

Chapter 8 In-Class Examples

1. A sample of 21 minivan electrical repairs for “loose, not attached” wires showed a mean repair cost of \$45.66 with a standard deviation of \$27.79. Construct a 95 percent confidence interval for the true mean repair cost.

ANSWER: There is a 95% chance that the true population mean repair cost will fall between \$33.0099 and \$58.3101 based on a sample of size 21.

2. How decaffeinated is decaffeinated coffee? A researcher wants to estimate the mean caffeine content of a cup of Starbucks decaffeinated coffee with a 90% confidence level. A sample of 32 cups of coffee revealed a mean caffeine content of 4.2 mg per cup with a standard deviation of 0.5 mg per cup. Construct the true mean confidence interval using a 90% confidence level.

ANSWER: There is a 90% chance that the true population mean caffeine per cup of decaffeinated coffee will be between 4.0546 mg and 4.3454 mg based on a sample of size 32.

3. If a quality control manager wants to estimate, with a 99% confidence, the mean life of light bulbs to within ± 20 hours and also assumes that the population standard deviation is 100 hours, how many light bulbs need to be selected?

ANSWER: A sample size of 166 is needed to limit the margin of error to 20 hours or less at a 99% confidence level.