

Heatwave deaths will rise steadily by 2080 as globe warms up

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If people cannot adapt to future climate temperatures, deaths caused by severe heatwaves will increase dramatically in tropical and subtropical regions, followed closely by Australia, Europe and the United States, a global new Monash-led study shows.

Published today in *PLOS Medicine*, it is the first global study to predict future heatwave-related deaths and aims to help decision makers in planning adaptation and mitigation strategies for climate change.

Researchers developed a model to estimate the number of deaths related to heatwaves in 412 communities across 20 countries for the period of 2031 to 2080.

The study projected excess mortality in relation to heatwaves in the future under different scenarios characterised by levels of [greenhouse gas emissions](#), preparedness and adaption strategies and population density across these regions.

Study lead and Monash Associate Professor Yuming Guo said the recent media reports

detailing deadly heatwaves around the world highlight the importance of the heatwave study.

"Future heatwaves in particular will be more frequent, more intense and will last much longer," Associate Professor Guo said.

"If we cannot find a way to mitigate the climate change (reduce the heatwave days) and help people adapt to heatwaves, there will be a big increase of heatwave-related deaths in the future, particularly in the poor countries located around the equator."

A key finding of the study shows that under the extreme scenario, there will be a 471 per cent increase in deaths caused by heatwaves in three Australian cities (Brisbane, Sydney and Melbourne) in comparison with the period 1971-2010.

"If the Australia government cannot put effort into reducing the impacts of heatwaves, more people will die because of heatwaves in the future," Associate Professor Guo said.

The study comes as many countries around the world have been affected by severe heatwaves, leaving thousands dead and tens of thousands more suffering from heatstroke-related illnesses. The collective [death](#) toll across India, Greece, Japan and Canada continues to rise as the regions swelter through record temperatures, humidity, and wildfires. Associate Professor Antonio Gasparrini, from the London School of Hygiene & Tropical Medicine and study co-author, said since the turn of the century, it's thought heatwaves have been responsible for tens of thousands of deaths, including regions of Europe and Russia.

"Worryingly, research shows that it is highly likely that there will be an increase in their frequency and severity under a changing climate, however, evidence about the impacts on mortality at a global scale is limited," Associate Professor Gasparrini

said.

"This research, the largest epidemiological study on the projected impacts of heatwaves under global warming, suggests it could dramatically increase heatwave-related mortality, especially in highly-populated tropical and sub-tropical countries. The good news is that if we mitigate greenhouse gas emissions under scenarios that comply with the Paris Agreement, then the projected impact will be much reduced."

Associate Professor Gasparini said he hoped the study's projections would support decision makes in planning crucial adaptation and mitigation strategies for climate change.

In order to prevent mass population death due to increasingly severe heatwaves, the study recommends the following six adaption interventions, particularly significant for developing countries and tropical and subtropical regions:

- Individual: information provision, adverting
- Interpersonal: Information sharing; communication; persuasive arguments; counselling; peer education
- Community: Strengthening community infrastructure; encouraging community engagement; developing vulnerable people group; livelihoods; neighbourhood watch
- Institutional: Institutional policies; quality standards; formal procedures and regulations; partnership working
- Environmental: Urban planning and management; built environment; planting trees; public available drink water; house quality
- Public policy: Improvement of health services; poverty reduction; redistribution of resources; education; [heatwave](#)-warning system.

Provided by Monash University

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