МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ КЫРГЫЗСКОЙ РЕСПУБЛИКИ

ОШСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ

МЕЖДУНАРОДНЫЙ МЕДИЦИНСКИЙ ФАКУЛЬТЕТ

КАФЕДРА ЕСТЕСТВЕННЫХ НАУК И МАТЕМАТИКИ

РАССМОТРЕНО И СОГЛАСОВАНО
на заседании кафедры ЕНиМ
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зав. каф. д.ф.-м.н., проф. Курбаналиев А.Ы.

УТВЕРЖДЕНО
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ФОНД ТЕСТОВЫХ ЗАДАНИЙ

для итогового контроля по дисциплине

«Методы научных и клинических исследований»

На 2023-2024 учебный год

Направление 560001 Лечебное дело (GM)

Распределение часов дисциплины по семестрам

название дисциплины	Всего часов	кредит	аудиторные занятия		СРС	Отчетность
			лек.	прак.		
Methods of scientific and clinical research	120	4	24	36	60	Экзамен
Количество тестовых вопросов	176					

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1 What is the primary purpose of scientific research?

To prove personal opinions

To generate reliable and valid data*

To support existing beliefs

To entertain the public

2 Which of the following is a characteristic of a good research problem?

Ambiguity

Simplicity

Specificity*

Subjectivity

3 What is the first step in the scientific research process?

Conducting experiments

Reviewing literature

Formulating a hypothesis*

Analyzing data

4 Which of the following best describes a hypothesis?

A proven fact

A testable statement*

A random guess

An experimental result

5 What is the primary purpose of a literature review?

To gather data

To identify gaps in existing research*

To formulate hypotheses

To draw conclusions

6 Which method involves the systematic investigation of phenomena by gathering observable, empirical, and measurable evidence?

Qualitative research

Quantitative research*

Theoretical research

Philosophical research

7 What is an independent variable?

A variable that is measured

A variable that is manipulated*

A variable that is kept constant

A variable that is dependent on the other variables

8 Which of the following is NOT a characteristic of qualitative research?

Subjective analysis

Use of open-ended questions

Statistical analysis*

Exploratory nature

9 Which sampling method involves dividing the population into subgroups and selecting random samples from each subgroup?

Simple random sampling

Systematic sampling

Stratified sampling*

Convenience sampling

10 Which term refers to the consistency of a research study or measuring test?

Validity

Reliability*

Accuracy

Precision

11 What is a control group?

The group that receives the experimental treatment

The group that is used to measure the effect of the experimental treatment*

The group that is not part of the study

The group that designs the experiment

12 Which of the following is an example of a qualitative data collection method?

Surveys

Experiments

Interviews*

Quasi-experiments

13 What does the term 'bias' refer to in scientific research?

The precision of measurements

A systematic error that skews results*

A random error in data collection

The validity of an experiment

14 What is the purpose of using a double-blind study?

To increase sample size

To prevent bias*

To decrease cost

To simplify the study

15 What is meant by 'operationalization' in research?

Defining variables in practical terms*

Conducting the research

Analyzing data

Reviewing literature

16 What does the term 'statistical significance' imply?

The results are due to chance

The results are important

The results are unlikely to be due to chance*

The results have practical significance

17 Which research design is best suited for determining causal relationships?

Descriptive research

Correlational research

Experimental research*

Exploratory research

18 Which of the following is NOT a method of data collection in quantitative research?

Questionnaires

Structured interviews

Focus groups*

Surveys

19 What is the main goal of a pilot study?

To complete the full-scale study

To test the feasibility of the study design*

To analyze data

To review literature

20 What type of research aims to understand phenomena in their natural setting?

Quantitative research

Qualitative research*

Experimental research

Theoretical research

21 Which of the following best describes a case study?

A study involving a large sample size

An in-depth analysis of a single case or small number of cases*

A study that uses statistical analysis

A study that focuses on theoretical aspects

22 Which term refers to the extent to which the results of a study can be generalized to other situations and to other people?

