where *erf* is the error function.

See Also

Chapter III-12, **Statistics** for a function and operation overview; the **erf**, **StatsNormalPDF** and **StatsInvNormalCDF** functions.

StatsNormalPDF

StatsNormalPDF(*x*, *m*, *s*)

The StatsNormalPDF function returns the normal probability distribution function

$$f(x,\mu,\sigma) = \frac{1}{\sigma\sqrt{2\pi}}\exp\left(-\frac{(x-\mu)^2}{2\sigma^2}\right).$$

See Also

Chapter III-12, **Statistics** for a function and operation overview; the **StatsNormalCDF** and **StatsInvNormalCDF** functions.

StatsNPMCTest

StatsNPMCTest [***flags***] [***wave1***, ***wave2***,… ***wave100***]

The StatsNPMCTest operation performs a number of nonparametric multiple comparison tests. Output waves are saved in the current data folder according to the test(s) performed. Some tests are only appropriate when you have the same number of samples in all groups. StatsNPMCTest usually follows **StatsANOVA1Test** or **StatsKWTest**.

Flags

/ALPH = *val* Sets the significance level (default *val*=0.05).

/CIDX=*controlIndex* Performs nonparametric multiple comparisons on a control group specified by the zero-based *controlIndex* wave in the input list. Output is to the M_NPCCResults wave in the current data folder or optionally to a table. The output column contents are: the first contains the difference between the rank sums of the control and each of the other waves; the second contains the standard error (SE); the third contains the statistic q, defined as the ratio of the difference in rank sums to SE; the fourth contains the critical value which also depends on the tails specification (see /TAIL); and the fifth contains the conclusion with 0 to reject H_0 and 1 to accept it. One version of this test applies when all inputs contain the same number of samples. When that is not the case, it uses the Dunn-Hollander-Wolfe approach to compute an appropriate SE and to handle possible ties.

/CONW=*cWave* Performs a nonparametric multiple contrasts tests. *cWave* has one point for each input wave. The *cWave* value is 1 to include the corresponding (zero based) input wave in the first group, 2 to include the wave in the second group, or zero to exclude the wave.

The contrast is defined as the difference between the normalized sum of the ranks of the first group and that of the second group. If *cWave*={0,1,1,1,2}, then the contrast is computed as

$$\text{contrast: } \frac{1}{3}[R_{n1}+R_{n2}+R_{n3}]-R_{n4}.$$

where R_{ni} is the normalized rank sum of the samples from the corresponding input wave. Note the significance of allowing zeros in the contrast wave because the actual ranking is performed on the pool of all the samples.

Output is to the M_NPMConResults wave in the current data folder or optionally to a table. The output column contents are: the first is the contrast value; the second is the standard error (SE); the third is the statistic S, which is the ratio of the absolute value of the contrast to SE; the fourth is the critical value (from χ^2 the approximation); and the fifth is the conclusion with 0 to reject H_0 and 1 indicating acceptance.

This test supports input waves with different number of samples and can also handle tied ranks. Note that the contrast wave used here is structured differently than for **StatsMultiCorrelationTest**.

/DHW

Performs the Dunn-Holland-Wolfe test, which supports unequal number of samples and accounts for ties in the rank sums. Output is to the M_NPMCDHWResults wave in the current data folder or optionally to a table. The output column contents are: the first contains the difference between the means of the rank sums (rank sums divided by the number of samples in the group), the second contains the standard error (SE), the third contains the DHW statistic Q, the fourth contains the critical value, and the fifth contains the conclusion (0 to reject H_0 and 1 to accept).

/Q

No results printed in the history area.

/SWN

Creates a text wave containing wave names corresponding to each row of the comparison table. Depending on your choice of tests, the following wave names are created:

/CIDX test: T_NPCCResultsDescriptors

/DHW test: T_NPMCDHWDescriptors

/SNK test: T_NPMCSNKResultsDescriptors

/TUK test: T_NPMCTukeyDescriptors

/T=*k*

Displays results in a table. *k* specifies the table behavior when it is closed.

k=0: Normal with dialog (default).

k=1: Kills with no dialog.

k=2: Disables killing.

The table is associated with the test and not with the data. If you repeat the test, it will update the table with the new results.

/TAIL=*tc*

Specifies H_0 with /CIDX.

tc=1: One tailed test ($\mu_c \leq \mu_a$).

tc=2: One tailed test ($\mu_c \geq \mu_a$).

tc=4: Default; two tailed test ($\mu_c = \mu_a$).

Code combinations are not allowed.

/SNK

Performs a nonparametric variation on the Student-Newman-Keuls test where the standard error SE is a function of p (the rank difference). This test requires equal numbers of samples in all groups; use /DHW for unequal sizes.

Output is to the M_NPMCSNKResults wave in the current data folder. The output column contents are: the first contains the difference between rank sums, the second contains the standard error (SE), the third contains the p value (rank difference), the fourth the statistic, the fifth contains the critical value, and the sixth contains the conclusion (0 to reject H_0 and 1 to accept). This test is more sensitive to differences than the Tukey test (/TUK).