

Biometry practical 1

Illustrated (imperfect) practical guide

If there will be something unclear in following guides, ask from the teacher!

Solving the exercises punctually following the guides without understanding, why something must be done, is not very useful ...

Preparatory work

1. Save the questionnaire data of previous courses (http://www.eau.ee/~ktanel/VL_0413/ankeet.xlsx),
2. open the saved fail in MS Excel,
3. rename the first worksheet containing the dataset as 'Andmed' (or 'Data'),
4. rename 'Sheet2' to 'Praks1' (or 'Practical 1'),



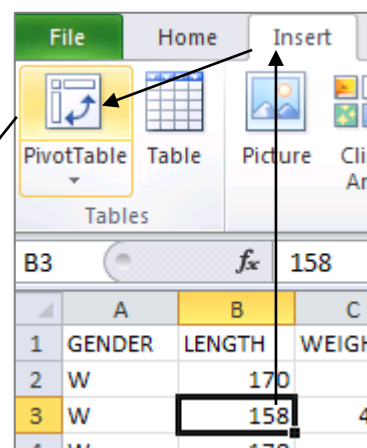
5. make a copy of the datatable (from worksheet 'Andmed') and paste it into the upper left corner of the worksheet 'Praks1'.

Exercise 1.

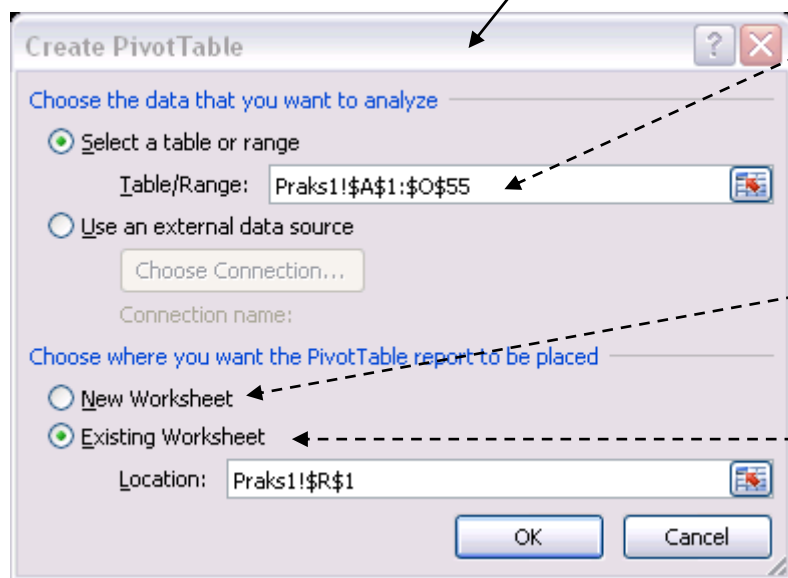
- Construct the frequency table to variable 'BREAKFAST',
- sort the frequency table by frequencies from largest to smallest values, and
- illustrate the frequency table with barplot. Format the barplot to be normal also in black and white printout.
- Calculate relative frequencies and construct the barplot also based on those.

Guide

1. Put the cursor into some cell in the datatable (in worksheet 'Praks1').
2. *Insert* → *PivotTable*



3.



☐) If you put the cursor into datatable before selecting command *PivotTable*, *Excel* selects automatically whole table and you don't need to select anything more.

☐) By default *Excel* will add a new worksheet for *PivotTable*.

If you want to put the *PivotTable* into existing worksheet, you must select the second opinion and give the address of the right upper corner of constructed *PivotTable* (option *Location*).

4.

PivotTable Field List

Choose fields to add to report:

- GENDER
- LENGTH
- WEIGHT
- HEAD
- SHOE_SIZE
- MATH
- BREAKFAST**
- PORRIDGE
- PET

Drag fields between areas below:

Report Filter

Column Labels

Row Labels: BREAKFAST

Values: Count of BRE...

