CASE STUDY 1

Health

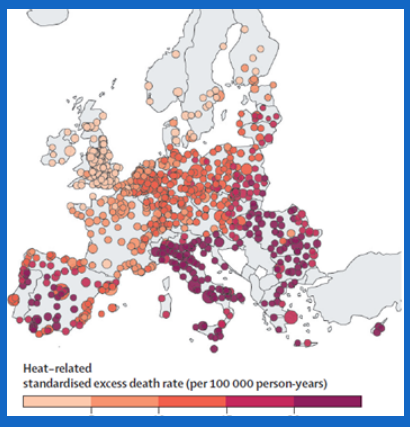
CrossEU

Prague, Czech Republic
London, United Kingdom

Context

Temperatures in Europe are rising at twice the rate of the global average. Many negative climate-related health impacts have already been documented across Europe due to observed climate change, with risks projected to intensify as temperatures increase in the future.

Significant risk of heat-related mortality and morbidity can be observed across the whole European continent. The magnitude of the risk differs depending on the climate characteristics, demographic structure and socio-economic characteristics that differentiate population groups most vulnerable to climate-related risks. Fig. 1 shows a north-south gradient in annual heat-related mortality rates (per 100 000 inh.). Despite the largest proportion of heat-related mortality in the south-eastern Europe, no region is immune to excessive heat.



Annual impact of heat on mortality across European cities (source: Masselot et al. 2023)

Climate Change Hotspots (CCHs)

- Record breaking heatwaves have been observed across Europe during the recent decade (2010-2019), and attributional studies suggest that the likelihood of occurrence of European heatwaves like the one in 2019 has been 2 to 10 times higher due to climate change. The increasing frequency and intensity of heatwaves are affecting human health across Europe.
- ***Prague, Czech Republic*** and ***London, United Kingdom*** have been selected as the case study hotspots. Both regions have experienced a significant increase in the frequency and intensity of heatwaves over the recent decades that resulted in unprecedented heat-related mortality. In addition, the impact of heatwaves in European cities is amplified due to the Urban Heat Island effect. Furthermore, as women and elderly are most at risk of increased heat-related mortality risks, European cities are expected to face a growing burden on their health care sectors due to population aging.
- This highlights the importance of assessing the adaptive capacity of health sectors in individual countries while using as recent as possible datasets combined with demographic projections.

Objectives

- Analyse the links between spatiotemporal dynamics of heatwaves and detailed mortality data sets in the selected CCHs.
- Estimate the future impact of heatwaves based on region and population group specific exposure-response curves.
- Combine future climate change scenarios with socioeconomic and demographic data at the NUTS 3 level in order to investigate the role of population aging in future impacts of heatwaves on mortality, and to identify population groups that are most vulnerable to the impact of increasing frequency and intensity of heatwaves in the future climate.
- Provide a comparative analysis of risk across London and Prague and explore the different socio-economic and climate factors responsible.

Methods

Statistical models are employed to analyse the temperature-mortality associations in selected population groups during the historical period. Consequently, historical associations will be extrapolated to the future climate scenarios, based on selected RCP scenarios (EURO-CORDEX) combined with demographic and socioeconomic projections (Shared Socioeconomic Pathways).

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