Name: Feedback

SM339 · Applied Statistics   Spring 2023 · Uhan

Quiz 2 – 1/25/2023

Instructions. You have 10 minutes to complete this quiz. You may use your plebe-issue TI-36X Pro calculator. You may <u>not</u> use any other materials.

<u>Show all your work.</u> To receive full credit, your solutions must be completely correct, sufficiently justified, and easy to follow.

Problem	Weight	Score
1a	1	
1b	1	
1c	1	
Total		/ 30

For this quiz, use the following critical values: $t_{0.005,19} = 2.86$ $t_{0.025,19} = 2.09$ $t_{0.05,19} = 1.73$

Problem 1. You have been recently hired as an analyst at Vanessa's Vacations. You are interested in the mean nightly rate for Annapolis vacation rentals on Airbnb for Memorial Day weekend. You randomly sample 20 such listings on Airbnb. Using a normal Q-Q plot, you find that your nightly rate data approximately follows a Normal distribution. You also find that the sample mean nightly rate is $343, and the sample standard deviation is $47.

a. Construct a 95% confidence interval for the mean nightly rate.

Most of you had the right idea here. See page 3 of Lesson 3 Part 1 to review the formula for a confidence interval for the population mean when the population variance is not known. Also, see Lesson 3 Part 2, as well as Problems 1 and 2 from the Lesson 3 Exercises for examples of how to compute such a confidence interval.

b. You explain to your new colleague that you are "95% confident" that the interval you found in part a contains the true mean nightly rate. Briefly explain what this means.

c. Last year, your predecessor found that the mean nightly rate was $317. You want to conduct a hypothesis test based on your random sample to determine whether there is evidence that the mean nightly rate is different from what your predecessor found.

Your hypotheses are:

$$H_0 : \mu = 317 \qquad H_A : \mu \neq 317$$

You conduct the hypothesis test and find a p-value of 0.023. Do you reject or fail to reject the null hypothesis? Briefly explain. Use a signficance level of $\alpha = 0.05$.

Some of you mentioned something about Type I errors. Note that we do not have enough information in this problem to make any statements about Type I or Type II errors, because we are not told whether the null hypothesis H_0 is actually true or false.