Current and projected temperature-related mortality in Europe

Some notes on adaptation and mitigation strategies

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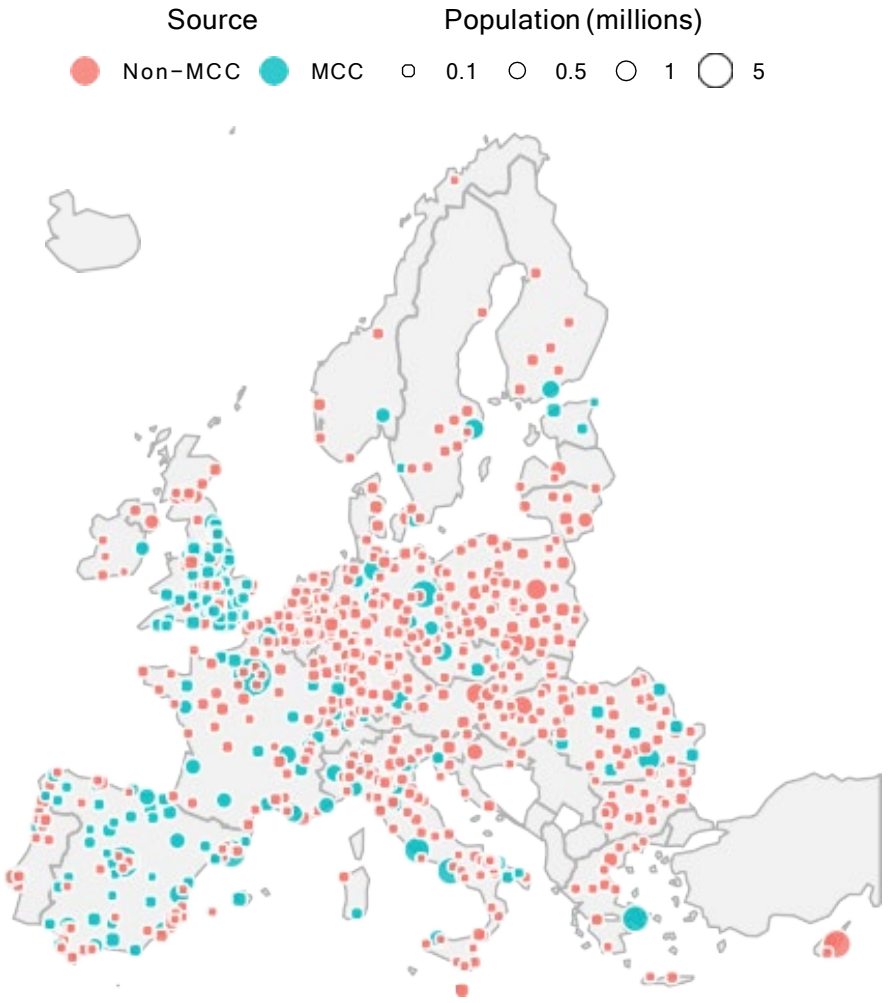
Health impact assessment in the EU

An analysis of the **historical and projected temperature-related excess mortality** in Europe

Aspects:

