

A sunset over a city skyline. The sun is a large, bright yellow circle in the upper right quadrant of the sky. The sky is a gradient of orange and red, with some dark clouds. The city skyline is a dark silhouette of various buildings of different heights and shapes, stretching across the bottom of the image.

Astrid Caldas

Senior Climate Scientist

Climate & Energy Program

@climategeek

Killer Heat in the United States
www.ucsusa.org/killer-heat

“We have seen a huge spike in ER visits and admissions...in the past several weeks. Huge. We have been admitting people left and right.”

--Dr. Arash Armin, chief of Emergency Medicine and Chief of Staff at Beaumont Hospital, Trenton, MI. July 19, 2019

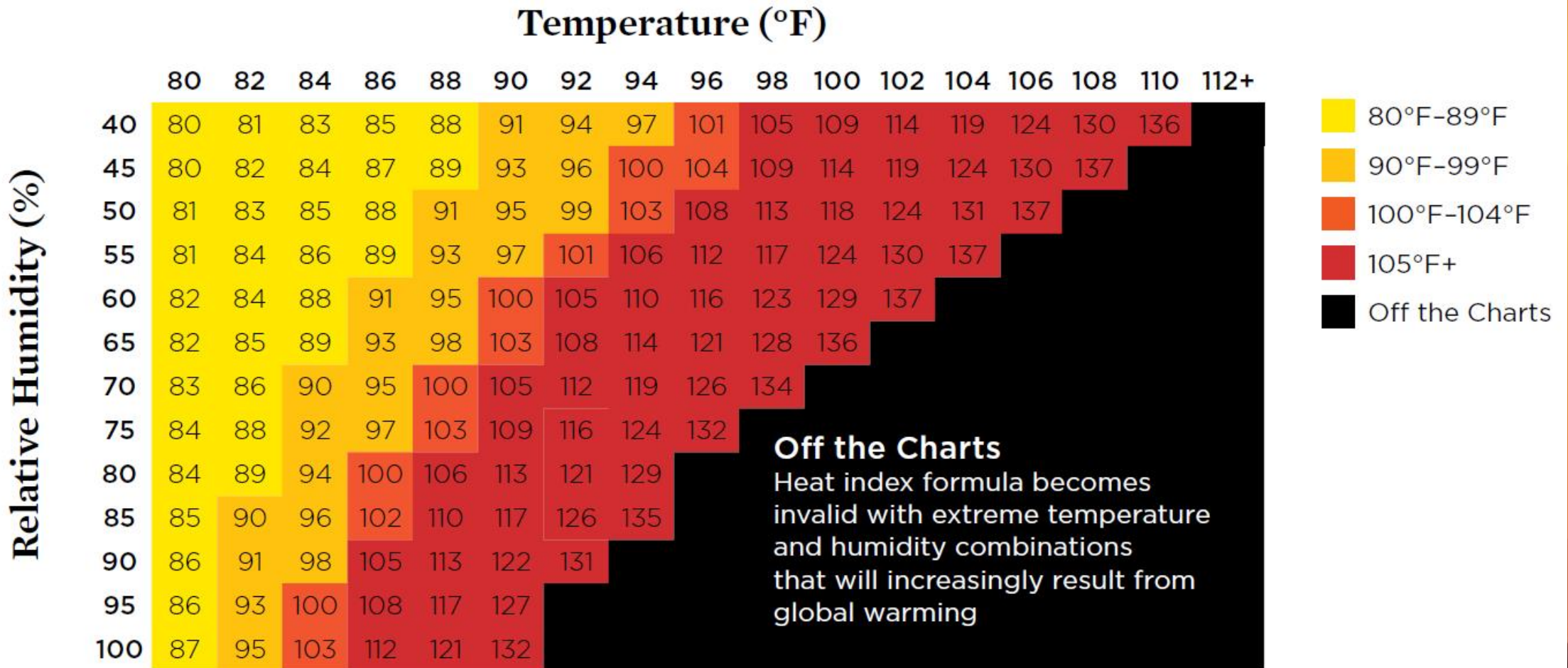


The background of the slide is a photograph of a city skyline at sunset. The sky is a gradient of orange and yellow, with a large, bright sun on the right side. The city buildings are silhouetted against the sky. A large white bracket is on the left side of the slide, framing the title and the list.

