Project title

Modelling Short- and Long-Term Effects of Air Pollution and Temperature on Population Health and Mortality

Objectives

The aims of this project are: First, to investigate short- and long-term effects of air pollution and extreme weather events on health and mortality across population subgroups in Britain. Second, to develop a multilevel survival model to study the effect of time-varying contextual factors on individuals' health and mortality.

Context

Climate change has brought renewed interest in environmental effects on human health and mortality. Environmental effects on health in industrialised countries are predicted to be pronounced with rapidly ageing populations. Previous studies show that hot and cold weather increase mortality from heart and respiratory diseases. Other research reports that air pollution increases mortality from respiratory diseases. Nevertheless, the full effect of air pollution and extreme weather on individuals' health is far from clear. Little research has examined long-term environmental effects on human health and how these effects vary across population subgroups. Many studies have applied conventional regression methods on hierarchical data; this approach leads to bias, the magnitude of which remains unclear.

Data and methods

The project will develop and apply a multilevel (random-effects) survival model to individual-level data from the Scottish Longitudinal Study (SLS) and the ONS Longitudinal Study (LS) linked to environmental data. The LS will provide the opportunity to study the effect of pollution and extreme weather on individuals' health and mortality. The SLS data will be used to conduct detailed analysis of the impact of air pollution and (primarily) cold weather on individuals' health and mortality, with information available on individuals' residential histories and hospital visits. The project will improve our understanding of how extreme weather events and air pollution interact in influencing health and mortality of population subgroups in Britain. The developed method could be applied to study contextual effects on other domains of individuals' behaviour (e.g. migration, fertility, employment).

Supervisors: Prof. Hill Kulu, and Dr. Urška Demšar

Please apply by **10th April 2019** using the following link:
https://www.sgsss.ac.uk/studentships/current-opportunities/. (Please click on 'Apply now' next to the project on "Modelling Short- and Long-Term Effects of Air Pollution and Temperature on Population Health and Mortality".)

The studentship starts in October 2019.

For informal inquiries, please contact Prof. Hill Kulu (Hill.Kulu@st-andrews.ac.uk). Please include 'ESRC SGSSS PhD studentship' in the subject line of your email.