

A FURTHER EXAMINATION OF VULNERABLE SUBGROUPS OF TEMPERATURE AND MORTALITY IN CALIFORNIA: IS THERE A HARVESTING EFFECT?

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Background and Aims: Investigators have consistently demonstrated associations between elevated temperatures and mortality worldwide. Few have recently focused on identifying vulnerable subgroups, and far fewer have determined whether at least some of the observed effect may be a manifestation of mortality displacement. We examined mean daily apparent temperature and mortality in 13 counties in California during the warm season from 1999 to 2006 to identify vulnerable subgroups and to evaluate the potential effect of mortality displacement.

Methods: The time-series method using Poisson regression was applied for data analysis for single lags of zero to 20 days, and for cumulative average lags of five and ten days. The California Irrigation and Management Information System, the U.S. Environmental Protection Agency Air Quality System, and the National Climatic Data Center all provided weather data, while the California Department of Health Services, Health Data and Statistics Branch provided mortality data.

Results: Significant associations were observed for the same-day (excess risk = 4.3%, 95% confidence interval: 3.4, 5.2) continuing up to a maximum of four days following apparent temperature exposure for non-accidental mortality, cardiovascular mortality, respiratory mortality, and mortality among the elderly and children. Since no significantly negative effects were observed in the following single or cumulative days, evidence of mortality displacement was not found.

Conclusions: The effect of temperature on mortality appears to be an acute event with a potentially broad impact on the population with significant public health implications.