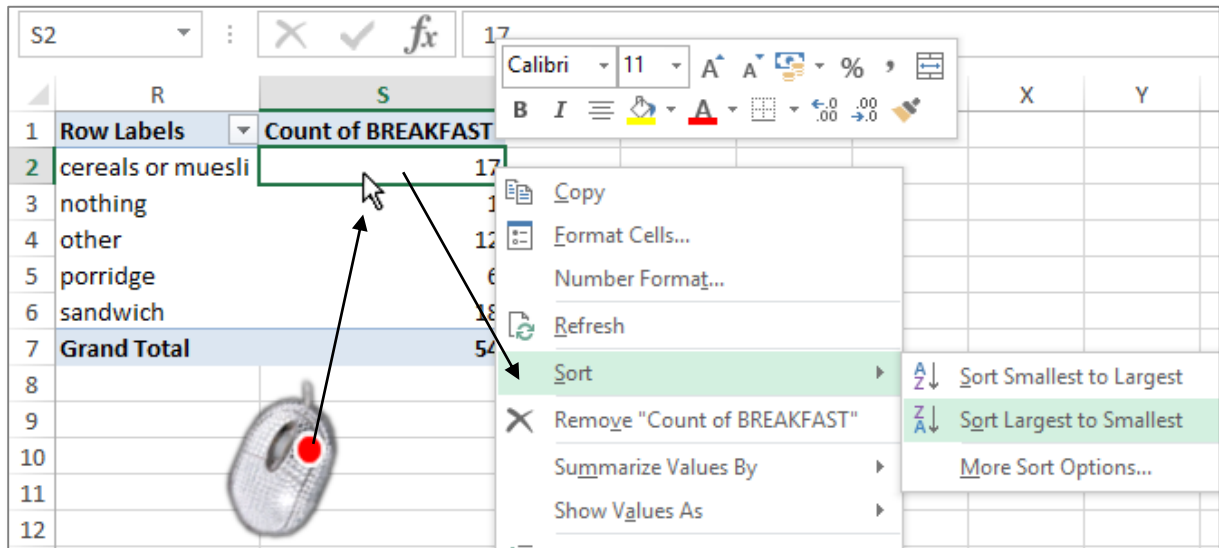
Drag the variable BREAKFAST into cell Row Labels and also into cell Values

Result:

Row Labels	Count of BREAKFAST
cereals or muesli	17
nothing	1
other	12
porridge	6
sandwich	18
Grand Total	54

5. Sorting the constructed *PivotTable* by frequencies

☐) One variant is to click with the mouse right button in the frequencies' column and select the sort-command from the drop-down menu.



Result:

Row Labels	Count of BREAKFAST
sandwich	18
cereals or muesli	17
other	12
porridge	6
nothing	1
Grand Total	54

6. Diagram construction.

NB! At the first step the copy of **values** listed in *PivotTable* should be made:

Select the cell where to paste *PivotTable* values

Paste only values
(using the corresponding button or selecting the desired option from command *Paste Special...*)

Pivot Table

Row Labels	Count of BREAKFAST
sandwich	18
cereals or muesli	17
other	12
porridge	6
nothing	1
Grand Total	54

Copied values

Row Labels	Count of BREAKFAST
sandwich	18
cereals or muesli	17
other	12
porridge	6
nothing	1
Grand Total	54

Result:

Row Labels	Count of BREAKFAST
sandwich	18
cereals or muesli	17
other	12
porridge	6
nothing	1
Grand Total	54

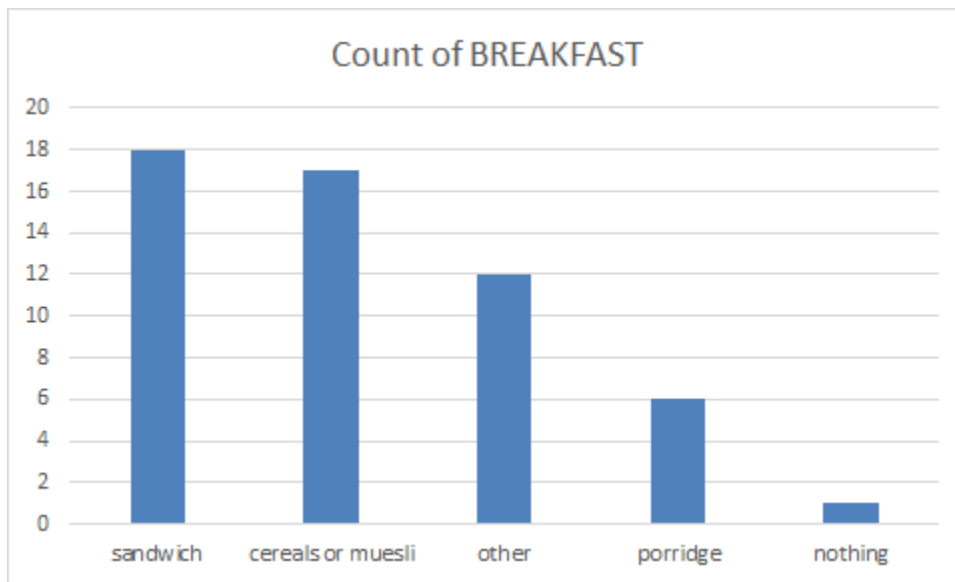
Pivot Table

Copied values

For figure construction use copied values (and without *Grand Total* row)!