Internal validity

External validity*

Construct validity

Content validity

23 What is the main characteristic of exploratory research?

It tests specific hypotheses

It establishes causal relationships

It explores new areas where little information is available*

It uses large sample sizes

24 What type of variable is influenced by the independent variable in an experiment?

Control variable

Dependent variable*

Extraneous variable

Confounding variable

25 What is triangulation in qualitative research?

Using multiple data sources to verify findings*

Using statistical analysis to validate results

Using control groups to compare results

Using experimental methods to test hypotheses

26 Which of the following is a common method for analyzing qualitative data?

Regression analysis

Content analysis*

ANOVA

Chi-square test

27 Which research method involves the intensive study of a particular individual, group, or event?

Survey research

Experimental research

Case study research*

Cross-sectional research

28 Which of the following is NOT an ethical consideration in research?

Informed consent

Confidentiality

Subjectivity*

Avoiding harm to participants

29 What is the main advantage of using a longitudinal study?

It is less expensive

It requires a smaller sample size

It allows for the study of changes over time*

It provides quick results

30 What does 'peer review' mean in the context of scientific research?

Review by friends and colleagues

Evaluation by experts in the same field*

Review by the research participants

Evaluation by funding agencies

31 Which type of research seeks to establish cause-and-effect relationships by manipulating one or more variables?

Descriptive research

Experimental research*

Correlational research

Qualitative research

32 What is the primary purpose of a null hypothesis?

To predict a specific outcome

To be proven true

To be tested and possibly rejected*

To support the research hypothesis

33 Which of the following best describes mixed-method research?

Using only quantitative methods

Using only qualitative methods

Combining qualitative and quantitative methods*

Using secondary data analysis

34 What is a key characteristic of action research?

It involves a controlled experiment

It aims to solve an immediate problem*

It focuses on theoretical issues

It uses large sample sizes

35 Which term refers to the ability of a test to measure what it is supposed to measure?

Reliability

Validity*

Objectivity

Subjectivity

36 Which of the following is NOT a type of observational research?

Naturalistic observation

Participant observation

Laboratory observation

Experimental observation*

37 What is the primary focus of descriptive research?

To establish causal relationships

To explore new phenomena

To describe characteristics of a population or phenomenon*

To test hypotheses

38 Which statistical test would be most appropriate for comparing the means of two independent groups?

Chi-square test

t-test*

ANOVA

Correlation analysis

39 Which type of interview uses a set of pre-determined questions with no deviation?

Structured interview*

Semi-structured interview

Unstructured interview

Informal interview

40 What is a key feature of ethnographic research?

Short-term data collection

Use of experiments

In-depth study of cultural groups*

Statistical analysis

41 Which of the following is an example of a secondary data source?

Survey responses

Interview transcripts

Government reports*

Experimental results

42 What does 'random assignment' refer to in the context of experimental research?

Randomly selecting participants from the population

Randomly assigning participants to different groups*

Randomly choosing variables to study

Randomly collecting data

43 Which type of validity refers to whether a study's findings can be generalized to real-world settings?

Internal validity

Construct validity

Ecological validity*

Criterion validity

44 What is a meta-analysis?

Analyzing a single study in depth

Combining results from multiple studies to draw a general conclusion*

Reviewing literature on a topic

Conducting original research

45 Which of the following is an example of a primary data source?

Census data

Literature reviews

Direct observations*

Historical records

46 Which type of research aims to generate new theories?

Applied research

Basic research*

Experimental research

Descriptive research

47 What is the role of an institutional review board (IRB) in research?

To fund research projects

To review and approve research involving human subjects*

To conduct the research

To publish research findings

48 What is a common purpose of a focus group?

To conduct a large-scale survey

To gather in-depth qualitative data*

To perform statistical analysis

To manipulate variables in an experiment

49 Which of the following describes 'informed consent' in research?

Participants' confidentiality

Participants' agreement to take part in the study after being fully informed of its purpose and methods*

