

[Commentary by [John F Hall](#)]

[[New page](#) 14 November 2017: last updated 16 June 2018]

John MacInnes

[An Introduction to Secondary Data Analysis with IBM SPSS Statistics](#)

(Sage, Dec. 2017)

Chapter 4: Getting Started with SPSS

4.2.1: [Exercise answer videos](#)

Previous guides:

[Aide-mémoire for easier navigation of companion website](#)

[MacInnes 4.1.1 Overview of video tutorials 1 to 6](#)

[MacInnes 4.1.2 Downloading the European Social Survey Practice File](#)

[MacInnes 4.1.3 Downloading the SPSS syntax](#)


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Chapter 4: Getting Started with SPSS 

- Video tutorials
- Syntax files and Datasets
- Exercise answer videos**

Extract from page 104

exercises using the ESS6 practice dataset

- 1 Which countries have the (a) highest and (b) lowest proportion of their adult populations born in other countries?
- 2 Across all countries, what proportion of those not born in the country in which they are living are women? (Hint: use the correct weight variable!)
- 3 Across all countries, is the employment rate for those born in the country higher or lower than those not born there?
- 4 What is the average age of those not born in the country they live in, compared to those born there?
- 5 Are those born in the country or those not born in the country more likely to belong to a religious denomination?
- 6 In which countries do people report the highest and lowest level of trust in political parties?
- 7 What seems to have more impact on trust in political parties: age, gender or religion?
- 8 What proportion of men and women have married by the time they are 30 years old across all the countries in the survey?
- 9 In which country is the proportion of people who say they never watch television the highest?
- 10 Produce a chart of the mean size of households across the countries in the survey, ranking average household size from the smallest to the largest.

Answers, and explanations of how to arrive at these results, are available on the companion website.

Videos 1 - 5 are more or less self-explanatory: they are fairly routine and repeat some analyses performed for topics covered in earlier exercises. As research questions go, they are not particularly interesting (except perhaps to demographers) but are useful as practical exercises in the mechanics of SPSS (navigating the ESS6 practice file, using (GUI) syntax, producing and interpreting output).

Research questions proper start with **Exercise 6**:

Research question:

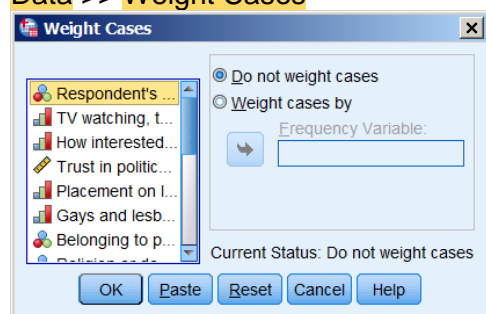
In which countries do people report the highest and lowest level of trust in political parties?

Variables: **[trstprt]** "Trust in political parties"
 [cntry] "Country of residence"

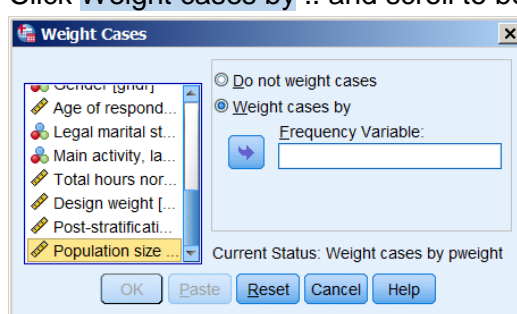
SPSS commands: **WEIGHT**
 FREQUENCIES
 MEANS

MacInnes performs a descriptive analysis done mainly via the GUI (and without saving any syntax).

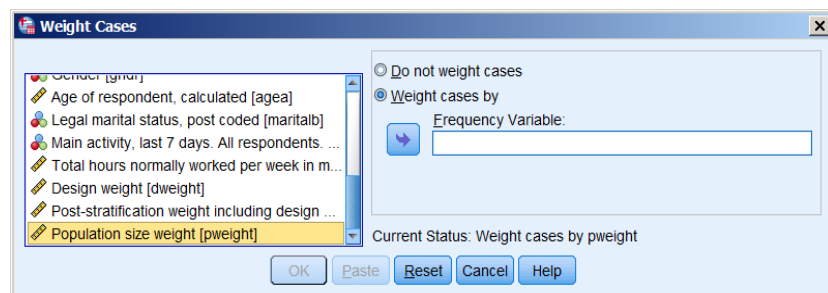
Data >> Weight Cases



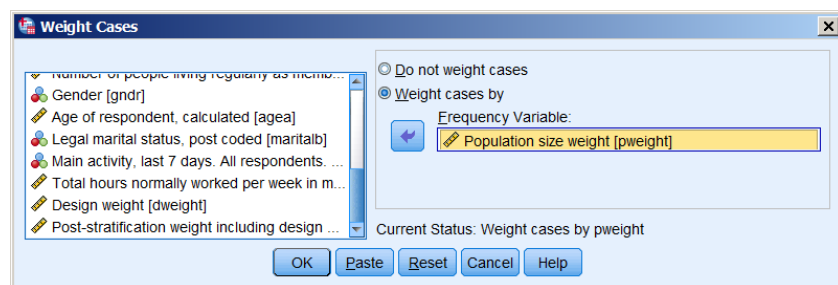
Click **Weight cases by ..** and scroll to bottom of list:



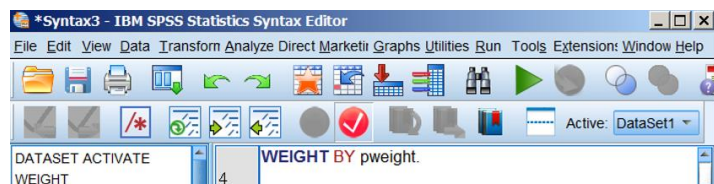
Drag right edge of pane out to see labels and variable name [pweight]:



.. click on blue arrow to transfer variable **[pweight]** to the **Frequency Variable** box:



Syntax generated by Paste

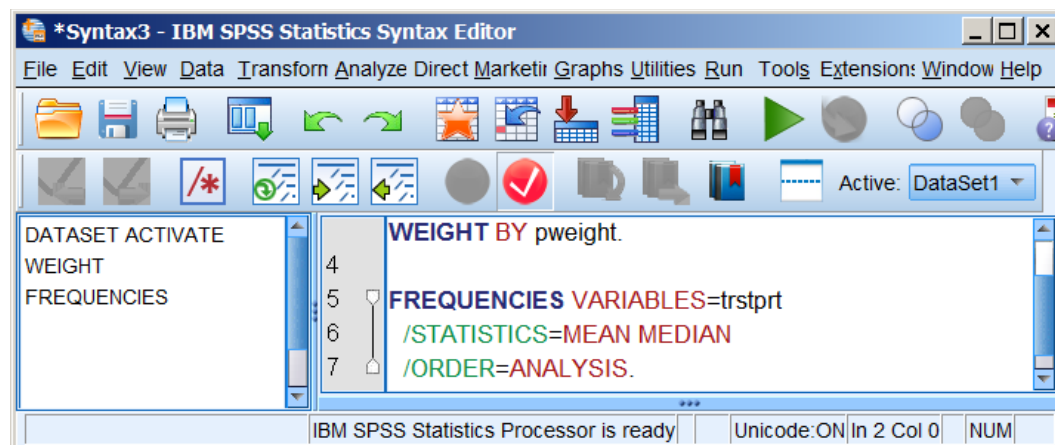


Go back to the **Data Editor**

Analyze >> Descriptive Statistics >> Frequencies



Syntax generated by Paste is added to the **Syntax Editor**:



This can actually be done more easily and quickly by typing direct into the **Syntax Editor**:

weight by pweight .
freq trstprt
 /**sta** **mea** **med** .

In addition to reporting the numbers of valid and missing cases, the summary statistics table now also includes the **mean** and **median** values for **[trstprt]**

Statistics

Trust in political parties

	N	Valid	54969
		Missing	1865
→	Mean		3.01
→	Median		3.00

The rows in the resultant frequency table are displayed in the SPSS **default** format, in **ascending** order of their (numeric) code value:

		Trust in political parties			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No trust at all	11743	20.7	21.4	21.4
	1	5619	9.9	10.2	31.6
	2	7230	12.7	13.2	44.7
	3	7705	13.6	14.0	58.8
	4	6023	10.6	11.0	69.7
	5	8470	14.9	15.4	85.1
	6	3905	6.9	7.1	92.2
	7	2593	4.6	4.7	96.9
	8	1110	2.0	2.0	99.0
	9	254	.4	.5	99.4
	Complete trust	317	.6	.6	100.0
	Total	54969	96.7	100.0	
Missing	Refusal	72	.1		
	Don't know	1736	3.1		
	No answer	57	.1		
	Total	1865	3.3		
Total		56835	100.0		

Not much trust in political parties there! Almost 50% of replies are on the lowest three points!

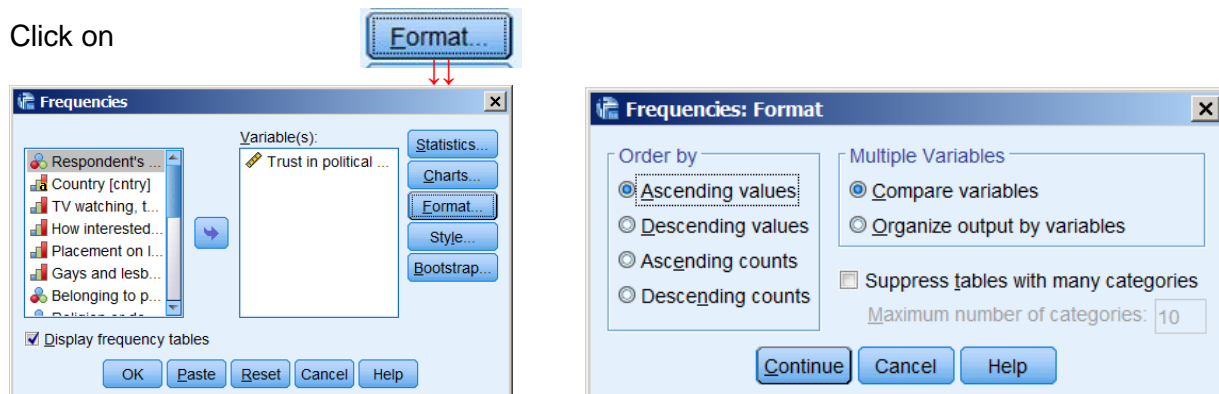
MacInnes treats [trstprt] as **Scale**, but then asks himself whether it should be treated as **Ordinal** (which it in fact is, but researchers often ignore this and treat such Likert items as interval scales anyway). He asks whether **mean** or **median** is the better indicator of a central value around which the actual values are spread. Has he actually covered this topic before? If not, why has he set it as an exercise? Is there an explanation of why one measure should be preferred to the other? I've looked hard and can't find one.

He also makes a comment about people using a scale of 1 - 10 to describe their level of trust in political parties, but the scale used is actually 0 - 10.

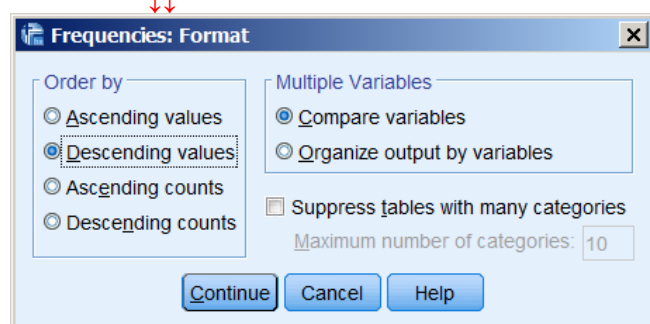
In his commentary JM says that "most of the responses tend to cluster towards the bottom of the **scale**" referring to points 8 – 10 which are actually at the bottom of the **table**. This is confusing: the table needs to be inverted so that the rows are displayed in **descending** order of their numeric code value. The GUI sequence would be:

Analyze >> Descriptive Statistics >> Frequencies

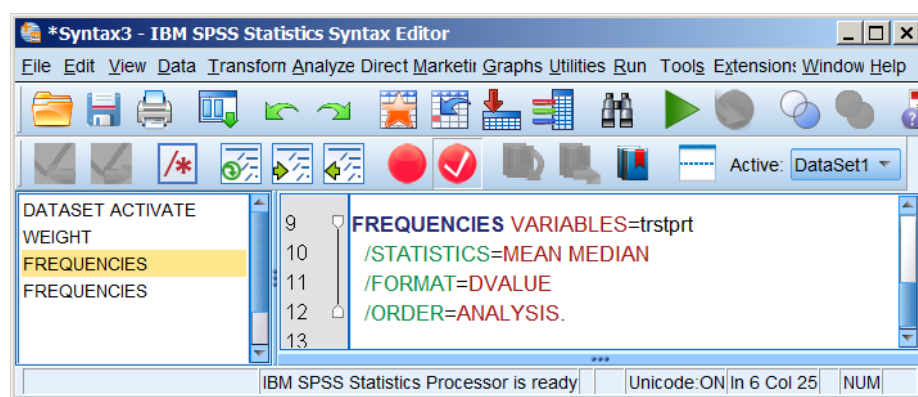
Click on



Check ☒ **Descending values** then



If you click on the syntax generated by SPSS is added to the **Syntax Editor**



.. but if you have a **Syntax Editor** open, it's much quicker and easier to type in:

```

frequencies trstprt
  /formats dvalue.
  
```

		Trust in political parties			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Complete trust	317	.6	.6	.6
	9	254	.4	.5	1.0
	8	1110	2.0	2.0	3.1
	7	2593	4.6	4.7	7.8
	6	3905	6.9	7.1	14.9
	5	8470	14.9	15.4	30.3
	4	6023	10.6	11.0	41.2
	3	7705	13.6	14.0	55.3
	2	7230	12.7	13.2	68.4
	1	5619	9.9	10.2	78.6
	No trust at all	11743	20.7	21.4	100.0
	Total	54969	96.7	100.0	
Missing	No answer	57	.1		
	Don't know	1736	3.1		
	Refusal	72	.1		
	Total	1865	3.3		
Total		56835	100.0		

A picture is worth a thousand words.

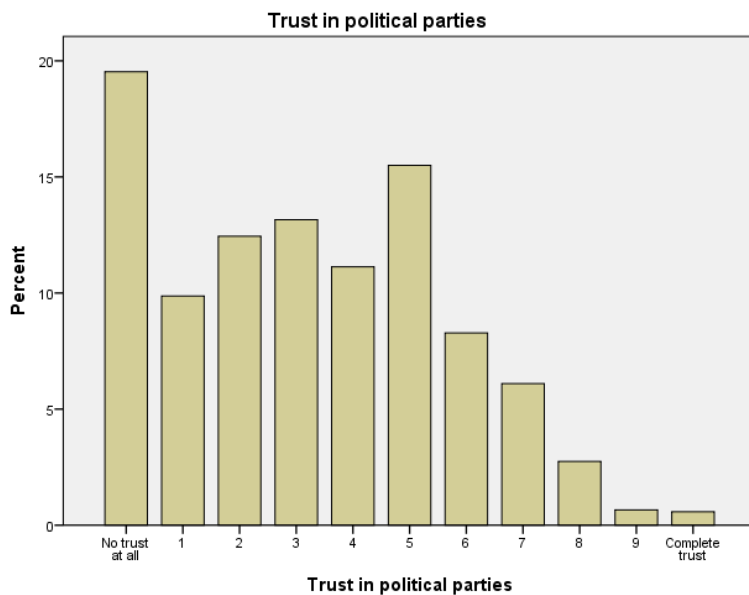
In data analysis a chart often has more impact than a table.

Strictly speaking the level of measurement of **[trstprt]** is not **Scale**, but **Ordinal**. A true **Scale** level variable would warrant a **histogram** because there is a fixed interval between each point. Because **[trstprt]** has no such fixed interval we need a **barchart** in which there are spaces between the bars to keep the plotted values separated. We have already obtained the frequency table, so we can suppress that and just ask for the **barchart** with:

```

frequencies trstprt
  /format notable
  /barchart percent.

```



Pitifully small numbers of people assign themselves to step 10 "Complete trust" in political parties or even to levels 8 and 9. Why? This warrants further investigation.

JM then proceeds to analyse both variables together, to explore the model:

Dependent variable: [trstprt] "Trust in political parties"
Independent variable: [cntry] "Country of residence"
SPSS command: MEANS

MEANS trstprt by cntry .

