

STATISTICS WORKSHEET-8

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

Ans: b. The probability of failing to reject H_0 when H_1 is true

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

Ans: b. null hypothesis

3. When the null hypothesis has been true, but the sample information has resulted in the rejection of the null, a _____ has been made

Ans: d. Type I error

4. 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

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

5. A Type II error is the error of

Ans: b. accepting H_0 when it is true

6. 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

Ans: d. a two-tailed test

7. In hypothesis testing, the level of significance is

Ans: b. the probability of committing a Type I error

8. In hypothesis testing, β is

Ans: a. the probability of committing a Type II error

9. When testing the following hypotheses at an α level of significance $H_0: p = 0.7$ $H_1: p > 0.7$ The null hypothesis will be rejected if the test statistic Z is

Ans: a. $z > z_\alpha$

10. 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

Ans: c. the level of significance

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

Ans: a. level of significance

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

Ans: a. Degrees of Freedom

13. What is Anova in SPSS?

Ans: In SPSS (Statistical Package for the Social Sciences), ANOVA (Analysis of Variance) is a statistical test used to determine if there is a significant difference between the means of

two or more groups. ANOVA can be used to analyze experimental or observational data with one or more independent variables (factors) and one dependent variable.

To perform ANOVA in SPSS, you can follow these steps:

1. Open your data file in SPSS.
2. Click on the "Analyze" menu and select "Compare Means".
3. Choose "One-Way ANOVA" if you have one independent variable, or "Two-Way ANOVA" if you have two independent variables.
4. Select the dependent variable you want to analyze and add it to the "Dependent List".
5. Select the independent variable(s) you want to analyze and add it/them to the "Factor(s)" list.
6. Click on "Options" to specify any additional options for your analysis, such as post-hoc tests to determine which groups are significantly different.
7. Click "OK" to run the analysis and view the results.

14. What are the assumptions of Anova?

Ans: The assumptions of ANOVA (Analysis of Variance) are as follows:

1. Normality: The dependent variable should be normally distributed within each group or level of the independent variable(s).
2. Homogeneity of variance: The variances of the dependent variable should be equal across all groups or levels of the independent variable(s).
3. Independence: Observations within each group or level of the independent variable(s) should be independent of each other.
4. Random Sampling: The data should be collected using random sampling techniques, so that the sample is representative of the population.

15. What is the difference between one way Anova and two way Anova

Ans: The main difference between one-way ANOVA and two-way ANOVA is the number of independent variables (factors) involved in the analysis.

One-way ANOVA involves one independent variable with two or more levels (groups). It is used to compare the means of three or more groups to determine if there is a significant difference between them. For example, a one-way ANOVA can be used to compare the mean scores of three different groups of students who received different teaching methods. On the other hand, two-way ANOVA involves two independent variables, each with two or more levels. It is used to determine the main effects of each independent variable as well as their interaction effect on the dependent variable. For example, a two-way ANOVA can be used to analyze the effects of two factors, such as gender and age, on a dependent variable like income.

In summary, one-way ANOVA compares the means of three or more groups based on one independent variable, while two-way ANOVA compares the means of groups based on two independent variables and their interaction effect on the dependent variable.