

## 4.7: Q-Q plot

### Introduction

Use of graphs by a data analyst may serve different purposes: communication of results or as diagnostics. The Q-Q plot is one example of a graph used as a diagnostic.

The quantile-quantile, or Q-Q plot, is a probability plot used to graphically compare two probability distributions. In brief, a set of intervals for the quantiles is chosen for each sample. A point on the plot represents one of the quantiles from the second distribution (y value) against the same quantile from the first distribution (x value).

A common use of Q-Q plot would be to compare data from a sample against a normal distribution. If the sample distribution is similar to a normal distribution, the points in the Q-Q plot will approximately lie on the line  $y = x$ .

### R code

In R, the Q-Q plot can be obtained directly in Rcmdr.

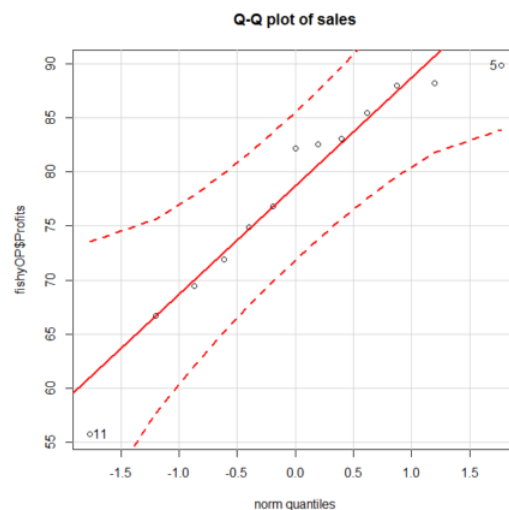


Figure 4.7.1: A Q-Q plot, the default command in Rcmdr.

### Rcmdr: Graphics → Quantile-comparison plot...

After choosing the variable (in this case, Sales), click on Options tab and make additional selections before making the graph. Here, we selected normal distribution.

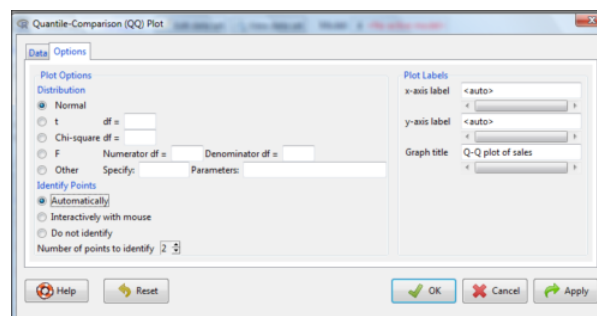


Figure 4.7.2: Screenshot of R Commander menu for Q-Q plot.

Another version is available in the `KMggplot2` package.

### Questions

1. What is a Q-Q plot used for in statistics?
2. Looking at the plot in Figure 4.7.1, explain why the confidence lines get further and further away from the straight line.

This page titled [4.7: Q-Q plot](#) is shared under a [CC BY-NC-SA 4.0](#) license and was authored, remixed, and/or curated by [Michael R Dohm](#) via [source content](#) that was edited to the style and standards of the LibreTexts platform.