**Quiz #5 Take-home**

**Multiple Choice**

1. In an Independent Sample t-test, what is the null hypothesis?

a. There is no statistically significant difference between sample and population

b. There is no statistically significant difference between the samples

c. There is no statistically significant difference between the slope and intercept

d. There is a statistically significant difference between the sample and population

2. What is the t-critical value for a two-tailed test, testing at.05 level significance with n1 + n2 -2 degrees of freedom, where both groups have a sample size equal to 12?

a. 2.074 b. 1.717 c. 2.086 d. 2.069

3. Say your z-obtained on a one-sample z-test was 2.46 and Prof. Cohen asked you to test at .01 level of significance, what would be your decision?

a. z-obtained is extreme enough to reject the null hypothesis

b. Fail to reject the null hypothesis

c. Reject the null hypothesis

d. The distributions are skewed to the left

4. What are sociologists really saying when they proclaim "the obtained value is not extreme enough to reject the null hypothesis"?

a. There is a statistically significant difference found

b. Any differences found are just due to chance

c. There is something systematic going on which requires further study

d. Extreme sports are associated with high testosterone levels

5. In a one sample Z- test, what is being compared?

a. two samples

b. a sample with a population

c. If there is a significant difference between pretest and posttest scores in two groups

d. if one variable co-varies with another

6. Concerning interpreting regression equations, if you want to know the direction of the correlation, you should look at

a. Intercept b. r2 c. Slope d. SS Total

7. When we interpret r2, we are saying that:

a. For each unit increase in x, we will see an increase or decrease in the predicted variable (y)

b. The sample is significantly different from the population

c. There is a strong positive or negative relationship between the variables

d. Some portion of the dependent variable co-varies with some portion of the independent variable

8. When we interpret the slope of the line, we do not need the:

a. Intercept b. Slope

9. If we want to find some *expected* or *predicted* value of the dependent variable given a value of an independent variable, then we need the:

a. Slope and Intercept b. Correlation coefficient c. Intercept only d. Slope only

10. Predicted y equals 3000+ .65(x), where x= years of educations and y=income. How is this regression equation interpreted?

a. for every year increase in income, education increases by $3000

b. for every year increase in education, expected income increases by .65

c. for every year increase in education, expected income decreases by .65

d. if X were equal to zero, income would be predicted to be $4500

**One Sample Z-test (5 pts)**

It is known that freshman college students’ gain 10 to 15 pounds their first year in college, due to increased beer drinking, pizza eating and lack of exercise. The national average of freshman weight gain was 9 pounds with a population standard deviation of 1.5, while it was 8 pounds for 65 San Jose State's freshman students. Did the students at San Jose State score significantly above the national average? Test at α = .01 level of significance.

**Independent Samples T Test (10 pts)**

With recent pressure for men to "measure up" with other men, there are many drugs out there that claim they will "enhance" the male sexual drive to see if there is a significant difference in "staying power". The newest drug on the market "libido fever" was tested against a placebo (please don't ask for specifics of the experiment) ☺.

**Following Calculations have been performed.**

**Grp 1 1=20 ; s21 = 1.5; n1=8 Grp 2 2 = 18; s22=3.1; n2=8**

i. Running a two-tailed test, test the null hypothesis of no difference between the two groups at .01 level of significance and n1 + n2 ̶ 2 degrees of freedom.

**Regression Analysis (10 pts)**

An employer suspected that absenteeism was associated with company tenure. He randomly selected the records of seven employees and recorded the data below. Is he correct in assuming that more time at the company means fewer absences?

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Years w/Company  (x) | 3 | 6 | 6 | 7 | 5 | 2 | 1 |
| Days Absent last quarter  (y) | 10 | 0 | 1 | 4 | 3 | 7 | 5 |

**Following calculations have been performed.**

Ʃxy=98; Ʃx=30; (Ʃx) 2= 900; Ʃy=30; Ʃx2=160 n=7;

i. Find the slope and y-intercept for the data

ii. Write out the regression equation and interpret.

iiii. Using the regression equation, predict the number of days absent last quarter given that an employee has been with the company for three years.

**Interpreting Regression Analysis (5 points)**

In the previous problem, SS Regression is equal to 29.74 and SS Residual is equal to 41.7.

i. Find rxy2 and interpret

ii. Using rxy2 that you calculated above and the direction of the slope of the line in the previous problem interpret the correlation coefficient, rxy, concerning both the strength and direction.

**Xtra Credit:**

**Chi Square** **(5 pts)**: Researchers asked 120 students at SJSU if they support giving in-state tuition to unauthorized immigrant students. The following data have been collected:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Category | Observed | Expected | Difference | (O-E)2 | (O-E)2/E |
| Yes | 54 |  |  |  |  |
| No | 32 |  |  |  |  |
| Undecided | 34 |  |  |  |  |

i Using the Chi Square test statistic, test the null hypothesis of no difference between the categories at the .05 level of significance. Interpret your findings.