

Final Project-2

Lecture 7

L7- Statistical Analysis- P3

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Session Outline

- Descriptive Statistic Analysis

Descriptive Statistic Analysis



- Concerning the sample classification, descriptive statistics is calculated to describe the sample.
- It represents percentages and frequencies of the sample who participated in the current study and responded to the questionnaire
- Also get descriptive to variables
- In descriptive analysis, there are 3 ways to be calculated

1st in way descriptive analysis

1. Define descriptive statistics
2. Identify the purposes of descriptive statistics
3. Represent data graphically using SPSS
4. Compute the Descriptive analysis using SPSS

- Statistics is concerned with the scientific method by which information is collected, organized, analyzed and interpreted for the purpose of description and decision making.
- Descriptive statistics one of the statistics types which describe the basic features of the data in a study.

- They provide simple summaries about the sample and the measures.
- Together with simple graphics analysis, they form the basis of virtually every quantitative analysis of data.
- Descriptive statistics you are simply describing what is or what the data shows.

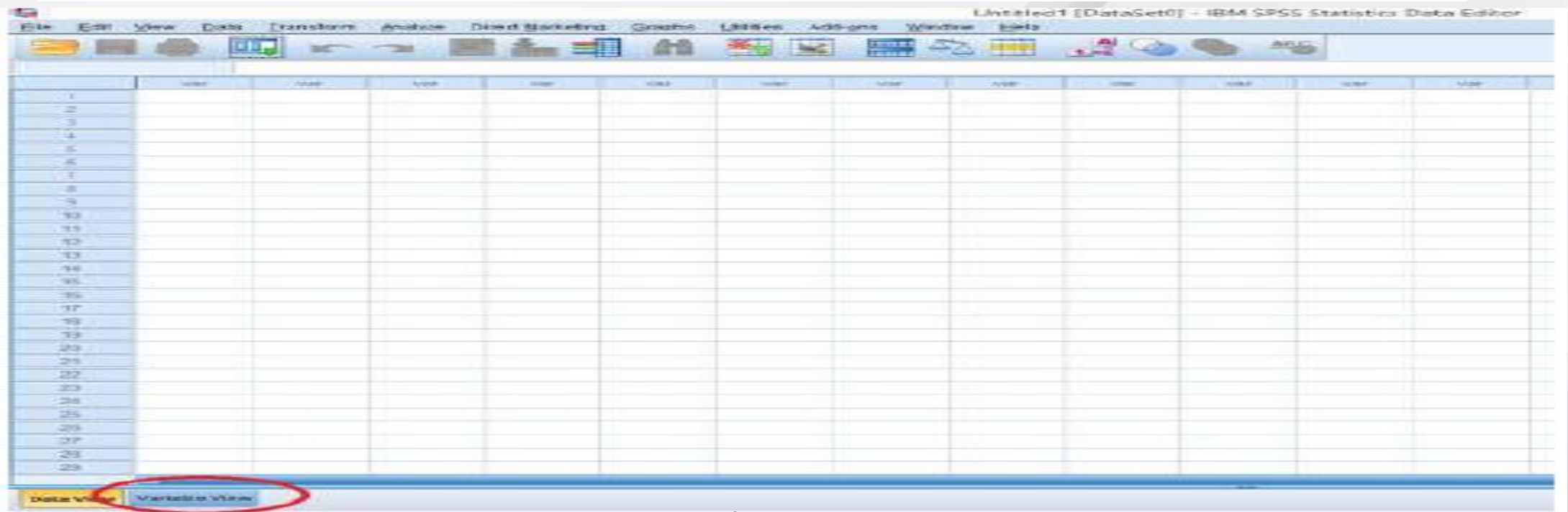
- Univariate analysis involves describing the distribution of a single variable, including its central tendency (including the mean, median, and mode) and dispersion (including the range and quantiles of the data-set, and measures of spread such as the variance and standard deviation).
- Here, we will show how to compute the descriptive statistics using SPSS Version 20.

Data Entry:

Gender	Age	BLS Exam	ACLS Exam
Male	25	84	100
Male	24	88	92
Female	30	84	92
Female	25	84	100
Female	27	88	84
Male	30	92	76
Male	30	92	80
Female	32	88	84
Male	29	100	84
Female	31	100	88
Female	26	88	88
Female	29	84	88
Male	29	74	92
Male	31	70	88
Male	25	82	92
Female	27	82	94
Male	27	84	96
Female	34	84	100
Female	33	88	84
Female	25	92	84

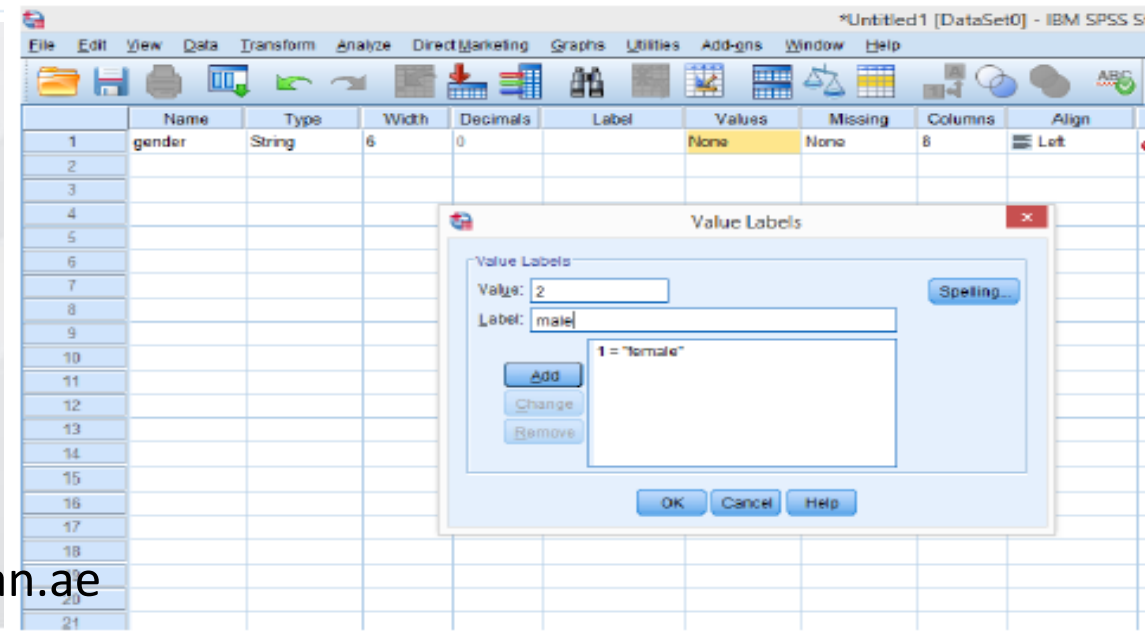
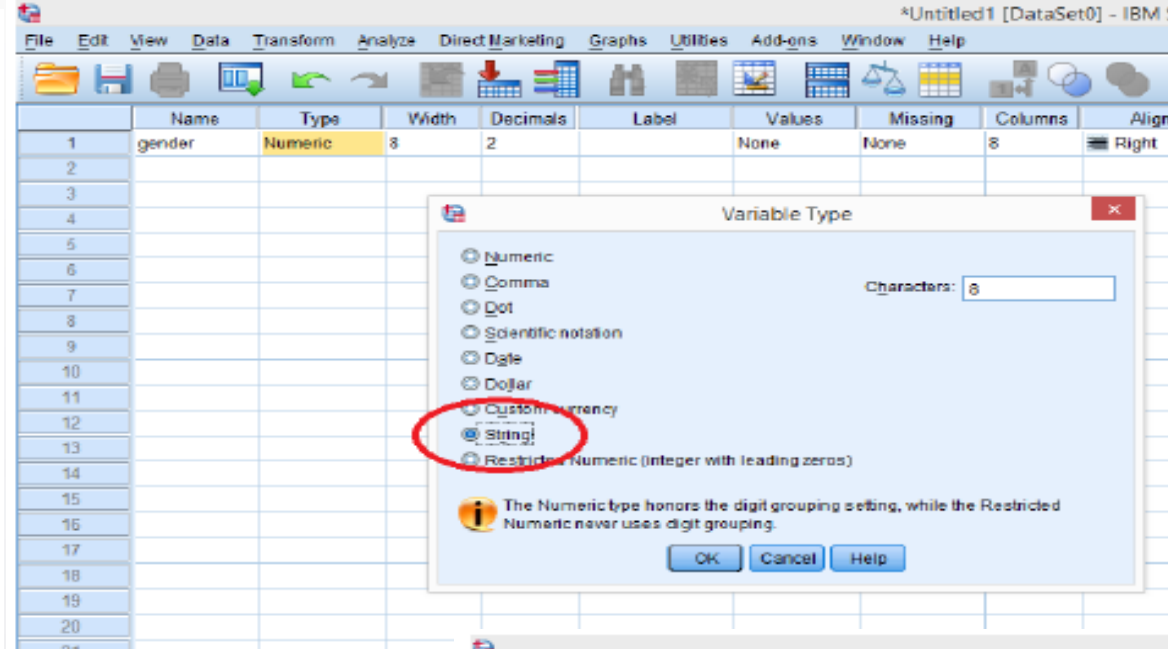
- To perform descriptive analysis on the above data using SPSS program, we need to enter the data there. This can be done by opening a blank sheet of SPSS and choose the variable view.

- The variable view is used to define the variables. Each variable is represented as a row, and various properties of the variable are represented as columns, allowing us to change the properties of existing variables or establish properties for new variables



For the gender:

- Name: gender
- Type: choose 'string' as the gender holds text character.
- Width: can be "6" as the word "female" has 6 letters and "male" is 4 letters only.
- Decimal: There is no decimal for the string.
- Label: You can label it by writing "gender"
- Values: label "female" for value "1" and "male" for value "2" as shown in the picture.
- Missing: to know what to enter if there was an absent data instead of keeping it empty. So, we will write "99".
- Columns: the width of column on the data view
- Align: the Alignment on the data view
- Measures: choose nominal as the gender is nominal and not ordinal.



- Age:
 - Name: Age
 - Type: choose 'numerical' as the age is numbers.
 - Width: can be "2" as the maximum digits we can use it for age is 2.
 - Decimal: put it "0" as we want to use an integer number for the age.
 - Label: You can label it by writing "age"
 - Values: no need to label it.
 - Missing: to know what to enter if there was an absent data instead of keeping it empty. So, we will write "99".
 - Columns: the width of column on the data view
 - Align: the Alignment on the data view
 - Measures: choose scale as the age is different numbers.
 - Role: keep it input, as the age is an input variable
- Enter the BLS and ACLS exams variable the same as we did in age variable and as shown in the picture.

The screenshot shows the SPSS Data Editor window with the 'Variable View' tab selected. The table below represents the data shown in the screenshot:

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure	Role
1	gender	String	6	0	gender	(1, female)	99	8	Left	Nominal	Input
2	age	Numeric	2	0	age	None	99	8	Right	Scale	Input
3	BLS	Numeric	2	0	BLS exam	None	99	8	Right	Scale	Input
4	ACLS	Numeric	2	0	ACLS exam	None	99	8	Right	Scale	Input
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											

- Then, on the data view to enter the data.

