Package 'etable'

July 22, 2025

Version 1.3.1

Date 2021-05-22

Title Easy Table

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Depends R (>= 4.0.0)

Imports Hmisc

Suggests knitr, rmarkdown

VignetteBuilder knitr

Description Creates simple to highly customized tables for a wide selection of descriptive statistics, with or without weighting the data.

License GPL (>= 3)

NeedsCompilation no

Repository CRAN

Date/Publication 2021-05-22 16:50:02 UTC

Contents

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etable-package   *Easy Table*

Description

The package comes without any warranty.

Details

Package:	etable
Title:	Easy Table
Type:	Package
Version:	1.3.0
Date:	2021-05-23
Depends:	R (>= 3.0.0)
Imports:	xtable, Hmisc
License:	GPL version 3 or newer
LazyLoad:	yes

Author(s)

Andreas Schulz
Maintainer: <ades-s@web.de>

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combi_cell   *Dichotomous and continuous variable combination cell function*

Description

Calculates different statistics depending on the type of variable.

Usage

```
combi_cell(x, y, z, w, cell_ids, row_ids, col_ids, vnames, vars, n_min,
            digits=3, style=1)
```

Arguments

x	The x variable for calculations, if not using y
y	The y variable for calculations, if not using x
z	NOT USED
w	Weights for x or y variable.
cell_ids	Index vector for selecting values in cell.
row_ids	NOT USED
col_ids	NOT USED
vnames	NOT USED
vars	NOT USED
n_min	Minimum n in the cell for useful calculation. Cells with n<n_min deliver no output.
digits	Integer indicating the number of significant digits.
style	Type of representation.

- 1 N, Proportion, Median, Q1, Q3
- 2 N, Proportion, Mean, SD

Author(s)

Andreas Schulz <ades-s@web.de>

Examples

```
sex     <- factor(rbinom(1000, 1, 0.4),  labels=c('Men', 'Women'))
height  <- rnorm(1000, mean=1.7, sd=0.1)
weight  <- rnorm(1000, mean=70, sd=5)
bmi     <- weight/height^2
event   <- factor(rbinom(1000, 1, 0.1), labels=c('no',  'yes'))
d<-data.frame(sex, height, weight, bmi, event)

tabular.ade(x_vars=names(d), cols=c('sex','ALL'), rnames=c('Gender'),
            data=d, FUN=combi_cell)
```

---

corr_p_cell	*Correlation cell function*

Description

Calculating Pearson product-moment correlation coefficient.

Usage

```
corr_p_cell(x, y, z, w, cell_ids, row_ids, col_ids, vnames, vars, n_min,
digits = 3)
```

Arguments

x	The x variable
y	The y variable
z	NOT USED
w	Weights for x and y variable.
cell_ids	Index vector for selecting values in cell.
row_ids	NOT USED
col_ids	NOT USED
vnames	NOT USED
vars	NOT USED
n_min	Minimum n in the cell for useful calculation. Cells with n<n_min deliver no output.
digits	Integer indicating the number of decimal places.

Author(s)

Andreas Schulz <ades-s@web.de>

Examples

```
sex    <- factor(rbinom(1000, 1, 0.4),  labels=c('Men', 'Women'))
height <- rnorm(1000, mean=1.70, sd=0.1)
weight <- rnorm(1000, mean=70, sd=5)
bmi    <- weight/height^2
d<-data.frame(sex, bmi, height, weight)

tabular.ade(x_vars=c('bmi','height','weight'), xname=c('BMI','Height','Weight'),
         y_vars=c('bmi','height','weight'), yname=c('BMI','Height','Weight'),
         rows=c('sex','ALL'), rnames=c('Gender'), data=d, FUN=corr_p_cell)
```

---

eventpct_cell   *Factor level frequencies cell function*

Description

Calculates frequencies or proportions of a certain level of factor x.

Usage

```
eventpct_cell(x, y, z, w, cell_ids, row_ids, col_ids, vnames, vars, n_min,
digits=1, digits2=0, event=2, type=1)
```

Arguments

x	The factor x for calculations
y	NOT USED
z	NOT USED
w	Weights for x factor, only if calculating weighted frequencies.
cell_ids	Index vector for selecting values in cell.
row_ids	NOT USED
col_ids	NOT USED
vnames	NOT USED
vars	NOT USED
n_min	Minimum n in the cell for useful calculation. Cells with n<n_min deliver no output.
digits	Integer indicating the number of decimal places (for percentages)
digits2	Integer indicating the number of decimal places (N, needed if N is not integer because of weighting)
event	The Number of factor level to calculate frequencies. from 1 to nlevels(x)
type	Type of representation, one of following.

