

Introduction to SPSS

November 13, 2009
2:30-4:00 pm
112A Stright Hall

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Objectives

This workshop is designed for users who wish to enter and analyze their survey data in SPSS.

After this workshop, you should:

- 1.) Be more familiar with SPSS
- 2.) Know how to code your data in SPSS
- 3.) Be able to verify your data
- 4.) Understand various ways to clean up your data.
- 5.) Know how to generate descriptive statistics of your data
- 6.) Be able to create graphs and charts of your data

Supporting Materials (See Appendix A)

The Attitudes Toward Research Scale (ATRS)

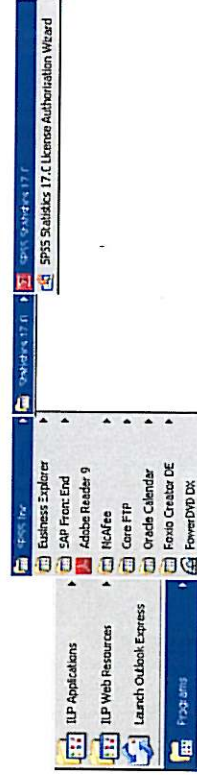
- developed by Elena C. Papanastasiou.
- Likert-type scale containing 31 statements covering aspects of educational research
- The items form five subscales:
 - (a) Usefulness of research for the Profession
 - (b) Research Anxiety
 - (c) Positive Attitudes Toward Research
 - (d) Relevance of Research to Life
 - (e) Perceived Difficulty of Research

During Summer 2008, the ARL wrote a StudentVoice survey that was randomly sent to 600 IUP graduate students.

- Asked for demographic information (age, race, gender, program, degree, etc)
- Asked the students to complete the ATRS
- 57 students responded
- See Appendix A for a copy of the survey

First Step: Becoming Familiar with SPSS Finding SPSS on your computer

1. In Windows: Click on the “Start” button.
2. Scroll up to “All Programs”
3. Select “SPSS Inc. ”
4. Select “SPSS 17.0”
5. Select “SPSS 17.0”



First Step: Becoming Familiar with SPSS Things to Look For

- Open up the data file called “AttitudesUnedited.sav”.
- Notice that there are two tabs at the bottom-left corner of the SPSS data editor: “Data View” and “Variable View”.
- Notice also that SPSS opened another window called “Output”.

Second Step: Coding Your Data

- At the bottom of the screen, click “Variable View”.
- This contains 10 attributes for each of the 64 variables in our dataset.
- Seven of these attributes are important for us.
 - 1.) Variable name
 - 2.) Variable type
 - 3.) Decimals
 - 4.) Variable label
 - 5.) Values of the variable
 - 6.) Missing Values
 - 7.) Measure of variable (AKA Type of variable, such as scale, nominal, etc).

Practice

Let's practice modifying the attributes for Variable Q1:

- 1) Change the variable name from “Q1” to “Q01”.
- 2) Change the type to “**Numeric**”.
- 3) Change the decimals from 2 to 0.
- 4) Enter a relevant label--a good one would be “**Q01 gender**”.
- 5) Add value labels (see the next slide).
- 6) There are no missing values, so no changes are needed here.
- 7) Change the Measure from “scale” to “**nominal**”.

	1)	2)	3)	4)	5)	6)	7)		
	Name	Type	Width	Decimals	Label	Missing	Columns	Align	Measure
1	Respondentid	Numeric	1	0	Respondentid	None	0	Right	Scale
2	Q1	Date	8	2	None	None	5	Left	Scale
3	Q02	Numeric	1	0	Q02 age	None	6	Right	Scale
4	Q03	Numeric	1	0	Q03 credits	None	9	Right	Scale
5	Q04	Numeric	1	0	Q04 race (1..Black)...	None	9	Right	Nominal

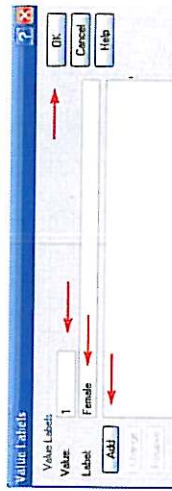
How to Handle Value Labels

Gender has two values.

