Package 'cumstats'

October 12, 2022

Type Package

Title Cumulative Descriptive Statistics

Version 1.0

Date 2017-01-13

Author Arturo Erdely and Ian Castillo

Maintainer Arturo Erdely <arturo.erdely@comunidad.unam.mx>

Description Cumulative descriptive statistics for (arithmetic, geometric, harmonic) mean, median, mode, variance, skewness and kurtosis.

License GPL-3

NeedsCompilation no

Repository CRAN

Date/Publication 2017-01-16 08:13:00

R topics documented:

cumstats-package *Cumulative Descriptive Statistics*

Description

Cumulative descriptive statistics for (arithmetic, geometric, harmonic) mean, median, mode, variance, skewness and kurtosis.

Details

The DESCRIPTION file:

Package:	cumstats
Type:	Package
Title:	Cumulative Descriptive Statistics
Version:	1.0
Date:	2017-01-13
Author:	Arturo Erdely and Ian Castillo
Maintainer:	Arturo Erdely <arturo.erdely@comunidad.unam.mx>
Description:	Cumulative descriptive statistics for (arithmetic, geometric, harmonic) mean, median, mode, variance, skewnes
License:	GPL-3

Index of help topics:

Mode	Statistical Mode
cumgmean	Cumulative Geometric Mean
cumhmean	Cumulative Harmonic Mean
cumkurt	Cumulative Kurtosis
cummean	Cumulative Arithmetic Mean
cummedian	Cumulative Median
cummode	Cumulative Mode
cumquant	Cumulative Quantile
cumskew	Cumulative Skewness
cumstats-package	Cumulative Descriptive Statistics
cumvar	Cumulative Variance
kurtosis	Pearson's Measure of Kurtosis
skewness	Skewness

Cumulative descriptive statistics for (arithmetic, geometric, harmonic) mean, median, mode, variance, skewness and kurtosis.

Author(s)

Arturo Erdely and Ian Castillo

Maintainer: Arturo Erdely <arturo.erdely@comunidad.unam.mx>

cumgmean *Cumulative Geometric Mean*

Description

Returns a vector whose elements are the cumulative *geometric mean* of the elements of the argument.

Usage

```
cumgmean(x)
```

Arguments

x	a numeric vector.

Value

A numeric vector of the same length as x. An NA value in x causes the corresponding and following elements of the return value to be NA.

Author(s)

Arturo Erdely.

References

Kotz, S., Balakrishnan, N., Read, C.B, Vidakovic, B., Johnson, N.L. (2006) *Encyclopedia of Statistical Sciences.* Wiley, New Jersey.

See Also

cumhmean, cummean

Examples

```
cumgmean(c(9, 1, 4, 0, 3, NA, 8, 5))

z <- cumgmean(rlnorm(10000, 0, 1))
head(z); tail(z)
```

cumhmean *Cumulative Harmonic Mean*

Description

Returns a vector whose elements are the cumulative *harmonic mean* of the elements of the argument.

Usage

```
cumhmean(x)
```

Arguments

x	a numeric vector.

Value

A numeric vector of the same length as x. An NA value in x causes the corresponding and following elements of the return value to be NA.

Author(s)

Arturo Erdely.

References

Kotz, S., Balakrishnan, N., Read, C.B, Vidakovic, B., Johnson, N.L. (2006) *Encyclopedia of Statistical Sciences.* Wiley, New Jersey.

See Also

cumgmean, cummean

Examples

```
cumhmean(c(9, 1, 4, 0, 3, NA, 8, 5))
```

cumkurt *Cumulative Kurtosis*

Description

Returns a vector whose elements are the cumulative *kurtosis* of the elements of the argument.

Usage

```
cumkurt(x)
```

Arguments

x	a numeric vector.

Value

A numeric vector of the same length as x. An NA value in x causes the corresponding and following elements of the return value to be NA. The first entry is always NaN since kurtosis requires at least two different values.

Author(s)

Arturo Erdely.

References

Kotz, S., Balakrishnan, N., Read, C.B, Vidakovic, B., Johnson, N.L. (2006) *Encyclopedia of Statistical Sciences.* Wiley, New Jersey.

See Also

kurtosis

Examples

```
cumkurt(c(9, 1, 4, 0, 3, NA, 8, 5))
```

cummean *Cumulative Arithmetic Mean*

Description

Returns a vector whose elements are the cumulative *arithmetic mean* of the elements of the argument.

Usage

```
cummean(x)
```

Arguments

x	a numeric vector.

Value

A numeric vector of the same length as x. An NA value in x causes the corresponding and following elements of the return value to be NA.

Author(s)

Arturo Erdely and Ian Castillo.

References

Kotz, S., Balakrishnan, N., Read, C.B, Vidakovic, B., Johnson, N.L. (2006) *Encyclopedia of Statistical Sciences.* Wiley, New Jersey.

See Also

cumhmean, cumgmean, cummedian

Examples

```
cummean(c(9, 1, 4, 0, 3, NA, 8, 5))
```

`cummedian` *Cumulative Median*

Description

Returns a vector whose elements are the cumulative *median* of the elements of the argument.

Usage

```
cummedian(x)
```

Arguments

`x`	a numeric vector.

Value

A numeric vector of the same length as `x`. An `NA` value in `x` causes the corresponding and following elements of the return value to be `NA`.

Author(s)

Arturo Erdely.

References

Kotz, S., Balakrishnan, N., Read, C.B, Vidakovic, B., Johnson, N.L. (2006) *Encyclopedia of Statistical Sciences.* Wiley, New Jersey.

