Homework 9

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MAT 251: Probability and Mathematical Statistics

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Confidence Intervals for proportion and difference of means and proportions

Exercise 1. A study shows that 40 out of 2000 people are smokers. Construct the 99% confidence interval for the true proportion of smokers in the society.

Exercise 2. Suppose that 400 out of 800 women prefer ovals to rectangles, while only 350 out of 900 men prefer ovals. Can we say that there is a significant difference between two proportions? How do we interpret the findings? (Recall that 'significant' means 95% confidence level)

Exercise 3. Quality scores on a 10-point scale for two brands of orange juice are shown.

Brand A: 7,6,8,5,4

Brand B: 10,9,7,6,8

Use confidence intervals to test, on the basis of these data, if there is a significant difference between the mean scores of the two brands?

Exercise 4. Assume that we are given $\bar{x}_1 = 49.37, s_1 = 4.89, n_1 = 32$ and $\bar{x}_2 = 52,13, s_2 = 5.38, n_2 = 16$. At the 90% confidence level, can we say that the population means are different?

Exercise 5. In a nationwide survey of 300 sports fans, 120 listed soccer as their favorite sport, 70 listed basketball, 60 listed baseball, and the rest listed other sports. Construct 99% CI for the true population proportion of sports fans whose favorite sport is soccer and interpret the findings.