Under values, click on "None" and a box with three ellipses should appear. Click on that box and a window called "Value Labels" should appear.

In our survey, a value of 1 indicates female and a value of 2 indicates male.

In the box next to "Value", type in 1. In the box next to "Label", type in female. Then click "Add". It should appear in the large text box. Then, do the same for the male respondents (labeled 2). When you are finished click "OK".

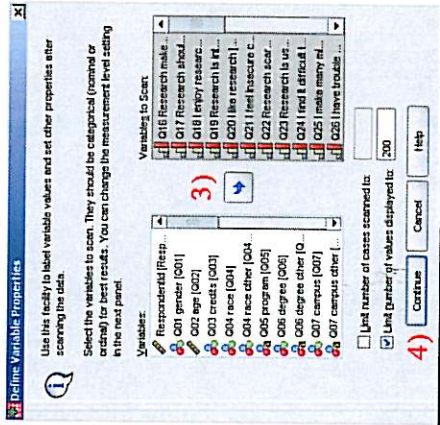


Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1 Respondent	Numeric	1	0	Respondent	None		8	Right	Scale
2 Q01	Numeric	8	0	(001) gender	(1, female)...	None	14	Right	Nominal

3.) Move the variables you want to check from the box on the left to the box on the right, by highlighting them and clicking on the arrow between the boxes.

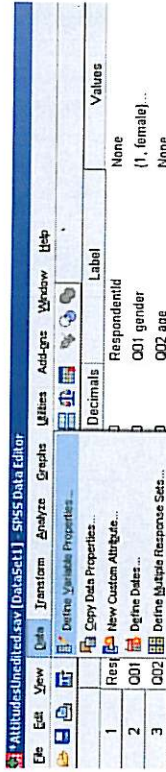
*For practice, move all variables from Q16 to Q46.

4.) Click on the "Continue" button.

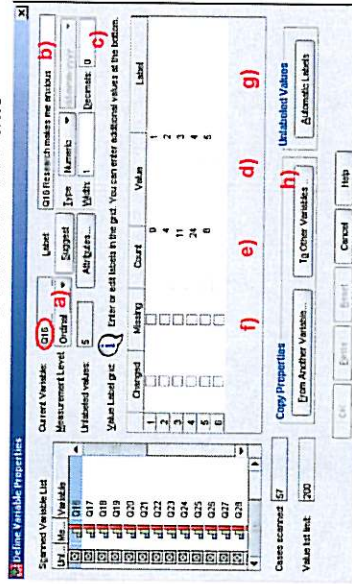


Step 3: Verifying your data

- 1) In SPSS: Select the "Data" pull-down menu.
- 2) Select the "Define Variable Properties..." option.



You will see a window like this

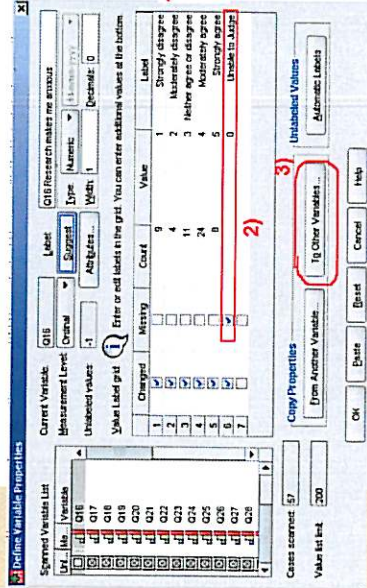


Notice what you can check for each selected variable:

- a.) The type of variable (scale, nominal, ordinal)
- b.) The label of the variable.
- c.) The number of digits after the decimal point.
- d.) The unique values for the selected variable.
- e.) The number of times that each value in d occurs (frequencies).
- f.) Whether or not the value represent missing values, like "Unable to judge."
- g.) The label.
- h.) You can also copy value labels and properties to other variables.

Now for Practice

- 1) Add the labels from this question (strongly agree, etc).
- 2) Add a value for 0 as unable to judge (and be sure to check the missing value box).
- 3) To copy the properties to items Q17-Q46, (because all of the questions are the same Likert-scale), click on the "To Other Variables" button...