Researchers' commitment to ethical guidelines

Review by an ethics committee

50 What is the purpose of using control variables in an experiment?

To test the hypothesis

To ensure reliability

To eliminate the influence of extraneous factors*

To measure the dependent variable

51 Which research method is often used to study the same subjects over a long period?

Cross-sectional research

Longitudinal research*

Experimental research

Case study research

52 What is a 'confounding variable'?

A variable that is kept constant

A variable that influences both the independent and dependent variables, potentially leading to a false conclusion*

A variable that is manipulated

A variable that is measured

53 What is the primary file format used by STATA to save datasets?

.csv

.xlsx

.dta *

.sav

54 Which function is used in R to read a CSV file?

read_csv

read.csv *

csv.read

readfile.csv

55 In STATA, which command is used to create a new variable?

gen *

newvar

create

addvar

56 In R-Studio, which package is commonly used for data manipulation?

ggplot2

dplyr *

caret

shiny

57 How do you install a package in R?

package.install("name")

install.packages("name") *

library("name")

install("name")

58 Which STATA command is used to list all variables in the dataset?

variables

list

describe *

vars

59 What is the null hypothesis in hypothesis testing typically denoted as?

H1

H2

H0 *

Hnull

60 In R, which function is used to perform a t-test?

t.test() *

test.t()

ttest()

test.t

61 In STATA, which command performs a paired t-test?

ttest var1, by(var2)

ttest var1 = var2 *

ttestpaired var1 var2

pairtest var1 var2

62 What is the significance level typically denoted as in hypothesis testing?

α *

β

p

μ

63 In hypothesis testing, if the p-value is less than α, what do you conclude?

Accept the null hypothesis

Reject the null hypothesis *

Accept the alternative hypothesis

Fail to reject the null hypothesis

64 Which R function is used to perform a Chi-squared test?

chi.test()

chisq.test() *

chisquare()

chi_square()

65 Which package in R is commonly used to create dynamic reports?

shiny

rmarkdown *

tidyverse

knitr

66 In STATA, which command can export tables to LaTeX format?

texsave

estout

outreg2

esttab *

67 In R, what function is used to create a PDF report from an R Markdown file?

rmarkdown::render() *

pdf::render()

markdown::pdf()

render::rmarkdown()

68 Which format is NOT supported by R Markdown for output?

HTML

Word

PDF

PNG *

69 What is the primary purpose of using the knitr package in R?

Creating visualizations

Data manipulation

Dynamic report generation *

Statistical modeling

70 In STATA, which command is used to create a table of summary statistics?

summarize

tabstat *

descriptive

sumtable

71 Which R package is most commonly used for creating graphics?

ggplot2 *
dplyr

data.table

caret

72 In STATA, which command generates a scatter plot?

plot scatter

graph scatter *

scatter plot

plot

73 Which function in R is used to create a bar plot?

barplot() *

plot.bar()

bar.plot()

plotbar()

74 What does the aes() function in ggplot2 specify?

Aesthetic mappings *

Data filters

Color schemes

Graph titles

75 In STATA, how do you create a histogram of a variable?

histogram varname *

graph hist varname

plot histogram varname

hist varname

76 In R, which function can you use to create a boxplot?

boxplot() *

plot.box()

box.plot()

plotbox()

77 What is a Type I error in hypothesis testing?

Rejecting a true null hypothesis *

Accepting a false null hypothesis

Accepting a true null hypothesis

Rejecting a false null hypothesis

78 What is a Type II error in hypothesis testing?

Rejecting a true null hypothesis

Accepting a false null hypothesis *

Accepting a true null hypothesis

Rejecting a false null hypothesis

79 Which issue arises from having too small a sample size?

Increased Type I error rate

Decreased power *

Increased effect size

Reduced measurement error

80 Which problem is associated with multicollinearity?

Independent variables are too highly correlated *

Dependent variable is not normally distributed

Residuals are heteroscedastic

Model is overfitted

81 In STATA, how can you test for heteroscedasticity?

hettest *

test hetero

homoscedasticity
residualtest

82 What is overfitting in the context of regression models?

Model too complex and fits the noise in the data *

Model too simple and fails to capture data patterns

Incorrect model specification

High variance and low bias

83 In R, which function can be used to check for multicollinearity?

cor() *

vif()

multi()

collinear()

