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MATH 263H

September 28, 2022

Assignment #3

#3.1.24

1. π represents the percentage of Americans who drink at least one cup of coffee a day.
2. P-value = 0
3. No as 0.50 gives us a data set that is centered at 0.5. And based on the p-value, we have no data that is within the range of greater than 0.64 or less than 0.36.
4. A one-sided p-value would still be the same as 0/2 is still 0.
5. (0.6578, 0.6612)
6. 95% confident that the population of Americans who consume at least one cup of coffee per day is between 65.78% and 66.12%.

#3.2.8

C. 0.6064 to 0.6533. Using a 1 proportion Z-interval, x = 0.63 x 2815 = 1773, n = 2815, C-level = 0.99.

#3.2.14

1. π = proportion of U.S. adults estimate that the US would become a cashless society within their lifetimes.
2. Randomness: Stated; Independence: 10(1024) < population; Large Enough: 635 successes > 10, 389 failures > 10.
3. (0.59039, 0.64984). Based on these results, 95% confident that the proportion of all US adults who estimate that the US will become a cashless society with their lifetime is between 59.04% and 64.98%.
4. 65% is not included in the calculated confidence interval. So yes.

#3.2.28

(0.0376, 0.20982).

#3.3.8

1. Observational Unit: Age of male rattlesnakes at a single site. Population: 10(21). Sample: 21 male rattlesnakes.
2. Randomness: Stated.
3. The age of the male rattlesnakes at a single site.
4. False. The answer should be 95% confident that the age of male rattlesnakes at a single site is between (7.2318, 9.9102).

#3.3.28

1. Observational Unit: Diameter of the needles in mm.
2. Quantitative. Variable of interest is the diameter of the needles.

Validity

Randomness: Stated

Independence: 10(35) < population

Large Enough: Sample size of 35 > 30.

Mechanics

T-Interval test

(1.616, 1.664)

Decision Linked in Context

95% confident that the population of needles have diameters between 1.616 mm and 1.664 mm.

#3.3.36

1. We only employ the use of theory-based approaches if we do not know the standard deviation of the population. For this study, the standard deviation that we do know is the standard deviation from the samples. In this case we will use a theory-based approach.
2. (0.3241, 0.3839) 95% confident that the mercury level for the population of Yellowfin tuna is between 0.3241ppm and 0.3839 ppm.