Residual Diagnostics (Continued)

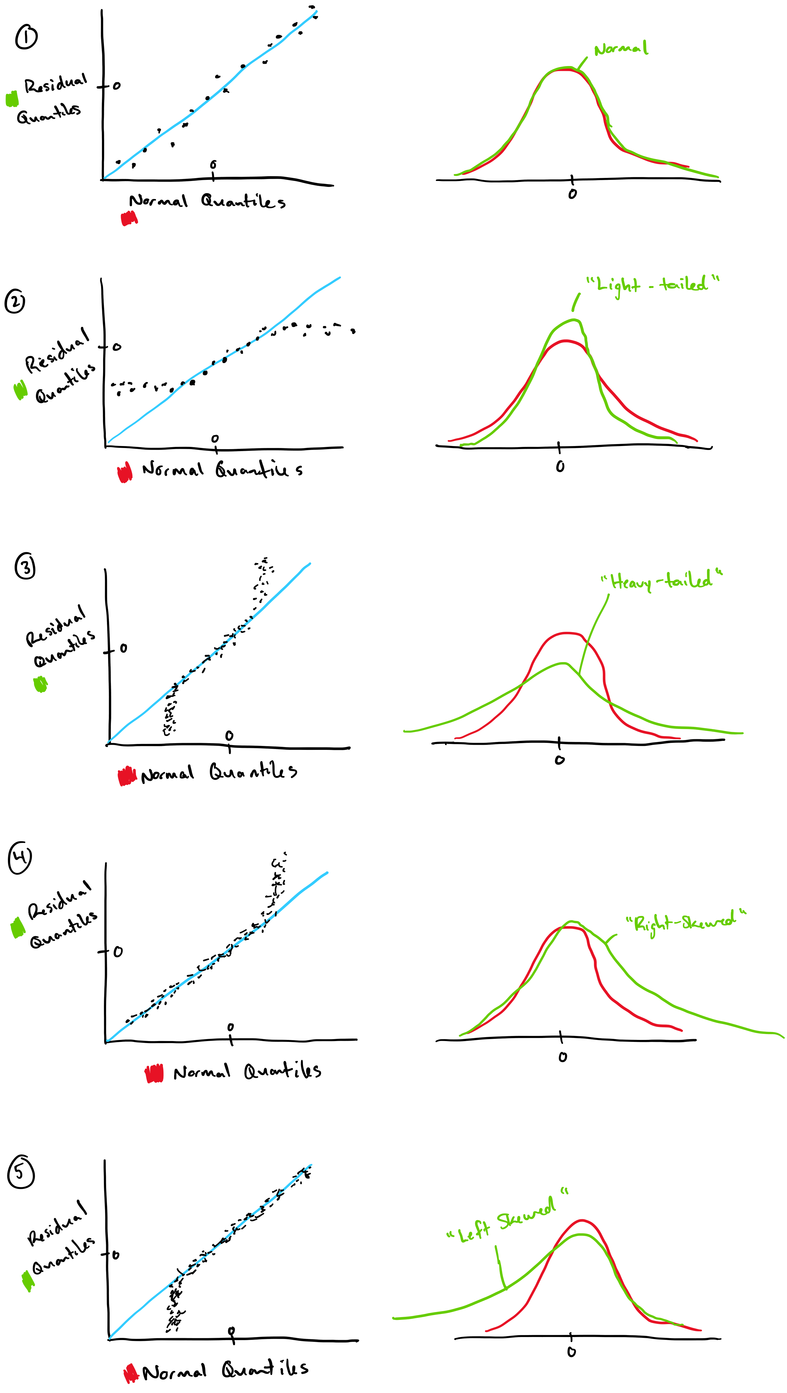
Assumption (iii) cannot be evaluated with the residuals, since by construction $\bar{e} = 0$ always and so we'd never have any evidence against $E[\varepsilon_i] = 0$.

- Assumption (ii) can be evaluated with a histogram of e_i (or d_i) With it we check whether the residuals appear to bell-shaped and symmetric around zero.

This method is good at identifying symmetry vs. skewedness, but it cannot very objectively identify whether the residuals follow the correct normal distribution.

For a more formal/objective assessment of normality, we use the QQ (quantile-quantile) plot. The QQ-plot is a scatterplot of the quantiles from two distributions. We can use this to compare two observed datasets to eachother, or one dataset to some assumed theoretical distribution. Here, we compare the residual quantiles to the standard Normal Quantiles.

If the observed and theoretical quantiles match (roughly), then the points on the scatter plot should fall (roughly) along the 45° line of equality through the origin.



Significant departures from ① may be problematic, in which case we may need to alter the type of regression model we fit.

When any of the error assumptions are violated, then it's inference (and not estimation) that are impacted.