Quiz 5

This is a preview of the published version of the quiz

Started: Jan 8 at 1:39pm

Quiz Instructions

This quiz must be taken in person during the set time in class. If you take the quiz at some other time or outside of the classroom, then you may not earn credit for your answers/work.

Question 1 — 1 pts

(Objective 5a: Confidence Intervals)

(Remember to include your work in your Excel file for this problem.)

A psychologist wants to know if a new mental exercise helps people retain short term memory. Adult subjects were selected and their short term memory was tested. After completing the exercise, their short term memory was tested again.

Suppose that for n=94 test subjects, 55 showed improved short term memory.

1. Find a 95% confidence interval for the proportion of adults that would show improved memory doing this exercise.
2. Using complete sentences, explain what the confidence interval means in the context of this problem.
3. Suppose the psychologist claims that at most 59% of adults would show improved memory doing this exercise. Does the confidence interval you found support this claim? Explain why or why not.

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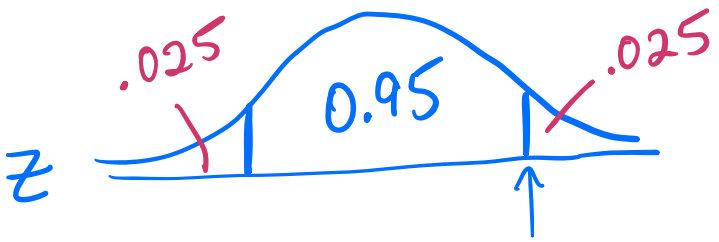
$n = 94$

$\bar{p} = \frac{55}{94}$

1. Confidence interval:

$$\bar{p} \pm (z_{\alpha/2}) \cdot \left(\sqrt{\frac{\bar{p}(1-\bar{p})}{n}} \right)$$



$z_{\alpha/2}$ = NORM.S.INV(0.95+0.025)

The rest of the solution is in the Excel file on Canvas.

Question 2

1 pts

(Objective 5b: Size of Sample: Proportion)

A sociologist wants to know what proportion of a town's residents feel like they trust their neighbors. They want to find a 95% confidence interval with margin of error $ME = 0.03$.

1. A previous study showed that of 61 surveyed residents , 25 trusted their neighbors. How many additional residents should the sociologist survey now to obtain a 95% confidence interval with margin of error $ME = 0.03$? (Use Excel and do not round any of your intermediate steps. Your final answer should be a whole number.)

2. If no previous study existed, then how many residents should the sociologist survey now to obtain a 95% confidence interval with margin of error $ME = 0.03$? (Use Excel and do not round any of your intermediate steps. Your final answer should be a whole number.)

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