

# Quantiles or percentiles with XLSTAT

[demoqua.xls](#)

## Quantiles and percentiles

XLSTAT has a complete tool to compute quantiles or percentiles, their associated confidence interval and graphical representations.

Quantiles are important statistical measures, they are simple to understand. The 0.5-quantile is the value such that half of the sample is below and the other half is above. It is also called the median. A quantile is called a percentile when it is based on a 0-100 scale. The 0.95-quantile is equivalent to the 95-percentile and is such that 95 % of the sample is below its value and 5 % is above.

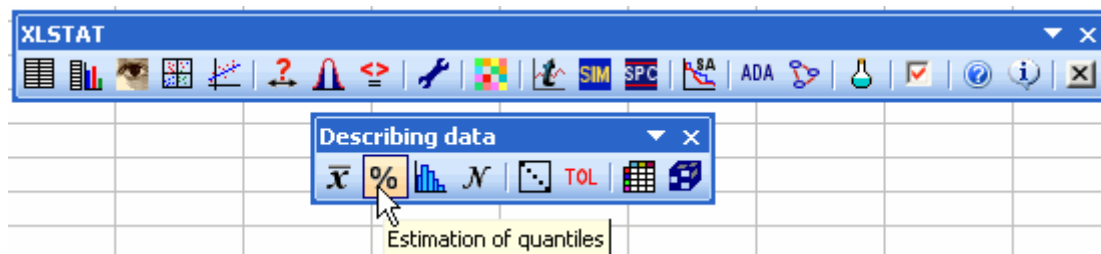
## Dataset to generate a quantile

An Excel sheet with both the data and results can be downloaded by clicking [here](#).

The dataset has been obtained from [Lewis T. and Taylor L.R. (1967). Introduction to Experimental Ecology, New York: Academic Press, Inc]. It concerns 237 children, described by their gender and height in centimeters (1 cm = 0.4 inch).

## Setting up the computation of a specific quantile

After opening XLSTAT, select the **XLSTAT / Description / Quantiles**, or click on the corresponding button of the "Description" toolbar (see below).



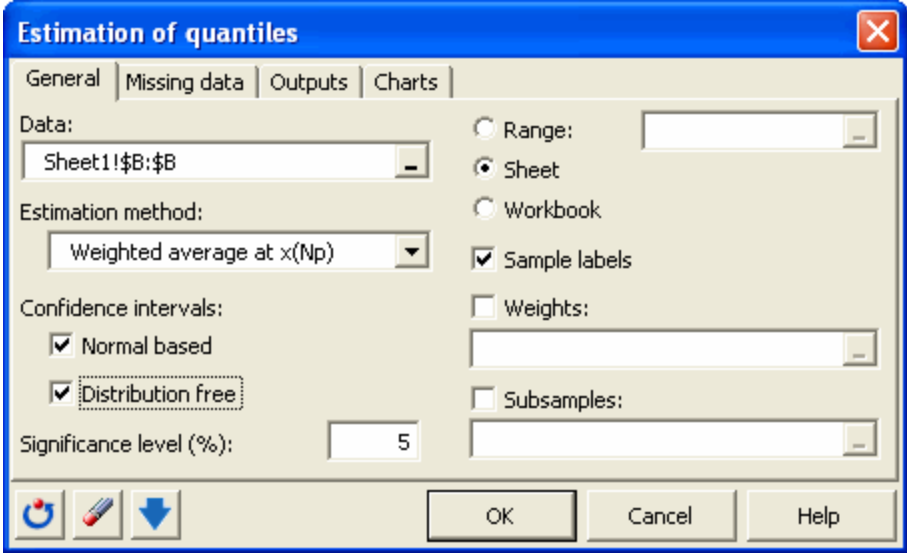
Once you've clicked on the button, the **Quantile** dialog box will appear. Select the data on the Excel sheet.

In our case; the **variable** is the "Height". Data should be **quantitative**.

