

AP Stats – Chap 22

Inferences About Means

Instead of knowing the proportions (p and q) for the data, we now know the individual quantitative data.

Since we don't know the SD, σ , of the population, we can't find the SD of the sample using the formula $SD = \frac{\sigma}{\sqrt{n}}$

What do we do?

We use the sample standard deviation, s , and can therefore find the standard error:

Assumptions and Conditions

Once these conditions are met, a **Student's t-model** is appropriate.
We will use

Coffee Machine

A coffee machine dispenses coffee into paper cups. You're supposed to get ten ounces of coffee, but the amount varies slightly from cup to cup. Here are the amounts measured in a random sample of 20 cups. Is there evidence that the machine is shortchanging customers?



9.9	9.7	10.0	10.1	9.9	9.6	
9.8	9.8	10.0	9.5	9.7	10.1	9.9
9.6	10.2	9.8	10.0	9.9	9.5	9.9

Fuel Economy



Penn State University has a large fleet of cars. Seeing a rise in their gas costs for the cars, they believe the fleet is not reaching their goal of 26 miles per gallon. To see if the goal is being met, managers check the gasoline usage for 50 trips from the cars chosen at random. They found a mean of 25.02 mpg and a standard deviation of 4.83 mpg. Is this evidence that they have failed to attain their fuel economy goal?