84 Which command in STATA can you use to identify influential data points?

influence

outlier

dfbeta *

leverage

85 In R, which package provides tools for advanced regression modeling?

lmtools

caret *

regression

advancedreg

86 Which STATA command is used for logistic regression?

logit *

reglog

logreg

logisticreg

87 In R, which function fits a linear model?

linear.model()

lm() *

fit.model()

linmod()

88 Which STATA command is used to merge datasets?

append

combine

merge *

join

89 In R, how do you merge two data frames by a common column?

merge(df1, df2)

merge(df1, df2, by="column") *

join(df1, df2)

merge.dataframes(df1, df2)

90 Which STATA function checks for missing values in a dataset?

misschk

misstable *

checkmiss

missing

91 In R, which function provides a summary of missing data?

summary.missing()

na.summary()

summary() *

missing()

92 Which STATA command is used to generate descriptive statistics?

summarize *

describe

stats

summary

93 What is the null hypothesis (H0H_0H0) in hypothesis testing?

The hypothesis that the researcher is trying to prove.

The hypothesis that there is no effect or no difference.*

The alternative hypothesis.

The hypothesis that cannot be tested.

94 What is the alternative hypothesis H1 in hypothesis testing?

The hypothesis that is assumed true initially.

The hypothesis that there is no effect or no difference.

The hypothesis that there is an effect or a difference.*

The hypothesis that always results in a Type I error.

95 In hypothesis testing, what does a Type I error refer to?

Accepting the null hypothesis when it is false.

Rejecting the null hypothesis when it is true.*

Accepting the alternative hypothesis when it is false.

Rejecting the alternative hypothesis when it is true.

96 In the context of hypothesis testing, what is meant by the 'power' of a test?

The probability of rejecting the null hypothesis when it is true.

The probability of rejecting the null hypothesis when it is false.*

The probability of accepting the null hypothesis when it is false.

The probability of making a Type I error.

97 Which of the following is a parametric test?

Chi-square test

Mann-Whitney U test

t-test*

Kruskal-Wallis test

98 When is the z-test typically used in hypothesis testing?

When sample sizes are small.

When the population standard deviation is known.*

When data is ordinal.

When comparing more than two groups.

99 In hypothesis testing, what is the critical value?

The value of the test statistic that separates the rejection region from the non-rejection region.*

The maximum allowable probability of making a Type II error.

The probability of obtaining the observed data given the null hypothesis is true.

The mean value under the null hypothesis.

100 What does a two-tailed test evaluate?

The likelihood that the true parameter is either larger or smaller than the hypothesized value.*

Only the likelihood that the true parameter is smaller than the hypothesized value.

Only the likelihood that the true parameter is larger than the hypothesized value.

The likelihood that the true parameter is equal to the hypothesized value.

101 In the context of hypothesis testing, what does the term 'significance level' (α\alphaα) refer to?

The probability of making a Type I error.*

The probability of making a Type II error.

The confidence level of the test.

The effect size.

102 Which of the following tests is used for hypothesis testing of proportions?

Chi-square test

ANOVA

z-test*

F-test

103 When comparing means from two related samples, which test is most appropriate?

Independent samples t-test

Paired samples t-test*

Chi-square test

ANOVA

104 What assumption is made about the variances when conducting a t-test for independent samples?

The variances must be equal.*

The variances must be unequal.

The variances must be zero.

The variances must be known.

