

# Introduction to SPSS

Presented by Maya  
Pilin

Centre for Scholarly  
Communication

UBCO



Zoom Protocol

- If you leave the Zoom call accidentally and need to re-enter, you can click the link in your email. If you cannot find it, please email Mathew at [mathew.vis-dunbar@ubc.ca](mailto:mathew.vis-dunbar@ubc.ca)

## Broad Learning Objective

Students will leave the workshop with a basic knowledge of

- how to operate SPSS
- the layout of the program
- the capabilities of SPSS
- resources for further assistance with SPSS

# The Schedule

- Part 1: Vocabulary (30 mins)
- Part 2: Downloading SPSS (30 mins)
- Part 3: Importing & sorting data, organizing variables (30 mins)
- Part 4: Transforming data & using descriptive stats (30 mins)
- Part 5: Visual data representation (30 mins)
- Part 6: Syntax and resources (30 mins)

# QUESTION

Why are you learning  
how to use SPSS?

# Excel v. SPSS

- Excel:
  - More difficult to learn
  - Not very well set-up for most types of statistical analyses
  - GREAT for organizing data
  - Requires some coding knowledge
- SPSS
  - Easier to learn
  - Designed for statistical analyses
  - Does not have many data organization features
  - Does not require coding knowledge

# Section 1: Vocabulary





# SPSS

A program that allows you to analyze data via an easy-to-use point-and-click format.

Gender	Age	Rice	var	var
Male	15.00	Yes		
Female	20.00	Yes		
Male	18.00	No		
Male	13.00	Yes		
Male	18.00	Yes		
Female	19.00	No		
Female	22.00	No		
Female	25.00	Yes		
Female	22.00	No		
Female	26.00	No		
Male	17.00	Yes		
Male	19.00	Yes		

12	12 Ryan
13	13K

# Syntax

The code that allows you to run analyses and commands via SPSS.

SPSS Syntax Editor window showing the following commands:

```
DATA LIST FILED=education_level  
D=SSTYPE(3)  
RECEPT=INCLUDE  
ALPHA=ALPHA(0.05)  
N=education_level.
```

```
DATA LIST FILED=education_level  
D=SSTYPE(3)  
RECEPT=INCLUDE  
ALPHA=ALPHA(0.05)  
N=education_level.
```

```
DATA LIST FILED=education_level  
D=SSTYPE(3)  
RECEPT=INCLUDE  
ALPHA=ALPHA(0.05)  
N=education_level.
```

```
DATA LIST FILED=education_level  
D=SSTYPE(3)  
RECEPT=INCLUDE  
ALPHA=ALPHA(0.05)  
N=education_level.
```

AnalyzeDirect MarketingGraphsUtilities

Add-on

## Missing Value

A response that does not count as valid data and that you do not want to include in your analyses.

start	jtype	whours
07-May-2016	1	28.7
27-Oct-2026	1	
	1	22.7
System missing values indicated by dots.	.	27.7
	1	
08-Dec-2016	2	43.7



File Edit View Data Transform Analyze Graphs Utilities Extensions Window Help

## Value Label

A category that corresponds to a value and identifies exactly what the number is referring to (i.e., 0 = 'Never').

ne	...	Label	Values
	.. .. .		None
	.. .. .		None
Primary type of education ...	.. .. .	Primary type of education ...	{1, Law}...



### Value Labels

#### Value Labels

Value:

Spelling...

Label:

Add

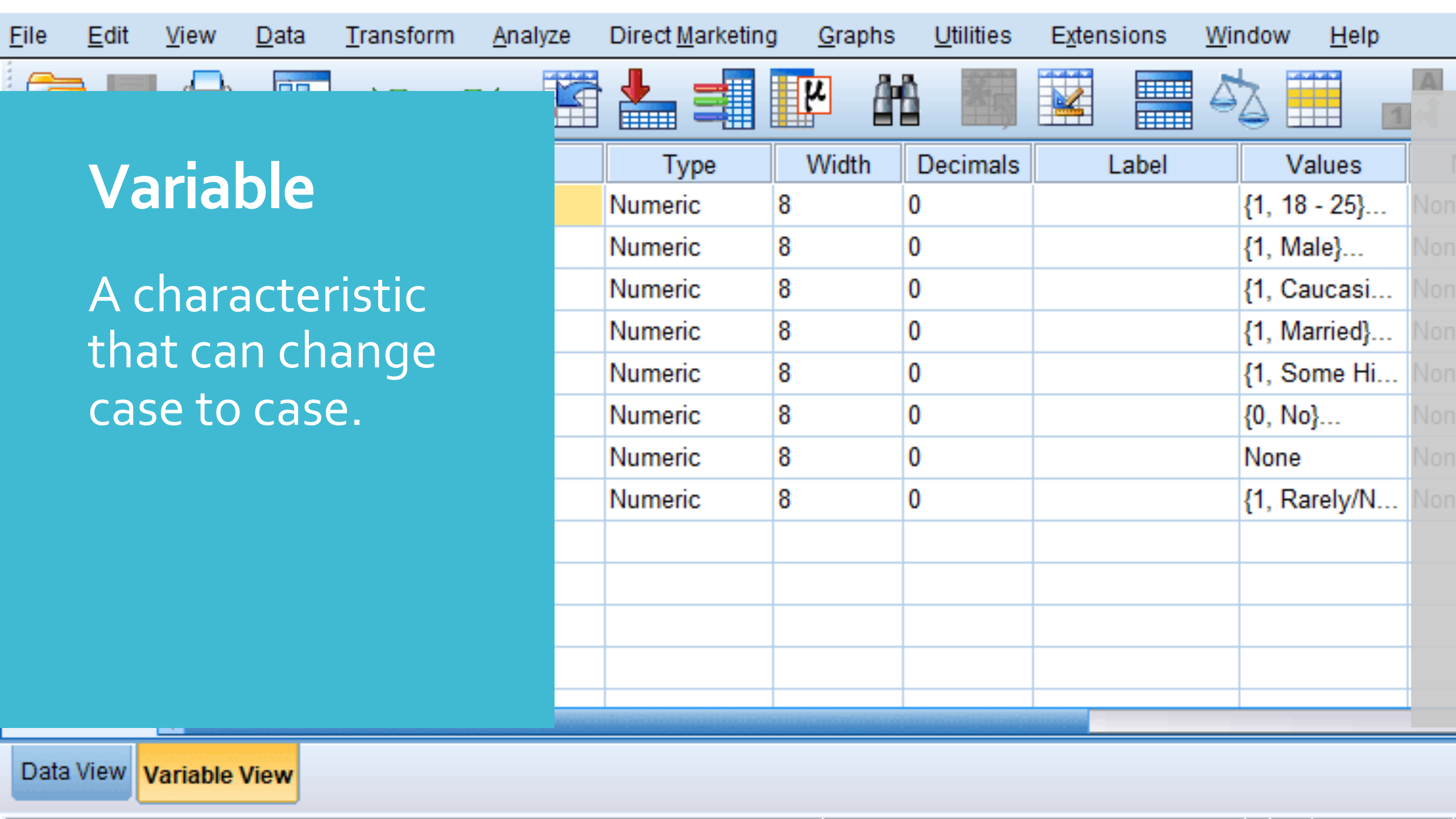
Change

Remove

1 = "Law"  
2 = "Economy"  
3 = "Social sciences"  
4 = "Medical"  
5 = "Other"

14

15



# Variable

A characteristic that can change case to case.

	Type	Width	Decimals	Label	Values
	Numeric	8	0		{1, 18 - 25}...
	Numeric	8	0		{1, Male}...
	Numeric	8	0		{1, Caucasi...
	Numeric	8	0		{1, Married}...
	Numeric	8	0		{1, Some Hi...
	Numeric	8	0		{0, No}...
	Numeric	8	0		None
	Numeric	8	0		{1, Rarely/N...

Data View

Variable View





File Edit View Data Transform Analyze Graphs Utilities Extensions Window Help

# Label

A description of what the variable means or measures; the description can be detailed and allows you to use spacing.

ne	...	...	...	Label	Values
	..	..	..		None
	..	..	..		None
oe	..	..	..	Primary type of education ...	{1, Law}...



## Value Labels

### Value Labels

Value:

Spelling...

Label:

Add

Change

Remove

1 = "Law"  
2 = "Economy"  
3 = "Social sciences"  
4 = "Medical"  
5 = "Other"

14

15

# Output

A window that shows the results and summary of the programming language used to obtain those results.

Equal variances not assumed				-.836	63.602	.407	-2.757	3.299	
-----------------------------	--	--	--	-------	--------	------	--------	-------	--

:\Christine 2012july11\ASK\Graduate School\Basics of SPSS Course\Employee\_Survey.sav

## Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
competency score starting their job	42.47	70	13.635	1.630
competency score after 1 year on the job	54.2690	70	17.42211	2.08234

## Paired Samples Correlations

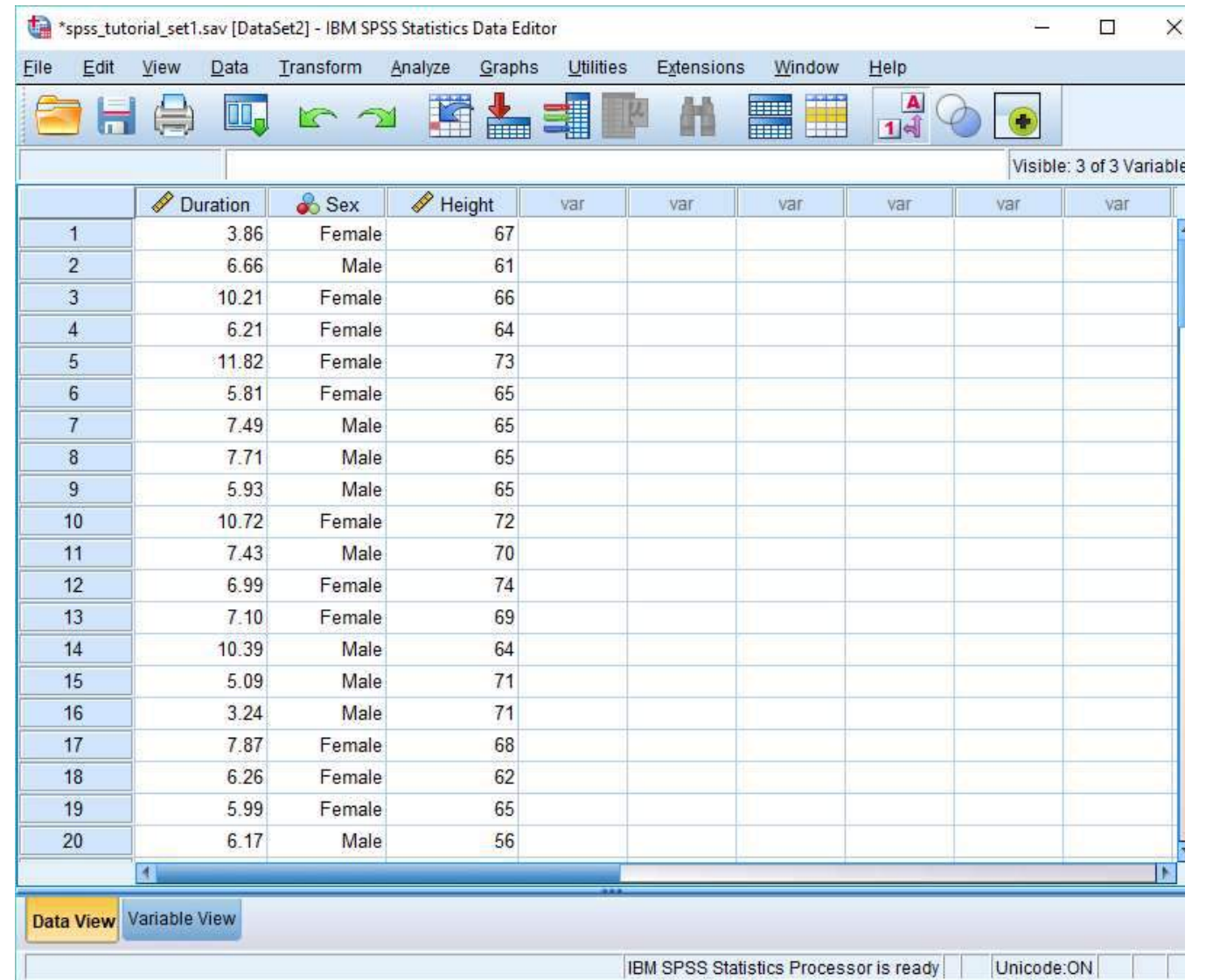
	N	Correlation	Sig.
competency score starting their job & competency score after 1 year on the job	70	1.000	.000

## Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
competency score before starting their job - Total competency score after 1 year on the job	-11.79762	3.78742	.45268	-12.70070	-10.89454	-26.062	69	.000

# Data

Numerical or qualitative information organized and analyzed within SPSS.



