

Making a normal quantile plot by hand

To make a Q-Q plot by hand to assess normality (if $n > 10$):

1. Sort the n data values.
2. For $k = 1, \dots, n$, obtain $\left(\frac{k - 0.5}{n}\right) \times 100$ percentiles of the standard normal distribution.
3. Plot ordered pairs of the above two quantities. That is, pair the (smallest, 2nd smallest, etc.) **observed** data value with what you **expect** the (smallest, 2nd smallest, etc.) data value to be when you draw n values from the standard normal distribution.

If the points fall roughly on a straight line, then the normality assumption is reasonable. The reference line goes through the points (25th percentile of standard normal, 25th percentile of data) and (75th percentile of standard normal, 75th percentile of data).