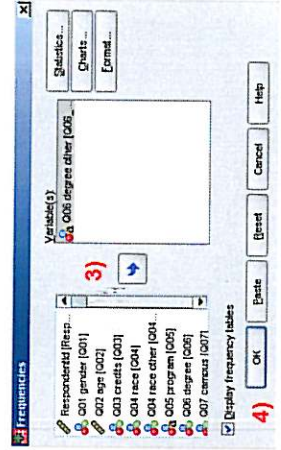


Q16 Research makes me ambxious.
 Strongly agree [Code = 5]
 Moderately agree [Code = 4]
 Neither agree nor disagree [Code = 3]
 Strongly disagree [Code = 2]
 Unable to judge [Code = 0]

Step 4: Cleaning Up Your Data Dealing with "Other" Responses

It is always a good idea to see what responses users gave for "Other". See Q06 for example.

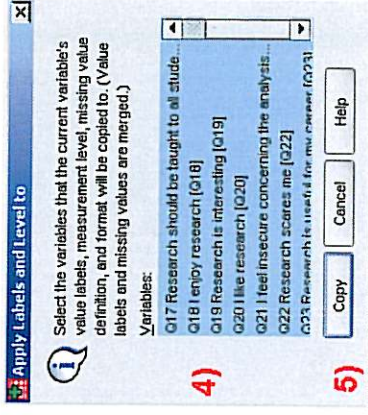
- Click on the "Analyze" pull-down menu.
- Select the "Descriptive Statistics..." options.
- Move "Q06 degree other" to the "Variable(s):" box.
- Click on the "OK" button.



4.) Then highlight variables Q17-Q46

5.) Click on the "Copy" button.

6.) When SPSS sends you back to the previous menu, click on the "OK" button.



Q06 degree other

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
	47	82.5	82.5	82.5
D.Ed	1	1.8	1.8	84.2
DEd	1	1.8	1.8	86.0
DEd	1	1.8	1.8	87.7
master's certificate	1	1.8	1.8	89.5
Psy.D	1	1.8	1.8	91.2
Psy.D	1	1.8	1.8	93.0
Psy.D	1	1.8	1.8	94.7
Total	57	100.0	100.0	100.0

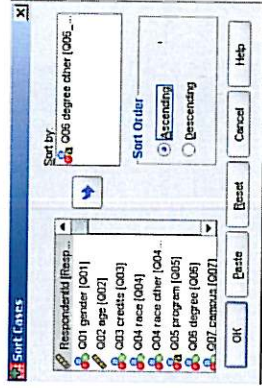
We need to change the codes for Q06 degree for the 10 "other" respondents.

We will change the PhD (Code 4) to Doctoral Degree to include the D.Ed. and Psy.D. responses.

Q6 What degree are you pursuing?
 Certificate Program [Code = 1]
 Master's Degree With Thesis [Code = 2]
 Master's Degree Without Thesis [Code = 3]
 PhD [Code = 4]
 Other (please specify) [Code = 5] [TextBox]

The easiest way to do this is to sort the cases by **Q06 degree other**.

1. From the “Data” pull-down menu, select the “Sort Cases...” option.
2. Choose the “Q06 degree other” variable.
3. Click on “OK” button.



Step 4: Cleaning Up Your Data Recoding Variables

For Practice: we will be recoding Q04 into new binary (2 levels) variable Q04R because there are very few respondents who are not White/Caucasian

1. Select the “Transform” pull-down menu.
2. Select the “Recode into Different Variables” option.



At the bottom of the dataset in “Data View”, you see:

Q06	Q06_other
3	
4	
<hr/>	
5 D Ed	
5 DE d	
5 DED	
<hr/>	
5 master's certificate	
5 Psy. D	
5 Psy.D.	
5 Psy.D.	
5 PsyD	
5 PsyD	
5 PsyD	

Change code for Q06 to:

4

1

4

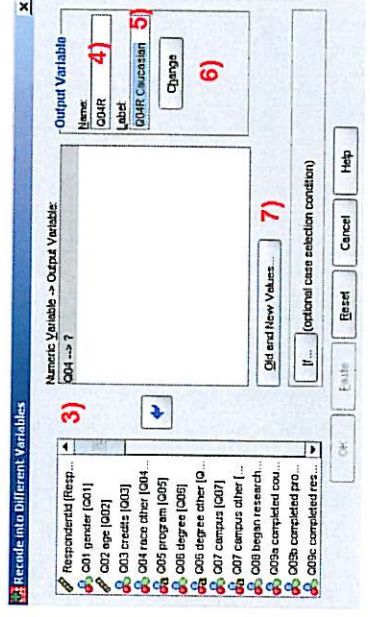
Change the values for Q06 and change the value label of 4 from PhD. to Doctoral Degree for the new value.

- 3.
- 4.
- 5.
- 6.
- 7.

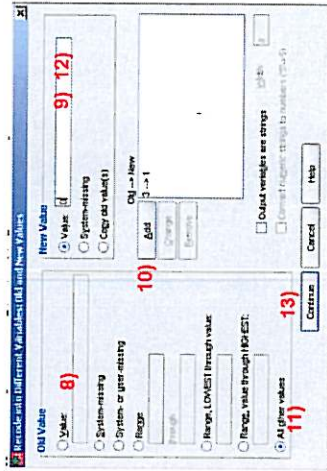
Move the variable to the “Numeric Variable --> Output Variable:” box.
Type in the new variable name in the “Name” box. We will use Q04R.
Type in a variable label for Q04R in the “Label” box, such as race recoded or Q04R Caucasian.

Click on the “Change” button.

Click on the “Old and New Values...” button.



8. Put in the coded value (3) for "Caucasian" in the "Old Value" box
9. Put 1 in the "New Value" box.
10. Then click on the "Add" button. You will see in the text box that anyone who initially had a 3, will now be assigned a 1.
11. Select the "All other values" option.
12. Type in 0 in the "New Value" box and then click on the "Add" button. Again, you should see this in the text box.
13. Click on the "Continue" button.
14. When SPSS sends you back to the previous screen, click on the "OK" button.

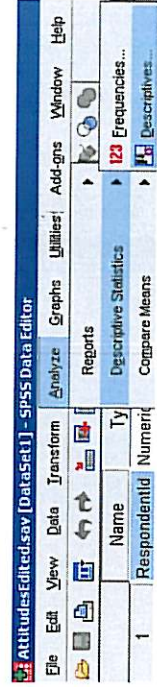


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Step 5: Generating Descriptive Statistics Summary Statistics for Scale Variables

We will look at summary statistics for Q02 Age.

1. Select the "Analyze" pull-down menu.
2. Select the "Descriptive Statistics" option.
3. Select the "Descriptives..." option.



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Now go back and modify the variable attributes for your new variable using "Define Variable Properties..."

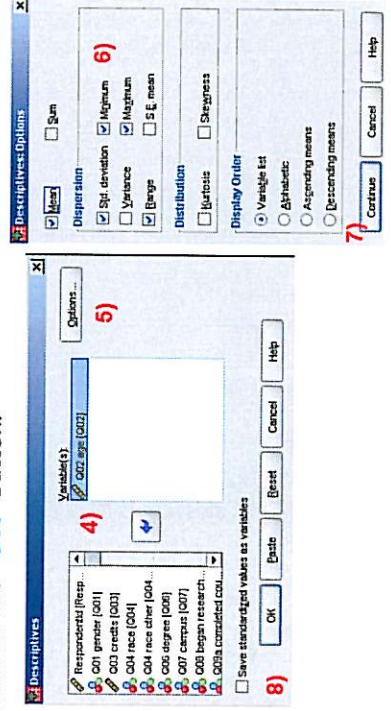


Now exit SPSS, saving any files to your H: drive and open the file called

Attitudes_edited.sav

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4. Move "Q02 age" to the "Variable(s)" box.
5. Click on the "Options..." button.
6. Select the desired statistics: mean, min, max, range, and standard deviation are typically used.
7. Click on the "Continue" button.
8. Click on the "OK" button.



