403-SPSS-(LAB MANUAL)

M.Com (CA) Semester-IV

SPSS-Menus – Creating editing a data file –Sort – Merge – Statistical functions i.e mean, median and mode – standard deviation, variance and skewness - graphs and charts – tabulation - t-test, chi-square test - Analysis of ANOVA etc.

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FACULTY OF COMMERCE, SATAVAHANA UNIVERSITY, KARIMNAGAR
MASTER OF COMMERCE (COMPUTER APPLICATIONS) - FOURTH SEMESTER
404: DATA ANALYSIS WITH SPSS

(For M.Com-Computer Applications - under CBCS) Lab: 2 PPW
Lab – Students are required to undergo Lab Sessions with SPSS Software

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UNIT-I:

1. Exercise on Understanding SPSS menus
2. Exercise on Understanding Structure of Data and Variable View
3. Exercise on Creating and Editing a Data File
4. Exercise on Adding and Dropping Variables
5. Exercise on Recoding Variables
6. Exercise on Sorting Cases
7. Exercise on Merging Files
8. Exercise on Importing Files

UNIT-II:

9. Exercise on Computing Variable
10. Exercise on Computation of Mean, Median and Mode
11. Exercise on Computation of Standard Deviation, Variance and Skewness.
12. Exercise on Computation of Range, Sum, Minimum and Maximum
13. Exercise on Creating Bar and Line Diagrams
14. Exercise on Creating Histogram, Pie-Chart and Area Chart

UNIT-III:

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16. Exercise on Computing Correlation
17. Exercise on Computing Linear Regression
18. Exercise on Comparing Means
19. Exercise on One-way Analysis of Variance
20. Exercise on Computation of Independent Sample t-test
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UNIT-IV:

22. Exercise on Mann-Whitney U-test
23. Exercise on Wilcoxon Test
24. Exercise on Sign Test
25. Exercise on Runs Test
26. Exercise on Kolmogorov-Smirnov Test
27. Exercise on One-Sample Chi-Square Test
28. Exercise on Friedman One-way ANOVA
29. Exercise on K-Sample Median Test

UNIT-V:

30. Exercise on Factor Analysis
31. Exercise on Interpretation of Output of Factor Analysis.

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1. Exercise on Understanding SPSS menus

Exercise: Analyzing Survey Data

Suppose you have survey data collected from 100 participants. The survey includes questions about age, gender, income, and satisfaction with a product on a scale from 1 to 5.

Tasks:

Import the data into SPSS.
Explore descriptive statistics for age, gender, income, and satisfaction.
Conduct a correlation analysis between age, income, and satisfaction.
Compare satisfaction levels between different gender groups.

Step 1: Importing Data

Go to File > Open > Data.
Select the file containing your survey data.

Step 2: Descriptive Statistics

Go to Analyze > Descriptive Statistics > Frequencies.
Select variables: Age, Gender, Income, Satisfaction.
Click OK.

Step 3: Correlation Analysis

Go to Analyze > Correlate > Bivariate.
Select variables: Age, Income, Satisfaction.
Click OK.

Step 4: Comparing Satisfaction between Gender Groups

Go to Analyze > Compare Means > Independent Samples T-Test.
Select satisfaction as the test variable.
Select gender as the grouping variable.
Click Define Groups to specify groups (e.g., Male and Female).
Click OK.

By following these steps, you can gain insights into your survey data using SPSS. This exercise should help you understand how to navigate SPSS menus for basic analysis.

2. Exercise on Understanding Structure of Data and Variable View

Exercise: Creating and Editing Variables in SPSS

Suppose you have survey data collected from 50 participants, including their age, gender, income, and satisfaction with a product on a scale from 1 to 5.

Tasks:

Create a new SPSS dataset.
Define variables for age, gender, income, and satisfaction.
Enter data for 5 participants.
View the data in Data View.
Check and edit variable properties in Variable View.

Step 1: Creating a New SPSS Dataset

Open SPSS.
Go to File > New > Data.
Choose the appropriate data format and click OK.

Step 2: Defining Variables

Click on the Variable View tab.
Enter the following variable names in the Name column: Age, Gender, Income, Satisfaction.
Enter appropriate labels, measurement levels, and value labels for each variable.

Step 3: Entering Data

Switch to Data View.
Enter data for 5 participants under the respective variables.

Step 4: Viewing Data

Switch back to Variable View to check the entered data's properties.

Switch to Data View to view the entered data.

Step 5: Checking and Editing Variable Properties

In Variable View, check the properties of each variable (type, label, values, etc.).

Make any necessary edits such as changing measurement levels or adding value labels.

Example Variable View:

Name	Type	Width	Decimals	Label	Values
Age	Numeric	3	0	Age of participant	
Gender	String	10	0	Gender of participant	Male, Female
Income	Numeric	5	2	Participant's income	
Satisfaction	Numeric	1	0	Satisfaction with product	1=Very dissatisfied, 2=Dissatisfied, 3=Neutral, 4=Satisfied, 5=Very satisfied

Sample Data View:

Age	Gender	Income	Satisfaction
35	Male	50000	4
28	Female	60000	3
42	Male	70000	5
39	Male	55000	2
45	Female	80000	4

By completing this exercise, you should gain a good understanding of how to structure data and define variables in SPSS.

3. Exercise on Creating and Editing a Data File

Certainly! Here's an exercise on creating and editing a data file in SPSS.

Exercise: Creating and Editing a Data File

Suppose you have survey data collected from 30 participants, including their age, gender, and satisfaction with a product on a scale from 1 to 5.

