

Package ‘r2spss’

November 24, 2021

Type Package

Title Format R Output to Look Like SPSS

Version 0.2.0

Date 2021-11-24

Description Create plots and LaTeX tables that look like SPSS output for use in teaching materials. Rather than copying-and-pasting SPSS output into documents, R code that mocks up SPSS output can be integrated directly into dynamic LaTeX documents with tools such as knitr. Functionality includes methods that are typically covered in introductory statistics classes: descriptive statistics, common hypothesis tests, ANOVA, and linear regression, as well as boxplots, histograms, scatterplots, and line plots (including profile plots).

License GPL (>= 3)

URL <https://github.com/aalfons/r2spss>

BugReports <https://github.com/aalfons/r2spss/issues>

Depends R (>= 3.5.0)

Imports graphics, grDevices, stats, car

Suggests knitr

LazyLoad yes

VignetteBuilder knitr

Author Andreas Alfons [aut, cre] (<<https://orcid.org/0000-0002-2513-3788>>)

Maintainer Andreas Alfons <aalfons@ese.eur.nl>

Encoding UTF-8

RoxygenNote 7.1.2

NeedsCompilation no

Repository CRAN

Date/Publication 2021-11-24 18:50:05 UTC

R topics documented:

r2spss-package	2
ANOVA	3
boxplotSPSS	5
chisqTest	7
descriptives	8
Eredivisie	9
Exams	11
formatSPSS	11
histSPSS	12
kruskalTest	13
linesSPSS	14
paletteSPSS	15
plotSPSS	16
regression	17
signTest	19
tTest	21
wilcoxonTest	22
Index	25

r2spss-package

Format R Output to Look Like SPSS

Description

Create plots and LaTeX tables that look like SPSS output for use in teaching materials. Rather than copying-and-pasting SPSS output into documents, R code that mocks up SPSS output can be integrated directly into dynamic LaTeX documents with tools such as knitr. Functionality includes methods that are typically covered in introductory statistics classes: descriptive statistics, common hypothesis tests, ANOVA, and linear regression, as well as boxplots, histograms, scatterplots, and line plots (including profile plots).

Details

The DESCRIPTION file:

```

Package:      r2spss
Type:         Package
Title:        Format R Output to Look Like SPSS
Version:      0.2.0
Date:         2021-11-24
Description:  Create plots and LaTeX tables that look like SPSS output for use in teaching materials. Rather than copyin
License:      GPL (>= 3)
URL:          https://github.com/aalfons/r2spss
BugReports:   https://github.com/aalfons/r2spss/issues
Depends:      R (>= 3.5.0)

```

Imports: graphics, grDevices, stats, car
 Suggests: knitr
 LazyLoad: yes
 VignetteBuilder: knitr
 Authors@R: c(person("Andreas", "Alfons", email = "alfons@ese.eur.nl", role = c("aut", "cre"), comment = c(ORCID =
 Author: Andreas Alfons [aut, cre] (<<https://orcid.org/0000-0002-2513-3788>>)
 Maintainer: Andreas Alfons <alfons@ese.eur.nl>
 Encoding: UTF-8
 RoxygenNote: 7.1.2

Index of help topics:

ANOVA	One-way and Two-way ANOVA
Eredivisie	Football players of the Dutch Eredivisie season 2013-14
Exams	Exam results of an applied statistics course
boxplotSPSS	Boxplots
chisqTest	Chi-squared Tests
descriptives	Descriptive Statistics
formatSPSS	Format Objects
histSPSS	Histogram
kruskalTest	Kruskal-Wallis Test
linesSPSS	Line Plots
paletteSPSS	SPSS Color Palette
plotSPSS	Scatterplot and Scatterplot Matrix
r2spss-package	Format R Output to Look Like SPSS
regression	Linear Regression
signTest	Sign Test
tTest	t Tests
wilcoxonTest	Wilcoxon Signed Rank and Rank Sum Tests

Further information is available in the following vignettes:

r2spss-intro r2spss: Format R Output to Look Like SPSS (source)

Author(s)

Andreas Alfons [aut, cre] (<<https://orcid.org/0000-0002-2513-3788>>)
 Maintainer: Andreas Alfons <alfons@ese.eur.nl>

Description

Perform one-way or two-way ANOVA on variables of a data set. The output is printed as a LaTeX table that mimics the look of SPSS output (version <24), and a plot of the results mimics the look of SPSS graphs.

