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EXCLUSIVE

NPR spent 2 years tracking deaths from heat. We found a staggering hidden toll

AUGUST 31, 2026 · 5:00 AM ET

HEARD ON [MORNING EDITION](#)

By [Alejandra Borunda](#)

Thousands of Americans die every year from a chronically underreported cause: heat.

As summer heat intensifies because of human-driven climate change, the United States' official tally of heat-related deaths does not come close to capturing the full human toll. The data feeding into nationwide death counts is collected inconsistently and rarely thoroughly.

The result is a vast undercount of the number of people who die because of heat. And experts say failing to recognize and address this may cost more people their lives.

So NPR set out to create a more comprehensive national count.

We partnered with Boston University to find the total number of deaths influenced by heat every year in the United States. The investigation took two years and involved building a statistical model that assessed nearly every county in the country. The full analysis will soon be published in a scientific journal.

An accurate assessment of the true scope — as well as understanding who is affected, where and why — is critical for developing lifesaving solutions, says Quinn Adams, a research scientist at Boston University’s Center for Climate and Health and the lead partner in the joint NPR-BU investigation.

Beyond the statistical assessment, NPR set out to find people whose deaths slipped through the cracks — those who might not have died if heat hadn’t pushed them beyond their breaking point — to understand exactly how heat could be missed as a factor. We will be bringing you their stories in the coming days.

But first, here are three key takeaways from our research — and why it matters.

How big is the undercount?

The scale of the undercount is significant.

The primary keeper of cause-of-death records in the U.S. is the Centers for Disease Control and Prevention (CDC). It keeps an annual tally of heat-related deaths in the U.S., which is compiled from state reports based on whether heat is noted on individual death records.

From 2004 to 2018, the national number of heat-related deaths compiled by the CDC was low: on average, [around 700 a year](#). The number has crept up in recent years, averaging around 1,700 but sometimes topping 2,000, as heat risks grow and counting strategies evolve.

But even that number is an underestimate, according to NPR and BU’s analysis. On average between 2018 and 2025, we estimate that some 9,000 deaths each year in the country are

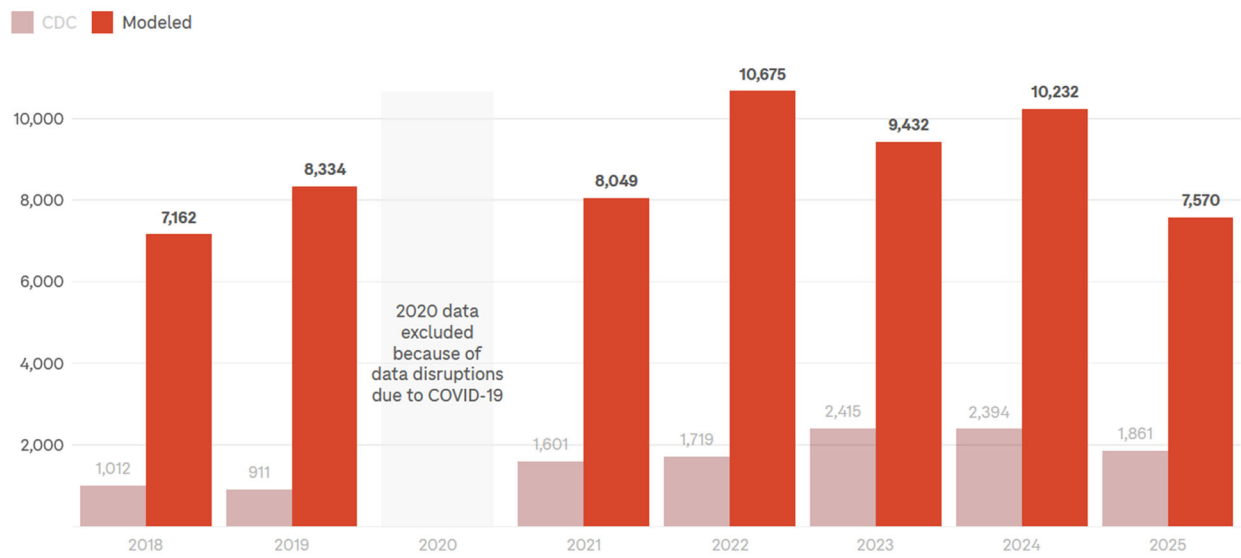
impacted by heat — a factor of five higher than the official average over that same period.