\*spss\_tutorial\_set1.sav [DataSet2] - IBM SPSS Statistics Data Editor

File Edit View Data Transform Analyze Graphs Utilities Extensions Window Help

Visible: 3 of 3 Variables

	Duration	Sex	Height	var	var	var	var	var	var
1	3.86	Female	67						
2	6.66	Male	61						
3	10.21	Female	66						
4	6.21	Female	64						
5	11.82	Female	73						
6	5.81	Female	65						
7	7.49	Male	65						
8	7.71	Male	65						
9	5.93	Male	65						
10	10.72	Female	72						
11	7.43	Male	70						
12	6.99	Female	74						
13	7.10	Female	69						
14	10.39	Male	64						
15	5.09	Male	71						
16	3.24	Male	71						
17	7.87	Female	68						
18	6.26	Female	62						
19	5.99	Female	65						
20	6.17	Male	56						

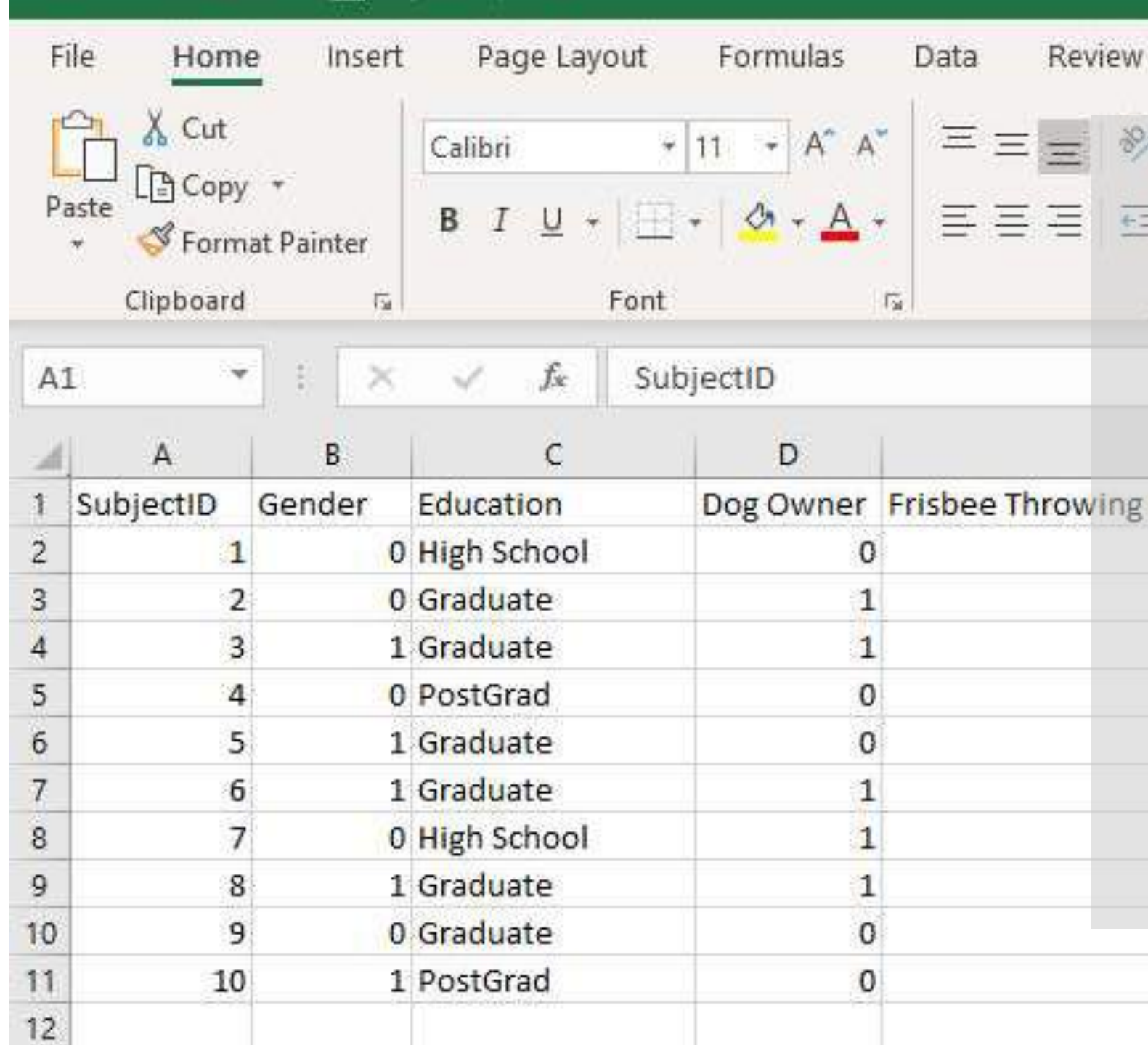
Data View Variable View

IBM SPSS Statistics Processor is ready Unicode:ON



# Import

Bringing data from a source outside of SPSS (i.e., Excel) into SPSS.

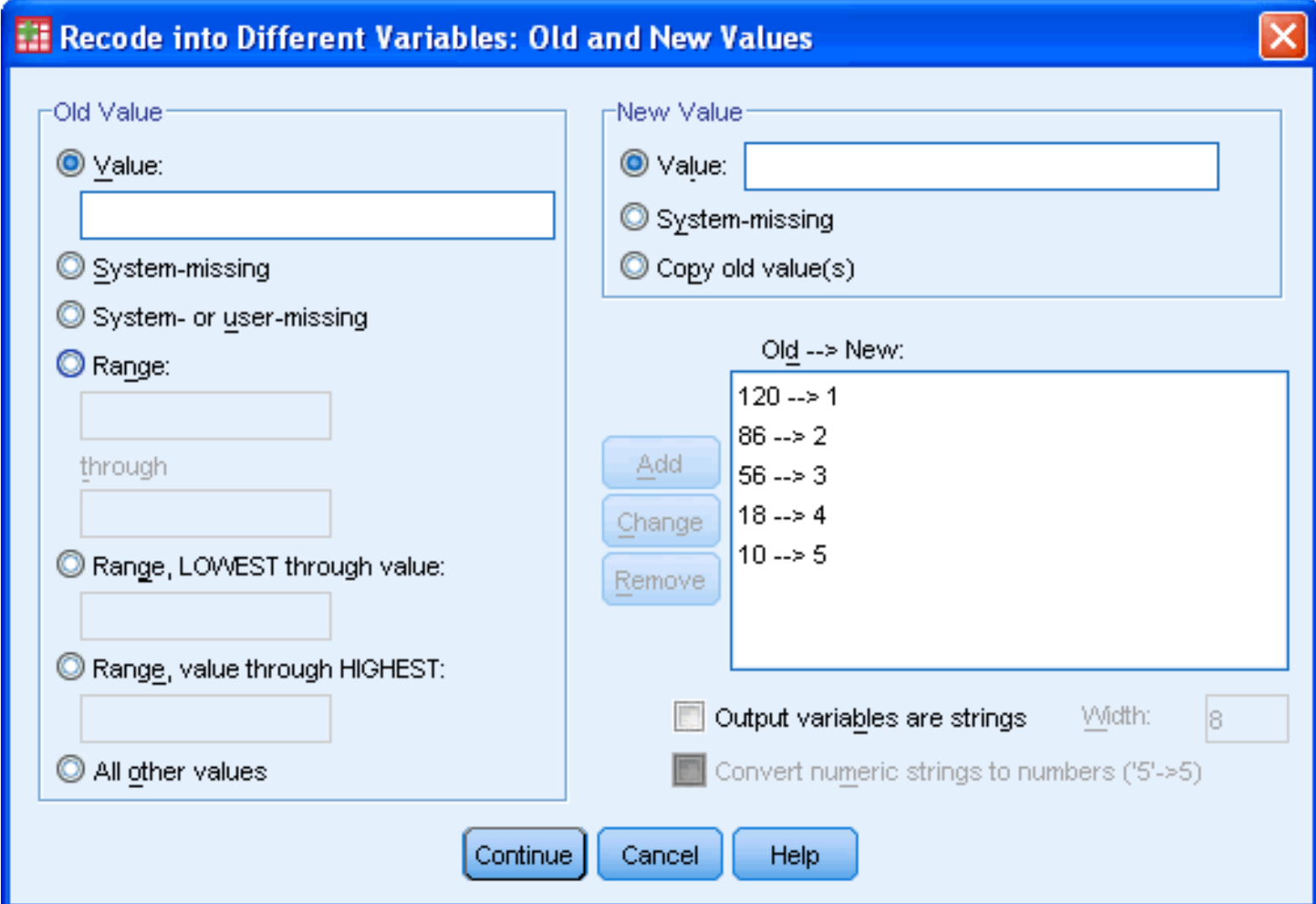


The screenshot shows the Microsoft Excel interface with the 'Home' tab selected. The ribbon includes 'Clipboard', 'Font', and 'Paragraph' groups. The active cell is A1, containing the text 'SubjectID'. Below the ribbon, a data table is visible with the following columns: A (SubjectID), B (Gender), C (Education), D (Dog Owner), and E (Frisbee Throwing). The table contains 11 rows of data.

	A	B	C	D	E
1	SubjectID	Gender	Education	Dog Owner	Frisbee Throwing
2	1	0	High School	0	
3	2	0	Graduate	1	
4	3	1	Graduate	1	
5	4	0	PostGrad	0	
6	5	1	Graduate	0	
7	6	1	Graduate	1	
8	7	0	High School	1	
9	8	1	Graduate	1	
10	9	0	Graduate	0	
11	10	1	PostGrad	0	
12					

# Recode

The action of systematically changing the numerical or text values of a variable (i.e., all 1s become zeroes).



**Recode into Different Variables: Old and New Values**

**Old Value**

- ☒ Value:
- ☐ System-missing
- ☐ System- or user-missing
- ☒ Range:  
  
through
- ☐ Range, LOWEST through value:
- ☐ Range, value through HIGHEST:
- ☐ All other values

**New Value**

- ☒ Value:
- ☐ System-missing
- ☐ Copy old value(s)

**Old --> New:**

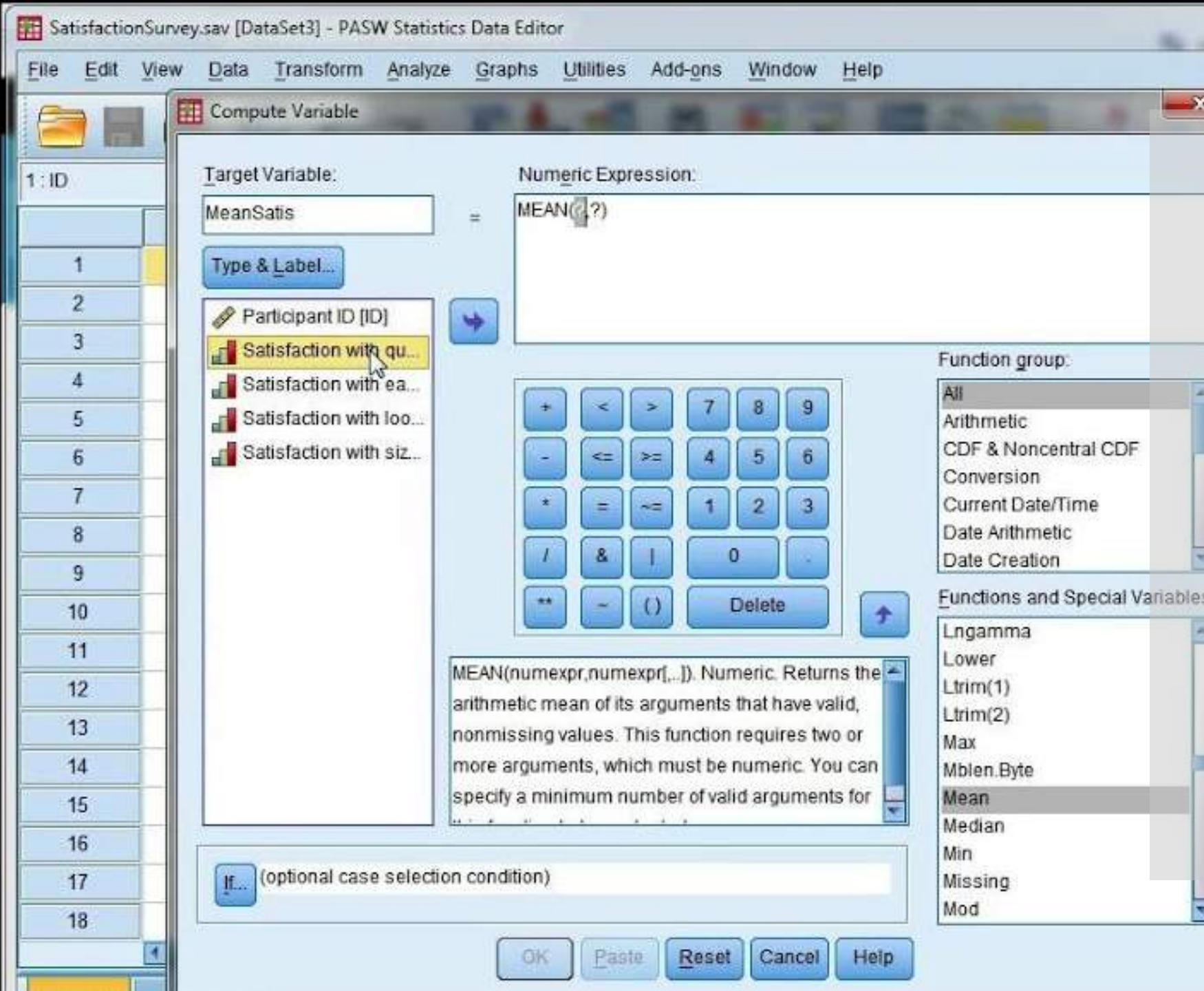
120	-->	1
86	-->	2
56	-->	3
18	-->	4
10	-->	5

☐ Output variables are strings **Width:**

☐ Convert numeric strings to numbers ('5'-->5)

# Compute

Completing calculations with your variables (i.e., adding the values of several variables to get the total score for a scale).



