Package ‘CUFF’

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Note

Encoding: utf-8

Type
Package

Title
Charles's Utility Function using Formula

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Depends
R (>= 3.2.2)

Imports
openxlsx, xtable, DT, lmerTest, nlme

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

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LazyData
YES

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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)
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.
correlation

Usage

```r
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(corr) for more details.
- **exact**: Logical value to know if a p.value is exact or asymptotic. See help(corr) for more details.
- **use**: Methods to deal with missing values.
- **continuity**: Logical value to know if continuity correction must be used. See help(corr) for more details.
- **...**: Unused in this function
- **data**: data.frame to use in conjunction 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

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

```r
require(CUFF)
### example of crosstabs
cr1 <- cross(~ N + P, npk)
print(cr1, test = c("chisq.test", "fisher.test"))
```
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
```r
require(CUFF)
### example of crosstabs
fr1 <- freq(~ N + P, npk, c("Nitrogen", "Phosphate"))
fr1
### To use with sweave or knitr.
print(fr1, toLatex = TRUE)
```
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 fréquence et du pourcentage

Author(s)

Charles-Édouard Giguère

Examples

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

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)

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

```r
require(CUFF)
### example of crosstabs
crl1 <- cross(~ N + P, npk)
print(crl1, test = c("chisq.test", "fisher.test"))
```

---

### Format p-values

**Description**

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

**Usage**

```r
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**

```r
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.
umtostr(9048948449.94948,nch=8)
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

\[
\text{sum}(x, n) = \frac{\text{mean}(x) \times \text{length}(x)}{\text{n.valid}(x)}
\]

Value

sum.n returns the values of the weighted sum.

Author(s)

Charles-Édouard Giguère

Examples

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

Description

Wrapper to DT::datatable.

Usage

```r
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

```r
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

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

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

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

### Description

Functions to create contingency table using formula.

### Usage

```r
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

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