Some years, heat-related deaths can top 10,000.

The true figure could be even higher, says Adams, because of some limitations in the data and the conservative nature of our analysis.

Official records may vastly undercount heat-related deaths

The Centers for Disease Control and Prevention (CDC) compiles death information from around the United States. Between 2018 and 2025, it reports an average of 1,700 deaths related to heat each year. NPR's modeled estimate shows the number may be more than five times that, or around 9,000 people on average each year.



Notes

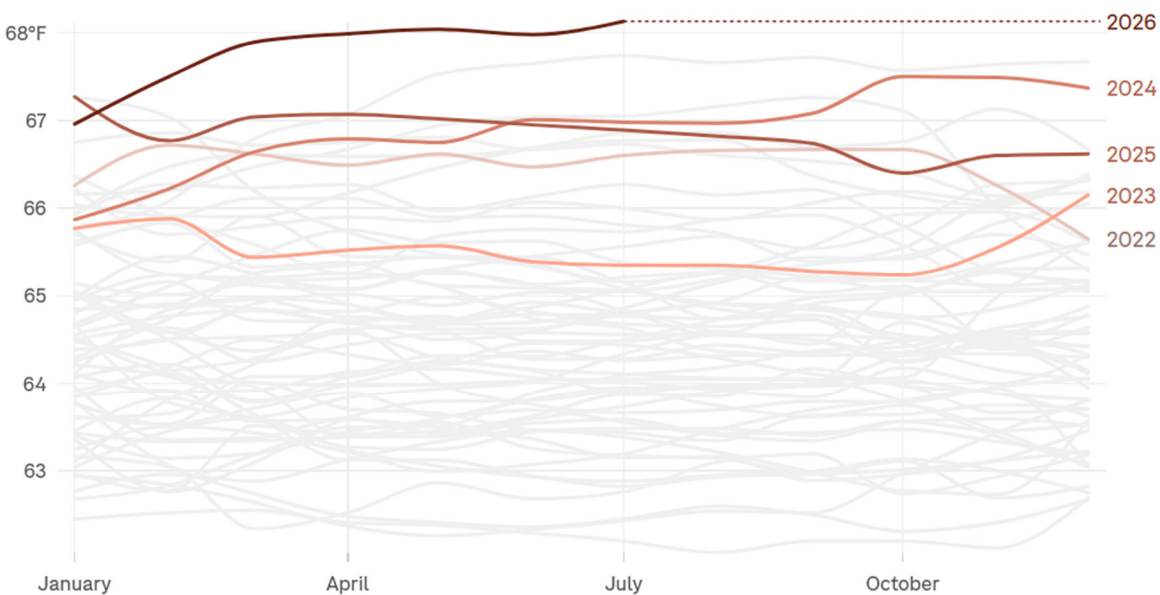
Modeled estimates are scaled to the contiguous-U.S. population; year 2020 data excluded.

The dangers from heat are growing every year because of human-caused climate change. The heat wave season has extended by [a month and a half since the 1960s](#). In 50 of the country's biggest cities, the number of heat waves has [doubled since the 1980s](#). [Heat domes](#) that settle over the country [regularly](#) expose [tens of millions](#) of Americans — sometimes well over 100 million at a time — to dangerous heat.

“The frequency and the duration of these heat events has been expanding very rapidly,” says Adams. “That’s what we can expect moving forward into the next few decades: having more heat waves, and having them last longer, and having them be more intense such that people don’t get the escape from the heat that they need to physiologically reset.”