About the Killer Heat analysis

- High-resolution climate models
- Use temperature and humidity to calculate **heat index**
- Three future emissions scenarios

About the Killer Heat analysis



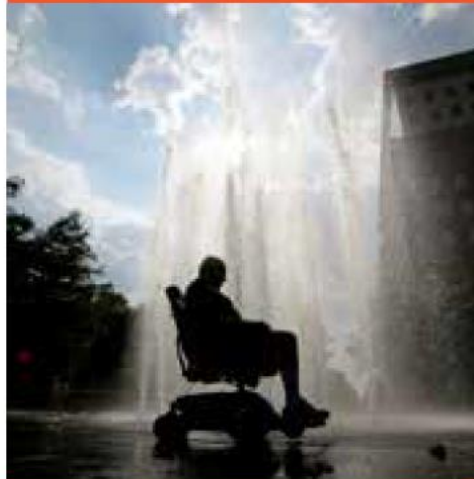
About the Killer Heat analysis

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.

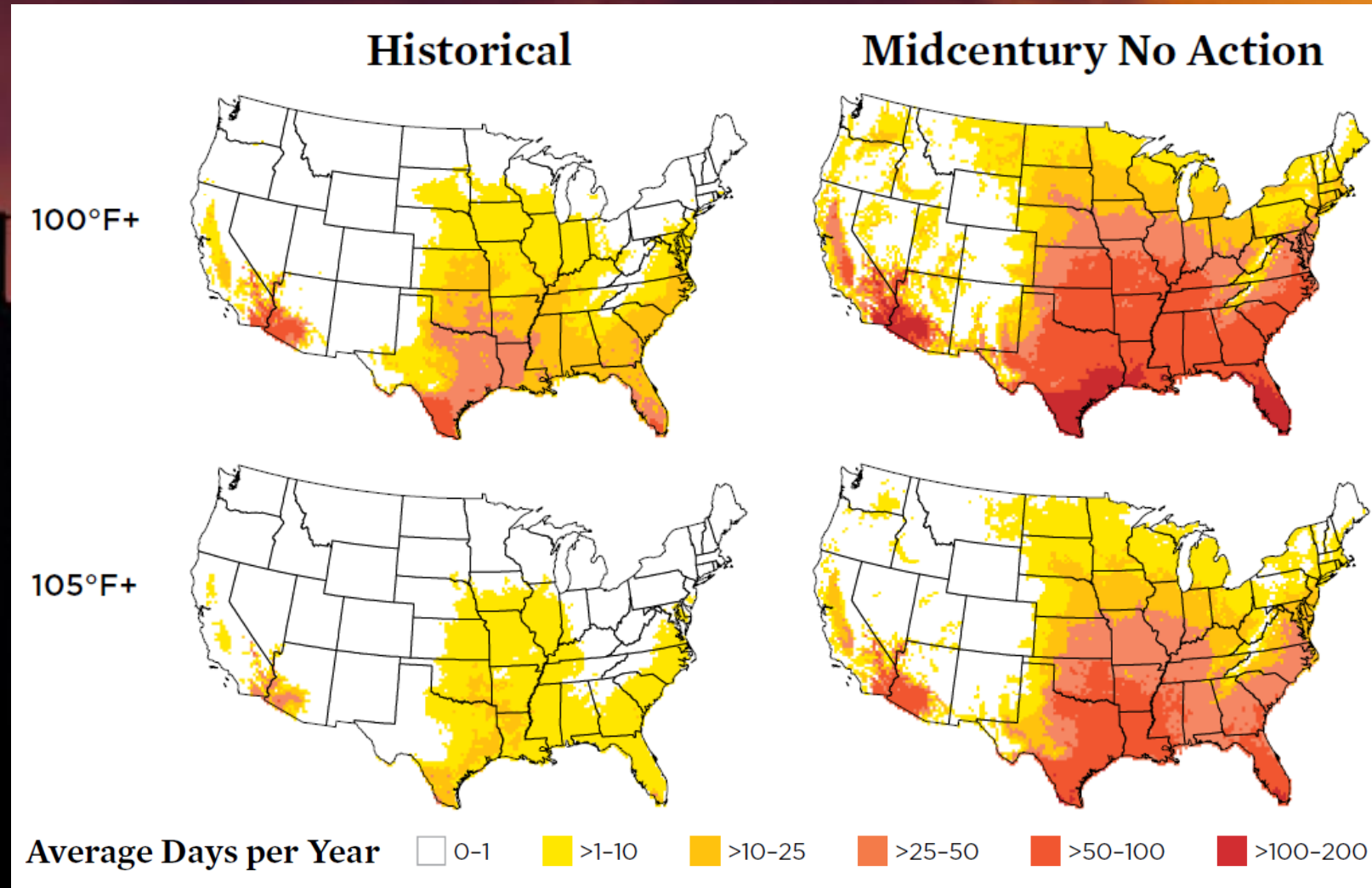
Heat Index
Off the Charts



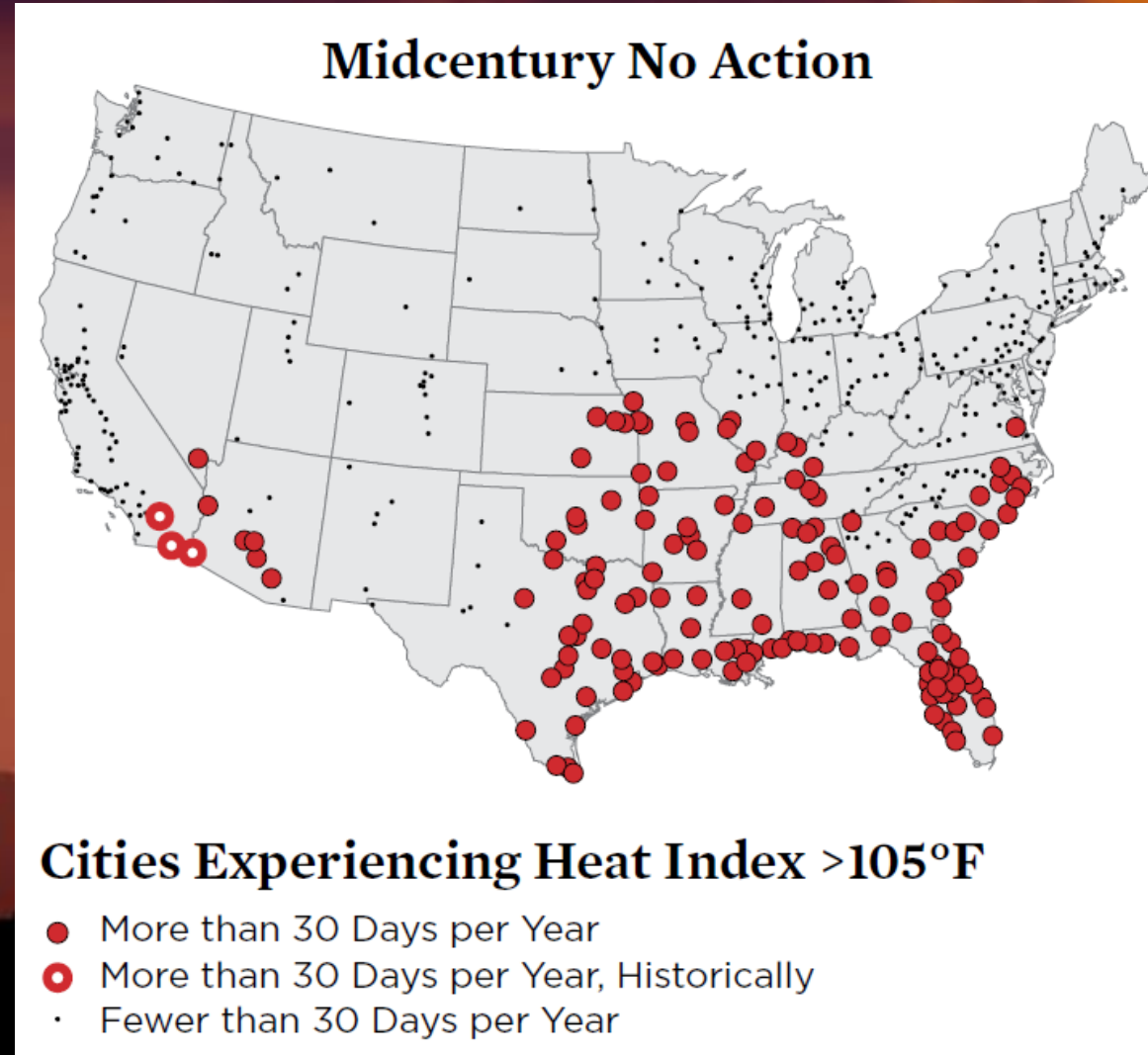
Undetermined: any level of exposure is presumed extremely dangerous for all people and likely to result in heat-related illness or even death.