Usage

```
ANOVA(data, variable, group, conf.level = 0.95)

## S3 method for class 'ANOVASPPS'
print(x, digits = 3, statistics = c("descriptives", "variance", "test"), ...)

## S3 method for class 'ANOVASPPS'
plot(x, y, which = 1, type = "o", main = NULL, xlab = NULL, ylab = NULL, ...)
```

Arguments

<code>data</code>	a data frame containing the variables.
<code>variable</code>	a character string specifying the numeric variable of interest.
<code>group</code>	a character vector specifying one or two grouping variables.
<code>conf.level</code>	a number between 0 and 1 giving the confidence level of the confidence interval.
<code>x</code>	an object of class "ANOVASPPS" as returned by function ANOVA.
<code>digits</code>	an integer giving the number of digits after the comma to be printed in the LaTeX tables.
<code>statistics</code>	a character vector specifying which LaTeX tables should be printed. Available options are "descriptives" for descriptive statistics, "variance" for Levene's test on homogeneity of the variances, and "test" for ANOVA results. The default is to print all tables.
<code>...</code>	For the plot method, additional arguments to be passed down, in particular graphical parameters (see also linesSPSS). For the print method, additional arguments are currently ignored.
<code>y</code>	ignored (only included because it is defined for the generic function plot).
<code>which</code>	for two-way ANOVA, an integer with possible values 1 or 2 indicating whether the first or the second factor should be used on the <i>x</i> -axis. The other factor will then be used for drawing separate lines. For one-way ANOVA, this is not meaningful and ignored.
<code>type</code>	a character string specifying the type of lines. Possible values are "o" (the default) for overplotted points and lines, and "l" for lines only.
<code>main, xlab, ylab</code>	the plot title and axis labels.

Value

An object of class "ANOVASPPS" with the following components:

`descriptives` a data frame containing per-group descriptive statistics.

levene an object as returned by `leveneTest`.
test a data frame containing the ANOVA table.
variable a character string containing the name of the numeric variable of interest.
group a character vector containing the name(s) of the grouping variable(s).
i an integer giving the number of groups in the (first) grouping variable.
j an integer giving the number of groups in the second grouping variable (only two-way ANOVA).
conf.level numeric; the confidence level used.
type a character string giving the type of ANOVA performed ("one-way" or "two-way").

The `print` method produces a LaTeX table that mimics the look of SPSS output (version <24).

The `plot` method does not return anything, but produces a profile plot of the ANOVA results.

Author(s)

Andreas Alfons

Examples

```

# load data
data("Eredivisie")
# log-transform market values
Eredivisie$logMarketValue <- log(Eredivisie$MarketValue)

# one-way ANOVA
oneway <- ANOVA(Eredivisie, "logMarketValue",
               group = "Position")
oneway      # print LaTeX table
plot(oneway) # create profile plot

# two-way ANOVA
twoway <- ANOVA(Eredivisie, "logMarketValue",
               group = c("Position", "Foreign"))
twoway      # print LaTeX table
plot(twoway) # create profile plot

```

boxplotSPSS

Boxplots

Description

Draw boxplots of variables in a data frame, including boxplots for groups of observations and boxplots for separate variables. The plots thereby mimic the look of SPSS graphs.

Usage

```

boxplotSPSS(
  data,
  variables,
  group = NULL,
  xlab = NULL,
  ylab = NULL,
  cut.names = NULL,
  ...
)

```

Arguments

<code>data</code>	a data frame containing the variables to be plotted.
<code>variables</code>	a character vector specifying separate variables to be plotted. If <code>group</code> is not <code>NULL</code> , only the first variable is used and boxplots of groups of observations are drawn instead.
<code>group</code>	an character string specifying a grouping variable, or <code>NULL</code> for no grouping.
<code>xlab, ylab</code>	the axis labels.
<code>cut.names</code>	a logical indicating whether to cut long variable names or group labels to 8 characters. The default is <code>TRUE</code> for boxplots of separate variables, but <code>FALSE</code> for boxplots of groups of observations (which mimics SPSS behavior).
<code>...</code>	additional arguments to be passed down, in particular graphical parameters (see boxplot and par).

Value

A list containing summary statistics is returned invisibly (see [boxplot](#)).

