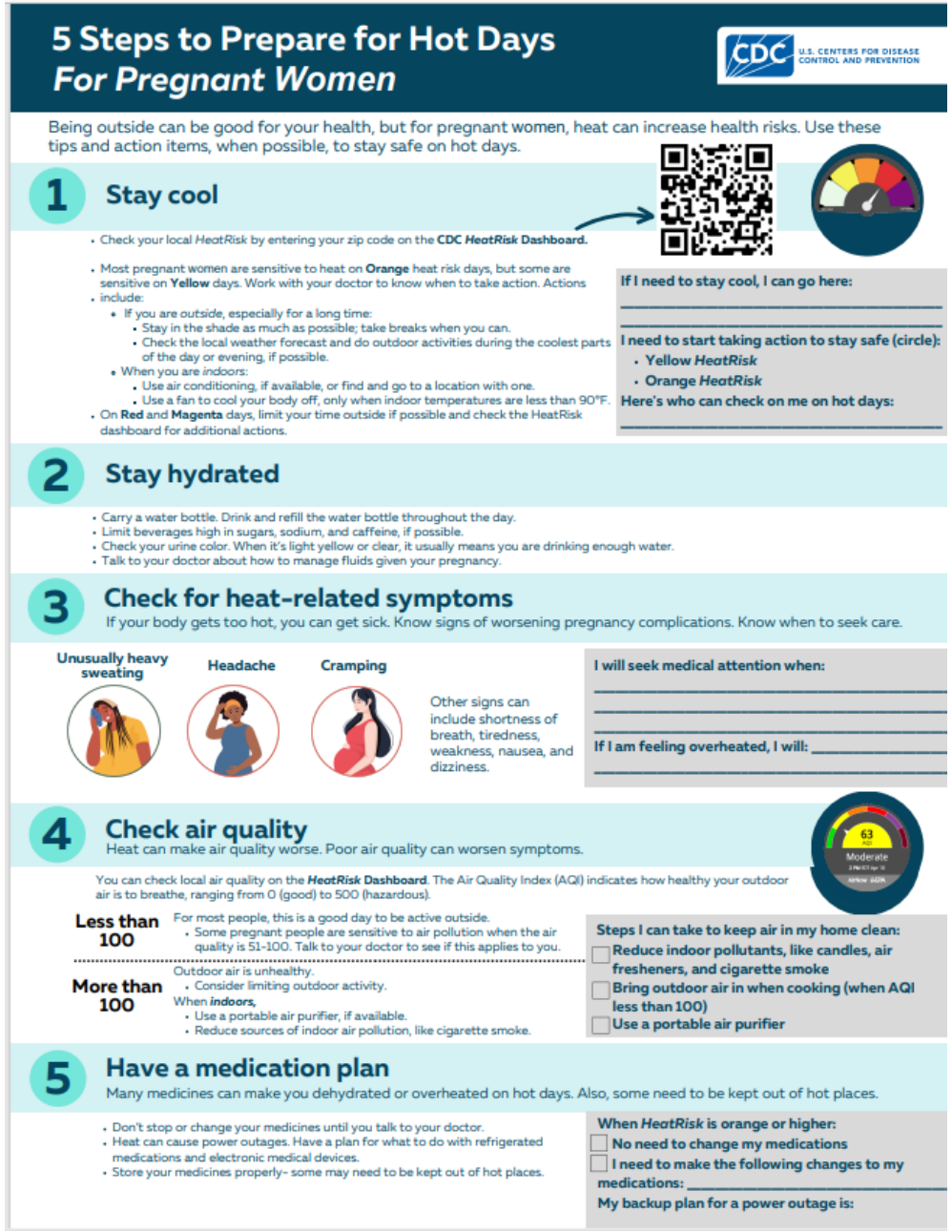
- **Medications and heat interact in three primary ways:**
  - Interfere with thermoregulation and/or fluid balance
  - Degrade or damage medications
  - Increase skin sensitivity from sun exposure

- **In advance of hot weather, review medications with your patients and make a plan**:
  - Consider adjusting medication doses or frequency.
  - Consider adjusting fluid restrictions on hot days.
  - Review symptoms that may indicate drug interactions with heat and when to seek care.
  - Identify point of contact to check on patients.
  - Don’t stop medications abruptly!

- **Table of medications and heat**

Heat and Medications – Guidance for Clinicians | Heat Health | CDC https://www.cdc.gov/heat-health/hcp/clinical-guidance/heat-and-medications-guidance-for-clinicians.html

Patient Tip Sheets and Heat Action Plans



5 Steps to Prepare for Hot Days
For Pregnant Women

CDC U.S. CENTERS FOR DISEASE CONTROL AND PREVENTION

Being outside can be good for your health, but for pregnant women, heat can increase health risks. Use these tips and action items, when possible, to stay safe on hot days.