Maximum temperatures across the U.S. have risen

So far, 2026 has recorded the hottest 12-month average of daily high temperatures across the contiguous United States for the past 60 years. The last five years have all been among the highest over that span. The number of heat waves per year has also [doubled since the 1980s](#), and the heat wave season has lengthened by a full month since that time.



Notes

Average daily high temperature over the previous 12 months, contiguous U.S.

The reasons for the undercount are complex. But a crucial issue, says doctor and researcher Sameed Khatana of the University of Pennsylvania’s Perelman School of Medicine, is that heat’s role in a death is often masked by other more obvious causes of death, like a heart attack.

“Heat is what people often call the silent killer, compared to things like hurricanes and typhoons,” says Khatana.

Heat, he says, can often be the trigger that pushes someone’s health condition — like cardiovascular disease — from manageable to fatal. “The heart starts beating faster and harder,” he explains, to shunt blood to the skin to cool the body. And eventually, if someone’s heart is already weak, it may not be able “to keep up with the demand that was required of it,” he says. That can lead to something like a heart attack.

But often, Khatana says, because heat leaves no obvious mark behind for doctors or coroners to examine, the cause of death gets marked down only as a heart attack. Heat isn’t noted on the death certificate, and therefore it is not included in the tallies reported to the municipality, the state and eventually the federal recordkeepers.

Such omissions are understandable, Khatana says. But repeated thousands of times, in all parts of the country, they create a blind spot that obscures the scale of heat’s danger.

National risks — even in unexpected places

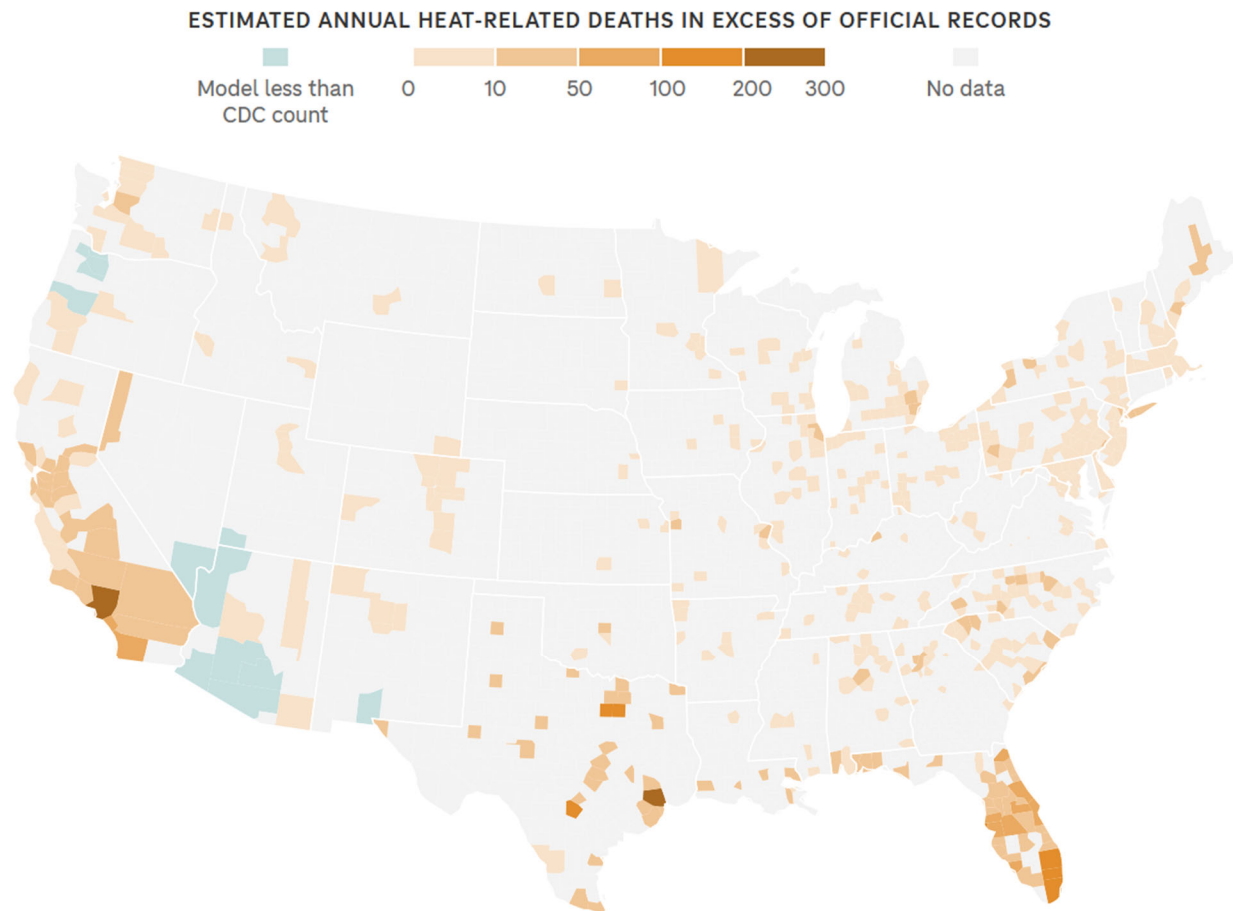
The NPR and BU investigation found that heat is killing people in nearly every corner of the country.

