

Creating histograms and fitting a distribution in with XLSTAT

[demoHisto.xls](#)

What you will do in this tutorial

First by using the XLSTAT tool allowing to create histograms, and then by using the distribution fitting tool, we want to test if the sample (in a statistical sense) follows a negative binomial distribution or not. Usually, the negative binomial distribution represents well the aggregation/dispersion phenomenon of bacteria in water environments.

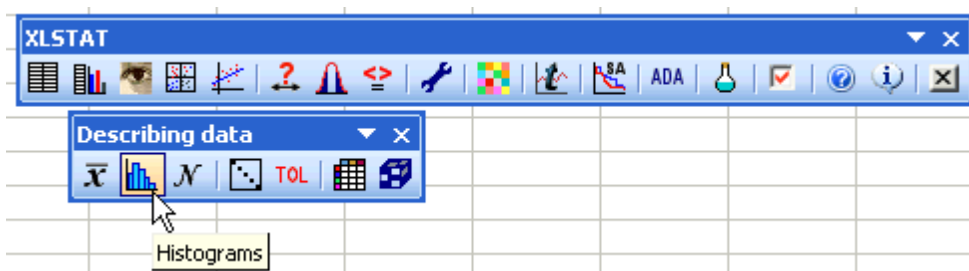
Data to create an histogram and fit a distribution

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

The data correspond to an experiment where 200 samples of water from a river were cultured on medium with nutrients to determine the presence or absence of bacterial contamination with Escherichia coli. The number of colonies has been counted after 72 hours of incubation. In the Bact-Data column you will find the counts for the 200 samples.

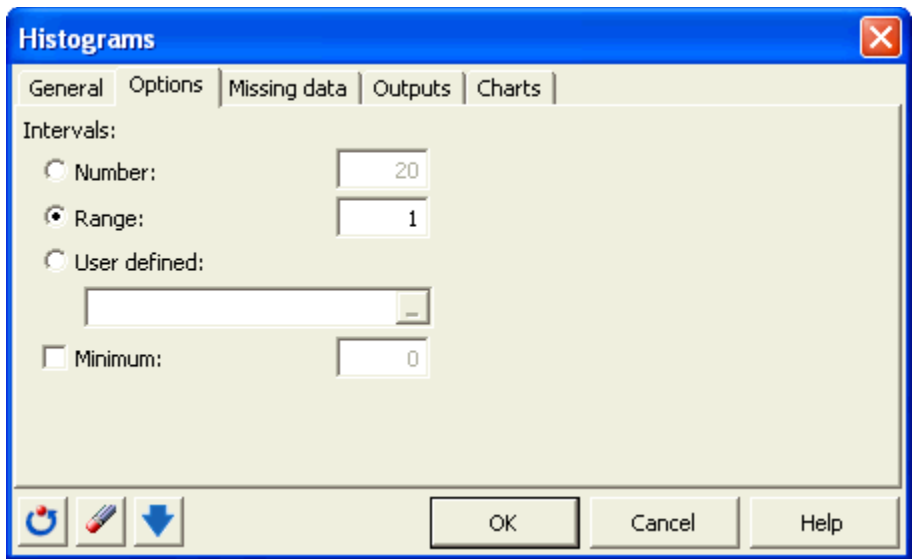
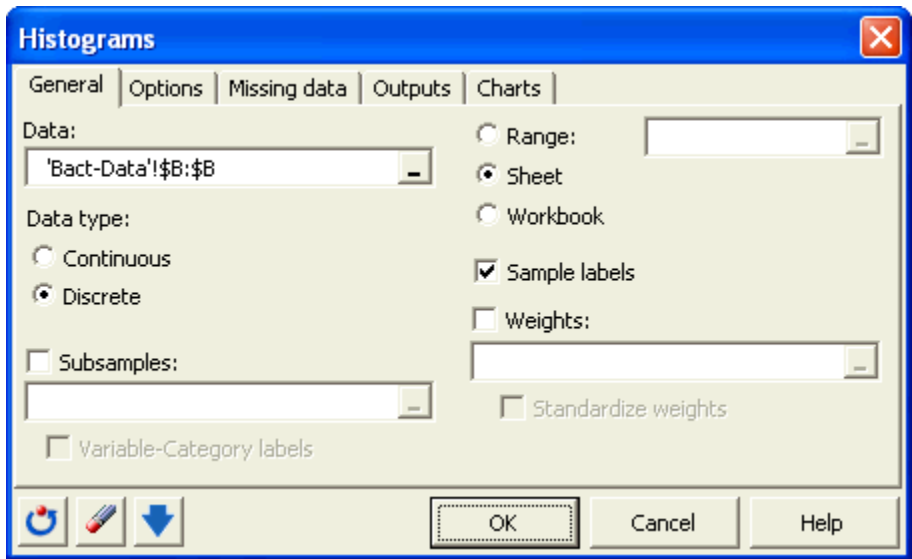
Setting up the dialog box to create an histogram