A window on SPSS that shows your raw data (i.e., the values input for each variable)

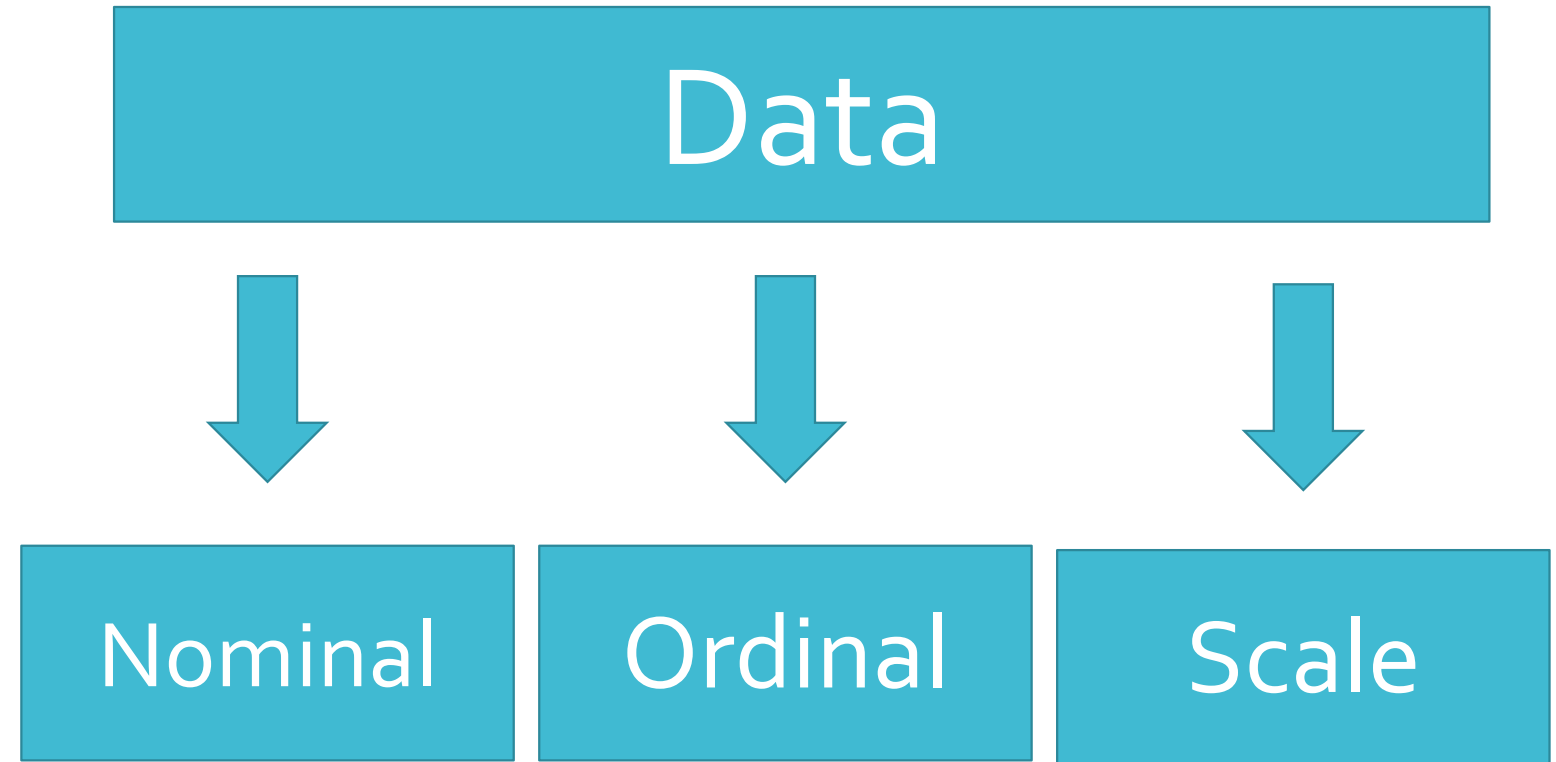
Data View Variable View

A window on SPSS that shows you the list of variables that you have input into the program, along with their characteristics.

Data View Variable View

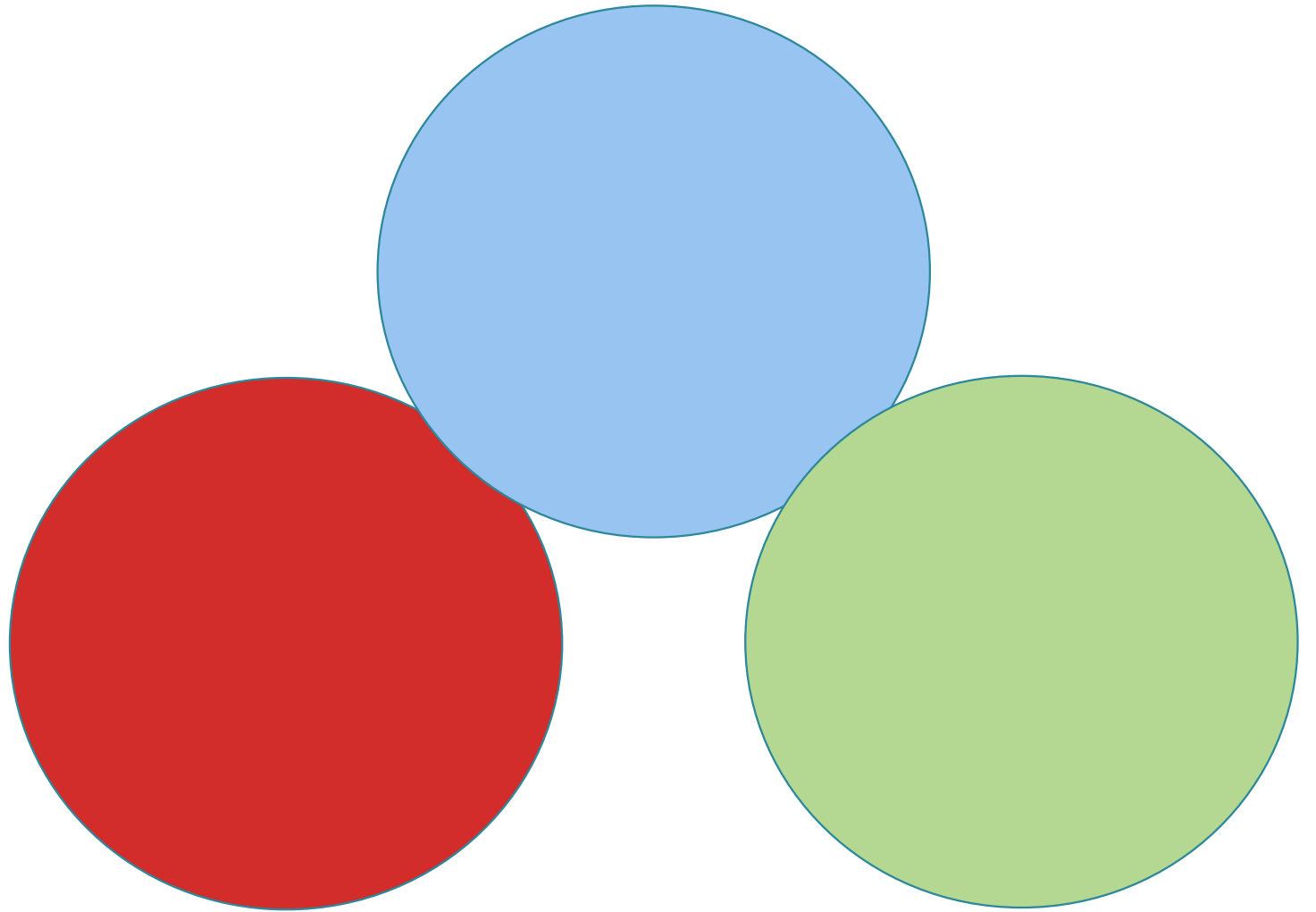


# Data Types



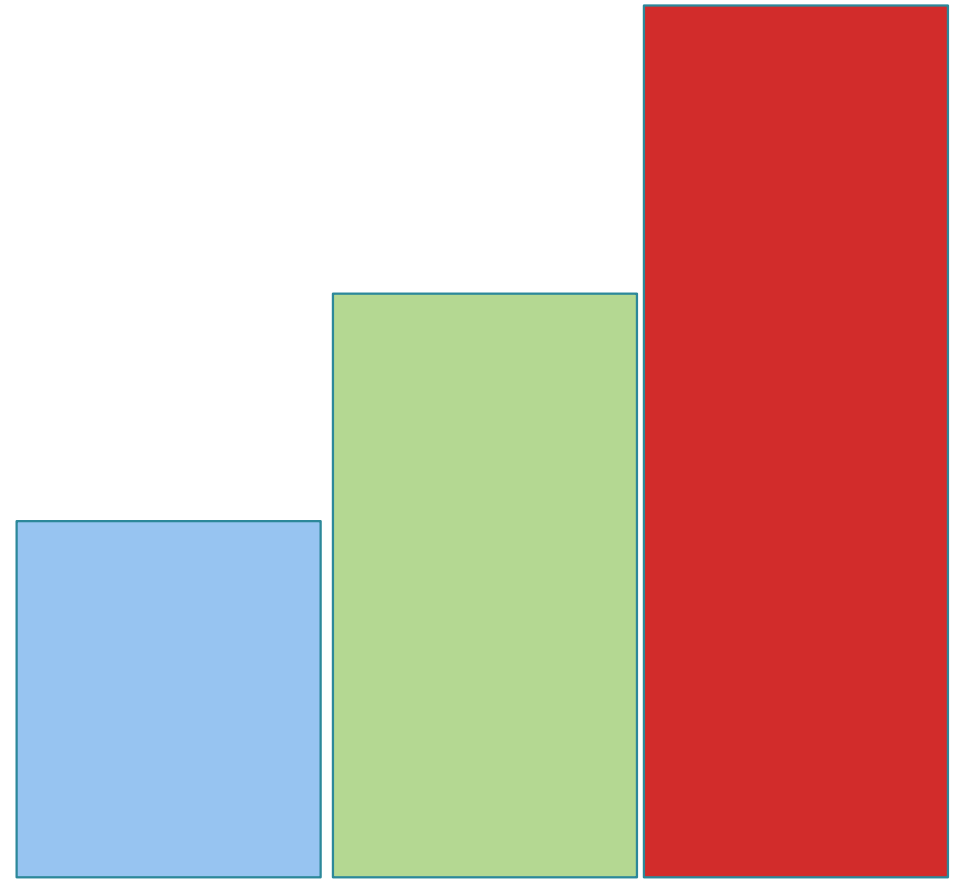
# Nominal Variable

Variable whose values represent categories with no intrinsic ranking (i.e., Politics).



# Ordinal Variable

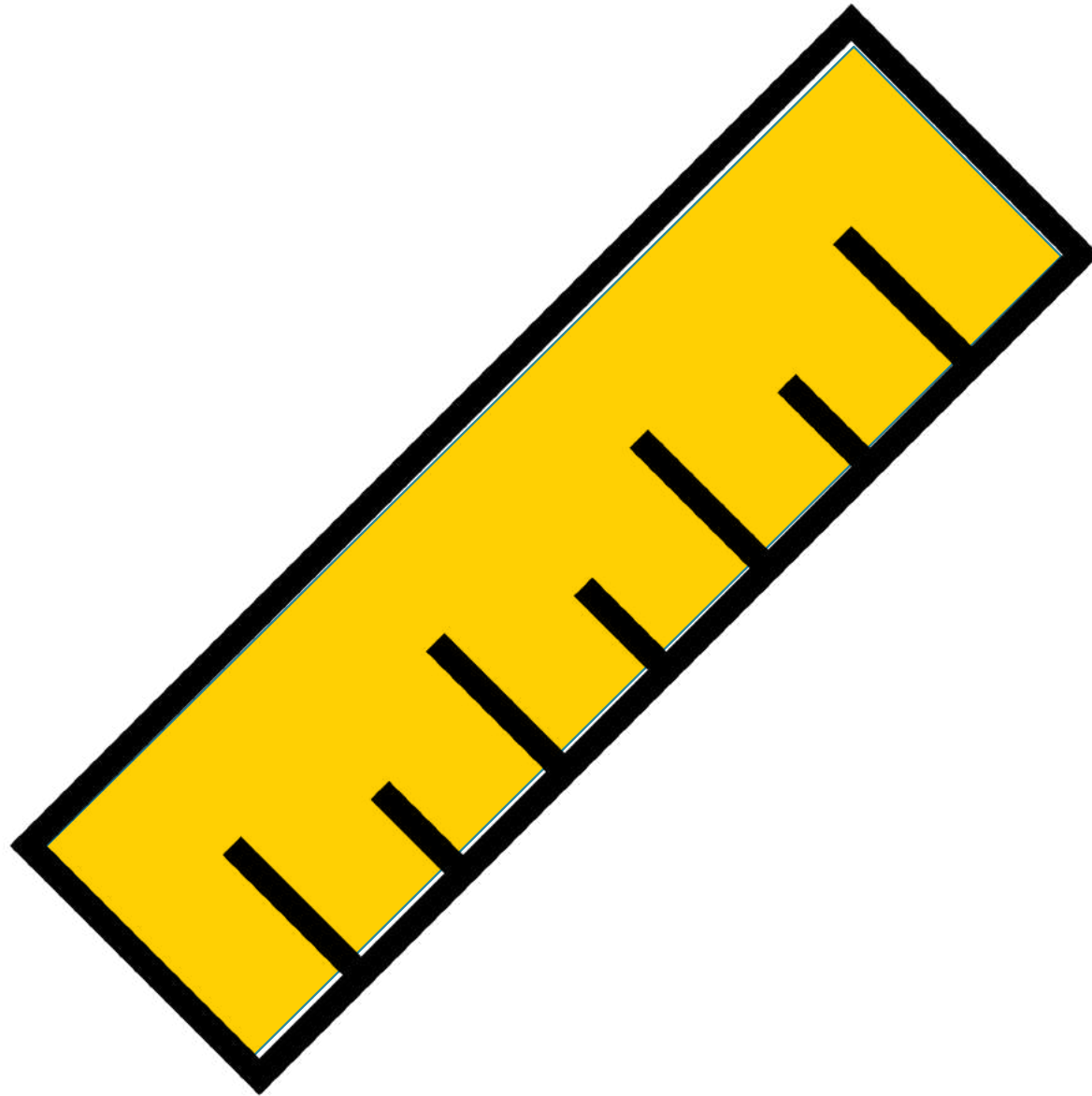
Variable whose values represent categories with some intrinsic ranking (i.e., Year of University)





# Scale Variable

Variable whose data values indicate both the order and an equal distance between values (i.e., Income).