*Untitled1 [DataSet0] - IBM SPSS Sta

	gender	age	BLS	ACLS	var	var	var	var	var	var
1	2	25	84	100						
2	2	24	88	92						
3	1	30	84	92						
4	1	25	84	100						
5	1	27	88	84						
6	2	30	92	76						
7	2	30	92	80						
8	1	32	88	84						
9	2	29	100	84						
10	1	31	100	88						
11	1	26	88	88						
12	1	29	84	88						
13	2	29	74	92						
14	2	31	70	88						
15	2	25	82	92						
16	1	27	82	94						
17	2	27	84	96						
18	1	34	84	100						
19	1	33	88	84						
20	1	25	92	84						
21										
22										
23										
24										
25										
26										
27										
28										
29										

1

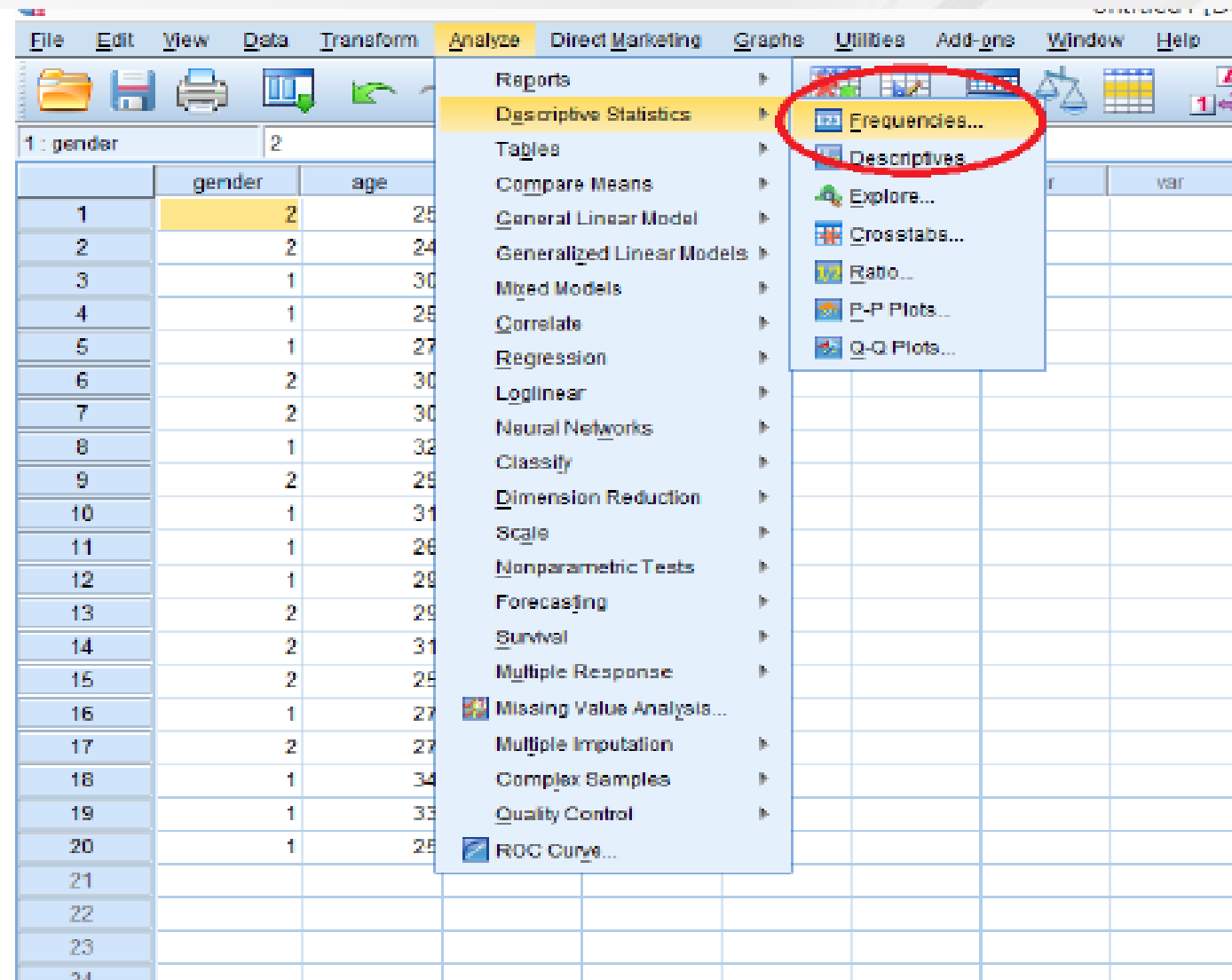
Data View Variable View

Calculating the frequencies, Mean, Median, Mode, Standard Deviation, Variance, Range, and Quartiles:

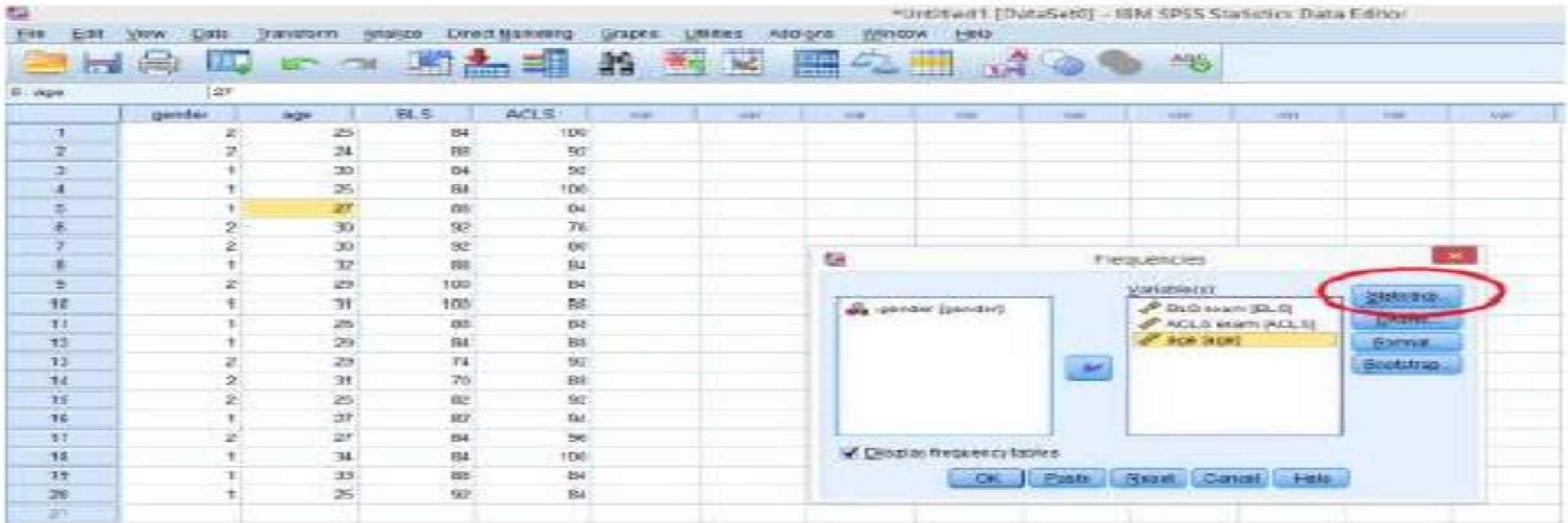
- To perform descriptive analysis:

- We have to know that there are two types of variables, categorical and continuous.
 - Categorical variable we can find n, the percentage, and the bar chart.
 - Continuous we can find n, mean, median, mode, standard deviation, variance, minimum, maximum, range, quartiles, and histogram.
- **Note:** If we try to take the standard deviation for the gender, the output sheet won't give you any reading.
- So, the menu bar is used to click on:

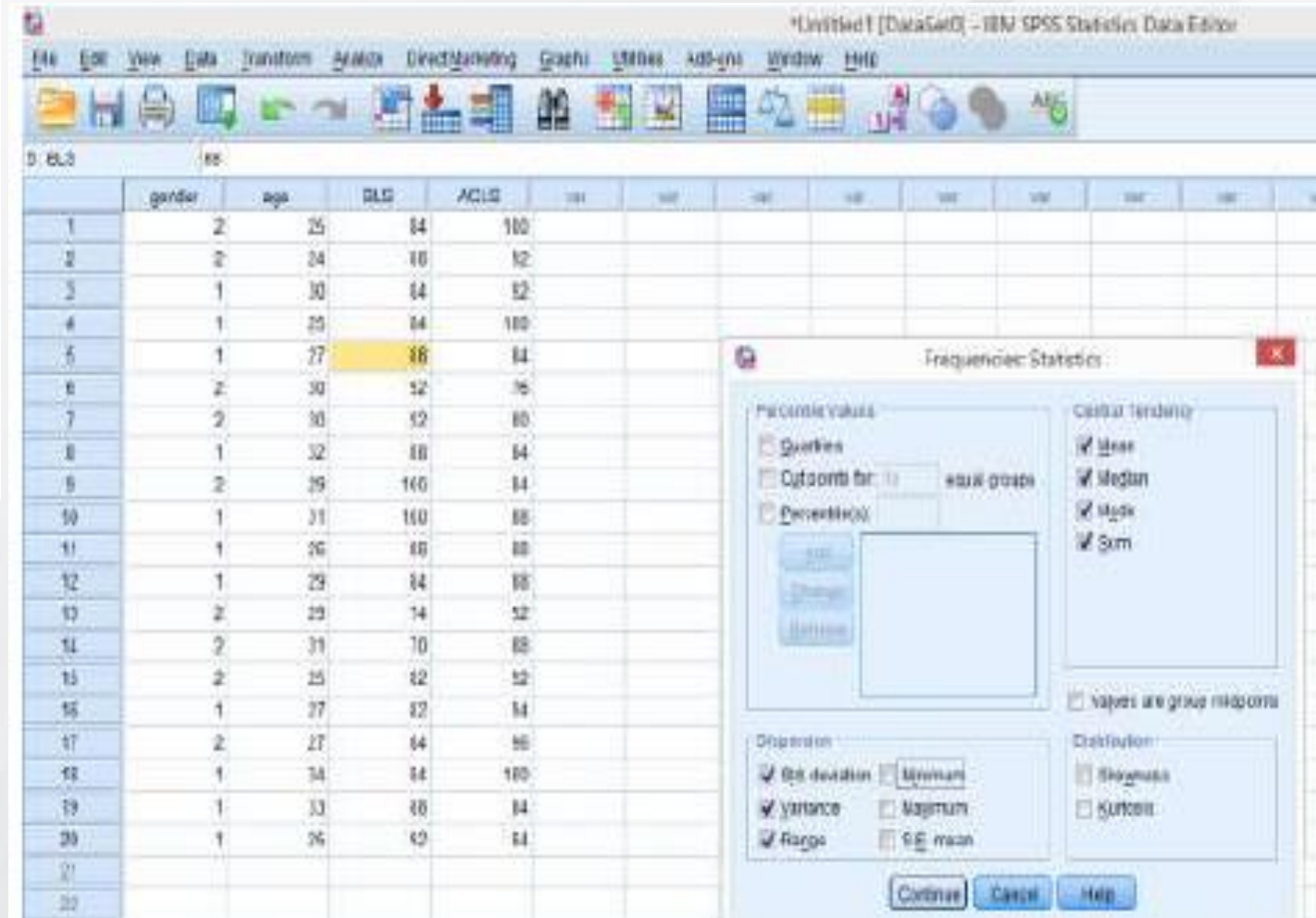
"Analysis" ➡ "descriptive statistics" ➡ "frequencies"



- In the “frequencies” pop-up box, choose the variables which you want to make analysis for them. And move them to the slot labeled “variables”.

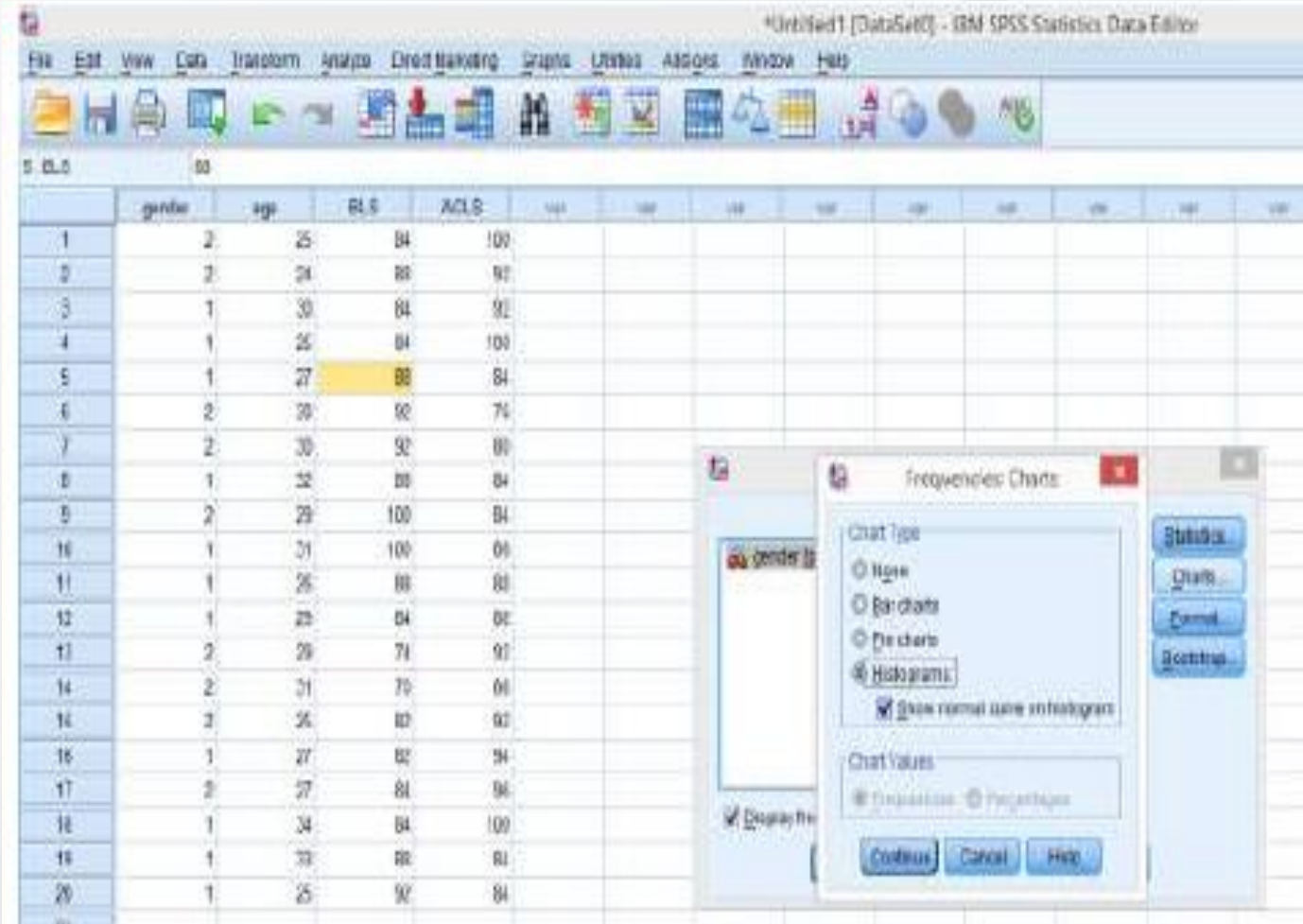


• In the "frequencies: statistics" pop-up box choose which measurements you want to perform. Like central tendency and dispersion. Then click continue button and that will take you to the frequencies pop-up window.