105 In the context of hypothesis testing, what does a Type II error mean?

Accepting the null hypothesis when it is false.*

Rejecting the null hypothesis when it is true.

Accepting the alternative hypothesis when it is true.

Rejecting the alternative hypothesis when it is true.

106 What is the F-test used for in hypothesis testing?

To compare the means of two independent groups.

To compare the variances of two populations.*

To test for independence between two variables.

To compare observed and expected frequencies.

107 Which test is used to determine if there is a significant difference between the variances of two normal populations?

Chi-square test

t-test

F-test*

ANOVA

108 When testing the correlation coefficient, what null hypothesis is typically tested?

The correlation coefficient is significantly positive.

The correlation coefficient is significantly negative.

The correlation coefficient is zero.*

The correlation coefficient is greater than zero.

109 What is the purpose of a flow diagram in hypothesis testing?

To provide a visual representation of the steps involved in the hypothesis testing process.*

To calculate the test statistic.

To determine the sample size required.

To illustrate the distribution of the sample data.

110 Which of the following is a limitation of hypothesis tests?

They provide a measure of the effect size.

They can only be applied to large sample sizes.

They do not measure the practical significance of results.*

They provide a definite proof of hypotheses.

111 What statistical test is typically used to test the equality of means for more than two groups?

t-test

ANOVA*

Chi-square test

z-test

112 Which of the following describes the main purpose of the Chi-square test for variance?

To determine the mean of the population

To compare sample means

To compare the sample variance to a hypothesized population variance*

To test for correlation between two variables

113 The Chi-square test is considered non-parametric because:

It relies on parameters of the population

It does not require assumptions about the distribution of the population*

It compares sample means

It uses a normal distribution

114 When applying the Chi-square test, which condition must be met?

The sample data must be normally distributed

The data must be categorical*

The data must be paired

The sample size must be less than 30

115 In the Chi-square test for goodness of fit, what does the null hypothesis state?

There is a significant difference between observed and expected frequencies

The observed frequencies follow a specific distribution*

The variances are equal

The sample means are different

116 What is Yates' correction for continuity used for?

To increase the Chi-square value

To adjust the Chi-square value in 2x2 contingency tables to account for small sample sizes*

To test for normality

To adjust for multiple comparisons

117 The Chi-square test for independence tests:

If variances are equal

If means are different

If two categorical variables are related*

If two samples are from the same population

118 Which of the following is a primary reason for using sampling instead of a census?

Sampling increases the cost of data collection.

Sampling reduces the accuracy of the data.

Sampling provides results faster and is less expensive.*

Sampling eliminates the need for statistical analysis.

119 In which situation is sampling not appropriate?

When the population is too large to study entirely.

When a quick decision is required.

When every unit of the population must be included in the study.*

When the cost of sampling is lower than a census.

120 Which term describes the distribution of a sample statistic over all possible samples from the population?

Sampling distribution*

Population distribution

Sample space

Distribution function

121 What is the primary purpose of inferential statistics?

To describe data

To summarize data

To infer characteristics of a population from a sample*

To collect data

122 Which of the following is true about the t-distribution?

It is used when the sample size is large (n > 30).

It is used when the population standard deviation is known.

It has heavier tails than the normal distribution.*

It converges to a binomial distribution as sample size increases.

123 Which sampling distribution is appropriate for proportions in a large sample?

Normal distribution*

Chi-square distribution

Poisson distribution

Exponential distribution

124 The Central Limit Theorem (CLT) states that the sampling distribution of the sample mean:

Approaches a uniform distribution as the sample size increases.

Approaches a binomial distribution as the sample size increases.

Approaches a normal distribution as the sample size increases, regardless of the population's distribution.*

Becomes exactly the same as the population distribution as the sample size increases.

125 Which of the following is a key implication of the Central Limit Theorem?

The mean of the sample means is greater than the population mean.

The variance of the sample means is greater than the population variance.

