# Applying SPSS for data analysis

Assist Professor Dr. Shukir Saleem Cihan University Health Administration department

### Object of the seminar is to:

- What about the windows in SPSS
- The basics of managing data files
- The simple analysis in SPSS
- Simple practice of SPSS

#### Introduction: What is SPSS?

- SPSS is the acronym of Statistical Package for the Social Science.
- SPSS is one of the most popular statistical packages which can perform highly complex data manipulation and analysis with simple instructions.

# **Opening SPSS**

#### Start → All Programs → SPSS Inc→ SPSS versions → SPSS



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# Variable View window

- This sheet contains information about the data set that is stored with the dataset
- Name
  - The first character of the variable name must be alphabetic
  - Variable names must be unique, and have to be less than 64 characters.

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# Variable View window: Type

- Type
  - Click on the 'type' box. The two basic types of variables that you will use are numeric and string. This column enables you to specify the type of variable.

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### Variable View window: Width

- Width
  - Width allows you to determine the number of characters SPSS will allow to be entered for the variable

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### Variable View window: Decimals

#### Decimals

- Number of decimals
- It has to be less than or equal to 16

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#### Variable View window: Label

- Label
  - You can specify the details of the variable
  - You can write characters with spaces up to 256 characters

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### Variable View window: Values

- Values
  - This is used and to suggest which numbers represent which categories when the variable represents a category

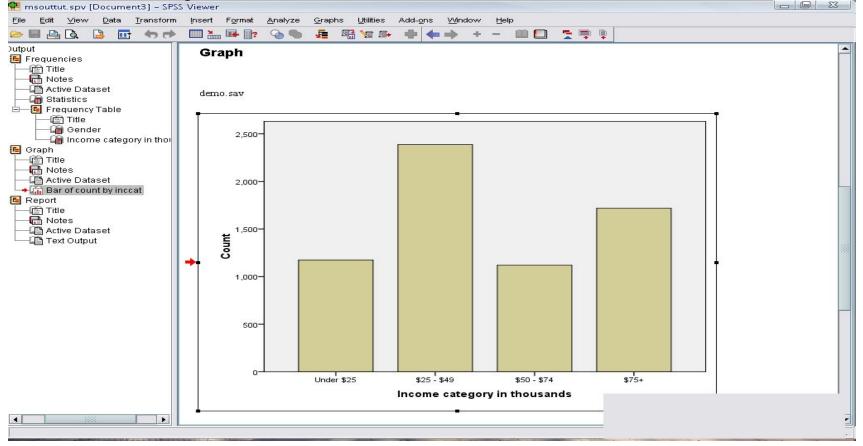
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### Defining the value labels

- Click the cell in the values column as shown below
- For the value, and the label, you can put up to 60 characters.
- After defining the values click add and then click OK.

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#### **Output Viewer**



#### Practice 1

#### How would you put the following information into SPSS? name gender height

name	gender	height
sheryl	female	5.7
jennifer	female	5.4
tara	female	5.3
christian	male	5.6
jose	male	5.8
roberto	male	5.7
kasie	female	5.5
cady	female	5.5
sandy	female	5.6
daniel	male	6
kurra	female	5.4
ashley	female	5.4
alain	male	6.1

#### Practice 1 (Solution Sample)

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2	SALLY	2	5.3		
3	DONNA	2	5.6		
4	SABRINA	2	5.7		
5	JOHN	1	5.7		
6	MARK	1	6.0		
7	ERIC	1	6.4		
8	BRUCE	1	5.9		_
1	4				

#### Saving the data

• To save the data file you created simply click 'file' and click 'save as.' You can save the file in different forms by clicking "Save as type."

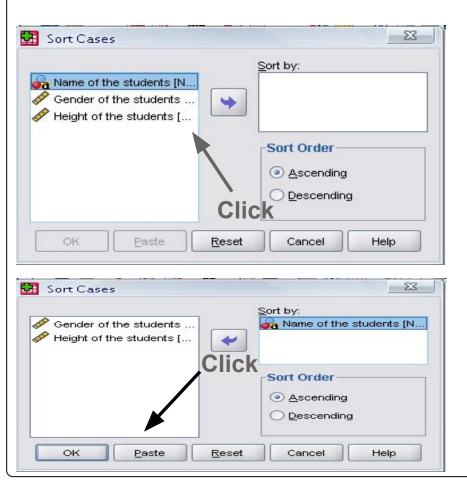
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#### Sorting the data

#### • Click 'Data' and then click Sort Cases

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### Sorting the data (cont'd)



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3	ERIC	1	6.4			
4	JAUNITA	2	5.4			
5	JOHN	1	5.7			
6	MARK	1	6.0			
7	SABRINA	2	5.7			
8	SALLY	2	5.3			
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#### Transforming data

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3	BRUCE	Visual Binning		
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#### Practice 3

 Create a new variable named "sqrtheight" which is the square root of height.

