Parametric or Non-Parametric

When carrying out statistical testing one of your decisions will be to choose between a Parametric or the equivalent Non-Parametric test.

For the main part we strive to carry out parametric tests where possible. Mainly because there are more assumptions, or more rules. Because of this, we attempt to ‘rule in’ a Parametric test. If the data collected doesn’t meet the Parametric assumptions, the likelihood is that it will meet the assumptions of the Non-Parametric alternative, in these cases we use Non-Parametric instead. Using this guide, the Non-Parametric are treated like a back-up to the Parametric test.

There are 4 assumptions of Parametric tests:

1. **Normally Distributed Data.** This means that a frequency graph of the data collected would follow the pattern of a ‘Bell Curve’. There are tests that can be carried out on the data to establish whether it is normally distributed. However a lot of researchers tend to rely on ‘eye-balling’ their data.

2. **Homogeneity of Variance.** This is assuming the variance of each of your variables are roughly similar. Variance is a measure of spread of data. Once again, there are tests for Homogeneity of Variance, but often researcher will use the ‘rule of thumb’ that one variance can be within three time the variance of the other to comply with this assumption.

3. **Interval Date (or higher).** The data should be of Interval measure or higher. The only other that is a higher level is Ratio measure data. Meaning that if the data is of Ordinal or Categorical (Nominal) level, this assumption would be violated. (See Level of Data sheet for more detail on each level)

4. **Independence.** This is assuming that none of the participants/samples are influenced by any other. Each persons / samples data is independent of the others. e.g. We may assume independent is testing participants, however if one (who had completed) was to talk to another about a test before they took it, they are no longer independent.