Killer Heat

ARCCA

Alliance of Regional Collaboratives for Climate Adaptation

Learning Session Webinar

October 29, 2019 | 10:00 – 11:00 AM

Webinar Agenda

- Brief overview of ARCCA
- **Presentation: Killer Heat**
- Q&A Panel Discussion
- Closing Remarks

Webinar Logistics

Questions:

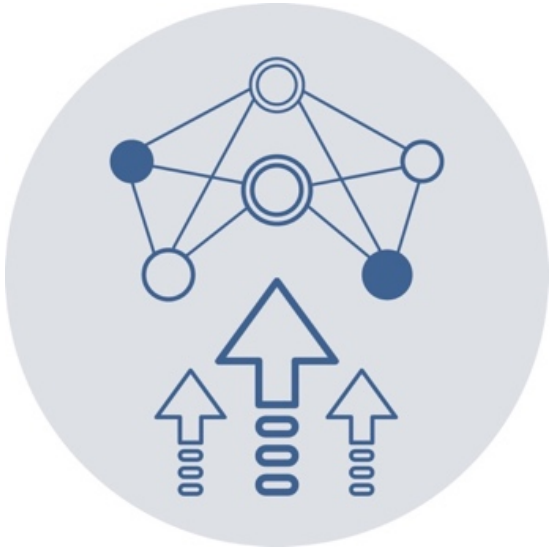
At any point during the webinar, you can submit a question through the Zoom control panel. All questions will be read aloud and answered during Q&A as long as time permits.

You can also use the 'hand raising' feature to be unmuted and ask a question during Q&A.

About ARCCA

A network of leading regional collaboratives from across California that work together to advance adaptation statewide and increase local capacity to build community resilience.

Knowledge Exchange



Collaborative Formation

State Engagement

ARCCA Members

Coordinator

Local Government Commission
Leaders for Livable Communities

State Liaison

GOVERNOR'S OFFICE OF PLANNING AND RESEARCH · STATE OF CALIFORNIA

Affiliates

BUROHAPPOLD ENGINEERING
CALIFORNIA ReLEAF
Climate Resolve
CSU The California State University OFFICE OF THE CHANCELLOR
CALIFORNIA HEALTH CARE CLIMATE ALLIANCE
CADMUS
GEORGETOWN CLIMATE CENTER
Harris & Associates
GEOS INSTITUTE
INSTITUTE FOR Sustainable Communities
BERKELEY LAB
Union of Concerned Scientists

Featured Presenters

Dr. Kristina Dahl
Union of Concerned Scientists

Jamesine Rogers Gibson
Union of Concerned Scientists

Moderator

Amber McGarvey
Local Government Commission

ARCCA

www.ARCCAcalifornia.org

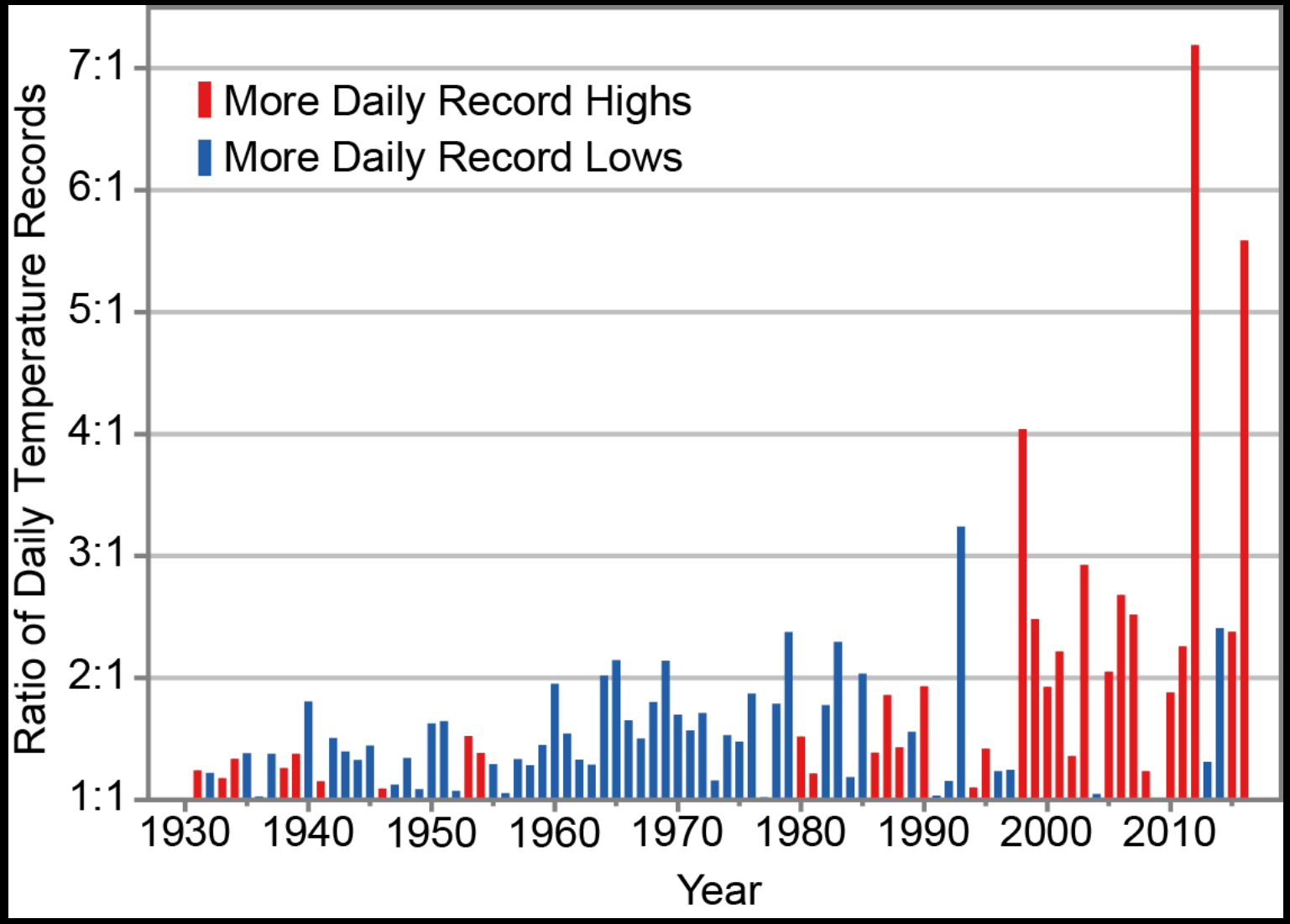
Killer Heat in California

Kristy Dahl, Senior Climate Scientist (kdahl@ucsusa.org)
Jamesine Rogers Gibson, Senior Climate Analyst (jvrogers@ucsusa.org)
Union of Concerned Scientists