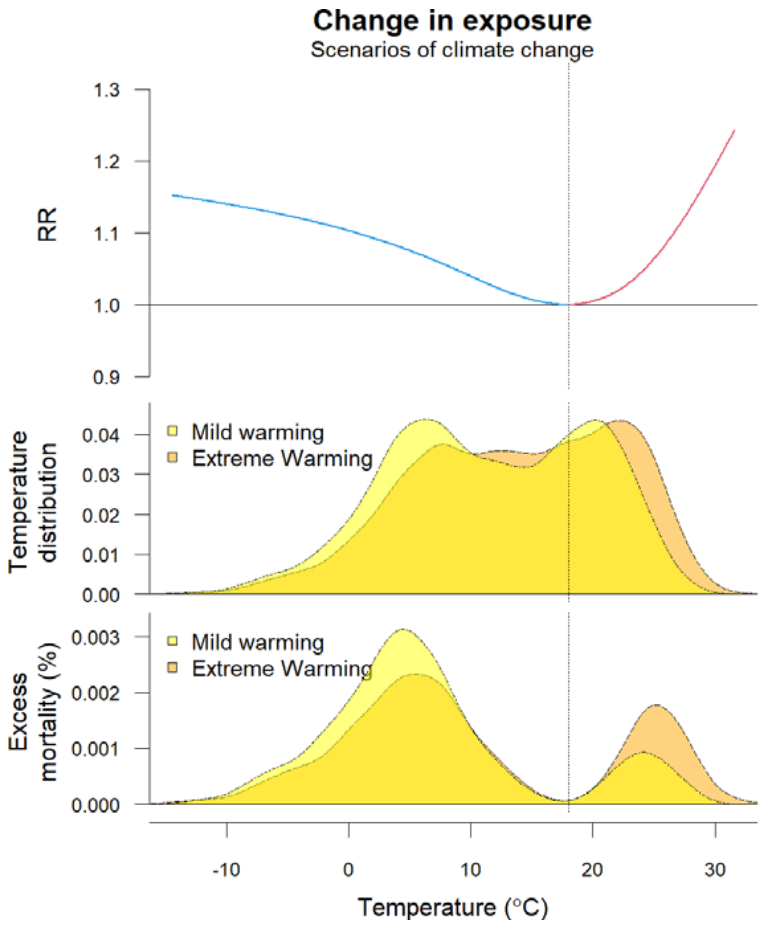
- **Comprehensive** assessment across 854 cities in 30 countries
- Collection and linkage of several **publicly-available databases**
- Provision of both **heat and cold** related mortality

