$$\text{obs}_i \sim \text{Poisson}(\pi_i)$$

$$\log(\pi_i) = \text{offs}_i + \beta_{0i} + \beta_1 \text{perc\_aff}_i$$

offset = ln(expected no.)

exposure variable

$$\beta_0 + \sum_{j \in neighl(i)} w_{i,j}^{(3)} u_{0j}^{(3)} + u_{0,area(i)}^{(2)}$$

fixed part of intercept

random intercepts for adjacent neighbours weighted by summed memberships

NB constrained to have equal variance

random intercept for each separate area (County District)