Left to right: AP Photo/Napa Valley Register; Lianne Milton; AP Photo/Julio Cortez; Izf/Stock; logoboom/Shutterstock

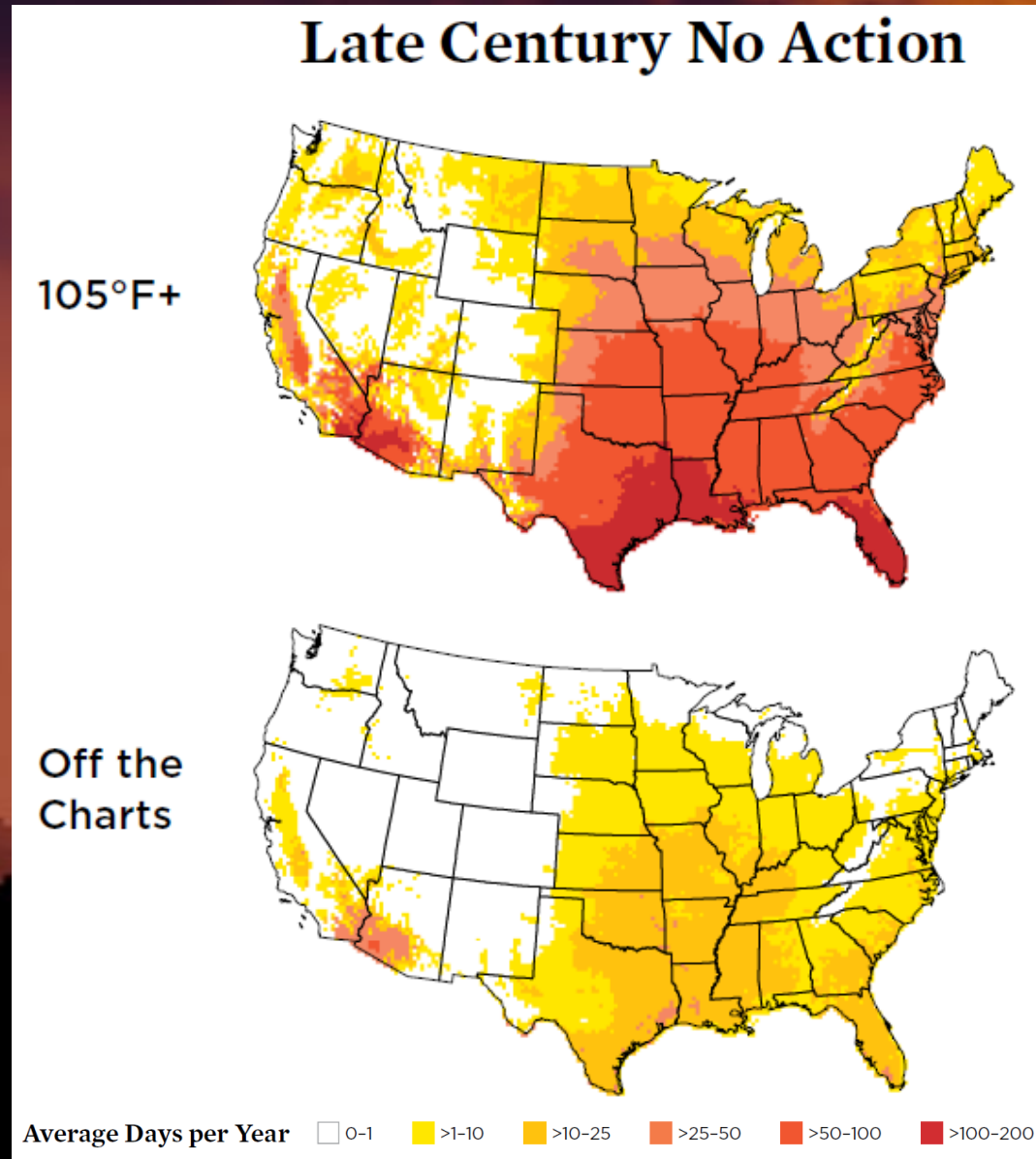
Midcentury: Steep increase in extreme heat