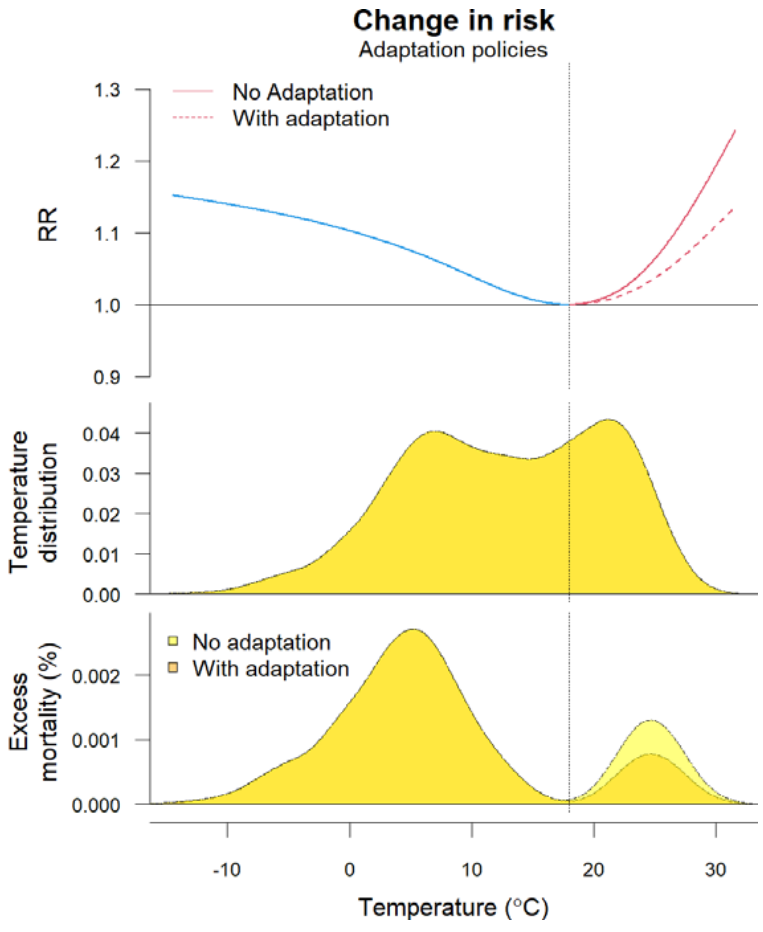


Data

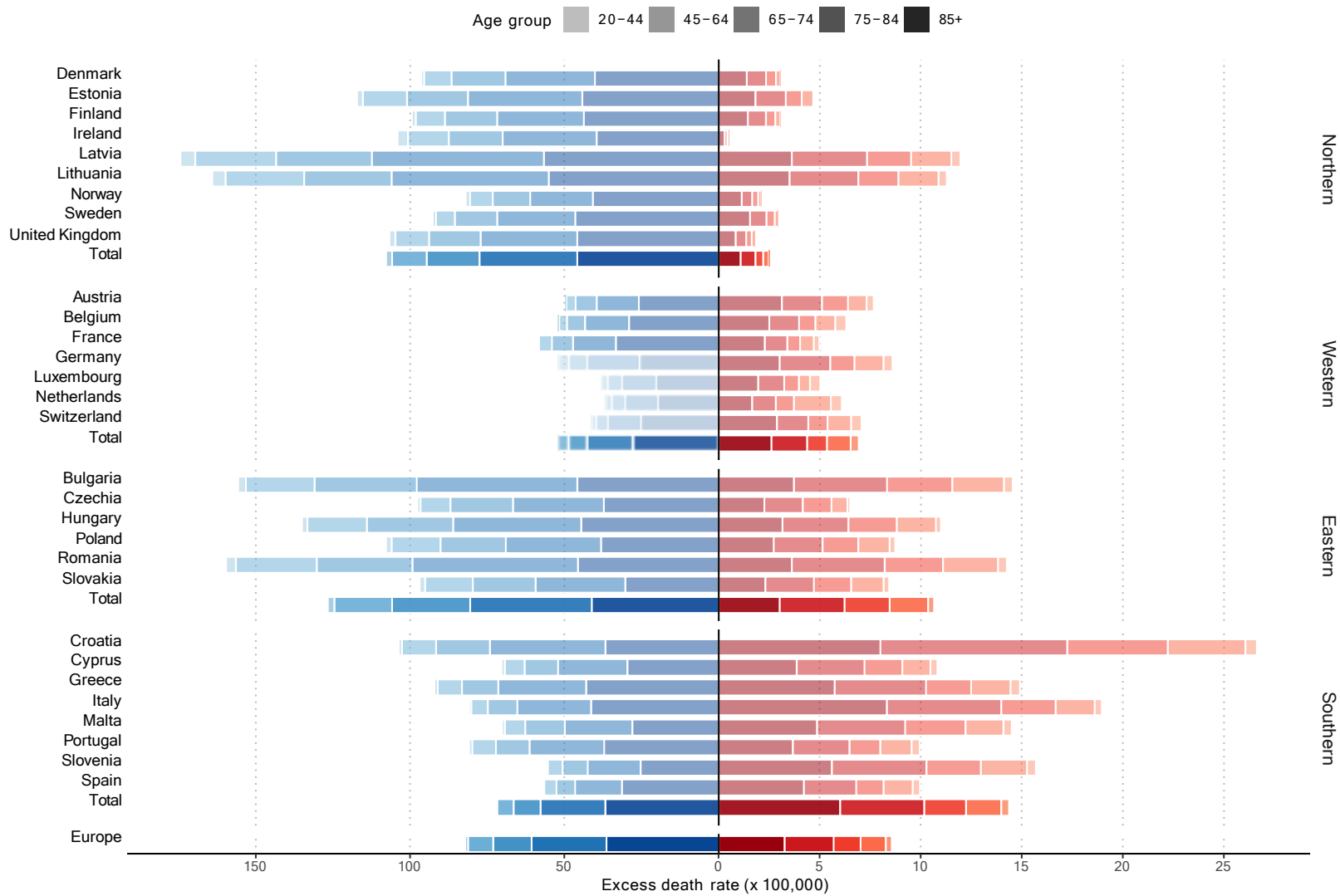
- **Study setting**: urban population residing in 854 EU cities with at least 50,000 inhabitants identified in the Urban Audit database
- **Daily mortality series**: collected for 191 cities within the MCC Network for different age groups
- **Historical temperature data**: ERA-Land database in Copernicus, gridded with ~9km resolution, linked using area-weighted averaging
- **Other environmental variables**: air pollution ($PM_{2.5}$ and NO_2) from global gridded datasets, NDVI from remote sensing satellite measurements (MODIS/NASA)
- **Projected temperature data**: 21 GCM CMIP6 from NASA-NEX, downscaled at 0.25 x 0.25 deg. resolution under scenarios RCP26, RCP45, and RCP70
- **City-specific characteristics**: from Eurostat, collection of demographic, socio-economic, topographical, and climatological indices, collected at different levels of resolution (urban, NUTS)

