

Extending Dunn's Test

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It is common practise to use Dunn's post test when a Kruskal-Wallis test turns out significant, in order to compare any pairs of samples of interest. In particular, Dunn's statistic is a z with the absolute difference of the mean ranks in the numerator and a standard error in the denominator derived from the variance of the total sample (modified by the number and length of the ties, if any) and the sizes of the two samples being compared. The individual p-values are two-tailed and compared with $\alpha/[k(k-1)/2]$, where alpha is the significance level of the Kruskal-Wallis test and k is the total number of groups (so that $k(k-1)/2$ is the total number of pairs).

What if one is interested only in a small number m of a priori comparisons? Can one compute z as above but compare the individual p-values (one-tailed, if so specified in advance) to α/m ? For example, if I have k=4 samples and I am interested in m=3 comparisons: sample1-sample2, sample1-sample3 and sample3-sample4 (in those directions) if the overall Kruskal-Wallis is significant at the 0.05 level, then the standard Dunn's test would compare the individual two-sided p-values to $0.05/6$ whereas my question is whether one can compare the individual one-sided p-values to $0.05/3$?

Any help or guidance or references would be greatly appreciated.

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