# Section 2: Downloading SPSS

# Downloading SPSS

1

Visit UBC's On the Hub online store:  
<https://ubc.onthehub.com/WebStore/Welcome.aspx>

2

Click *Start Shopping* and log in

3

Complete verification if necessary

4

Under UBC Licensed Software, find the program IBM SPSS Statistics 27 and click *OK*.

5

Choose the platform you use on your personal computer (Windows or Mac)

6

Check out using the *cart* icon at the top right of the screen. The total cost should be \$0.00

# Downloading SPSS

7

Go to the top right of the screen. You should see a message that says “*Hello \_\_\_\_*” right beside the cart. Click there.

8

Select the *Your Accounts/Orders* option.

9

Find the relevant order (SPSS) and click *View Details*.

10

You will see the Download icon and an authorization code. Copy the code and press *Download*.

11

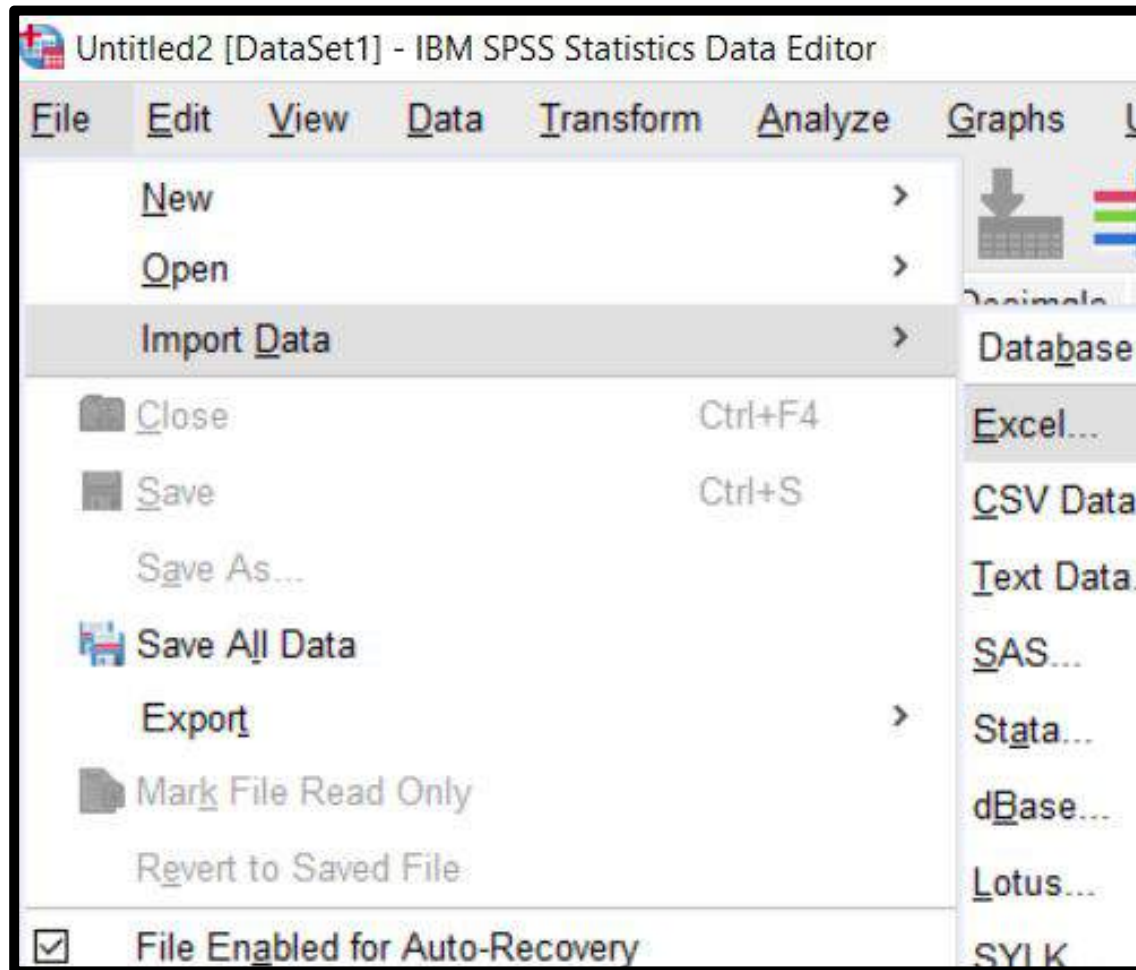
Follow the download procedure on your computer.

12

Enter the authorization code when you are prompted to do so.



# Section 3: Importing & sorting data; organizing variables



# Importing Data

1. Open a blank SPSS file.
2. Click *File* and *Import Data*.
3. Choose your data source (Excel).

# Importing Data

4. Find the relevant Excel file on your computer.
5. You will see a Read Excel File window pop up on SPSS. In this window, you will see a preview of your file.
6. Choose the relevant worksheet at the top of the window.

Read Excel File

C:\Users\mpili\OneDrive\Sample Excel Data File.xlsx

Worksheet: Sheet1 [A1:E5]

Range:

☒ Read variable names from first row of data

☒ Percentage of values that determine data type: 95

☒ Ignore hidden rows and columns

☐ Remove leading spaces from string values

☐ Remove trailing spaces from string values

Preview

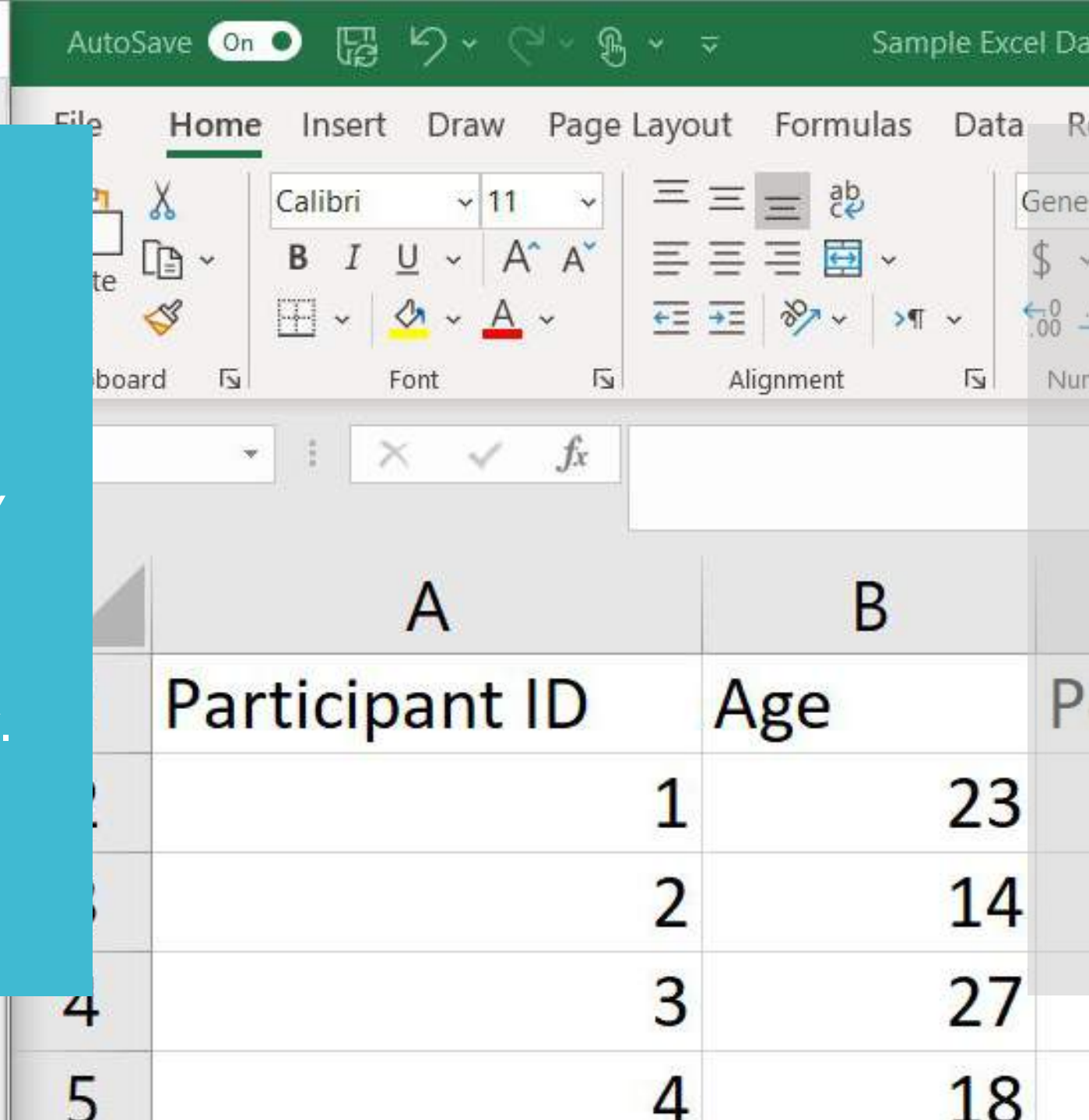
	Partici...	Age	Politics	Income	Height
1	1	23	1	10123	151
2	2	14	2	15837	163
3	3	27	1	8124	178
4	4	18	1	50123	132

Final data type is based on all data and can be different from the preview, which is based on the preview displays only the first 500 columns.

OK Paste Reset Cancel Help

# Importing Data

1. From the options, choose whether you want to *Read variable names from the first row of data*.
2. Press *OK* when you're done.
3. Your file will open automatically.
4. Go to data view and make sure your data matches what you have on Excel.