• In the “frequencies: charts” pop-up box select histogram for the ACLS, BLS, and the age then click continue.

- Note: if you select the variable gender you can't get any histogram for that.
- To see the normal curve, you can click on 'show the normal curve on histogram'.



- On the output sheet, we can see the frequency tables and the histograms of the chosen variables.

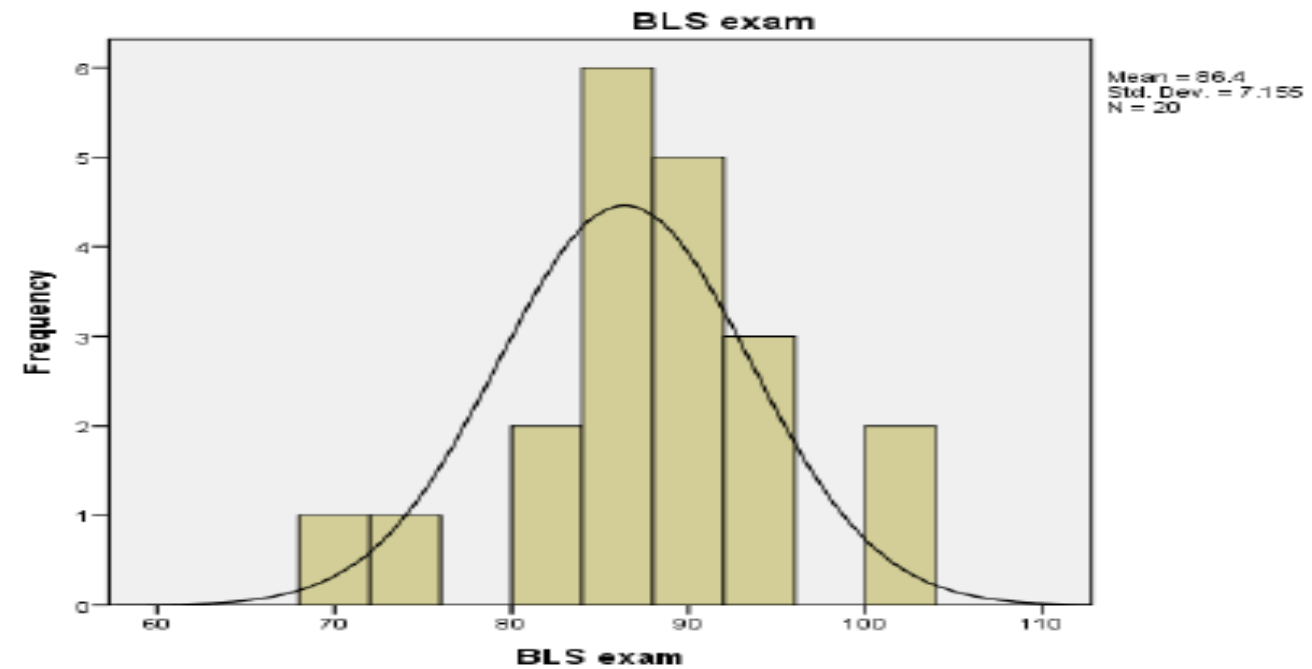
ACLS exam

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	76	1	5.0	5.0	5.0
	80	1	5.0	5.0	10.0
	84	5	25.0	25.0	35.0
	88	4	20.0	20.0	55.0
	92	4	20.0	20.0	75.0
	94	1	5.0	5.0	80.0
	96	1	5.0	5.0	85.0
	100	3	15.0	15.0	100.0
Total		20	100.0	100.0	

age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	24	1	5.0	5.0	5.0
	25	4	20.0	20.0	25.0
	26	1	5.0	5.0	30.0
	27	3	15.0	15.0	45.0
	29	3	15.0	15.0	60.0
	30	3	15.0	15.0	75.0
	31	2	10.0	10.0	85.0
	32	1	5.0	5.0	90.0
	33	1	5.0	5.0	95.0
	34	1	5.0	5.0	100.0
Total		20	100.0	100.0	

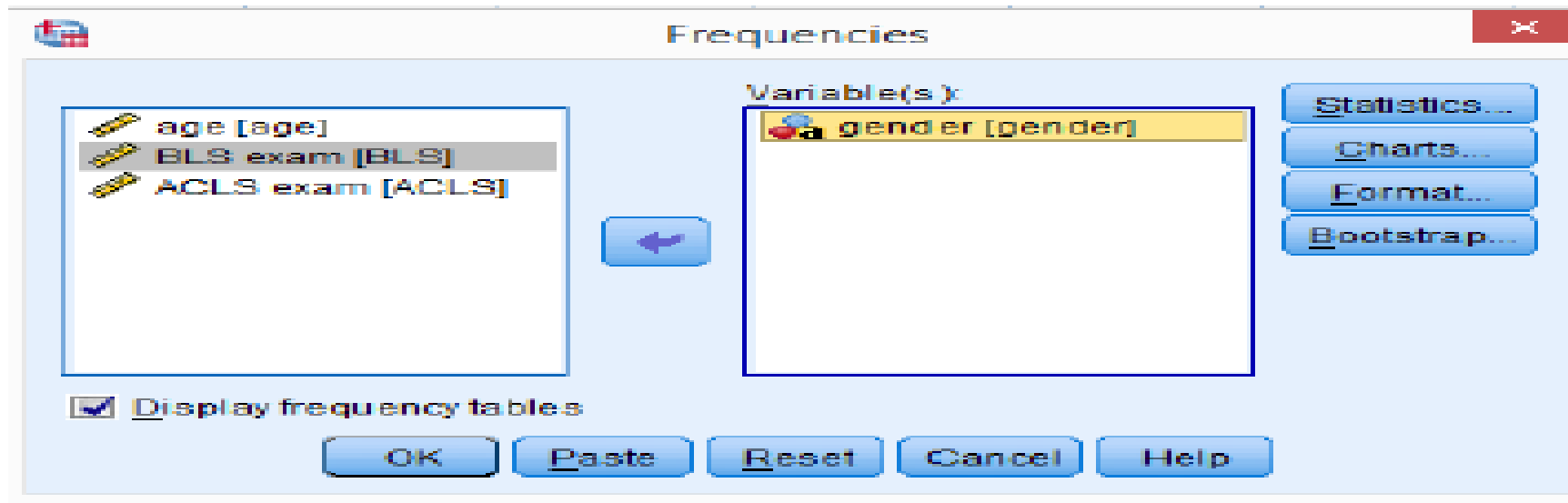
Histogram



- For the bar chart, by doing the same steps.

“Analysis” → “descriptive statistics” → “frequencies”

- Then choose the variable “gender” and click on charts to choose the bar chart.



- Then it will show the frequency table and the bar chart on the output sheet:

gender

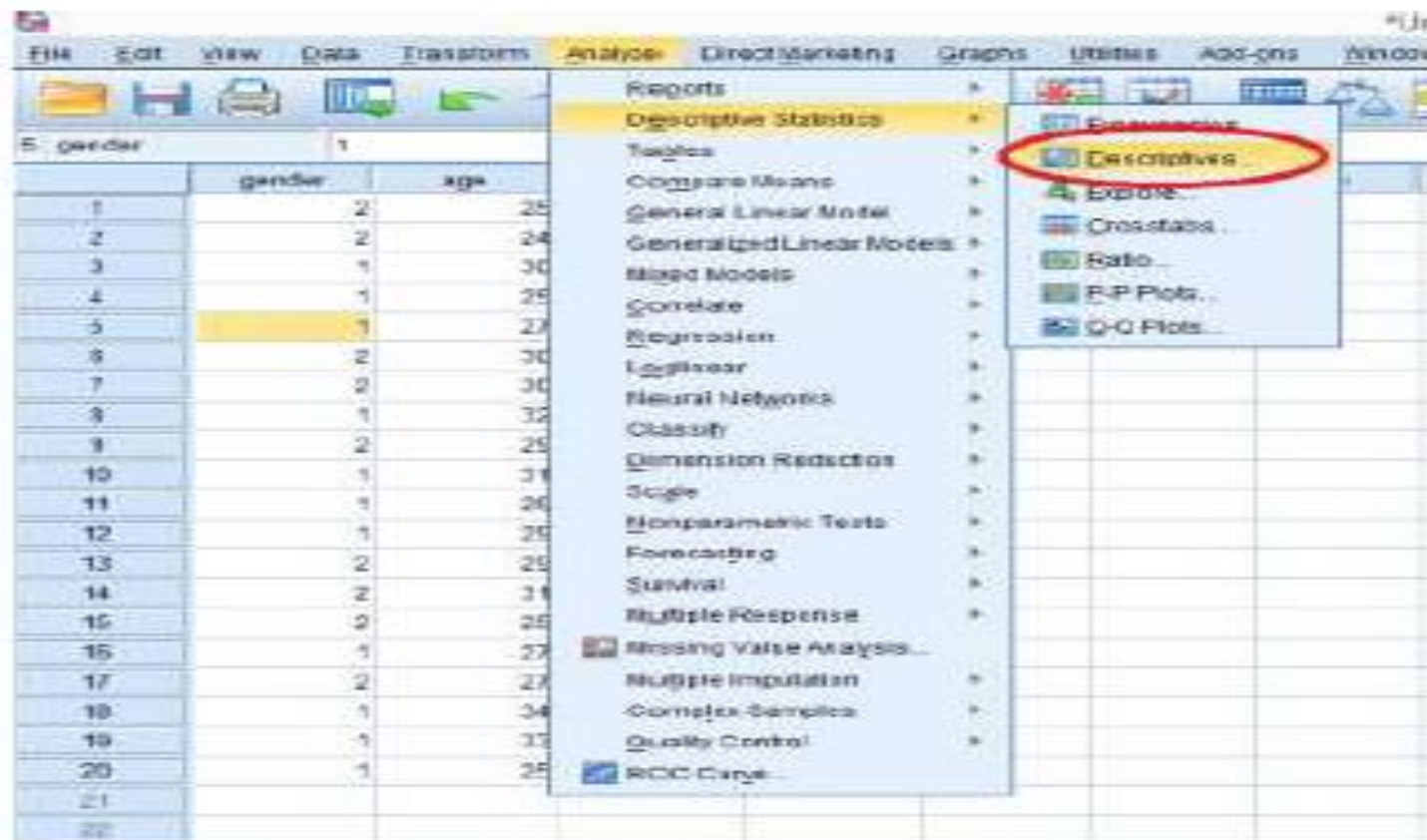
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	female	11	55.0	55.0	55.0
	male	9	45.0	45.0	100.0
	Total	20	100.0	100.0	

gender



2nd way of descriptive analysis

- Another way to perform a descriptive analysis is to click on Analyze > Descriptive statistics > Descriptives. Choose the variables then click on options





- On the output sheet, we can find the results as following

Descriptives

[DataSet0]