#### Answer

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4	JOHN	E	5.7	1.74	2.39	
5	SABRINA	2	5.7	1.74	2.39	
6	DONNA	2	5.6	1.72	2.37	
7	JAUNITA	2	5.4	1.69	2.32	
8	SALLY	2	5.3	1.67	2.30	
0	•					•
Data View	Variable View					

# The basic analysis

The basic analysis of SPSS that will be introduced in this class

#### • Frequencies

- This analysis produces frequency tables showing frequency counts and percentages of the values of individual variables.
- Descriptives
  - This analysis shows the maximum, minimum, mean, and standard deviation of the variables
- Linear regression analysis
  - Linear Regression estimates the coefficients of the linear equation

### Opening the sample data

#### • Open 'Employee data.sav' from the SPSS

• Go to "File," "Open," and Click Data

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### Opening the sample data

- Go to Program Files," "SPSSInc," "SPSS16," and "Samples" folder.
- Open "Employee Data.sav" file

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#### Frequencies

 Click 'Analyze,' 'Descriptive statistics,' then click 'Frequencies'

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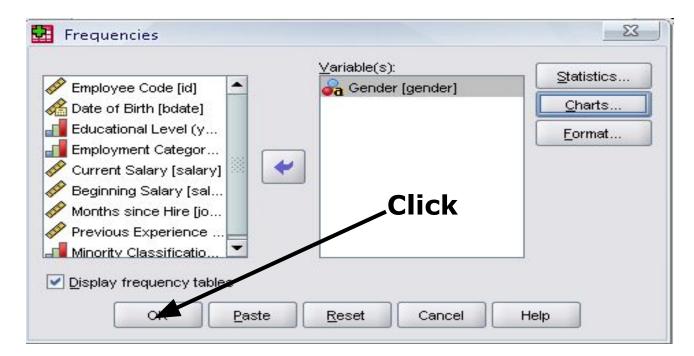
#### Frequencies

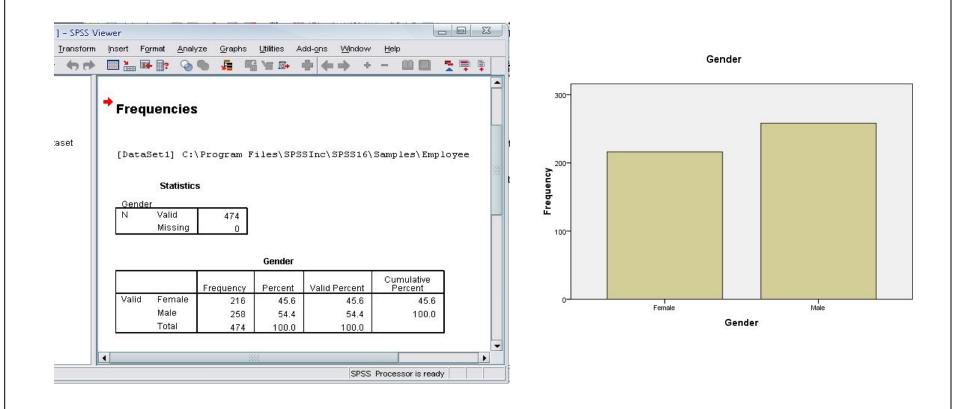
- Click gender and put it into the variable box.
- Click 'Charts.'
- Then click 'Bar charts' and click 'Continue.'

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Display frequency tables     OK Paste Reset Cancel Help	Erequencies OPercentages     Continue Cancel Help

#### Frequencies

#### • Finally Click OK in the Frequencies box.





#### Practice 4

# Do a frequency analysis on the variable "minority"

Create pie charts for it

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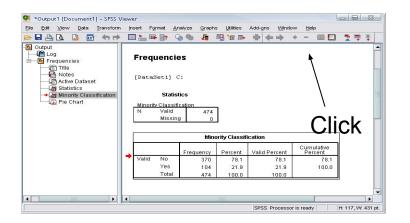
Part one: socio-demographic characteristics of participants:

- •Age: -----
- •Gender: Male 1 Female 2
- •Level of education: Physician 1 Nurses 2 other health care providers 3
- •Socio-economic status Satisfied 1 somehow sufficed 2 bad 3
- •Marital status: Single 1 Married 2

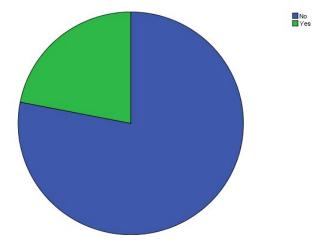
#### Part two: Quality of patient records; participant view.