AP/John Locher

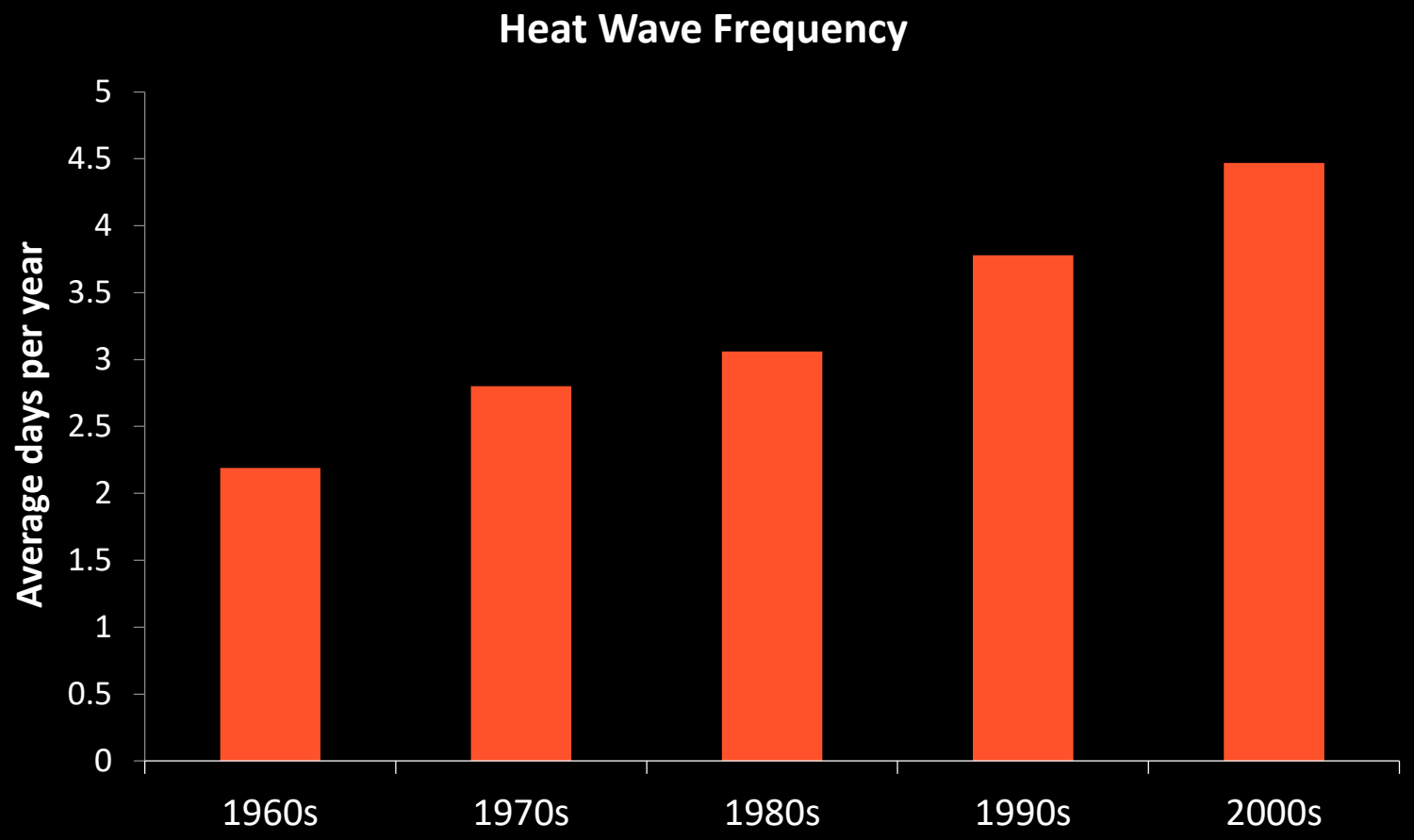

Union of Concerned Scientists
Science for a healthy planet and safer world.