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean		Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
age	20	10	24	34	28.45	.659	2.946	8.682	.179	.512	-1.003	.992
BLS exam	20	30	70	100	86.40	1.600	7.155	51.200	-.158	.512	1.100	.992
ACLS exam	20	24	76	100	89.30	1.496	6.689	44.747	.049	.512	-.481	.992
Valid N (listwise)	20											

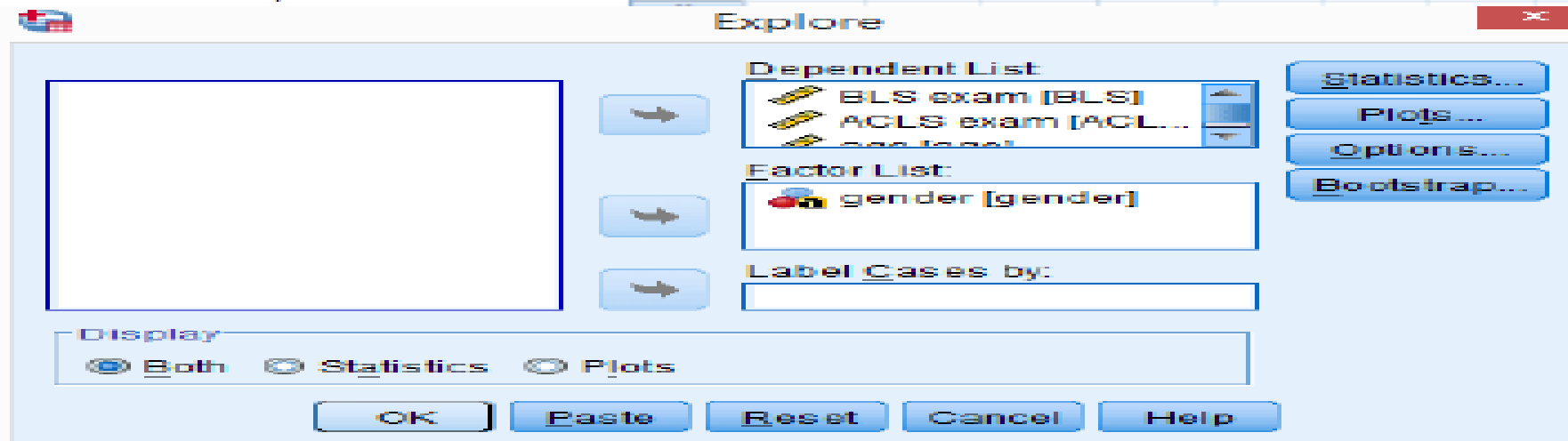
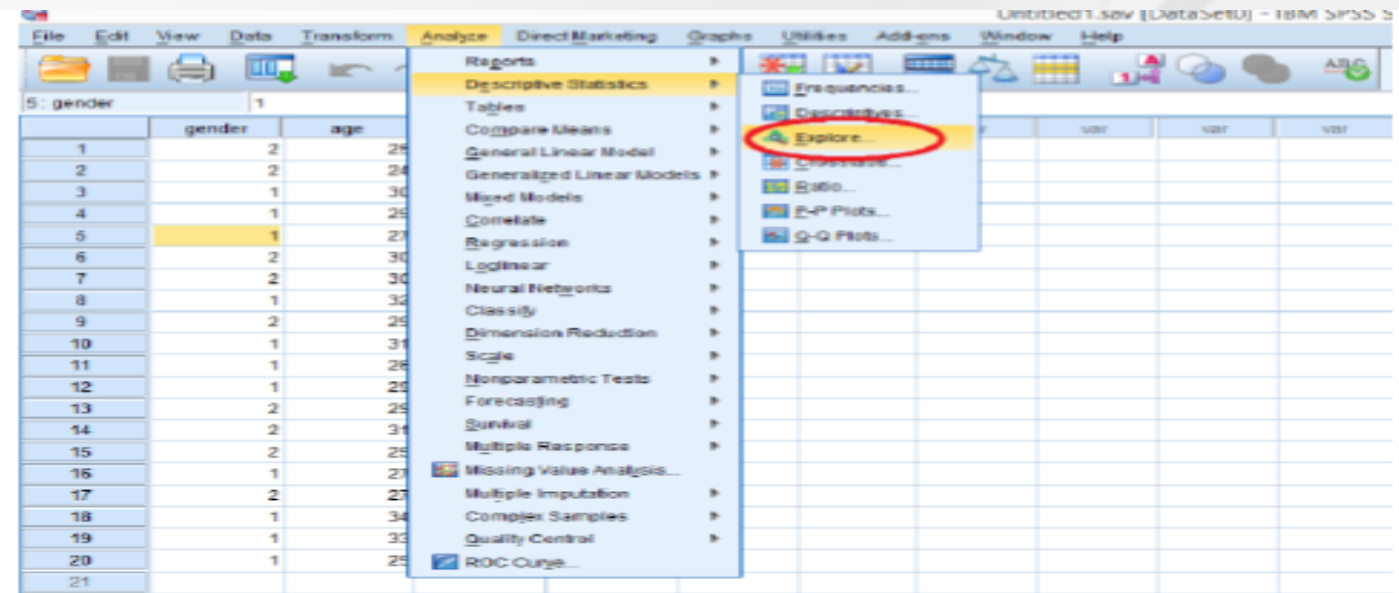
DESCRIPTIVES VARIABLES=age BLS ACLS

/STATISTICS=MEAN STDDEV VARIANCE RANGE MIN MAX SE MEAN KURTOSIS SKEWNESS.

3rd way to find descriptive analysis

- The third way to find descriptive statistics:

- In the menu bar click on "analyze"
- Select "descriptive statistics"
- Select "explore"
- Arrange the variables as dependent and factor.
- click **OK** to have the output



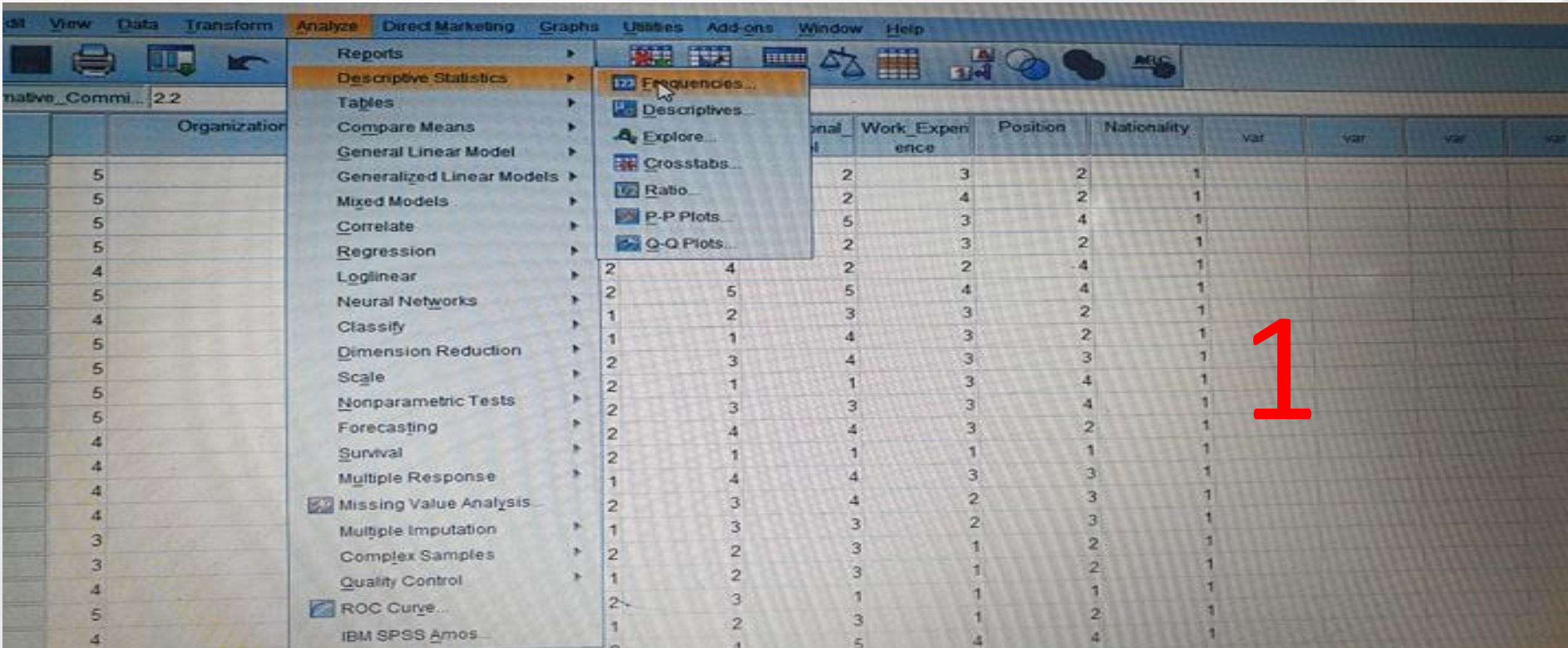
Descriptives

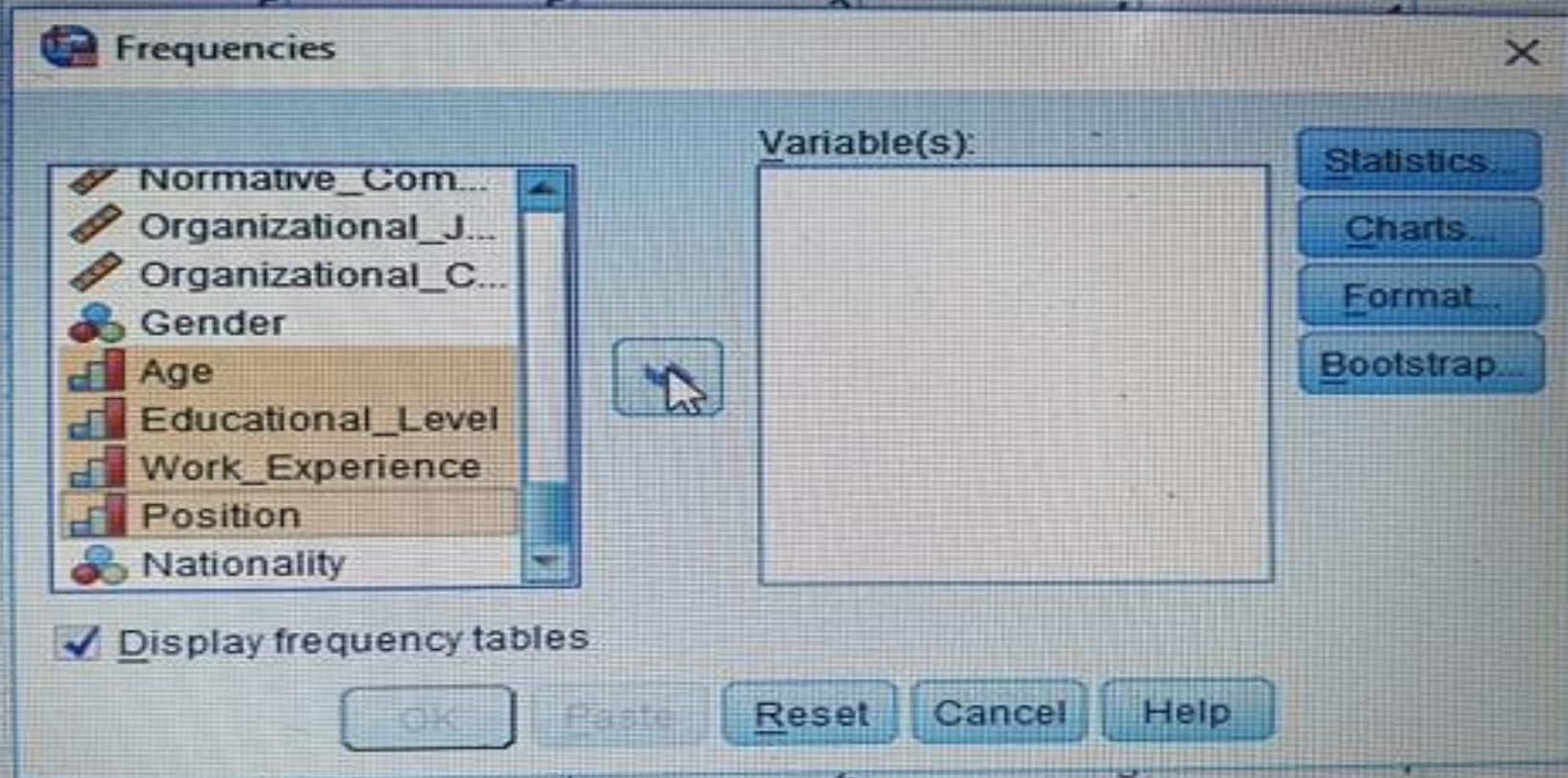
Use Variable Sets

BLS exam	gender			Statistic	Std. Error
BLS exam	female	Mean		87.45	1.528
		95% Confidence Interval for Mean	Lower Bound	84.05	
			Upper Bound	90.86	
		5% Trimmed Mean		87.06	
		Median		88.00	
		Variance		25.673	
		Std. Deviation		5.067	
		Minimum		82	
		Maximum		100	
		Range		18	
		Interquartile Range		4	
		Skewness		1.637	.661
		Kurtosis		3.247	1.279
	male	Mean		85.11	3.093
		95% Confidence Interval for Mean	Lower Bound	77.98	
			Upper Bound	92.24	
		5% Trimmed Mean		85.12	
		Median		84.00	
		Variance		86.111	
		Std. Deviation		9.280	
		Minimum		70	
		Maximum		100	
		Range		30	
		Interquartile Range		14	
		Skewness		-.176-	.717
		Kurtosis		-.193-	1.400