. . produces the following table:

[Weighted by pweight]

Report

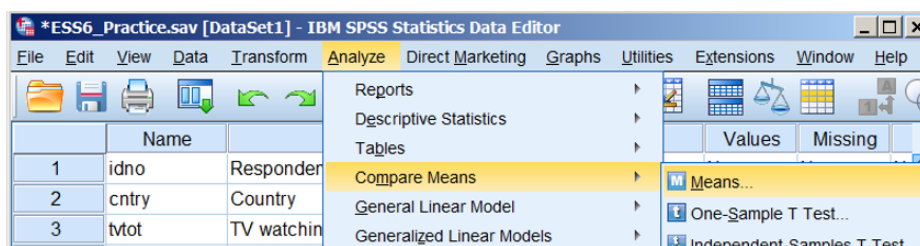
Trust in political parties

Country	Mean	N	Std. Deviation
Albania	2.26	219	2.877
Belgium	4.20	917	2.181
Bulgaria	1.80	606	2.035
Switzerland	4.97	643	1.962
Cyprus	2.47	69	2.346
Czech Republic	2.69	876	2.408
Germany	3.76	7012	2.045
Denmark	5.25	450	1.953
Estonia	3.22	111	2.214
Spain	1.90	3875	2.187
Finland	4.93	447	1.999
France	3.19	5273	2.119
United Kingdom	3.70	5030	2.119
Hungary	3.28	821	2.482
Ireland	2.98	347	2.266
Israel	3.14	536	2.477
Iceland	3.55	25	2.243
Italy	1.94	5104	2.180
Lithuania	2.80	246	2.206
Netherlands	5.12	1371	1.868
Norway	5.14	401	1.921
Poland	2.22	3168	2.025
Portugal	1.83	891	1.828
Russian Federation	2.99	11308	2.382
Sweden	4.91	772	1.993
Slovenia	2.26	172	2.044
Slovakia	2.68	450	2.222
Ukraine	1.86	3698	2.050
Kosovo	2.41	132	2.689
Total	3.01	54969	2.353

. . which he then edits to re-organise the countries in descending order of their mean value.

He doesn't show the stages in detail, but here's what he did:

Analyze >> Compare Means >> Means



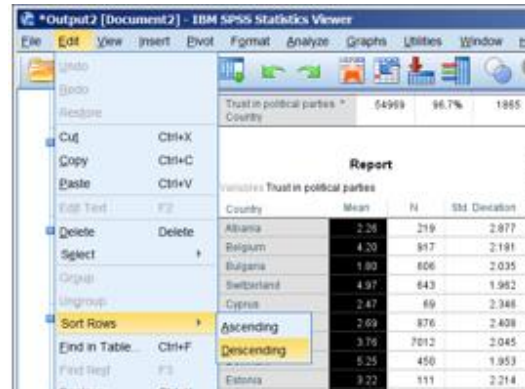
To sort the rows in descending order of the **mean**, double-click on the output table to enter **Pivot** mode:

highlight the **Mean** column, then **Edit >> Sort Rows >> Descending**

Report

Trust in political parties

Country	Mean	N	Std. Deviation
Albania	2.26	219	2.877
Belgium	4.20	917	2.181
Bulgaria	1.80	606	2.035
Switzerland	4.97	643	1.962
Cyprus	2.47	69	2.346
~~~~~			
Slovakia	2.68	450	2.222
Ukraine	1.86	3698	2.050
Kosovo	2.41	132	2.689
Total	3.01	54969	2.353



Report			
Variables Trust in political parties			
Country	Mean	N	Std. Deviation
Albania	2.32	1179	2.897
Belgium	4.23	1862	2.175
Bulgaria	1.80	2160	1.996
Switzerland	4.99	1420	1.939
Cyprus	2.46	1080	2.347
Czech Republic	2.69	1967	2.438
Germany	3.68	2923	2.034
Denmark	5.31	1618	1.961
Estonia	3.20	2320	2.224
Spain	1.88	1868	2.191
Finland	4.89	2176	2.002
France	3.13	1953	2.081
United Kingdom	3.61	2211	2.117
Hungary	3.24	1943	2.464
Ireland	2.94	2546	2.236
Israel	3.14	2396	2.442
Iceland	3.58	732	2.199
Italy	2.00	942	2.161
Lithuania	2.82	2033	2.166
Netherlands	5.02	1828	1.933
Norway	5.15	1605	1.877
Poland	2.21	1841	2.016
Portugal	1.87	2129	1.863
Russian Federation	3.01	2329	2.387
Sweden	4.86	1808	2.005
Slovenia	2.27	1225	2.043
Slovakia	2.74	1819	2.252
Ukraine	1.90	2070	2.060
Kosovo	2.01	1252	2.553
Total	3.22	53235	2.426

[My highlights]

Report			
Trust in political parties			
Country	Mean	N	Std. Deviation
Bulgaria	1.80	606	2.035
Portugal	1.83	891	1.828
Ukraine	1.86	3698	2.050
Spain	1.90	3875	2.187
Italy	1.94	5104	2.180
Poland	2.22	3168	2.025
Slovenia	2.26	172	2.044
Albania	2.26	219	2.877
Kosovo	2.41	132	2.689
Cyprus	2.47	69	2.346
Slovakia	2.68	450	2.222
Czech Republic	2.69	876	2.408
Lithuania	2.80	246	2.206
Ireland	2.98	347	2.266
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Israel	3.14	536	2.477
France	3.19	5273	2.119
Estonia	3.22	111	2.214
Hungary	3.28	821	2.482
Iceland	3.55	25	2.243
United Kingdom	3.70	5030	2.119
Germany	3.76	7012	2.045
Belgium	4.20	917	2.181
Sweden	4.91	772	1.993
Finland	4.93	447	1.999
Switzerland	4.97	643	1.962
Netherlands	5.12	1371	1.868
Norway	5.14	401	1.921
Denmark	5.25	450	1.953
Total	3.01	54969	2.353

[My colouring]

Note that the overall **sample mean** of 3.01 has been partitioned into **conditional means** for each country ranging from 1,80 to 5.25. Hang on to this idea of **partitioning**: it is the key to the statistical analysis of relationships between dependent and independent variables.

## Misgiving

I am not convinced that comparison of means is the best place to start this analysis. The use of means loses sight of the **shape** of the distribution of values of the dependent variable. The same mean can be obtained from very different distributions.

My inclination would be first, to produce an intermediate contingency table in order to compare the percentages at each end of the scale. For instance:

**CROSSTABS** cntry by trstprt  
/cells row.

. . yields the following very large table.

So few people assigned themselves to step 10 "Complete trust" (0.6% of the total sample) that we can confine our comparison to the percentage of people in each country who placed themselves on step 0 "No trust at all" (21.4% of the total sample).

		Country * Trust in political parties Crosstabulation												
% within Country Weighted by pweight		Trust in political parties											Complete trust	Total