1 Stay cool

- Check your local *HeatRisk* by entering your zip code on the **CDC *HeatRisk* Dashboard.**
- Most pregnant women are sensitive to heat on **Orange** heat risk days, but some are sensitive on **Yellow** days. Work with your doctor to know when to take action. Actions include:
  - If you are *outside*, especially for a long time:
    - Stay in the shade as much as possible; take breaks when you can.
    - Check the local weather forecast and do outdoor activities during the coolest parts of the day or evening, if possible.
  - When you are *indoors*:
    - Use air conditioning, if available, or find and go to a location with one.
    - Use a fan to cool your body off, only when indoor temperatures are less than 90°F.
- On **Red** and **Magenta** days, limit your time outside if possible and check the HeatRisk dashboard for additional actions.

If I need to stay cool, I can go here: _____

I need to start taking action to stay safe (circle):
- **Yellow *HeatRisk***
- **Orange *HeatRisk***

Here's who can check on me on hot days: _____

2 Stay hydrated

- Carry a water bottle. Drink and refill the water bottle throughout the day.
- Limit beverages high in sugars, sodium, and caffeine, if possible.
- Check your urine color. When it's light yellow or clear, it usually means you are drinking enough water.
- Talk to your doctor about how to manage fluids given your pregnancy.

3 Check for heat-related symptoms

If your body gets too hot, you can get sick. Know signs of worsening pregnancy complications. Know when to seek care.

Unusually heavy sweating | **Headache** | **Cramping**

Other signs can include shortness of breath, tiredness, weakness, nausea, and dizziness.

I will seek medical attention when: _____

If I am feeling overheated, I will: _____

4 Check air quality

Heat can make air quality worse. Poor air quality can worsen symptoms.

You can check local air quality on the ***HeatRisk* Dashboard**. The Air Quality Index (AQI) indicates how healthy your outdoor air is to breathe, ranging from 0 (good) to 500 (hazardous).

Less than 100
For most people, this is a good day to be active outside.
- Some pregnant people are sensitive to air pollution when the air quality is 51-100. Talk to your doctor to see if this applies to you.

More than 100
Outdoor air is unhealthy.
- Consider limiting outdoor activity.

When ***indoors,***
- Use a portable air purifier, if available.
- Reduce sources of indoor air pollution, like cigarette smoke.

Steps I can take to keep air in my home clean:
- ☐ **Reduce indoor pollutants, like candles, air fresheners, and cigarette smoke**
- ☐ **Bring outdoor air in when cooking (when AQI less than 100)**
- ☐ **Use a portable air purifier**

5 Have a medication plan

Many medicines can make you dehydrated or overheated on hot days. Also, some need to be kept out of hot places.

- Don't stop or change your medicines until you talk to your doctor.
- Heat can cause power outages. Have a plan for what to do with refrigerated medications and electronic medical devices.
- Store your medicines properly- some may need to be kept out of hot places.

When *HeatRisk* is orange or higher:
- ☐ **No need to change my medications**
- ☐ **I need to make the following changes to my medications:** _____

My backup plan for a power outage is:

For Pregnant Women, Children and teens with Asthma, and People with Heart Disease

[Toolkit for People with Heart Disease | Heat Health | CDC https://www.cdc.gov/heat-health/hcp/toolkits/toolkit-for-people-with-heart-disease.html]

[Tips and Action Plans for Children with Asthma | Heat Health | CDC https://www.cdc.gov/heat-health/hcp/toolkits/tips-and-action-plans-for-children-with-asthma.html]

About Heat and Your Health

JUNE 25, 2024 ESPAÑOL

About Heat and Your Health

KEY POINTS

- Protect yourself and others when it's hot outside by staying cool, staying hydrated, and knowing the symptoms.
- Hot days can affect anyone. If you are pregnant, are a child or teen with asthma, or have a heart condition or other chronic health conditions, heat can make your health worse.
- Work with your doctor to create a Heat Action Plan PDF

Stay Cool

If you are outside, especially for a long time, and the HeatRisk is red or above, you can:

- Stay in the shade as much as possible
- Take breaks when you can
- Do outdoor activities during the coolest parts of the day or evening, if possible.

ON THIS PAGE

Make a Heat Action Plan with Your Doctor

U.S. CENTERS FOR DISEASE CONTROL AND PREVENTION

1 Stay Cool

Stay in the shade

Use a fan

Use an air conditioner

Check the CDC HeatRisk Dashboard for more information.

2 Stay Hydrated

3 Know the Symptoms

Unusually heavy sweating

Shortness of breath

Dizziness

Other signs can include headache, tiredness, weakness, and nausea.

4 Check Air Quality

Clear Day

High Pollution

5 Have a Medication Plan

Make a plan

Store in a cool place

Prepare for power outages

How Will We Measure Impact?

Process measure

- ✓ Document downloads

Outcome measures

- ✓ Reduction in ED visits
- ✓ Links to community resources

THANK YOU!

This presentation is supported by the Centers for Disease Control and Prevention (CDC) of the U.S. Department of Health and Human Services (HHS) as part of an award with 0 (zero) percentage financed with non-governmental sources. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by CDC or the U.S. Government.

Back-up slides