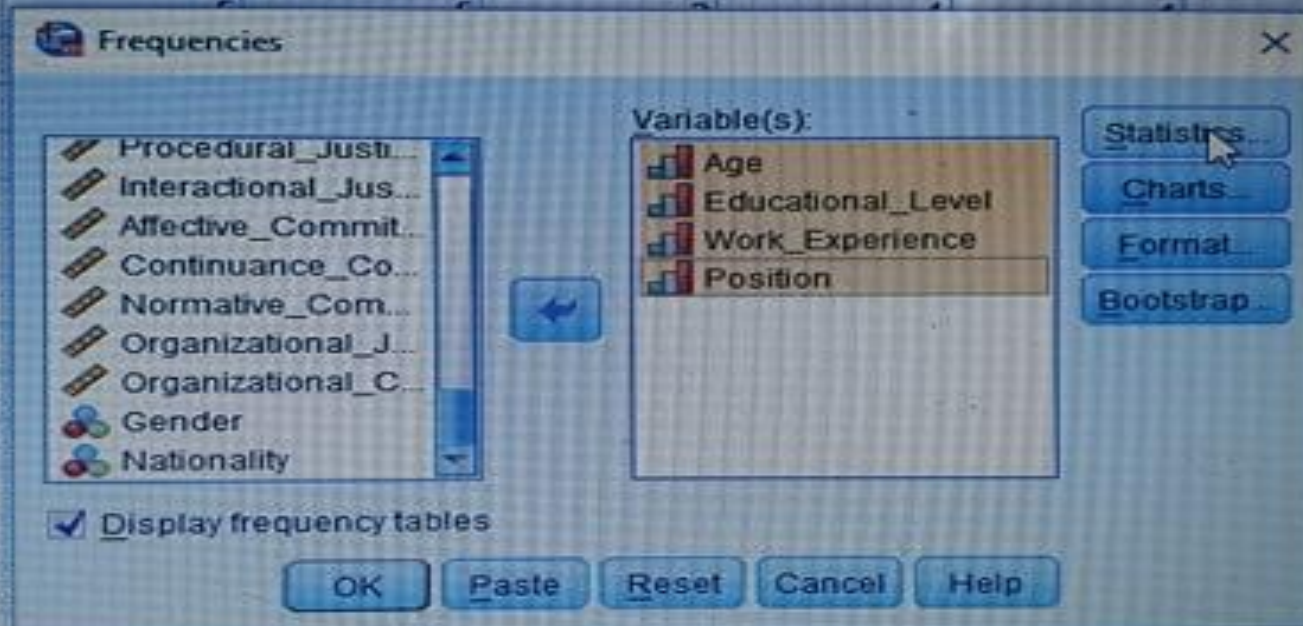
Examples

1st method of descriptive analysis

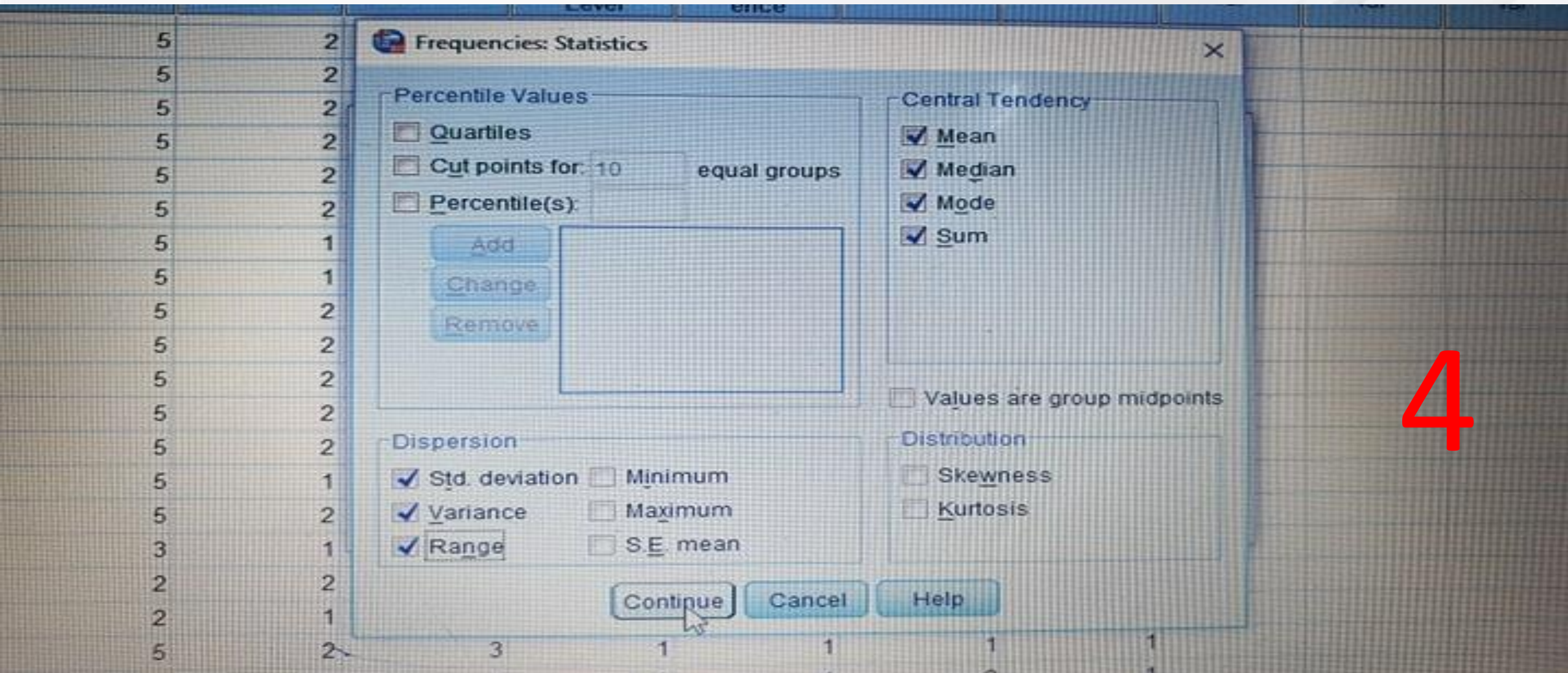


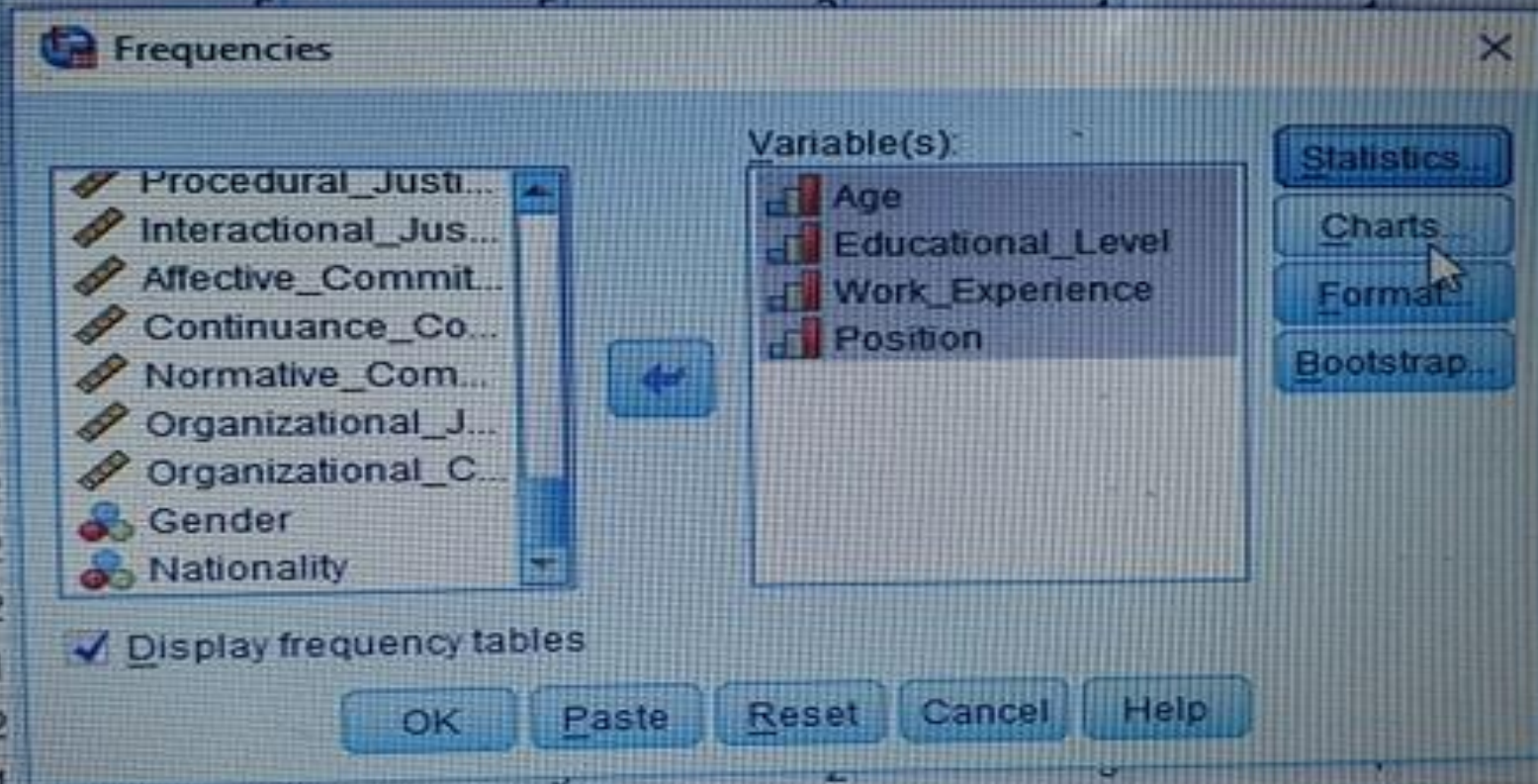


2

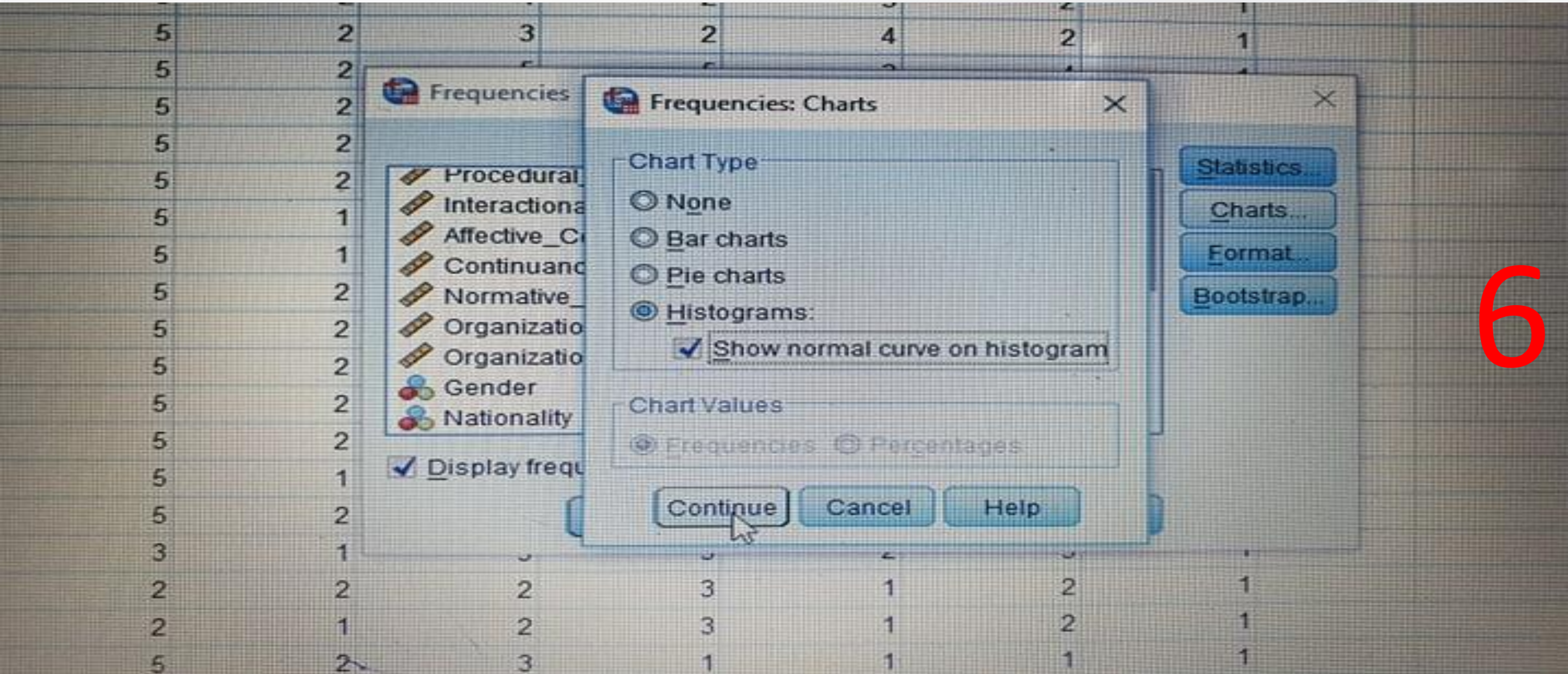


3





5



The screenshot shows the SPSS 'Frequencies' dialog box overlaid on a data grid. The dialog box contains the following elements:

- Variable(s):** A list of variables including Age, Educational_Level, Work_Experience, and Position.
- Display frequency tables:** A checkbox that is checked.
- Buttons:** Statistics..., Charts..., Format..., Bootstrap..., OK, Paste, Reset, Cancel, and Help.

A green arrow points to the 'OK' button. A large red number '7' is visible on the right side of the image.

Frequency Table

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 20	11	7.4	7.4	7.4
	20-29	48	32.4	32.4	39.9
	30-39	54	36.5	36.5	76.4
	40-49	29	19.6	19.6	95.9