Extreme heat on the rise



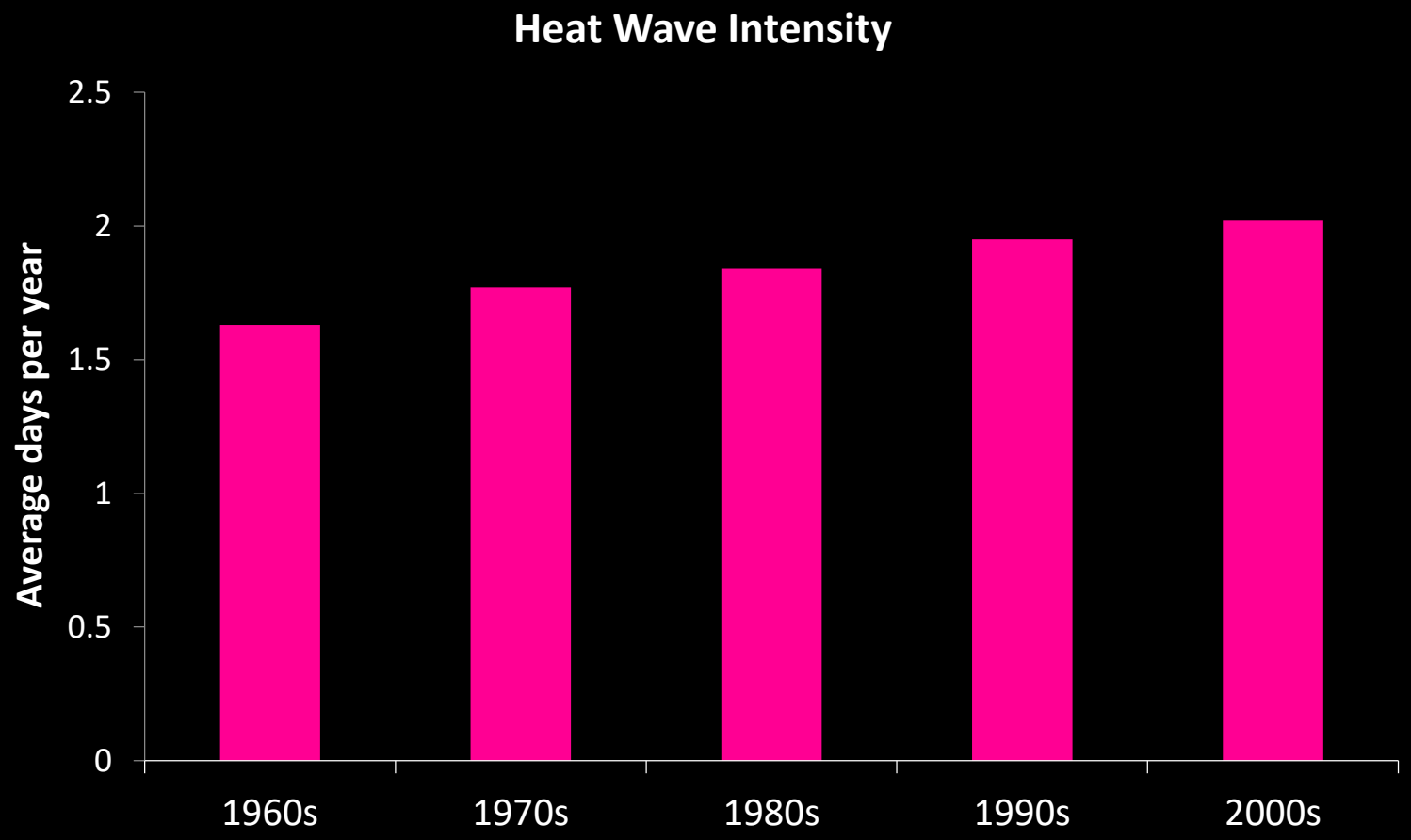
Vose et al., 2017

Extreme heat on the rise



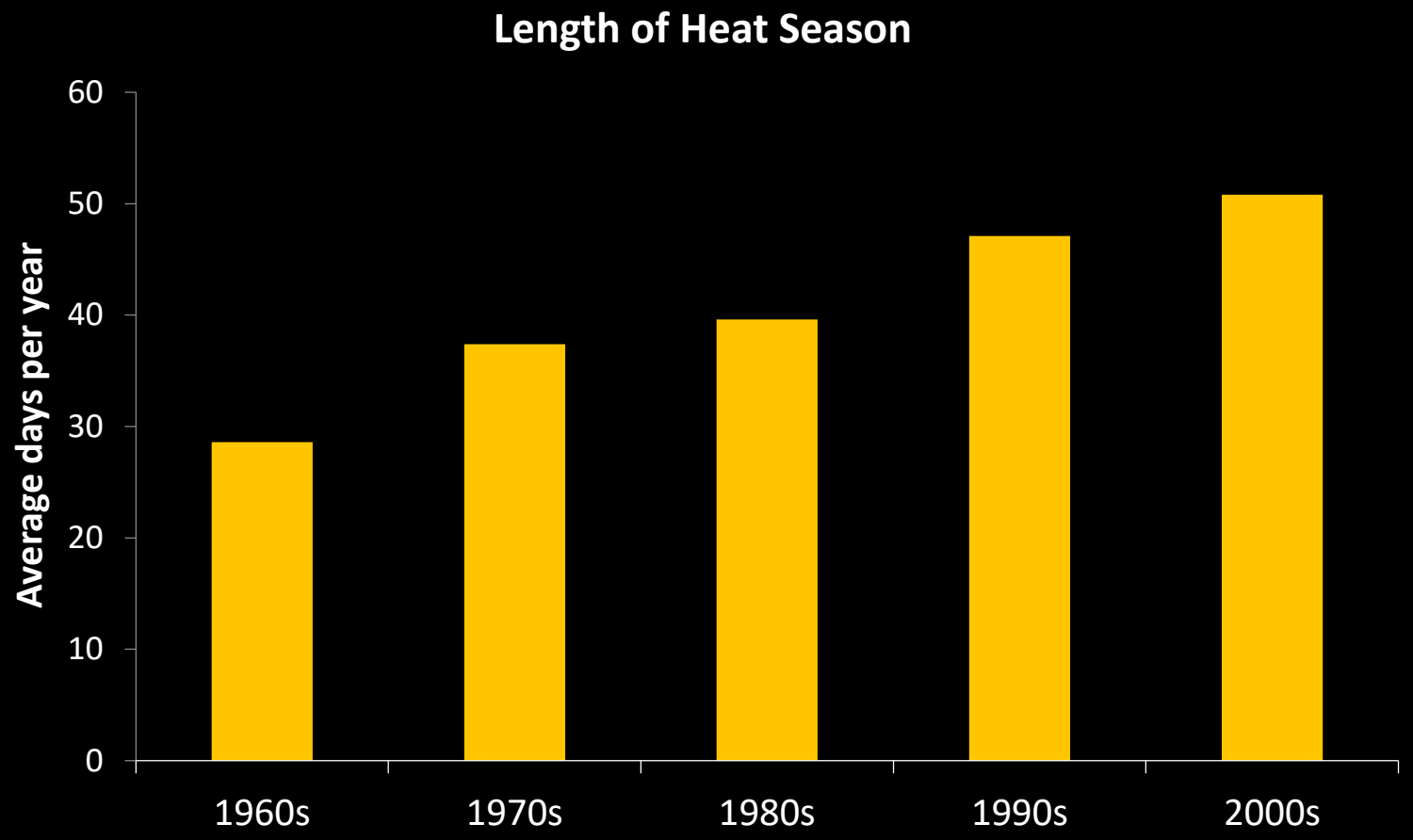
Habeeb et al., 2015

Extreme heat on the rise



Habeeb et al., 2015

Extreme heat on the rise



Habeeb et al., 2015

AP/Richmond Times-Dispatch/P. Kevin Morley

"We have seen a huge spike in ER visits and admissions… We have been admitting people left and right."

--Dr. Arash Armin, Trenton, MI. July 19, 2019

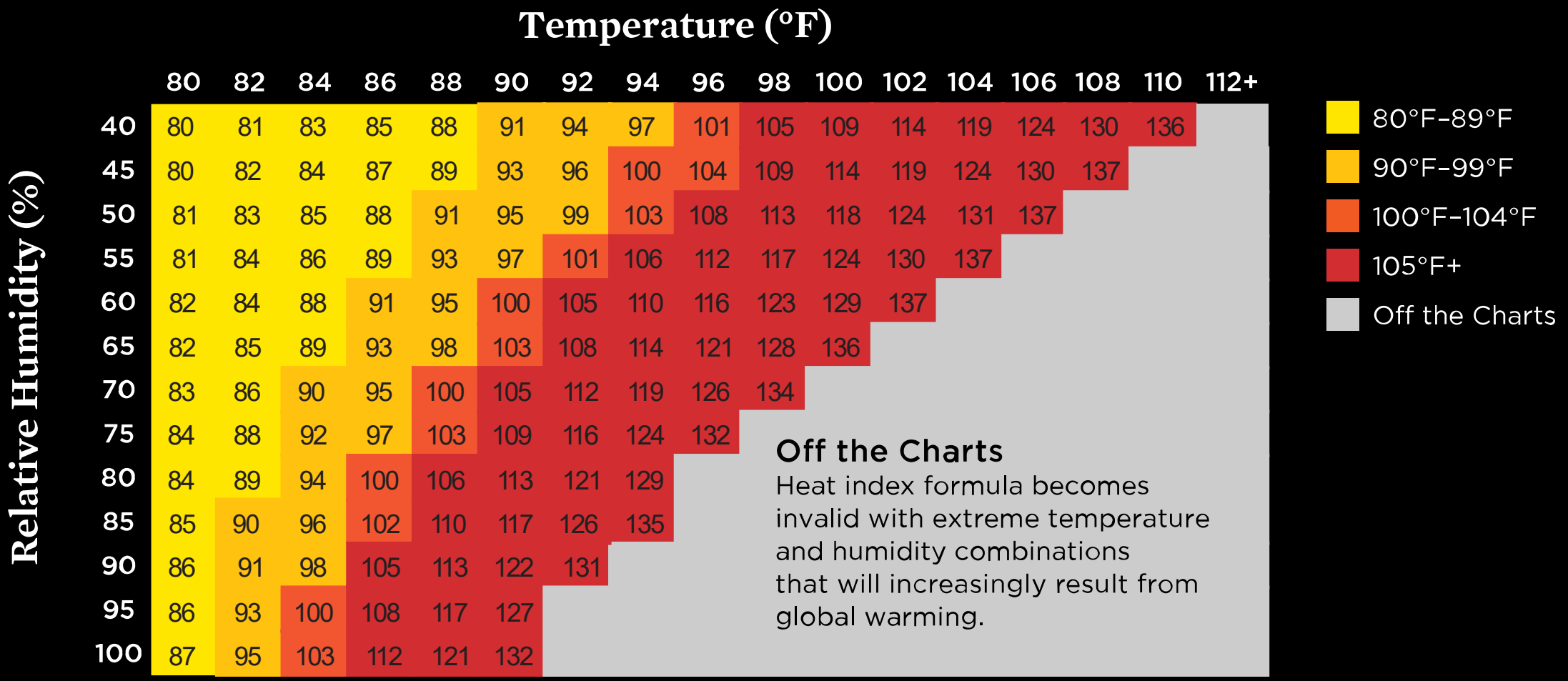
Killer Heat in the United States

Climate Choices and the Future of Dangerously Hot Days

About the Killer Heat analysis

- High-resolution climate models
- Use temperature and humidity to calculate **heat index**
- Three future emissions scenarios
- Data for every community in the lower 48

The Heat Index



Heat Index Above 90°F

Outdoor workers become more susceptible to heat-related illness.

Heat Index Above 100°F

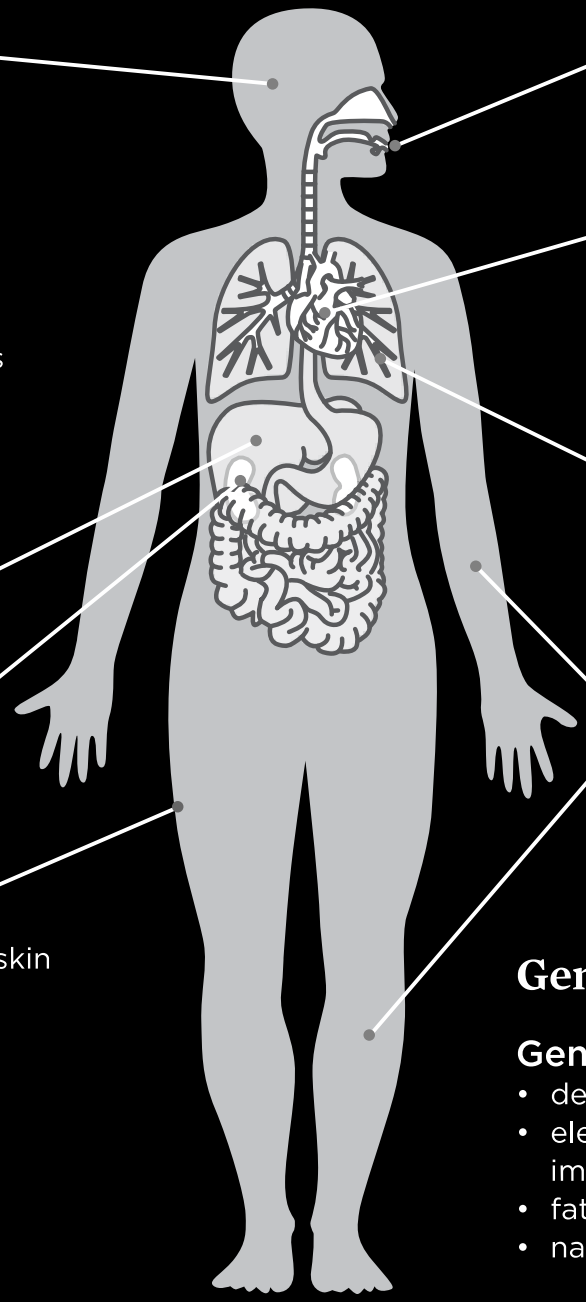
Children, elderly adults, pregnant women, and people with underlying conditions are at heightened risk of heat-related illness.

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.