Tasks:

Create a new SPSS dataset.

Enter data for 10 participants.

Edit and modify the data file.

Save the data file.

Step 1: Creating a New SPSS Dataset

Open SPSS.

Go to File > New > Data.

Choose the appropriate data format and click OK.

Step 2: Entering Data

Switch to Data View.

Enter data for 10 participants under the respective variables (Age, Gender, Satisfaction).

Sample Data View:

Age	Gender	Satisfaction
25	Male	4
30	Female	3
45	Male	5
38	Female	2
55	Male	4
28	Female	5
33	Male	3
40	Female	4
20	Male	2
48	Female	5

Step 3: Editing and Modifying the Data File

Switch back to Variable View.
Check variable properties such as labels, measurement levels, etc.
Edit properties if necessary.

Example Variable View:

Name	Type	Width	Decimals	Label	Values
Age	Numeric	3	0	Age of participant	
Gender	String	10	0	Gender of participant	Male, Female
Satisfaction	Numeric	1	0	Satisfaction with product	1=Very dissatisfied, 2=Dissatisfied, 3=Neutral, 4=Satisfied, 5=Very satisfied

Make any necessary corrections to the entered data.

Step 4: Saving the Data File

Go to File > Save As.
Choose a file name and location.
Select the appropriate file type (usually .sav for SPSS).
Click Save.
By completing this exercise, you should be comfortable with creating, editing, and saving data files in SPSS.

4. Exercise on Adding and Dropping Variables

Certainly! Here's an exercise on adding and dropping variables in SPSS.

Exercise: Adding and Dropping Variables

Suppose you have survey data collected from 50 participants, including their age, gender, income, and satisfaction with a product on a scale from 1 to 5. Additionally, you have data on their education level and occupation.

Tasks:

Import the provided dataset into SPSS.
Add variables for education level and occupation.
Drop the variable "Income" from the dataset.
Save the modified dataset.

Step 1: Importing the Dataset

Open SPSS.
Go to File > Open > Data.
Select the dataset containing the survey data.

Step 2: Adding Variables

Go to Variable View.
Click on the last row to add new variables.
Enter the names, types, and other properties for the new variables (Education, Occupation).

Example Variable View:

Name	Type	Width	Decimals	Label	Values
Age	Numeric	3	0	Age of participant	
Gender	String	10	0	Gender of participant	Male, Female
Satisfaction	Numeric	1	0	Satisfaction with product	1=Very dissatisfied, 2=Dissatisfied, 3=Neutral, 4=Satisfied, 5=Very satisfied
Education	String	20	0	Education level	
Occupation	String	20	0	Occupation of participant	

Step 3: Dropping the Variable "Income"

Go to Variable View.
Locate the "Income" variable.
Right-click on the variable name and select "Delete."

Step 4: Saving the Modified Dataset

Go to File > Save As.
Choose a file name and location.
Click Save.
By completing this exercise, you should be familiar with adding and dropping variables in SPSS.

5. Exercise on Recoding Variables

Exercise: Recoding Variables

Suppose you have survey data collected from 50 participants, including their age, gender, and satisfaction with a product on a scale from 1 to 5. You want to recode the "Satisfaction" variable into a new variable with three categories: "Low" (1-2), "Medium" (3), and "High" (4-5).

Tasks:

Import the provided dataset into SPSS.
Recode the "Satisfaction" variable into the new categories.
Save the modified dataset.

Step 1: Importing the Dataset

Open SPSS.
Go to File > Open > Data.
Select the dataset containing the survey data.

Step 2: Recoding the "Satisfaction" Variable

Go to Transform > Recode into Different Variables.
Select "Satisfaction" as the variable to recode.
Enter a new name for the recoded variable (e.g., "Satisfaction_Group").
Click on Old and New Values.
For Old Value, enter the range 1-2 and assign it the value "Low".
For Old Value, enter 3 and assign it the value "Medium".
For Old Value, enter the range 4-5 and assign it the value "High".
Click Add.

Click Continue.
Click OK.

Step 3: Saving the Modified Dataset

Go to File > Save As.
Choose a file name and location.
Click Save.
By completing this exercise, you should be comfortable with recoding variables in SPSS.

6. Exercise on Sorting Cases

Exercise: Sorting Cases

Suppose you have survey data collected from 50 participants, including their age, gender, and satisfaction with a product on a scale from 1 to 5. You want to sort the cases based on age in ascending order.

Tasks:

Import the provided dataset into SPSS.
Sort the cases based on age in ascending order.
View the sorted data.
Save the sorted dataset.

Step 1: Importing the Dataset

Open SPSS.
Go to File > Open > Data.
Select the dataset containing the survey data.

Step 2: Sorting the Cases

Go to Data > Sort Cases.
Select the variable "Age" as the sorting variable.
Choose Ascending for the order.
Click OK.

Step 3: Viewing the Sorted Data

Switch to Data View to see the sorted cases.

Step 4: Saving the Sorted Dataset

Go to File > Save As.
Choose a file name and location.
Click Save.
By completing this exercise, you should be comfortable with sorting cases in SPSS.

7. Exercise on Merging Files

Exercise: Merging Files

Suppose you have two datasets: one containing survey data from 30 participants with their age and gender, and another containing survey data from 20 participants with their satisfaction level. You want to merge these two datasets based on a common identifier, such as participant ID.

Tasks:

Import the two provided datasets into SPSS.
Merge the datasets based on a common identifier (e.g., participant ID).
View the merged dataset.
Save the merged dataset.

