

# **ESTIMATION USING CONFIDENCE INTERVALS: THE FOUR-STEP PROCESS**

**STATE:** What is the problem or research question that requires estimating a parameter?

## **PLAN:**

- Choose correct procedure (e.g. one sample Z confidence interval for proportions)
- Describe parameter being estimated in context
- Choose a level of confidence

## **SOLVE:**

- Collect data
- Plot data (for quantitative variables only)
- Calculate sample statistic(s)
- List conditions and check if they are met
- Calculate confidence interval

## **CONCLUDE:** should include

- level of confidence
- parameter of interest in the context of the problem
- calculated interval

# TESTS OF SIGNIFICANCE: THE FOUR-STEP PROCESS

**STATE:** What is the problem or research question that requires a statistical test?

## **PLAN:**

- Choose correct test procedure (e.g. matched-pairs  $t$ -test for means)
- Describe the parameter of interest in context
- State null and alternative hypotheses
- Choose level of significance (alpha or  $\alpha$ )

## **SOLVE:**

- Collect data
- Plot data (for quantitative variables only)
- Calculate sample statistic(s)
- List conditions and check if they are met
- Calculate the test statistic
- Find  $P$ -value from table

## **CONCLUDE:**

- Compare  $P$ -value to alpha
- Decide to Reject or Fail-to-reject  $H_0$
- Conclude in context of the problem