		No trust at all	1	2	3	4	5	6	7	8	9			
Country	Albania	47.7	8.3	7.8	6.0	6.9	9.2	4.1	3.2	2.3	0.9	3.7	100.0	
	Belgium	8.5	5.6	8.7	12.2	11.8	24.3	15.7	9.3	3.2	0.3	0.4	100.0	
	Bulgaria	39.2	14.9	13.6	13.2	8.1	6.8	1.3	1.0	1.0	0.3	0.7	100.0	
	Switzerland	3.1	2.5	5.6	10.7	12.1	25.2	19.3	13.5	6.5	0.9	0.5	100.0	
	Cyprus	29.9	16.4	10.4	13.4	7.5	14.9	4.5	1.5	1.5			100.0	
	Czech Republic	23.8	14.0	17.6	11.7	8.3	11.3	4.8	3.8	2.7	1.6	0.3	100.0	
	Germany	8.7	6.0	11.5	18.5	16.0	21.3	9.2	6.0	2.4	0.2	0.3	100.0	
	Denmark	1.8	1.6	5.3	11.1	11.3	22.4	17.6	18.0	8.2	1.6	1.1	100.0	
	Estonia	14.5	10.9	15.5	16.4	12.7	16.4	6.4	4.5	1.8		0.9	100.0	
	Spain	42.2	11.7	11.7	11.6	7.5	8.2	3.1	2.1	1.0	0.5	0.3	100.0	
	Finland	2.9	2.5	6.7	11.4	14.3	19.9	18.3	15.9	6.7	0.9	0.4	100.0	
	France	15.1	8.6	15.2	16.9	12.7	18.9	7.0	3.2	1.9	0.3	0.1	100.0	
	United Kingdom	9.8	7.3	12.5	15.5	15.3	20.1	10.6	6.4	1.8	0.2	0.4	100.0	
	Hungary	17.4	10.7	14.3	14.7	9.5	14.5	7.2	6.0	3.5	1.2	1.0	100.0	
	Ireland	19.3	10.6	15.8	13.5	13.2	14.4	6.0	3.7	2.6	0.6	0.3	100.0	
	Israel	23.1	7.3	13.6	11.9	10.8	14.9	8.2	6.3	2.8	0.6	0.6	100.0	
	Iceland	12.0	8.0	12.0	16.0	16.0	20.0	8.0	4.0	4.0			100.0	
	Italy	41.2	11.7	12.9	9.4	7.9	10.0	3.6	1.9	1.0		0.5	100.0	
	Lithuania	16.7	16.7	17.1	14.3	12.2	11.0	5.3	2.9	2.4	0.8	0.4	100.0	
	Netherlands	3.0	3.1	3.9	7.5	12.0	22.3	24.1	19.0	5.0	0.2		100.0	
	Norway	2.3	1.3	5.8	9.0	14.0	25.0	18.3	15.5	6.3	1.8	1.0	100.0	
	Poland	26.6	16.8	18.1	12.2	10.2	10.4	2.5	1.8	0.9	0.2	0.2	100.0	
	Portugal	33.3	16.7	17.8	14.0	8.2	7.0	1.2	1.0	0.6	0.1	0.1	100.0	
	Russian Federation	19.6	12.2	14.5	15.2	9.4	15.3	5.9	4.0	1.8	0.9	1.3	100.0	
	Sweden	3.1	2.6	6.3	11.3	13.7	23.8	16.3	15.3	5.8	1.0	0.6	100.0	
	Slovenia	28.9	11.6	17.3	16.8	7.5	11.0	4.0	1.7	0.6		0.6	100.0	
	Slovakia	18.9	18.7	14.2	15.6	10.4	12.2	3.6	3.1	2.2	0.4	0.7	100.0	
	Ukraine	38.2	14.4	14.9	12.4	6.6	8.1	2.7	1.2	0.8	0.3	0.4	100.0	
	Kosovo	35.9	14.5	11.5	9.2	5.3	10.7	3.8	3.1	2.3	1.5	2.3	100.0	
Total		21.4	10.2	13.2	14.0	11.0	15.4	7.1	4.7	2.0	0.5	0.6	100.0	

[NB: Table edited to narrow columns and get rid of % signs in the cells]

As with the table of means, the rows in the above table can be re-ordered in descending order of % of respondents assigning themselves to point 0 "No trust at all". Double click on the table to enter **Pivot** mode, highlight the cells in the 0 column (but not the **Total** cell) and click on:

**Edit >> Sort Rows >>> Descending**

Table with rows re-ordered by % "No trust at all"

% within Country Weighted by pweight		Trust in political parties											Complete trust	Total
	No trust at all	1	2	3	4	5	6	7	8	9				
Country	Albania	47.7	8.3	7.8	6.0	6.9	9.2	4.1	3.2	2.3	0.9	3.7	100.0	
	Spain	42.2	11.7	11.7	11.6	7.5	8.2	3.1	2.1	1.0	0.5	0.3	100.0	
	Italy	41.2	11.7	12.9	9.4	7.9	10.0	3.6	1.9	1.0		0.5	100.0	
	Bulgaria	39.2	14.9	13.6	13.2	8.1	6.8	1.3	1.0	1.0	0.3	0.7	100.0	
	Ukraine	38.2	14.4	14.9	12.4	6.6	8.1	2.7	1.2	0.8	0.3	0.4	100.0	
	Kosovo	35.9	14.5	11.5	9.2	5.3	10.7	3.8	3.1	2.3	1.5	2.3	100.0	
	Portugal	33.3	16.7	17.8	14.0	8.2	7.0	1.2	1.0	0.6	0.1	0.1	100.0	
	Cyprus	29.9	16.4	10.4	13.4	7.5	14.9	4.5	1.5	1.5			100.0	
	Slovenia	28.9	11.6	17.3	16.8	7.5	11.0	4.0	1.7	0.6		0.6	100.0	
	Poland	26.6	16.8	18.1	12.2	10.2	10.4	2.5	1.8	0.9	0.2	0.2	100.0	