Analytical framework

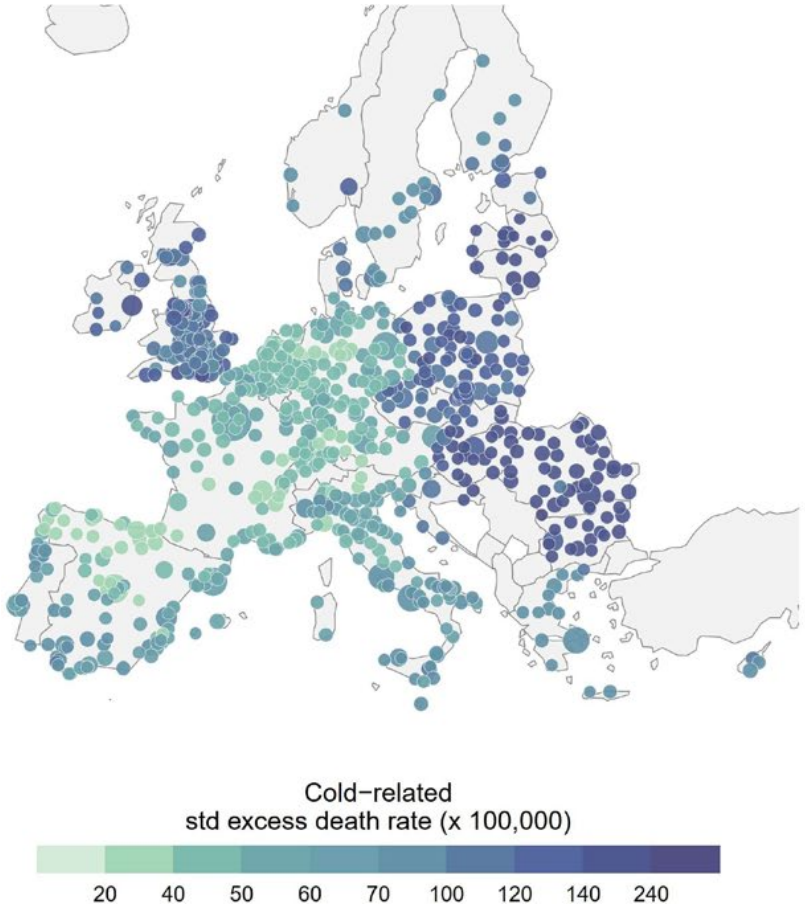


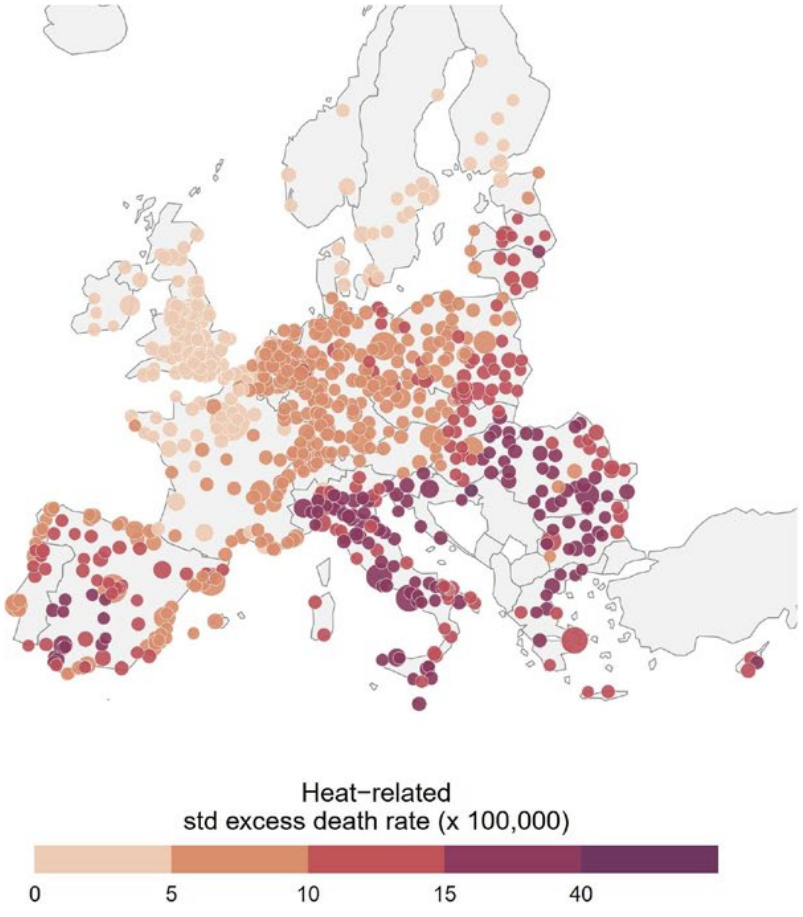


Heat and cold-related death rates by country



Maps of mortality impacts

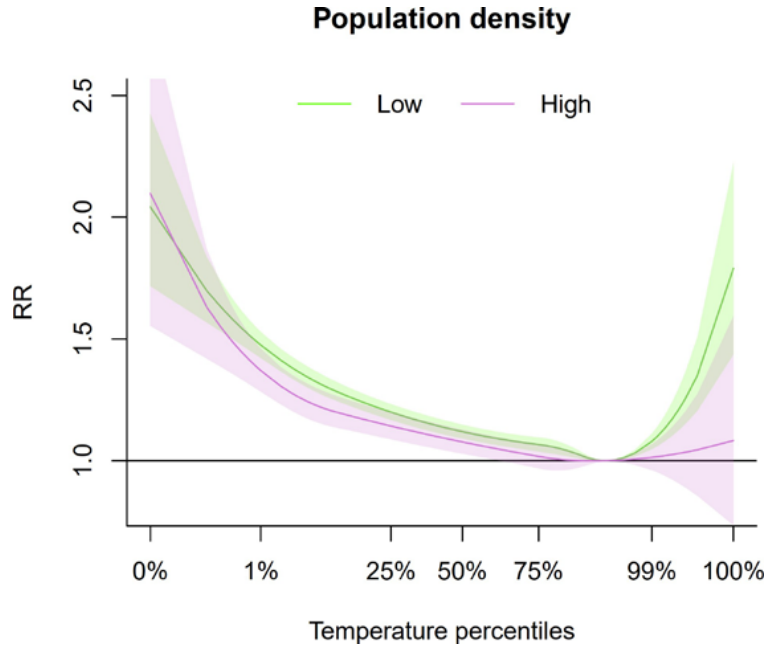