Author(s)

Andreas Alfons

Examples

```

## paired sample
# load data
data("Exams")

# plot grades on regular and resit exams
boxplotSPSS(Exams, c("Regular", "Resit"))

## independent samples

# load data
data("Eredivisie")
# log-transform market values

```

```
Eredivisie$logMarketValue <- log(Eredivisie$MarketValue)

# plot log market values of Dutch and Foreign players
boxplotSPSS(Eredivisie, "logMarketValue", group = "Foreign")
```

chisqTest

 χ^2 Tests

Description

Perform a χ^2 goodness-of-fit test or a χ^2 test on independence on variables of a data set. The output is printed as a LaTeX table that mimics the look of SPSS output (version <24).

Usage

```
chisqTest(data, variables, p = NULL)

## S3 method for class 'chisqTestSPSS'
print(x, digits = c(1, 3), statistics = c("frequencies", "test"), ...)
```

Arguments

data	a data frame containing the variables.
variables	a character vector specifying the categorical variable(s) of interest. If only one variable is specified, a goodness-of-fit test is performed. If two variables are specified, a test on independence is performed (with the first variable used for the rows and the second variable for the columns of the crosstabulation).
p	a vector of probabilities for the categories in the goodness-of-fit test.
x	an object of class "chisqTestSPSS" as returned by function chisqTest.
digits	an integer vector giving the number of digits after the comma to be printed in the LaTeX tables. The first element corresponds to the number of digits in the table of frequencies, and the second element corresponds to the number of digits in the table for the test.
statistics	a character vector specifying which LaTeX tables should be printed. Available options are "frequencies" for a table of the observed and expected frequencies, and "test" for test results. The default is to print both tables.
...	currently ignored.

Value

An object of class "chisqTestSPSS" with the following components:

chisq a list containing the results of the χ^2 test.
 lr a list containing the results of a likelihood ratio test (only test on independence).
 observed a table containing the observed frequencies.

expected a vector or matrix containing the expected frequencies.
 n an integer giving the number of observations.
 k an integer giving the number of groups (only goodness-of-fit test).
 r an integer giving the number of groups in the first variable corresponding to the rows (only test on independence).
 c an integer giving the number of groups in the second variable corresponding to the columns (only test on independence).
 variables a character vector containing the name(s) of the categorical variable(s) of interest.
 type a character string giving the type of χ^2 test performed ("goodness-of-fit" or "independence").
 The print method produces a LaTeX table that mimics the look of SPSS output (version <24).

Note

The test on independence also reports the results of a likelihood ratio test.

Author(s)

Andreas Alfons

Examples

```

# load data
data("Eredivisie")

# test whether playing position and dummy variable for
# foreign players are independent
chisqTest(Eredivisie, c("Position", "Foreign"))

# test whether the traditional Dutch 4-3-3 (total football)
# is still reflected in player composition
chisqTest(Eredivisie, "Position", p = c(1, 4, 3, 3)/11)

```

descriptives

Descriptive Statistics

Description

Compute descriptive statistics of numeric variables of a data set (number of observations, minimum, maximum, mean, standard deviation). The output is printed as a LaTeX table that mimics the look of SPSS output (version <24).

Usage

```

descriptives(data, variables)

## S3 method for class 'descriptivesSPSS'
print(x, digits = 2, ...)

```


Arguments

<code>data</code>	a data frame containing the variables.
<code>variables</code>	a character vector specifying numeric variables for which to compute descriptive statistics.
<code>x</code>	an object of class "descriptivesSPSS" as returned by function <code>descriptives</code> .
<code>digits</code>	an integer giving the number of digits after the comma to be printed in the LaTeX table.
<code>...</code>	currently ignored.

Value

An object of class "descriptivesSPSS" with the following components:

`classes` a character vector giving the (first) class of the variables of interest.

`descriptives` a data frame containing the descriptive statistics.

`n` an integer giving the number of observations.

The print method produces a LaTeX table that mimics the look of SPSS output (version <24).

Author(s)

Andreas Alfons

Examples

```
# load data
data("Eredivisie")

# compute descriptive statistics for market value and age
descriptives(Eredivisie, c("MarketValue", "Age"))
```

Eredivisie

Football players of the Dutch Eredivisie season 2013-14

Description

Data on all football players in the Dutch Eredivisie, the highest men's football league in the Netherlands, who played at least one match in the 2013-14 season.

Usage

```
data("Eredivisie")
```

Format

A data frame with 417 observations on the following 20 variables.

Player the player's name.

Team the team with which the player was under contract at the end of the 2013-14 season.

MarketValue the player's market value after the 2013-14 season.

Age the player's age in years.

Height the player's height in centimeters.

Foreign a dummy variable with value 0 for Dutch players and value 1 for players without a Dutch nationality.

Position the primary position of the player ("Goalkeeper", "Defender", "Midfielder", or "Forward").