Step 1: Importing the Datasets

Open SPSS.
Go to File > Open > Data.
Select the first dataset containing age and gender data.
Go to File > Open > Data.

Select the second dataset containing satisfaction data.

Step 2: Merging the Datasets

Go to Data > Merge Files > Add Variables.

Select the second dataset from the list.

Choose "Participant ID" as the matching variable.

Click OK.

Step 3: Viewing the Merged Dataset

Switch to Data View to see the merged dataset.

Step 4: Saving the Merged Dataset

Go to File > Save As.

Choose a file name and location.

Click Save.

By completing this exercise, you should be comfortable with merging files in SPSS.

8. Exercise on Importing Files

Exercise: Importing Files

Suppose you have a CSV file containing survey data collected from 50 participants, including their age, gender, and satisfaction with a product on a scale from 1 to 5. You want to import this file into SPSS for analysis.

Tasks:

Import the provided CSV file into SPSS.

View the imported data.

Save the imported dataset.

Step 1: Importing the CSV File

Open SPSS.

Go to File > Open > Data.

Select the CSV file containing the survey data.

Follow the prompts to import the file. Ensure you correctly specify the delimiter and variable types.

Step 2: Viewing the Imported Data

Switch to Data View to see the imported data.

Step 3: Saving the Imported Dataset

Go to File > Save As.

Choose a file name and location.

Click Save.

By completing this exercise, you should be comfortable with importing files into SPSS.

9. Exercise on Computing Variable

Exercise: Computing Variables

Suppose you have survey data collected from 50 participants, including their age and income. You want to compute a new variable representing the ratio of income to age for each participant.

Tasks:

Import the provided dataset into SPSS.

Compute the new variable representing the ratio of income to age.

View the computed variable.

Save the modified dataset.

Step 1: Importing the Dataset

Open SPSS.

Go to File > Open > Data.

Select the dataset containing the survey data.

Step 2: Computing the New Variable

Go to Transform > Compute Variable.
Enter a name for the new variable (e.g., Income_Age_Ratio).
Enter the expression to compute the variable (e.g., income / age).
Click OK.

Step 3: Viewing the Computed Variable

Switch to Data View to see the computed variable.

Step 4: Saving the Modified Dataset

Go to File > Save As.
Choose a file name and location.
Click Save.
By completing this exercise, you should be comfortable with computing variables in SPSS.

10. Exercise on Computation of Mean, Median and Mode with example

Exercise: Computation of Mean, Median, and Mode

Suppose you have survey data collected from 30 participants, including their scores on a test. You want to compute the mean, median, and mode of these scores.

Example Data:

Test Scores: 85, 78, 92, 75, 86, 90, 88, 82, 79, 91, 84, 77, 89, 83, 85, 76, 80, 88, 87, 81, 84, 85, 88, 92, 86, 79, 82, 87, 90, 85

Tasks:

Import the provided dataset into SPSS.
Compute the mean, median, and mode of the test scores.
View the computed statistics.
Save the modified dataset.

Step 1: Importing the Dataset

Open SPSS.
Go to File > Open > Data.
Enter the example data into SPSS or create a data file with the provided test scores.

Step 2: Computing Mean, Median, and Mode

Go to Analyze > Descriptive Statistics > Frequencies.
Select the variable "Test_Scores" as the variable of interest.
Check the boxes for Mean, Median, and Mode under Statistics.
Click OK.

Step 3: Viewing the Computed Statistics

Review the output table to see the computed mean, median, and mode.

Step 4: Saving the Modified Dataset

Go to File > Save As.
Choose a file name and location.
Click Save.

Results:

Mean: 84.9 Median: 85 Mode: 85
By completing this exercise, you should understand how to compute the mean, median, and mode in SPSS and interpret the results.

11. Exercise on Computation of Standard Deviation, Variance and Skewness with an example

Exercise: Computation of Standard Deviation, Variance, and Skewness

Suppose you have survey data collected from 30 participants, including their scores on a test. You want to compute the standard deviation, variance, and skewness of these scores.

Example Data:

Test Scores: 85, 78, 92, 75, 86, 90, 88, 82, 79, 91, 84, 77, 89, 83, 85, 76, 80, 88, 87, 81, 84, 85, 88, 92, 86, 79, 82, 87, 90, 85

Tasks:

Import the provided dataset into SPSS.
Compute the standard deviation, variance, and skewness of the test scores.
View the computed statistics.
Save the modified dataset.

Step 1: Importing the Dataset

Open SPSS.
Go to File > Open > Data.
Enter the example data into SPSS or create a data file with the provided test scores.

Step 2: Computing Standard Deviation, Variance, and Skewness

Go to Analyze > Descriptive Statistics > Descriptives.
Select the variable "Test_Scores" as the variable of interest.
Check the boxes for Standard deviation, Variance, and Skewness under Statistics.
Click OK.

Step 3: Viewing the Computed Statistics

Review the output table to see the computed standard deviation, variance, and skewness.

Step 4: Saving the Modified Dataset

Go to File > Save As.
Choose a file name and location.
Click Save.

Results:

Standard Deviation: 4.901 Variance: 24.015 Skewness: -0.352
By completing this exercise, you should understand how to compute standard deviation, variance, and skewness in SPSS and interpret the results.

12. Exercise on Computation of Range, Sum, Minimum and Maximum with an example.

Exercise: Computation of Range, Sum, Minimum, and Maximum

Suppose you have survey data collected from 30 participants, including their scores on a test. You want to compute the range, sum, minimum, and maximum of these scores.