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SPSS Output for Descriptives for Scale Variables

```
DESCRIPTIVES
  VARIABLES=Q02 /SAVE
  /STATISTICS=MEAN STDDEV RANGE MIN MAX .
```

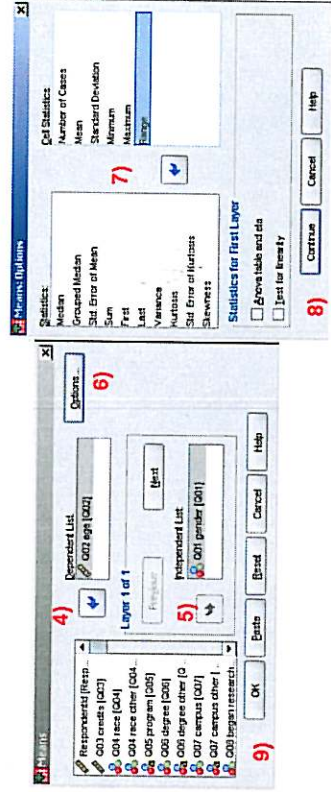
SPSS recorded code (syntax) for your request to do summary statistics.

Descriptives

[DataSet2] Q:\training\July 2008\research attitudes.sav

Descriptive Statistics						
	N	Range	Minimum	Maximum	Mean	Std. Deviation
Q02 age	57	40	22	62	33.51	11.380
Valid N (listwise)	57					

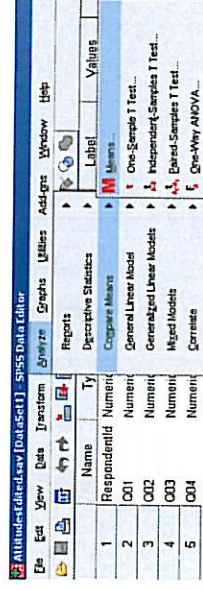
4. Move the scale variable (Q02 age) to the "Dependent List" box.
5. Move the "by" variable (Q01 gender) to the "Independent List" box.
6. Click on the "Options..." button.
7. Move the desired statistics over to the "Cell Statistics" box (we are demonstrating with the most typical statistics).
8. Click on the "Continue" button".
9. Click on the "OK" button"



Step 5: Generating Descriptive Statistics Summary Statistics by Group

We will analyze summary statistics for Q02 age by Q01 gender

1. Select "Analyze" pull-down menu.
2. Select "Compare Means" option.
3. Select "Means..." option.



SPSS Output for Descriptives by Group

```
MEANS TABLES=Q02 BY Q01
  /CELLS COUNT MEAN STDDEV MIN MAX RANGE.
```

Means

recorded code (syntax) for your SPSS instructions

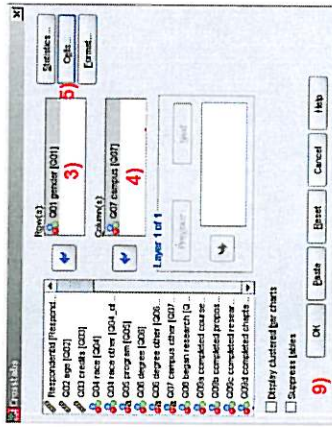
[DataSet1] O:\Projects\2008-09_Fall\Training\Intro-October 2008\AttitudesEdited.sav

Case Processing Summary									
	N	Included		Excluded		Total		N	Percent
		N	Percent	N	Percent	N	Percent		
Q02 age * Q01 gender	57	57	100.0%	0	.0%	57	100.0%		

Report									
Q01	N	Mean	Std. Deviation	Minimum	Maximum	Range			
Female	42	32.83	11.301	22	61	39			
Male	15	35.40	11.783	23	62	39			
Total	57	33.51	11.380	22	62	40			

Step 5: Generating Descriptive Statistics Cross Tabulation

1. Select the "Analyze" pull-down menu.
2. Select the "Descriptive Statistics" option, then select the "Crosstabs..." option.
3. Move one categorical variable (Q01 gender) into the "Rows" box
4. Move the other categorical variable (Q07 campus) into the "Columns" box.
5. Select the "Cells..." button.



