Outline

Setting: a population, a single variable, and an unknown parameter (for now, $\mu$), and one SRS

1. The two main types of inference: confidence intervals and hypothesis tests

2. In hypothesis testing we start with a specific hypothesis (called the null hypothesis) about the value of the unknown parameter. Examples: $\mu = 3, \pi = .7, \sigma = 12$.

3. Where do (null) hypotheses come from?

4. How do we test a hypothesis? Some data seem consistent with the null hypothesis, others less so.

5. Important point: we never prove that the null hypothesis is false. Nor do we prove that the null hypothesis is true. We just figure out how suspicious we are of the null hypothesis because of the data.

6. Possible conclusions of a hypothesis test.
   
   (a) There isn’t enough evidence to doubt the null hypothesis.
   
   (b) The evidence is such that it would be surprising if the null hypothesis were true. (Either the null hypothesis is false or something surprising happened.)

7. The case of $\mu$ and $\bar{x}$. 