

Model Selection & Regularization

Lecture 7

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Recall: Linear Models and Least Squares

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_p X_p + \epsilon \qquad \text{RSS} = \sum_{i=1}^n (y_i - \hat{\beta}_0 - \sum_{j=1}^p \hat{\beta}_j x_{ij})^2$$

Model with all available predictor variables is commonly referred to as **the full model**

Issues:

- predictive accuracy
- model interpretability

Solutions:

- select **subset** of predictors
- consider **extension to the least squares solution** of full model