

# Researchers find cold weather linked to mortality risks in Texas

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Cold weather increases the risk of mortality in Texas residents, according to researchers at The University of Texas Health Science Center at Houston (UTHealth) School of Public Health. The findings were recently published in the journal *Environmental Pollution*.

In the state's 12 major metro areas from 1990 to 2011, researchers found that cold temperatures significantly increased the risk of mortality by up to 5 percent with a 1 degree Celsius decrease in [temperature](#) in the winter. A 1-degree Celsius drop caused a combined 166 excessive deaths, researchers found. Higher mortality risks were observed in areas with higher winter temperatures and lower latitudes. For the metropolitan areas along the Gulf Coast, increased risk in mortality ranged from 2 to 5 percent.

"Cold weather can trigger certain diseases and even death because it can put extra strain on body systems such as the thermoregulation, heart and circulatory systems. With changing temperatures, your body has to adjust to maintain a stable body temperature," said senior author Kai Zhang, Ph.D., assistant professor in the Department of Epidemiology, Human Genetics and Environmental Sciences.

According to the Centers for Disease Control and Prevention, from 2006 to 2010, about 2,000 people in the United States died each year due to weather-related causes. Of those deaths, 63 percent were attributed to exposure to excessive natural cold, hypothermia or both.

Zhang said, however, "The CDC's estimate is significantly underestimated because cold weather can affect people with pre-existing diseases, resulting in the attribution of primary cause of death to these diseases rather than to cold weather."

The study focused on the effects of cold weather in 12 metropolitan areas with a population of more than 200,000 across Texas: Austin-Round Rock, Beaumont-Port Arthur, Brownsville-Harlingen, Corpus Christi, Dallas-Fort Worth-Arlington, El Paso, Houston-The Woodlands-Sugar Land, Killeen-Temple, Lubbock, McAllen-Edinburg-Mission, San Antonio-New Braunfels and Waco.

Researchers also estimated the effects of cold waves, which are extended periods of extremely cold temperatures. They observed the highest impact of cold waves in areas along the Gulf Coast, which had increased risks ranging from 3 to 8 percent depending on the area.

According to the researchers, cold temperatures affected those 75 and older most and at an even higher rate because of the vulnerability of their body systems to [cold temperatures](#).

Researchers also found that in Texas, cold weather significantly increases mortality risk highest in people who have suffered from a heart attack or have pre-existing conditions like respiratory disease, ischemic heart disease and cardiovascular disease.

The highest increased risk for these diseases across Texas was observed in Brownsville/Harlingen, one of the southernmost [metropolitan areas](#) in Texas.

"For those with existing heart and respiratory disease, they have to deal with additional pressure and thus are vulnerable to cold [weather](#)," Zhang said. "These findings highlight the significant impact of [cold weather](#) on

mortality in Texas and support the importance of prevention and interventions to reduce adverse health effects, particularly among vulnerable populations."

**More information:** Tsun-Hsuan Chen et al, Impacts of cold weather on all-cause and cause-specific mortality in Texas, 1990–2011, *Environmental Pollution* (2017). [DOI: 10.1016/j.envpol.2017.03.022](https://doi.org/10.1016/j.envpol.2017.03.022)

Provided by University of Texas Health Science Center at Houston

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