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Statistics Quiz PDF

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Which probability distribution is used to model the number of successes in a fixed number of independent Bernoulli trials?

○ Normal distribution

○ Poisson distribution

○ Binomial distribution

○ Exponential distribution

Which software is commonly used for statistical analysis and is known for its extensive library of packages?

○ Excel

○ SPSS

○ R

○ SAS

Which measure of dispersion is calculated as the square root of the variance?

○ Range

○ Interquartile range

○ Standard deviation

○ Mean absolute deviation

What is the primary purpose of using a scatter plot in data analysis?

○ To show the distribution of a single variable

○ To compare parts of a whole

○ To visualize the relationship between two variables

○ To display frequency distributions

What does a p-value less than 0.05 typically indicate in hypothesis testing?

○ The null hypothesis is true

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◯ The null hypothesis is rejected
◯ The test is inconclusive
◯ The alternative hypothesis is rejected

Which tests are used to compare means between groups? (Select all that apply)

☐ T-test
☐ ANOVA
☐ Chi-square test
☐ Kruskal-Wallis test

Explain the difference between descriptive and inferential statistics.

◯ Descriptive statistics summarize data
◯ Inferential statistics predict population parameters
◯ Descriptive statistics use sample data
◯ Inferential statistics describe data

Describe how a confidence interval is constructed and what it represents.

◯ It is a point estimate
◯ It represents a range of values
◯ It is always 100% accurate
◯ It is based on population data

What are the ethical considerations one must keep in mind when conducting statistical analysis?

◯ Data integrity
◯ Manipulation of data
◯ Confidentiality
◯ Bias in reporting

Which of the following are components of time series analysis? (Select all that apply)

☐ Trend analysis
☐ Seasonal adjustment
☐ Hypothesis testing
☐ Forecast

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Discuss the importance of data visualization in statistics and provide examples of effective visualization techniques.

◯ It simplifies data interpretation
◯ It can mislead if not done correctly
◯ It is only useful for large data sets
◯ It replaces statistical analysis

How can multicollinearity affect the results of a multiple regression analysis?

◯ It improves model accuracy
◯ It inflates variance of estimates
◯ It has no effect on regression
◯ It simplifies interpretation

What are the steps involved in conducting a hypothesis test, and why is each step important?

◯ Define hypotheses
◯ Select significance level
◯ Calculate test statistic
◯ Ignore results

What is the measure of central tendency that represents the middle value in a data set?

◯ Mean
◯ Median
◯ Mode
◯ Range

Which of the following are types of sampling methods? (Select all that apply)

☐ Random sampling
☐ Stratified sampling
☐ Systematic sampling
☐ Convenience sampling

In hypothesis testing, what is the probability of rejecting the null hypothesis when it is true?

◯ Type I error
◯ Type II error

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◯ Power of the test
◯ Confidence level

Which of the following are measures of central tendency? (Select all that apply)

☐ Mean
☐ Median
☐ Mode
☐ Variance

Which of the following is a non-parametric test?

◯ T-test
◯ ANOVA
◯ Chi-square test
◯ Mann-Whitneys U test

Which factors can affect the power of a statistical test? (Select all that apply)

☐ Sample size
☐ Significance level
☐ Effect size
☐ Data visualization

Which of the following are assumptions of linear regression? (Select all that apply)

☐ Linearity
☐ Homoscedasticity
☐ Multicollinearity
☐ Normality of residuals

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