Statistics-3

1. Which of the following is the correct formula for total variation?
b) Total Variation = Residual Variation + Regression Variation

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

3. How many outcomes are possible with Bernoulli trial?
a) 2

4. If Ho is true and we reject it is called
a) Type-I error

5. Level of significance is also called:
c) Level of confidence

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

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

8. What is the purpose of multiple testing in statistical inference?
d) All of the mentioned

9. Normalized data are centred at and have units equal to standard deviations of the original data
a) 0

10. What Is Bayes' Theorem?

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.

$$P(A|B)=P(B)P(A\bigcap B)=P(B)P(A)\cdot P(B|A)$$

where:$P(A)$= The probability of A occurring$P(B)$= The probability of B occurring$P(A|B)$= The probability of A given B$P(B|A)$= The probability of B given A$P(A\bigcap B))$= The probability of both A and B occurring

11. What is z-score?

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. A Z-score of 1.0 would indicate a value that is one standard deviation from the mean. Z-scores may be positive or negative, with a positive value indicating the score is above the mean and a negative score indicating it is below the mean.

$z = (x-\mu)/\sigma$, where x is the raw score, μ is the population mean, and σ is the population standard deviation.

12. What is t-test?

A t-test is **an inferential statistic used to determine if there is a significant difference between the means of two groups and how they are related**.

13. What is percentile?

A percentile (or a centile) is a measure used in statistics indicating the value *below which* a given percentage of observations in a group of observations fall.

14. What is ANOVA?

An ANOVA test is a type of statistical test used to determine if there is a statistically significant difference between two or more categorical groups by testing for differences of means using variance

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15. How can ANOVA help?

It provides the overall test of equality of group means. It can control the overall type I error rate (i.e. false positive finding) It is a parametric test so it is more powerful, if normality assumptions hold true.