BothFeet a dummy variable with value 0 if the player has one stronger foot and value 1 if the player is equally strong with both feet.

AtClub the number of years the player is with the current team.

Contract the number of years remaining on the player's current contract.

Matches the number of matches played in the 2013-14 season.

Goals the number of goals scored in the 2013-14 season.

OwnGoals the number of own goals scored in the 2013-14 season.

Assists the number of assists given in the 2013-14 season.

Yellow the number of yellow cards received in the 2013-14 season.

YellowRed the number of yellow-red cards received in the 2013-14 season.

Red the number of red cards received in the 2013-14 season.

SubOn the number of times the player was substituted on the field in the 2013-14 season.

SubOff the number of times the player was substituted off the field in the 2013-14 season.

Minutes the number of minutes played in the 2013-14 season.

Source

<https://www.transfermarkt.de/>

Examples

```
data("Eredivisie")
summary(Eredivisie)
```

Exams

Exam results of an applied statistics course

Description

Data on grades for an applied statistics course at Erasmus University Rotterdam for students who took both the regular exam and the resit. Grades in the Netherlands are on a scale from 1 to 10, with a higher grade being better, and a minimum of 5.5 is required to pass.

Usage

```
data("Exams")
```

Format

A data frame with 45 observations on the following 2 variables.

`Regular` the student's grade based on the regular exam at the end of the course.

`Resit` the student's grade based on the resit exam at the end of the academic year.

Examples

```
data("Exams")
summary(Exams)
```

formatSPSS

Format Objects

Description

Format an object for printing, mostly used to print numeric data in the same way SPSS. This is mainly for internal use in `print` methods.

Usage

```
formatSPSS(x, ...)

## Default S3 method:
formatSPSS(x, ...)

## S3 method for class 'integer'
formatSPSS(x, ...)

## S3 method for class 'numeric'
formatSPSS(x, digits = 3, ...)
```

```
## S3 method for class 'matrix'
formatSPSS(x, ...)

## S3 method for class 'data.frame'
formatSPSS(x, ...)
```

Arguments

`x` an R object, typically numeric. Currently methods are implemented for vectors, matrices and data frames. The default method calls `as.character`.

`...` additional arguments passed down to methods.

`digits` an integer giving the number of digits after the comma to display.

Value

A character vector or matrix containing the formatted object.

Author(s)

Andreas Alfons

Examples

```
# note how numbers in the interval (-1, 1) are printed
# without the zero in front of the comma
formatSPSS(c(-1.5, -2/3, 2/3, 1.5))
```

histSPSS

Histogram

Description

Draw a histogram of a variable in a data frame. The plot thereby mimics the look of SPSS graphs.

Usage

```
histSPSS(data, variable, normal = FALSE, xlab = NULL, ylab = NULL, ...)
```

Arguments

`data` a data frame containing the variable to be plotted.

`variable` a character string specifying the variable to be plotted.

`normal` a logical indicating whether to add a normal density with the estimated mean and standard deviation (the default is FALSE).

`xlab, ylab` the axis labels (the default is to use the variable name for the *x*-axis label and "Frequency" as the *y*-axis label).

`...` additional arguments to be passed down, in particular graphical parameters (see `hist` and `par`).

Value

An object of class "histogram" is returned invisibly (see [hist](#)).

Author(s)

Andreas Alfons

Examples

```
# load data
data("Eredivisie")
# log-transform market values
Eredivisie$logMarketValue <- log(Eredivisie$MarketValue)

# plot histogram of log market values
histSPSS(Eredivisie, "logMarketValue")
```

kruskalTest

Kruskal-Wallis Test

Description

Perform a Kruskal-Wallis test on variables of a data set. The output is printed as a LaTeX table that mimics the look of SPSS output (version <24).

Usage

```
kruskalTest(data, variable, group)
```

```
## S3 method for class 'kruskalTestSPSS'
print(x, digits = 2:3, statistics = c("ranks", "test"), ...)
```

Arguments

data	a data frame containing the variables.
variable	a character string specifying the numeric variable of interest.
group	a character string specifying a grouping variable.
x	an object of class "kruskalTestSPSS" as returned by function <code>kruskalTest</code> .
digits	an integer vector giving the number of digits after the comma to be printed in the LaTeX tables. The first element corresponds to the number of digits in table with the summary of the ranks, and the second element corresponds to the number of digits in the table for the test.
statistics	a character vector specifying which LaTeX tables should be printed. Available options are "ranks" for a summary of the ranks and "test" for test results. The default is to print both tables.
...	currently ignored.

