

# Heat wave deaths highest in early summer

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The risk of dying from a heat wave is highest when heat waves occur early in the summer and are hotter and longer than usual, according to a Yale study published in the journal *Environmental Health Perspectives* (*EHP*).

During the first heat wave of a summer, the risk of [mortality](#) increases 5.04 percent, compared to 2.65 percent for heat waves that occur later in the summer. Michelle Bell, a co-author of the study and associate professor of environmental health at the Yale School of Forestry & Environmental Studies, said that people may be less accustomed to the heat early in the summer and may not protect themselves against it, and that people most vulnerable to heat waves may succumb during the first one of the season.

"We found a higher mortality risk from heat waves that were either hotter, longer or earlier in the summer," said Bell. The average daily risk of non-accidental death increased by an average of 3.74 percent during heat waves that occurred during the study, from 1987 to 2005 in 43 U.S. cities. The mortality impact of a heat wave increased by 2.49 percent for each 1-degree Fahrenheit increase in mean temperature and 0.38 percent every day a heat wave dragged on.

The *EHP* article, "Heat Waves in the United States: Mortality Risk During Heat Waves and Effect Modification by Heat Wave Characteristics in 43 U.S. Communities," will be available at [online](#) on Nov. 18.

Bell and Brooke Anderson, the study's other co-author and a postdoctoral researcher at the Yale School of Forestry & Environmental Studies, defined a [heat wave](#) as two or more days for which the average mean temperature exceeded the 95th percentile of temperatures for May through September for a given city during the 19-year study.

The risk of mortality was greater in the Northeast and Midwest than in the South. Bell said that even though it's hotter in the South, the risk of dying may be lower because air conditioning is more prevalent and people are more acclimated to the heat. Mortality did not increase at all during heat waves in several of the southern cities that were studied, including Charlotte, Dallas/Fort Worth and Tulsa.

In addition to variation across regions, the authors also found that mortality rates during heat waves of similar intensity and duration could vary from one year to the next within the same region or even within the same city. "Our findings have implications for decision-makers addressing the health burden of heat waves and for researchers estimating health effects from climate change," said Anderson.

Provided by Yale University

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