Head
- headache
- dizziness
- irritability
- loss of coordination
- confusion
- delirium
- anxiety
- loss of consciousness
- seizures
- stroke
- coma

Liver
- liver injury

Kidneys
- kidney disease
- kidney failure

Skin
- flushed and clammy skin
- profuse sweating
- heat rash

Mouth
- intense thirst
- dry mouth

Heart
- rapid heartbeat
- irregular heartbeat
- reduced bloodflow to the heart
- heart attack

Lungs
- increased breathing rate
- worsened allergies and asthma
- worsened chronic obtrusive pulmonary disease

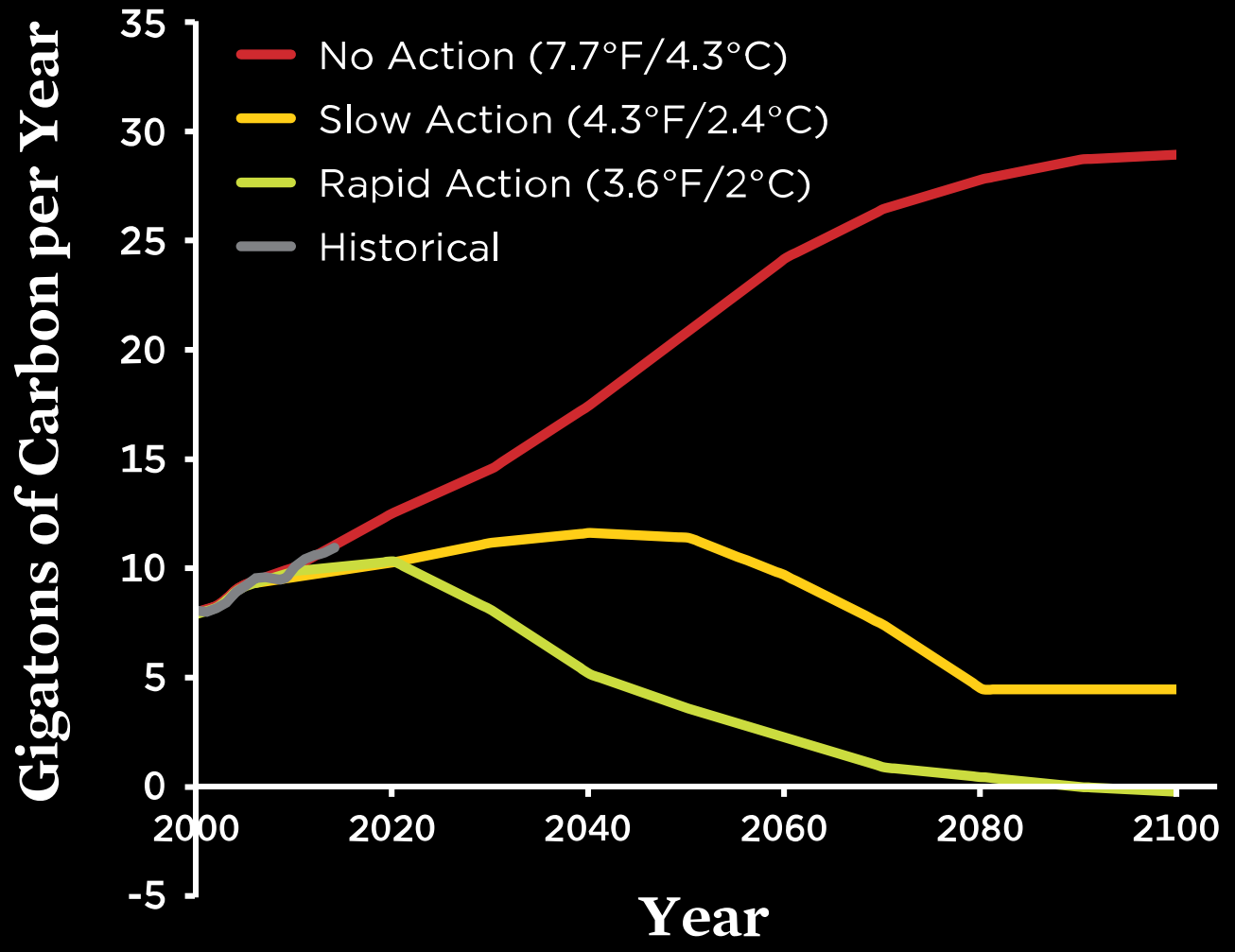
Arms and Legs
- heat cramps
- muscle spasms
- weakness

General Physiology and Unique Circumstances

General
- dehydration
- electrolyte imbalance
- fatigue
- nausea
- vomiting
- drop in blood pressure
- fever

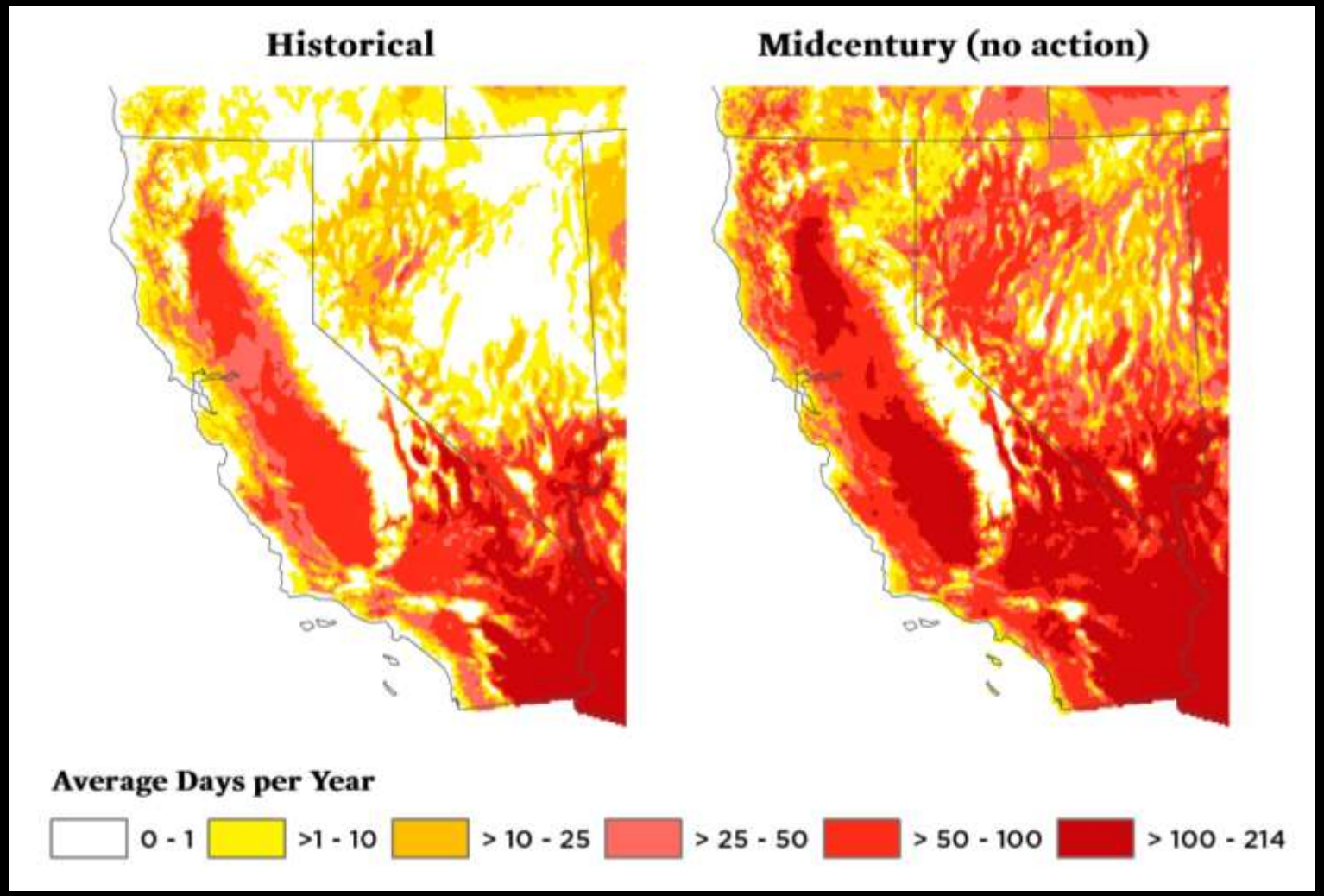
Pregnant People
- fetal nutrition deficits
- preterm delivery and birth
- stillbirth

