

STATISTICS WORKSHEET-3

1. Which of the following is the correct formula for total variation?

- a) Total Variation = Residual Variation – Regression Variation
- b) Total Variation = Residual Variation + Regression Variation
- c) Total Variation = Residual Variation * Regression Variation
- d) All of the mentioned

Answer – b) Total Variation = Residual Variation + Regression Variation

2. Collection of exchangeable binary outcomes for the same covariate data are called outcomes.

- a) random
- b) direct
- c) binomial
- d) none of the mentioned

Answer – c) binomial

3. How many outcomes are possible with Bernoulli trial?

- a) 2
- b) 3
- c) 4
- d) None of the mentioned

Answer – a) 2

4. If H_0 is true and we reject it is called

- a) Type-I error
- b) Type-II error
- c) Standard error
- d) Sampling error

Answer – a) Type-I error

5. Level of significance is also called:

- a) Power of the test
- b) Size of the test

- c) Level of confidence
- d) Confidence coefficient

Answer – b)

6. The chance of rejecting a true hypothesis decreases when sample size is:

- a) Decrease
- b) Increase
- c) Both of them
- d) None

Answer – b) Increase

7. Which of the following testing is concerned with making decisions using data?

- a) Probability
- b) Hypothesis
- c) Causal
- d) None of the mentioned

Answer – b) Hypothesis

8. What is the purpose of multiple testing in statistical inference?

- a) Minimize errors
- b) Minimize false positives
- c) Minimize false negatives
- d) All of the mentioned

Answer – a) Minimize errors

9. Normalized data are centred at and have units equal to standard deviations of the original data

- a) 0
- b) 5
- c) 1
- d) 10

Answer – a) 0

10. What Is Bayes' Theorem?

Answer – Bayes' Theorem states that the conditional probability of an event, based on the occurrence of another event, is equal to the likelihood of the second event given the first event multiplied by the probability of the first event.

11. What is z-score?

Answer – A Z-score is a numerical measurement that describes a value's relationship to the mean of a group of values. Z-score is measured in terms of standard deviations from the mean. If a Z-score is 0, it indicates that the data point's score is identical to the mean score.

For example let's say you have a test score of 190. The test has a mean (μ) of 150 and a standard deviation (σ) of 25. Assuming a normal distribution, your z score would be: $z = (x - \mu) / \sigma$

12. What is t-test?

Answer – A t-test is a statistical test that compares the means of two samples. It is used in hypothesis testing, with a null hypothesis that the difference in group means is zero and an alternate hypothesis that the difference in group means is different from zero.

13. What is percentile?

Answer – A value on a scale of 100 that indicates the percent of a distribution that is equal to or below it a score in the 95th percentile. A percentile is a comparison score between a particular score and the scores of the rest of a group. It shows the percentage of scores that a particular score surpassed. For example, if you score 75 points on a test, and are ranked in the 85th percentile, it means that the score 75 is higher than 85% of the scores.

14. What is ANOVA?

Answer – Analysis of variance, or ANOVA, is a statistical method that separates observed variance data into different components to use for additional tests. A one-way ANOVA is used for three or more groups of data, to gain information about the relationship between the dependent and independent variables.

15. How can ANOVA help?

Answer – The one-way analysis of variance (ANOVA) is used to determine whether there are any statistically significant differences between the means of three or more independent (unrelated) groups. ANOVA is helpful for testing three or more variables. It is similar to multiple two-sample t-tests. However, it results in fewer type I errors and is appropriate for a range of issues. ANOVA groups differences by comparing the means of each group and includes spreading out the variance into diverse sources.