**Statistics Assignment - 8**

1. In hypothesis testing, type II error is represented by β and the power of the test is 1−β then β is:

a. The probability of rejecting H0 when H1 is true

b. The probability of failing to reject H0 when H1 is true

c. The probability of failing to reject H1 when H0 is true

d. The probability of rejecting H0 when H1 is trueB

Ans: - B

1. In hypothesis testing, the hypothesis which is tentatively assumed to be true is called the

a. correct hypothesis

b. null hypothesis

c. alternative hypothesis

d. level of significance

Ans: B

1. When the null hypothesis has been true, but the sample information has resulted in the rejection of the null, a \_\_\_\_\_\_\_\_\_ has been made

a. level of significance

b. Type II error

c. critical value

d. Type I error

Ans: D

1. For finding the p-value when the population standard deviation is unknown, if it is reasonable to assume that the population is normal, we use

a. the z distribution

b. the t distribution with n - 1 degrees of freedom

c. the t distribution with n + 1 degrees of freedom

d. none of the above

Ans: B

1. A Type II error is the error of

a. accepting Ho when it is false

b. accepting Ho when it is true

c. rejecting Ho when it is false

d. rejecting Ho when it is true

Ans: C

1. A hypothesis test in which rejection of the null hypothesis occurs for values of the point estimator in either tail of the sampling distribution is called

a. the null hypothesis

b. the alternative hypothesis

c. a one-tailed test

d. a two-tailed test

Ans: D

1. In hypothesis testing, the level of significance is

a. the probability of committing a Type II error

b. the probability of committing a Type I error

c. the probability of either a Type I or Type II, depending on the hypothesis to be tested

d. none of the above

Ans:B

1. In hypothesis testing, b is

a. the probability of committing a Type II error

b. the probability of committing a Type I error

c. the probability of either a Type I or Type II, depending on the hypothesis to be test

d. none of the above

Ans: A

1. When testing the following hypotheses at an α level of significance

H0: p = 0.7

H1: p > 0.7

The null hypothesis will be rejected if the test statistic Z is

a. z > zα

b. z < zα

c. z < -z

d. none of the above

Ans: A

1. Which of the following does not need to be known in order to compute the P-value?

a. knowledge of whether the test is one-tailed or two-tail

b. the value of the test statistic

c. the level of significance

d. All of the above are needed

Ans: C

1. The maximum probability of a Type I error that the decision maker will tolerate is called the

a. level of significance

b. critical value

c. decision value

d. probability value

Ans: A

1. For t distribution, increasing the sample size, the effect will be on

a. Degrees of Freedom

b. The t-ratio

c. Standard Error of the Means

d. All of the Above

Ans: D

1. **What is ANOVA in SPSS?**

ANOVA which stands for analysis of variance, is a statistical method used to compare the means of two or more groups. It is used to determine whether there are any significance differences among the means of the groups. In SPSS, ANOVA is a statistical analysis tool that can be used to perform ANOVA analysis.

It provides a way to test hypothesis about the means of several population, and can be used to determine if there are significant differences among the means of two or more groups. ANOVA can also be used to investigate the relationship between an independent variable and dependent variable.

(SPSS – statistical package for the social sciences)

1. **What are the assumptions of ANOVA?**

Analysis of variance (ANOVA) is a statistical method that is used to test the differences between two or more means. There are several assumptions that must be met for ANOVA to provide reliable results:

1. Each observation must be independent of all other observations. This means that the observations must not be related or correlated with one another.
2. The populations from which the samples are drawn must be normally distributed. This assumptions is important for making inferences about the population means.
3. The variance of the population from which the samples are drawn must be equal. This assumption is important for the validity of the F-test used in ANOVA.
4. The effects of the different groups must be additive. This means that the sum of the effects of each group must equal to overall effect.
5. The data should not contain any outliers or extreme values that could have a significant impact on the results.

It’s worth nothing that these assumptions should be tested before conducting an ANOVA. If these assumptions are not met, other statistical methods should be considered, or transformations of the data should be applied.

1. **What is the difference between one way Anova and two way Anova?**

One-way ANOVA and Two-way ANOVA are both statistical method used to compare means of multiple groups. The difference between them lies in the no. of factors (also known as independent variable or predictors) that are used to explain the variance in the dependent variable.

**One-way-ANOVA:** In a One-way ANOVA, there is only one factor that explains the variation in the dependent variable. This factor is used to divide the data into several groups, and the means of these groups are compared to determine if they are significantly different from each other.

**Two-way-ANOVA:** In a Two-way ANOVA , there are two factors that explain the variation in the dependent data into several groups, and the means of these groups are compared to determine if they are significantly different from each other. The two – way ANOVA allows you to explore the interaction between the two factors, and determine if the effect of one factor is different at different levels of the other factor.

In summary – One -way ANOVA is used when there is only one factor that effect the dependent variable, where as a Two-way ANOVA is used when there are two factors that interact with each other to effect the dependent variable.