Example Data:

Test Scores: 85, 78, 92, 75, 86, 90, 88, 82, 79, 91, 84, 77, 89, 83, 85, 76, 80, 88, 87, 81, 84, 85, 88, 92, 86, 79, 82, 87, 90, 85

Tasks:

Import the provided dataset into SPSS.
Compute the range, sum, minimum, and maximum of the test scores.
View the computed statistics.
Save the modified dataset.

Step 1: Importing the Dataset

Open SPSS.
Go to File > Open > Data.
Enter the example data into SPSS or create a data file with the provided test scores.

Step 2: Computing Range, Sum, Minimum, and Maximum

Go to Analyze > Descriptive Statistics > Descriptives.
Select the variable "Test_Scores" as the variable of interest.
Check the boxes for Range, Sum, Minimum, and Maximum under Statistics.
Click OK.

Step 3: Viewing the Computed Statistics

Review the output table to see the computed range, sum, minimum, and maximum.

Step 4: Saving the Modified Dataset
Go to File > Save As.
Choose a file name and location.
Click Save.
Results:
Range: 17 Sum: 2541 Minimum: 75 Maximum: 92
By completing this exercise, you should understand how to compute the range, sum, minimum, and maximum in SPSS and interpret the results.

13. Exercise on Creating Bar and Line Diagrams with an example.

Exercise: Creating Bar and Line Diagrams
Suppose you have survey data collected from 50 participants, including their satisfaction with a product on a scale from 1 to 5, and you want to visualize the distribution of satisfaction scores using both bar and line diagrams.
Example Data:
Satisfaction Scores: 3, 4, 2, 5, 4, 3, 5, 2, 3, 4, 5, 1, 4, 3, 2, 3, 4, 5, 3, 4, 2, 3, 4, 5, 4, 3, 2, 3, 4, 5, 3, 2, 4, 5, 3, 4, 2, 3, 4, 5, 3, 4, 2, 3, 4, 5, 4, 3, 2, 3
Tasks:
Import the provided dataset into SPSS.
Create a bar diagram to visualize the distribution of satisfaction scores.
Create a line diagram to show the trend of satisfaction scores.
Save the diagrams as images.
Step 1: Importing the Dataset
Open SPSS.
Go to File > Open > Data.
Enter the example data into SPSS or create a data file with the provided satisfaction scores.
Step 2: Creating a Bar Diagram
Go to Graphs > Legacy Dialogs > Bar.
Select Simple and then click Define.
Move "Satisfaction" to the Category Axis and Frequency to the Y-Axis.
Click OK.
Step 3: Creating a Line Diagram
Go to Graphs > Chart Builder.
Select Line from the gallery.
Drag "Satisfaction" to the X-Axis and then to the Y-Axis.
Click OK.
Step 4: Saving the Diagrams
Right-click on each diagram and select Save as Picture.
Choose a file name and location.
Click Save.
By completing this exercise, you should understand how to create bar and line diagrams in SPSS and save them as images.

14. Exercise on Creating Histogram, Pie-Chart and Area Chart

Exercise: Creating Histogram, Pie Chart, and Area Chart
Suppose you have survey data collected from 50 participants, including their age groups, and you want to visualize the distribution of age groups using a histogram, pie chart, and area chart.
Example Data:
Age Groups: 20-30, 30-40, 40-50, 50-60, 60-70, 70-80
Tasks:

Import the provided dataset into SPSS.
Create a histogram to visualize the distribution of age groups.
Create a pie chart to show the proportion of each age group.
Create an area chart to display the trend of age groups.
Save the charts as images.

Step 1: Importing the Dataset

Open SPSS.
Go to File > Open > Data.
Enter the example data into SPSS or create a data file with the provided age groups.

Step 2: Creating a Histogram

Go to Graphs > Legacy Dialogs > Histogram.
Select a Simple histogram and click Define.
Move "Age Groups" to the Variable box.
Click OK.

Step 3: Creating a Pie Chart

Go to Graphs > Legacy Dialogs > Pie.
Select a Pie and click Define.
Move "Age Groups" to the Slices variable box.
Click OK.

Step 4: Creating an Area Chart

Go to Graphs > Chart Builder.
Select Area from the gallery.
Drag "Age Groups" to the X-Axis and then to the Y-Axis.
Click OK.

Step 5: Saving the Charts

Right-click on each chart and select Save as Picture.
Choose a file name and location.
Click Save.
By completing this exercise, you should understand how to create a histogram, pie chart, and area chart in SPSS and save them as images.

15. Exercise on Cross Tabulations with an example

Exercise: Cross Tabulations

Suppose you have survey data collected from 100 participants, including their gender and satisfaction with a product (rated from 1 to 5). You want to analyze the relationship between gender and satisfaction levels using a cross-tabulation.

Example Data:

Gender: Male, Female
Satisfaction: 1, 2, 3, 4, 5

Tasks:

Import the provided dataset into SPSS.
Create a cross-tabulation to analyze the relationship between gender and satisfaction levels.
View the cross-tabulation.
Save the cross-tabulation as an image.

Step 1: Importing the Dataset

Open SPSS.
Go to File > Open > Data.
Enter the example data into SPSS or create a data file with the provided gender and satisfaction levels.

Step 2: Creating a Cross-Tabulation

Go to Analyze > Descriptive Statistics > Crosstabs.
Select "Gender" as the row variable and "Satisfaction" as the column variable.
Click OK.

Step 3: Viewing the Cross-Tabulation

Review the output table to see the cross-tabulation of gender and satisfaction levels.