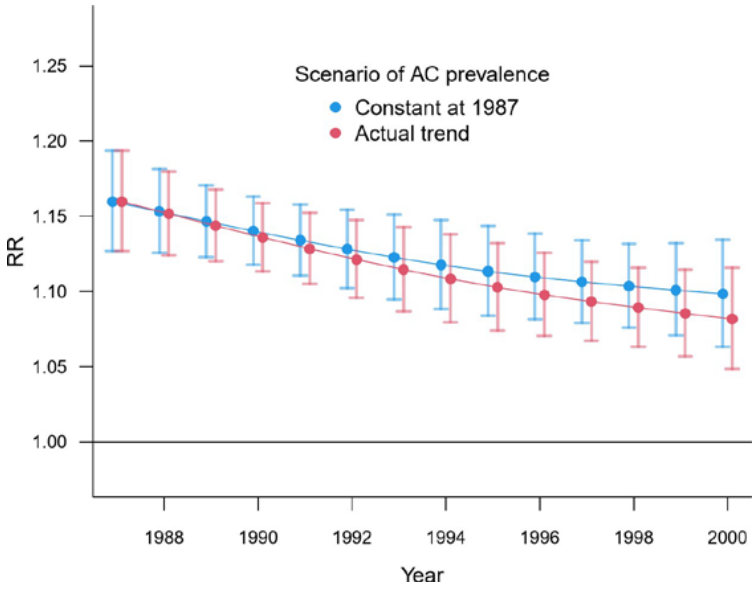


Vulnerability drivers and adaptation

Recent research on potential **drivers of vulnerability**

Some evidence on specific indicators, such as **air pollution**, **population density**, and **green areas**