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SPSS Crosstab output

Q01 gender * Q07 campus Crosstabulation

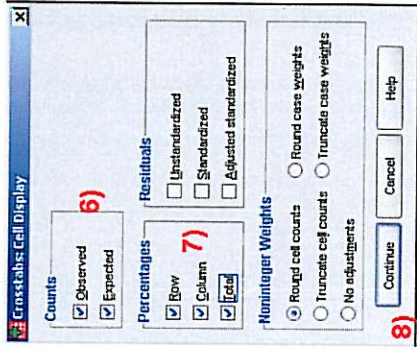
	Q01 gender	Q07 campus					Total
		Diem Center	Indiana	Monroeville	Northpointe	Other	
Expected Count		1.5	3.24	3.7	1.5	2.9	42.0
% within Q01 gender		2.4%	73.8%	11.9%	4.8%	7.1%	100.0%
% within Q07 campus		50.0%	70.5%	100.0%	100.0%	73.7%	73.7%
% of Total		1.8%	54.4%	8.8%	3.5%	5.3%	15.0%
Expected Count		.5	11.6	1.3	.5	1.1	15.0
% within Q01 gender		6.7%	86.7%	.0%	0%	6.7%	100.0%
% within Q07 campus		29.5%	22.8%	.0%	0%	25.0%	26.3%
% of Total		1.8%	22.8%	.0%	0%	1.8%	26.3%
Expected Count		2.0	44.0	5.0	2.0	4.0	57.0
% within Q01 gender		3.5%	77.2%	0.8%	3.5%	7.0%	100.0%
% within Q07 campus		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of Total		3.5%	77.2%	8.8%	3.5%	7.0%	100.0%
Total		4	44	5	2	4	57
Expected Count		1.3	11.6	1.3	.5	1.1	15.0
% within Q01 gender		8.7%	86.7%	.0%	0%	6.7%	100.0%
% within Q07 campus		29.5%	22.8%	.0%	0%	25.0%	26.3%
% of Total		1.8%	22.8%	.0%	0%	1.8%	26.3%

Interpretation of the numbers in the highlighted cell:

- 13 of the 57 respondents (22.8%) are male and study primarily at the Indiana Campus.
- If there were no relationship between Gender and Campus, you would expect to see 11.6 respondents who are male and study primarily at the Indiana Campus.
- 13 of the 15 male respondents (86.7%) study primarily at the Indiana Campus.
- 13 of the 44 respondents from the Indiana campus (29.5%) are male.

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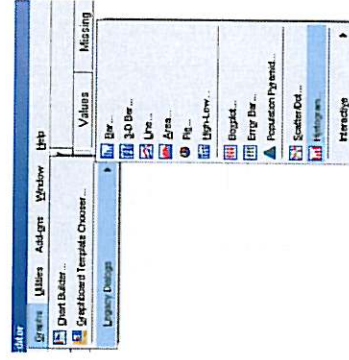
6. Under Counts, select "Observed" and "Expected."
7. Under Percentages, select "Row", "Column" and "Total".
8. Then click on the "Continue" button.
9. Finally, when SPSS sends you back to the previous screen, click on the "OK" button.



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Step 6: Creating Charts and Diagrams Histograms for Scale Variables

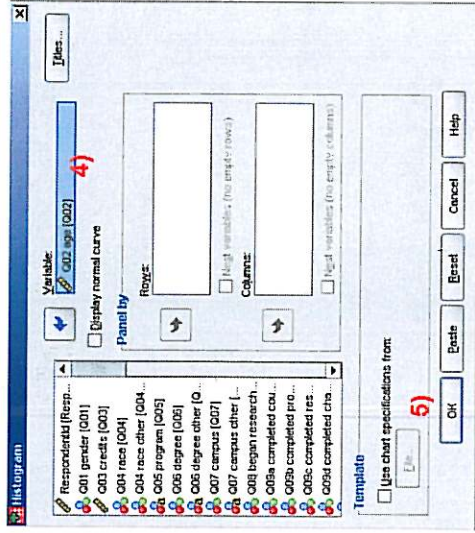
- We will create a histogram of the respondents ages.
- 1.) Select the "Graphs" pull-down menu.
 - 2.) Select the "Legacy Dialogs" option.
 - 3.) Select the "Histogram" option.