- 1, pct (n)
- 2, n (pct)
- 3, pct
- 4, n
- 5, pct (n/N)

Author(s)

Andreas Schulz <ades-s@web.de>

Examples

```
sex     <- factor(rbinom(1000, 1, 0.4), labels=c('Men', 'Women'))
event   <- factor(rbinom(1000, 1, 0.1), labels=c('no',  'yes'))
decades <- rbinom(1000, 3, 0.5)
decades <- factor(decades, labels=c('[35,45)','[45,55)','[55,65)','[65,75)'))
d<-data.frame(sex, decades, event)

tabular.ade(x_vars=c('event'), xname=c('Event'),
   rows=c('sex','ALL'), rnames=c('Gender'),
   cols=c('decades', 'ALL'),   cnames=c('Age decades'),
   data=d, FUN=eventpct_cell)
```

---

iqr_cell   *Median IQR cell function.*

Description

For calculate median and interquartile range. (weighting is possible)

Usage

```
iqr_cell(x, y, z, w, cell_ids, row_ids, col_ids, vnames, vars, n_min,
digits = 3, add_n=FALSE)
```

Arguments

x	The x variable for calculations
y	NOT USED
z	NOT USED
w	Weights for x variable.
cell_ids	Index vector for selecting values in cell.
row_ids	NOT USED
col_ids	NOT USED
vnames	NOT USED
vars	NOT USED
n_min	Minimum n in the cell for useful calculation. Cells with n<n_min deliver no output.
digits	Integer indicating the number of significant digits.
add_n	Logical asking whether to draw N for each cell.

Author(s)

Andreas Schulz <ades-s@web.de>

Examples

```
sex     <- factor(rbinom(1000, 1, 0.4),  labels=c('Men', 'Women'))
height  <- rnorm(1000, mean=1.66, sd=0.1)
height[which(sex=='Men')]<-height[which(sex=='Men')]+0.1
weight  <- rnorm(1000, mean=70, sd=5)
decades <- rbinom(1000, 3, 0.5)
decades <- factor(decades, labels=c('[35,45)','[45,55)','[55,65)','[65,75)'))
d<-data.frame(sex, decades, height, weight)

tabular.ade(x_vars=c('height', 'weight'), xname=c('Height [m]','Weight [kg]'),
   rows=c('sex','ALL'), rnames=c('Gender'),
   cols=c('decades'),   cnames=c('Age decades'),
   data=d, FUN=iqr_cell, add_n=TRUE)
```

---

mean_sd_cell	*Mean and SD cell function*

Description

Calculates mean and SD or weighted mead and SD.

Usage

```
mean_sd_cell(x, y, z, w, cell_ids, row_ids, col_ids, vnames, vars, n_min,
             digits = 3, style=1, nsd=1)
```

Arguments

x	The x variable for calculations
y	NOT USED
z	NOT USED
w	Weights for x variable.
cell_ids	Index vector for selecting values in cell.
row_ids	NOT USED
col_ids	NOT USED
vnames	NOT USED
vars	NOT USED
n_min	Minimum n in the cell for useful calculation. Cells with n<n_min deliver no output.
digits	Integer indicating the number of significant digits.
style	Type of representation.
	• 1. mean (sd)

- 2. mean (mean-sd*nsd, mean+sd*nsd)
- 3. mean plus-minus sd

nsd   Multiplier for sd in stlyle 2. (for normal distribution)

- nsd=1 –> 68.27 % values
- nsd=1.645 –> 90 % values
- nsd=1.96 –> 95 % values
- nsd=2 –> 95.45 % values
- nsd=2.575 –> 99 % values
- nsd=3 –> 99.73 % values

Author(s)

Andreas Schulz <ades-s@web.de>

Examples

```
sex     <- factor(rbinom(1000, 1, 0.4),  labels=c('Men', 'Women'))
height  <- rnorm(1000, mean=1.66, sd=0.1)
height[which(sex=='Men')]<-height[which(sex=='Men')]+0.1
weight  <- rnorm(1000, mean=70, sd=5)
decades <- rbinom(1000, 3, 0.5)
decades <- factor(decades, labels=c('[35,45)','[45,55)','[55,65)','[65,75)'))
d<-data.frame(sex, decades, height, weight)

tabular.ade(x_vars=c('height', 'weight'), xname=c('Height [m]','Weight [kg]'),
   rows=c('sex','ALL'), rnames=c('Gender'),
   cols=c('decades'),   cnames=c('Age decades'),
   data=d, FUN=mean_sd_cell, style=2, nsd=1.96)
```

---

miss_cell   *Missing values cell function*

Description

Counting the number of missing values in each cell.

