median of the data and the edges of the array. The Moore and McCabe method is similar to Tukey's method except you do not include the median itself in computing the quartiles. Mendenhall and Sincich compute the quartiles using 1/4 and 3/4 of (numDataPoints+1) and round to the nearest integer (if the fraction part is exactly 0.5 they round up for the lower quartile and down for the upper quartile). Minitab uses the same expressions but instead of rounding it uses linear interpolation.

StatsQuantiles uses a stable index sorting routine so that

```
IndexSort W_QuantilesIndex,srcWave
```

is a monotonically increasing wave.

### References

Tukey, J. W., *Exploratory Data Analysis*, 688 pp., Addison-Wesley, Reading, Massachusetts, 1977.

Mendenhall, W., and T. Sincich, *Statistics for Engineering and the Sciences*, 4th ed., 1008 pp., Prentice Hall, Englewood Cliffs, New Jersey, 1995.

### See Also

Chapter III-12, **Statistics** for a function and operation overview; **WaveStats**, **StatsMedian**, **Sort**, and **MakeIndex**.

# StatsRankCorrelationTest

**StatsRankCorrelationTest** [*flags*] *waveA*, *waveB*

The StatsRankCorrelationTest operation performs Spearman's rank correlation test on *waveA* and *waveB*, 1D waves containing the same number of points. Output is to the W_StatsRankCorrelationTest wave in the current data folder.

### Flags

| | |
|---|---|
| /ALPH = *val* | Sets the significance level (default *val*=0.05). |
| /P=*method* | Controls the computation of the P-value. |
| | The /P flag was added in Igor Pro 9.00. |

|  |  |  |
|---|---|---|
| | *method*=0: | If the number of data points is less than or equal to 6 then an exact calculation is made. This is the default if /P is omitted. |
| | *method*=1: | The P-value is computed using the Edgeworth approximation. The P-value reported corresponds to a two tails calculation. |
| | *method*=2: | The P-value is computed using the Student-T approximation. This is appropriate when the number of data points is large. |

| | |
|---|---|
| /Q | No results printed in the history area. |
| /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

StatsRankCorrelationTest ranks *waveA* and *waveB* and then computes the sum of the squared differences of ranks for all rows. Ties are assigned an average rank and the corrected Spearman rank correlation coefficient is computed with ties. It reports the sum of the squared ranks (sumDi2), the sums of the ties coefficients (sumTx and sumTy respectively), the Spearman rank correlation coefficient (in the range [-1,1]), and the critical value. $H_0$ corresponds to zero correlation against the alternative of nonzero correlation. The critical value is usually lower than the one in published tables. When the first derivative of the CDF is discontinuous, tables tend to use a more conservative value by choosing the next transition of the CDF as the critical value. StatsRankCorrelationTest is not as powerful as **StatsLinearCorrelationTest**.

### See Also

Chapter III-12, **Statistics** for a function and operation overview.