See Also

`cummean`, `cumquant`

Examples

```
cummedian(c(9, 1, 4, 0, 3, NA, 8, 5))
```

cummode *Cumulative Mode*

Description

Returns a list whose elements are the cumulative *statistical mode(s)* of the elements of the argument.

Usage

```
cummode(x)
```

Arguments

x	a numeric vector.

Value

A list of the same length as x with numeric vectors. NA values are also counted.

Author(s)

Arturo Erdely.

References

Kotz, S., Balakrishnan, N., Read, C.B, Vidakovic, B., Johnson, N.L. (2006) *Encyclopedia of Statistical Sciences.* Wiley, New Jersey.

See Also

Mode

Examples

```
cummode(c(rep(1, 2), rep(12, 5), rep(44, 3), rep(8, 5), 55))

cummode(c(rep(1, 2), rep(12, 5), rep(44, 3), rep(8, 5), rep(NA, 7), 55))

cummode(runif(5))

cummode(c(rep("a", 2), rep("b", 5), rep("d", 3), rep("e", 5), rep(NA, 5)))
```

cumquant *Cumulative Quantile*

Description

Returns a vector whose elements are the cumulative *quantile* of the elements of the argument.

Usage

```
cumquant(x, p, type = 7)
```

Arguments

x	a numeric vector.
p	probability for the desired quantile.
type	See quantile in R base package.

Value

A numeric vector of the same length as x. An NA value in x causes the corresponding and following elements of the return value to be NA.

Author(s)

Arturo Erdely.

References

Kotz, S., Balakrishnan, N., Read, C.B, Vidakovic, B., Johnson, N.L. (2006) *Encyclopedia of Statistical Sciences.* Wiley, New Jersey.

See Also

cummedian

Examples

```
y <- c(9, 1, 3, 0, NA, 2, 5)
cummedian(y)
cumquant(y, 0.5)

z <- cumquant(rcauchy(10000), 0.75)
head(z); tail(z)
```

cumskew *Cumulative Skewness*

Description

Returns a vector whose elements are the cumulative *skewness* of the elements of the argument.

Usage

```
cumskew(x)
```

Arguments

x	a numeric vector.

Value

A numeric vector of the same length as x. An NA value in x causes the corresponding and following elements of the return value to be NA. The first entry is always NaN since skewness requires at least two different values.

Author(s)

Arturo Erdely.

References

Kotz, S., Balakrishnan, N., Read, C.B, Vidakovic, B., Johnson, N.L. (2006) *Encyclopedia of Statistical Sciences.* Wiley, New Jersey.

See Also

skewness

Examples

```
cumskew(c(9, 1, 4, 0, 3, NA, 8, 5))
```

cumvar *Cumulative Variance*

Description

Returns a vector whose elements are the cumulative sample *variance* of the elements of the argument.

Usage

```
cumvar(x)
```

Arguments

x	a numeric vector.

Value

A numeric vector of the same length as x. An NA value in x causes the corresponding and following elements of the return value to be NA. The first entry is always NA since sample variance requires at least two values.

Author(s)

Arturo Erdely.

References

Kotz, S., Balakrishnan, N., Read, C.B, Vidakovic, B., Johnson, N.L. (2006) *Encyclopedia of Statistical Sciences.* Wiley, New Jersey.

Examples

```
cumvar(c(9, 1, 4, 0, 3, NA, 8, 5))
```

kurtosis *Pearson's Measure of Kurtosis*

Description

This function computes the estimator of Pearson's measure of *kurtosis*.

Usage

```
kurtosis(x)
```

Arguments

x	a numeric vector.

Value

A numeric value of skewness. Returns NA if x contains NA value(s), and NaN if length(unique(x))==1 is TRUE.

Author(s)

Adapted by Arturo Erdely from moments R package by Lukasz Komsta.

References

Komsta, L. and Novomestky, F. (2015). *moments: Moments, cumulants, skewness, kurtosis and related tests.* R package version 0.14. https://CRAN.R-project.org/package=moments

See Also

cumkurt

Examples

```
kurtosis(c(9, 1, 3, 0))
```

Mode *Statistical Mode*

Description

This function computes the statistical *mode* of given data.

Usage

```
Mode(x)
```

Arguments

x	a numeric or character vector.

Value

A list containing the following components:

Values	of statistical mode(s) found, in the order they appear in x
Frequency	number of times the mode(s) appear in x

NA values are also considered.

Author(s)

Ian Castillo.

References

Kotz, S., Balakrishnan, N., Read, C.B, Vidakovic, B., Johnson, N.L. (2006) *Encyclopedia of Statistical Sciences.* Wiley, New Jersey.

See Also

cummode

Examples

```
Mode(c(rep(1, 2), rep(12, 5), rep(44, 3), rep(8, 5), 55))

Mode(c(rep(1, 2), rep(12, 5), rep(44, 3), rep(8, 5), rep(NA, 7), 55))

Mode(runif(5))

Mode(c(rep("a", 2), rep("b", 5), rep("d", 3), rep("e", 5), rep(NA, 5)))
```

---

skewness *Skewness*

Description

This function computes skewness of given numeric data.

Usage

```
skewness(x)
```

Arguments

x	a numeric vector.

Value

A numeric value of skewness. Returns NA if x contains NA value(s), and NaN if `length(unique(x))==1` is TRUE.

Author(s)

Adapted by Arturo Erdely from moments R package by Lukasz Komsta.

References

Komsta, L. and Novomestky, F. (2015). *moments: Moments, cumulants, skewness, kurtosis and related tests.* R package version 0.14. https://CRAN.R-project.org/package=moments

See Also

cumskew

Examples

```
skewness(c(9, 1, 3, 0))
```

Index