Goals of Statistics

Population
  The group of people/events a theory applies to

Sample
  The people/events observed in a particular study

Goal: Use sample to make conclusions about population

Challenge: Sampling variability
  Samples have an element of randomness
  Never perfectly represent population

Central question: Reliability
  How to decide when a pattern in your sample is likely to be true about population as a whole?
  Or, is it due to sampling variability (chance)?

Factors Affecting Reliability

Sample size (increases reliability)
Variability (decreases reliability)
Effect size (increases reliability)