

SPSS STATISTICAL PACKAGE

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Learning Objectives:

Students to be able to:

- 1 Understand three SPSS windows
- 2 Familiar with steps in data analysis
- 3 Define variable and enter data into Data Editor
- 4 Perform data editing and transformation
- 5 Run selected statistical procedures
- 6 Use SPSS coaches

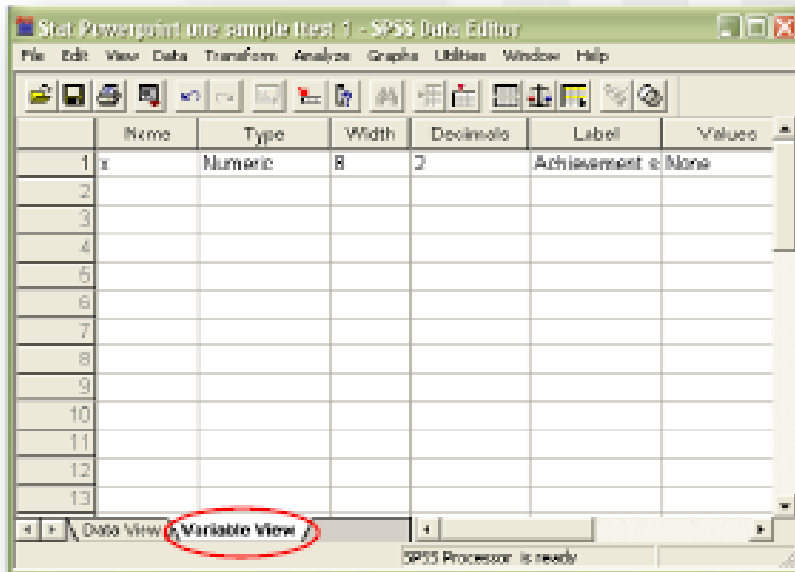
SPSS

Windows

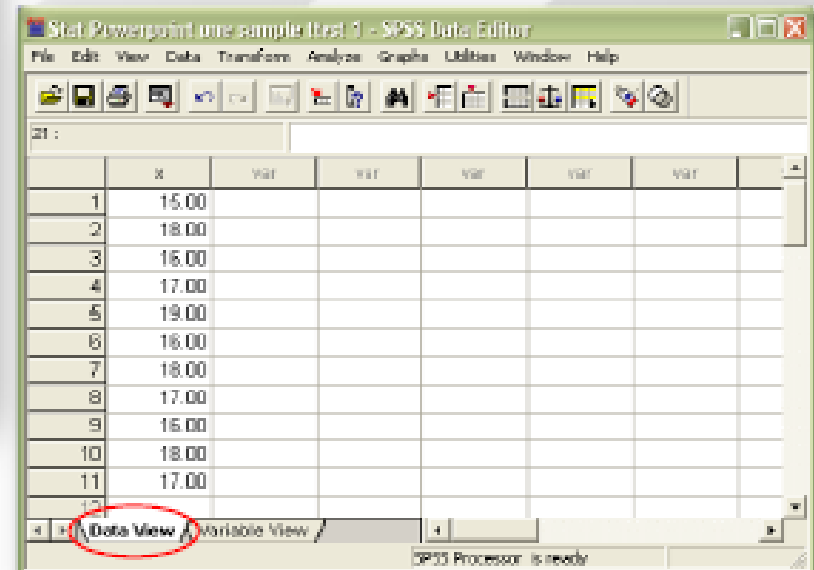


1 SPSS Data Editor:

Define and enter data



Variable view: to define variables



Data view: to enter data

2 SPSS Viewer:

Display results of data analyses

Navigator
to help
easy
browsing

Results of
data
analyses

Descriptives

Descriptive Statistics

	Achievement scores	X_SQ	Valid N (listwise)
N	11	11	11
Minimum	15.00	226.00	
Maximum	19.00	361.00	
Sum	187.00	3193.00	
Mean	17.0000	290.2727	
Std. Deviation	1.18322	40.25442	

