Package 'CUFF'

October 12, 2022

Note -*- Encoding: utf-8 -*-

Type Package

Title Charles's Utility Function using Formula

Version 1.8

Date 2022-02-14

Author Charles-Édouard Giguère

Maintainer Charles-Édouard Giguère <ce.giguere@gmail.com>

Depends R (>= 3.2.2)

Imports xlsx, xtable, DT, lmerTest, nlme, haven, dplyr

Description Utility functions that provides wrapper to descriptive base functions like cor, mean and table. It makes use of the formula interface to pass variables to functions. It also provides operators to concatenate (%+%), to repeat (%n%) and manage character vectors for nice display.

License GPL (>= 2)

Encoding UTF-8

LazyLoad TRUE

URL https://github.com/giguerch/CUFF

NeedsCompilation no

Repository CRAN

Date/Publication 2022-02-22 18:20:02 UTC

R topics documented:

`cf` *Extract and format coefficients table*

Description

This function extract coefficients tables from common statistical model (lm/glm/lme/lmer/t-test) and format them.

Usage

```
cf(x, addci = TRUE, pv.style = 1, signif = 2, expcf, ...)
```

Arguments

`x`	x is a lm/glm/lme/lmer/t.test model
`addci`	Logical value that tells R to add a 95% confidence interval to the output. True by default.
`pv.style`	Integer specifying the style (1 or 2) of p-value formatting. See `help(pv)` for details
`signif`	Either an integer specifying the number of significant digits or a dimension 3 vector for respectively the estimate, standard error and t-value
`expcf`	Logical value that tells R to add exponentiated value of estimate. Set to FALSE except if the model specifies a logistic regression (family = binomial)
`...`	Not used yet

Value

Returns a data.frame of formatted characters of the coefficient table.

Author(s)

Charles-Édouard Giguère

Examples

```
lm1 <- lm(Sepal.Length ~ Species, iris)
cf(lm1)
```

`clip` *Send to clipboard*

Description

This is a function that sends a table-like object to the clipboard to paste it quickly on an external program.

Usage

```
clip(x, sep = "\t", row.names = FALSE, quote = FALSE, ...)
```

Arguments

`x`	x is a table a matrix or a data.frame to send to clipboard
`sep`	Type of separator for the output
`row.names`	Logical value (T/F) to include or exclude row names
`quote`	logical value to print or exclude quotation marks.
`...`	other arguments passed to `write.table` function

Value

No output. The results is printed to the clipboard.

Author(s)

Charles-Édouard Giguère

Examples

```
clip(iris[1:6,])
```

`correlation` *Bivariate correlations*

Description

This is a function that creates correlation matrix objects that can be printed with the corresponding N and p-values. It is a wrapper for cor and cor.test.

Usage

```
correlation(x, y = NULL, method = "pearson",
            alternative = "two.sided", exact = NULL,
            use = "pairwise.complete.obs",
            continuity = FALSE, data = NULL)
## S3 method for class 'corr'
print(x, ... , toLatex = FALSE, cutstr = NULL, toMarkdown = FALSE)
```

Arguments

`x`	x is a matrix/`data.frame` or a formula defining which variable to use in the correlation matrix (see details).
`y`	y is a matrix/`data.frame` to correlate against x. If x is a formula y is passed to data argument
`method`	Method used to compute correlations.
`alternative`	Unilateral (`one.sided`) test or bilateral (`two.sided`) test. See `help(cor)` for more details.
`exact`	Logical value to know if a p.value is exact or asymptotic. See `help(cor)` for more details.
`use`	Methods to deal with missing values.
`continuity`	Logical value to know if continuity correction must be used. See `help(cor)` for more details.
`...`	Unused in this function
`data`	data.frame to use in conjuction with formula
`toLatex`	Logical value to know if output displayed as a latex tabular environment.
`cutstr`	Optional digits that cut the length of variable names
`toMarkdown`	Logical value to know if output should be displayed as a markdown table for report

Value

Returns a list with correlations, N for each pair of correlations and p.value for each correlations.

Author(s)

Charles-Édouard Giguère

Examples

```
require(CUFF)
X=rnorm(10)
Y=rnorm(10)
correlation(cbind(X,Y))
```

---

cross *Crosstabs*

Description

Functions to display (2 x 2) contingency table

Usage

```
cross(x, ...)
```

Arguments

x	Object of type table or formula, vector to tabulate
...	Arguments passed to table of xtabs

Details

The xtab functions corrects the inability to deal with missing values in the original xtabs that comes with R base.

Value

The cross methods returns an object of type cross with the original table and the marginal percentages by row and by column. A print methods is associated with a cross object. xtab returns an object of type table (see details). Total returns a sum with na.rm=TRUE by default and replaces NA with 0.