	50 above	6	4.1	4.1	100.0
	Total	148	100.0	100.0	

Educational_Level

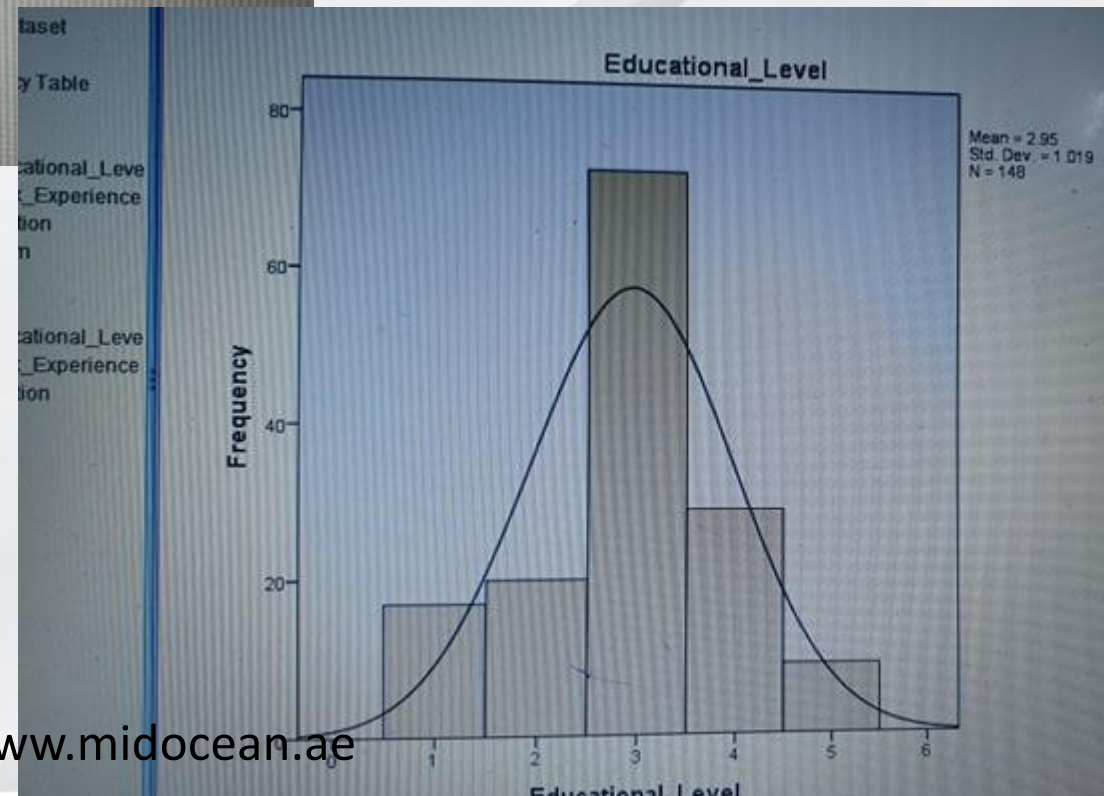
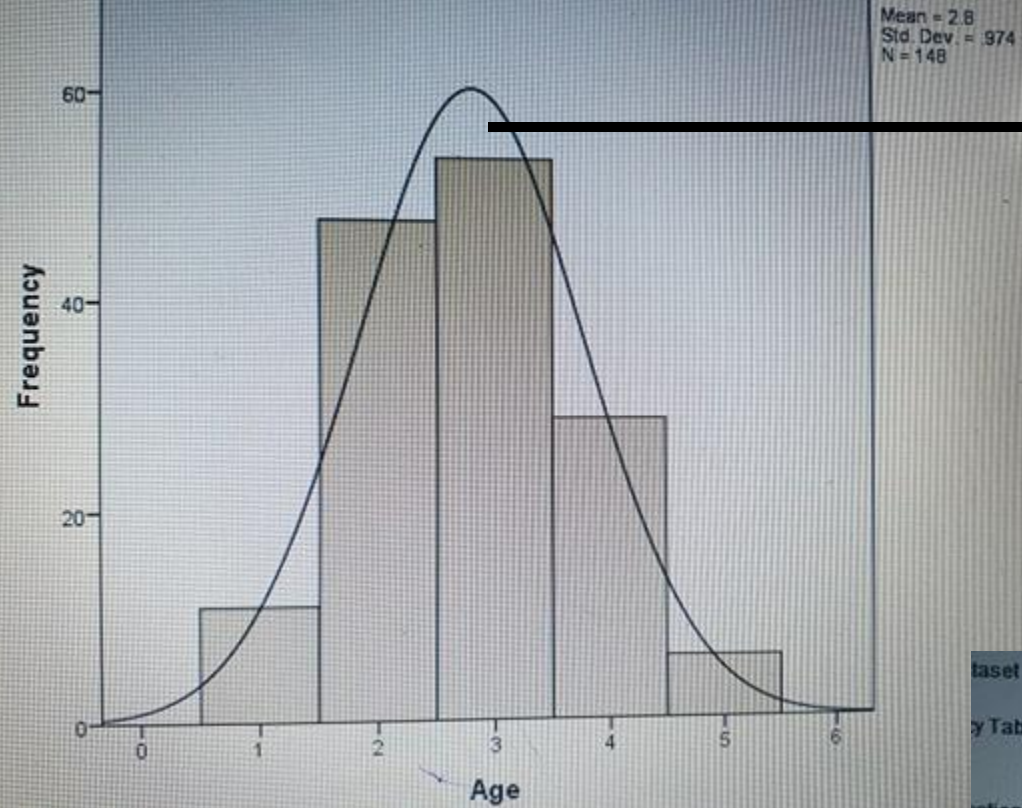
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High School	17	11.5	11.5	11.5
	Diploma	20	13.5	13.5	25.0
	University Degree	73	49.3	49.3	74.3
	Master	29	19.6	19.6	93.9
	Ph.D/DBA	9	6.1	6.1	100.0
	Total	148	100.0	100.0	

Work_Experience

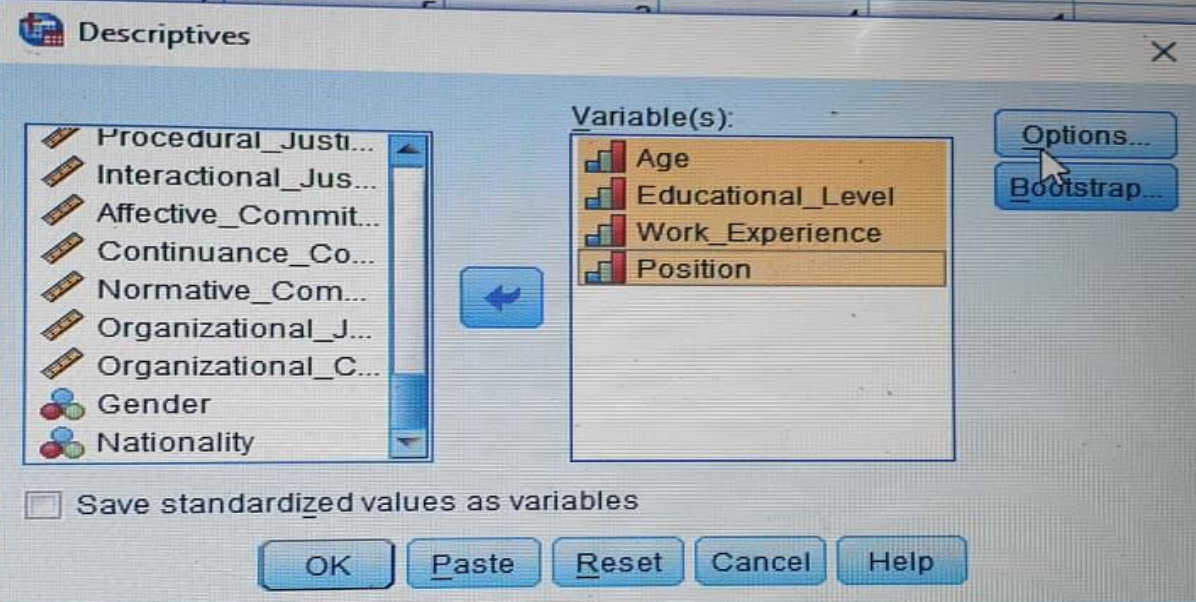
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2-5 years	40	27.0	27.0	27.0
	6-10 years	44	29.7	29.7	56.8
	10-15 years	41	27.7	27.7	84.5
	More than 15 years	23	15.5	15.5	100.0
	Total	148	100.0	100.0	

Position

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Entry level employee	30	20.3	20.3	20.3
	Junior employee	53	35.8	35.8	56.1
	Senior employee	48	32.4	32.4	88.5
	Senior executive employee	17	11.5	11.5	100.0
	Total	148	100.0	100.0	