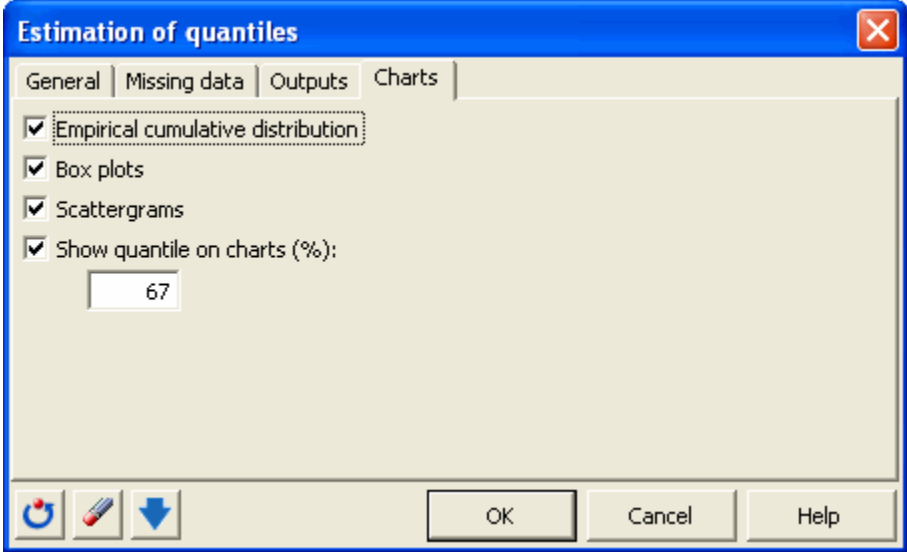
As the column header was selected for the variables, the **Variable labels** option needs to be activated.

We select the default method for estimation (**weighted mean at  $x(Np)$** ) and both type of **confidence intervals with a 95 % confidence**.

Details on statistical methods can be found in the help of XLSTAT.



In the **charts** tab, we select all charts and we are interested by the **67-percentile** (two third of the children are smaller and one third is taller).



The computations begin once you have clicked on **OK**. The results will then be displayed.

## Interpreting the results of a quantile generation

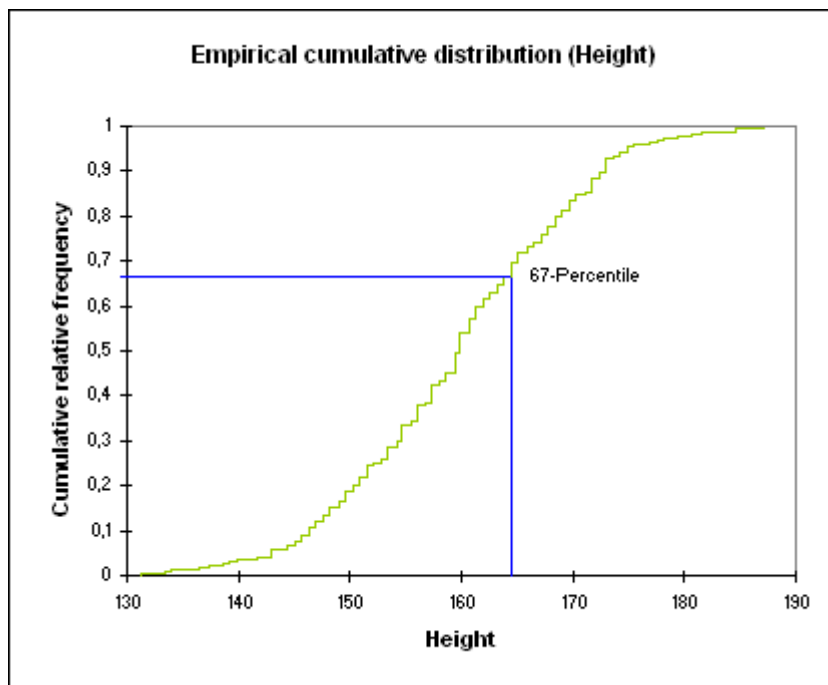
The first table displays some descriptive statistics on the height variable. The second table displays quantiles and their associated confidence interval for different commonly used values.

For example, the median is 159.9 cm. The 95-percentile shows that 95 % of the children are smaller than 174.98 cm.

