Practical Session 2

Statistical graphics for qualitative variables

1. Creating a frequency table

   If you have raw (categorical) data, you can use the COUNTIF (CONTAR.SI) command to put the data into a frequency table.

   The following data represent the Political Party supported by a certain group of students.

   Which political party do you support?

PP	PP	PP
PP	PSOE	PSOE
PSOE	PP	PP
Podemos	PP	Cs
Cs	Cs	Podemos
Other	Cs	Cs
PSOE	Podemos	PSOE
PP	Podemos	PP
Cs	Other	PP
PP	Other	PSOE
Other	PSOE	Cs
Podemos	PSOE	Other
Podemos	PP	PP
PP	Cs	Cs
Cs	Podemos	Other
PSOE	PP	PSOE
PSOE	PP	PP
Podemos	Cs	PP
Other	Podemos	PSOE
Podemos	Other	PSOE
Podemos	PP	Podemos

   The easiest way to set up the table is first to write the categories in a column of Excel.

   Political party
   PP
   PSOE
   Podemos
   Cs
   Other

Then use the command **COUNTIF (data; category)** to find how many data there are in a given category. If the data are in cells **B3:D23** then write **COUNTIF(B3:D23;"PP")** to find how many PP voters there are.

Even faster, if the categories are in cells **F7:F11**, we can the dollar trick (clicking **F4**) to fix the data and set **COUNTIF($B$3:$D$23;F7)** to count the PP voters and then simply drag the formula down.

Political party	n
PP	19
PSOE	13
Podemos	12
Cs	11
Other	8

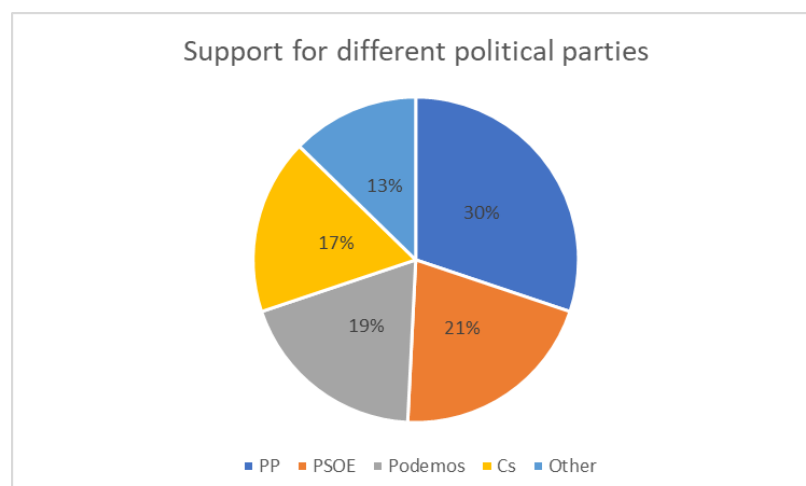We can complete the table by counting the total number of data using SUM and then converting the data to proportions dividing the absolute frequencies by the total. We use the dollar trick again to do this quickly.

The final table should look something like the following.

Political party	n	f
PP	19	0.30
PSOE	13	0.21
Podemos	12	0.19
Cs	11	0.17
Other	8	0.13
Total	63	1.00

2. Drawing a pie chart in Excel.

Just mark the data and then under the Insert option choose the pie chart under Reommended graphs. You can play with the different formats to get something that makes the results clear. The following example shows the absolute frequencies, but you could easily show the proportions.

3. Drawing a bar graph.

   The following bar chart shows the relative frequencies. Note that the bars should be separated, and we should add labels to the axes.

   Support for different political parties

   (bar chart: vertical axis labelled f from 0 to 0,35 in steps of 0,05; horizontal axis labelled "Political party" with categories PP, PSOE, Podemos, Cs, Other. Bar values approximately: PP 0,3; PSOE 0,2; Podemos 0,19; Cs 0,17; Other 0,13)