Our analysis finds that Florida and Texas have the most heat-related deaths overall. That is in part due to their large populations. But those states remain among the most impacted even when adjusted for their size.

But the losses are not limited to states historically considered hot.

See where heat-related deaths aren't being tracked accurately

A new model of heat-related mortality shows where the temperature contributed to people dying but where official records don't count heat as a cause.



Notes

Data is the annual average for 2018-2025, excluding 2020. The difference is calculated by subtracting the Centers for Disease Control and Prevention's count of heat-attributable deaths from the modeled estimate of heat-attributable deaths. Less than 0 means the CDC reported more heat-related deaths than the model's estimate. Where the CDC reports "NA", data was suppressed because of fewer than 10 cases. Counties not included were places where population size was too small to create a reliable estimate.

Source: CDC's WONDER database; ERA5-Land weather database

Credit: Analysis by Boston University's Center for Climate and Health and Alejandra Borunda/NPR. Graphic by Brent Jones/NPR

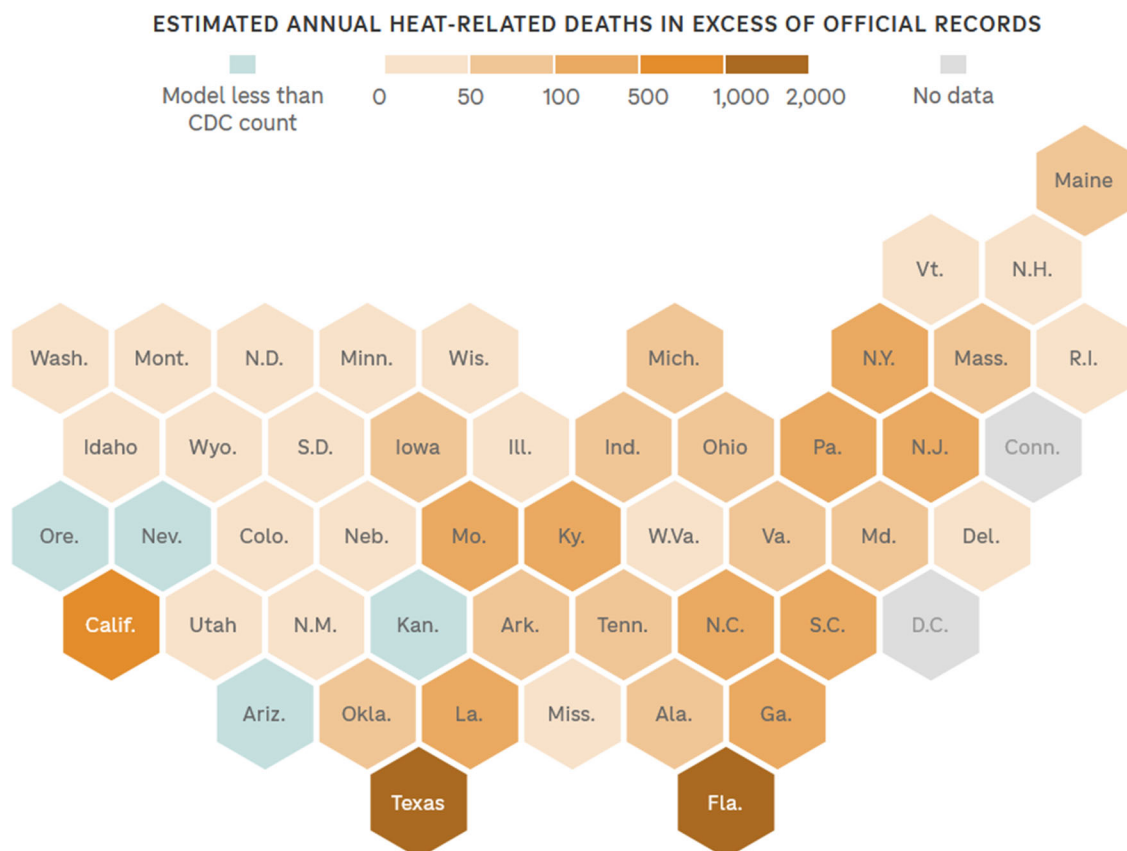
Our model finds that more than 100 people die from heat-related causes in Michigan every year, 10 times the official reported numbers. In Massachusetts, official records say only