Midcentury: 150 cities with frequent, dangerous heat

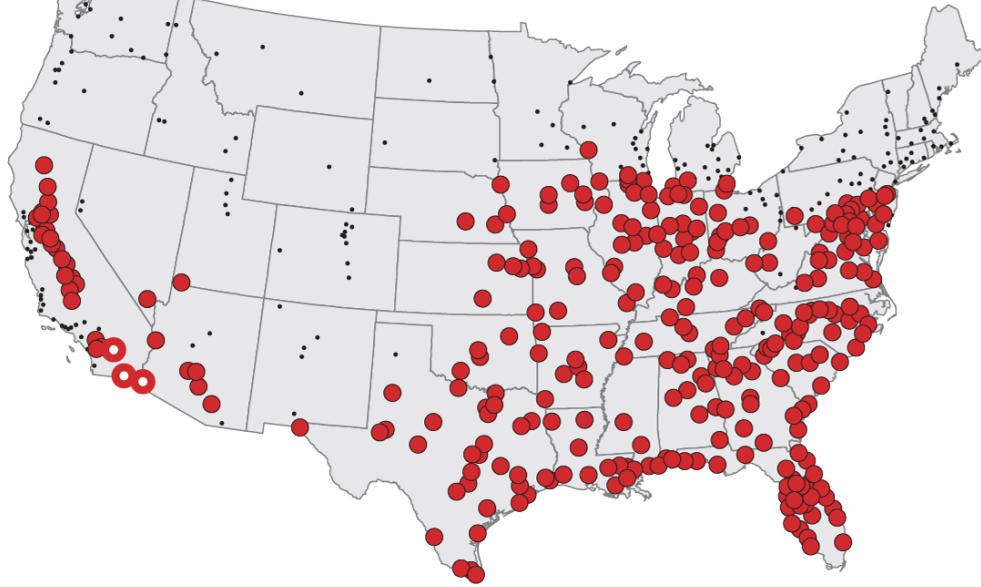


Late century: Unprecedented heat

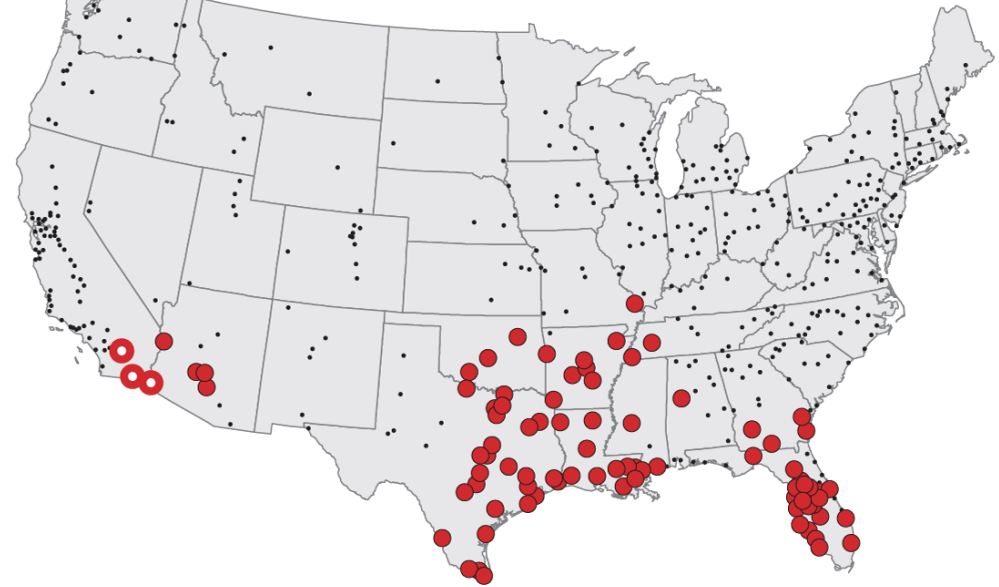


Taking action now would limit expansion of heat

Late Century No Action



Late Century Rapid Action



Cities Experiencing Heat Index $>105^{\circ}\text{F}$

- More than 30 Days per Year
- More than 30 Days per Year, Historically
- Fewer than 30 Days per Year

