Row	Data
0	Number of groups
1	Number of valid data points (excludes NaNs)
2	Alpha
3	Kruskal-Wallis Statistic H
4	Chi-squared approximation for the critical value Hc
5	Chi-squared approximation for the P value
6	Wallace approximation for the critical value Hc
7	Wallace approximation for the P value
8	Exact P value (requires /E)

V_flag will be set to -1 for any error and to zero otherwise.

References

Klotz, J.H., *Computational Approach to Statistics*.

Klotz, J., and Teng, J., One-way layout for counts and the exact enumeration of the Kruskal-Wallis H distribution with ties, *J. Am. Stat. Assoc*, *72*, 165-169, 1977.

Wallace, D.L., Simplified Beta-Approximation to the Kruskal-Wallis H Test, *J. Am. Stat. Assoc*., *54*, 225-230, 1959.

Zar, J.H., *Biostatistical Analysis*, 4th ed., 929 pp., Prentice Hall, Englewood Cliffs, New Jersey, 1999.

See Also

Chapter III-12, **Statistics** for a function and operation overview; **StatsWilcoxonRankTest**, **StatsNPMCTest**, and **StatsAngularDistanceTest**.

StatsLinearCorrelationTest

StatsLinearCorrelationTest [***flags***] ***waveA, waveB***

The StatsLinearCorrelationTest operation performs correlation tests on *waveA* and *waveB*, which must be real valued numeric waves and must have the same number of points. Output is to the W_StatsLinearCorrelationTest wave in the current data folder or optionally to a table.

Flags

/ALPH = *val*	Sets the significance level (default *val*=0.05).
/CI	Computes confidence intervals for the correlation coefficient.
/Q	No results printed in the history area.
/RHO=*rhoValue*	Tests hypothesis that the correlation has a nonzero value $\|r\| \leq 1$.
/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.
/Z	Ignores errors.

Details

The linear correlation tests start by computing the linear correlation coefficient for the *n* elements of both waves:

$$r = \frac{\sum_{i=1}^{n} X_i Y_i - \frac{1}{n}\sum_{i=1}^{n} X_i \sum_{i=1}^{n} Y_i}{\sqrt{\left(\sum_{i=1}^{n} X_i^2 - \frac{1}{n}\left(\sum_{i=1}^{n} X_i\right)^2\right)\left(\sum_{i=1}^{n} Y_i^2 - \frac{1}{n}\left(\sum_{i=1}^{n} Y_i\right)^2\right)}}$$

Next it computes the standard error of the correlation coefficient

$$sr = \sqrt{\frac{1-r^2}{n-2}}$$

The basic test is for hypothesis H_0: the correlation coefficient is zero, in which case *t* and *F* statistics are applicable. It computes the statistics:

$$t = r / sr$$

and

$$F = \frac{1+|r|}{1-|r|},$$

and then the critical values for one and two tailed hypotheses (designated by t_{c1}, t_{c2}, F_{c1}, and F_{c2} respectively). Critical value for *r* are computed using

$$\mathrm{rc}_i = \sqrt{\frac{t_c^2}{t_c^2 + n}}$$

where *i* takes the values 1 or 2 for one and two tailed hypotheses. Finally, it computes the power of the test at the alpha significance level for both one and two tails (Power1 and Power2).

If you use /RHO it uses the Fisher transformation to compute

$$\mathrm{FisherZ} = \frac{1}{2}\ln\left(\frac{1+r}{1-r}\right)$$

$$\mathrm{zeta} = \frac{1}{2}\ln\left(\frac{1+\rho}{1-\rho}\right)$$

the standard error approximation

$$\mathrm{sigmaZ} = \sqrt{\frac{1}{n-3}},$$

$$\mathrm{Zstatistic} = \frac{FisherZ - zeta}{sigmaZ},$$

and the critical values from the normal distribution Z_{ci}.