ANALYSING LIKERT SCALE/TYPE DATA.

1. Motivation.

Likert items are used to measure respondents' attitudes to a particular question or statement. To analyse the data it is usually coded as follows.

- 1 = Strongly disagree
- 2 = Disagree
- 3 = Neutral
- 4 = Agree
- 5 = Strongly agree

One must recall that Likert-type data is ordinal data, i.e. we can only say that one score is higher than another, not the distance between the points.

2. Basic analysis

With Likert scale data we cannot use the mean as a measure of central tendency as it has no meaning i.e. what is the average of Strongly agree and disagree? The most appropriate measure of is the mode the most frequent responses, or the median. The best way to display the distribution of responses i.e. (% that agree, disagree etc) is to use a bar chart.

2.1. Inference.

To test hypotheses one must initially think carefully about the questions you are trying to answer. Once you have identified your hypotheses, you will have a dependent variable, that which is measured and your independent variable/s that which defines your groups.

Analysis of variance techniques include:

- Mann Whitney test.
- Kruskal Wallis test.

Data may also be combined into say two nominal categories Agree/Accept and Disagree/Reject, which allows us to carry out the:

- Chi-square test.

3. Likert scale.

A Likert scale is composed of a series of four or more Likert-type items that represent similar questions combined into a single composite score/variable. Likert scale data can be analyzed as interval data, i.e. the mean is the best measure of central tendency.

3.1. Inference.

Parametric analysis of ordinary averages of Likert scale data is justifiable by the Central Limit Theorem, analysis of variance techniques include:

- t-test.
- ANOVA.
- regression procedures

4. Design considerations.

The data analysis decision for Likert items should be made at the questionnaire development stage.

- If you have a series of individual questions that have Likert response options for your participants to answer - then analyze them as Likert-type items i.e. Modes, medians, and frequencies.
- If you have a series of Likert-type questions that when combined describe a personality trait or attitude - use means and standard deviations to describe the scale.
5. Distortion.

Likert scales are subject to distortion from several causes;
- Avoidance of using extreme response categories - central tendency bias.
- Agreeing with statements as presented acquiescence bias.
- Attempt to portray themselves or their organization in a more favorable light social desirability bias.

6. Likert scale Regression Analysis.

If your dependent variable is on a likert scale you should run either;
- Ordered logistic regression, or;
- Multinomial logistic regression.

Alternatively collapse the levels of the Dependent variable into two levels and run binary logistic regression.

You should not use linear regression as linear regression requires a continuous dependent variable.

- What information is necessary? At the end of the process, what data do you hope to have? What information is necessary for a decision? Separate "need to know" from "nice to know" information.

7. Other types of Questions.

- Dichotomous i.e. Yes/No or Male/Female.
- Nominal level of measurement i.e. 1=lawyer, 2=veterinarian, etc..
- Ranking order of preference.
- Filter or Contingency Questions - i.e. Have you ever.... if so how often.