Author(s)

Charles-Édouard Giguère

Examples

```
require(CUFF)
### example of crosstabs
cr1 <- cross( ~ N + P, npk)
print(cr1, test = c("chisq.test", "fisher.test"))
```

`freq` *Frequencies*

Description

Functions to display frequency

Usage

```
freq(x, y = NULL, ..., labels = NULL, data = NULL)
## S3 method for class 'frequencies'
print(x, ..., toLatex = FALSE)
```

Arguments

`x`	Object of type `formula`, `matrix` or `data.frame`
`y`	If x is a formula,y or `data` contains the data from x or are set to NULL if the variables are in the main environment
`...`	used for compatibility
`labels`	Optional vector of labels the same length as the dimension of x or the number of variables in formula.
`data`	see y for details
`toLatex`	Logical value that indicates if the print methods should return a tabular latex environment to use with Sweave or knitr.

Details

The `freq` methods returns an object of type `frequencies` object with a `print` methods associated.

Value

An object of type "frequencies" that is a list of `matrix` containing the frequencies the % and the % with missing value.

Author(s)

Charles-Édouard Giguère

Examples

```
require(CUFF)
### example of crosstabs
fr1 <- freq( ~ N + P, npk, c("Nitrogen", "Phosphate"))
fr1
### To use with sweave or knitr.
print(fr1, toLatex = TRUE)
```

ftab *Fonctions pour ajouter les pourcentages dans les tables*

Description

La fonction retourne une table avec le contenu en caractères de la fréquence et du pourcentage

Usage

```
ftab(xt, margin = seq_along(dim(xt)), fmt = "%d (%5.1f %%)", quiet = FALSE)
```

Arguments

xt	Une table de contingence généré avec table ou xtabs
margin	Si 2x2, est que le pourcentage est en ligne (1) ou en colonne(2) ou total (1:2). Par défaut, pourcentage total. Ne sert à rien lorsque le tableau est à une dimension.
fmt	format d'affichage
quiet	Valeur logique qui indique si le tableau est imprimé

Value

Retourne une table avec le contenu en caractères de la frequence et du pourcentage

Author(s)

Charles-Édouard Giguère

Examples

```
ex <- as.table(cbind(3:4,5:6))
ftab(ex,2)
```

meansd *function to compute mean and sd into a single string*

Description

Methods that estimates a mean and sd and stores it into a single string

Usage

```
meansd(x, digits = c(1, 1))
```

Arguments

x	A vector of numeric value
digits	digits for respectively the mean and sd. If a single value is entered it applies to mean and sd

Value

Returns a string containing mean and sd with entered digit precisions.

Author(s)

Charles-Édouard Giguère

Examples

```
xf(Sepal.Width ~ Species, iris, meansd)
```

---

pal_CUFF *Palette de couleurs*

Description

A 10 color palette.

Usage

```
pal_CUFF(n = 10, pal = "CUFF")
```

Arguments

n	Integer indicating the number of color desired (1-10)
pal	The only value possible for now is CUFF

Value

Returns a vector of color.

Author(s)

Charles-Édouard Giguère

Examples

```
pal_CUFF(3)
```

`printcross` *Crosstabs print methods*

Description

Functions to display (2 x 2) contingency table

Usage

```
## S3 method for class 'cross'
print(x, ..., test = "chisq.test", export = NULL)
```

Arguments

`x`	Object of type `cross` to print
`...`	Unused arguments
`test`	list of statistical tests (as character vector) passed to the 2x2 table. By default, `test` is set to "chisq.test" which performs a khi-square test with Yates continuity correction.
`export`	Either "pdf" or "xlsx" or NUll. Crosstab is flushed into either a pdf using latex or an Excel spreadsheet using package openxlsx

Details

Export to "pdf", "xlsx" open the crosstabs in the corresponding formats.

Value

Print methods associated with the `cross` object.

Author(s)

Charles-Édouard Giguère

Examples

```
require(CUFF)
### example of crosstabs
cr1 <- cross( ~ N + P, npk)
print(cr1, test = c("chisq.test", "fisher.test"))
```

pv *Format p-values*

Description

This is a function that format p-values for publication.

Usage

```
pv(p, style = 1)
```

Arguments

p	A vector of p-values
style	By default (1), formatting according to APA style guide version 6

Details

- (1) APA: 2 digits of significance except if p is <0.05. If p < 0.05 we use 3 digits of significance except if p < 0.001 when we print "<0.001".
- (2) Other: 4 digits of significance except if p < 0.0001 when we print "<0.0001".

Value

returns a character vector of formatted p-value.

Author(s)

Charles-Édouard Giguère

Examples

```
p <- c(0.1563,0.0122,0.00001)
pv(p)
```

strutils *Utility functions to treat characters*

Description

Function %+% paste characters with other characters pairwise. Function %n% is used to repeat a character n time. Function `numtostr` converts numeric to a string in a nice format.