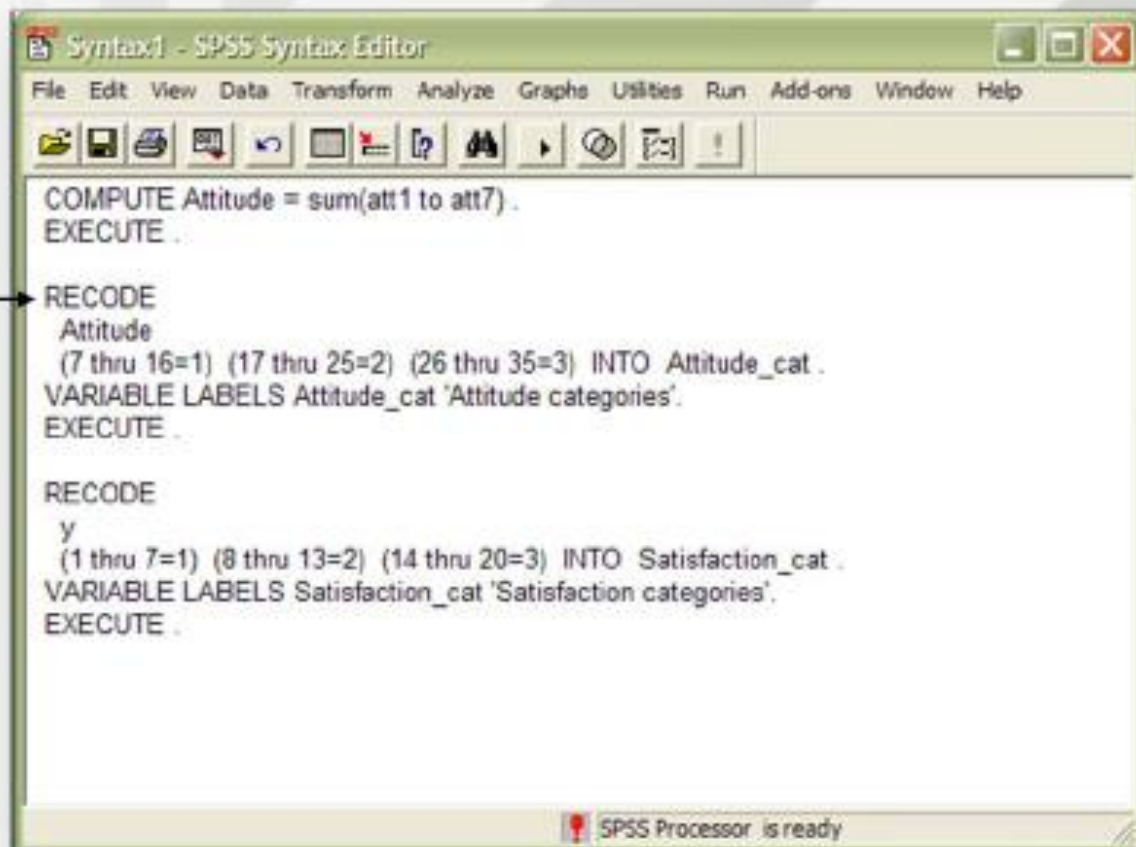
Note is hidden

SPSS Processor is ready

3 SPSS Syntax Editor:

Write, display, retrieve, run and save syntax/commands

Syntax or
commands



The screenshot shows the SPSS Syntax Editor window titled 'Syntax1 - SPSS Syntax Editor'. The window has a menu bar with 'File', 'Edit', 'View', 'Data', 'Transform', 'Analyze', 'Graphs', 'Utilities', 'Run', 'Add-ons', 'Window', and 'Help'. Below the menu bar is a toolbar with various icons. The main text area contains the following syntax commands:

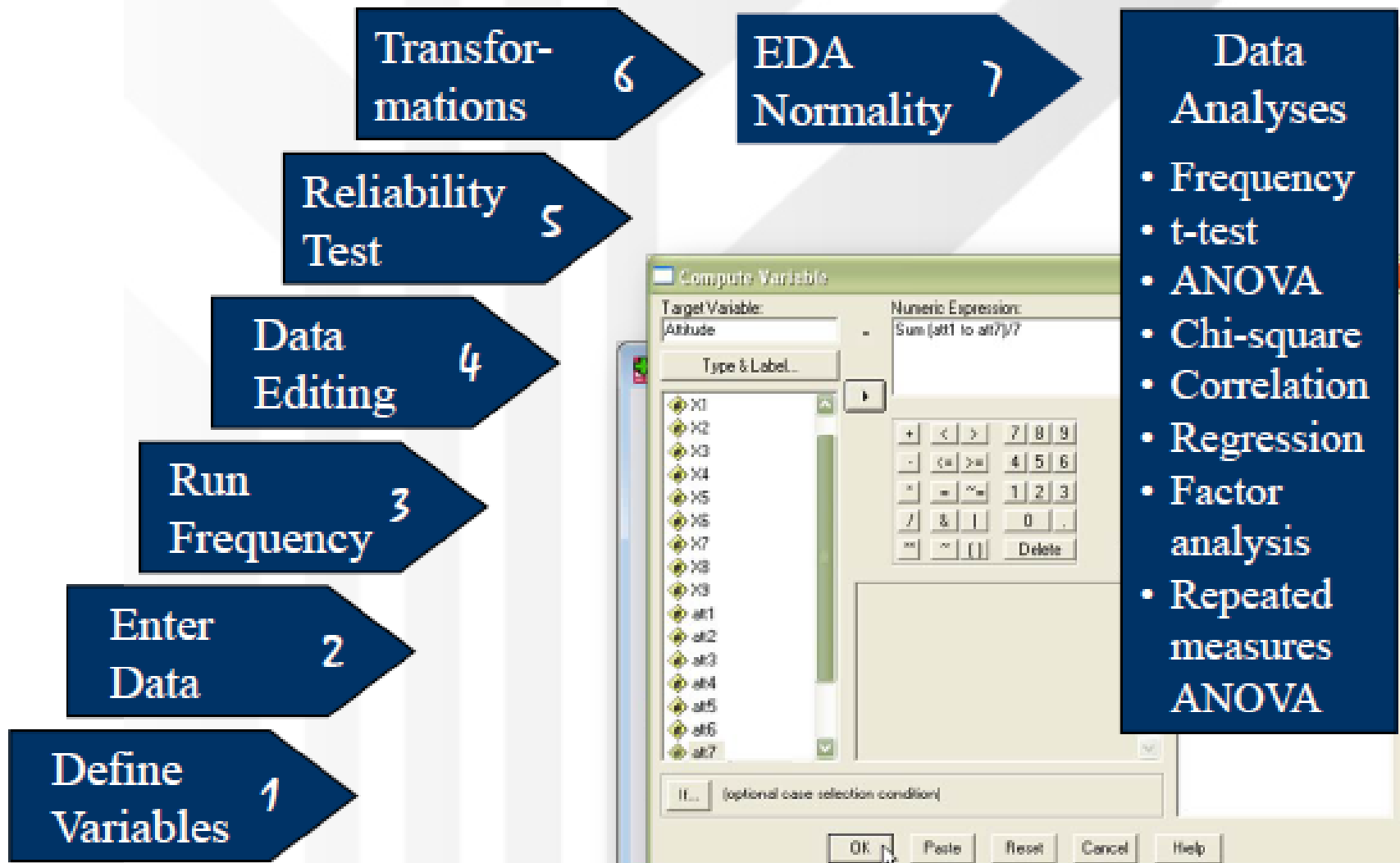
```
COMPUTE Attitude = sum(att1 to att7) .  
EXECUTE .  
  
RECODE  
  Attitude  
  (7 thru 16=1) (17 thru 25=2) (26 thru 35=3) INTO Attitude_cat .  
VARIABLE LABELS Attitude_cat 'Attitude categories'.  
EXECUTE .  
  
RECODE  
  y  
  (1 thru 7=1) (8 thru 13=2) (14 thru 20=3) INTO Satisfaction_cat .  
VARIABLE LABELS Satisfaction_cat 'Satisfaction categories'.  
EXECUTE .
```

At the bottom right of the window, a status bar indicates 'SPSS Processor is ready'.

Steps in Data Analysis



Steps in Data Analysis:



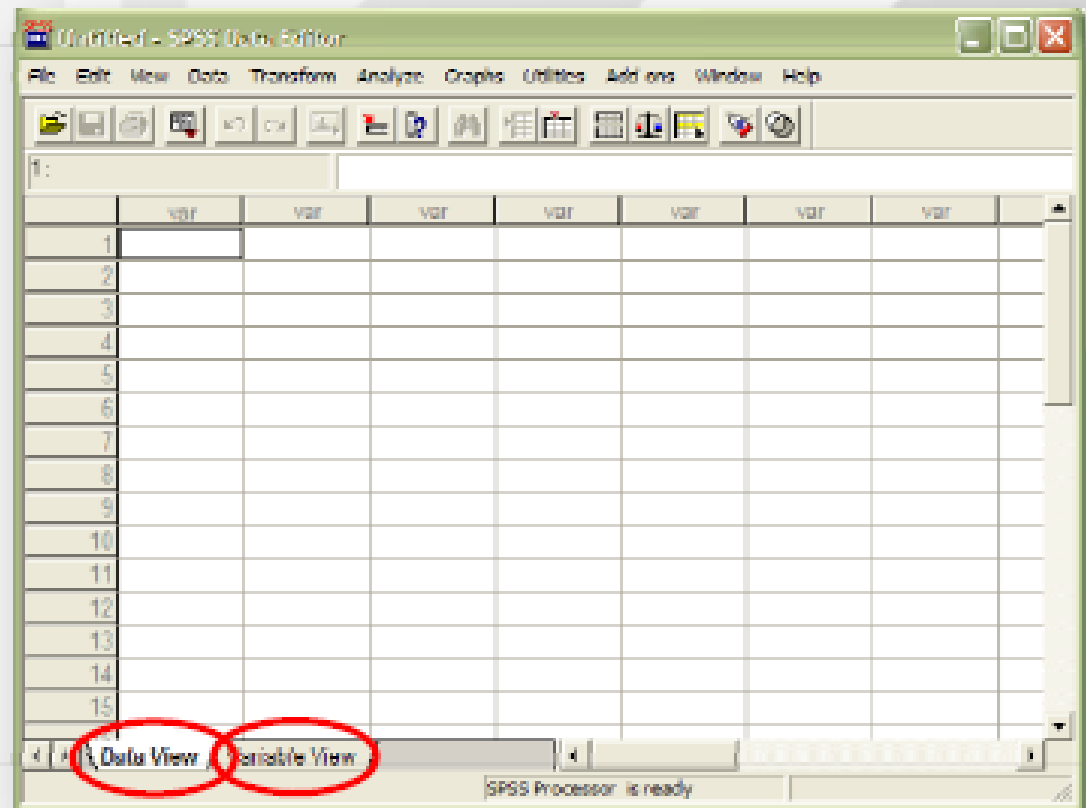
Define Variable *and* Enter Data



SPSS Data Editor:

In the Data Editor, you can:

- 1 Define variables in Variable View window
- 2 Enter data in Data View window



1 Define Variables

Click the *Variable View* tab

Define:

- Name
- Label
- Values

PracticeData - SPSS Data Editor

File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help

	Name	Type	Width	Decimals	Label	Values	Missi
1	ID	Numeric	8	2	Response #	None	None
2	X1	Numeric	8	2	Age	None	None
3	X2	Numeric	8	2	Gender	{1.00, Male}...	None
4	X3	Numeric	8	2	Marital status	{1.00, Married}	None
5	X4	Numeric	8	2	Job category	{1.00, Clerical}	None
6	X5	Numeric	8	2	Salary	None	None
7	X6	Numeric	8	2	Motivation	None	None
8	X7	Numeric	8	2	From p	None	None
9	X8	Numeric	8	2		None	None
10	X9	Numeric	8	2		None	None
11	att1	Numeric	8	2	Attitude item 1	{1.00, Strongly	None
12	att2	Numeric	8	2	Attitude item 2	{1.00, Strongly	None
13	att3	Numeric	8	2	Attitude item 3	{1.00, Strongly	None
14	att4	Numeric	8	2	Attitude item 4	{1.00, Strongly	None
15	att5	Numeric	8	2	Attitude item 5	{1.00, Strongly	None
16	att6	Numeric	8	2	Attitude item 6	{1.00, Strongly	None
17	att7	Numeric	8	2	Attitude item 7	{1.00, Strongly	None

Required
Optional;
recommended

Data View Variable View

SPSS Processor is ready

2 Enter Data

In *Data View* window

One column
refers to one
variable

One row
refers to one
case or
observation

PracticeData - SPSS Data Editor

File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help

46 ID

		X1	X2	X3	X4	X5	X6
1	1.00	25.00	1.00	1.00	1.00	1250.00	9.00
2	2.00	26.00	1.00	1.00	1.00	1435.00	8.00
3	3.00	35.00	2.00	2.00	2.00	2645.00	6.00
4	4.00	28.00	1.00	2.00	3.00	4500.00	7.00
5	5.00	46.00	3.00	3.00	1.00	950.00	3.00
6	6.00	26.00	1.00	2.00	2.00	2350.00	5.00
7	7.00	37.00	2.00	2.00	3.00	2000.00	4.00
8	8.00	35.00	2.00	1.00	1.00	1500.00	5.00
9	9.00	39.00	1.00	2.00	2.00	5500.00	6.00
10	10.00	34.00	1.00	1.00	2.00	1295.00	4.00
11	11.00	26.00	2.00	2.00	1.00	2150.00	4.00
12	12.00	50.00	2.00	3.00	1.00	3225.00	3.00
13	13.00	35.00	2.00	2.00	2.00	2645.00	6.00
14	14.00	28.00	1.00	2.00	3.00	3500.00	7.00
15	15.00	45.00	2.00	3.00	1.00	1285.00	3.00

