Lesson Learning Objectives

LO 1. Notice that sampling distributions of point estimates coming from samples that don't meet the required conditions for the CLT (about sample size, skew, and independence) will not be normal.

LO 2. Formulate the framework for statistical inference using hypothesis testing and nearly normal point estimates:

1. Set up the hypotheses first in plain language and then using appropriate notation.

2. Identify the appropriate sample statistic that can be used as a point estimate for the parameter of interest.

3. Verify that the conditions for the CLT hold.

4. Compute the SE, sketch the sampling distribution, and shade area(s) representing the p-value.

5. Using the sketch and the normal model, calculate the p-value and determine if the null hypothesis should be rejected or not, and state your conclusion in context of the data and the research question.

LO 3. If the conditions necessary for the CLT to hold are not met, note this and do not go forward with the analysis. (We will later learn about methods to use in these situations.)

LO 4. Calculate the required sample size to obtain a given margin of error at a given confidence level by working backwards from the given margin of error.

LO 5. Distinguish between statistical significance vs. practical significance.

LO 6. Define power as the probability of correctly rejecting the null hypothesis (complement of Type 2 error).

✓ **Completed**

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