### Wilcoxon matched-pairs signed-ranks test

Like the sign test, this is a distribution-free test for comparing the locations of two populations when paired samples are available.

Method: The test is carried out by first taking the differences between the matched pairs. The non-zero differences are then ranked from smallest to largest based on the absolute magnitudes of the differences (ie. a difference of +1 would receive a smaller rank than a difference of -5). The test statistic is then the sum of the ranks associated with + differences. If there is no difference between the two populations, the sums of the ranks associated with + and with - differences should be reasonably close. Once the calculations have been carried out, if the numbers of pairs is large enough ($n > 25$), you will be given a p-value, but if not you will be directed to the Wilcoxon matched-pairs... static table to compare the critical values. The null hypothesis (Ho) is that the distribution of the differences is symmetric about zero; $H_1$ may be one- or two-sided.

The p-value given is for a one-sided alternative, so that you must use your knowledge of your specific problem to decide whether a one-sided or a two-sided (double the probability given) alternative is appropriate.

See the Statistics topic for instructions on selecting this test.