Step 4: Saving the Cross-Tabulation

Right-click on the cross-tabulation table and select Save as Picture.
Choose a file name and location.
Click Save.
By completing this exercise, you should understand how to create cross-tabulations in SPSS and interpret the results.

16. Exercise on Computing Correlation with an example

Exercise: Computing Correlation

Suppose you have survey data collected from 50 participants, including their age and satisfaction with a product (rated from 1 to 5). You want to analyze the relationship between age and satisfaction levels using correlation analysis.

Example Data:

Age: 35, 28, 42, 39, 45, 28, 33, 40, 20, 48, 37, 31, 50, 32, 55, 44, 29, 38, 47, 41, 36, 51, 46, 30, 49, 34, 43, 52, 27, 53, 26, 54, 25, 56, 57, 24, 58, 59, 23, 22, 60, 61, 62, 63, 21, 64, 65, 66, 67
Satisfaction: 4, 3, 5, 2, 4, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4, 2

Tasks:

Import the provided dataset into SPSS.
Compute the correlation between age and satisfaction levels.
View the computed correlation.
Save the correlation matrix.

Step 1: Importing the Dataset

Open SPSS.
Go to File > Open > Data.
Enter the example data into SPSS or create a data file with the provided age and satisfaction levels.

Step 2: Computing the Correlation

Go to Analyze > Correlate > Bivariate.
Select "Age" and "Satisfaction" as the variables.
Click OK.

Step 3: Viewing the Correlation

Review the output table to see the computed correlation between age and satisfaction levels.

Step 4: Saving the Correlation Matrix

Go to File > Save As.
Choose a file name and location.
Click Save.
By completing this exercise, you should understand how to compute correlations in SPSS and interpret the results.

17. Exercise on Computing Linear Regression with an example

Exercise: Computing Linear Regression

Suppose you have survey data collected from 50 participants, including their age and satisfaction with a product (rated from 1 to 5). You want to analyze the relationship between age and satisfaction levels using linear regression.

Example Data:

Age: 35, 28, 42, 39, 45, 28, 33, 40, 20, 48, 37, 31, 50, 32, 55, 44, 29, 38, 47, 41, 36, 51, 46, 30, 49, 34, 43, 52, 27, 53, 26, 54, 25, 56, 57, 24, 58, 59, 23, 22, 60, 61, 62, 63, 21, 64, 65, 66, 67
Satisfaction: 4, 3, 5, 2, 4, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4, 2

Tasks:

Import the provided dataset into SPSS.
Compute the linear regression between age and satisfaction levels.
View the computed regression equation and statistics.
Save the regression results.

Step 1: Importing the Dataset

Open SPSS.
Go to File > Open > Data.
Enter the example data into SPSS or create a data file with the provided age and satisfaction levels.

Step 2: Computing the Linear Regression

Go to Analyze > Regression > Linear.
Select "Satisfaction" as the dependent variable and "Age" as the independent variable.
Click OK.

Step 3: Viewing the Regression Results

Review the output table to see the computed regression equation and statistics.

Step 4: Saving the Regression Results

Go to File > Save As.
Choose a file name and location.
Click Save.
By completing this exercise, you should understand how to compute linear regression in SPSS and interpret the results.

18. Exercise on Comparing Means with an example.

Exercise: Comparing Means

Suppose you have survey data collected from two groups of participants, Group A and Group B, regarding their satisfaction with a product (rated from 1 to 5). You want to compare the means of satisfaction scores between these two groups.

Example Data:

Group A: 4, 3, 5, 2, 4, 5, 3, 4, 2, 5
Group B: 3, 4, 2, 5, 3, 4, 2, 5, 3, 4

Tasks:

Import the provided dataset into SPSS.
Compute the means of satisfaction scores for both Group A and Group B.
Compare the means of satisfaction scores between the two groups using an independent samples t-test.
View the computed t-test results.
Save the t-test results.

Step 1: Importing the Dataset

Open SPSS.
Go to File > Open > Data.
Enter the example data into SPSS or create a data file with the provided satisfaction scores for both groups.

Step 2: Computing the Means

Go to Analyze > Descriptive Statistics > Descriptives.
Select "Satisfaction" as the variable.
Click on "Group A" and then "Group B" and move them to the "Grouping Variable" box.

Click OK.

Step 3: Comparing Means using t-test

Go to Analyze > Compare Means > Independent Samples T-test.
Select "Satisfaction" as the test variable.
Select "Group A" and "Group B" as the grouping variable.
Click OK.

Step 4: Viewing the t-test Results

Review the output table to see the computed t-test results, including the means, standard deviations, and significance level.

Step 5: Saving the t-test Results

Go to File > Save As.
Choose a file name and location.
Click Save.
By completing this exercise, you should understand how to compare means between two groups using an independent samples t-test in SPSS and interpret the results.

19. Exercise on One-way Analysis of Variance with an example

Exercise: One-way Analysis of Variance (ANOVA)

Suppose you have survey data collected from three groups of participants, Group A, Group B, and Group C, regarding their satisfaction with a product (rated from 1 to 5). You want to compare the means of satisfaction scores among these three groups using ANOVA.

Example Data:

Group A: 4, 3, 5, 2, 4
Group B: 3, 4, 2, 5, 3
Group C: 2, 5, 3, 4, 2

Tasks:

Import the provided dataset into SPSS.
Conduct a one-way ANOVA to compare the means of satisfaction scores among the three groups.
View the computed ANOVA results.
Save the ANOVA results.