[Takeaways

- Failing to take action to reduce emissions would lead to a staggering expansion of dangerous heat.
- Aggressively reducing emissions could contain that expansion.
- The time to act is now.

Adaptation:

*Protecting & Keeping
People Safe*



Credit: AP Photo David Goldman



Mitigation:

*Investing in a Rapid Path to
Reduced Emissions*



Credit: Ellysa Ho, iStock

Keeping people safe

- Improved heat early-warning systems
- State/local heat adaptation and emergency response plans
- Cooling standards for public housing
- Investments in community cooling infrastructure, trees, shading, cool roofs
- Bill assistance programs for low-income households
- Investments in heat- and climate-smart infrastructure
- Reforming utility disconnect policies

Keeping People Safe: *Outdoor workers*



AP: Rich Pedroncelli



AP Photo: Charlie Riedel

- Exposure to direct sun can ↑ heat index values by as much as 15°F.
- Texas and Florida ↑ # of construction workers
- By 2050 TX & FL will likely experience + 1 month's worth of days w/heat index above the worker-safety threshold of 90°F
- Migrant farmworkers face significant barriers to preventing heat-related illness: lack reg. breaks, shade, medical services, health insurance, etc.

Keeping People Safe? *Nat'l Occupational Heat standards*

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

- OSHA standard on the prevention of extreme heat for employers to protect their indoor and outdoor workers when the heat index is high
- Heat-related guidance for the US military must also be updated in light of growing heat risks



Credit: AP Lianne Milton

Transitioning away from fossil fuels



Rapid Path to Emissions Reduction?

Build a clean energy economy - Low-carbon electricity standard

- S.1974 - The Renewable Electricity Standard Act of 2019 (Sen. Tom Udall, D-NM)
- 50 % more renewables and zero-carbon electricity generation by 2035
- 38 % ↓ natural gas, 97 % ↓ coal
- ↓ power sector carbon dioxide emissions by almost 50%

