

## StatsQpCDF

### See Also

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

## StatsQpCDF

**StatsQpCDF**(*q*, *nr*, *nt*, *dt*, *side*, *sSizeWave*)

The StatsQpCDF function returns the Q' cumulative distribution function associated with Dunnett's test.

Here *nr* is the number of groups (should be set to 1), *nt* is the number of treatments, *df* is the error degrees of freedom.

Set *side*=1 for upper-tail or *side*=2 for two-tailed CDF.

*sSizeWave* is an integer wave of *nt* rows specifying the number of samples in each treatment.

### Details

StatsQpCDF is a modified Q distribution typically used with Dunnett's test, which compares the various means with the mean of the control group or treatment

### References

"Algorithm AS 251: Multivariate Normal Probability Integrals with Product Correlations Structure", C. W. Dunnett, *Appl. Stat.*, 38 (1989) 564-579.

A short correction for the algorithm was published in: *Appl. Stat.*, 42 (1993) 709.

### See Also

Chapter III-12, **Statistics** for a function and operation overview; the **StatsDunnettTest**, **StatsInvQpCDF**, and **StatsInvQCDF** functions.

## StatsQuantiles

**StatsQuantiles** [*flags*] *srcWave*

The StatsQuantiles operation computes quantiles and elementary univariate statistics for a set of data in *srcWave*.

### Flags

/ALL	Invokes all flags except /Q, /QM, and /Z.
/BOX	Computes parameters necessary to construct a box plot.
/iNaN	Ignores NaNs, which are sorted to the end of the array by default.
/IW	Creates an index wave W_QuantilesIndex. W_QuantilesIndex[i] corresponds to the position of <i>srcWave</i> [i] when sorted from minimum to maximum.
/Q	No information printed in the history area.
/QM= <i>qMethod</i>	Specifies the method for computing quantiles. <i>qMethod</i> has one of these values: 0: Tukey (default). 1: Minitab. 2: Moore and McCabe. 3: Mendenhall and Sincich.  See Details for more information.
/QW	Creates a single precision wave W_QuantileValues containing the quantile value corresponding to each entry in <i>srcWave</i> .
/STBL	Uses a stable sort, which may require significant computation time for multiple entries with the same value.

/T= <i>k</i>	Displays the result wave W_StatsQuantiles in a table and specifies window behavior when the user attempts to close the table. <i>k</i> =0: Normal with dialog (default). <i>k</i> =1: Kills with no dialog. <i>k</i> =2: Disables killing. If you use /K=2 you can still kill the window using the <b>KillWindow</b> operation.
/TM	Computes the tri-mean: $0.25*(V\_Q25+2*median+V\_Q75)$ .
/TRIM= <i>tVal</i>	Computes the trimmed mean which is the mean value of the entries between the quantiles <i>tVal</i> (in %) and 100- <i>tVal</i> . By default <i>tVal</i> =25 and the trimmed mean corresponds to the midmean.
/Z	Ignores any errors.

### Details

StatsQuantiles produces quick five-number summaries or more detailed results for univariate data. Values are returned in the wave W\_StatsQuantiles and in the variables:

V_min	Minimum value.
V_max	Maximum value.
V_Median	Median value.
V_Q25	Lower quartile.
V_Q75	Upper quartile.
V_IQR	Inter-quartile range V_Q75-VQ25, which is also known as the H-spread.
V_MAD	Median absolute deviation.
V_mode	The most frequent value. If there is a tie and several values have the highest frequency then the lowest value among them is returned as the mode. If all values in srcWave are unique or if the number of points in srcWave is less than 3, V_mode is set to NaN. This output was added in Igor Pro 7.00.

Entries in the wave W\_StatsQuantiles depend on your choice of flags. Each row has a row label explicitly defining its value. If you use the /ALL flag, W\_StatsQuantiles will contain the following row labels:

minValue	lowerInnerFence
maxValue	lowerOuterFence
Median	upperInnerFence
Q25	upperOuterFence
Q75	triMean
IQR	trimmedMean
MedianAbsoluteDeviation	

Otherwise, W\_StatsQuantiles will contain the first five entries and any additionally requested value. You should always access values using the dimension labels (see **Dimension Labels** on page II-93).

There is frequently some confusion in comparing statistical results computed by different programs because each may use a different definition of quartiles. You can specify the method of computing the quartiles as you prefer with the /QM flag. If you neglect to choose a method, StatsQuantiles uses Tukey's method, which computes quartiles (also called hinges) as the lower and upper median values between the