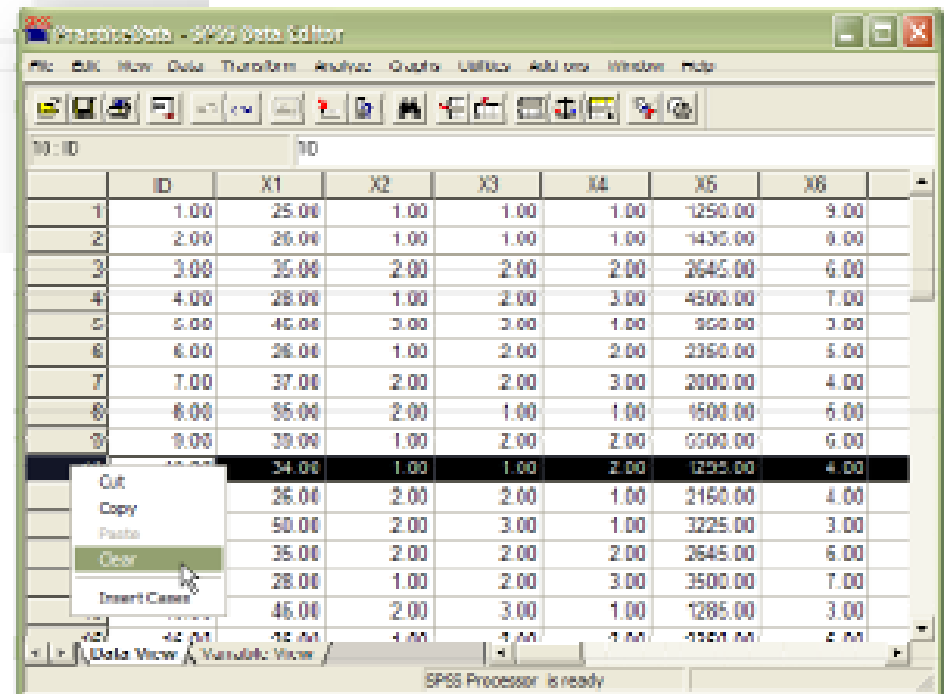
Data View Variable View

SPSS Processor is ready

DATA EDITING & TRANSFORMATIONS

Data Editing:

- ▶ Change data value
- ▶ Cut, copy and paste data value
- ▶ Add or delete case
- ▶ Add or delete variable
- ▶ Change ordering of variables



The screenshot shows the SPSS Data Editor window with a data table. A context menu is open over row 9, highlighting the 'Clear' option. The data table is as follows:

ID	X1	X2	X3	X4	X5	X6	
1	1.00	25.00	1.00	1.00	1.00	1250.00	9.00
2	2.00	26.00	1.00	1.00	1.00	1435.00	9.00
3	3.00	35.00	2.00	2.00	2.00	2645.00	6.00
4	4.00	28.00	1.00	2.00	3.00	4500.00	7.00
5	5.00	46.00	3.00	3.00	1.00	900.00	3.00
6	6.00	26.00	1.00	2.00	2.00	2350.00	5.00
7	7.00	37.00	2.00	2.00	3.00	2000.00	4.00
8	6.00	35.00	2.00	1.00	1.00	1500.00	5.00
9	9.00	39.00	1.00	2.00	2.00	5500.00	6.00
10	34.00	1.00	1.00	2.00	1295.00	4.00	
11	26.00	2.00	2.00	1.00	2150.00	4.00	
12	50.00	2.00	3.00	1.00	3225.00	3.00	
13	35.00	2.00	2.00	2.00	2645.00	6.00	
14	28.00	1.00	2.00	3.00	3500.00	7.00	
15	46.00	2.00	3.00	1.00	1285.00	3.00	
16	42.00	4.00	4.00	1.00	1100.00	2.00	

Data Transformations:

Two commonly used data transformations:

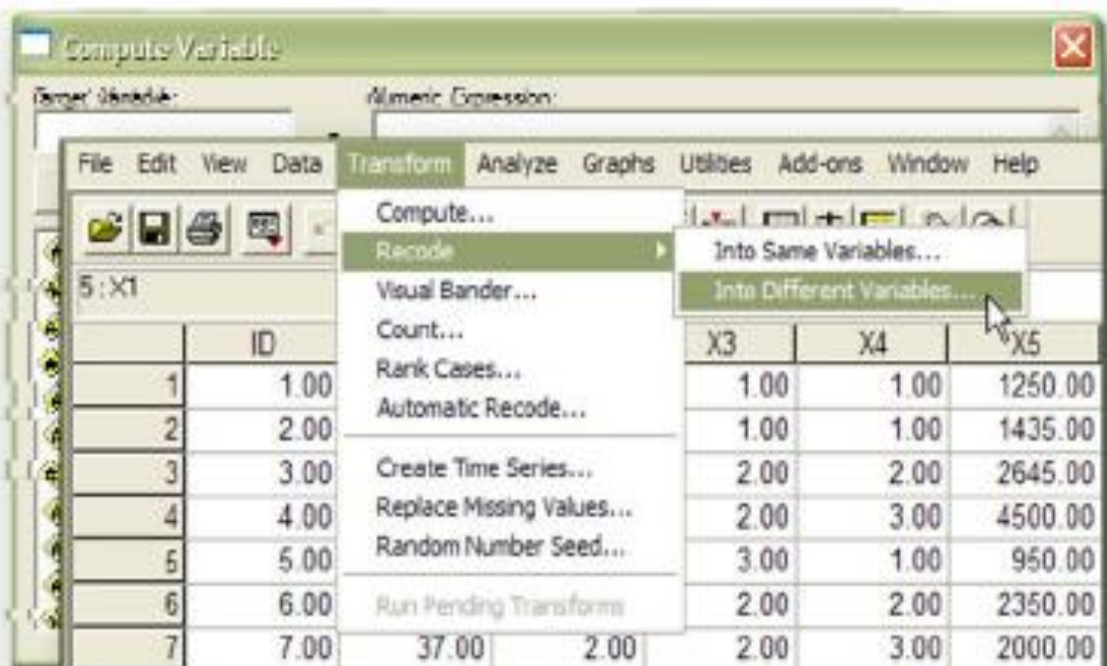
① **Compute**

– create new variable based on existing variable/s

② **Recode**

used to:

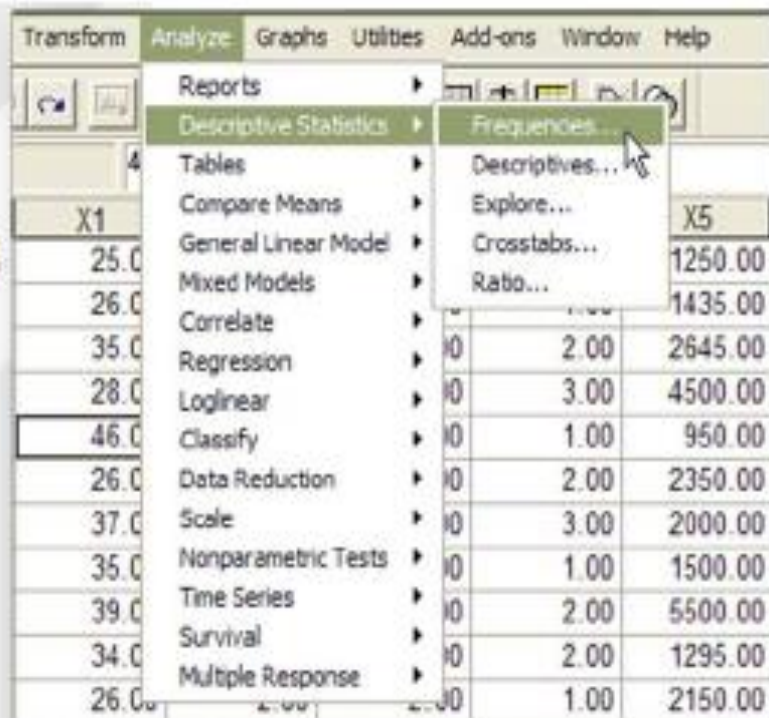
- recategorize values
- create categories from continuous variable



STATISTICAL PROCEDURES

Statistical Procedures:

- ▶ Reliability test
- ▶ Exploratory data analysis
- ▶ Descriptive Statistics
 - Frequencies, crosstabs
- ▶ Compare group means
 - t-test and ANOVA
- ▶ Relationship between variables
 - Chi-square, Spearman rho, Pearson PM correlation, and regression



The screenshot shows the SPSS software interface. The 'Analyze' menu is open, and the 'Descriptive Statistics' sub-menu is also open, with 'Frequencies...' selected. The background shows a data table with columns X1 and X5.