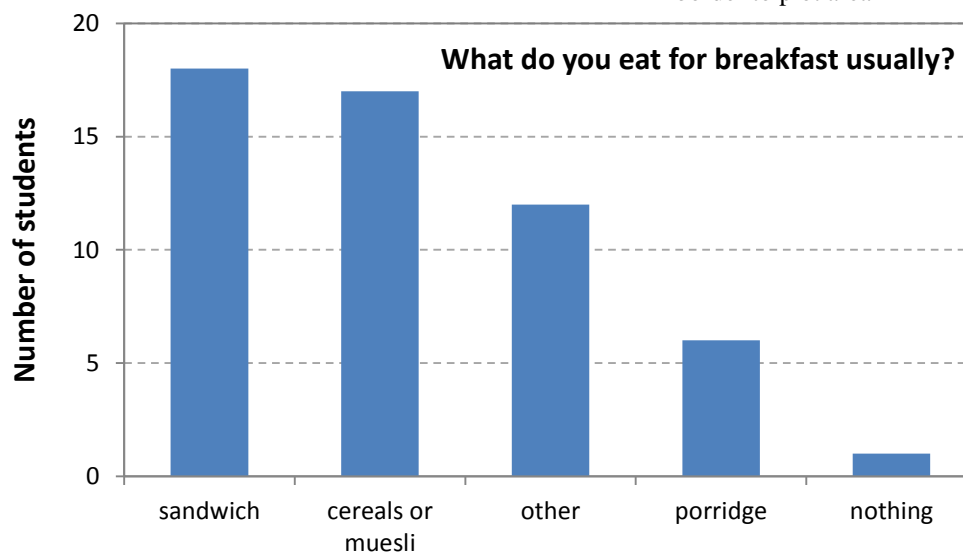
2-D Column

3-D Column



Try to format the figure in the following way.

- Delete figure title and add axes with major tick marks
- Mark the major gridlines with light grey dotted lines
- Put titles to x- and y-axis, move the x-axis title inside the plot area; change the text color to black
- Present the axis units in size 10 and axis titles in size 12
- Fix the maximum of y-axis to 20 , minimum to 0 and major unit to 5
- Change the gap between bar to 120%
- Remove the border of the chart area and add grey border to plot area



7. Calculate relative frequencies, present these in percentages and make a new barplot.

	U	V	W	X	Y
1		Row Labels	Count of BREAKFAST		
2		sandwich	18	=W2/SUM(\$W\$2:\$W\$6)	
3		cereals or muesli	17		
4		other	12		
5		porridge	6		
6		nothing	1		
7		Grand Total	54		

Why are there dollar-signs \$ in formula?

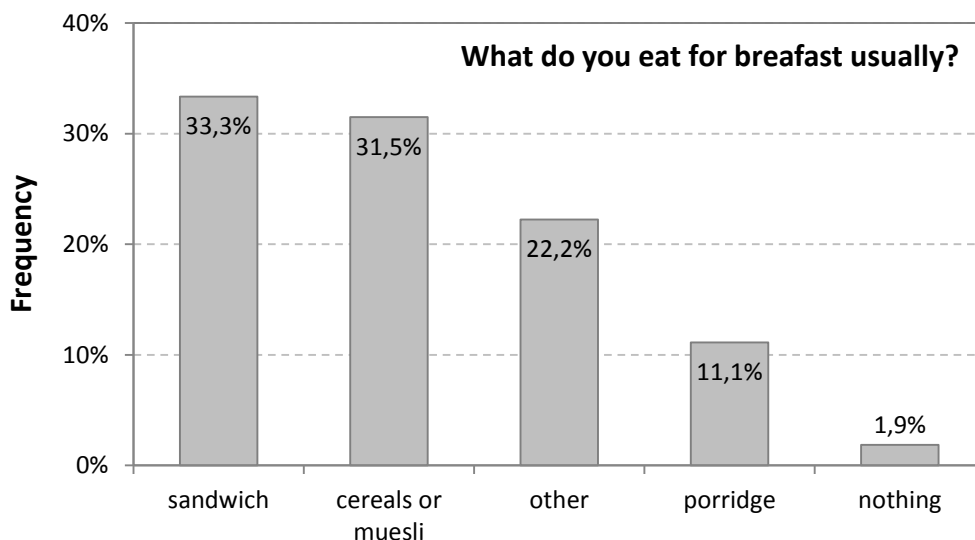
Row Labels	Count of BREAKFAST
sandwich	18
cereals or muesli	17
other	12
porridge	6
nothing	1
Grand Total	54