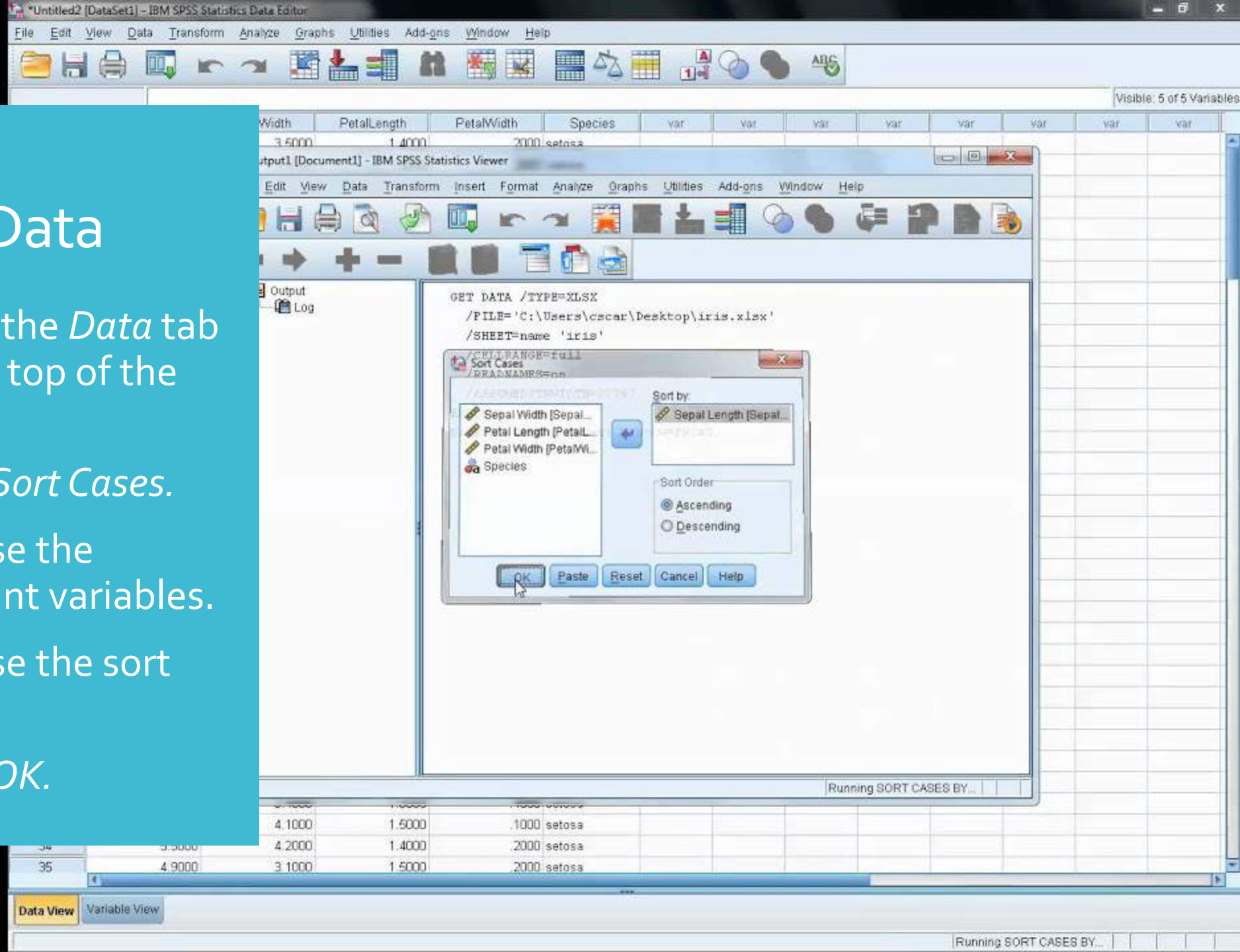
The screenshot shows the Microsoft Excel interface with the 'Home' tab selected. The ribbon includes options for Font, Alignment, and Number. Below the ribbon, a data table is visible with columns A and B. Column A is labeled 'Participant ID' and Column B is labeled 'Age'. The data rows show IDs 1, 2, 3, 4 and corresponding ages 23, 14, 27, 18.

Participant ID	Age
1	23
2	14
3	27
4	18



# Sort Data

1. Go to the *Data* tab at the top of the page.
2. Click *Sort Cases*.
3. Choose the relevant variables.
4. Choose the sort order.
5. Click *OK*.





File Edit View Data Transform Analyze Graphs Utilities Extensions Window Help

## Variable View Options

In variable view, you can enter values for your variables.

When participants complete a survey, their responses will be coded numerically. Values allow you to assign a name for each numerical value (i.e., 1 = Law).

	Label	Values
...		
..		None
..		None
..	Primary type of education ...	{1, Law}...

Value Labels

Spelling...

1 = "Law"  
2 = "Economy"  
3 = "Social sciences"  
4 = "Medical"  
5 = "Other"

Remove

14

15

# Variable View Options

If you want to see your data by the value labels instead of just in numbers, you can click on the Value Labels in data view to switch.

\*pef\_example\_data.sav [DataSet1] - IBM SPSS Statistics Data Editor

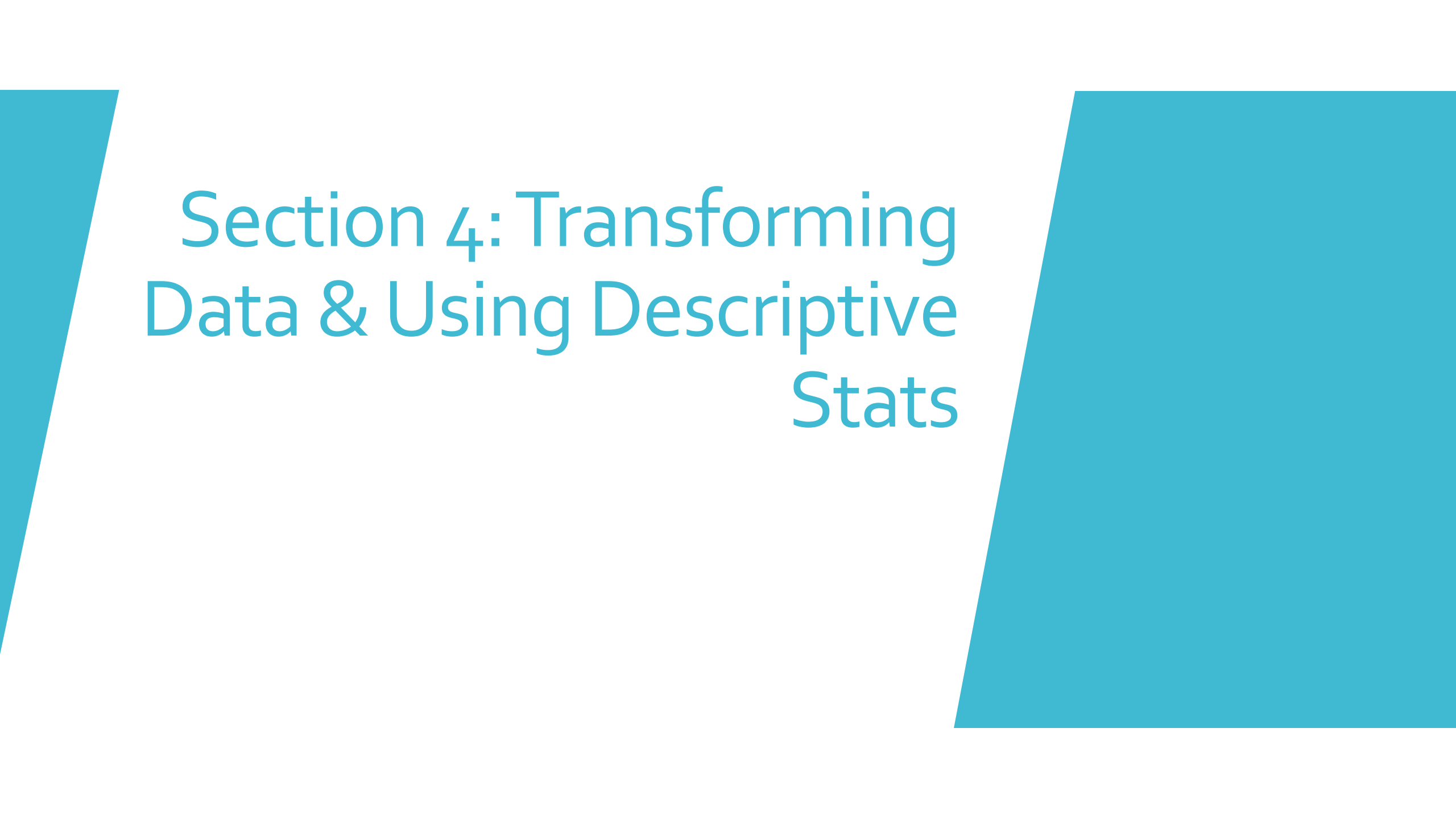
Edit View Data Transform Analyze Graphs Utilities Extensions Window Help

Visible: 5 of 5 Variables

	ID	Sex	PrePEF	PostPEF	Education	var	var
1	1	Male	472	469	School		
2	2	Male	473	482	Graduate		
3	3	Male	437	475	Postgrad		
4	4	Male	442	471	Graduate		
5	5	Male	442	491	School		
6	6	Male	445	477	Graduate		
7	7	Male	444	473	Graduate		
8	8	Male	469	477	School		
9	9	Male	467	489	Postgrad		
10	10	Male	460	509	Graduate		
11	11	Male	455	451	School		
12	12	Male	461	496	School		
13	13	Male	440	487	Graduate		
14	14	Male	462	458	Graduate		
15	15	Male	454	468	Graduate		
16	16	Male	449	484	School		
17	17	Male	458	491	Graduate		
18	18	Male	458	486	School		
19	19	Male	472	484	Postgrad		
20	20	Male	463	489	Graduate		

# EXERCISE

- Find the Language variable in your imported data file
- Assign whatever value labels you want to each of the values in the Language variable



# Section 4: Transforming Data & Using Descriptive Stats

## Why recode a variable?

- ☐ Reverse-coded questions
- ☐ A scale that does not make sense to you
- ☐ Uniformity of scales for data interpretation

Value

Value:

System-missing

Copy old value(s)

Old --> New:

120 --> 1

86 --> 2

56 --> 3

18 --> 4

10 --> 5



Output variables are strings

Width:

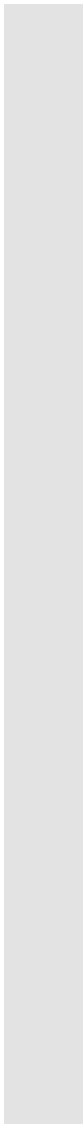
8



## Recode into Same Variables

- Recodes your data
- Deletes the original coding and transforms into the new code
- Can be useful if you are confident in the procedure, using syntax, and trying to keep variables to a minimum

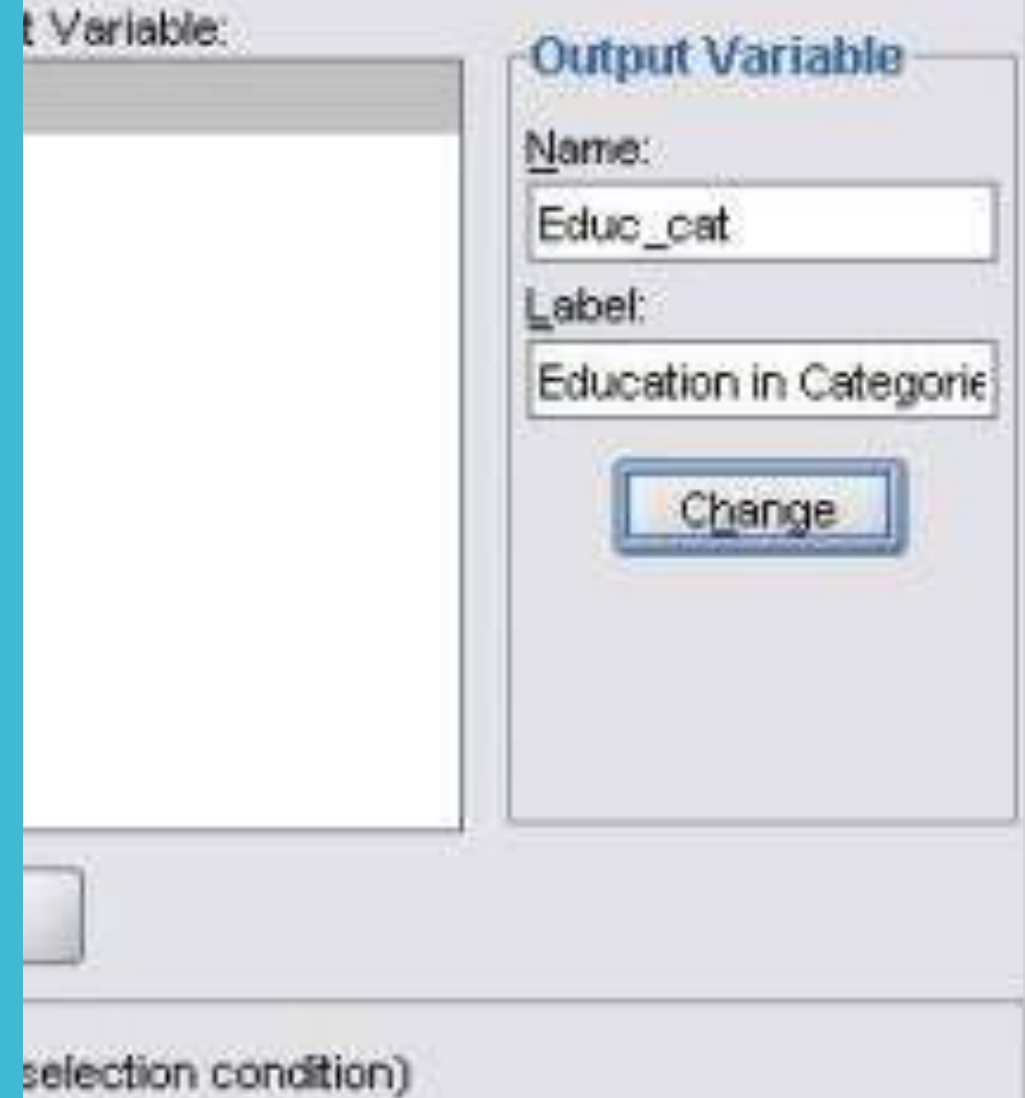
## Recode into Different Variables.

- Recodes your data
  - Keeps the original variable and creates a new variable with new coding
  - Useful for beginners and easier to check for mistakes
- 



# Recode into a Different Variable

1. Choose a variable from the list on the left and click the arrow to put it into the "Numeric Variable -> Output Variable" box
2. If you are recoding multiple variables (must be using the same scheme), click on the relevant variable whose name you want to change so it's highlighted.
3. Enter the name of your new variable into the Name section of the Output Variable box (far right) and the new label in the Label section.



The image shows the 'Recode into Different Variables' dialog box in SPSS. On the left, there is a list of variables, with 'Educ\_cat' highlighted. An arrow points from this list to a box labeled 'Numeric Variable:'. To the right of this is the 'Output Variable' section, which contains two text boxes: 'Name:' with 'Educ\_cat' entered, and 'Label:' with 'Education in Categories' entered. Below these is a 'Change' button. At the bottom of the dialog, there is a section for 'selection condition)' and a row of buttons: 'OK', 'Paste', 'Reset', 'Cancel', and 'Help'.