Value

An object of class "kruskalTestSPSS" with the following components:

`statistics` a data frame containing information on the per-group mean ranks.

`test` a list containing the results of the Kruskal-Wallis test.

`variable` a character string containing the name of the numeric variable of interest.

`group` a character string containing the name of the grouping variable.

The print method produces a LaTeX table that mimics the look of SPSS output (version <24).

Author(s)

Andreas Alfons

Examples

```
# load data
data("Eredivisie")

# test whether market values differ by playing position
kruskalTest(Eredivisie, "MarketValue", group = "Position")
```

linesSPSS

Line Plots

Description

Draw connected lines for variables in a data frame. The plot thereby mimics the look of SPSS graphs.

Usage

```
linesSPSS(data, variables, index = NULL, xlab = NULL, ylab = NULL, ...)
```

Arguments

<code>data</code>	a data frame containing the variables to be plotted.
<code>variables</code>	a character vector specifying at least one variable to be plotted on the <i>y</i> -axis. In case of multiple variables, separate lines are drawn for each variable and a legend is shown.
<code>index</code>	a character string specifying a variable to be plotted on the <i>x</i> -axis, or NULL to plot the observations against their index.
<code>xlab, ylab</code>	the axis labels.
<code>...</code>	additional arguments to be passed down, in particular graphical parameters (see par).

Value

Nothing is returned, but a plot is produced.

Author(s)

Andreas Alfons

Examples

```
# load data
data("Eredivisie")
# log-transform market values
Eredivisie$logMarketValue <- log(Eredivisie$MarketValue)

# aggregate log market values by position
means <- aggregate(Eredivisie[, "logMarketValue", drop = FALSE],
                   Eredivisie[, "Position", drop = FALSE],
                   FUN = mean)

# create profile plot
linesSPSS(means, "logMarketValue", "Position")

# easier and fancier as the plot method of ANOVA results
oneway <- ANOVA(Eredivisie, "logMarketValue",
               group = "Position")
plot(oneway)
```

paletteSPSS

SPSS Color Palette

Description

Color palette used by SPSS (e.g., for multiple lines in a plot).

Usage

```
paletteSPSS()
```

Value

A character vector specifying 30 colors as used by SPSS.

Author(s)

Andreas Alfons

Examples

```
df <- data.frame(x = 1:30, y = 0)
colors <- paletteSPSS()
plotSPSS(df, c("x", "y"), col = colors, pch = 16)
```

plotSPSS

Scatterplot and Scatterplot Matrix

Description

Draw a scatterplot or a scatterplot matrix of variables in a data frame. The plots thereby mimic the look of SPSS graphs.

Usage

```
plotSPSS(data, variables, xlab = NULL, ylab = NULL, ...)
```

Arguments

data	a data frame containing the variables to be plotted.
variables	a character vector specifying at least two variables to be plotted. In case of two variables, a simple scatterplot is produced with the first variable on the x -axis and the second variable on the y -axis. In case of more than two variables, a scatterplot matrix is produced.
xlab, ylab	the axis labels for a simple scatterplot (the default is to use the variable names). This is ignored for a scatterplot matrix.
...	additional arguments to be passed down, in particular graphical parameters (see par).

Value

Nothing is returned, but a plot is produced.

Author(s)

Andreas Alfons

Examples

```
# load data
data("Eredivisie")
# log-transform market values
Eredivisie$logMarketValue <- log(Eredivisie$MarketValue)

# plot log market values against age
plotSPSS(Eredivisie, c("Age", "logMarketValue"))
```



```
# scatterplot matrix of age, number of minutes played, and
# log market values
plotSPSS(Eredivisie, c("Age", "Minutes", "logMarketValue"))
```

regression

Linear Regression

Description

Perform linear regression on variables of a data set. The output is printed as a LaTeX table that mimics the look of SPSS output (version <24), and plots of the results mimic the look of SPSS graphs.

