DAILY SCIENCE

# How climate change could change the way we die

A new study predicts more deaths from injuries in a warmer world.

**By Sarah DeWeerdt**

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Global warming of 1.5 °C could result in an additional 1,603 deaths from injuries each year in the United States, an international team of researchers reported yesterday in the journal *Nature Medicine*. They calculated the death toll from 2 °C of warming at 2,135 excess injury-related deaths yearly.

Until now, most studies of the health effects of climate change have focused on deaths from insect-borne diseases, heart and respiratory conditions, and direct effects of heat. But deaths from various types of injuries are known to vary by season. So it stands to reason that changes in climate could also alter these patterns.

The researchers mined 38 years' worth of US government data on weather conditions and deaths from injuries in the United States (excluding Alaska and Hawaii). They calculated the average temperature in each month of the year for each state from 1980 to 2017. They

identified months when the temperature was warmer than average in a given state, and compared the death rate from injuries during these months to the background rate of injury deaths.

This enabled them to calculate how mortality from injuries might change if average temperatures in all states increase year-round by 1.5 or 2 °C, the benchmarks set out in the Paris Agreement.

The number of excess deaths for 2 °C of warming, 2,135, represents 1% of all deaths from injuries in 2017. California, Texas, and Florida are likely to have the largest number of these increased deaths.

The researchers analyzed data on injuries from road traffic accidents and other forms of transport, falls, drowning, assault, and suicide, which together account for about three-quarters of deaths from injuries in the United States.

They found that the largest number of excess deaths is likely to be from traffic accidents, followed by suicide. The largest proportional increase is projected for drowning, while the smallest proportional increases are projected for assault and suicide.

"Of the excess deaths, 84% would occur in males and 16% in females," the researchers write. "Of all male excess deaths, 92% would occur in those aged 15–64 years, who have

higher rates of deaths from transport and suicide."

Meanwhile, these increases would be partly offset by a decline in deaths from falls in middle-aged and elderly people during the winter months.

Drownings may increase during unusually warm weather because more people go swimming. Deaths from traffic accidents may increase because higher temperatures tend to result in greater overall road traffic (at least in North America), erosion of driving skills, and increased alcohol consumption. And it's possible that increased time spent outside combined with greater irritability in warm temperatures could increase confrontations and therefore injuries from assault, while the increase in suicides could have its roots in a possible increase in emotional distress among young people associated with high temperatures.

However, some of these connections are tentative and more research will be necessary to work out the cause and effect relationships. Future research should also look at how infrastructure, socioeconomic, and racial disparities affect the risk of injury deaths in unusually warm weather, the researchers say.

Although the predicted increases in injury deaths are relatively modest, the research focuses attention on just how many unexpected risks climate change poses. And small increases

in injury deaths could add up: injuries are responsible for 9% of deaths worldwide, and most of the burden falls on low-resource countries that are most vulnerable to the effects of climate change and least responsible for its causes.

"These new results show how much climate change can affect young people," study leader Majid Ezzati of Imperial College London said **in a statement**. "We need to respond to this threat with better preparedness in terms of emergency services, social support and health warnings."

For example, officials could design public health messages specifically targeted at young men warning of the risks from traffic accidents and drowning, and implement additional blood alcohol level checkpoints on roads during hot weather.

Source: Parks R.M. *et al.* "**Anomalously warm temperatures are associated with increased injury deaths**." *Nature Medicine* 2020.

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