The moments Package
August 12, 2005

Type Package

Title Moments, skewness, kurtosis and related tests

Version 0.1

Date 2005-08-11

Author Lukasz Komsta <luke@novum.am.lublin.pl>

Maintainer Lukasz Komsta <luke@novum.am.lublin.pl>

Description Functions to calculate: moments, Pearson’s kurtosis, Geary’s kurtosis and skewness; tests related to them (Anscombe-Glynn, D’Agostino, Bonett-Seier).


URL http://www.r-project.org, http://www.komsta.net/

R topics documented:

<table>
<thead>
<tr>
<th>agostino.test ..................................................</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>anscombe.test ..................................................</td>
<td>3</td>
</tr>
<tr>
<td>bonett.test ..................................................</td>
<td>4</td>
</tr>
<tr>
<td>geary ............................................................</td>
<td>5</td>
</tr>
<tr>
<td>kurtosis ..................................................................</td>
<td>6</td>
</tr>
<tr>
<td>moment ...............................................................</td>
<td>6</td>
</tr>
<tr>
<td>skewness ..................................................................</td>
<td>7</td>
</tr>
</tbody>
</table>

Index 8

---

agostino.test | D'Agostino test of skewness

Description

Performs D’Agostino test for skewness in normally distributed data.

Usage

agostino.test(x, alternative = c("two.sided", "less", "greater"))
Arguments

x       a numeric vector of data values.
alternative  a character string specifying the alternative hypothesis, must be one of "two.sided" (default), "greater" or "less". You can specify just the initial letter.

Details

Under the hypothesis of normality, data should be symmetrical (i.e. skewness should be equal to zero). This test has such null hypothesis and is useful to detect a significant skewness in normally distributed data.

Value

A list with class htest containing the following components:

  statistic     the list containing skewness estimator and its transformation.
  p.value       the p-value for the test.
  alternative   a character string describing the alternative hypothesis.
  method        a character string indicating what type of test was performed.
  data.name     name of the data argument.

Author(s)

Lukasz Komsta

References


See Also

skewness

Examples

set.seed(1234)
x = rnorm(1000)
skewness(x)
agostino.test(x)
Description

Performs Anscombe-Glynn test of kurtosis for normal samples

Usage

anscombe.test(x, alternative = c("two.sided", "less", "greater"))

Arguments

x  
a numeric vector of data values.

alternative  
a character string specifying the alternative hypothesis, must be one of "two.sided" (default), "greater" or "less". You can specify just the initial letter.

Details

Under the hypothesis of normality, data should have kurtosis equal to 3. This test has such null hypothesis and is useful to detect a significant difference of kurtosis in normally distributed data.

Value

A list with class htest containing the following components:

statistic  
the list containing kurtosis estimator and its transformation.

p.value  
the p-value for the test.

alternative  
a character string describing the alternative hypothesis.

method  
a character string indicating what type of test was performed.

data.name  
name of the data argument.

Author(s)

Lukasz Komsta

References


See Also

kurtosis

Examples

set.seed(1234)
x = rnorm(1000)
kurtosis(x)
anscombe.test(x)
bonett.test

Bonett-Seier test of Geary’s kurtosis

Description

This function performs Bonett-Seier test of Geary’s measure of kurtosis for normally distributed data.

Usage

bonett.test(x, alternative = c("two.sided", "less", "greater"))

Arguments

x a numeric vector of data values.
alternative a character string specifying the alternative hypothesis, must be one of "two.sided" (default), "greater" or "less". You can specify just the initial letter.

Details

Under the hypothesis of normality, data should have Geary’s kurtosis equal to $\sqrt{2/\pi}$ (0.7979). This test has such null hypothesis and is useful to detect a significant difference of Geary’s kurtosis in normally distributed data.

Value

A list with class htest containing the following components:

- statistic the list containing Geary’s kurtosis estimator and its transformation.
- p.value the p-value for the test.
- alternative a character string describing the alternative hypothesis.
- method a character string indicating what type of test was performed.
- data.name name of the data argument.

Author(s)

Lukasz Komsta

References


See Also

geary

Examples

set.seed(1234)
x = rnorm(1000)
geary(x)
bonett.test(x)
Description

This function computes an estimator of Geary’s measure of kurtosis.

Usage

geary(x, na.rm = FALSE)

Arguments

x

a numeric vector, matrix or data frame.

na.rm

logical. Should missing values be removed?

Details

The Geary’s kurtosis is computed by dividing average difference between observation and the mean by standard deviation of the sample.

Author(s)

Lukasz Komsta

References


See Also

kurtosis, bonett.test

Examples

set.seed(1234)
geary(rnorm(1000))
### kurtosis

**Pearson’s measure of kurtosis**

**Description**

This function computes the estimator of Pearson’s measure of kurtosis.

**Usage**

```r
kurtosis(x, na.rm = FALSE)
```

**Arguments**

- `x`: a numeric vector, matrix or data frame.
- `na.rm`: logical. Should missing values be removed?

**Author(s)**

Lukasz Komsta

**See Also**

`geary`, `anscombe.test`

**Examples**

```r
set.seed(1234)
kurtosis(rnorm(1000))
```

### moment

**Statistical Moments**

**Description**

This function computes the sample moment of specified order.

**Usage**

```r
moment(x, order = 1, central = FALSE, absolute = FALSE, na.rm = FALSE)
```

**Arguments**

- `x`: a numeric vector of data.
- `order`: order of the moment to be computed
- `central`: a logical value - if central moments are to be computed.
- `absolute`: a logical value - if absolute moments are to be computed.
- `na.rm`: a logical value - remove NA values?
Description

This function computes skewness of given data.

Usage

skewness(x, na.rm = FALSE)

Arguments

x

a numeric vector, matrix or data frame.

na.rm

logical. Should missing values be removed?

Author(s)

Lukasz Komsta

See Also

agostino.test

Examples

set.seed(1234)
skewness(rnorm(1000))
Index

*Topic htest
  agostino.test, 1
  anscombe.test, 2
  bonett.test, 3

*Topic univar
  geary, 4
  kurtosis, 5
  moment, 6
  skewness, 6

agostino.test, 1, 7
anscombe.test, 2, 5
bonett.test, 3, 5
geary, 4, 4, 5
kurtosis, 3, 5, 5
moment, 6
skewness, 2, 6