The distribution of sample means approaches normality, even if the population distribution is not normal.*

The sample mean always equals the population mean.

126 Which of the following best describes simple random sampling?

Every member of the population has an equal chance of being selected.*
Samples are chosen based on a specific characteristic.

Samples are chosen at regular intervals.

Samples are grouped and then selected.

127 Which of the following describes stratified sampling?

The population is divided into clusters, and a random sample is taken from each cluster.

Every member of the population has an equal chance of being selected.

The population is divided into strata, and a random sample is taken from each stratum.*

Samples are chosen at regular intervals.

128 Sandler's A-test is typically used to assess:

The variance within a single sample.

The difference between two independent sample variances.

The agreement between two sample means.

The magnitude of measurement errors in repeated measures of the same sample.*

129 Which of the following is an assumption for Sandler's A-test?

The data must be normally distributed.

The sample sizes must be equal.

The samples must be dependent.*

The variance of the population must be known.

130 The standard error of the mean measures:

The dispersion of data points around the mean of the sample.

The variability of the sample mean relative to the population mean.*

The variability of individual data points.

The central tendency of the population.

131 Which of the following affects the size of the standard error of the mean?

Population mean

Sample size*

Population median

Sample median

132 A point estimate is:

An interval estimate that provides a range of values.

A single value estimate for a population parameter.*

Always equal to the population parameter.

A biased estimate of the population parameter.

133 Which of the following is a property of a good estimator?

Bias

Efficiency*

Variability

Complexity

134 When estimating a population mean, which distribution should be used if the sample size is small and the population standard deviation is unknown?

Normal distribution

t-distribution*

Binomial distribution

Poisson distribution

135 A confidence interval for the population mean is given by the formula $\bar{x} \pm t \cdot s$ $\bar{x} \pm t \cdot \frac{s}{\sqrt{n}}$ $\bar{x} \pm t \cdot s$. What does t represent in this context?

Z-score

Critical value from the normal distribution

Critical value from the t-distribution*

Sample mean

136 When estimating a population proportion, which of the following is true about the sample proportion $\hat{p}$?

It is always equal to the population proportion.

It is used as a point estimate for the population proportion.*

It is always biased.

It does not vary from sample to sample.

137 The formula for the margin of error when estimating a population proportion is $\pm z \cdot p^{(1-p^{\square})} n \pm z \cdot \sqrt{\frac{\hat{p}1-\hat{p}}{n}} \pm z \cdot np(1-p)$. What does z represent?

The sample proportion

The standard deviation

The critical value from the normal distribution*

The mean of the sample proportions

138 Which factor does not directly affect the sample size required for a study?

Desired margin of error

Level of confidence

Population size*

Population variance

139 When determining sample size using precision rate and confidence level, which of the following components is not typically required?

Desired confidence level

Population size*

Precision rate (margin of error)

Population standard deviation or variance

140 To achieve a narrower confidence interval at the same confidence level, the sample size should be:

Increased*

Decreased

Kept the same

Doubled

141 In Bayesian statistics, the determination of sample size often incorporates:

Prior distributions and posterior distributions.*

Confidence intervals from frequentist approaches.

Only the sample mean.

Only the sample proportion.

142 Which is a characteristic of Bayesian sample size determination?

It does not require prior information.

It uses maximum likelihood estimations.

It incorporates prior beliefs and evidence into the calculation.*

It is independent of the prior distribution.

143 If the population distribution is skewed, which sample size is generally considered adequate for the Central Limit Theorem to apply?

