In a two sample case, the ranks are assigned in a similar way. The only difference is that in a two sample case we first find out the differences between the corresponding observations of the two samples and then rank them in increasing order of magnitude. The ranks are then given the sign of the corresponding differences. The deviations are ranked in increasing order of absolute magnitude and then the ranks are given the sign of the corresponding deviations.

500 was assigned the rank two. In such a case, we assign a common rank of 1.5 to both observations. The only exception to this is when there are ties in the absolute values of the deviations. In such cases, the ranks of the tied observations are averaged.

The Wilcoxon Signed Rank Test is a non-parametric statistical test for testing hypothesis on the median of a population. The null hypothesis to be tested is $H_0 : m = m_0$, where $m$ is the specific value of population median and $m_0$ is the specific value of population median.

The advantage with Wilcoxon Signed Rank Test is that it neither depends on the form of the parent distribution nor on its parameters. It does not require any assumptions about the shape of the distribution.

For example, suppose that we have a sample of weights of $n$ obese adults before they are subjected to a change of diet. One could be tempted to straightaway use the dependent t-test for paired samples but the assumption of normality is not satisfied. The efficiency of this test compared to t-test is almost 95%.

Most of the standard statistical techniques can be used provided certain standard assumptions such as independence, normality etc. are satisfied. However that test has certain assumption notable among them being normality. If this assumption is violated, one would have to go for the non-parametric test.

In the above table, the difference 500 occurs twice. In such a case, we assign a common rank of 1.5 to both observations. The only exception to this is when there are ties in the absolute values of the deviations. In such cases, the ranks of the tied observations are averaged.

In the non-parametric test, the efficiency of this test compared to t-test is almost 95%. Even if the normality assumption holds, it does not imply that each individual observation of one sample has a unique corresponding member in the other sample. The null hypothesis here is of the form $H_0 : m = m_0$. If the alternative hypothesis $H_1 : m \neq m_0$ is true, then would be that there has been no significant reduction in median income of a sample of his clients and test the null hypothesis $H_0 : m = m_0$.

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