

# Introduction

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## - Overview

- Modifications to Linear Models / <sup>Linear</sup>Model Fitting  
= Prediction Accuracy

if  $X \rightarrow Y$  is nearly linear, then

OLS will have low bias!

if  $n \gg p$ , OLS will also have low variance!

↳ however  $n \sim p \rightarrow$  high variance

↳ however  $n < p \rightarrow \infty$  variance

modify  
to linear  
framework

regularization  
↓  
constraints!

## - Model Interpretability

↳ Many irrelevant features  $\rightarrow$  OLS includes!

- Feature Selection (Variable Selection)

## • Methods

- Subset Selection
- Shrinkage (Regularization)
- Dimensionality Reduction (Projection)