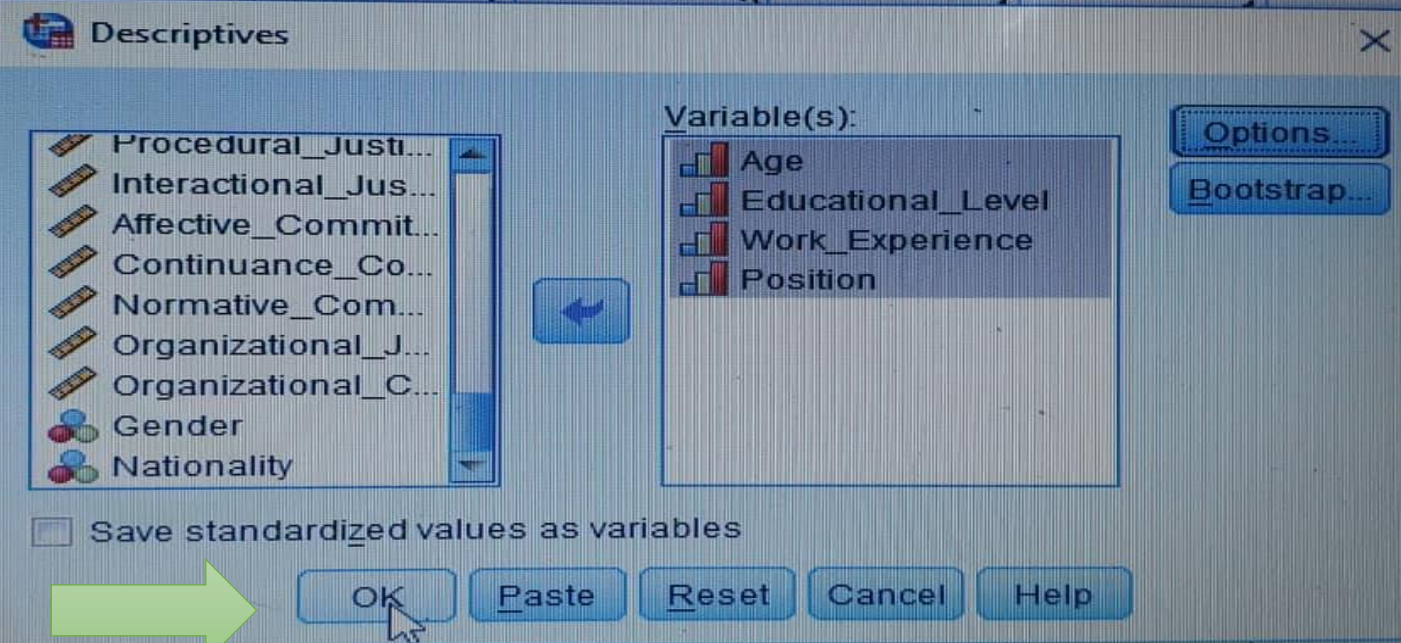


2nd method of descriptive analysis



The image shows a screenshot of the SPSS 'Descriptives: Options' dialog box. In the background, a data grid is visible with columns labeled 'Level', 'ence', 'var', 'var', and 'var'. The grid contains numerical data, with some cells highlighted in blue. The 'Descriptives' dialog box is open, showing a list of variables on the left: DJ1, DJ2, DJ3, DJ4, DJ5, PJ1, PJ2, PJ3, and PJ4. The 'Options' sub-dialog box is also open, showing various statistical options. The 'Mean' checkbox is checked. Under the 'Dispersion' section, 'Std. deviation', 'Variance', 'Range', 'Minimum', 'Maximum', and 'S.E. mean' are all checked. Under the 'Distribution' section, 'Kurtosis' and 'Skewness' are unchecked. Under the 'Display Order' section, 'Variable list' is selected. At the bottom of the 'Options' dialog are 'Continue', 'Cancel', and 'Help' buttons. To the right of the 'Options' dialog, another dialog box is partially visible with 'Options...' and 'Bootstrap...' buttons. A large red number '2' is overlaid on the right side of the image.

Commitment	Gender	Age	Educational Level	Work Experience	Position	Nationality	var	var	var
5	2	4	2	3	2	1			
5	2	3	2	4	2	1			
5	2	5	5	3	4	4			
5	2								
5	2								
5	2								
5	2								
5	1								
5	1								
5	2								
5	2								
5	2								
5	2								
5	2								
5	2								
5	1								
5	2								
3	1								
2	2	2	3	1	2	1			
2	1	2	3	1	2	1			
5	2	3	1	1	1	1			



3

```
DESCRIPTIVES VARIABLES=Age Educational_Level Work_Experience Position
/STATISTICS=MEAN STDDEV VARIANCE RANGE MIN MAX SEMEAN.
```

→ Descriptives

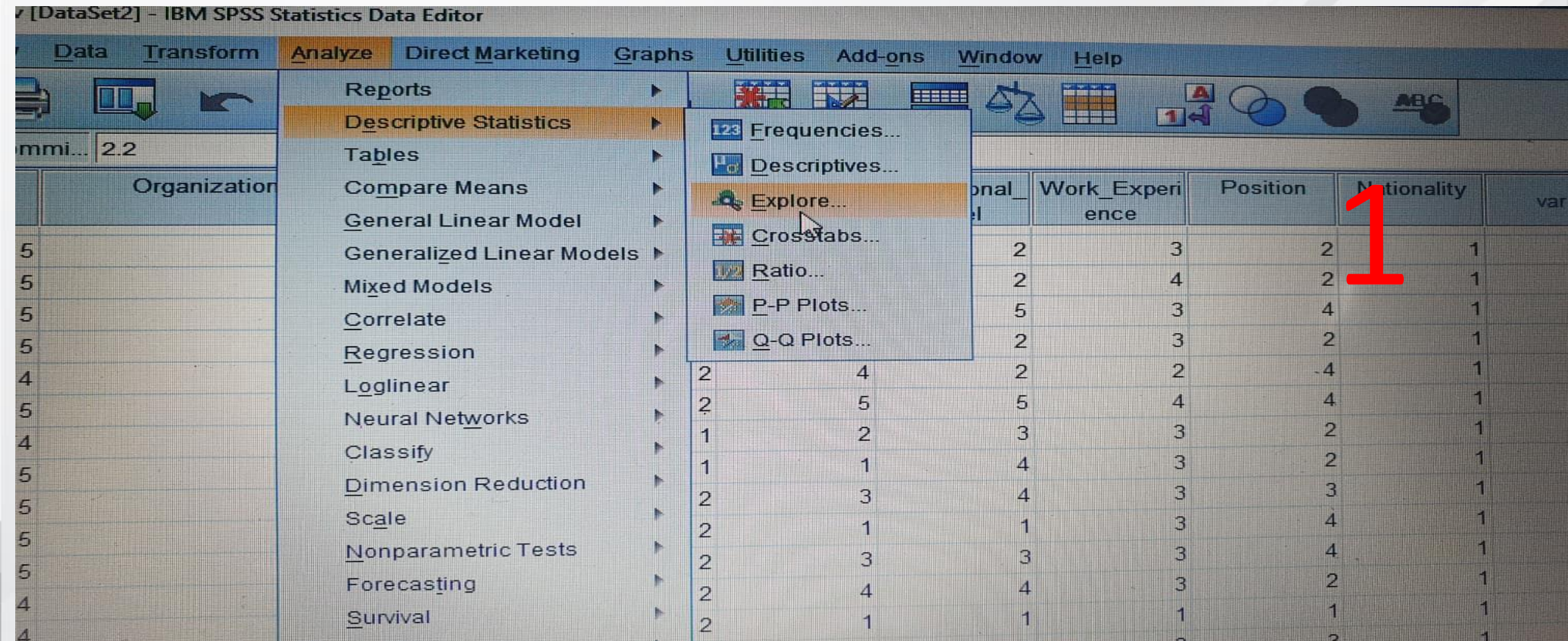
4

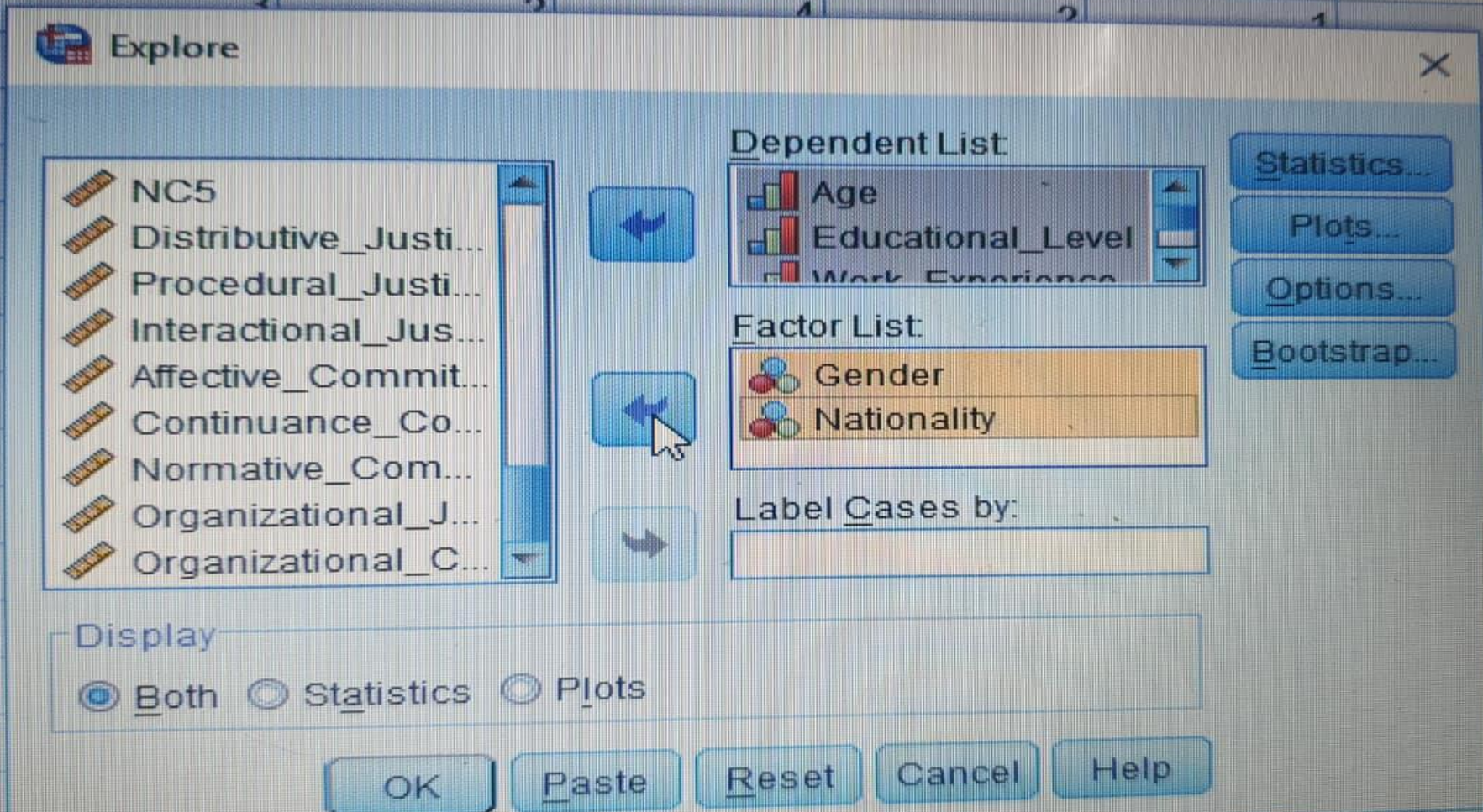
[DataSet2] F:\My Private Course\RM L 8\SPSS DATA .sav