about 5 people die from heat each year, but our estimate suggests that number could be more than 60.

And in Florida, the difference is even more dramatic: We estimate more than 1,900 deaths each year, about 40 times as many as reported.

Most states have more heat-related deaths than official records report

A new model of heat-related mortality shows that all but a handful of states have more deaths related to heat than the Centers for Disease Control and Prevention (CDC) officially counts. California, Texas and Florida have the most heat-related deaths overall, in part because of their large populations. But Texas and Florida also stand out when normalized against population.



Notes

Data is the annual average for 2018-2025, excluding 2020. Modeled data covered only counties with sufficient data. Results have been scaled to the entire population of the state. The difference is calculated by subtracting the CDC's count of heat-attributable deaths from the modeled estimate of heat-attributable deaths. Less than 0 means the CDC reported more heat-related deaths than the model's estimate.

Source: CDC's WONDER database; ERA5-Land weather database

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Heat can be particularly dangerous for people who are not already used to it. And in many parts of the country that were not historically hot, infrastructure to keep cool is less common. Nearly all homes in Alabama have some form of air conditioning, for example. But in Washington state, only [53% of homes](#) do. In Maine, 70% do. Yet the risks of heat exist, and are growing, in those states as well as those where it is a more entrenched problem.

Counts are getting more accurate — but not everywhere

The official national counts from the CDC have trended upward in recent years, rising from an average of roughly 700 between 2004 and 2018 to about 1,700 between 2018 and 2025.