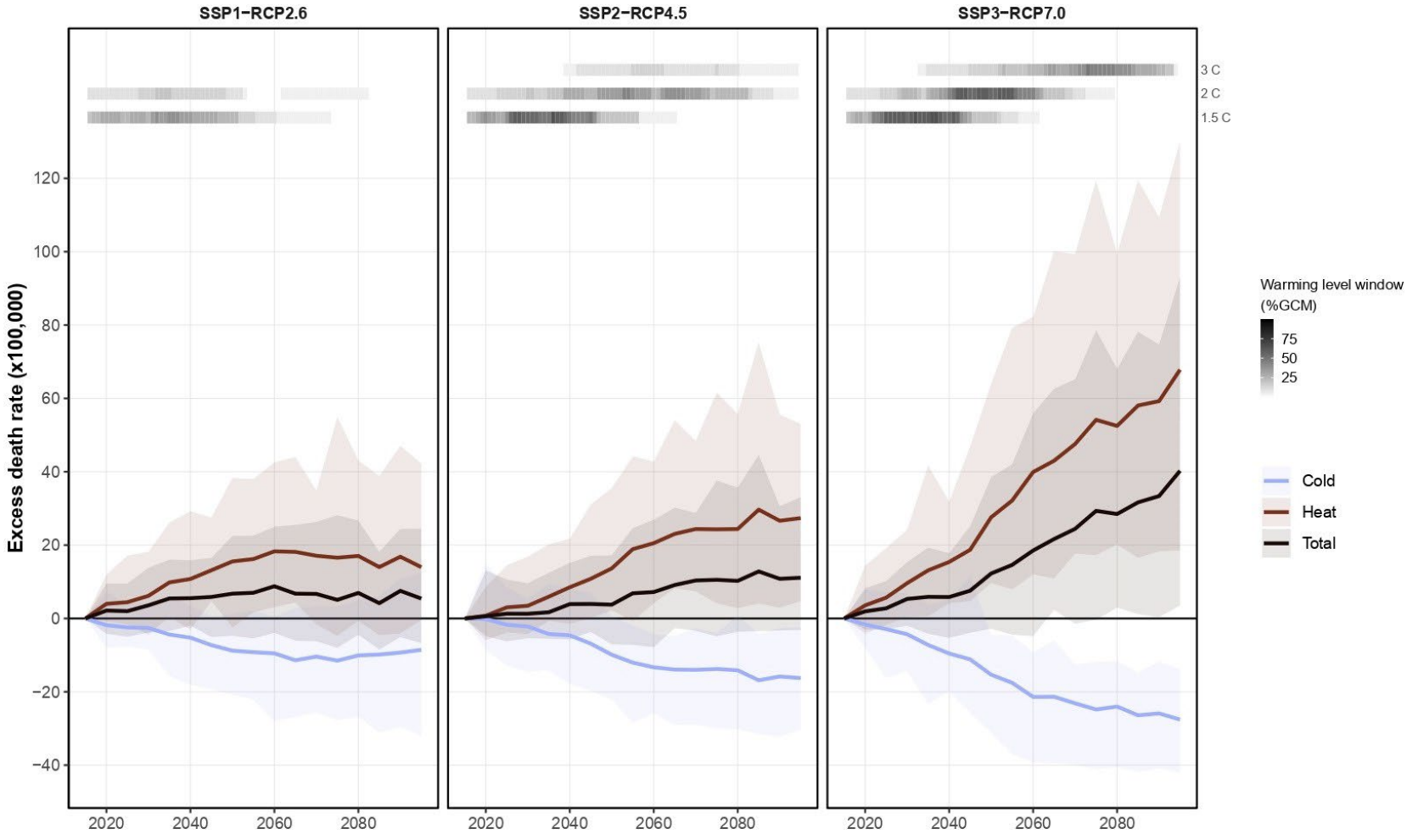


However, results are still limited

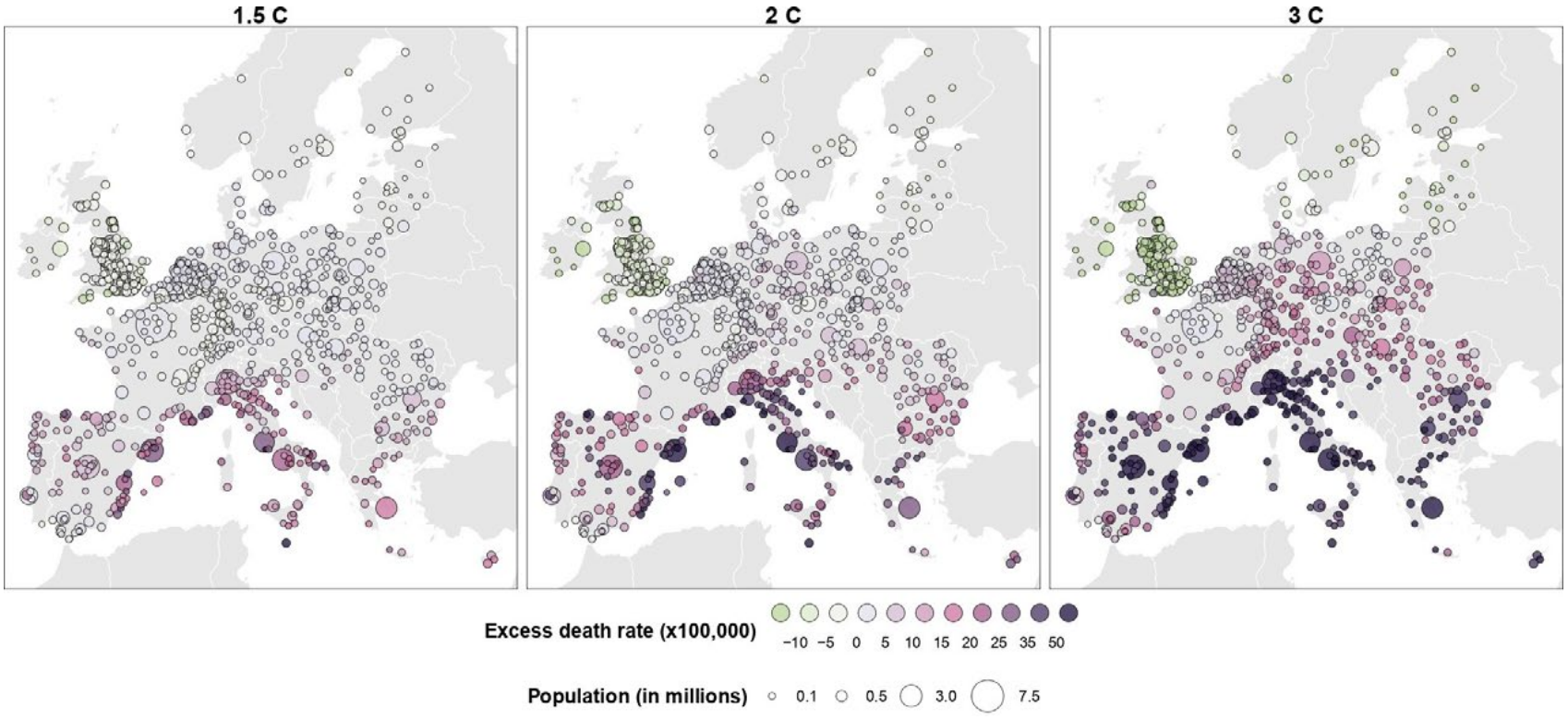
Various **methodological complexities**, such as disentangling effects of highly correlated characteristics