	Czech Republic	23.8	14.0	17.6	11.7	8.3	11.3	4.8	3.8	2.7	1.6	0.3	100.0	
	Israel	23.1	7.3	13.6	11.9	10.8	14.9	8.2	6.3	2.8	0.6	0.6	100.0	
	Russian Federation	19.6	12.2	14.5	15.2	9.4	15.3	5.9	4.0	1.8	0.9	1.3	100.0	
	Ireland	19.3	10.6	15.8	13.5	13.2	14.4	6.0	3.7	2.6	0.6	0.3	100.0	
	Slovakia	18.9	18.7	14.2	15.6	10.4	12.2	3.6	3.1	2.2	0.4	0.7	100.0	
	Hungary	17.4	10.7	14.3	14.7	9.5	14.5	7.2	6.0	3.5	1.2	1.0	100.0	
	Lithuania	16.7	16.7	17.1	14.3	12.2	11.0	5.3	2.9	2.4	0.8	0.4	100.0	
	France	15.1	8.6	15.2	16.9	12.7	18.9	7.0	3.2	1.9	0.3	0.1	100.0	
	Estonia	14.5	10.9	15.5	16.4	12.7	16.4	6.4	4.5	1.8		0.9	100.0	
	Iceland	12.0	8.0	12.0	16.0	16.0	20.0	8.0	4.0	4.0			100.0	
	United Kingdom	9.8	7.3	12.5	15.5	15.3	20.1	10.6	6.4	1.8	0.2	0.4	100.0	
	Germany	8.7	6.0	11.5	18.5	16.0	21.3	9.2	6.0	2.4	0.2	0.3	100.0	
	Belgium	8.5	5.6	8.7	12.2	11.8	24.3	15.7	9.3	3.2	0.3	0.4	100.0	
	Switzerland	3.1	2.5	5.6	10.7	12.1	25.2	19.3	13.5	6.5	0.9	0.5	100.0	
	Sweden	3.1	2.6	6.3	11.3	13.7	23.8	16.3	15.3	5.8	1.0	0.6	100.0	
	Netherlands	3.0	3.1	3.9	7.5	12.0	22.3	24.1	19.0	5.0	0.2		100.0	
	Finland	2.9	2.5	6.7	11.4	14.3	19.9	18.3	15.9	6.7	0.9	0.4	100.0	
	Norway	2.3	1.3	5.8	9.0	14.0	25.0	18.3	15.5	6.3	1.8	1.0	100.0	
	Denmark	1.8	1.6	5.3	11.1	11.3	22.4	17.6	18.0	8.2	1.6	1.1	100.0	
Total		21.4	10.2	13.2	14.0	11.0	15.4	7.1	4.7	2.0	0.5	0.6	100.0	

[NB: Table edited to narrow columns and get rid of % signs in the cells]

Note that the overall **sample percentage** of 21.4% having "No trust at all" has been partitioned into **conditional percentages** for each country ranging from 1.8% to 47.7%. Again hang on to this idea of **partitioning**: it is the key to the statistical analysis of relationships between dependent and independent variables. In fact the word **analysis** is derived from the ancient Greek word for breaking down.

Early versions of SPSS actually had a **BREAKDOWN** command (always good for a laugh in the classroom with students who were just about coping with SPSS syntax).

**Comparison of method****[trstprt]** Trust in political parties

Ranked by:

**% No trust all****Mean**

Country	Albania	47.7
	Spain	42.2
	Italy	41.2
	Bulgaria	39.2
	Ukraine	38.2
	Kosovo	35.9
	Portugal	33.3
	Cyprus	29.9
	Slovenia	28.9
	Poland	26.6
	Czech Republic	23.8
	Israel	23.1
	Russian Federation	19.6
	Ireland	19.3
	Slovakia	18.9
	Hungary	17.4
	Lithuania	16.7
	France	15.1
	Estonia	14.5
	Iceland	12.0
	United Kingdom	9.8
	Germany	8.7
	Belgium	8.5
	Switzerland	3.1
	Sweden	3.1
	Netherlands	3.0
	Finland	2.9
	Norway	2.3
	Denmark	1.8
Total		21.4

Bulgaria	1.80
Portugal	1.83
Ukraine	1.86
Spain	1.90
Italy	1.94
Poland	2.22
Slovenia	2.26
Albania	2.26
Kosovo	2.41
Cyprus	2.47
Slovakia	2.68
Czech Republic	2.69
Lithuania	2.80
Ireland	2.98
Russian Federation	2.99
Israel	3.14
France	3.19
Estonia	3.22
Hungary	3.28
Iceland	3.55
United Kingdom	3.70
Germany	3.76
Belgium	4.20
Sweden	4.91
Finland	4.93
Switzerland	4.97
Netherlands	5.12
Norway	5.14
Denmark	5.25
Total	3.01

As you can see the ranking by percentage on step 10 is different from the ranking by mean, not by much, but worth noting.

**End of:**        **MacInnes 4.2.1 Exercise answer videos for Chapter 4** (Supplementary tutorial)

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