X1	X5
25.0	1250.00
26.0	1435.00
35.0	2645.00
28.0	4500.00
46.0	950.00
26.0	2350.00
37.0	2000.00
35.0	1500.00
39.0	5500.00
34.0	1295.00
26.0	2150.00

Reliability Test:

The image shows the SPSS interface for conducting a Reliability Test. It consists of several overlapping windows:

- Data Table:** A table with 11 rows and 2 columns. The first column is labeled 'D' and contains values from 1 to 11. The second column is labeled 'y' and contains values from 1.00 to 11.00.
- Reliability Analysis (Top):** A dialog box with a list of variables: X5, X6, X7, X8, X9, and y. The 'Model' is set to 'Alpha'. There is a 'List item labels' checkbox.
- Reliability Analysis: Statistics:** A sub-dialog box with two sections:
 - Descriptives for:** Includes checkboxes for 'Item' (checked), 'Scale' (checked), and 'Scale if item deleted' (checked).
 - Inter-Item:** Includes checkboxes for 'Correlations' and 'Covariances' (both unchecked).Buttons for 'Continue', 'Cancel', and 'Help' are visible.
- Reliability Analysis (Bottom):** A dialog box where the 'Items' list is populated with att1, att2, att3, att4, att5, att6, and att7. The 'Model' is set to 'Alpha'. There is a 'List item labels' checkbox and a 'Statistics...' button.

Exploratory Data Analysis:

The image displays the SPSS software interface with several dialog boxes open for Exploratory Data Analysis (EDA). The main window shows a data list with variables ID, X1, X2, X3, X4, X5, X6, X7, X8, and X9. The 'Explore' dialog box is open, showing the list of variables and the 'Display' options set to 'Both'. The 'Explore: Plots' dialog box is also open, showing the 'Boxplots' and 'Descriptive' options. The 'Explore' dialog box is open again, showing the 'Dependent List' set to 'y' and the 'Factor List' empty. The 'Display' options are set to 'Both'. The 'OK' button is highlighted by a mouse cursor.

File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help

22: X7

Explore

ID
X1
X2
X3
X4
X5
X6
X7
X8
X9

Display
 Both Statistics Plots

Explore: Plots

Boxplots Descriptive Continue

Explore

ID
X1
X2
X3
X4
X5
X6
X7
X8
X9

Dependent List:
y

Factor List:

Label Cases by:

Display
 Both Statistics Plots

Statistics... Plots... Options...

OK
Paste
Reset
Cancel
Help

Normal Q-Q Plot 3.00
Detrended Normal Q-Q 5.00
Boxplot 7.00
3.00

Double click to edit Pivot Table

SPSS Processor

Frequencies:

The image shows the SPSS interface with several windows open. The main window displays a data table with 11 rows and 2 columns: ID and a numerical value. The 'Frequencies' dialog box is open, showing a list of variables (ID, X1, X2, X3, X4, X5, X6, X7, vn) and a checked option for 'Display frequency tables'. The 'Frequencies: Statistics' sub-dialog box is also open, showing options for 'Percentile Values' (Quantiles, Cut points for, Percentile(s)), 'Central Tendency' (Mean checked), and 'Dispersion' (Std. deviation checked). The 'Continue' button is highlighted in the Statistics dialog, and the 'OK' button is highlighted in the main Frequencies dialog.

ID	
1	1.00
2	2.00
3	3.00
4	4.00
5	5.00
6	6.00
7	7.00
8	8.00
9	9.00
10	10.00
11	11.00

Frequencies

Variable(s):

- ID
- X1
- X2
- X3
- X4
- X5
- X6
- X7
- vn

Display frequency tables

Frequencies: Statistics

Percentile Values

Quantiles

Cut points for:

Percentile(s):

Add

Change

Remove

Central Tendency

Mean

Continue

Cancel

Frequencies

Variable(s):

- y

OK

Paste

Reset

Cancel

Help

Display frequency tables

Statistics...

Charts...

Format...