Three future scenarios



Midcentury: Steep increase in extreme heat

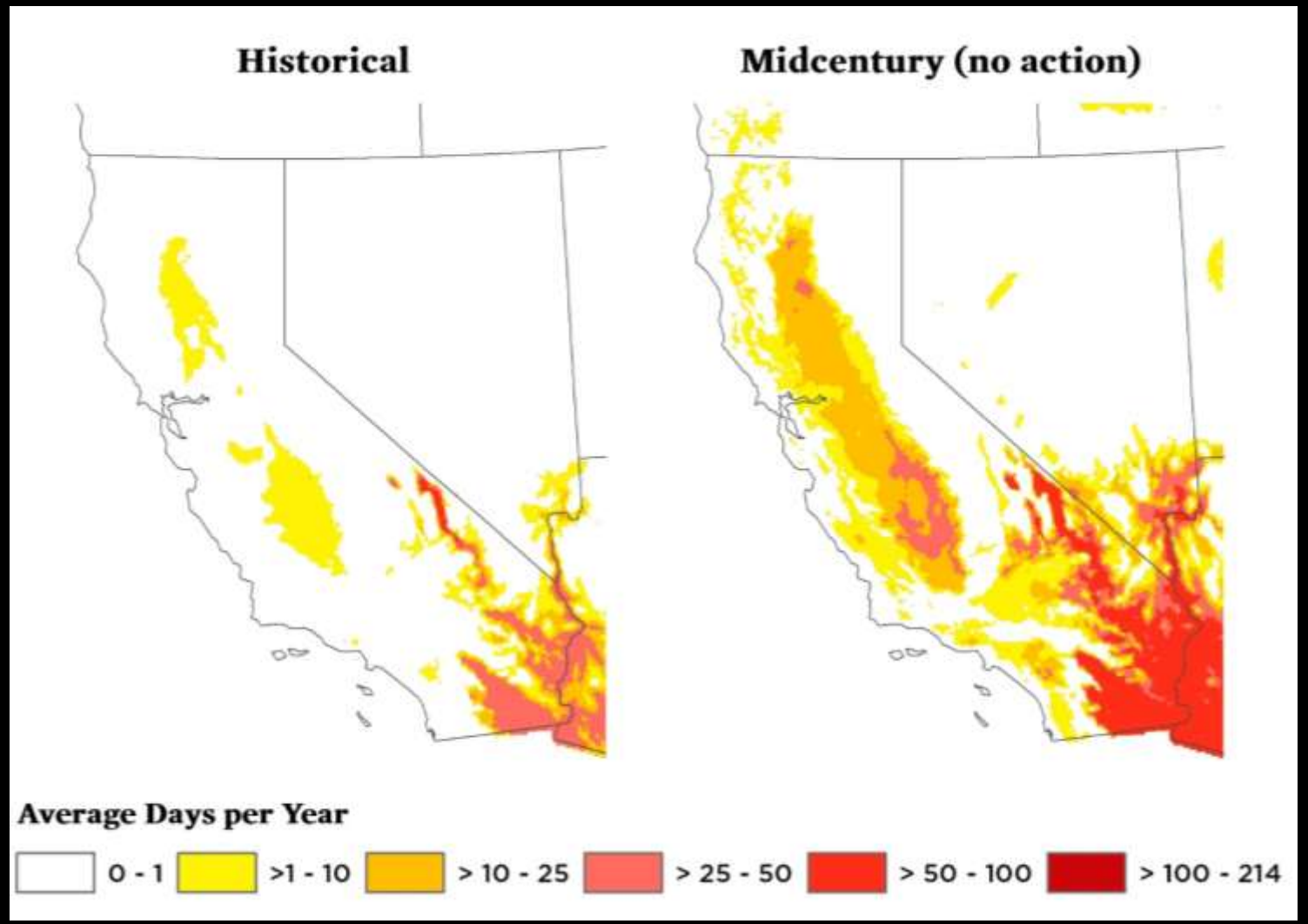
Days per year with heat index > 90°F



	Historical	Midcentury
Redding	71	108
Santa Rosa	8	31
Sacramento	47	94
Fresno	77	119
Los Angeles	20	56

Midcentury: Steep increase in extreme heat

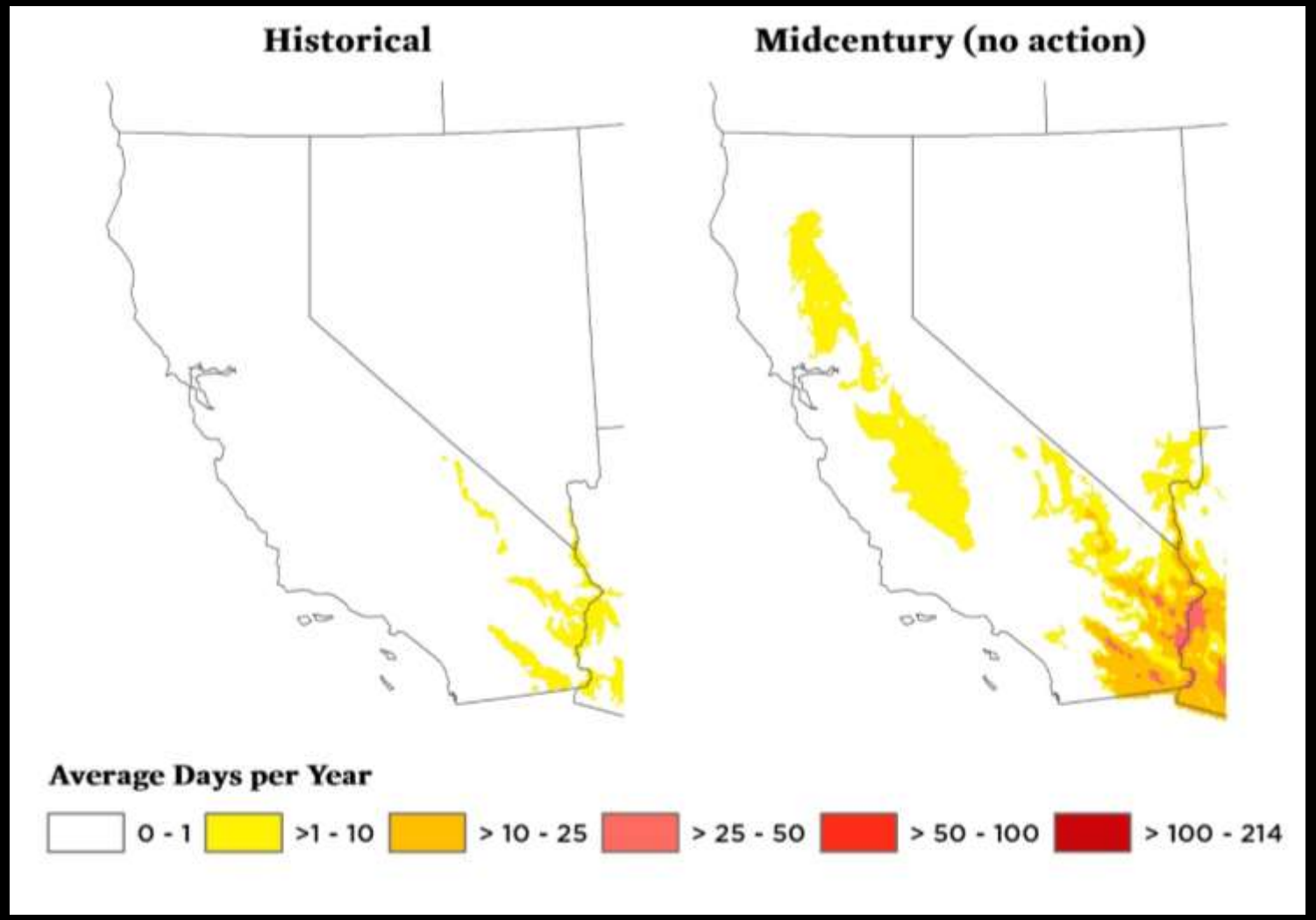
Days per year with heat index > 105°F



	Historical	Midcentury
Redding	2	24
Santa Rosa	0	1
Sacramento	1	13
Fresno	3	27
Los Angeles	0	3

