# Inference

- We are more interested in understanding the relationship between $x$ and $y$

- Typically involves inference for some parameters

Examples: causal inference, genetic disease variants, finding biomarkers

- Interpretability is key: Which variables in $x$ are important?  What is the relationship between these variables and $y$?

- Example methods:

► Linear regression

▸ logistic regression and GLMs

► lasso

▸ elastic net

- Bayesian models

...generally speaking, parametric or model-based methods

# Prediction or Inference?

# Prediction or Inference?

**Inference**

- We are more interested in understanding the relationship between $x$ and $y$

- Typically involves inference for some parameters
  Examples: causal inference, genetic disease variants, finding biomarkers

- Interpretability is key: Which variables in $x$ are important?  What is the relationship
  between these variables and $y$?

- Example methods:
  - Linear regression
  - logistic regression and GLMs
  - lasso
  - elastic net
  - Bayesian models
  ...generally speaking, parametric or model-based methods

# Tradeoff: Flexibility and Interpretability