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6. For e

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- Create a four section.

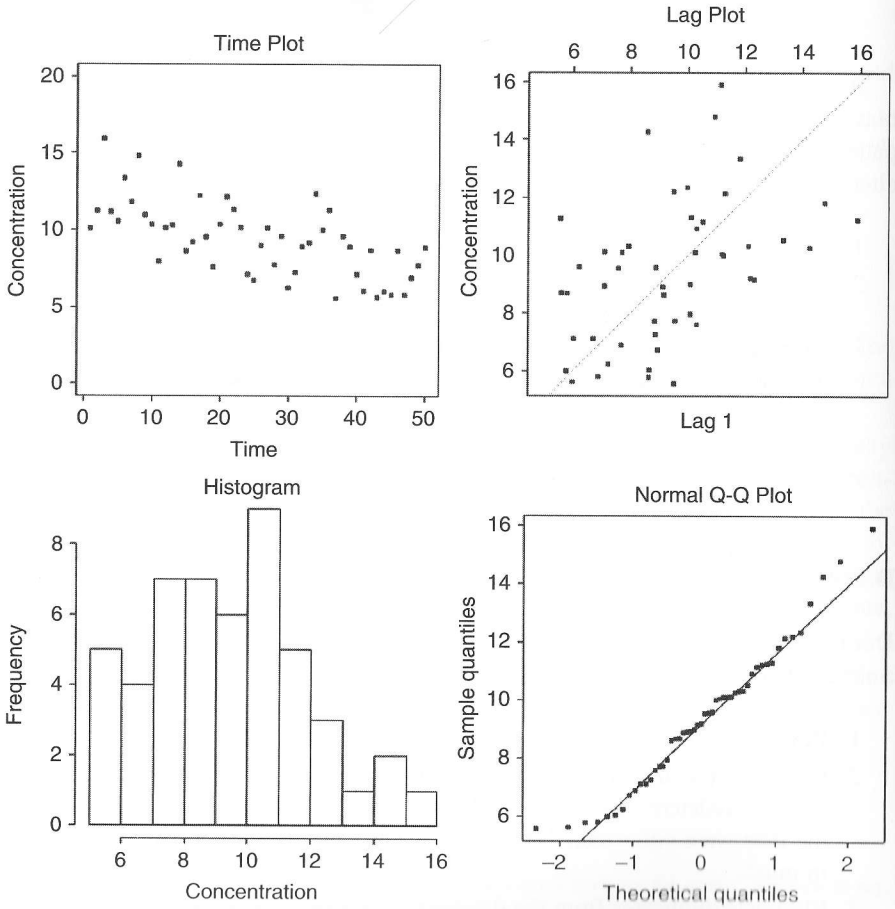

Figure 4.2. Example of a four-plot.

OUTLIERS

Outliers, extreme values, either small or large, that are well separated from the main set of observations, are frequently detected during a DQA, as they are easily spotted on a dot chart or a box whiskers plot. But as they are not signs of poor data, they should not be eliminated from the database. Rather, they should be dealt with during the subsequent analyses.

THE FOUR-PLOT

Four assumptions underlie almost all measurement processes: the data should be (1) random, (2) from a single fixed distribution, with (3) a fixed location and (4) a fixed variance. To verify these assumptions, use a four-plot consisting of a time plot, a lag plot, a histogram, and a normal probability plot.

- The data are random if the lag plot is structureless.
- If the time plot is flat and nondrifting, the data have a fixed location.
- If the time plot has a constant spread, the data have a fixed variance.
- If the histogram has multiple modes, the data may have come from multiple distributions and further stratification should be considered.

In Figure 4.2, note that the data are not quite normal (deviations from the straight line on the plot), do not have a fixed location (a downward trend in the time plot), and possibly have serial correlation present (the tendency of the lag plot to increase from left to present (the tendency of the lag plot to be increasing from left to right).

TO LEARN MORE

Consult the excellent documents available from the United States Environmental Protection Agency at http://www.epa.gov/quality/dqa.html. See, also, Husted et al. [2000].