UCI - Stats 115 Winter 2020

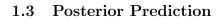
## 1 Simple Linear Regression

## 1.1 Question of the Day

## 1.2 The Model

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

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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?