

Homework #9 Solutions (10 Points)

Math 112-N

Due April 11, 2003

19-13: A survey of 80,000 American households in 1996 found that 27.3% of the households in the sample owned a pet cat.

- (a) Use this sample information to form a 99% confidence interval to estimate the proportion of all American households that owned a pet cat in 1996.

Using `1-PropZInt` with $x = 27.3\%(80000) = 21840$, $n = 80000$, and `C-Level` at 0.99, we find that the confidence interval is (0.269, 0.277) or from 26.9% to 27.7%.

- (b) Write a sentence or two interpreting what this interval means.

The interval is our estimate of what θ is.

- (c) Explain what the phrase “99% confidence” means in this context.

We are 99% sure that the interval contains θ .

- (d) What additional information about this survey would you need in order to comment on whether the technical conditions underlying the confidence interval procedure are satisfied in this case?

We have a large enough sample size n ; we need to know that the sample is random.

19-16: The 1998 General Social Survey asked a sample of adult Americans how often they read a newspaper. Of the 1870 who responded, 805 said that they read a newspaper daily.

- (a) Produce a 90% confidence interval for the proportion of all American adults who read a newspaper daily.

Using `1-Prop-ZInt` with $x = 805$, $n = 1870$, and `C-Level` at 0.9, we get an interval of (0.412, 0.449) or from 41.2% to 44.9%.

- (b) Does this interval include the value .5?

No, .5 lies above the interval.

- (c) Comment on whether this sample provides any reason to doubt the proposition that half of all American adults read a newspaper daily.

We are 90% sure that the interval contains θ . Since the interval does not contain .5, we are at least 90% sure that .5 is not the population proportion.