

Scientists identify ways to prevent heat-related deaths from climate change

July 4 2016



Central Park, New York. Credit: Anthony Quintano/Flickr

New model shows that reducing fossil fuel emissions and improving adaptation efforts may reduce heat-related deaths in New York City.

By the 2080s, as many as 3,331 people could die every year from exposure to heat during the summer months in New York City, according to research published in *Environmental Health Perspectives*.

The high estimate is based on a [new model](#)—the first to account for variability in future population size, greenhouse gas trajectories, and the extent to which residents adapt to heat through interventions like air conditioning and public cooling centres. The research was led by Columbia University's Mailman School of Public Health and co-authored by the London School of Hygiene & Tropical Medicine's Dr Antonio Gasparrini.

Researchers project that as many as 1,779 annual heat-related deaths could be avoided if the climate follows the more moderate of two greenhouse gas trajectories—known as representative concentration pathways 4.5 and 8.5. High levels of adaptation could save an additional 1,198 lives.

Projections are based on more than a century of temperature, population, and mortality data for New York City in conjunction with climate projections for the 2020s, 2050s, and 2080s. The risk of dying from heat-related causes was relatively constant during the first part of the 20th Century, then decreased dramatically from the 1970s to the 2000s, during which time the portion of households with air conditioning more than doubled, from 39% in 1979 to 84% in 2003.

Since [air conditioning](#) is already so commonplace in New York City, adaptation efforts may be at or near their maximum effectiveness, the researchers caution. On the other hand, they say the city could grow even more resilient due to the ongoing efforts to reduce the urban heat island effect—for instance through programs to install reflective roofs and plant trees, as well as to protect vulnerable populations through heat warning systems and the availability of cooling centres. Societal factors like gains in overall population health and economic security also promote adaptation.

Dr Antonio Gasparrini, a Senior Lecturer in Biostatistics and

Epidemiology at the School, co-authored the paper. Dr Gasparri, who is also leading an international collaborative network to investigate the health effect associated to non-optimal temperature and climate change said: "This study shows that climate change is putting more people at risk of death as a result of extreme heat. These deaths could be avoided by limiting greenhouse gas emissions and by pursuing high-temperature adaptation methods."

The researchers say follow-up studies could explore questions such as what extent demographic changes—especially a larger population of older adults—will have on heat-related mortality, and the effect of specific interventions related to adaptation and [greenhouse gas](#) reductions.

More information: Elisaveta P. Petkova et al. Towards More Comprehensive Projections of Urban Heat-Related Mortality: Estimates for New York City under Multiple Population, Adaptation, and Climate Scenarios, *Environmental Health Perspectives* (2016). [DOI: 10.1289/EHP166](#)

Provided by London School of Hygiene & Tropical Medicine

Citation: Scientists identify ways to prevent heat-related deaths from climate change (2016, July 4) retrieved 25 April 2024 from <https://phys.org/news/2016-07-scientists-ways-heat-related-deaths-climate.html>

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