Usage

```
regression(..., data, labels = NULL, change = FALSE)

## S3 method for class 'regressionSPSS'
print(x, digits = 3, statistics = c("summary", "anova", "estimates"), ...)

## S3 method for class 'regressionSPSS'
coef(object, ...)

## S3 method for class 'regressionSPSS'
df.residual(object, ...)

## S3 method for class 'regressionSPSS'
fitted(object, standardized = FALSE, ...)

## S3 method for class 'regressionSPSS'
residuals(object, standardized = FALSE, ...)

## S3 method for class 'regressionSPSS'
plot(
  x,
  y,
  which = c("histogram", "scatter"),
  main = NULL,
  xlab = NULL,
  ylab = NULL,
  ...
)
```

Arguments

...	for regression, at least one formula specifying a regression model. Different models can be compared by supplying multiple formulas. For the <code>plot</code> method, additional arguments to be passed down, in particular graphical parameters (see also <code>histSPSS</code> and <code>plotSPSS</code>). For other methods, this is currently ignored.
<code>data</code>	a data frame containing the variables.
<code>labels</code>	a character or numeric vector giving labels for the regression models in the output tables.
<code>change</code>	a logical indicating whether tests on the R^2 change should be included in model summaries.
<code>x</code> , <code>object</code>	an object of class "regressionSPSS" as returned by function <code>regression</code> .
<code>digits</code>	an integer giving the number of digits after the comma to be printed in the LaTeX tables.
<code>statistics</code>	a character vector specifying which LaTeX tables should be printed. Available options are "summary" for model summaries, "anova" for ANOVA results, and "estimates" for estimated coefficients. The default is to print all tables.
<code>standardized</code>	a logical indicating whether to return standardized residuals and fitted values (TRUE), or residuals and fitted values on their original scale (FALSE).
<code>y</code>	ignored (only included because it is defined for the generic function <code>plot</code>).
<code>which</code>	a character string specifying which plot to produce. Possible values are "histogram" for a histogram of the residuals, or "scatter" for a scatterplot of the standardized residuals against the standardized fitted values.
<code>main</code> , <code>xlab</code> , <code>ylab</code>	the plot title and axis labels.

Value

An object of class "regressionSPSS" with the following components:

`models` a list in which each component is an object of class "lm" as returned by function `lm`.

`response` a character string containing the name of the response variable.

`method` a character string specifying whether the nested models are increasing in dimension by entering additional variables ("enter") or decreasing in dimension by removing variables ("remove").

`change` a logical indicating whether tests on the R^2 change are included in model summaries.

The `print` method produces a LaTeX table that mimics the look of SPSS output (version <24).

The `coef`, `df.residual`, `fitted` and `residuals` methods return the coefficients, residual degrees of freedom, fitted values and residuals, respectively, of the *last* model (to mimic SPSS functionality).

Similarly, the `plot` method creates the specified plot for the *last* model.

Author(s)

Andreas Alfons

Examples

```

# load data
data("Eredivisie")
# log-transform market values
Eredivisie$logMarketValue <- log(Eredivisie$MarketValue)
# squared values of age
Eredivisie$AgeSq <- Eredivisie$Age^2

# simple regression model of log market value on age
fit1 <- regression(logMarketValue ~ Age, data = Eredivisie)
fit1                                     # print LaTeX table
plot(fit1, which = "scatter") # diagnostic plot

# add a squared effect for age
fit2 <- regression(logMarketValue ~ Age + AgeSq,
                  data = Eredivisie, labels = 2)
fit2                                     # print LaTeX table
plot(fit2, which = "scatter") # diagnostic plot

# more complex models with model comparison
fit3 <- regression(logMarketValue ~ Age + AgeSq,
                  logMarketValue ~ Age + AgeSq + Contract +
                    Foreign,
                  logMarketValue ~ Age + AgeSq + Contract +
                    Foreign + Position,
                  data = Eredivisie, labels = 2:4,
                  change = TRUE)
fit3                                     # print LaTeX table
plot(fit3, which = "histogram") # diagnostic plot

```

 signTest

Sign Test

Description

Perform a sign test for a paired sample on variables of a data set. The output is printed as a LaTeX table that mimics the look of SPSS output (version <24).

Usage

```

signTest(data, variables, exact = FALSE)

## S3 method for class 'signTestSPSS'
print(x, digits = 3, statistics = c("frequencies", "test"), ...)

```

Arguments

<code>data</code>	a data frame containing the variables.
<code>variables</code>	a character vector specifying two numeric variables containing the paired observations.
<code>exact</code>	a logical indicating whether or not to include the exact p-value using the binomial distribution. Note that the p-value using the normal approximation is always reported.
<code>x</code>	an object of class "signTestSPSS" as returned by function <code>signTest</code> .
<code>digits</code>	an integer giving the number of digits after the comma to be printed in the LaTeX tables.
<code>statistics</code>	a character vector specifying which LaTeX tables should be printed. Available options are "frequencies" for a summary of the frequencies and "test" for test results. The default is to print both tables.
<code>...</code>	currently ignored.