# Recode into a Different Variable

4. Click on Old and New Values... (bottom)
5. In the Old Value section (left), click on the option that fits your need

Old Value New Value

Value:

System-missing

Copy old value(s)

Old --> New:

12 --> 2
16 --> 4
MISSING --> SYSMIS
Lowest thru 11 --> 1
13 thru 15 --> 3
17 thru Highest --> 5

☐ Output variables are strings Width:

☐ Convert numeric strings to numbers ('5'-->5)

# Old Value Options

If you are just changing one particular value to another specific value.

For example

All 1s become 0s  
All 1s become 2s.

If you are changing all the values within a certain range to a new specific value.

For example

All values from 1 – 3  
become 1s  
All values from 4 – 6  
become 2s

If you are changing a missing value (either a value that is not entered or values that you have marked as missing) to a new value

For example

All System/User  
Missing values become  
0s

# Recode into a Different Variable

7. Let's work with just Value for now! Enter one of the original values. For example, if we are reverse coding and our current scale is 1 - 5 (Strongly Disagree to Strongly Agree), let's start with 1.

8. Click on Value under New Value (right) and enter your new value. If we're reverse coding, 1 will now become 5.



Variables

Recode into Same Variables: Old and New Values

Value

Value:

System-missing

System- or user-missing

Range:

Range

Range, LOWEST through value:

Range, value through HIGHEST:

New Value

☒ Value:☐ System-missing

Old --&gt; New:

7 --&gt; 1

6 --&gt; 2

5 --&gt; 3

4 --&gt; 4

3 --&gt; 5

2 --&gt; 6

1 --&gt; 7

Add

Change

Remove

17 Total

18

# Recode into a Different Variable

9. Press 'Add' so the new code is entered in the Old → New box
10. Do the same for the rest of your codes. For example, 2 will now become 4, 3 will stay 3, and so on
11. Press Continue
12. Press Ok.

Old and New Values

New Value

☒ Value:

☐ System-missing

Old → New:

7	→	1
6	→	2
5	→	3
4	→	4
3	→	5
2	→	6
1	→	7

Add

Change

Remove

Value:

EST:

## **Recode into a Different Variable**

**CHECK YOUR WORK CAREFULLY.**

Does the recoded variable look  
the way you want it to?

Check a random selection of  
participants by hand

# EXERCISE

Take the sample data file and

- 1) Reverse code Q1\_3 using recode into different variable
- 2) Recode Religion to a scheme of your choice using recode into different variable

# Descriptive Statistics

- Statistics that give you the basic characteristics of your data without running analyses or making any inferences about what the data means (i.e., no p-values)
- The two main options on SPSS for descriptive statistics are
  - Descriptives: Characteristics of your data
  - Frequencies: Characteristics of your data plus frequency tables

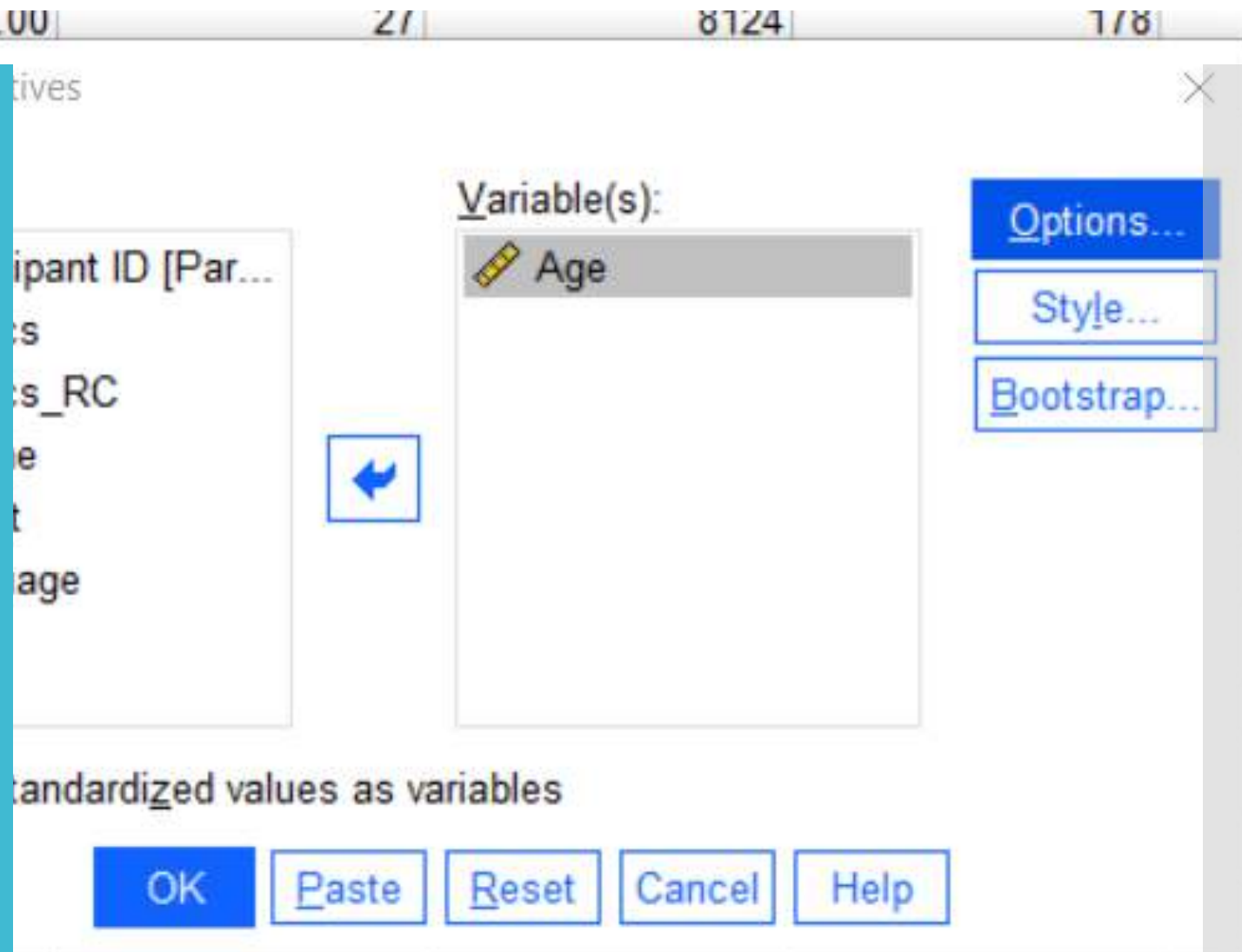
## QUESTION

Why would printing frequency tables be useful for you in the context of your analyses?



# Printing Descriptives

1. Analyze - Descriptive Statistics - Descriptives
2. Select the variables you want to look at and press the arrow to put them into the Variables box
3. Click Options and check off the descriptive stats you want
4. Press Ok and an output window will pop up with your results

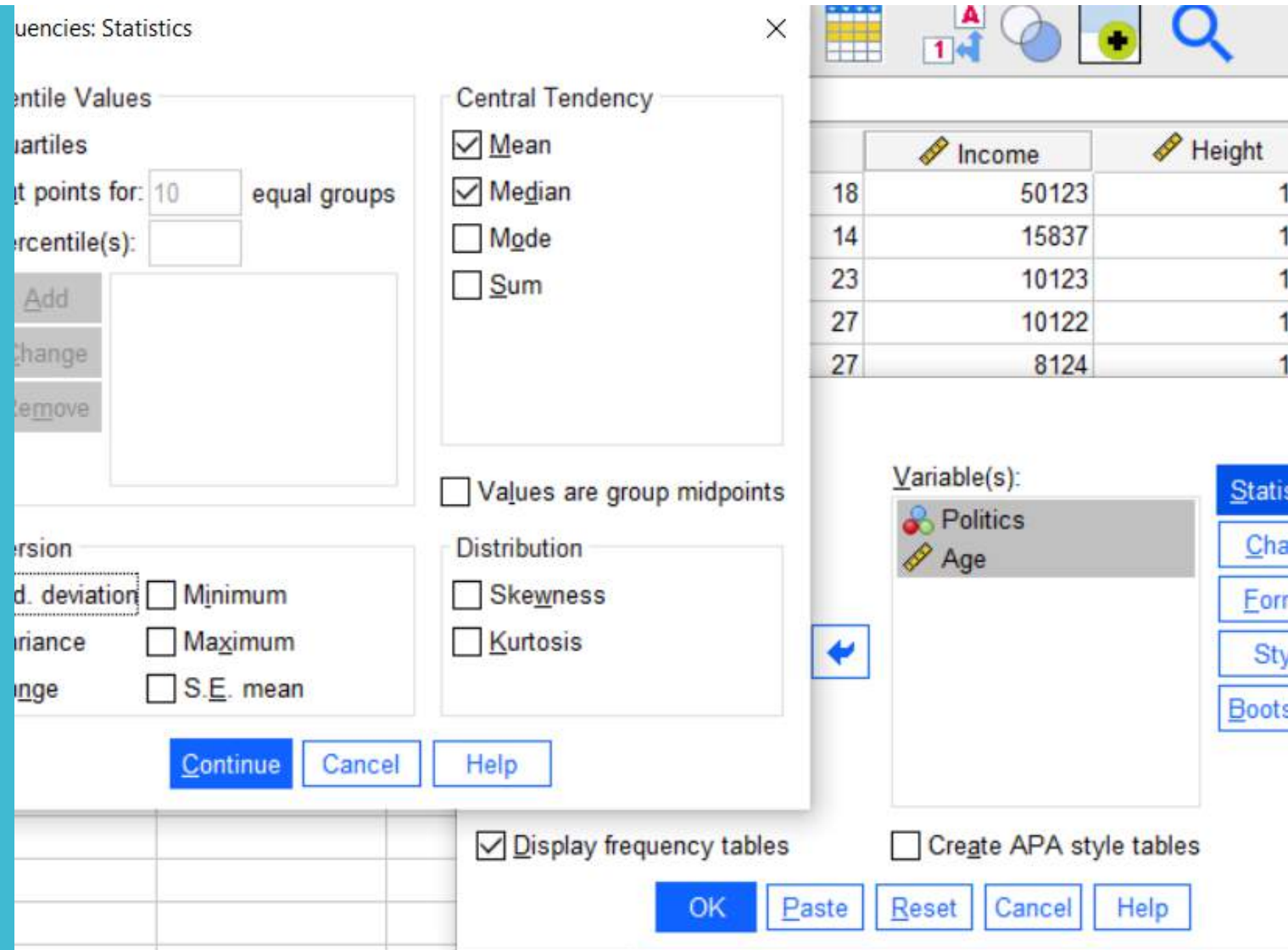


# EXERCISE

- Take the sample data file and
  - 1) Print descriptives (Mean, Median, Mode) for Income
  - 2) Print descriptives (Mean and Standard deviation) for Height

# Printing Frequencies

1. Analyze - Descriptive Statistics - Frequencies
2. Select the variables you want to look at and press the arrow to put them into the Variables box
3. Click Statistics to select the output you want
4. Click Charts if you want to print a Bar Graph for each variable
5. Press Ok and an output window will pop up with your results



# EXERCISE

- Take the sample data file and
  - 1) Print frequencies (Mean, Median, Mode) for Income
  - 2) Print frequencies (Mode and Frequency Table) for Language



# Section 5: Visual Data Representation

# Graphing Options

## Legacy Dialogs

Basic charts  
Limited options  
Not as flexible

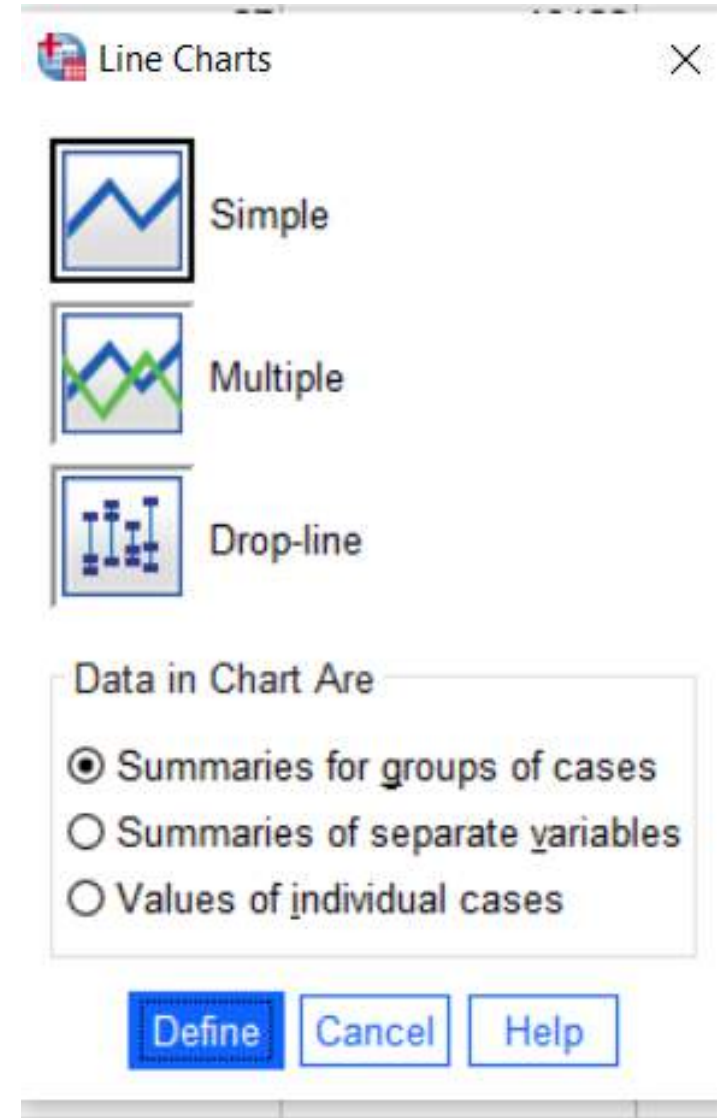
## Chart Builder

More flexible  
Building charts using  
individual parts  
Lots more options

# Making a Line Graph (Legacy Dialogs)

1. Click Graphs and then Legacy Dialogs
2. Select the kind of graph you are interested in building
3. When you do this, you will see the Line Charts dialog box
4. Click Simple, and then click Define. You will see the Define Simple Line dialog box.

