ac209b

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Define δ_i to be the percent change in the number of flu cases between two consecutive weeks for state i.

$$\delta_i \sim N\left(\frac{\sum_{j=1}^{48} \alpha_{ij}\delta_j I(j \neq i)}{\sum_{j=1}^{48} \alpha_{ij} I(j \neq i)}, \sigma^2\right)$$

$$\sigma^2 \sim Inv - Gamma(1, 1)$$

$$\alpha_{ij} \sim Expo(\lambda_{ij})$$

$$log(\lambda_{ij}) = \beta_0 + \beta_1 I_{neighbor} + \beta_2|density_i - density_j| + \beta_3 * commute_{ij} + ... + \beta_k|summer\_temp_i - summer\_temp_j| * I(season = s$$

$$\beta_i \sim N(0, 100)$$

More weight is automatically placed on the weeks where the flu rates are changing most rapidly

Learn two things:

1. Determine which states have most closely linked to state i by looking at α_{ij}
2. Impact of each of the predictors on how closely two states are linked:

$\beta_i = 0$ indicates that the ith predictor has no impact on the relationship

$\beta_i > 0$ indicates that the greater the discrepancy in the ith predictor value for two arbitrary states, the less the two states are linked (higher λ_{ij} implies smaller $\alpha_i j$). We want to identify predictors that fall into this category!

$\beta_i < 0$ indicates that the greater the discrepancy in the ith predictor value for two arbitrary states, the more the two states are linked. This doesn't make any sense except for $I_{neighbor}$ and $commute_{ij}$