ANOVA:

The image shows a screenshot of the SPSS software interface. In the background, a data table is visible with the following data:

ID	X
1	1.00
2	2.00
3	3.00
4	4.00
5	5.00
6	6.00
7	7.00
8	8.00
9	9.00
10	10.00
11	11.00

Overlaid on the data table are three dialog boxes:

- One-Way ANOVA:** The 'Dependent List' contains 'y'. The 'Factor' list includes ID, X1, X2, X4, X5, X6, X7, X8, X9, att1, and att2.
- One-Way ANOVA: Post Hoc Multiple Comparisons:** The 'Equal Variances Assumed' section has 'LSD' selected. The 'Significance level' is set to 0.05.
- One-Way ANOVA (second instance):** The 'Dependent List' contains 'y' and the 'Factor' is 'X3'. The 'OK' button is highlighted by a mouse cursor.

The SPSS menu bar at the top includes File, Edit, View, Data, Transform, Analyze, Graphs, Utilities, Add-ons, Window, and Help. The 'Analyze' menu is open, showing 'Reports' and 'Descriptive Statistics' options. The bottom status bar indicates 'Pivot Table is visible' and 'SPSS'.

Correlation Analyses:

The screenshot displays the SPSS software interface. The main window shows a data table with two columns: 'ID' and 'X1'. The data points are as follows:

ID	X1
1	25.0
2	26.0
3	35.0
4	28.0
5	46.0
6	26.0
7	37.0
8	35.0
9	39.0
10	34.0
11	26.0

The 'Analyze' menu is open, and the 'Correlate' option is selected. The 'Bivariate Correlations' dialog box is open, showing the following settings:

- Variables:** att2, att3, att4, att5, att6, att7 (in the source list); X1, X5 (in the target list).
- Correlation Coefficients:** Pearson, Kendall's tau-b, Spearman.
- Test of Significance:** Two-tailed, One-tailed.
- Flag significant correlations.

The 'OK' button is highlighted with a mouse cursor. The status bar at the bottom indicates 'SPSS Processor is ready'.


SPSS COACHES

1 **Statistic Coach**

Guide in selecting the most appropriate statistical analysis

Add-ons		Window		Help	
				Topics	
				Tutorial	
				Case Studies	
				Statistics Coach	
				Command Syntax Reference	
				SPSS Home Page	
				About...	
				Register Product...	
X4					
1.00					00
1.00					00
2.00					00
3.00	4500.00	7.00	7.00		00
1.00	950.00	3.00	4.00		

Statistic Coach




Industry	Mean	Sum
Government	\$2,625	\$1,762,681
Commercial	\$2,481	\$1,100,204
Academic	\$2,548	\$1,715,728
Total	\$2,517	\$3,744,000

What do you want to do?

- Summarize, describe, or present data
- Look at variance and distribution of cases
- Create OLAP report cubes
- Compare groups for significant differences
- Identify significant relationships between variables
- Identify groups of similar cases
- Identify groups of similar variables

Time on Hold	Frequency	Percent	Cumulative Percent
< 1 Minute	278	18.6	18.6
1-2 Minutes	262	22.6	42.1
2-4 Minutes	307	20.5	62.5
> 4 Minutes	582	27.5	100.0
Total	1500	100.0	

Time on Hold	North	South	East	West
< 1 Minute	85	82	85	97
1-2 Minutes	93	89	98	91
2-4 Minutes	75	84	78	92
> 4 Minutes	149	120	145	139



More Examples

Help Back Next Cancel

2 Result Coach

Help to interpret statistical results

The screenshot displays two overlapping windows from a statistical software application. The background window, titled 'Job satisfaction', shows a 'Tests' table with a Kolmogorov-Smirnov statistic of .153 and a significance level of .000. Below this, it lists 'Job satisfaction Stem-and-Leaf' and 'Frequency Stem & Leaf'. The foreground window, titled 'Tutorial', displays 'Tests of Normality' for two divisions: Consumer Products (Statistic: .156, df: 179, Sig.: .000) and Business Products (Statistic: .192, df: 211, Sig.: .000). A text box on the right explains that the Kolmogorov-Smirnov statistic tests the hypothesis that the data are normally distributed. At the bottom, a blue bar contains the text 'Explore Tests of Normality' and a set of navigation icons.

	Kolmogorov-Smirnov ^a		
	Statistic	df	Sig.
Y	.153	20	.000

^a. This is a lower bound of the true significance level.
b. Lilliefors Significance Correction

Job satisfaction

Job satisfaction Stem-and-Leaf

Frequency Stem & Leaf

Division	Kolmogorov-Smirnov		
	Statistic	df	Sig.
Consumer Products	.156	179	.000
Business Products	.192	211	.000

The Kolmogorov-Smirnov statistic tests the hypothesis that the data are normally distributed.

Explore Tests of Normality