

# Example 1

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A company claims that 85% of its customers report being very satisfied with their product 6 months after purchase.

A followup survey of 120 customers who bought a certain product found that after 6 months, 87 reported that they were very satisfied with the product. Does this data support the claim at the  $\alpha$  level of 0.05? At 0.01?

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Technique: Confidence interval for proportions

Solution:

95%: (0.65,0.80) Sample mean:.725 (NO)

99%: (0.62,0.83) (NO)

# Example 2

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Capacity planners for an electric utility claim that the average household electric bill in a certain area is \$85 per month.

A sample of 98 households in a certain area yields an average monthly electric bill of \$82.50 with a sample standard deviation of \$15.10. Do the sample results support the utility estimate at  $\alpha = 0.05$ ? How about 0.10?

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Technique: Confidence interval for a mean with standard deviation unknown (estimated from sample)

Solution:

95%: (79.47, 85.53) YES

90%: (79.97, 85.03) YES

# Example 3

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A temp agency claims that its applicants have a mean number of years of formal education of 11.

A sample of 120 applicants has a mean years of formal education of 10.1. Data from the most recent census indicates that the standard deviation of the number of years of formal education in the population is 2.8. Does this data support the agency's claim?

# Example 3

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A sample of 120 applicants has a mean years of formal education of 10.1. Data from the most recent census indicates that the standard deviation of the number of years of formal education in the population is 2.8. Does this data support the agency's claim?

Technique: Confidence interval for a mean with standard deviation known

Solution:

95%: (9.60, 10.60)

# Example 4

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DEM officials believe that the level of infestation of deer ticks in an area is increasing. The average number of deer tick nymphs per square yard was estimated to be 21.4 last year.

A researcher conducts a survey of deer tick (*Ixodes scapularis*) nymphs in an infested area by dragging a white cloth over a square yard of ground and counting the number of tick nymphs that attach themselves to the cloth. A sample of 180 plots yields a mean count of 23.2 with a standard deviation of 5.9. Does this data support the claim of an increasing infestation level at the  $\alpha = 0.01$  level?

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Technique: Confidence interval for a mean with standard deviation unknown

Solution:

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99%: (22.33, 24.07)