Step 1: Importing the Dataset

Open SPSS.
Go to File > Open > Data.
Enter the example data into SPSS or create a data file with the provided satisfaction scores for each group.

Step 2: Conducting One-way ANOVA

Go to Analyze > Compare Means > One-Way ANOVA.
Select "Satisfaction" as the dependent variable.
Select "Group" as the factor.
Click OK.

Step 3: Viewing the ANOVA Results

Review the output table to see the computed ANOVA results, including the F-value, p-value, and means for each group.

Step 4: Saving the ANOVA Results

Go to File > Save As.
Choose a file name and location.
Click Save.
By completing this exercise, you should understand how to conduct a one-way ANOVA in SPSS and interpret the results.

20. Exercise on Computation of Independent Sample t-test with an example

Exercise: Independent Sample t-test

Suppose you have survey data collected from two groups of participants, Group A and Group B, regarding their satisfaction with a product (rated from 1 to 5). You want to compare the means of satisfaction scores between these two groups using an independent samples t-test.

Example Data:

Group A: 4, 3, 5, 2, 4, 5, 3, 4, 2, 5
Group B: 3, 4, 2, 5, 3, 4, 2, 5, 3, 4

Tasks:

Import the provided dataset into SPSS.
Conduct an independent samples t-test to compare the means of satisfaction scores between Group A and Group B.
View the computed t-test results.
Save the t-test results.

Step 1: Importing the Dataset

Open SPSS.
Go to File > Open > Data.
Enter the example data into SPSS or create a data file with the provided satisfaction scores for both groups.

Step 2: Conducting Independent Samples t-test

Go to Analyze > Compare Means > Independent Samples T-test.
Select "Satisfaction" as the test variable.
Select "Group A" and "Group B" as the grouping variable.
Click OK.

Step 3: Viewing the t-test Results

Review the output table to see the computed t-test results, including the means, standard deviations, t-value, and significance level.

Step 4: Saving the t-test Results

Go to File > Save As.
Choose a file name and location.
Click Save.
By completing this exercise, you should understand how to conduct an independent samples t-test in SPSS and interpret the results.

21. Exercise on Computation of Paired t-test with an example

Exercise: Paired Sample t-test

Suppose you have survey data collected from a group of participants before and after using a product, and you want to analyze whether there is a significant difference in their satisfaction scores before and after using the product.

Example Data:

Before: 3, 4, 2, 5, 3, 4, 2, 5, 3, 4
After: 4, 5, 3, 2, 4, 3, 5, 2, 4, 3

Tasks:

Import the provided dataset into SPSS.
Conduct a paired samples t-test to compare the means of satisfaction scores before and after using the product.
View the computed t-test results.
Save the t-test results.

Step 1: Importing the Dataset

Open SPSS.

Go to File > Open > Data.
Enter the example data into SPSS or create a data file with the provided satisfaction scores before and after using the product.

Step 2: Conducting Paired Samples t-test

Go to Analyze > Compare Means > Paired-Samples T Test.
Select "Before" as the variable containing the scores before using the product and "After" as the variable containing the scores after using the product.
Click OK.

Step 3: Viewing the t-test Results

Review the output table to see the computed t-test results, including the means, standard deviations, t-value, and significance level.

Step 4: Saving the t-test Results

Go to File > Save As.
Choose a file name and location.
Click Save.
By completing this exercise, you should understand how to conduct a paired samples t-test in SPSS and interpret the results.

22. Exercise on Mann-Whitney U-test with an example

Exercise: Mann-Whitney U-test

Suppose you have survey data collected from two groups of participants, Group A and Group B, regarding their satisfaction with a product (rated from 1 to 5). You want to compare the distributions of satisfaction scores between these two groups using a Mann-Whitney U-test.

Example Data:

Group A: 4, 3, 5, 2, 4, 5, 3, 4, 2, 5
Group B: 3, 4, 2, 5, 3, 4, 2, 5, 3, 4

Tasks:

Import the provided dataset into SPSS.
Conduct a Mann-Whitney U-test to compare the distributions of satisfaction scores between Group A and Group B.
View the computed Mann-Whitney U-test results.
Save the Mann-Whitney U-test results.

Step 1: Importing the Dataset

Open SPSS.
Go to File > Open > Data.
Enter the example data into SPSS or create a data file with the provided satisfaction scores for both groups.

Step 2: Conducting Mann-Whitney U-test

Go to Analyze > Nonparametric Tests > 2 Independent Samples.
Select "Satisfaction" as the test variable.
Select "Group A" and "Group B" as the grouping variable.
Click OK.

Step 3: Viewing the Mann-Whitney U-test Results

Review the output table to see the computed Mann-Whitney U-test results, including the U statistic, z-value, and significance level.

Step 4: Saving the Mann-Whitney U-test Results

Go to File > Save As.
Choose a file name and location.
Click Save.

By completing this exercise, you should understand how to conduct a Mann-Whitney U-test in SPSS and interpret the results.

23. Exercise on Wilcoxon Test with an example

Exercise: Wilcoxon Signed-Rank Test

Suppose you have survey data collected from a group of participants before and after using a product, and you want to analyze whether there is a significant difference in their satisfaction scores before and after using the product using the Wilcoxon signed-rank test.

Example Data:

Before: 3, 4, 2, 5, 3, 4, 2, 5, 3, 4
After: 4, 5, 3, 2, 4, 3, 5, 2, 4, 3

Tasks:

Import the provided dataset into SPSS.
Conduct a Wilcoxon signed-rank test to compare the distributions of satisfaction scores before and after using the product.
View the computed Wilcoxon signed-rank test results.
Save the Wilcoxon signed-rank test results.

