

Applied Linear Models

- Before start:
- Data is observational / experimental? How collected
 - Any nonresponse
 - Missing values
 - Coding, e.g. cat var
 - Units
 - Corruption of data - sanity check

Model, Estimation, Inference

Model

Assumptions:

Skipped parts in the book

- autoreg
- causality
- matching
- partial reg plot: $\hat{y}_i \sim x_i \hat{\beta}_1 \sim x_i$

Estimation

Least Squares

$$\hat{\beta} = \arg\min_{\beta} \|y - X\beta\|^2$$

$$\hat{\beta} = (X^T X)^{-1} X^T y$$

$$= \frac{1}{n} \sum_{i=1}^n (y_i - \hat{y}_i)^2$$

$$= \frac{1}{n} \sum$$