

$$\mu_{ij} = \beta_{0_j} + x_{ij}$$

$$y_{ij} \sim \text{normal}(\mu_{ij}, \sigma^2)$$

$$\beta_{0_j} \sim \text{normal}(\mu_{\beta_0}, \sigma_{\beta_0}^2)$$

$$j = 1, \dots, J$$

$$i = 1, \dots, n_j$$