	V	W	X	Y	Z	AA	A
	Row Labels	Count of BREAKFAST					
	sandwich	18	0.333333				
	cereals or muesli	17	0.314815				
	other	12	0.222222				
	porridge	6	0.111111				
	nothing	1	0.018519				
	Grand Total	54	1				

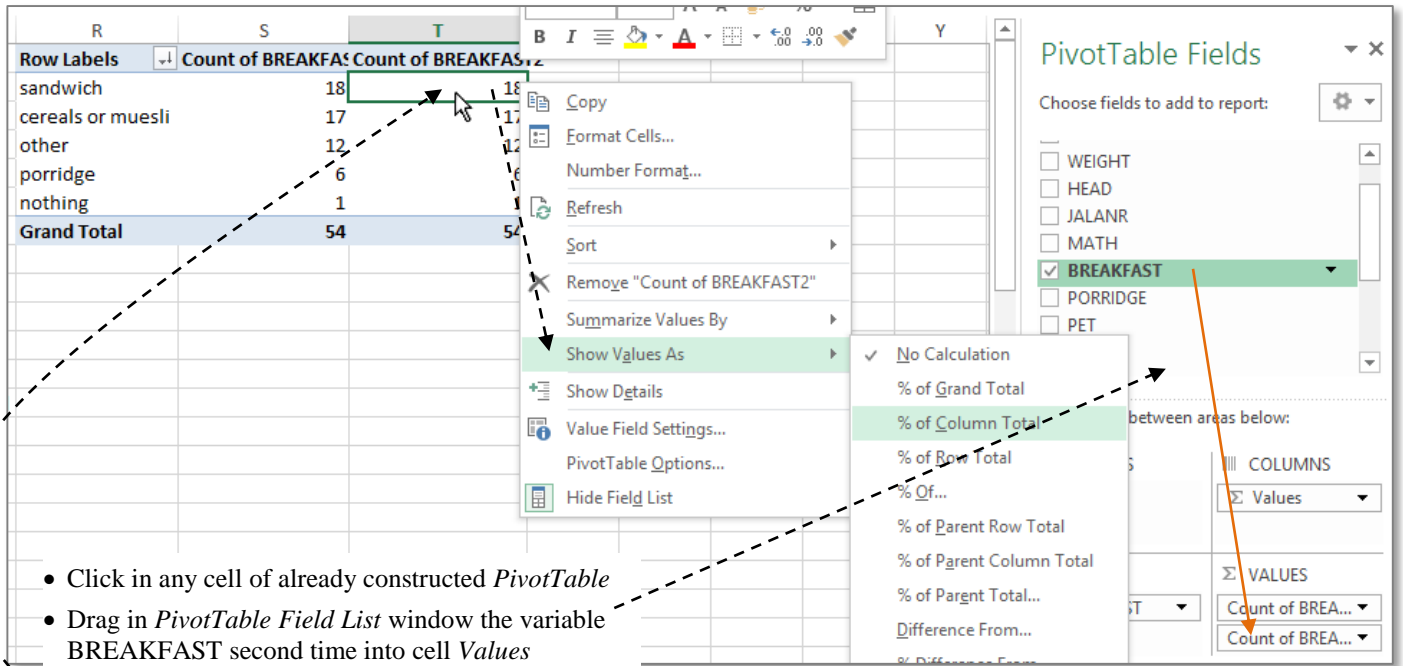
Row Labels	Count of BREAKFAST
sandwich	18
cereals or muesli	17
other	12
porridge	6
nothing	1
Grand Total	54

To select separate cells hold down the 'Ctrl'-key ...

- Delete figure title and add axes with major tick marks
- Mark the major gridlines with light grey dotted lines
- Put titles to x- and y-axis, move the x-axis title inside the plot area
- Present the axis units in size 10 and axis titles in size 12, change color of all texts to black
- Fix the maximum of y-axis to 40% (0.4), minimum to 0 and major unit to 10% (0.1)
- Change the gap between bar to 120% and fill the bars with light gray color
- Add the percentage values inside the bars and round them to one decimal place
- Remove the border of the chart area and add grey border to plot



NB! It is possible to calculate the relative frequencies also with *PivotTable*! Try it.