	Patient records	Agree	e	Disag	ree
		1		2	
	Consist of detailed information				
2.	Missed spelling				
3.	All have right for write their notes				
4.	Nurses has right for writing her notes				
5.	Laboratories have right recording their nots on patient record				
6.	It is in high quality				
7.	Provide the patient's privacy				
8.	The notes written in good approach				
9.	The patient record represent the standard.				
10.	The patient records are stored correctly				

#### Answer

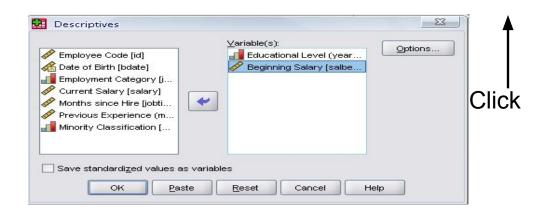


**Minority Classification** 



#### Descriptives

- Click 'Analyze,' 'Descriptive statistics,' then click 'Descriptives...'
- Click 'Educational level' and 'Beginning Salary,' and put it into the variable box.
- Click Options



#### Descriptives

- The options allows you to analyze other descriptive statistics besides the mean and Std.
- Click 'variance' and 'kurtosis'

Finally click 'Continue'	Descriptives: Options
	<u> M</u> ean <u>S</u> um
	Dispersion
	<ul> <li>✓ Std. deviation</li> <li>✓ Minimum</li> <li>✓ Variance</li> <li>✓ Maximum</li> </ul>
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Click 🔨	<u>A</u> lphabetic     Ascending means
CIICK	O Descending means
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#### Descriptives

• Finally Click OK in the Descriptives box. You will be able to see the result of the analysis.

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#### **Regression Analysis**

 Click 'Analyze,' 'Regression,' then click 'Linear' from the main menu.

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#### **Regression Analysis**

- For example let's analyze the model salbegin =  $\beta_0 + \beta_1 edu + \varepsilon$
- Put 'Beginning Salary' as Dependent and 'Educational Level' as Independent.

🚰 Linear Regression		<u> </u>	🚰 Linear Regression		
Date of Birth [bdate]	Dependent: I at I revious Independent st Independent st I	Statistics Plots Save Options	<ul> <li>Employee Code [id]</li> <li>Gender [gender]</li> <li>Date of Birth [bdate]</li> <li>Educational Level (year</li> <li>Employment Category [j</li> <li>Current Salary [salary]</li> <li>Months since Hire [jobti</li> <li>Previous Experience (m</li> <li>Minority Classification [</li> </ul>	Dependent:         Previous       Next         Independent(s):       Independent(s):         Educational Level (years) [educ]         Click       Method:         Enter       Selection Variable:         Selection Variable:       Rule         Case Labels:       Case Labels:         WLS Weight:       Help	Statistics Plots Save Options

#### **Regression Analysis**

#### • Clicking OK gives the result

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			2000 C				
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	Residual	1.7558	10 472	3.719E7			
	Total	2.9308	10 473	100000000000000000000000000000000000000			
a. Pi	redictors: (C	onstant), Educat	tional Level (yea	ars)			
b. D	ependent Va	ariable: Beginnin	ig Salary				
~~~~~							
			Coe	efficientsª			
			1	10000000000000000000000000000000000000	Standardized	1 1	
			Unstandardiz	zed Coefficients	Coefficients		
Model			В	Std. Error	Beta	t	Siq.
1	(Constant)	)	-6290.967	1340.920		-4.692	.00

#### Plotting the regression line

 Click 'Graphs,' 'Legacy Dialogs,' 'Interactive,' and 'Scatterplot' from the main menu.

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# Plotting the regression line

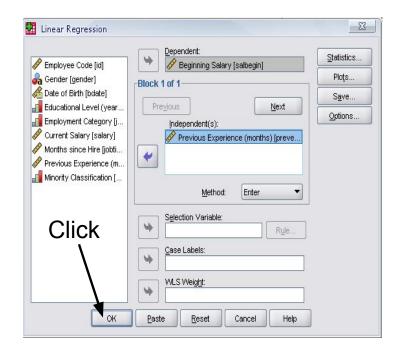
- Drag 'Current Salary' into the vertical axis box and 'Beginning Salary' in the horizontal axis box.
- Click 'Fit' bar. Make sure the Method is regression in the Fit box. Then click 'OK'.

Assign Variables Fit :	Spikes Titles Options	
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#### Answer

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#### Model Summary<sup>2</sup>

Mode I	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.045ª	.002	.000	\$7,870.942

a. Predictors: (Constant), Previous Experience (months)

b. Dependent Variable: Beginning Salary

#### ANOVA<sup>b</sup>

Mode	1	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.969E7	1	5.969E7	.964	.327ª
	Residual	2.924E10	472	6.195E7	- 000 00 MA	
	Total	2.930E10	473			

a. Predictors: (Constant), Previous Experience (months)

b. Dependent Variable: Beginning Salary

		Unstandardize	d Coefficients	Standardized Coefficients		
Mode		В	Std. Error	Beta	t	Siq.
1	(Constant)	16690.478	490.646		34.017	.000
	Previous Experience (months)	3.397	3.460	.045	.982	.327

a. Dependent Variable: Beginning Salary