Difficulties in **translating evidence** in potential adaptation policies

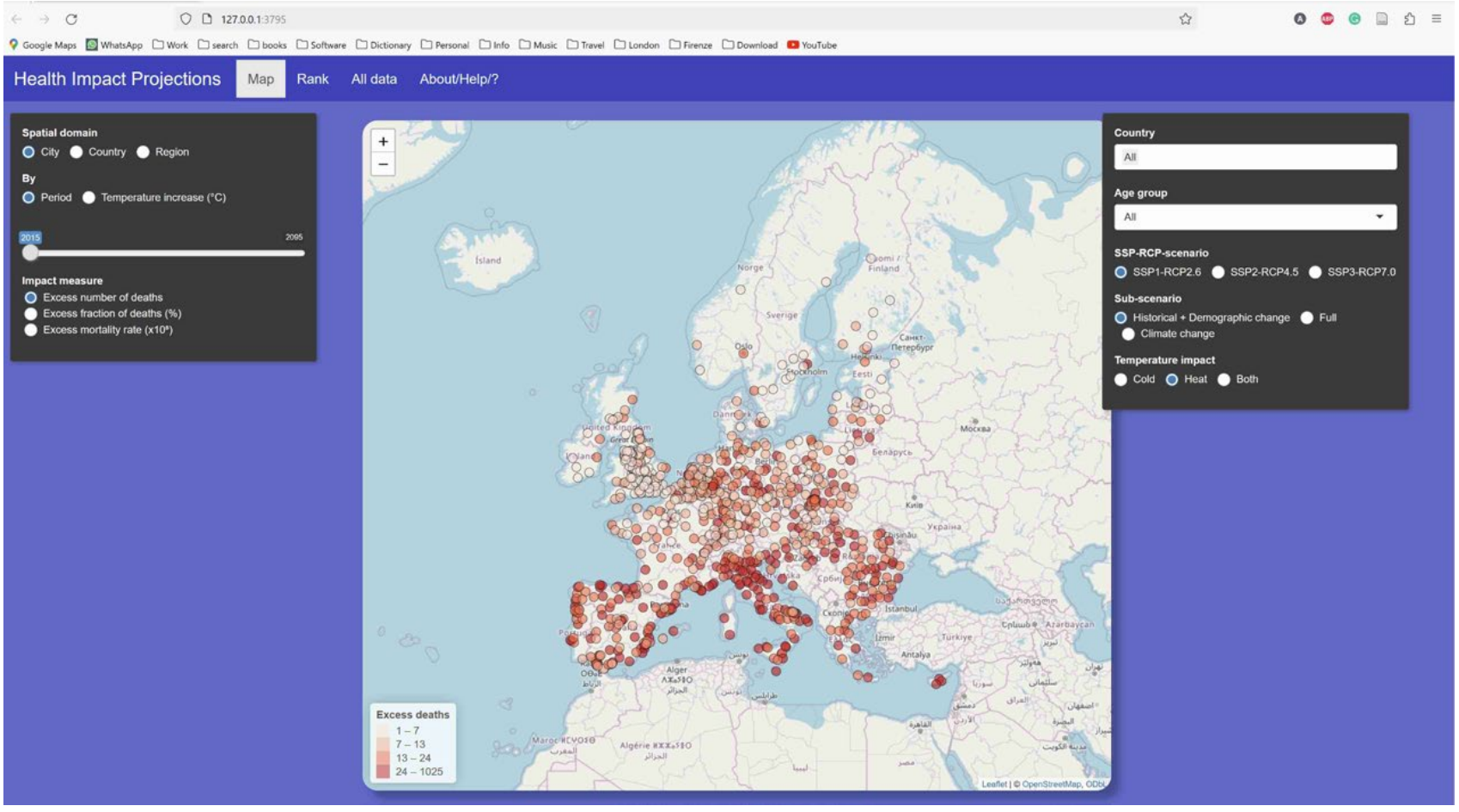
Heat vs cold-related mortality projections



Projection of net mortality changes in the EU



Development of web tools for dissemination



Policy recommendations

- **Prioritise mitigation**: keep the focus on policies on emission reduction, as adaptation alone cannot prevent health impacts from climate change
- **Evidence-based adaptation**: design adaptation policies supported by strong scientific evidence and encourage evaluation studies on specific adaptation strategies
- **Differentiate EU/national vs local policies**: promote both wide-ranging EU/national policies and local interventions aimed at at-risk areas and population sub-groups
- **Invest in data infrastructure and research dissemination**: establish and remove barriers to the provision of publicly-available databases and facilitate dissemination of research findings