

## Heat waves and their effect on human mortality in Europe

September 30th, 2017



Cooling down during a heat wave in the city (photo: Nicolas Longchamps, www.flickr.com)

When it comes to the design of ellective climate change adaptation measures, it is key to estimate the impact of heat waves on human mortality. The usual approach to do this is to rely on detailed health data from hospital records. These data are often not available in su3 cient detail and over a long period for many countries. There is a dillerent approach to quantify this impact, however, where hospital records are no longer needed. In this approach excess mortality is estimated for a certain country, and then regressed against a heat wave measure. The ellect of heat waves on mortality is superimposed on the other factors that allect mortality. As a result, it is possible to dillerentiate the ellects of heat waves from the other causes of human mortality. Monthly mortality rates on a country level are su3 cient to obtain reasonable estimates.

This new approach was carried out for 27 European countries for the period 1951-1980. The analysis demonstrates that many European countries are severely allected by heat waves. On average, around 28,000 people die every year in the 27 countries combined due to heat waves. An average of 0.61% of all mortality in the examined 27 countries is excess mortality

caused by heat waves. This estimate goes up to 1.14% in the worst allected country, Portugal. Heat-related excess mortality may rise in the near future due to climate change.

The ellect of heat waves on human mortality varies signilcantly across countries, according to the results of this study. Some countries such as Spain and Greece suller from higher mortality during individual high temperature events than other countries such as Germany or Switzerland. One reason for this is that the examined countries diller signilcantly with respect to the age structure of their population, their health care system, as well as their economic and institutional capabilities. Countries in Scandinavia are least allected in terms of total deaths.

Source: Merte, 2017. Climatic Change 142: 321-330.