Usage

```
miss_cell(x, y, z, w, cell_ids, row_ids, col_ids, vnames, vars, n_min,
          pct = FALSE, digits = 0, prefix='', suffix='')
```

Arguments

x	The x variable
y	NOT USED
z	NOT USED
w	NOT USED (The number of missing will not be weighted!).
cell_ids	Index vector for selecting values in cell.
row_ids	NOT USED
col_ids	NOT USED
vnames	NOT USED
vars	NOT USED
n_min	NOT USED
pct	Logical asking whatever to draw absolute or relative frequency of missing values.
digits	Integer indicating the number of decimal places.
prefix	Free text added in each cell bevor results.
suffix	Free text added in each cell after results.

Author(s)

Andreas Schulz <ades-s@web.de>

Examples

```
sex     <- factor(rbinom(1000, 1, 0.4),  labels=c('Men', 'Women'))
height  <- rnorm(1000, mean=1.66, sd=0.1)
height[which(sex=='Men')]<-height[which(sex=='Men')]+0.1
weight  <- rnorm(1000, mean=70, sd=5)
decades <- rbinom(1000, 3, 0.5)
decades <- factor(decades, labels=c('[35,45)','[45,55)','[55,65)','[65,75)'))
d<-data.frame(sex, decades, height, weight)
d$height[round(runif(250,1,1000))]<- NA
d$weight[round(runif(25 ,1,1000))]<- NA

tabular.ade(x_vars=c('height', 'weight'), xname=c('Height [m]','Weight [kg]'),
        cols=c('sex','decades','ALL'), cnames=c('Gender', 'Age decades'),
        data=d, FUN=miss_cell, prefix='Miss:')
```

---

mode_cell   *Mode cell function*

Description

Shows the most frequent value (mode)

Usage

```
mode_cell(x, y, z, w, cell_ids, row_ids, col_ids, vnames, vars, n_min,
        digits=3)
```

Arguments

x	The x variable
y	NOT USED
z	NOT USED
w	Weights for x variable. Only if calculating weighted mode.
cell_ids	Index vector for selecting values in cell.
row_ids	Index vector for selecting values in row.
col_ids	Index vector for selecting values in col.
vnames	NOT USED
vars	NOT USED
n_min	NOT USED
digits	Integer indicating the number of significant digits.

Author(s)

Andreas Schulz <ades-s@web.de>

Examples

```
sex     <- factor(rbinom(1000, 1, 0.4),  labels=c('Men', 'Women'))
note    <- as.factor(rbinom(1000, 4, 0.5)+1)
decades <- rbinom(1000, 3, 0.5)
decades <- factor(decades, labels=c('[35,45)','[45,55)','[55,65)','[65,75)'))
d<-data.frame(sex, decades, note)

tabular.ade(x_vars=c('note'), xname=c('Noten'),
      rows=c('sex','ALL','decades'), rnames=c('Gender', 'Age decades'),
      data=d, FUN=mode_cell)
```

---

n_cell   *Frequency Cell FUN*

Description

For calculation of relative or absolute frequencies.

Usage

```
n_cell(x, y, z, w, cell_ids, row_ids, col_ids, vnames, vars, n_min,
       digits=0, digits2=1, type="n")
```

Arguments

x	The x variable (can be just 1:N if without missings values)
y	NOT USED
z	NOT USED
w	Weights for x variable. Only if calculating weigted frequences.
cell_ids	Index vector for selecting values in cell.
row_ids	Index vector for selecting values in row.
col_ids	Index vector for selecting values in col.
vnames	NOT USED
vars	NOT USED
n_min	NOT USED
digits	Integer indicating the number of decimal places (N)
digits2	Integer indicating the number of decimal places (percentages)
type	Type of frequencies, one of following.