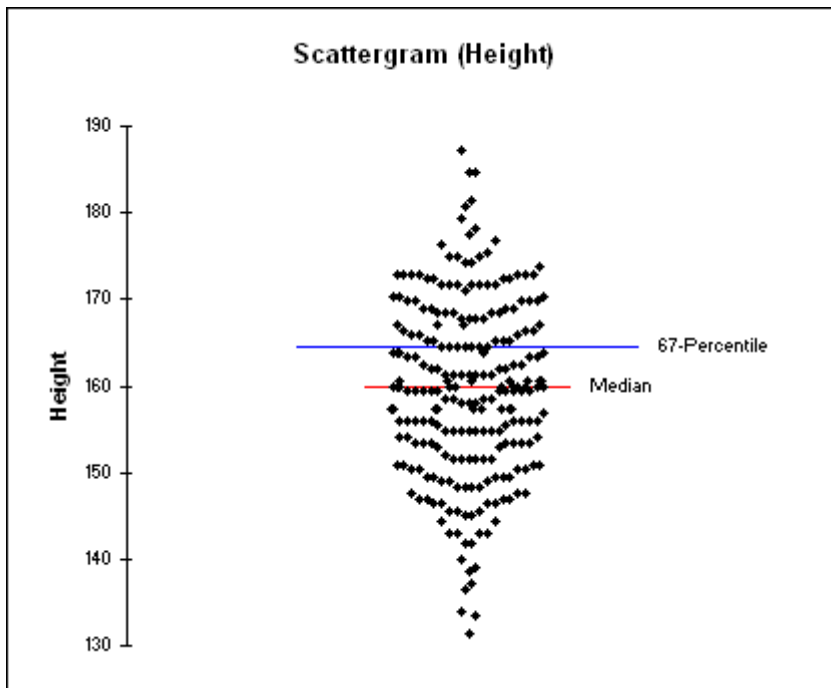
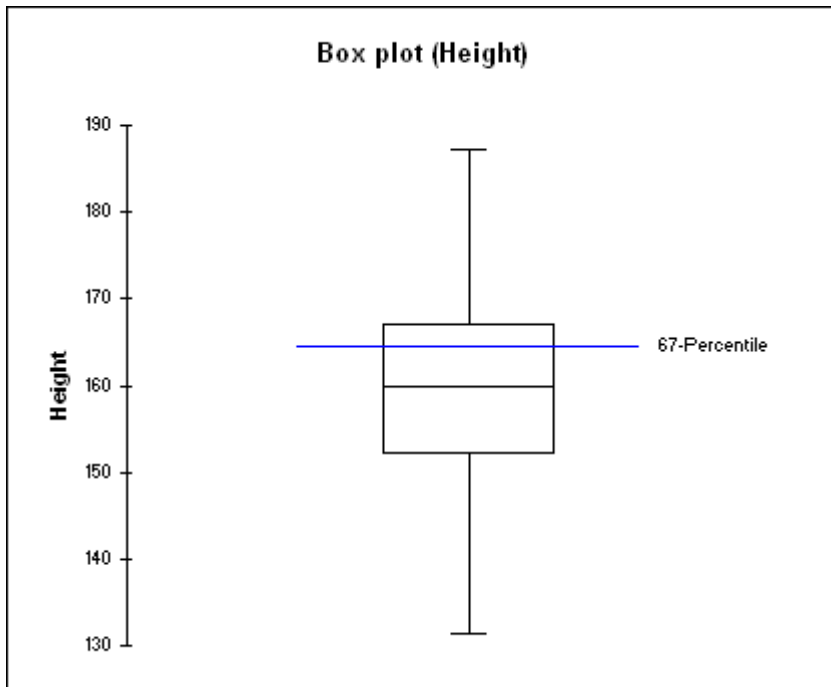
Percentile table (Weighted average at $x(Np)$ ):					
Percentile	Value	bound (Normal	bound (Normal	bound (Distributio	bound (Distribution free)
Maximum 100%	187,200				
99%	183,446	179,400	187,200	178,100	187,200
95%	174,980	172,900	179,400	172,900	179,400
90%	172,536	171,600	174,200	171,600	174,200
3rd Quartile 75%	167,180	164,580	169,000	164,580	169,000
Median 50%	159,900	158,080	160,680	158,080	160,680
1st Quartile 25%	152,295	150,280	154,700	150,280	154,700
10%	146,380	144,300	148,200	143,000	148,200
5%	143,000	137,280	145,080	136,500	145,600
1%	133,572	131,300	137,280	131,300	133,900
Minimum 0%	131,300				

The value of the 67-percentile is then displayed. Two third of the children are smaller than 164.58 cm.

The first chart (see below) allows us to visualize the empirical cumulative distribution function with the value of the 67-percentile.



The second and third charts are a box plot and the scattergram. The 67-percentile is displayed using a blue line.



You can also use sub-samples, for example gender can be used as a group variable. Weights associated to the observations can also be included.