Usage

```
x %+% y
x %n% y
numtostr(x,nch,digits=4)
```

Arguments

x	Character vector or a numeric vector for numtostr functions
y	Character vector
nch	(Optionnal) length of the resulting character vector
digits	Number of digits in the resulting strings

Value

Function %+% is an operator that shortens paste(x, y, sep="") see help(paste) for more options. Function %n% returns the character vector x repeated y times. If both x and y are vector each element of x are applied to each element of y. Function numtostr converts numerical vector to a character vector using a nice format.

Author(s)

Charles-Édouard Giguère

Examples

```
require(CUFF)
"Hello " %+% "world."
cat(" " %n%  c(rep(1,9),2) %+% 1:10,fill=TRUE)
### Returns a * because specified length of character is unsufficient.
numtostr(9048948449.94948,nch=8)
```

---

sum.n *sum weighted on the number of non-missing values*

Description

Methods that estimates a sum weighted by the number of non-missing values

Usage

```
 ## S3 method for class 'n'
sum(x,n = 1, ...)
```

Arguments

x	A vector of values possibly containing missing values.
n	Minimum number of valid values
...	extra parameters to sum

Details

sum(x,n) = mean(x) * length(x) / n.valid(x)

Value

sum.n returns the values of the weighted sum.

Author(s)

Charles-Édouard Giguère

Examples

```
sum.n(c(1, 2, NA, NA), n = 2)
### [1] 6
sum.n(c(1, NA, NA, NA), n = 2)
### [1] NA
```

---

to_csv *Export into a csv file with a format csv companions for factors*

Description

This functions export a data frame into a csv file with a csv companion file containing formats to properly reimport data into R.

Usage

```
column_types(data)
to_csv(data, file)
```

Arguments

data	A data.frame containing data to export
file	Name of the csv file to export to

Value

returns nothing

Author(s)

Charles-Édouard Giguère

Examples

```
# to_csv(iris,"iris.csv")
```

`view` *view methods*

Description

Wrapper to DT::datatable.

Usage

```
view(x, ...)
```

Arguments

`x`	x is a matrix/`data.frame`/`table` format for viewing
`...`	arguments passed to datatable

Value

Export data to be viewed as a web page. See `help(datatable, package = "DT")` for further details.

Author(s)

Charles-Édouard Giguère

Examples

```
view(iris)
### add filter on top.
view(iris, filter = "top")
```

xf *Methods that apply a function across a levels of one or more factors*

Description

Methods that apply a function across a levels of one or more factors. It works like aggregate but returns a table instead. It also has a useNA options that adds NA as a level before applying the function.

Usage

```
xf(formula, data, FUN, ..., subset, na.action = na.omit, useNA = FALSE, addmargins = TRUE)
```

Arguments

formula	Formula defining the variables. On the left is the variable we are applying the function to, on the right, variables defining levels of the tables
data	Data.frame containing the variables
FUN	The function to apply to each subset of data
...	extra parameters to FUN
subset	Vectors defining a subset of data.frame (see help(aggregate)).
na.action	Action functions to deal with NA in data file
useNA	Make NA a level of the factors (if any)
addmargins	Add function applied to the margins of each category

Value

xf returns an object "xf" that behaves like a table with all associated methods.

Author(s)

Charles-Édouard Giguère

Examples

```
res <- xf(Sepal.Length~Species,iris,mean)
barplot(res)
```

xtab *Crosstabulations using formula*

Description

Functions to create contingency table using formula

Usage

```
xtab(formula, data, useNA = FALSE, exclude = c(NA,NaN), miss.char = "-",
     na.action = na.exclude, subset = NULL, sparse = FALSE,
     drop.unused.levels = FALSE)
Total(x)
```

Arguments

formula	Object of class cross to be printed
data	data frame to use with formula
useNA	logical values to add NA to the levels in the table
exclude	levels to exclude from table
miss.char	Character to replace NA
na.action	methods to deal with NA
subset	subset to use in data
sparse	see help(xtabs) for details
drop.unused.levels	logical values indicating whether we drop empty levels
x	numerical vector

Details

The xtab functions corrects the inability to deal with missing values in the original xtabs that comes with R base. Total is a utility function to use in conjunction with addmargins instead of sum.

Value

xtab returns an object of type table (see details). Total returns a sum with na.rm=TRUE by default and replaces NA with 0.

Author(s)

Charles-Édouard Giguère

Examples

```
require(CUFF)
### example of crosstabs
xtab( ~ N + P, npk)
```

xyboth *Utility function to match 2 indices*

Description

Function %xyb% or xyboth(x, y) shows index present in x, y and both

Usage

```
x %xyb% y
xyboth(x, y)
```

Arguments

x	vector(matrix/dataframe) of indices
y	vector(matrix/dataframe) of indices

Value

Returns a list with indices present only in x and y and in both.

Author(s)

Charles-Édouard Giguère

Examples

```
require(CUFF)
xyboth(1:5, 3:6)
### $x
### [1] "1" "2"
###
### $y
### [1] "6"
###
### $both
### [1] "3" "4" "5"
```

Index