Value

An object of class "signTestSPSS" with the following components:

<code>statistics</code>	a data frame containing information on the number of observations with negative and positive differences.
<code>asymptotic</code>	a list containing the results of the test using the normal approximation.
<code>exact</code>	if requested, a numeric vector containing the exact two-sided p-value, one-sided p-value, and point probability using the binomial distribution.
<code>variables</code>	a character vector containing the names of the two numeric variables with the paired observations.
<code>n</code>	an integer giving the number of observations.

The `print` method produces a LaTeX table that mimics the look of SPSS output (version <24).

Author(s)

Andreas Alfons

Examples

```
# load data
data("Exams")

# test whether grades differ between the
# regular exam and the resit
signTest(Exams, c("Regular", "Resit"))
```

tTest	<i>t Tests</i>
-------	----------------

Description

Perform a one-sample t test, a paired-sample t test or an independent-samples t test on variables of a data set. The output is printed as a LaTeX table that mimics the look of SPSS output (version <24).

Usage

```
tTest(data, variables, group = NULL, mu = 0, conf.level = 0.95)
```

```
## S3 method for class 'tTestSPSS'
print(x, digits = 3, statistics = c("statistics", "test"), ...)
```

Arguments

data	a data frame containing the variables.
variables	a character vector specifying numeric variable(s) to be used for testing the mean(s). If group is NULL, a one-sample t test is performed if only one variable is specified, and a paired-sample t test is performed if two variables are specified. If a grouping variable is specified in group, an independent-samples t-test is performed and this should be a character string specifying the numeric variable of interest.
group	a character string specifying a grouping variable for an independent-samples t-test, or NULL.
mu	a number indicating the true value of the mean for a one-sample t test.
conf.level	a number between 0 and 1 giving the confidence level of the confidence interval.
x	an object of class "tTestSPSS" as returned by function tTest.
digits	an integer giving the number of digits after the comma to be printed in the LaTeX tables.
statistics	a character vector specifying which LaTeX tables should be printed. Available options are "statistics" for descriptive statistics and "test" for test results. The default is to print both tables.
...	currently ignored.

Value

An object of class "tTestSPSS" with the following components:

statistics	a data frame containing the relevant descriptive statistics.
test	an object of class "htest" as returned by <code>t.test</code> (only one-sample and paired-sample tests).
variables	a character vector containing the name(s) of the relevant numeric variable(s).
n	an integer giving the number of observations (only paired-sample test).

levene an object as returned by `leveneTest` (only independent-samples test).

pooled an object of class "htest" as returned by `t.test` assuming equal variances (only independent-samples test).

satterthwaite an object of class "htest" as returned by `t.test` not assuming equal variance (only independent-samples test).

group a character string containing the name of the grouping variable (only independent-samples test).

type a character string giving the type of t test performed ("one-sample", "paired", or "independent").

The print method produces a LaTeX table that mimics the look of SPSS output (version <24).

Author(s)

Andreas Alfons

Examples

```
## one-sample and paired-sample t test

# load data
data("Exams")

# test whether the average grade on the resit
# differs from 5.5 (minimum passing grade)
tTest(Exams, "Resit", mu = 5.5)

# test whether average grades differ between the
# regular exam and the resit
tTest(Exams, c("Resit", "Regular"))

## independent-samples t test

# load data
data("Eredivisie")
# log-transform market values
Eredivisie$logMarketValue <- log(Eredivisie$MarketValue)

# test whether average log market values differ between
# Dutch and foreign players
tTest(Eredivisie, "logMarketValue", group = "Foreign")
```

Description

Perform a Wilcoxon signed rank test for a paired sample or a Wilcoxon rank sum test for independent samples on variables of a data set. The output is printed as a LaTeX table that mimics the look of SPSS output (version <24).

