

Quiz Grade: 100.0% (A)

Quiz Submission

Importance of Statistics in Data Analysis

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Total Questions: 10

Course Information

Course Title: Importance of Statistics in Data Analysis
Course Code: LCIST 247
Credit Hours: 3

Quiz Questions, Student Answers, and Correct Answers

Question 1 of 10

Multiple Choice Question

What is the primary purpose of statistical analysis in data evaluation?

Available Options:

- (A) Summarizing data
- (B) Making predictions
- (C) Identifying trends

(D) All of the above ← STUDENT SELECTED ← CORRECT ANSWER

Student's Answer: Option D: All of the above

Correct Answer: Option D: All of the above

Question 2 of 10

Multiple Choice Question

Which statistical measure is most appropriate for understanding the central tendency of a dataset?

Available Options:

- (A) Mean ← STUDENT SELECTED ← CORRECT ANSWER**
- (B) Median
- (C) Mode
- (D) Standard Deviation

Student's Answer: Option A: Mean

Correct Answer: Option A: Mean

Question 3 of 10

Multiple Choice Question

In hypothesis testing, what does a p-value represent?

Available Options:

(A) The probability of the null hypothesis being true

(B) The probability of observing the data given that the null hypothesis is true ← STUDENT SELECTED ← CORRECT ANSWER

(C) The probability of making a Type I error

(D) None of the above

Student's Answer: Option B: The probability of observing the data given that the null hypothesis is true

Correct Answer: Option B: The probability of observing the data given that the null hypothesis is true

Question 4 of 10

Multiple Choice Question

Which of the following graphs is most effective for displaying the distribution of a continuous variable?

Available Options:

(A) Bar chart

(B) Pie chart

(C) Histogram ← STUDENT SELECTED ← CORRECT ANSWER

(D) Line graph

Student's Answer: Option C: Histogram

Correct Answer: Option C: Histogram

Question 5 of 10

Multiple Choice Question

What is the significance of the correlation coefficient in statistics?

Available Options:

(A) It measures the strength and direction of a relationship between two variables ← STUDENT SELECTED ← CORRECT ANSWER

(B) It is used to calculate the mean of a dataset

(C) It indicates causation between two variables

(D) It is a measure of variability

Student's Answer: Option A: It measures the strength and direction of a relationship between two variables

Correct Answer: Option A: It measures the strength and direction of a relationship between two variables

Question 6 of 10

Multiple Choice Question

When a dataset has outliers, which measure of central tendency is the least affected?

Available Options:

(A) Mean

(B) Median ← STUDENT SELECTED ← CORRECT ANSWER

(C) Mode

(D) All are equally affected

Student's Answer: Option B: Median

Correct Answer: Option B: Median

Question 7 of 10

Multiple Choice Question

What is the term used to describe the spread or variability of data points in a dataset?

Available Options:

(A) Central tendency

(B) Dispersion ← STUDENT SELECTED ← CORRECT ANSWER

(C) Statistical significance

(D) Inferential statistics

Student's Answer: Option B: Dispersion

Correct Answer: Option B: Dispersion

Question 8 of 10

Text Answer Question

Explain the role of statistics in making data-driven decisions in business.

Student's Answer:

Statistics turns raw operational data into actionable insights, providing the analytical foundation for evidence-based strategic planning and risk management. Key Roles in Business Decision-Making Performance Measurement & Control: Descriptive statistics (means, standard deviations, and dashboards) allow management to track Key Performance Indicators (KPIs), establish performance benchmarks, and monitor everyday business health. Risk Reduction & Predictive Forecasting: Inferential statistics and predictive modeling quantify uncertainty. By examining historical trends, businesses can forecast demand, manage credit risk, and allocate resources efficiently. Optimization & Quality Management: Frameworks like Six Sigma rely on statistical process control to minimize defects, streamline supply chains, and optimize operational workflows. Product & Marketing Validation: Methods like A/B testing and hypothesis testing allow companies to evaluate changes in user interfaces, pricing strategies, or marketing campaigns before full-scale implementation, ensuring decisions are backed by empirical evidence rather than intuition.

Correct Answer:

Statistics provide the tools for analyzing data patterns, enabling businesses to forecast outcomes, measure performance, and optimize strategies based on empirical evidence.

Question 9 of 10

Text Answer Question

Describe a scenario in which regression analysis would be beneficial in data analysis.

Student's Answer:

A retail chain planning its holiday expansion strategy provides a classic scenario where regression analysis proves essential. Scenario: Predicting E-Commerce Sales Revenue An online clothing brand wants to determine how much money to spend on digital marketing for the fourth quarter. Management wants to project sales revenue and understand which specific channels yield the highest return on investment (ROI). Applying Regression Analysis The data analytics team builds a multiple linear regression model using three years of weekly performance metrics: Dependent Variable (Outcome to predict): Weekly Revenue (Y) Independent Variables (Predictors): Social Media Ad Spend (X_1) Search Engine Marketing Spend (X_2) Average Discount Percentage (X_3).

Correct Answer:

Regression analysis can be used to predict sales based on advertising expenditures by analyzing historical data to identify relationships between the two variables.

Question 10 of 10

Text Answer Question

Discuss the importance of understanding sampling methods in statistics.

Student's Answer:

Understanding sampling methods is fundamental to statistical analysis because the quality of any conclusion depends directly on how the underlying data was gathered. In practice, collecting data from an entire population (a census) is often impossible due to time, cost, or logistical constraints. Sampling solves this by selecting a subset, but the method chosen determines whether that sample accurately reflects the larger group. Core Reasons Sampling Methods Matter Ensuring Representativeness: A proper probability sampling method (such as simple random, stratified, or systematic sampling) gives every individual a known chance of selection. This creates a sample that mirrors the population's demographic, behavioral, or physical characteristics. Minimizing Bias: Flawed sampling techniques introduce systematic errors that invalidates analysis. Non-probability methods like convenience or volunteer sampling frequently suffer from selection bias, where certain groups are over- or under-represented. Validating Inferential Statistics: Statistical inference tools—such as confidence intervals and hypothesis testing—rely on the mathematical assumption that the sample was selected randomly. Without valid sampling, p -values and margin of error calculations become unreliable. Resource Efficiency: Proper sampling enables researchers to achieve precise estimates while spending a fraction of the time and budget required to survey an entire population.

Correct Answer:

Understanding sampling methods is crucial as they determine the representativeness of the sample, the validity of statistical inferences, and the overall reliability of study results.