

Package ‘npmc’

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Title Nonparametric Multiple Comparisons

Description Provides simultaneous rank test procedures for the one-way layout without presuming a certain distribution.

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Depends mvtnorm, stats, R (>= 2.4.0)

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brain	<i>reaction time of brain-damaged patients</i>
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Description

The `brain` data frame has 90 rows and 2 columns. It contains pairs of observations (`var`) and factor levels (`class`).

Usage

```
data(brain)
```

Format

This data frame contains the following columns:

class - factor with levels `c` = control-group, `l` = left hemisphere brain-damage, `r` = right hemisphere brain-damage

var - score for the reaction

Details

The effects of unilateral left hemisphere (LH) and right hemisphere (RH) lesions on the accuracy of choice and speed of response in a four-choice reaction time task were examined by Tartaglione et al. (1991). The subjects consisted of 30 controls, 30 LH and 30 RH brain-damaged patients, so this is an example for a balanced one-factorial design.

References

"A unified approach to Simultaneous Rank Test Procedures in the Unbalanced One-way Layout" written by Ullrich Munzel and Ludwig Hothorn.

Examples

```
data(brain)
nrmc(brain)
```

kronen

Baumkronen

Description

The `kronen` data frame has 72 rows and 2 columns. It contains pairs of observations (`var`) and factor levels (`class`).

Usage

```
data(kronen)
```

Format

This data frame contains the following columns:

class - factor with 3 levels

var - a numeric vector, the response variable

Details

An example for an unbalanced one-factorial design.

Examples

```
data(kronen)
nPMC(kronen)
```

nPMC

Nonparametric Multiple Comparisons

Description

`nPMC` implements the nonparametrical multiple test procedures (Behrens-Fisher- and Steel-type for the all-pairs and many-to-one situations) described in the paper "A unified approach to Simultaneous Rank Test Procedures in the Unbalanced One-way Layout" written by Ullrich Munzel and Ludwig Hothorn.

Usage

```
nPMC(dataset, control=NULL, df=2, alpha=0.05)
```

```
## S3 method for class 'nPMC':
summary(object, type="both", info=TRUE, short=TRUE, corr=FALSE, ...)
```

Arguments

<code>dataset</code>	a data-frame with variables 'var' (the response-variable) and 'class' (containing the class-level). The data may be unsorted and unbalanced. The 'summary'-function supports 'name' and 'description' attributes
<code>control</code>	level of control-group for the many-to-one situation or NULL for the all-pairs situation (default)
<code>df</code>	determines the BF-teststatistics' asymptotic distribution function (0 = standard-normal approximation, 1 = simple t-approximation, 2 = Satterthwaite t-approximation (default))
<code>alpha</code>	Level for the (1-alpha) confidence-intervals
<code>object</code>	An object of type 'npmc'
<code>type</code>	You may select either "BF" or "Steel". All other values extract information for both types
<code>info</code>	Prints info about the procedure and the data
<code>short</code>	Only prints the most relevant items of the test-results
<code>corr</code>	Prints the correlation-matrices
<code>...</code>	further arguments to be passed to or from methods.

Details

npmc performs nonparametrical multiple testprocedures (Behrens-Fisher- and Steel-type for the all-pairs and many-to-one situations) and computes the simultaneous (1-alpha) confidence limits for the relative effects.

The one-sided tests reject if group with smaller index has larger values due to the calculation of the relative effect-estimators.

Value

A list of several other values and structures with subvalues

<code>info</code>	group.index: an integer number to identify the group class.level: the class-level of this group nobs: the number of observations in this group
<code>corr</code>	BF: The Behrens-Fisher-type correlation-matrix Steel: The Steel-type correlation-matrix The matrices have attributes 'adjusted' which indicate if negative eigenvalues were changed to zero (see 'Notes'-section).
<code>test</code>	BF / Steel: Two lists containing the test-results and some other characteristics of the multiple nonparametric Behrens-Fisher- and Steel-type testprocedures cmp: names the compared groups ('a-b') gn: the sum of both sample-sizes effect: the relative effect-estimator variance: the variance-estimator std: the standard-deviation

	statistic: the test-statistic
	p-value 1s: the 1-sided p-value
	p-value 2s: the 1-sided p-value
	zero: TRUE if zero variances occurred and were substituted by 0.0000001
control	The factor-level of the control group (NULL for allpairs-comparison)
df.method	The original df-parameter
df	The estimated degrees of freedom for the multivariate t-distribution or 0 if the standard normal distribution was used for approximating the teststatistics' distribution (depending on the df-parameter).

Note

This function requires the 'mvtnorm' package to calculate the p-values for the test-statistics. If this package is not available on your system, the result will contain NA's as p-values.

The functions in the 'mvtnorm' package seem to use randomized values for integral calculations, so the results from npmc concerning p-values and confidence-intervals differ from call to call and can be recognized only as an approximative solution.

If a correlation-matrix has negative eigenvalues, they are replaced by 0 as recommended by the paper. The matrix's 'adjusted' attribute indicates whether or not the matrix was forced to be positive semidefinite.

Author(s)

Joerg Helms

References

"A unified approach to Simultaneous Rank Test Procedures in the Unbalanced One-way Layout" written by Ullrich Munzel and Ludwig Hothorn.

Examples

```
data(brain)
summary(npmc(brain), type="BF")
```

report

Report Printing

Description

Function to present text on screen.

Usage

```
report(msg=NULL, style=0, char="-")
```

Arguments

msg	The text to be printed (any vector-type)
style	The style in which to print the text. Possible values are 'underlined' and 'border' (and valid abbreviations). Any other value defaults to 'blank', i.e. the pure text-vector.
char	A character to use for the style.

Value

A matrix containing the printed lines in one row.

Note

report will always print a blank line first.

Author(s)

Joerg Helms

Examples

```
report("It's a nice day!", style="border", char="*")
```

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