Usage

```
wilcoxonTest(data, variables, group = NULL, exact = FALSE)
```

```
## S3 method for class 'wilcoxonTestSPSS'
print(x, digits = 2:3, statistics = c("ranks", "test"), ...)
```

Arguments

<code>data</code>	a data frame containing the variables.
<code>variables</code>	a character vector specifying numeric variable(s) to be used. If <code>group</code> is <code>NULL</code> , the Wilcoxon signed rank test is performed and this should be a character vector specifying two numeric variables which contain the paired observations. If a grouping variable is specified in <code>group</code> , the Wilcoxon rank sum test is performed and this should be a character string specifying the numeric variable of interest.
<code>group</code>	a character string specifying a grouping variable for the Wilcoxon rank sum test, or <code>NULL</code> .
<code>exact</code>	a logical indicating whether the Wilcoxon rank sum test should also return the p-value of the exact test. The default is <code>FALSE</code> . Note that the p-value of the asymptotic test is always returned.
<code>x</code>	an object of class <code>"wilcoxonTestSPSS"</code> as returned by function <code>wilcoxonTest</code> .
<code>digits</code>	an integer vector giving the number of digits after the comma to be printed in the LaTeX tables. The first element corresponds to the number of digits in table with the summary of the ranks, and the second element corresponds to the number of digits in the table for the test.
<code>statistics</code>	a character vector specifying which LaTeX tables should be printed. Available options are <code>"ranks"</code> for a summary of the ranks and <code>"test"</code> for test results. The default is to print both tables.
<code>...</code>	currently ignored.

Value

An object of class `"wilcoxonTestSPSS"` with the following components:

<code>statistics</code>	a data frame containing the relevant information on the ranks.
<code>test</code>	a list containing the results of the Wilcoxon signed rank test (only paired-sample test).
<code>variables</code>	a character vector containing the name(s) of the relevant numeric variable(s).
<code>n</code>	an integer giving the number of observations (only paired-sample test).
<code>w</code>	numeric; the Wilcoxon rank sum test statistic (only independent-samples test).
<code>asymptotic</code>	a list containing the results of the Wilcoxon rank sum test using the normal approximation (only independent-samples test).

`exact` a list containing the test statistic of the exact Wilcoxon rank sum test test, and if requested the corresponding p-value (only independent-samples test).

`group` a character string containing the name of the grouping variable (only independent-samples test).

`type` a character string giving the type of Wilcoxon test performed "paired" or "independent").

The `print` method produces a LaTeX table that mimics the look of SPSS output (version <24).

Note

The Wilcoxon rank sum test also reports the value of the equivalent Mann-Whitney U test statistic.

Author(s)

Andreas Alfons

Examples

```
## paired sample

# load data
data("Exams")

# test whether grades differ between the
# regular exam and the resit
wilcoxonTest(Exams, c("Regular", "Resit"))

## independent samples

# load data
data("Eredivisie")

# test whether market values differ between Dutch and foreign
# players
wilcoxonTest(Eredivisie, "MarketValue", group = "Foreign")
```


Index

- * **color**
 - paletteSPSS, 15
- * **datasets**
 - Eredivisie, 9
 - Exams, 11
- * **hplot**
 - boxplotSPSS, 5
 - histSPSS, 12
 - linesSPSS, 14
 - plotSPSS, 16
- * **htest**
 - ANOVA, 3
 - chisqTest, 7
 - kruskalTest, 13
 - signTest, 19
 - tTest, 21
 - wilcoxonTest, 22
- * **multivariate**
 - regression, 17
- * **package**
 - r2spss-package, 2
- * **univar**
 - descriptives, 8
- * **utilities**
 - formatSPSS, 11
- ANOVA, 3
- as.character, 12
- boxplot, 6
- boxplotSPSS, 5
- chisqTest, 7
- coef.regressionSPSS (regression), 17
- descriptives, 8
- df.residual.regressionSPSS (regression), 17
- Eredivisie, 9
- Exams, 11
- fitted.regressionSPSS (regression), 17
- formatSPSS, 11
- hist, 12, 13
- histSPSS, 12, 18
- kruskalTest, 13
- leveneTest, 5, 22
- linesSPSS, 4, 14
- lm, 18
- paletteSPSS, 15
- par, 6, 12, 14, 16
- plot, 4, 18
- plot.ANOVAPSS (ANOVA), 3
- plot.regressionSPSS (regression), 17
- plotSPSS, 16, 18
- print, 11
- print.ANOVAPSS (ANOVA), 3
- print.chisqTestSPSS (chisqTest), 7
- print.descriptivesSPSS (descriptives), 8
- print.kruskalTestSPSS (kruskalTest), 13
- print.regressionSPSS (regression), 17
- print.signTestSPSS (signTest), 19
- print.tTestSPSS (tTest), 21
- print.wilcoxonTestSPSS (wilcoxonTest), 22
- r2spss (r2spss-package), 2
- r2spss-package, 2
- regression, 17
- residuals.regressionSPSS (regression), 17
- signTest, 19
- t.test, 21, 22
- tTest, 21
- wilcoxonTest, 22