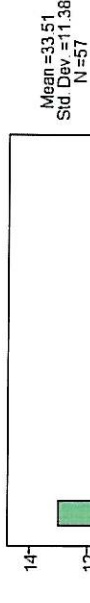
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SPSS Histogram for Scale Variable Output

4. Move the variable "Q02 age" to the "Variable" box.



5. Click on the "OK" button.

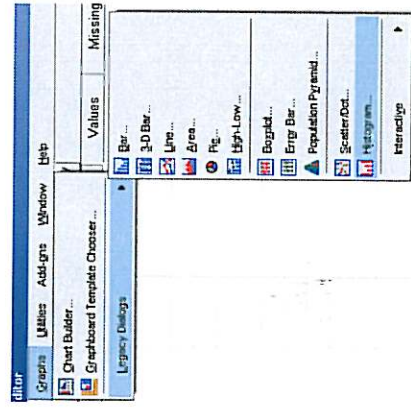


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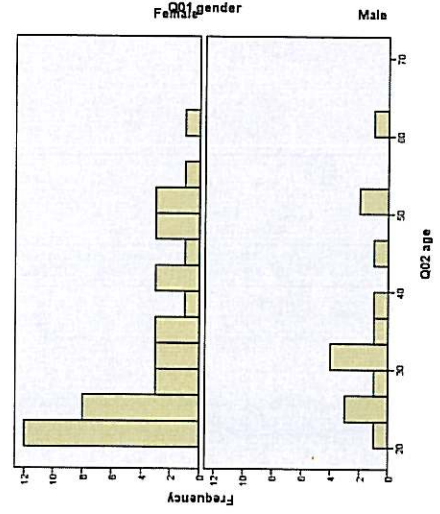
Step 6: Creating Charts and Diagrams Histograms for Scale Variables by Group

We will create a histogram for the respondents' ages by gender.

1. Select the "Graphs" pull-down menu.
2. Select the "Legacy Dialogs" option.
3. Select the "Histogram..." option.



4. Move the variable "Q02 age" to the "Variable" box.
5. Move Q01 gender to the "Rows" box.
6. Click on the "OK" button. You will see output like the one below.

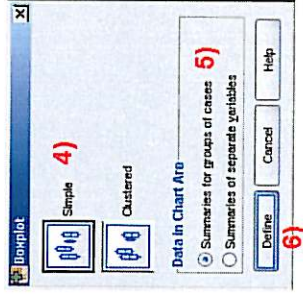


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Step 6: Creating Charts and Diagrams Box Plots

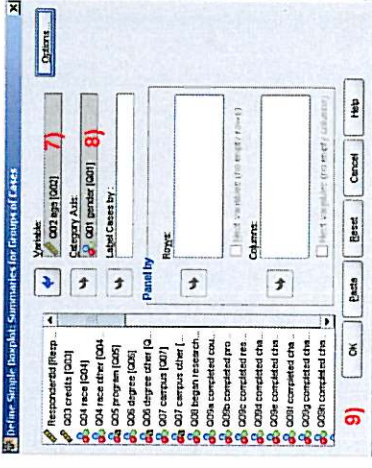
We will create a side-by-side box plot of the respondents' ages by gender.

1. Select the **"Graphs"** pull-down menu.
2. Select the **"Legacy Dialogs"** option.
3. Select the **"BoxPlot..."** option.
4. Select the **"Simple"** Option
5. Select the **"Summaries for Groups of Cases"** option.
6. Click on the **"Define"** button.



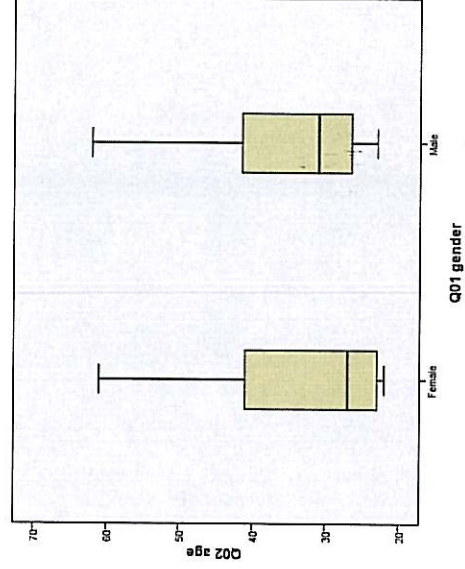
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7. Move the **"Q02 age"** variable to the **"Variable"** box.
8. Move the **"Q01 gender"** variable to the **"Category Axis"** box.
9. Click on the **"OK"** button.



