# Methods

The Human Mortality Database (HMD) is a joint initiative by the Max Planck Institute for Demographic, the University of California, and INED in Paris, which aims to provide detailed mortality and population data for research, including life expectancy estimates produced using a standard set of methods for many different populations. It currently covers 41 countries or areas

Period life expectancy at birth (e­­0) was extracted from the Human Mortality Database (HMD) to allow comparison between the UK and other high income nations, and from the ONS to allow comparison within UK nations and groups. Annual change in life expectancy across European and Anglophone nations was calculated to assess the extent to which a slowdown in e0 improvement rates is seen internationally, and within UK nations to assess how similar trends in slowdown are within the UK. For UK nations changepoint analysis is performed to assess whether the slowdown is contemporaneous, suggesting common exposure. ONS forecasts from 2012 onwards for the UK as a whole are shown to demonstrate the extent of the slowdown assumed by each biennial projection, including as heatmaps showing changes in conditional life expectancy between successive projections.

To better determine the amount of annual gain in e0 that should be assumed if current e0 improvement rates were to continue, 101 different e0 gain scenarios, ranging from 0% slowdown, assuming no slowdown since the breakpoint year, to 100% slowdown, assuming no gain since the breakpoint year, and the Bayes Factor (ratio of likelihoods) for each of these scenarios calculated as compared with the 0% slowdown scenario. The scenario that maximises the Bayes Factor is identified. Each ONS biennial projection is converted into an improvement rate scenario, and the Bayes Factor for each of these scenarios calculated as well.