Step 1: Importing the Dataset

Open SPSS.
Go to File > Open > Data.
Enter the example data into SPSS or create a data file with the provided satisfaction scores before and after using the product.

Step 2: Conducting Wilcoxon Signed-Rank Test

Go to Analyze > Nonparametric Tests > Legacy Dialogs > 2 Related Samples.
Select "Before" as the first variable and "After" as the second variable.
Click OK.

Step 3: Viewing the Wilcoxon Signed-Rank Test Results

Review the output table to see the computed Wilcoxon signed-rank test results, including the test statistic, p-value, and mean rank.

Step 4: Saving the Wilcoxon Signed-Rank Test Results

Go to File > Save As.
Choose a file name and location.
Click Save.
By completing this exercise, you should understand how to conduct a Wilcoxon signed-rank test in SPSS and interpret the results.

24. Exercise on Sign Test with an example

Exercise: Sign Test

Suppose you have survey data collected from a group of participants before and after using a product, and you want to analyze whether there is a significant difference in their satisfaction scores before and after using the product using the sign test.

Example Data:

Before: 3, 4, 2, 5, 3, 4, 2, 5, 3, 4
After: 4, 5, 3, 2, 4, 3, 5, 2, 4, 3

Tasks:

Import the provided dataset into SPSS.
Conduct a sign test to compare the distributions of satisfaction scores before and after using the product.
View the computed sign test results.
Save the sign test results.

Step 1: Importing the Dataset
Open SPSS.
Go to File > Open > Data.
Enter the example data into SPSS or create a data file with the provided satisfaction scores before and after using the product.
Step 2: Conducting the Sign Test
Go to Analyze > Nonparametric Tests > Legacy Dialogs > 2 Related Samples.
Select "Before" as the first variable and "After" as the second variable.
Click OK.
Step 3: Viewing the Sign Test Results
Review the output table to see the computed sign test results, including the test statistic, p-value, and number of positive and negative differences.
Step 4: Saving the Sign Test Results
Go to File > Save As.
Choose a file name and location.
Click Save.
By completing this exercise, you should understand how to conduct a sign test in SPSS and interpret the results.

25. Exercise on Runs Test with an example

Exercise: Runs Test
Suppose you have survey data collected from a group of participants regarding their satisfaction with a product (rated from 1 to 5). You want to test whether there is a significant deviation from randomness in the sequence of satisfaction ratings using the runs test.
Example Data:
Satisfaction ratings: 4, 3, 5, 2, 4, 5, 3, 4, 2, 5
Tasks:
Import the provided dataset into SPSS.
Conduct a runs test to test for randomness in the sequence of satisfaction ratings.
View the computed runs test results.
Interpret the results.
Step 1: Importing the Dataset
Open SPSS.
Go to File > Open > Data.
Enter the example data into SPSS or create a data file with the provided satisfaction ratings.
Step 2: Conducting the Runs Test
Go to Analyze > Nonparametric Tests > Legacy Dialogs > Runs.
Select "Satisfaction" as the test variable.
Click OK.
Step 3: Viewing the Runs Test Results
Review the output table to see the computed runs test results, including the observed number of runs, expected number of runs, and the Z statistic.
Step 4: Interpretation
If the Z statistic is greater than the critical value for the chosen significance level (e.g., 0.05), then you reject the null hypothesis that the data follows a random distribution. If the Z statistic is less than the critical value, then you fail to reject the null hypothesis.
By completing this exercise, you should understand how to conduct a runs test in SPSS and interpret the results.

26. Exercise on Kolmogorov-Smirnov Test with an example

Exercise: Kolmogorov-Smirnov Test

Suppose you have survey data collected from a group of participants regarding their satisfaction with a product (rated from 1 to 5). You want to test whether the distribution of satisfaction scores follows a normal distribution using the Kolmogorov-Smirnov test.

Example Data:

Satisfaction scores: 4, 3, 5, 2, 4, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4, 2, 5, 3, 4

Tasks:

Import the provided dataset into SPSS.
Conduct a Kolmogorov-Smirnov test to test the distribution of satisfaction scores.
View the computed Kolmogorov-Smirnov test results.
Interpret the results.

Step 1: Importing the Dataset

Open SPSS.
Go to File > Open > Data.
Enter the example data into SPSS or create a data file with the provided satisfaction scores.

Step 2: Conducting the Kolmogorov-Smirnov Test

Go to Analyze > Nonparametric Tests > One-Sample K-S.
Select "Satisfaction" as the test variable.
Click OK.

Step 3: Viewing the Kolmogorov-Smirnov Test Results

Review the output table to see the computed Kolmogorov-Smirnov test results, including the test statistic (D) and the significance level (p-value).

Step 4: Interpretation

If the p-value is less than the chosen significance level (e.g., 0.05), then you reject the null hypothesis that the data is normally distributed. If the p-value is greater than the chosen significance level, then you fail to reject the null hypothesis.
By completing this exercise, you should understand how to conduct a Kolmogorov-Smirnov test in SPSS and interpret the results.

27. Exercise on One-Sample Chi-Square Test with an example

Exercise: One-Sample Chi-Square Test

Suppose you have survey data collected from a group of participants regarding their preferences for different colors: red, blue, green, and yellow. You want to test whether the distribution of color preferences follows a uniform distribution using the one-sample chi-square test.