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SPSS Box Plot Output

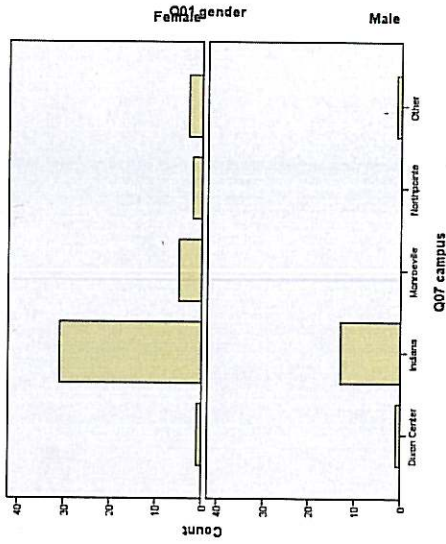


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Now try some on your own...

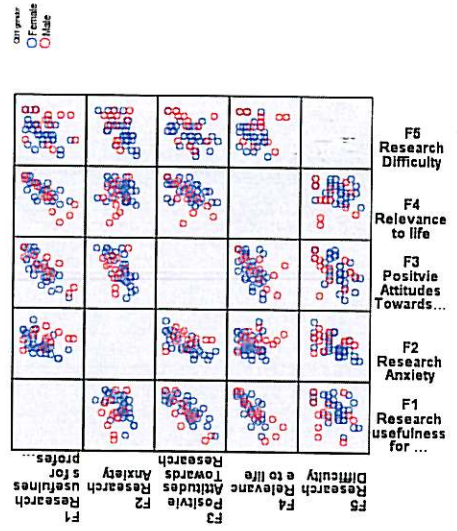
- Many of the descriptive analyses and diagrams in SPSS are created in similar ways to one another, so if you know how to create one, you may be able to create many other types.
- See if you can create the next several diagrams without instruction. We will explain how to once you are all finished.

Can you produce this bar graph?



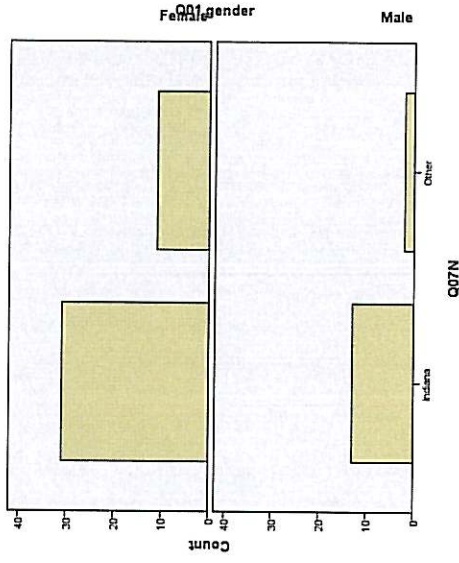
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Can you produce this matrix scatter plot?



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Hint: You need to modify Q07, creating a new variable called Q07N with just two outcomes:



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In Summary

- Today you have learned many things about SPSS.
- At this point, you should feel more comfortable:
 - 1.) Using SPSS
 - 2.) Coding your data
 - 3.) Verifying your data
 - 4.) Cleaning up your data
 - 5.) Generating descriptive statistics of your data
 - 6.) Creating graphs and charts of your data
- Now that you are able to handle the basics of SPSS, look for an upcoming Advanced SPSS Workshop from the ARL!

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Thank you! Any Questions?

If you need any additional help with your research and/or statistics, contact the ARL at:

G10 Donna D. Putt Hall
724-357-4530
www.iup.edu/arl

SPSS 17.0 is free for IUP students, faculty, and staff! To receive your free copy, present your I-card at:

IT Support Center
Delaney Hall Suite 35
724-357-4000