- n, number in cell.
- pct, overall percentages.
- pctn, overall percentages and n.
- rowpct, percentages of rows.
- colpct, percentages of cols.
- rowpctn, percentages of rows and n.
- colpctn, percentages of cols and n.
- all, overall, row, col percentages.

Details

The function calculate frequencies for cell. If x has no missing values the frequencies are independent of x. Missing values in x will be removed from calculation.

Author(s)

Andreas schulz <ades-s@web.de>

Examples

```
sex     <- factor(rbinom(1000, 1, 0.4),  labels=c('Men', 'Women'))
decades <- rbinom(1000, 3, 0.5)
decades <- factor(decades, labels=c('[35,45)','[45,55)','[55,65)','[65,75)'))
d<-data.frame(sex, decades)

tabular.ade(x_var='sex',  rows=c('sex',     'ALL'), rnames=c('Gender'),
                          cols=c('decades', 'ALL'), cnames=c('Age decades'),
            data=d, FUN=n_cell, , type="all")
```

---

quantile_cell	*Quantile cell function*

Description

Calculating simple or weighted quantiles

Usage

```
quantile_cell(x, y, z, w, cell_ids, row_ids, col_ids, vnames, vars, n_min,
              digits = 3, probs = 0.5, plabels=FALSE)
```

Arguments

x	The x variable for calculations
y	NOT USED
z	NOT USED
w	Weights for x variable.
cell_ids	Index vector for selecting values in cell.
row_ids	NOT USED
col_ids	NOT USED
vnames	NOT USED
vars	NOT USED
n_min	Minimum n in the cell for useful calculation. Cells with n<n_min deliver no output.
digits	Integer indicating the number of significant digits.
probs	A single or a vector of numeric probabilities for sample quantile with values in [0,1].
plabels	Logical asking whether to label the quantile in the cell or only draw the value.

Author(s)

Andreas Schulz <ades-s@web.de>

Examples

```
sex     <- factor(rbinom(1000, 1, 0.4),  labels=c('Men', 'Women'))
height  <- rnorm(1000, mean=1.66, sd=0.1)
height[which(sex=='Men')]<-height[which(sex=='Men')]+0.1
weight  <- rnorm(1000, mean=70, sd=5)
decades <- rbinom(1000, 3, 0.5)
decades <- factor(decades, labels=c('[35,45)','[45,55)','[55,65)','[65,75)'))
d<-data.frame(sex, decades, height, weight)

tabular.ade(x_vars=c('height', 'weight'), xname=c('Height [m]','Weight [kg]'),
    rows=c('sex',     'ALL'), rnames=c('Gender'),
    cols=c('decades', 'ALL'), cnames=c('Age decades'),
    data=d, FUN=quantile_cell, probs = 0.99)
```

---

stat_cell	*Diverse statistics cell function*

Description

Calculating values of several descriptive statistics.

Usage

```
stat_cell(x, y, z, w, cell_ids, row_ids, col_ids, vnames, vars, n_min,
digits = 3, digits2=1)
```

Arguments

x	The x variable
y	NOT USED
z	NOT USED
w	Weights for x variable.
cell_ids	Index vector for selecting values in cell.
row_ids	NOT USED
col_ids	NOT USED
vnames	NOT USED
vars	A vector of character strings with names of variables in data.frame for x, y and z. Use names of x or y as keywords, to choose a certain statistic.

n_min	Minimum n in the cell for useful calculation. Cells with n<n_min deliver no output.
digits	Integer indicating the number of significant digits.
digits2	Integer indicating the number of decimal places for percentages.

Details

Keywords are:

- N: number in this cell
- MIN: minimum
- MAX: maximum
- SUM: sum
- MEAN: mean
- SD: standard deviation
- MSD: mean, standard deviation
- MCI: mean, 95% CI
- VAR: variance
- MEDIAN: median
- MD: mean deviation from the mean (*1.253)
- MAD: median absolute deviation (*1.4826)
- IQR: interquartile range
- MQQ: median (Q1/Q3)
- PROP: proportion
- POP: proportion of level 2 (only binar)
- PCI: proportion of level 2, 95% CI
- RANGE: range
- CV: coefficient of variation
- MODE: mode
- MISS: number of missing values
- PNM: proportion of non missing values
- COMB: POP for binar and MQQ for continues
- SKEW: skewness
- KURT: excess kurtosis
- GEO: geometric mean
- HARM: harmonic mean
- TM1: truncated mean 1%
- TM5: truncated mean 5%
- TM10: truncated mean 10%