Example Data:

Red: 20
Blue: 15
Green: 25
Yellow: 20

Tasks:

Import the provided dataset into SPSS.
Conduct a one-sample chi-square test to test the distribution of color preferences.
View the computed one-sample chi-square test results.
Interpret the results.

Step 1: Importing the Dataset

Open SPSS.
Go to File > Open > Data.
Enter the example data into SPSS or create a data file with the provided color preferences.

Step 2: Conducting the One-Sample Chi-Square Test

Go to Analyze > Descriptive Statistics > Frequencies.
Select "Color" as the variable.
Click Statistics and check "Chi-square" under "Display."
Click OK.

Step 3: Viewing the One-Sample Chi-Square Test Results

Review the output table to see the computed one-sample chi-square test results, including the chi-square statistic and its significance level.

Step 4: Interpretation

If the p-value is less than the chosen significance level (e.g., 0.05), then you reject the null hypothesis that the data follows a uniform distribution. If the p-value is greater than the chosen significance level, then you fail to reject the null hypothesis.
By completing this exercise, you should understand how to conduct a one-sample chi-square test in SPSS and interpret the results.

28. Exercise on Friedman One-way ANOVA with an example

Exercise: Friedman One-way ANOVA

Suppose you have survey data collected from a group of participants who rated three different products (A, B, and C) on a scale from 1 to 5 based on their satisfaction. You want to test whether there is a significant difference in satisfaction scores among the three products using the Friedman test.

Example Data:

Product A: 4, 3, 5, 2, 4
Product B: 3, 4, 2, 5, 3
Product C: 2, 5, 3, 4, 2

Tasks:

Import the provided dataset into SPSS.
Conduct a Friedman test to test for differences in satisfaction scores among the three products.
View the computed Friedman test results.
Interpret the results.

Step 1: Importing the Dataset

Open SPSS.
Go to File > Open > Data.
Enter the example data into SPSS or create a data file with the provided satisfaction scores for each product.

Step 2: Conducting the Friedman Test

Go to Analyze > Nonparametric Tests > Legacy Dialogs > K Independent Samples.
Select "Product A," "Product B," and "Product C" as the test variables.
Click OK.

Step 3: Viewing the Friedman Test Results

Review the output table to see the computed Friedman test results, including the chi-square statistic and its significance level.

Step 4: Interpretation

If the p-value is less than the chosen significance level (e.g., 0.05), then you reject the null hypothesis that there is no difference in satisfaction scores among the three products. If the p-value is greater than the chosen significance level, then you fail to reject the null hypothesis.
By completing this exercise, you should understand how to conduct a Friedman one-way ANOVA in SPSS and interpret the results.

29. Exercise on K-Sample Median Test with an example

Exercise: K-Sample Median Test

Suppose you have survey data collected from three groups of participants who rated a product on a scale from 1 to 5 based on their satisfaction. You want to test whether there is a significant difference in satisfaction scores among the three groups using the K-sample median test.

Example Data:

Group 1: 4, 3, 5, 2, 4
Group 2: 3, 4, 2, 5, 3
Group 3: 2, 5, 3, 4, 2

Tasks:

Import the provided dataset into SPSS.
Conduct a K-sample median test to test for differences in satisfaction scores among the three groups.
View the computed K-sample median test results.
Interpret the results.

Step 1: Importing the Dataset

Open SPSS.
Go to File > Open > Data.
Enter the example data into SPSS or create a data file with the provided satisfaction scores for each group.

Step 2: Conducting the K-Sample Median Test

Go to Analyze > Nonparametric Tests > Legacy Dialogs > K Independent Samples.
Select "Group 1," "Group 2," and "Group 3" as the test variables.
Click OK.

Step 3: Viewing the K-Sample Median Test Results

Review the output table to see the computed K-sample median test results, including the chi-square statistic and its significance level.

Step 4: Interpretation

If the p-value is less than the chosen significance level (e.g., 0.05), then you reject the null hypothesis that there is no difference in median satisfaction scores among the three groups. If the p-value is greater than the chosen significance level, then you fail to reject the null hypothesis.
By completing this exercise, you should understand how to conduct a K-sample median test in SPSS and interpret the results.

30. Exercise on Factor Analysis with an example

Exercise: Factor Analysis

Suppose you have survey data collected from a group of participants regarding their preferences for different types of movies: action, comedy, drama, and romance. You want to explore the underlying factors that drive these preferences using factor analysis.

Example Data:

Action: 4, 3, 5, 2, 4
Comedy: 3, 4, 2, 5, 3
Drama: 2, 5, 3, 4, 2
Romance: 5, 3, 4, 2, 5

Tasks:

Import the provided dataset into SPSS.
Conduct a factor analysis to explore the underlying factors driving movie preferences.
View the computed factor analysis results.
Interpret the results.

Step 1: Importing the Dataset

Open SPSS.
Go to File > Open > Data.

Enter the example data into SPSS or create a data file with the provided movie preferences.

Step 2: Conducting the Factor Analysis

Go to Analyze > Dimension Reduction > Factor.

Select all movie preference variables (action, comedy, drama, romance).

Click OK.

Step 3: Viewing the Factor Analysis Results

Review the output table to see the computed factor analysis results, including factor loadings, communalities, eigenvalues, and variance explained.

Step 4: Interpretation

Look for patterns in the factor loadings to interpret the underlying factors. Factors with loadings above 0.5 are typically considered significant.

Name the factors based on the variables with high loadings in each factor.

Check the total variance explained to understand how much of the variance in the original variables is explained by the factors.

By completing this exercise, you should understand how to conduct a factor analysis in SPSS and interpret the results.

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