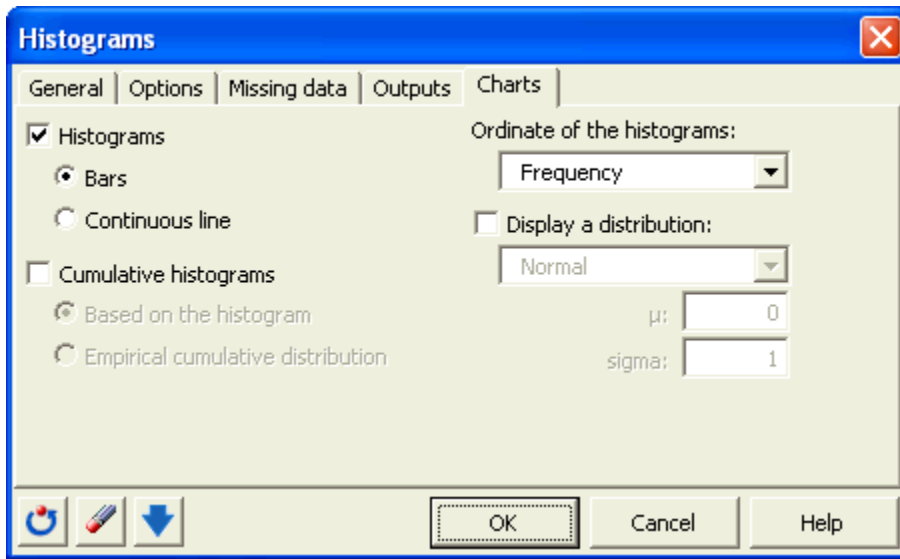
After opening XLSTAT, select the **XLSTAT / Describing data / Histograms** command, or click on the corresponding button of the **Describing data** toolbar (see below).



Once you've clicked on the button, the dialog box appears. Select the data on the Excel sheet.

The **Data** are in the B column. We activate the **discrete** option because the counts are discrete values. The **Sample labels** option is left activated because the first row of the data selection contains the name of the sample.

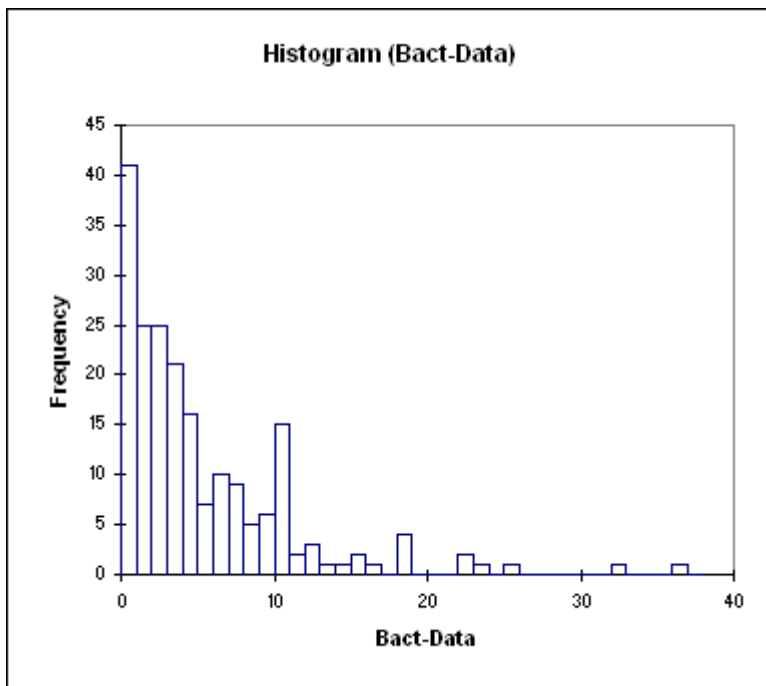




The computations begin once you have clicked on the **OK** button. The results will then be displayed.

Interpreting a histogram

After some summary statistics, the histogram is displayed on sheet **Histogram**, followed by a table where the statistics of the histogram are available.



On the histogram we can see that the most frequent value is 0, which represents over 20% of the data. That is, in more than one sample out of five, no bacteria has been found. We also notice that the frequency decreases quickly. In one sample, over 36 colonies have been counted.

The following video shows how to do it.

http://www.youtube.com/watch?feature=player_embedded&v=hS2GnBKDsyA