Question on Final Project

Group 1

5/7/2020

We are interested in modelling the excess death due to COVID-19

We are modeelling:

$$(2) \quad O_i \sim Poisson(E_i\theta_i)$$

where E_i is the expected number of deaths in week i that we estimate as the historical average of death for week i in yours prior to 2020 and θ_i the risk in week i. In a way it is a decomposition of λ_i between its known expected value E_i and a perturbation θ_i. $\theta_{i,2020}$ larger than 1 would mean excess death, we can build a credible interval for $\theta_{i,2020}$ to see if it includes 1. Then we can build on a hierarchical model adding countries and explanatory variables for the risk θ_i (% of elderly people, time after lockdown). Doing it in similar way it is done in spatial epidemiology, if I remember well, for example:

$log(\theta_i) \sim Normal(\beta_o + \beta_1 X_1 + \beta_2 X_2, \sigma^2)$

Also we can think of modelling the dependence between weeks i as spatial epidemiology models dependence between contiguous spatial units.