Key Concepts and Terminology

Kruskal-Wallis analysis: Non-parametric equivalent to a 1-way Anova. A solution to violations of parametric assumptions. A test used on >2 independent groups.

Hypothesis: An important part of this method is that the final assumptions are dependent upon testing for equality or non-equality of distributions for the categories involved. Equal distributions met-Null: The medians of the categories are equal; Equal distributions NOT met-Null: The mean ranks are equal

Dunn's Comparison: Pairwise comparison between groups to find significance in difference and get further insight into the concern being investigated.

Kruskal-Wallis H: Is the statistic used in the K-W test. It is also the statistic used in comparing the similarity of distributions between categories.

$$\mathrm{H} = (N-1)\frac{\sum_{i=1}^{g} n_i(\bar{r}_i - \bar{r})^2}{\sum_{i=1}^{g}\sum_{j=1}^{n_i}\left(r_{ij} - \bar{r}_i\right)^2}$$

$N = \#\ of observations$

$g = number\ of\ groups$

$n_i = number\ of\ observations\ in\ group\ i, r_{ij} = rank\ (among\ all\ obs)\ j\ from\ group\ i$

$\bar{r}_i = \frac{\sum_{j=1}^{n_i} r_{ij}}{n_i}$, $average\ rank\ of\ all\ observations\ in\ group\ i$

$\bar{r} = \frac{1}{2}(N+1), N = \#\ of\ obs$

$$H = \frac{12}{(n(n+1))}\left(\sum_{j=1}^{n_i}\frac{R_j^2}{n_i} - 3(n+1)\right)$$

Key Concepts and Terminology

Shapiro-Wilk (S-W) test: The null states normality and so a $p < 0.001$ is expected in the K-W test.

Kolmogorov-Smirnov: The null states normality and so a $p < 0.001$ is expected in the K-W test.

Lavene's test: The null states equality of variance and so a $p < 0.001$ is expected in the K-W test.

SPSS Visual of K-W: