Package 'npar'

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Type Package

Title Nonparametric group comparisons

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Author Rob Kabacoff

Maintainer Robert Kabacoff <robk@statmethods.net>

Description This package assesses group differences using nonparametric statistics. Currently a one-way layout is supported. Kruskal-Wallis test followed by pairwise Wilcoxon tests are provided. p-values are adjusted for multiple comparisons using the p.adjust() function. Results are plotted via annotated boxplots.

LazyData yes

License GPL-3

RoxygenNote 7.1.1

R topics documented:

`npar-package` *Functions for nonparametric group comparisons.*

Description

npar provides tools for calculating and visualizing nonparametric differences among groups.

life *Healthy Life Expectancy at Age 65*

Description

A dataset containing the healthy life expectancy (expected years of life in good health) at age 65, by US state in 2007-2009. Estimates are reported separately for men and women.

Usage

```
life
```

Format

A data frame with 50 rows and 4 variables. The variables are as follows:

region A factor with 4 levels (North Central, Northeast, South, West)

state A factor with the 2-letter ISO codes for the 50 US states

hlem Healthy life expectancy for men in years

hlef Healthy life expectancy for women in years

Source

The `hlem` and `hlef` data were obtained from the Center for Disease Control and Prevention *Morbidity and Mortality Weekly Report* at http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6228a1.htm?s_cid=mm6228a1_w. The `region` variable was added from the `state.region` dataset.

oneway *Nonparametric group comparisons*

Description

`oneway` computes nonparametric group comparisons, including an omnibus test and post-hoc pairwise group comparisons.

Usage

```
oneway(
  formula,
  data,
  exact = FALSE,
  sort = TRUE,
 method = c("holm", "hochberg", "hommel", "bonferroni", "BH", "BY", "fdr", "none")
)
```

Arguments

formula	an object of class formula, relating the dependent variable to the grouping variable.
data	a data frame containing the variables in the model.
exact	logical. If TRUE, calculate exact Wilcoxon tests.
sort	logical. If TRUE, sort groups by median dependent variable values.
method	method for correcting p-values for multiple comparisons.

Details

This function computes an omnibus Kruskal-Wallis test that the groups are equal, followed by all pairwise comparisons using Wilcoxon Rank Sum tests. Exact Wilcoxon tests can be requested if there are no ties on the dependent variable. The p-values are adjusted for multiple comparisons using the p.adjust function.

Value

a list with 7 elements:

CALL	function call
data	data frame containing the depending and grouping variable
sumstats	data frame with descriptive statistics by group
kw	results of the Kruskal-Wallis test
method	method used to adjust p-values
wmc	data frame containing the multiple comparisons
vnames	variable names

Author(s)

Rob Kabacoff ¡rkabacoff@statmethods.net¿

Examples

```
results <- oneway(hlef ~ region, life)
summary(results)
plot(results, col="lightblue", main="Multiple Comparisons",
     xlab="US Region", ylab="Healthy Life Expectancy at Age 65")
```

---

plot.oneway *Plot nonparametric group comparisons*

Description

plot.oneway plots nonparametric group comparisons.

Usage

```
## S3 method for class 'oneway'
plot(x, ...)
```

Arguments

x	an object of class oneway.
...	additional arguments passed to the boxplot function.

Details

This function plots nonparametric group comparisons created by the oneway function using annotated side by side boxplots. Medians and sample sizes are placed at the top of the chart. The overall median is represented by a horizontal dashed line.

Author(s)

Rob Kabacoff ¡rkabacoff@statmethods.net¿

Examples

```
results <- oneway(hlef ~ region, life)
plot(results, col="lightblue", main="Multiple Comparisons",
     xlab="US Region", ylab="Healthy Life Expectancy at Age 65")
```

---

print.oneway *Print multiple comparisons*

Description

print.oneway prints pairwise group comparisons.

Usage

```
## S3 method for class 'oneway'
print(x, ...)
```

Arguments

x	an object of class oneway.
...	additional arguments passed to the function.

Details

This function prints Wilcoxon pairwise multiple comparisons created by the oneway function.

Value

the input object is returned silently.

Author(s)

Rob Kabacoff ¡rkabacoff@statmethods.net¿

Examples

```
results <- oneway(hlef ~ region, life)
print(results)
```

summary.oneway *Summarize oneway nonparametric analyses*

Description

summary.oneway summarizes the results of a oneway nonparametric analysis.

Usage

```
## S3 method for class 'oneway'
summary(object, ...)
```

Arguments

object	an object of class oneway.
...	additional parameters.

Details

This function prints a summary of analyses produced by the oneway function. This includes descriptive statistics by group, an omnibus Kruskal-Wallis test, and Wilcoxon pairwise multiple comparisons.

Value

the input object is returned silently.

Author(s)

Rob Kabacoff ¡rkabacoff@statmethods.net¿

Examples

```
results <- oneway(hlef ~ region, life)
summary(results)
```

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