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. <u>Equal distributions met</u>-Null: The medians of the categories are equal; <u>Equal distributions NOT met</u>-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.

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

N = # of observations

g = number of groups

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

$$ar{r_i} = rac{\sum_{j=1}^{n_i} r_{ij}}{n_i}$$
 , average rank of all observations in group i

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

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

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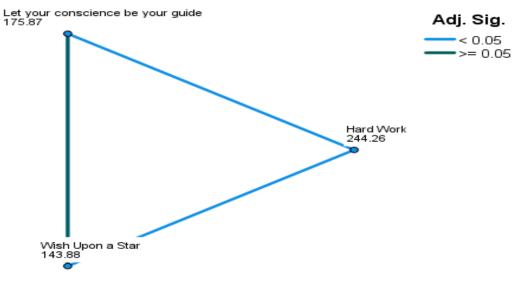
Shapiro-Wilk (S-W) test: The null states normality and so a p < 0.001 is expected in the K-W test.

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:

Pairwise Comparisons of Worker_type_code



Each node shows the sample average rank of Worker_type_code.