Midcentury: Steep increase in extreme heat

Days per year with off-the-charts conditions

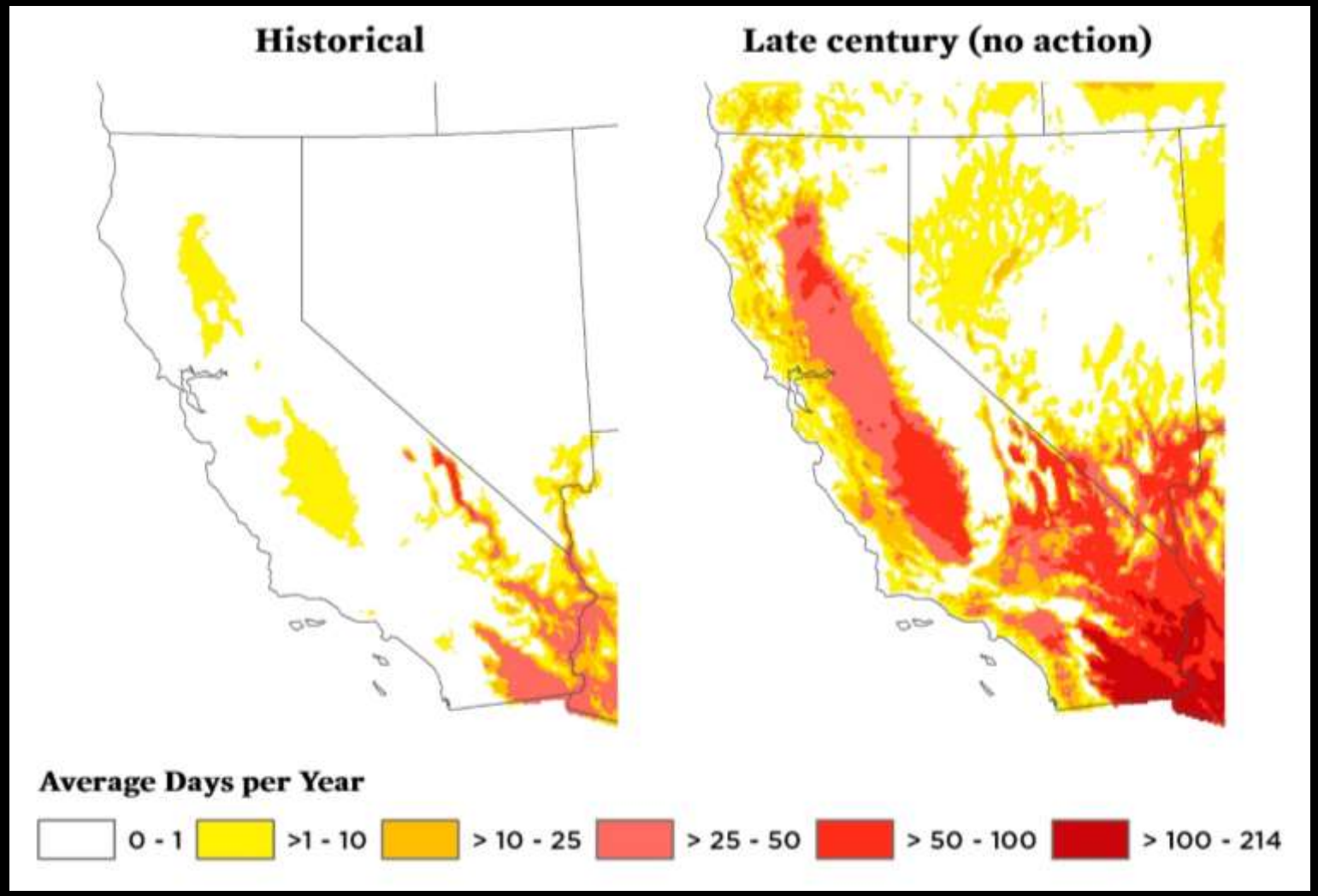


	Historical	Midcentury
Redding	0	3
Santa Rosa	0	0
Sacramento	0	1
Fresno	0	4
Los Angeles	0	0

Cities with frequent, dangerous heat

Late century: unprecedented heat

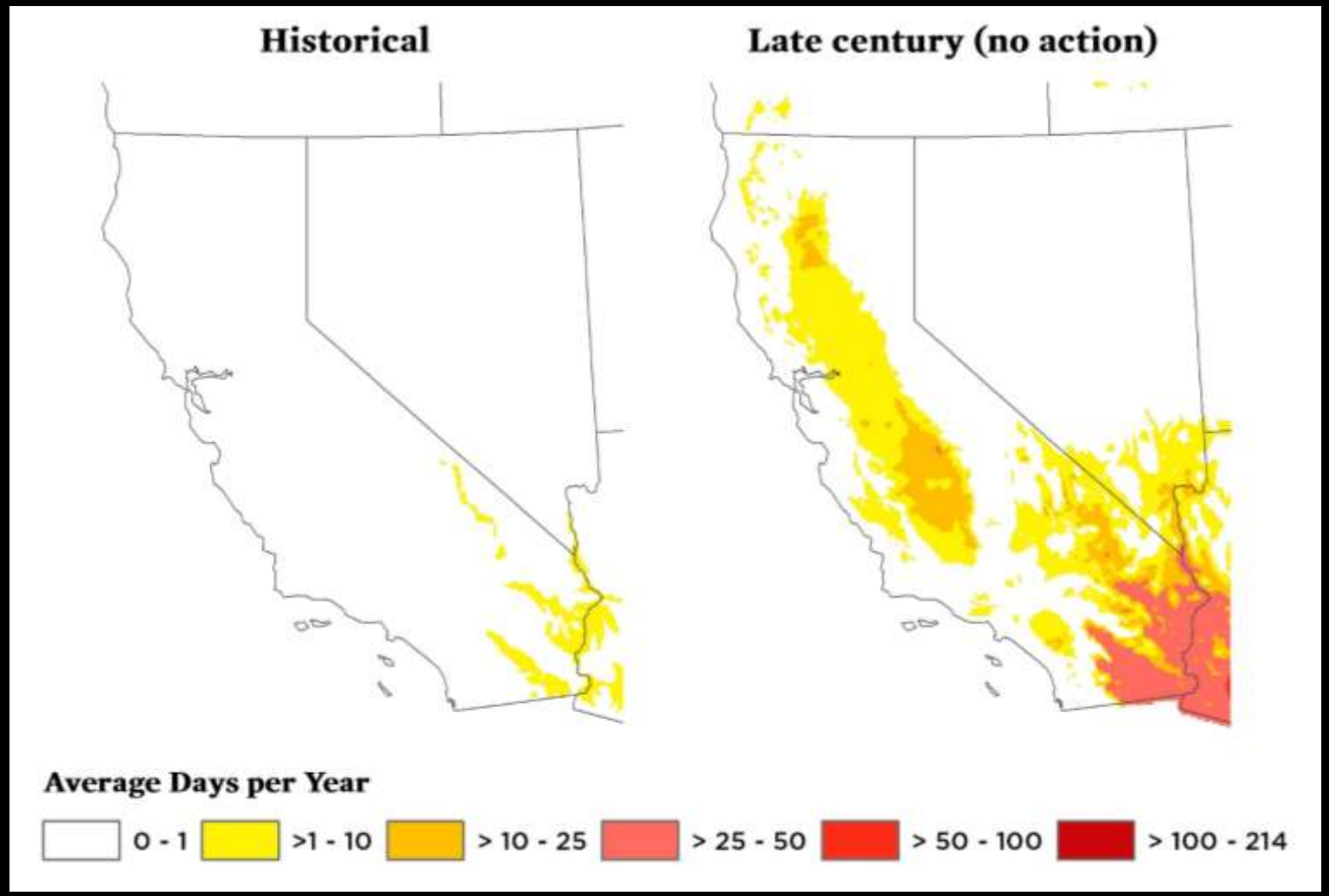
Days per year with heat index > 105°F



	Historical	Late century
Redding	2	52
Santa Rosa	0	5
Sacramento	1	37
Fresno	3	59
Los Angeles	0	15

Late century: unprecedented heat

Days per year with off-the-charts conditions



	Historical	Late century
Redding	0	13
Santa Rosa	0	0
Sacramento	0	6
Fresno	0	14
Los Angeles	0	1

