This quiz includes material from section ISI 3.5 and possibly from some preceding sections.

ISI 3.CE.11, cats, p.225

A national survey of 47,000 American households in 2006 found that 32.4% of the households included a pet cat. This survey result was reported in the 2011 Statistical Abstract of the United States, which listed the American Veterinary Medical Association as the source. No information was provided about how the sample households were selected. Conduct a theory-based test of whether one-third of all American households include a pet cat.


We will conduct a z-test for a population proportion and calculate a 95% confidence interval for the appropriate population parameter.

HT

1. State the research question.

2-4. Report the values of the sample statistics.

\[ n = \]

\[ x = \]

\[ \hat{p} = x/n = \]

5-8. Define \( \pi \), state the appropriate hypotheses, and report the value of \( \pi \). Define \( \pi \).

\[ H_0 : \]

\[ H_a : \]

\[ \pi = \]
9-10. Use the Theory-based Inference applet to determine the values of the standardized test statistic, \( z \), and \( p.value \). Send in a screenshot of the applet labeled cats showing all appropriate values.

\[ z = \]

\[ p.value = \]

11. Evaluate the strength of evidence against the null hypothesis indicated by \( p.value \).

\[ \text{strength} = \]

\[ \text{not much} \quad 0.10 \quad \text{moderate} \quad 0.05 \quad \text{strong} \quad 0.01 \quad \text{very strong} \]

12-13. Assume \( \alpha = 0.05 \).

State the formal conclusion of this HT.

( R ) I reject the null hypothesis

( F ) I fail to reject the null hypothesis

Justify your formal conclusion.

14. What does this HT tell you about the research question? Be sure to include your level of confidence in your statement.

95% CI

15. Use the Theory-based Inference applet to construct a 95% CI for the appropriate population parameter. Send in a screenshot of the applet labeled cats showing all appropriate values.

\[ 95\% \ C I = \]

16. Interpret this CI.

Hint: With how much confidence? ... what? ... is where?

HT and CI

17. Are the conclusions of the HT and CI consistent with each other?

Specifically, does your 95% CI support your formal conclusion to the HT?

Why or why not?
18. *Calculate and report a 90% CI for the appropriate population parameter. At this new 90% level of confidence, do you reject ( R ) or fail to reject ( F ) the null hypothesis? Why?*

19-20. *Reserved for applet image(s).*