For source, click [here](#)



# Making a Line Graph (Legacy Dialogs)

5. Click Politics, click to move the variable to the Category Axis: area.
6. Click the Other Statistic button.
7. Click Height, and then click to move the variable to the Variable: area.
8. Now is the time to enter a title or subtitle in any graph by clicking the Titles button in the Define dialog box and entering what titles, subtitles, and footnotes you want.

For source, click [here](#)

maries for Groups of Cases

Line Represents

☒ N of cases

☐ % of cases

☐ Cum. N

☐ Cum. %

☐ Other statistic (e.g., mean)



Variable:

Change Statistic....



Category Axis:

Panel by

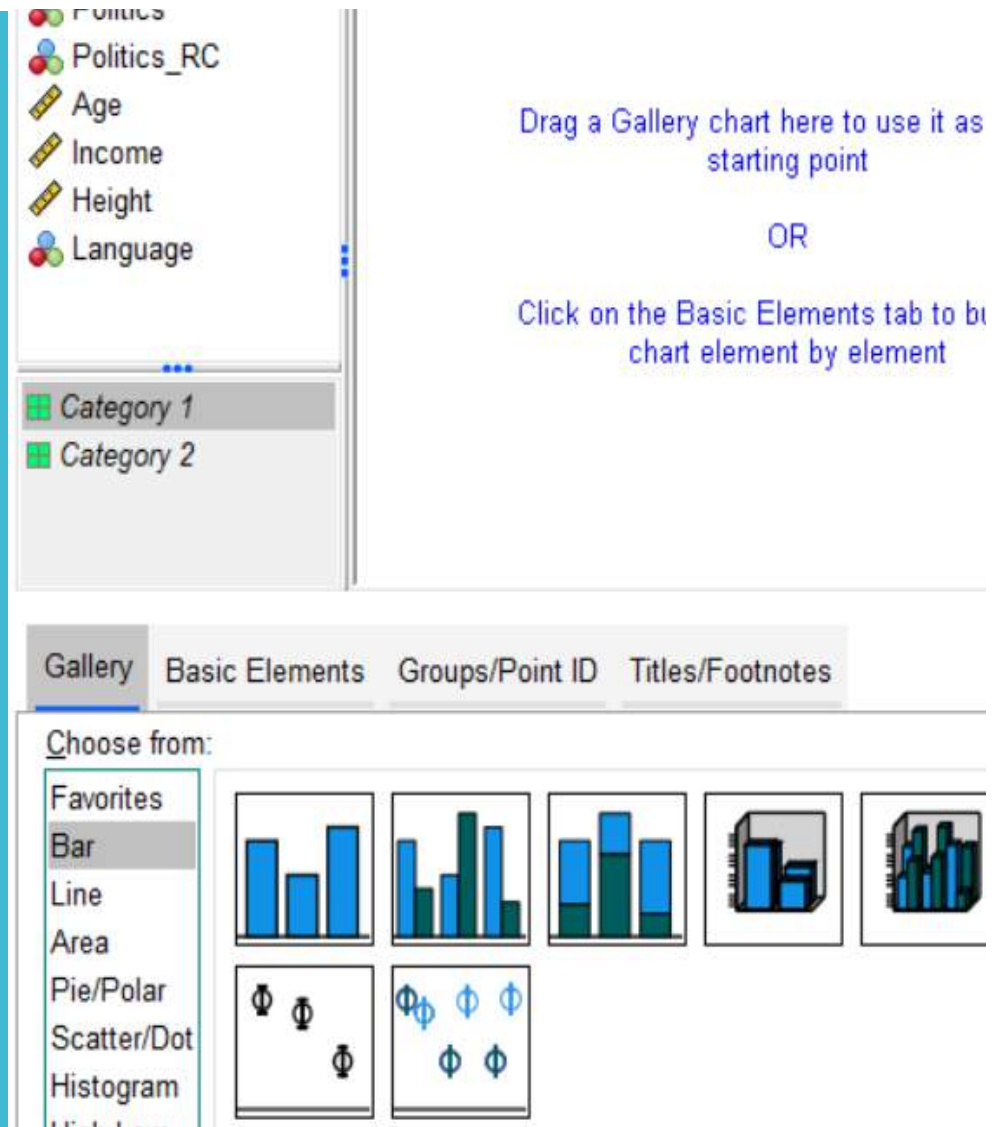
Rows:





# Making a Line Graph (Chart Builder)

1. Click on Chart Builder
2. Select the kind of graph you want to build (Line Graph in our example)
3. Drag the variable you want on the X-axis to the axis and drag the other variable to the Y-axis
4. Make sure that the statistic you want on the x-axis is selected under Statistic (i.e. Mean in our case, often selected automatically)
5. Click Ok

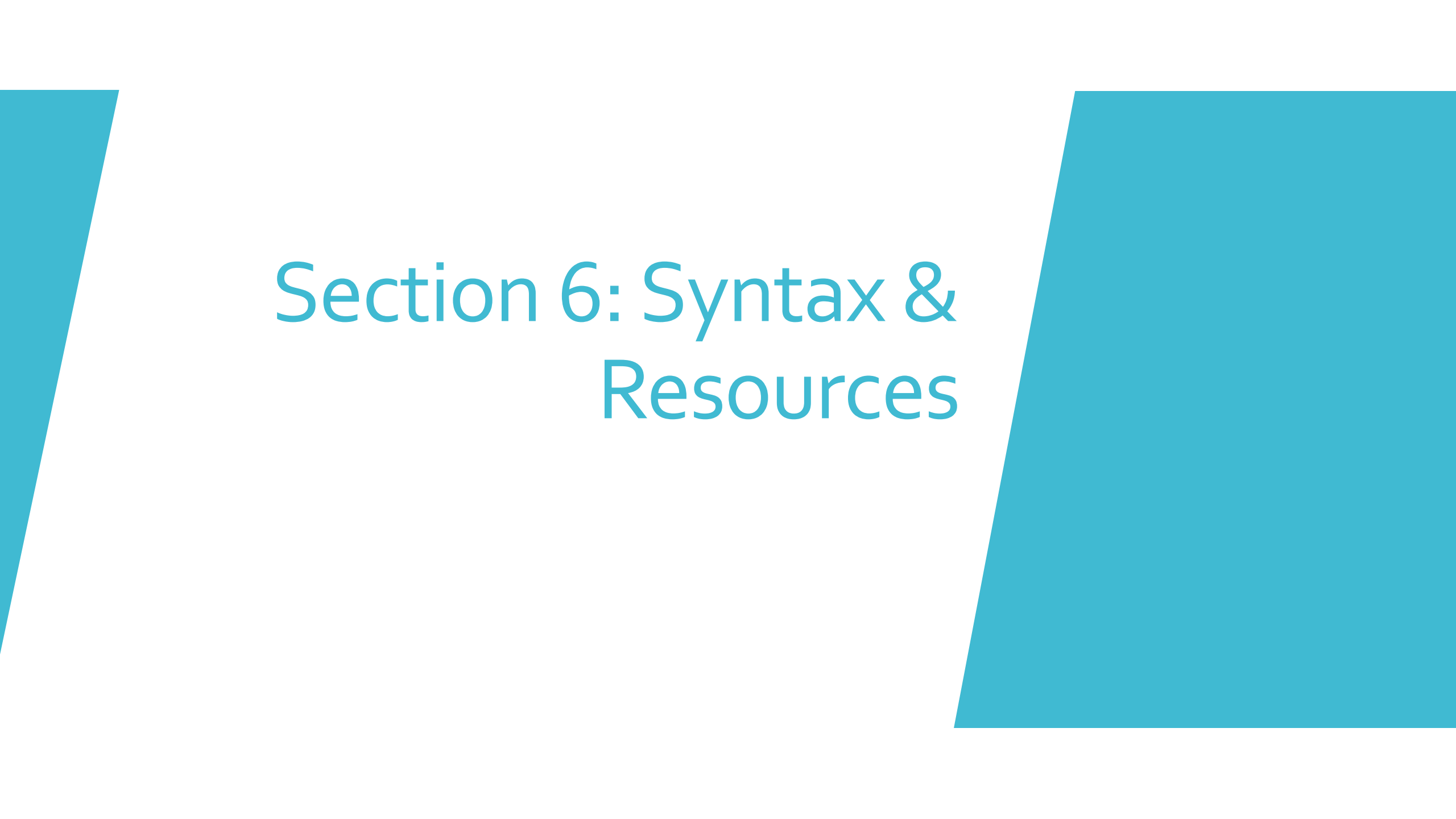


For source, click [here](#)

# EXERCISE

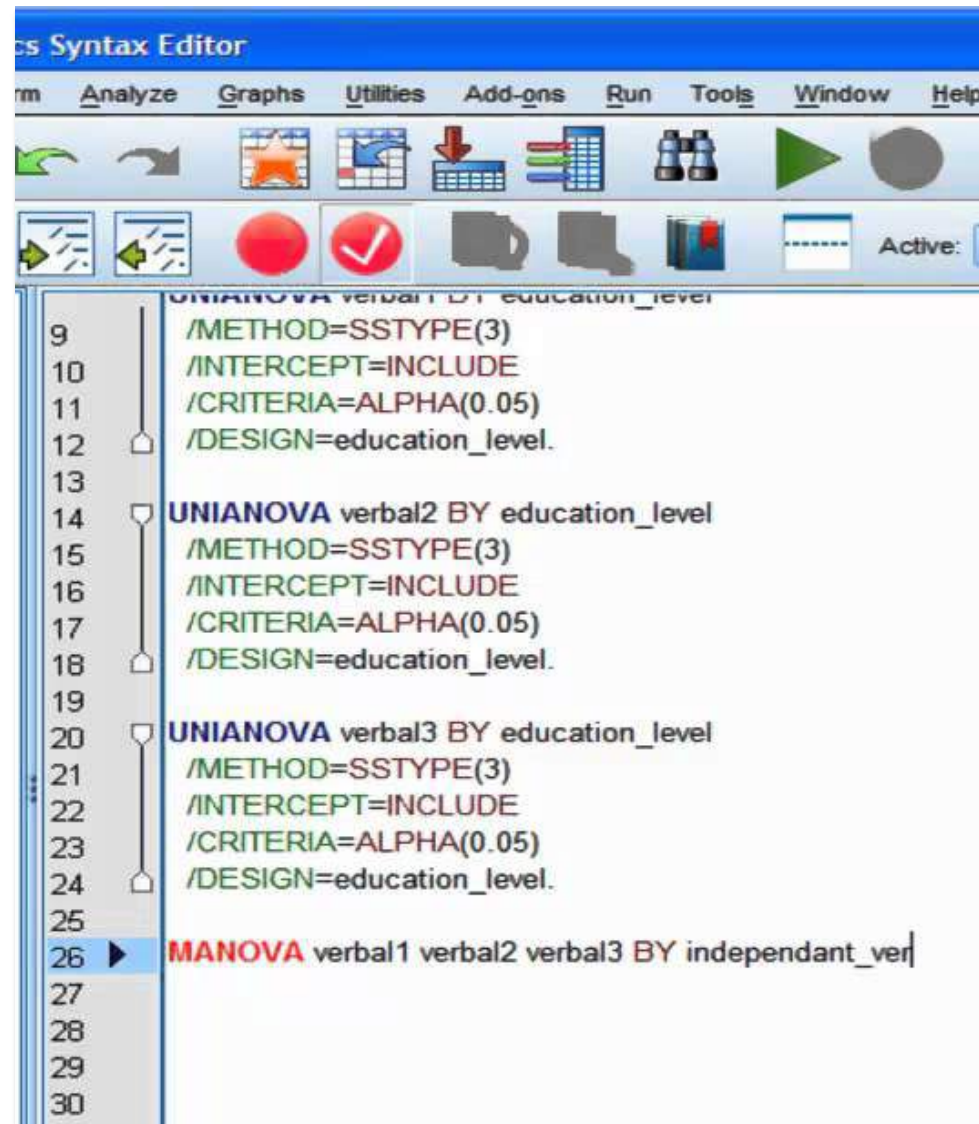
**Take the sample data file and**

- 1) Make a line graph for age by language using Chart Builder
- 2) Make a line graph for age by language using Legacy Dialogs