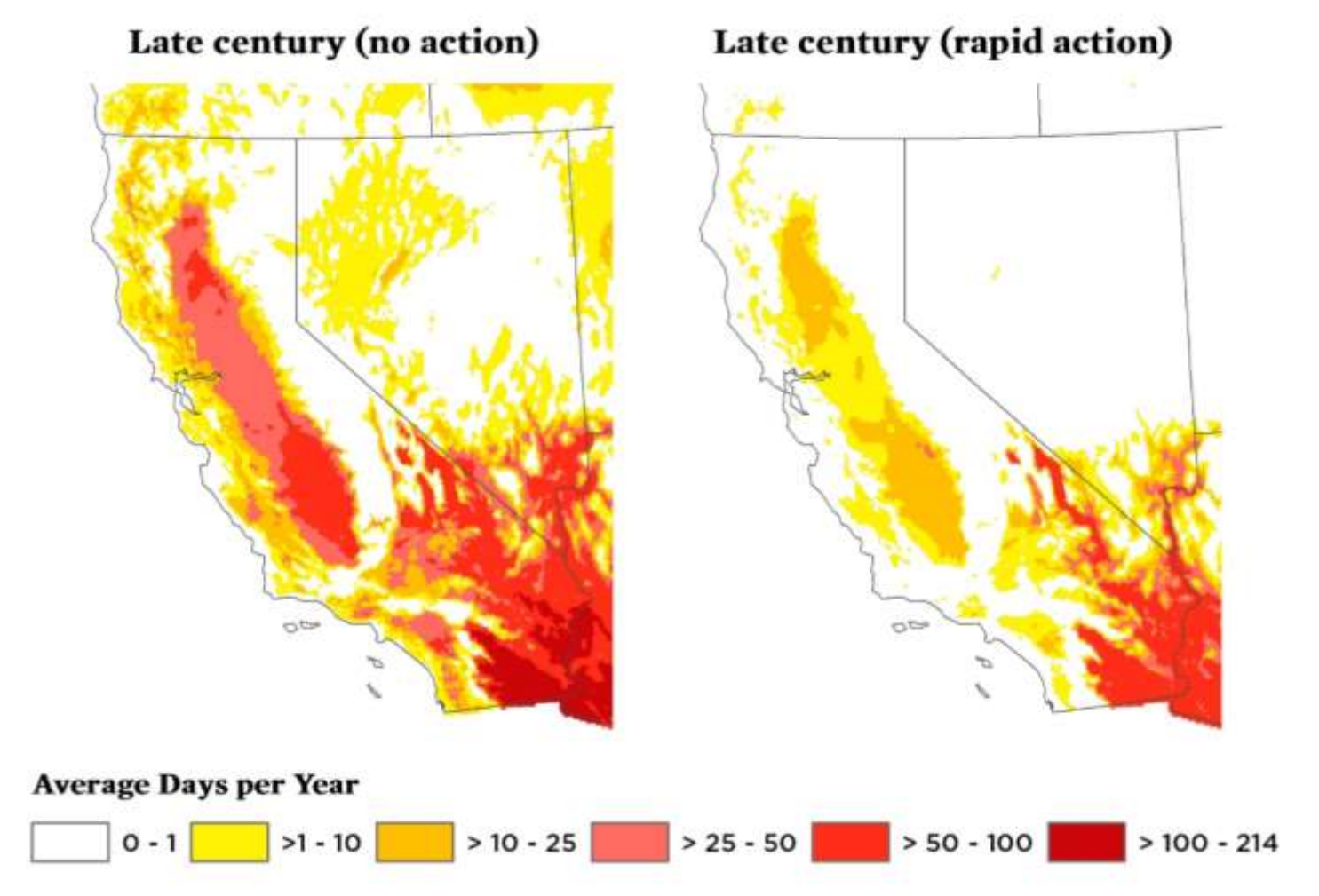
Taking action now would limit expansion of heat

Cities Experiencing Heat Index >105°F

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

Taking action now limits future extreme heat

Days per year with heat index > 105°F

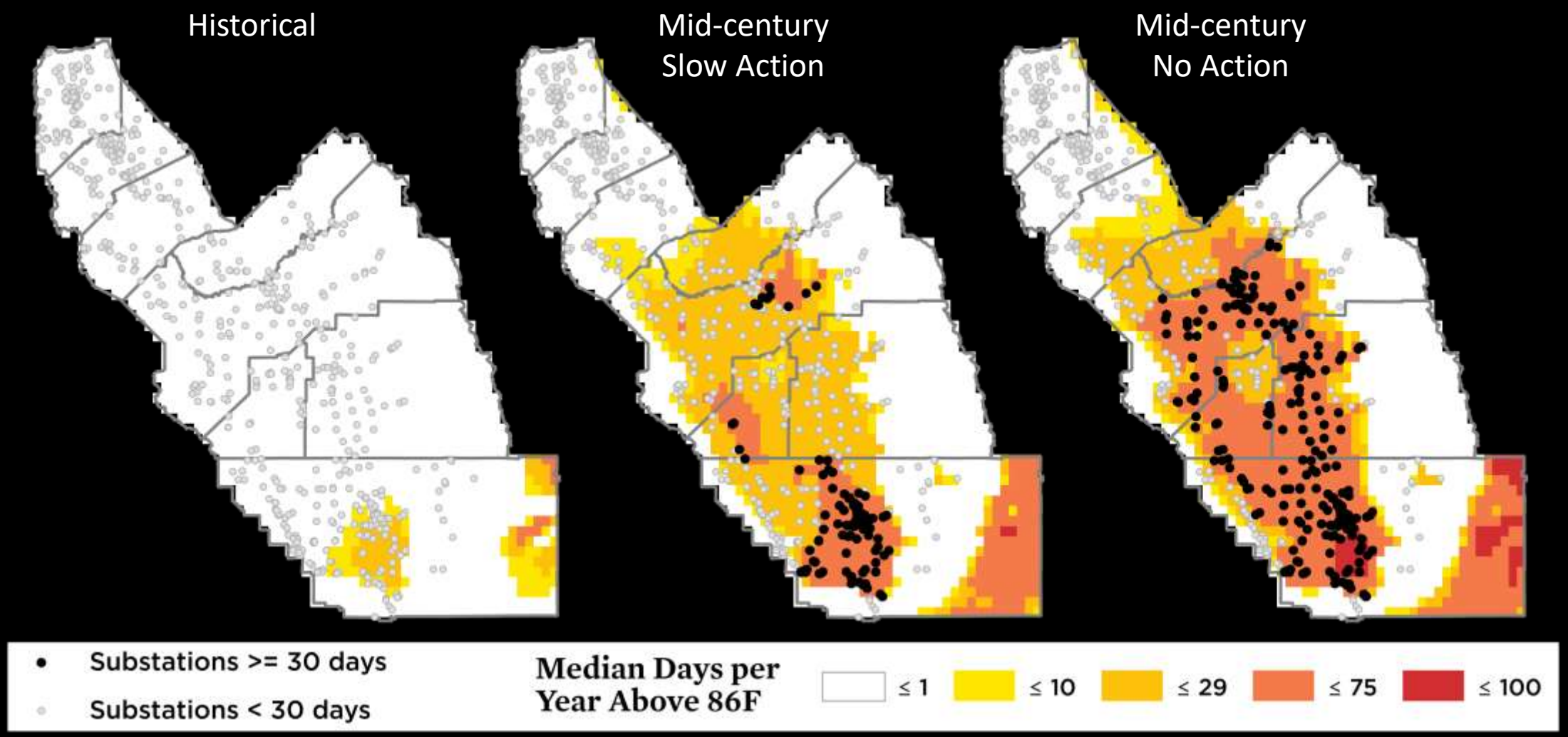


	No action	Rapid action
Redding	52	15
Santa Rosa	5	0
Sacramento	37	9
Fresno	59	18
Los Angeles	15	2

