

International study reveals that cold weather kills far more people than hot weather

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Credit: Larisa Koshkina/public domain

Cold weather kills 20 times as many people as hot weather, according to an international study analysing over 74 million deaths in 384 locations across 13 countries. The findings, published in *The Lancet*, also reveal that deaths due to moderately hot or cold weather substantially exceed those resulting from extreme heat waves or cold spells.

"It's often assumed that [extreme weather](#) causes the majority of deaths, with most previous research focusing on the effects of extreme heat waves," says lead author Dr Antonio Gasparrini from the London School of Hygiene & Tropical Medicine in the UK. "Our findings, from an analysis of the largest dataset of temperature-related deaths ever collected, show that the majority of these deaths actually happen on moderately hot and cold days, with most deaths caused by moderately cold temperatures."

The study analysed over 74 million (74225200) deaths between 1985 and 2012 in 13 countries with a wide range of climates, from cold to subtropical. Data on daily average temperature, [death](#) rates, and confounding variables (eg, humidity and air pollution) were used to calculate the temperature of minimum mortality (the optimal temperature), and to quantify total deaths due to non-optimal ambient temperature in each location. The researchers then estimated the relative contributions of heat and cold, from moderate to [extreme temperatures](#).

Around 7.71% of all deaths were caused by non-optimal temperatures, with substantial differences between countries, ranging from around 3% in Thailand, Brazil, and Sweden to about 11% in China, Italy, and Japan. Cold was responsible for the majority of these deaths (7.29% of all deaths), while just 0.42% of all deaths were attributable to heat.

The study also found that extreme temperatures were responsible for less than 1% of all deaths, while mildly sub-optimal temperatures accounted for around 7% of all deaths—with most (6.66% of all deaths) related to moderate cold.

According to Dr Gasparrini, "Current public-health policies focus almost exclusively on minimising the health consequences of heat waves. Our findings suggest that these measures need to be refocused and extended to take account of a whole range of effects associated with temperature."

Writing in a linked Comment, Keith Dear and Zhan Wang from Duke Kunshan University, Kunshan, Jiangsu, China say, "Factors such as susceptibility or resilience have not been included in the analysis, including socioeconomic status, age, and confounding air pollutants...Since high or low temperatures affect susceptible groups such as unwell, young, and elderly people the most, attempts to mitigate the risk associated with temperature would benefit from in-depth studies of the interaction between attributable mortality and socioeconomic factors, to avoid adverse policy outcomes and achieve effective adaptation."

More information: *The Lancet*, [www.thelancet.com/journals/lan ... \(14\)62114-0/abstract](https://www.thelancet.com/journals/lan/article/S0140-6736(14)62114-0/abstract)

Provided by Lancet

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