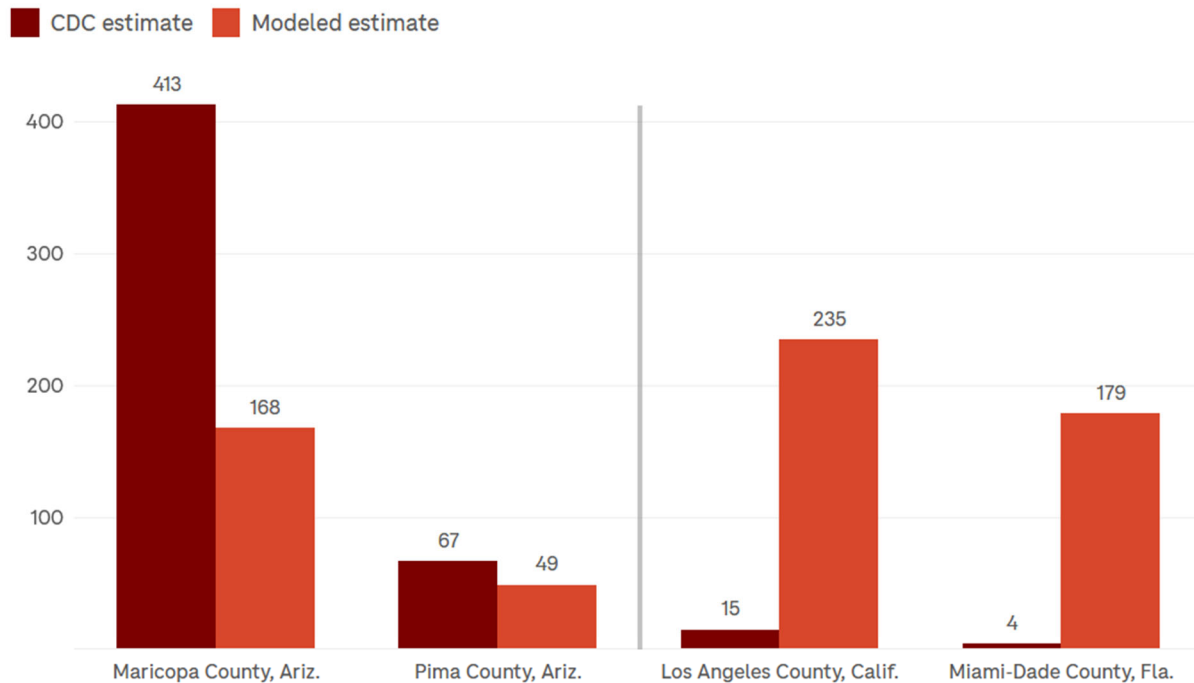
That increase is due in large part to two things: Heat is simply getting worse, according to the most recent [National Climate Assessment](#), and also there is better counting of heat-related deaths in some parts of the country.

Arizona's Maricopa County — home to Phoenix — has developed [sophisticated protocols](#) for sussing out the subtle influences of heat on people's deaths. Maricopa County trains "death investigators" to look for signs of heat stress, such as asking about the state of the deceased's air conditioning system, their

ability to pay electric bills to run ACs, their use of medications that increase heat sensitivity, and more.

Many counties and states don't comprehensively track heat-related deaths

Official estimates of heat-related deaths rely on mention of “heat” in death certificates, but heat isn’t always noted there. In places like Maricopa County, Ariz., where there has been significant effort to improve heat attribution, official counts closely track — or exceed — our modeled estimates. But in most of the U.S., our modeled estimates outstrip official reports. For example, the average in Los Angeles County is nearly 16 times higher than the official annual average. In Miami-Dade County, Fla., it's almost 45 times higher.



Notes

Figures shown are the average of 2018-2025 yearly data, excluding 2020.

Source: Centers for Disease Control and Prevention's WONDER database; ERA5-Land weather database

Credit: Analysis by Boston University's Center for Climate and Health and Alejandra Borunda/NPR. Graphic by Brent Jones/NPR

But Maricopa County is something of an outlier. In contrast, the counties home to Los Angeles and Houston report very

few heat-related deaths. Yet our model finds hundreds of people likely die in each of those counties because of heat each year.

Los Angeles recognizes the problem, says Nichole Quick, the chief science officer at the Los Angeles County Department of Public Health. The county's official numbers "are vast undercounts," Quick says. "The true impact of this is higher than I think a lot of the numbers show."

But solving the counting problem isn't simple. It took Maricopa County years to fine-tune its strategies for more accurately assessing heat's impact on deaths. And many doctors who certify deaths in emergency rooms and hospitals, or for patients who die at home, don't have protocols for confidently identifying heat impacts, says Khatana.

Until such issues are addressed, says Adams, the undercount will remain, and heat's true toll will remain obscured — making it harder for policymakers, planners and families to understand the urgency to protect themselves.

"Most people do not see themselves as vulnerable to heat. They're like, 'Oh, that's someone else. It's not me,'" says Adams. But the data is clear: Heat can take anyone, anywhere in the country. "But then, you know, push comes to shove and it actually is you."