Heat threatens critical infrastructure for cooling

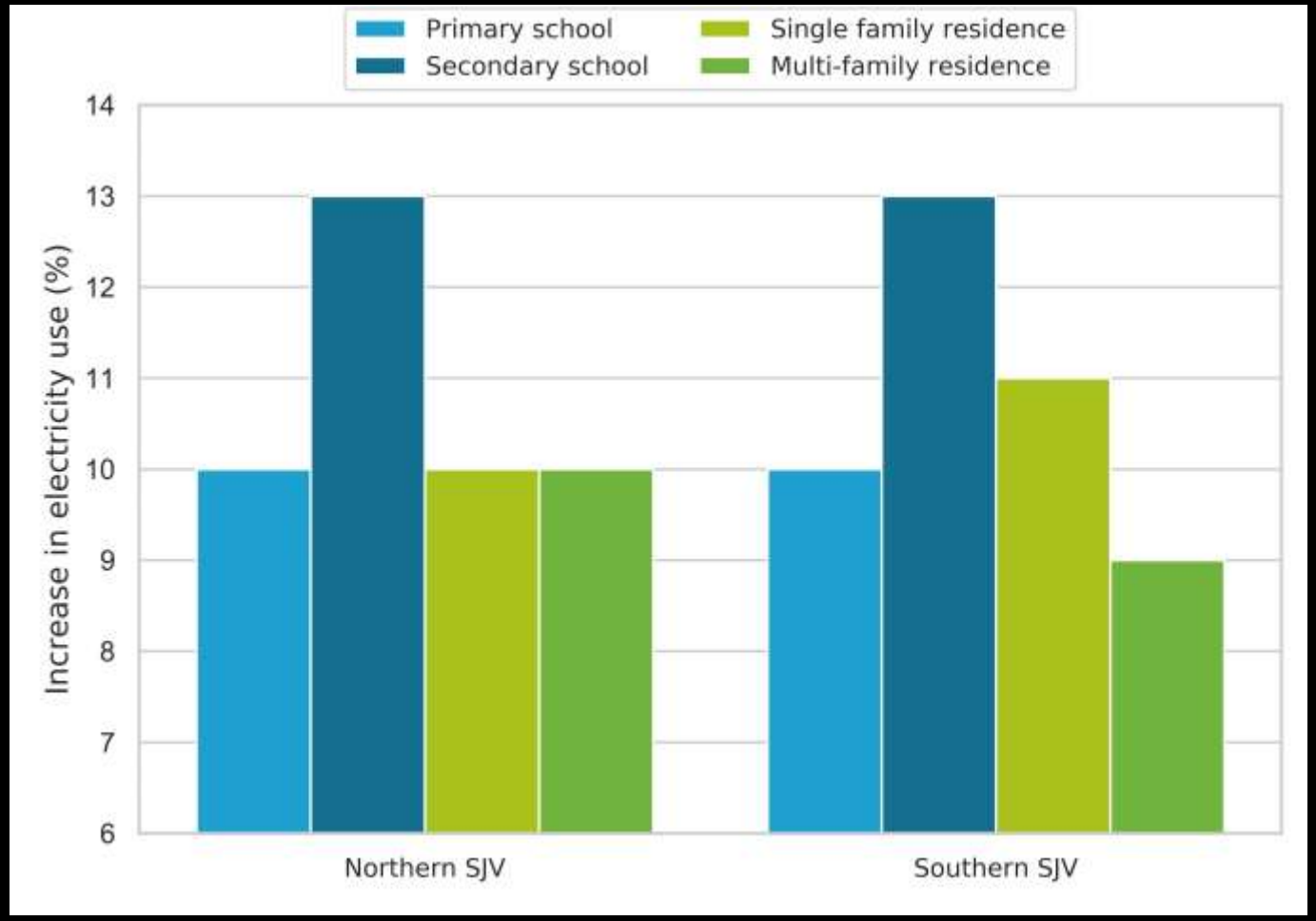
Infrastructure design increases heat exposure

More extremely hot days will increase stress on the grid



Note: 86F is a 24-hour average value

Higher electricity use, growing energy burdens



Increased monthly electricity use for September 2050

Adaptation:
Keeping People Safe

AP/David Goldman

+

Mitigation:
Reaching net zero emissions by 2045


Credit: Ellysa Ho, iStock

Keeping people safe

- State/local heat adaptation and emergency response plans
- Better enforcement of CalOSHA occupational standards
- Bill assistance programs for low-income households
- Robust heat stress thresholds for children
- Investments in community cooling infrastructure, trees, shading, cool roofs, cooling centers
- Investments in heat- and climate-smart infrastructure

Update extreme heat policies to protect families

Invest in climate-smart infrastructure

Transitioning away from fossil fuels

Got examples?

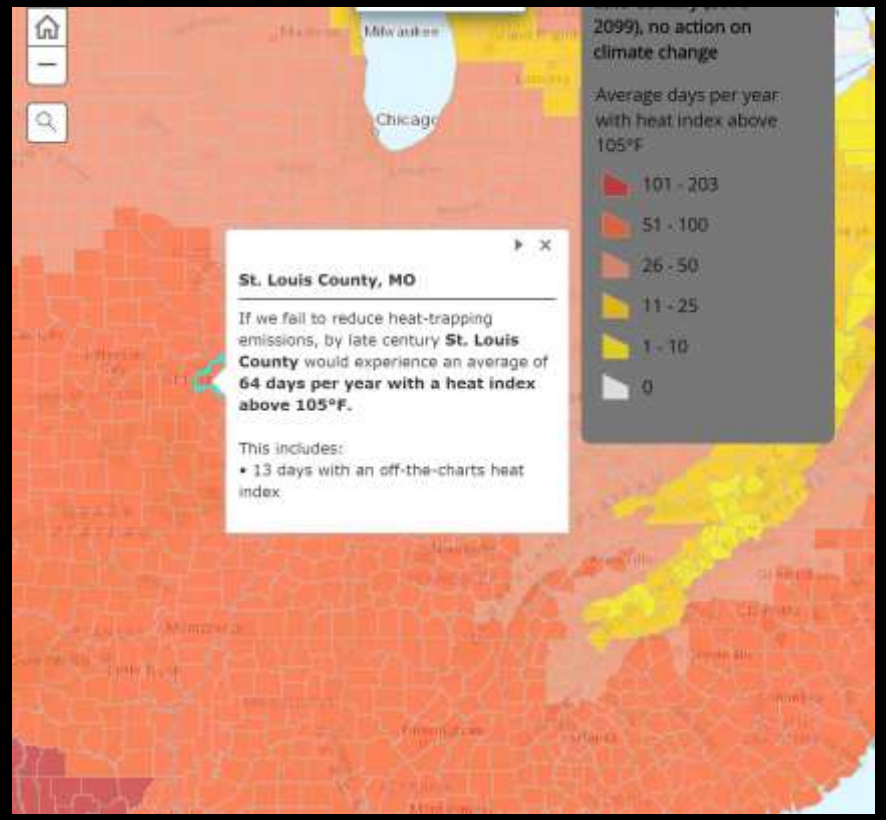
- Heat-safe policies and operational practices
- Heat stress metrics
- Climate-smart infrastructure projects
- Updated standards and codes
- Other?

Send to *jvrogers@ucsusa.org* and *kdahl@ucsusa.org*

Resources

www.ucsusa.org/killer-heat

Interactive maps

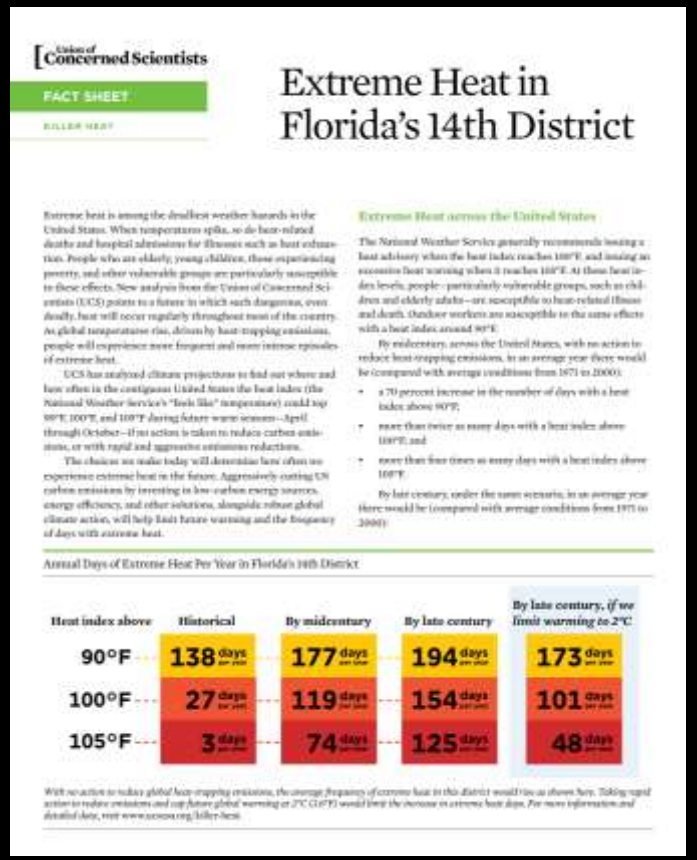


Interactive data widget

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

Congressional district fact sheets

www.ucsusa.org/killer-heat



Thank you

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Jamesine Rogers Gibson - jvrogers@ucsusa.org

Learn more: www.ucsusa.org/killer-heat

Thank you!

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