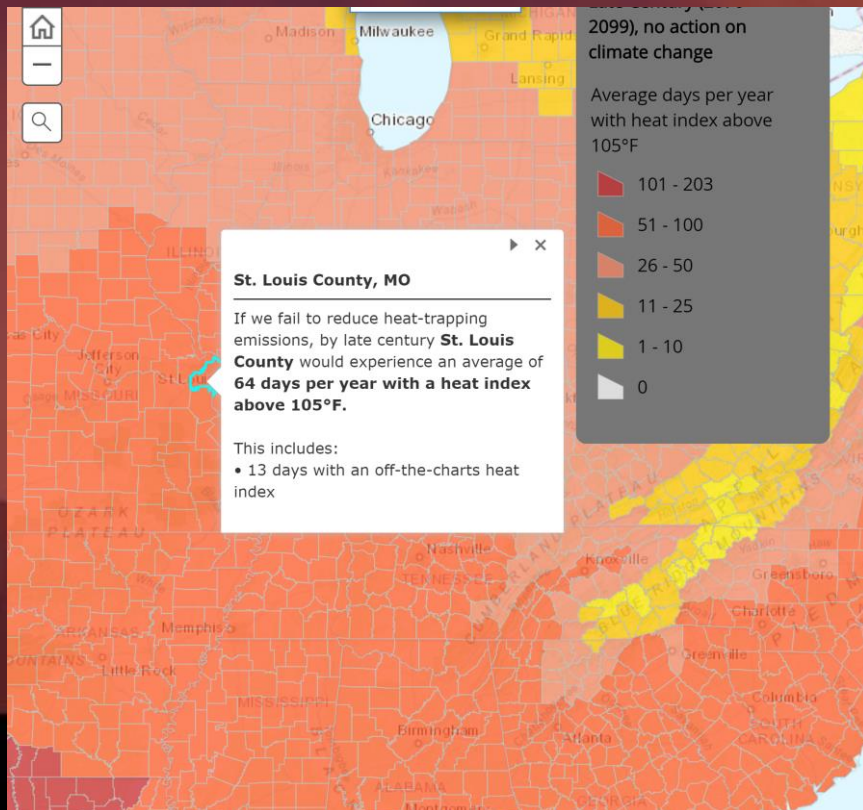


Credit: geniusksy Shutterstock

Resources

Lots of localized info at <http://www.ucsusa.org/killer-heat>

Interactive maps



Interactive data widget

Extreme Heat & Climate Change

HOW OFTEN WILL YOU ENDURE EXTREME HEAT WHERE YOU LIVE?

This tool shows the rapid increases in extreme heat projected to occur in locations across the US due to climate change. Results show the average number of days per year above a selected heat index, or “feels like” temperature, for three different time periods: historical, midcentury, and late century.

The results highlight a stark choice: We can continue along our current path, where we fail to reduce heat-trapping emissions and extreme heat soars, or we can act decisively now and stop the worst from becoming reality.

TYPE IN YOUR LOCATION (CITY OR COUNTY) ⓘ



CHOOSE HOW HOT ⓘ

Above 100°

GO

- + Spreadsheets with all the data
- + Spanish language webpage and materials

<https://es.ucsusa.org/nuestro-trabajo/calentamiento-global/calor-fatal-estados-unidos>

Resources

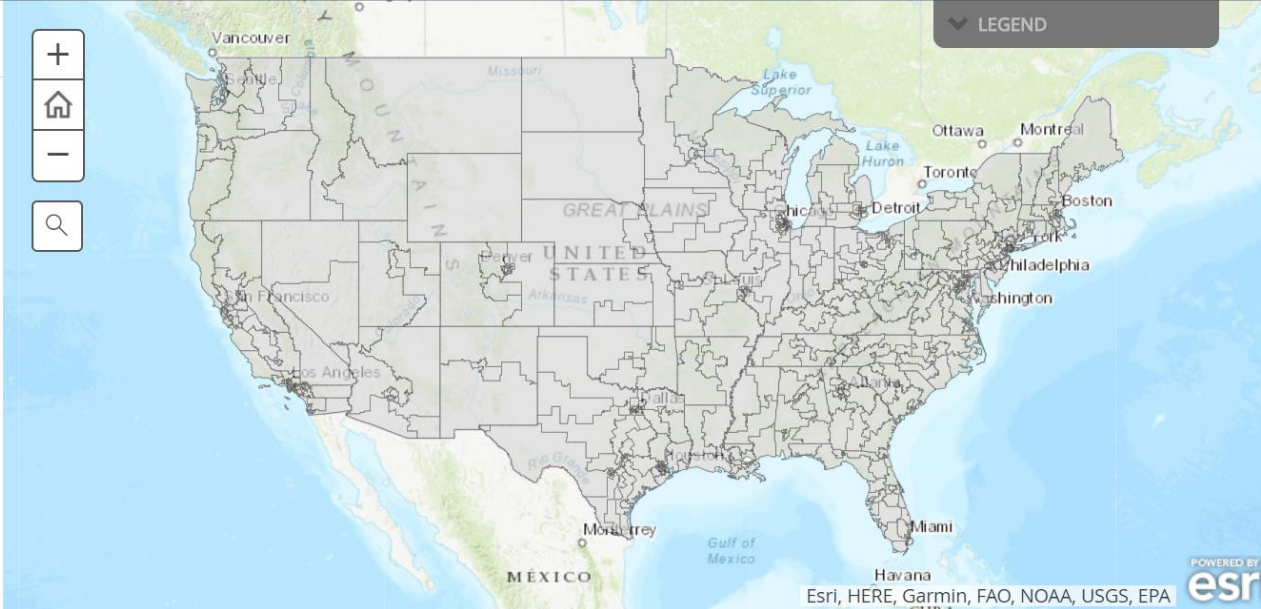
Congressional district map and 433 fact sheets