10

20

30*

50

144 What is the main advantage of using stratified sampling over simple random sampling?

Easier to administer

Reduces sampling error by ensuring all subgroups are represented*

Requires fewer resources

Simpler to analyze

145 Which is the first step in the research process?

Reviewing literature

Defining the research problem*

Collecting data

Formulating a hypothesis

146 A research problem should be:

Complex and unstructured

Clear and precise*

Vague and general

Theoretical and impractical

147 In medical research, informed consent is important because:

It ensures the researcher’s control over the participant

It protects the researcher from legal issues

It respects the participant’s autonomy and rights*

It simplifies the research process

148 Which ethical principle emphasizes the need to do no harm?

Beneficence

Nonmaleficence*

Justice

Autonomy

149 What type of research design is used to establish cause-and-effect relationships?

Descriptive

Experimental*

Correlational

Exploratory

150 A case study is an example of:

Quantitative research

Qualitative research*

Experimental research

Survey research

151 What is the primary goal of sampling in research?

To reduce research costs

To gather data from every member of the population

To make generalizations about a population based on a sample*

To simplify data collection

152 Which sampling method ensures every member of the population has an equal chance of being selected?

Stratified sampling

Cluster sampling

Systematic sampling

Simple random sampling*

153 Which scale of measurement is used for classifying data into distinct categories without any order?

Ordinal

Nominal*

Interval

Ratio

154 An example of an interval scale is:

Temperature in Celsius*

Height in centimeters

Number of children in a family

Gender

155 Which data collection method is typically used in qualitative research?

Surveys

Interviews*

Questionnaires

Observational checklists

156 Secondary data refers to:

Data collected by the researcher for the first time

Data collected from existing sources*

Data collected through experiments

Data collected through surveys

157 What is the process of transforming raw data into meaningful information called?

Data cleaning

Data processing*

Data collection

Data storage

158 Which of the following is a common data processing step?

Data collection

Data entry*

Data analysis

Data dissemination

159 What is a sampling frame?

A physical frame for storing samples

A list of all the items in the population*

A method of selecting samples

A type of non-random sampling

160 Which type of sampling involves dividing the population into subgroups and randomly selecting samples from each subgroup?

Simple random sampling

Cluster sampling

Stratified sampling*

Systematic sampling

161 Which test is used to compare the means of two independent groups?

Chi-square test

t-test*

ANOVA

Mann-Whitney U test

162 A p-value less than 0.05 typically indicates:

Strong evidence against the null hypothesis*

Strong evidence for the null hypothesis

No evidence against the null hypothesis

Data collection error

163 The chi-square test is used to:

Compare means

Test for independence between categorical variables*

Compare variances

Analyze variance

164 A chi-square test is appropriate when the data are:

Ordinal

Nominal*

Interval

Ratio

165 ANOVA is used to:

Compare two population means

Compare three or more population means*

Compare variances of two populations

Compare medians of two populations

166 Which technique adjusts the means of different groups to account for covariates?

ANOVA

ANCOVA*

MANOVA

MANCOVA

167 Which nonparametric test is used to compare two related samples?

Wilcoxon signed-rank test*

Mann-Whitney U test

Kruskal-Wallis test

Friedman test

168 The Mann-Whitney U test is used to:

Compare the means of two independent samples

Compare the medians of two independent samples*

Compare the means of two related samples

Compare the medians of two related samples

169 Which technique is used to identify underlying factors that explain the pattern of correlations within a set of observed variables?

Factor analysis*

Cluster analysis

Discriminant analysis

Regression analysis

170 Principal Component Analysis (PCA) is primarily used for:

Classifying data

Reducing the dimensionality of data*

Predicting outcomes

Testing hypotheses

171 Which section of a research report presents the main findings?

Introduction

Literature Review

Results*

Discussion

172 A well-written research report should:

Be lengthy and detailed

Be concise and clear*

Use complex language

Focus solely on positive results

173 What is the primary role of computers in research?

To replace human researchers

To assist in data collection and analysis*

To complicate the research process

To eliminate errors completely

174 Which software is commonly used for statistical analysis in research?

Microsoft Word

Adobe Photoshop

SPSS*

AutoCAD

175 Which command in STATA is used to summarize data?

summarize*

tabulate

regress

correlate

176 In Excel, which function calculates the mean of a range of cells?

MEDIAN

MODE

AVERAGE*

SUM