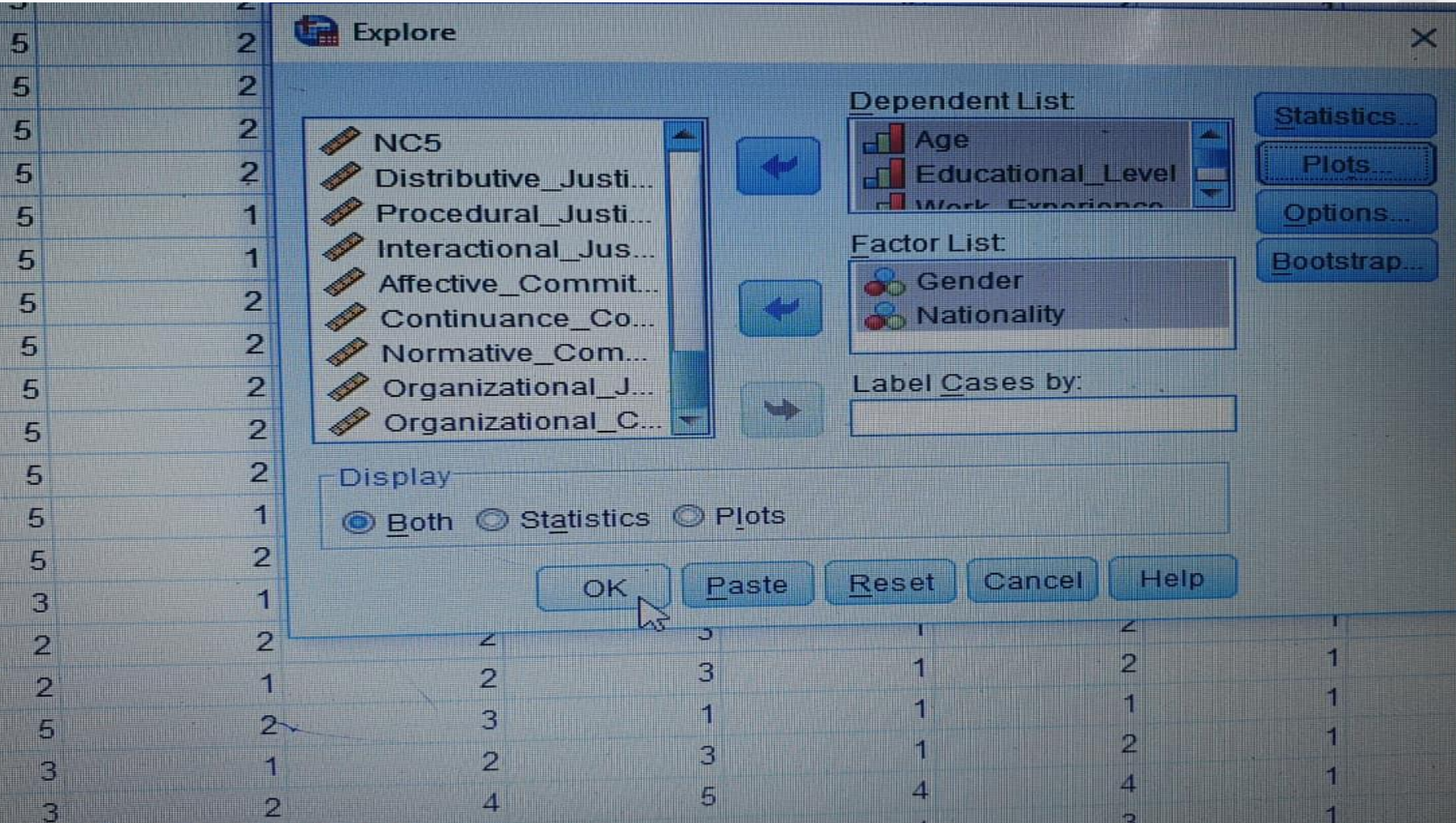
Descriptive Statistics

	N	Range	Minimum	Maximum	Mean		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
Age	148	4	1	5	2.80	.080	.974	.948
Educational_Level	148	4	1	5	2.95	.084	1.019	1.039
Work_Experience	148	3	1	4	2.32	.085	1.037	1.075
Position	148	3	1	4	2.35	.077	.932	.869
Valid N (listwise)	148							

3rd method of descriptive analysis







3

Gender

Age

Gender	Statistic	Std. Error
Male	Mean	2.88
	95% Confidence Interval for Mean	
	Lower Bound	2.67
	Upper Bound	3.10
	5% Trimmed Mean	2.87
	Median	3.00
	Variance	.920
	Std. Deviation	.959
	Minimum	1
	Maximum	5
	Range	4
	Interquartile Range	2
	Skewness	.239
	Kurtosis	-.289
Female	Mean	2.72
	95% Confidence Interval for Mean	
	Lower Bound	2.48
	Upper Bound	2.95
	5% Trimmed Mean	2.71
	Median	3.00
	Variance	.977
	Std. Deviation	.988
	Minimum	1
	Maximum	5
	Range	4
	Interquartile Range	1
		.143
		.285

Notes

Active Dataset

Gender

Age

Educational_Level

Work_Experience

Nationality

Nationality	Statistic	Std. Error
UAE National	Mean	2.80
	95% Confidence Interval for Mean	
	Lower Bound	2.65
	Upper Bound	2.96
	5% Trimmed Mean	2.79
	Median	3.00
	Variance	.948
	Std. Deviation	.974
	Minimum	1
	Maximum	5
	Range	4
	Interquartile Range	1
	Skewness	.179
	Kurtosis	-.415
UAE National	Mean	2.95
	95% Confidence Interval for Mean	
	Lower Bound	2.79
	Upper Bound	3.12
	5% Trimmed Mean	2.95
	Median	3.00
	Variance	1.039
	Std. Deviation	1.019
	Minimum	1
	Maximum	5
	Range	4
	Interquartile Range	2
	Skewness	-.217
	Kurtosis	-.062
UAE National	Mean	2.32
	95% Confidence Interval for Mean	
	Lower Bound	2.15
	Upper Bound	2.49

4th method of descriptive analysis

SS DATA .sav [DataSet2] - IBM SPSS Statistics Data Editor

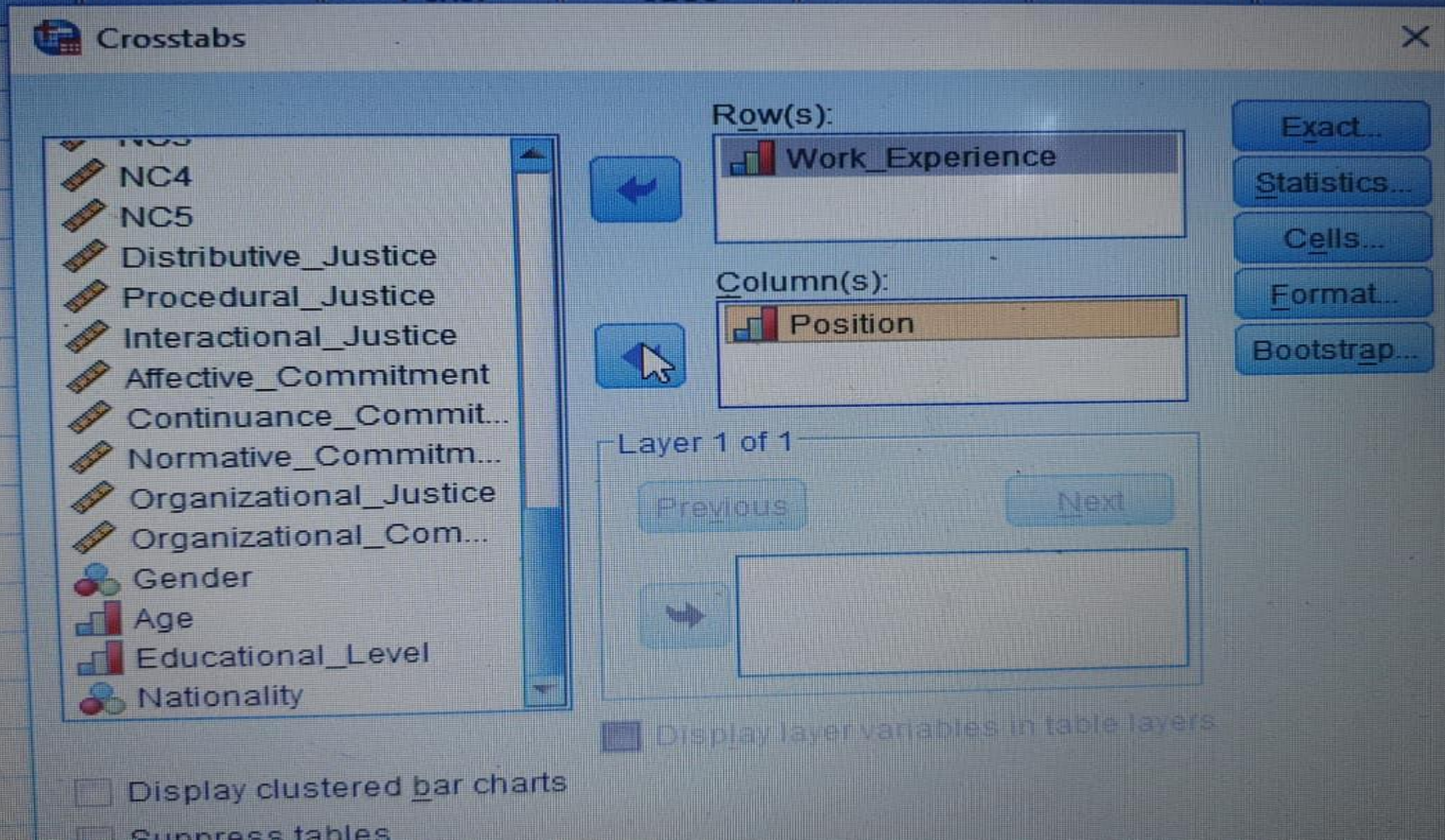
Edit View Data Transform Analyze Direct Marketing Graphs Utilities Add-ons Window Help

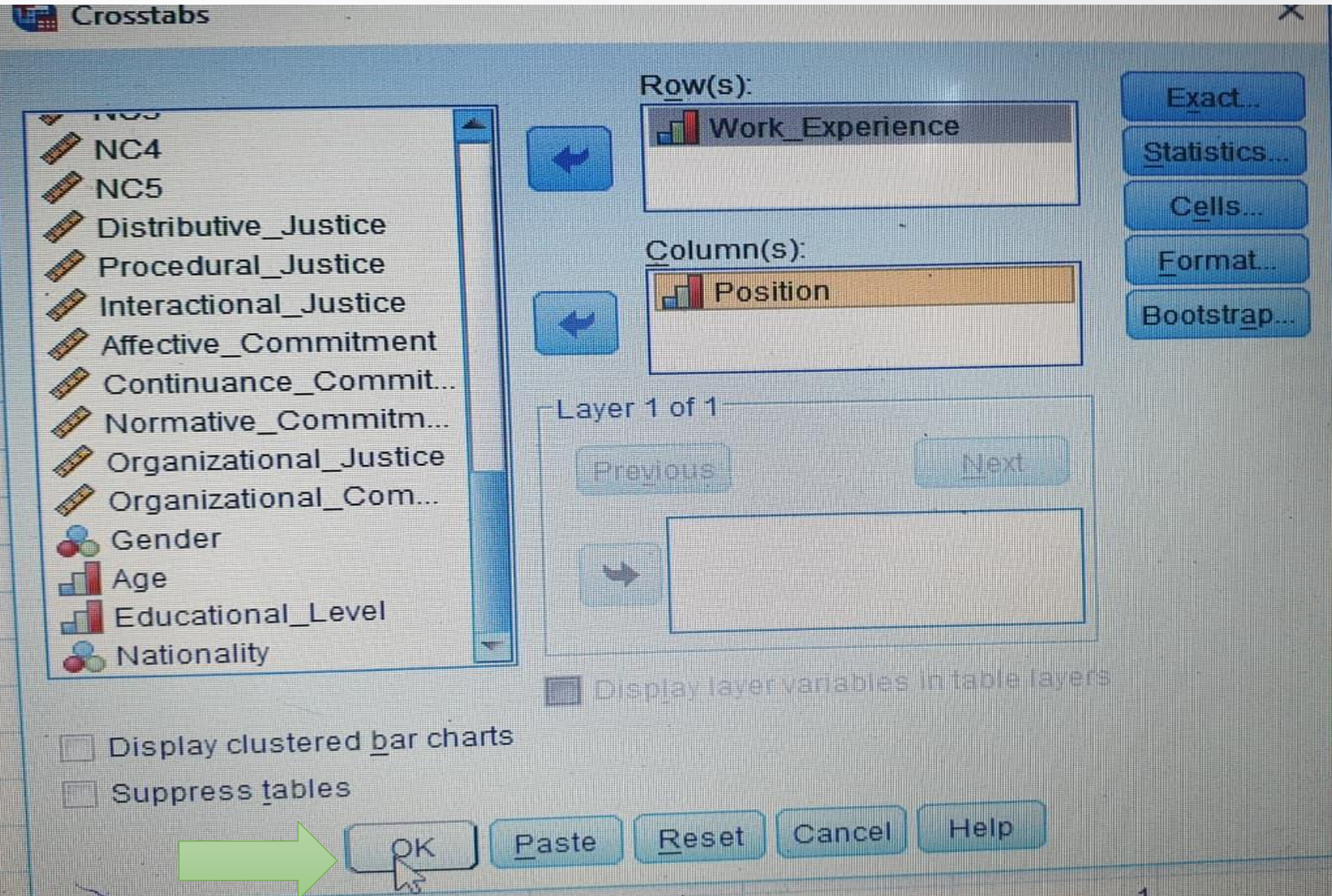
Descriptive Statistics

- Frequencies...
- Descriptives...
- Explore...
- Crosstabs...
- Ratio...
- P-P Plots...
- Q-Q Plots...

	Organization	Work_Experience	Position	Nationality
5		3	2	1
5		4	2	1
5		3	4	1
5		3	2	1
4		2	4	1
5		4	4	1
4		3	2	1
5		3	3	1
5		3	4	1
5		3	3	1
4		3	2	1
4		1	1	1
4		3	3	1
4		2	1	1
4		4	3	1
4		2	3	1

1





3

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Work_Experience * Position	148	100.0%	0	0.0%	148	100.0%

4

Work_Experience * Position Crosstabulation

Count

		Position				Total
		Entry level employee	Junior employee	Senior employee	Senior executive employee	
Work_Experience	2-5 years	20	18	2	0	40
	6-10 years	9	19	13	3	44
	10-15 years	0	14	21	6	41
	More than 15 years	1	2	12	8	23
Total		30	53	48	17	148



Thank You