Killer Heat in the United States, by Congressional District: The Future of Danger by the Union of Concerned Scientists [f](#) [t](#) [c](#)

English Español

The Future of Extreme Heat, by Congressional District

This interactive map allows you to download district-specific fact sheets for all 433 Congressional districts in the contiguous United States. (Fact



POWERED BY **esri**

Esri, HERE, Garmin, FAO, NOAA, USGS, EPA

Union of Concerned Scientists

FACT SHEET

KILLER HEAT

Extreme Heat in Florida's 14th District

Extreme heat is among the deadliest weather hazards in the United States. When temperatures spike, so do heat-related deaths and hospital admissions for illnesses such as heat exhaustion. People who are elderly, young children, those experiencing poverty, and other vulnerable groups are particularly susceptible to these effects. New analysis from the Union of Concerned Scientists (UCS) points to a future in which such dangerous, even deadly, heat will occur regularly throughout most of the country. As global temperatures rise, driven by heat-trapping emissions, people will experience more frequent and more intense episodes of extreme heat.

UCS has analyzed climate projections to find out where and how often in the contiguous United States the heat index (the National Weather Service's "feels like" temperature) could top 90°F, 100°F, and 105°F during future warm seasons—April through October—if no action is taken to reduce carbon emissions, or with rapid and aggressive emissions reductions.

The choices we make today will determine how often we experience extreme heat in the future. Aggressively cutting US carbon emissions by investing in low-carbon energy sources, energy efficiency, and other solutions, alongside robust global climate action, will help limit future warming and the frequency of days with extreme heat.

Extreme Heat across the United States

The National Weather Service generally recommends issuing a heat advisory when the heat index reaches 100°F, and issuing an excessive heat warning when it reaches 105°F. At these heat index levels, people—particularly vulnerable groups, such as children and elderly adults—are susceptible to heat-related illness and death. Outdoor workers are susceptible to the same effects with a heat index around 90°F.

By midcentury, across the United States, with no action to reduce heat-trapping emissions, in an average year there would be (compared with average conditions from 1971 to 2000):

- a 70 percent increase in the number of days with a heat index above 90°F;
- more than twice as many days with a heat index above 100°F; and
- more than four times as many days with a heat index above 105°F.

By late century, under the same scenario, in an average year there would be (compared with average conditions from 1971 to 2000):

Annual Days of Extreme Heat Per Year in Florida's 14th District

Heat index above	Historical	By midcentury	By late century	By late century, if we limit warming to 2°C
90°F	138 days per year	177 days per year	194 days per year	173 days per year
100°F	27 days per year	119 days per year	154 days per year	101 days per year
105°F	3 days per year	74 days per year	125 days per year	48 days per year

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.

Take action!

You are the perfect messenger to bring *Killer Heat* to Congress, help your legislator learn what is at stake, and urge them to act!

Why you?

We have a fact sheet for every Congressional district in the United States – but only YOU can bring the facts home!

Senators and Representatives care most about how they're seen by voters

You are part of a powerful nationwide network of people who care about climate change

The Difference You Can Make

Ask them to take actions for adaptation and mitigation, and to support the Renewable Electricity Standard and the Valdivia bills

Support the Valdivia Bill yourself!

<https://act.ucsususa.org/heatbill>



Are you a scientist,
engineer, or technical
expert?



ScienceNetwork@ucsusa.org



@SciNetUCS

**Union of
Concerned Scientists**



Not a scientist? We need your voice too!

Sciencechampions@ucsusa.org



@UCSUSA

STAND UP
for
SCIENCE

**Union of
Concerned Scientists**



A sunset over a city skyline. The sun is a large, bright yellow circle in the upper right quadrant of the sky. The sky transitions from a deep orange near the horizon to a darker purple at the top. The city skyline is silhouetted against the bright sky, with various skyscrapers of different heights and shapes. In the top left corner, there is a semi-transparent grey box containing the text 'Thank You!' in white. At the bottom left, the email address 'acaldas@ucsusa.org' is written in white. At the bottom right, the title 'Killer Heat in the United States' and the website URL 'www.ucsusa.org/killer-heat' are written in white.

Thank You!

acaldas@ucsusa.org

Killer Heat in the United States
www.ucsusa.org/killer-heat