

# 1 Simple Normal Regression

## 1.1 Question of the Day

## 1.2 The Model

$$\begin{aligned} f(\beta_0, \beta_1, \sigma \mid y) &= \frac{\text{prior} \cdot \text{likelihood}}{\int \text{prior} \cdot \text{likelihood}} \\ &= \frac{f(\beta_0)f(\beta_1)f(\sigma) \cdot [\prod_{i=1}^n L(\beta_0, \beta_1, \sigma \mid y_i)]}{\int \int \int f(\beta_0)f(\beta_1)f(\sigma) \cdot [\prod_{i=1}^n L(\beta_0, \beta_1, \sigma \mid y_i)] d\beta_0 d\beta_1 d\sigma} \end{aligned}$$

### 1.3 Posterior Prediction

Steps

1. Calculate the regression trend.
2. Sample from Normal Likelihood model centered at this trend with standard deviation  $\sigma^{(i)}$ .

**How good is the posterior predictive model?**