# Section 6: Syntax & Resources

# Syntax in SPSS



The screenshot shows the SPSS Syntax Editor window. The title bar reads "SPSS Syntax Editor". The menu bar includes "File", "Edit", "View", "Analyze", "Graphs", "Utilities", "Add-ons", "Run", "Tools", "Window", and "Help". The toolbar contains icons for undo, redo, save, open, print, and various analysis functions. The main text area contains the following syntax commands:

```
9      /METHOD=SSTYPE(3)
10     /INTERCEPT=INCLUDE
11     /CRITERIA=ALPHA(0.05)
12     /DESIGN=education_level.
13
14     UNIANOVA verbal2 BY education_level
15     /METHOD=SSTYPE(3)
16     /INTERCEPT=INCLUDE
17     /CRITERIA=ALPHA(0.05)
18     /DESIGN=education_level.
19
20     UNIANOVA verbal3 BY education_level
21     /METHOD=SSTYPE(3)
22     /INTERCEPT=INCLUDE
23     /CRITERIA=ALPHA(0.05)
24     /DESIGN=education_level.
25
26     MANOVA verbal1 verbal2 verbal3 BY independant_ver|
27
28
29
30
```

# QUESTION

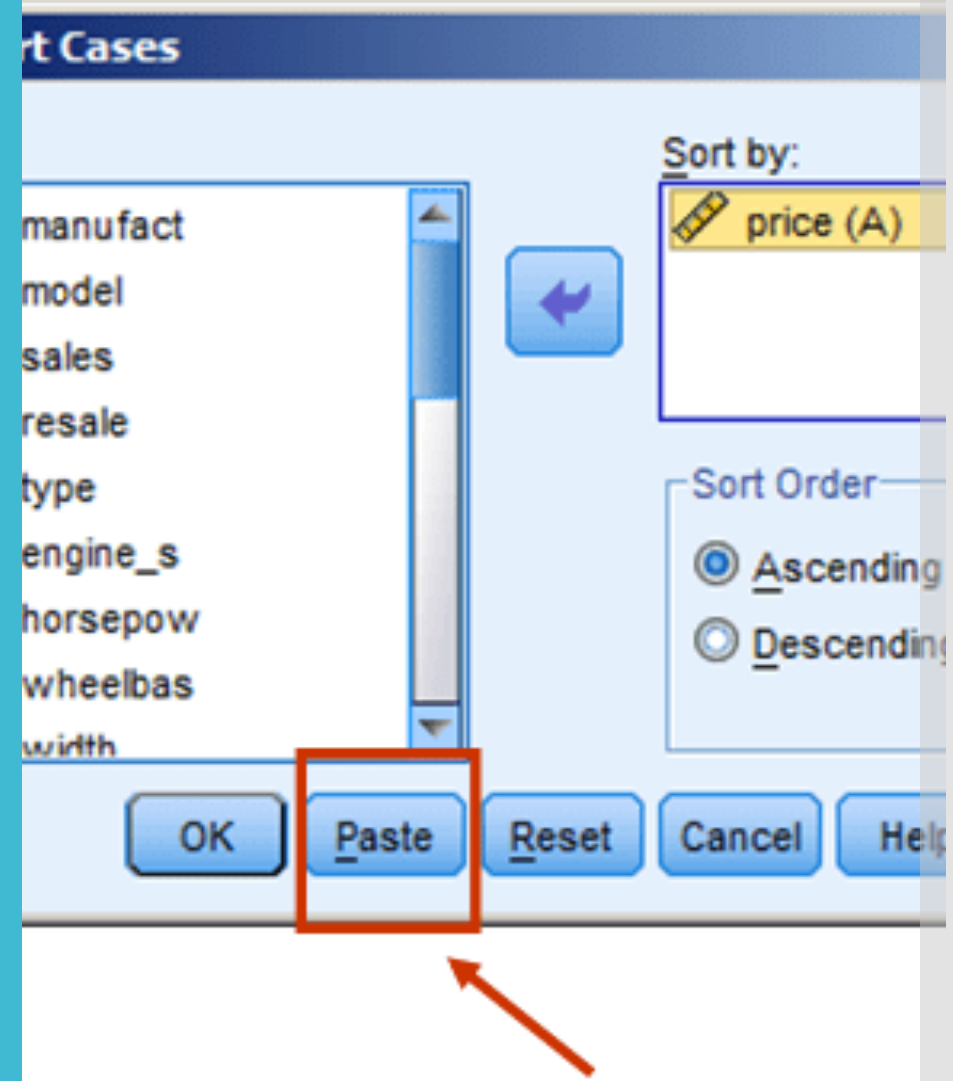
Why would syntax be useful for you in the context of your analyses?

# Why use syntax?

- Syntax describes each procedure that you ran for your data
  - It's a fantastic way of keeping your analyses organized.
  - It means that you will be able to refer back to a sheet that tells you everything you did with your data.
  - It also means you will be able to replicate your analyses if you have a data file with variables that had the same names.

# Writing Syntax

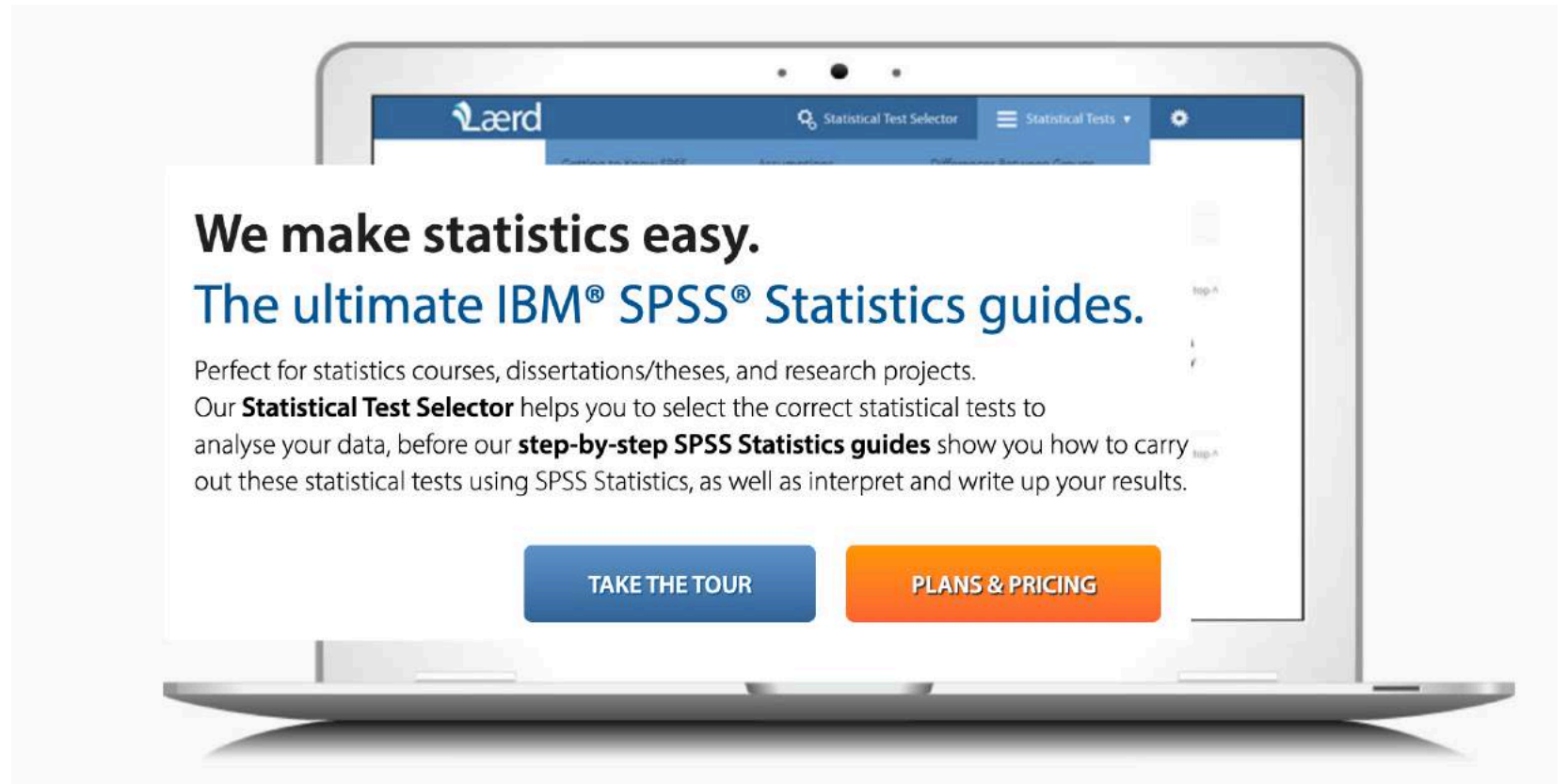
- ❑ Don't want to learn how to write syntax? No problem
- ❑ Every procedure box in SPSS has a Paste button. If you press Paste, it will automatically put the syntax for that procedure into a syntax file.
- ❑ Keep the syntax file open. If you want to run the procedure, you can either go back to the procedure box or highlight the syntax and press the green play button.





# Laerd

- My favourite SPSS resource
- Very detailed and easy to understand
- Step by step procedures
- Few free resources
- Reasonable pricing (\$6.99/6 months)



# Kent State Guides

- Detailed
- FREE
- Good for basic analyses
- Unclear what version of SPSS is being used, so some instructions may be unclear, but usually only minor issue

Students Faculty Locations

ASK US

MY LIBRARY ACCO

Search this Guide

SEARCH

anized into sections. Users can work through the tutorials in order or

s intended for new users of SPSS. In this section, you'll learn how to:

e drop-down menus or syntax.

from a file.

manipulation and cleaning of all kinds. In this section, you'll learn

ables.

erging, or transposing techniques.

for users who have mastered the skills in Section 1 and are ready to

learn how to:

umeric variables.

- Create frequency tables and crosstabulations of categorical variables.
- Graph the distributions or relationships of variables.
- Interpret these measures.

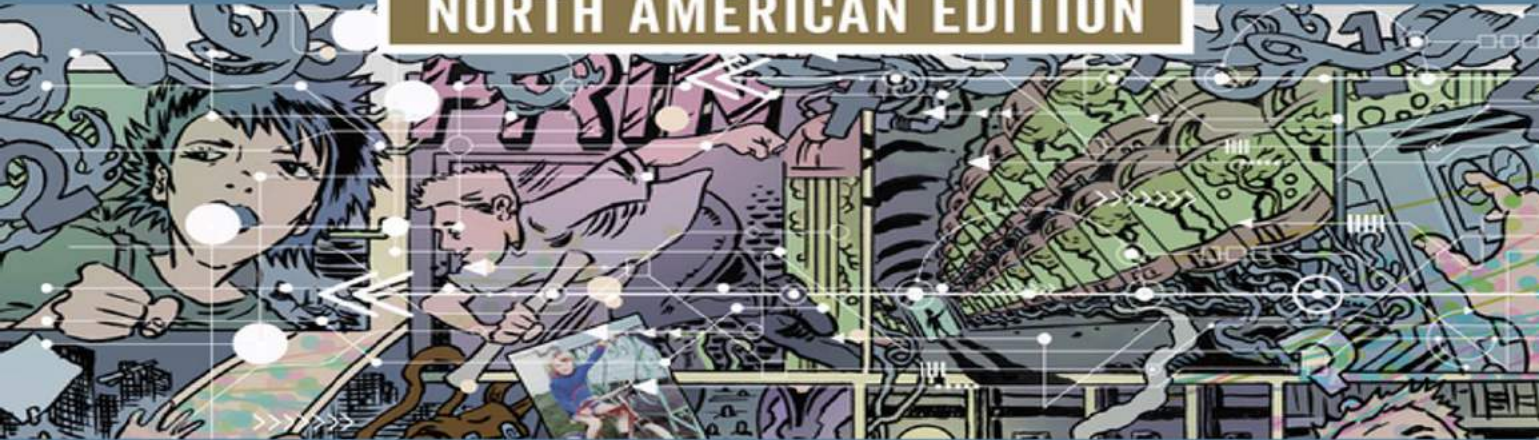
Subjects:

[Statistical Software](#)

5<sup>TH</sup>  
EDITION

# DISCOVERING STATISTICS USING IBM SPSS STATISTICS

NORTH AMERICAN EDITION



ANDY FIELD

## Discovering Statistics Using IBM SPSS

- Easy to read and understand
- Expensive (\$78 for the Kindle version)
- Worth it if you can afford it
- First two chapters available free on author's website



**Making Everything Easier!™**

**3rd Edition**

# **SPSS® Statistics FOR DUMMIES®**

A Wiley Brand

## **Learn to:**

- **Configure SPSS to produce better results**
- **Get data into and out of SPSS**
- **Produce graphs that best display your data**
- **Extend SPSS with programming options**

**Keith McCormick  
Jesus Salcedo  
with Aaron Poh**



## **SPSS for Dummies**

- Ebook available at the UBC Library
- Easy to navigate and straightforward
- Uses older version of SPSS, so some instructions might be unclear





The End

If you have any  
questions, please  
contact me at  
[maya.pilin@ubc.ca](mailto:maya.pilin@ubc.ca)