**See Also**

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

## StatsNCChiCDF

**StatsNCChiCDF(*x*, *n*, *d*)**

The StatsNCChiCDF function returns the noncentral chi-squared cumulative distribution function

$$F(x;n,d) = \sum_{i=1}^{\infty} \exp\left(d/2\right) \frac{\left(d/2\right)^i}{i!} F_c(x;n+2i),$$

where $n$>0 corresponds to degrees of freedom, $d \geq 0$ is the noncentrality parameter, and $F_c$ is the central chi-squared distribution.

**References**

Abramowitz, M., and I.A. Stegun, *Handbook of Mathematical Functions*, 446 pp., Dover, New York, 1972.

**See Also**

Chapter III-12, **Statistics** for a function and operation overview; the **StatsChiCDF**, **StatsNCChiPDF**, and **StatsChiPDF** functions.

## StatsNCChiPDF

**StatsNCChiPDF(*x*, *n*, *d*)**

The StatsNCChiPDF function returns the noncentral chi-squared probability distribution function

$$f(x;n,d) = \frac{\sqrt{d}\exp\left(-\frac{x+d}{2}\right)x^{(n-1)/2}}{2(dx)^{n/4}} I_{n/2-1}\left(\sqrt{dx}\right).$$

where $n$>0 is the degrees of freedom, $d \geq 0$ is the noncentrality parameter, and $I_k(x)$ is the modified Bessel function of the first kind, **bessI**.

**See Also**

Chapter III-12, **Statistics** for a function and operation overview; the **StatsNCChiCDF**, **StatsInvNCChiCDF**, **StatsChiCDF**, and **StatsChiPDF** functions.

## StatsNCFCDF

**StatsNCFCDF(*x*, *n1*, *n2*, *d*)**

The StatsNCFCDF function returns the cumulative distribution function of the noncentral F distribution. *n1* and *n2* are the shape parameters and *d* is the noncentrality measure. There is no closed form expression for the distribution.

**References**

Evans, M., N. Hastings, and B. Peacock, *Statistical Distributions*, 3rd ed., Wiley, New York, 2000.

**See Also**

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

## StatsNCFPDF

**StatsNCFPDF(*x*, *n1*, *n2*, *d*)**

The StatsNCFPDF function returns the probability distribution function of the noncentral F distribution