**BIS 305**

# Assignment 5

**Due 10/24/22**

According to a magazine, people read an average of more than two books in a month. A survey of 25 random individuals found that the mean number of books they read was 2.1 with a standard deviation of 1.24.

1. To test the magazine’s claim, what should the appropriate hypotheses be?

Ho: Mean =< 2.0, people on average read 2 or less books in a month

Ha: mean > 2.0, people on average read more than 2 books in a month

1. Compute the test statistic.

2.1(population Mean) – 2.0 (actual Mean) / (1.24(standard Deviation) /sqrt(25 Sample)) = 0.403

1. Using a level of significance of 0.05, what is the critical value?

df= sample size -1 🡪 25 -1 = 24

critical value at alpha = 0.05

critical value = 1.711

1. Find the *p*-value for the test.

P value =P(t > tobs )= P(t > 0.403 )= 0.3453 ---------- (from student t -table) P value= 0.3453

1. What is your conclusion?

since P-value is greater than significance level alpha = 0.05, we failed to reject the null hypothesis. There is not sufficient evidence to conclude that people read an average of more than two books in a month.

**A computer repair firm believes that its average repair time is less than two weeks. Using the data in the Excel file *Computer Repair Times*, determine if the company can continue to support this claim.**

mean = 14.912

variance= 35.5022

Standard deviation =  sqrt(25.5022)

s = 5.95

Hypthosis:

H0=< 14 days, the average repair time is 2 weeks or less

H1≠ 14 days, the average repair time is not 2 weeks or less

critical value 🡪 1 – (.05/2) = 0.025.

z values associated with 0.025 = ±1.96 are the critical values… . These values set up the rejection zone

Z= our mean – ho mean / ((sd)/(sqrt(sample size))

Z = 14.912 – 14 / ((5.95)/(sqrt(250)))

z = 2.42

z lies outside of ±1.96.

We have enough evidence to prove that average repair time is not equal to 14 days, so the company can't support their claim.

A two-sample test for means was conducted to deter- mine if the completion time for continuing education programs for nurses differed when costs are paid by employers (Yes) versus when individuals paid out of his or her own funds (No). The Excel *Data Analysis* tool results are shown next.

Table

Description automatically generated

1. Explain how to use this information to draw a conclusion if the null hypothesis is *H*0: mY - mN ... 0. Clearly state the correct critical value and *p*-value and your conclusion.
   1. Ha = Mean(yes) – Mean(no) > 0
   2. The P value is .263
   3. .9363 > .05 so we failed to reject the Ho hypothesis. This means that the data we have is not enough evidence to conclude that the average completion time is small for nurses when costs are paid by employers.
2. Explain how to use this information to draw a conclusion if the null hypothesis is *H*0: mY - mN Ú 0. Clearly state the correct critical value and *p*-value and your conclusion.
   1. Ha = mean yes – mean (no) < 0
   2. P value is .263
   3. .263 > .05 This means we failed to reject the Null Hypothesis. The data we have is not enough evidence to conclude that the mean completion times large for nurses when costs are paid by employers.
3. Explain how to use this information to draw a conclusion if the null hypothesis is *H*0: mY - mN = 0. Clearly state the correct critical value and *p*-value and your conclusion.
   1. Mean (yes) – mean(no) is not = 0
   2. The p value is .525
   3. .525 > 0.05 This means we failed to reject the Null Hypothesis. The data we have is not enough evidence to conclude that the mean completion time differs for nurses when costs are paid by employers.