- Click in any cell of already constructed *PivotTable*
- Drag in *PivotTable Field List* window the variable BREAKFAST second time into cell Values
- Right click in the new column of *PivotTable* and select from dropdown menu
Show Values As -> % of Column Total

Result:

Row Labels	Count of BREAKFAST	Count of BREAKFAST2
sandwich	18	33.33%
cereals or muesli	17	31.48%
other	12	22.22%
porridge	6	11.11%
nothing	1	1.85%
Grand Total	54	100.00%

8. Describe the absolute and relative frequencies – write down some sentences using for example *Text Box* (from *Insert*-tab).

Exercise 2.

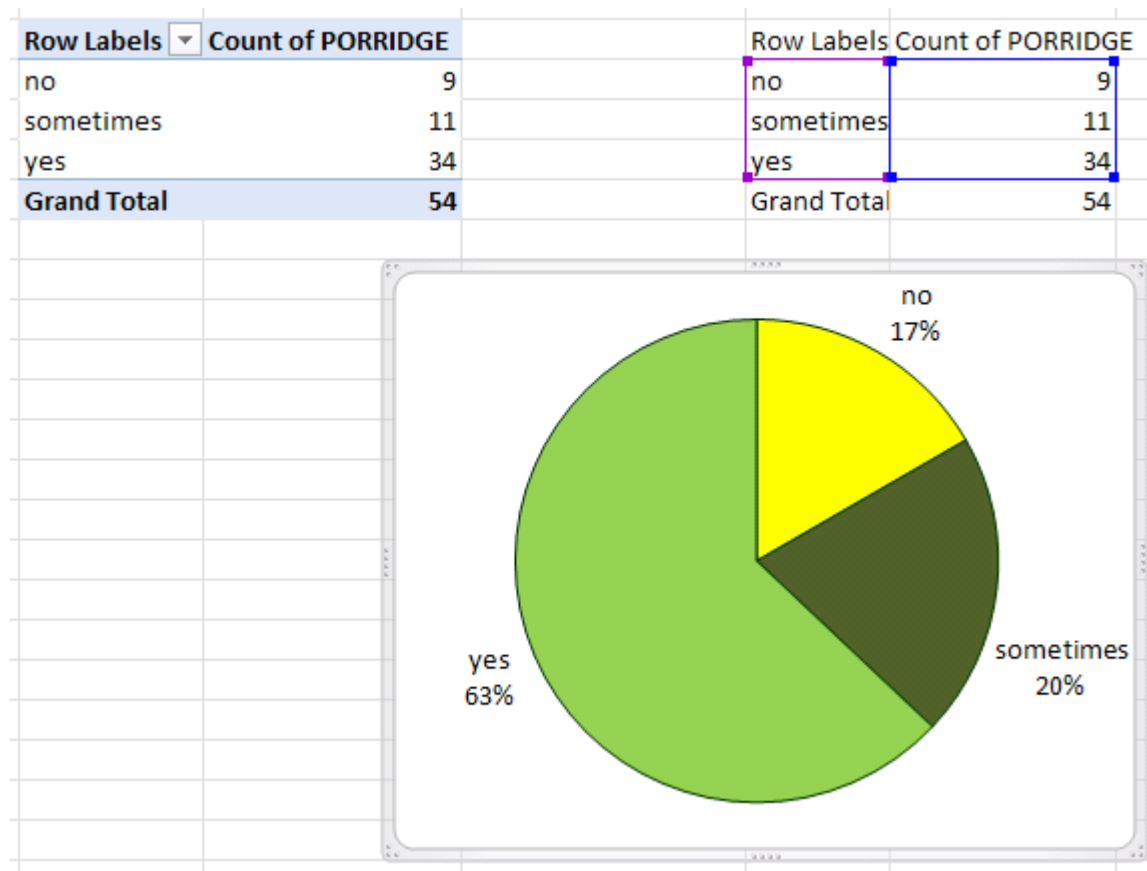
Construct the frequency table to variable 'PORRIDGE' and illustrate this table with pie plot.

Guide

Analogical to exercise 1 (it is not necessary to sort the frequency table and to calculate the relative frequencies).

Add the frequencies in percentages into the figure.

Expected result:



Describe the results with some sentences (write down these conclusions)!