- TM25: truncated mean 25%
- WM1: winsorized mean 1%
- WM5: winsorized mean 5%
- WM10: winsorized mean 10%
- WM25: winsorized mean 25%
- M1SD: mean-SD, mean+SD
- M2SD: mean-2SD, mean+2SD
- M3SD: mean-3SD, mean+3SD
- MM1SD: mean, mean-SD, mean+SD
- MM2SD: mean, mean-2SD, mean+2SD
- MM3SD: mean, mean-3SD, mean+3SD
- NORM50: mean-0.675SD, mean+0.675SD
- NORM90: mean-1.645SD, mean+1.645SD
- NORM95: mean-1.96SD, mean+1.96SD
- NORM99: mean-2.576SD, mean+2.576SD
- P1: 1th quantile
- P2.5: 2.5th quantile
- P5: 5th quantile
- P10: 10th quantile
- P20: 20th quantile
- P25: 25th quantile
- P30: 30th quantile
- P40: 40th quantile
- P50: 50th quantile
- P60: 60th quantile
- P70: 70th quantile
- P75: 75th quantile
- P80: 80th quantile
- P90: 90th quantile
- P95: 95th quantile
- P97.5: 97.5th quantile
- P99: 99th quantile

Author(s)

Andreas Schulz <ades-s@web.de>

Examples

```
sex     <- factor(rbinom(1000, 1, 0.4),  labels=c('Men', 'Women'))
height  <- rnorm(1000, mean=1.66, sd=0.1)
height[which(sex=='Men')]<-height[which(sex=='Men')]+0.1
weight  <- rnorm(1000, mean=70, sd=5)
decades <- rbinom(1000, 3, 0.5)
decades <- factor(decades, labels=c('[35,45)','[45,55)','[55,65)','[65,75)'))
d<-data.frame(sex, decades, height, weight)


tabular.ade(x_vars=c('height', 'weight'), xname=c('Height [m]','Weight [kg]'),
   y_vars=c('N', 'MEAN', 'SD', 'SKEW', 'KURT'),
   rows=c('sex', 'ALL', 'decades', 'ALL'), rnames=c('Gender', 'Age decades'),
   data=d, FUN=stat_cell)
```

---

tabular.ade   *Tabular representation of a wide selection of statistics*

Description

Creates simple to highly customized tables for a wide selection of descriptive statistics, with or without weighting the data.

Usage

```
tabular.ade(x_vars, xname=NULL, y_vars=NULL, yname=NULL,
            z_vars=NULL, zname=NULL,
            rows=NULL, rnames=NULL, cols=NULL, cnames=NULL, w=NULL,
            data=NULL, FUN, allnames=FALSE, nonames=TRUE, alllabel='Total',
            inset='?', remove='', n_min=0, ...)
```

Arguments

x_vars	This variable will be used to calculate the statistics for it.
	• a character string with the name of the variable in the data.frame
	• a vector of character strings with names of variables in data.frame
xname	Labels for x.
	• a character string with the label for x
	• a vector of character strings with labels for x, with the same length as x.
y_vars	This variable can be used to calculate bivariable statistics.

- a character string with the name of the variable in the data.frame
- a vector of character strings with names of variables in data.frame

yname   Labels for y.

- a character string with the label for y
- a vector of character strings with labels for y, with same length as x.

z_vars   This variable can be used for additional calculations.

- a character string with the name of the variable in the data.frame

zname   Labels for z.

- a character string with the label for y

rows   These factors will be used to separate the rows of the table in subgroups.

- a character string with the name of the factor variable in the data.frame
- a vector of character strings with names of factor variables in data.frame (max 6)
- a vector with names of factors and/or Keyword 'ALL' adds extra overall group for leading factor.

rnames   Labels for rows.

- a character string with the label for rows
- a vector of character strings with labels for rows, with same length as rows.
- a vector with names of factors and/or keyword 'ALL' adds extra overall group for leading factor.

cols   These factors will be used to separate the columns of the table in subgroups.

- a character string with the name of the factor variable in the data.frame
- a vector of character strings with names of factor variables in data.frame (max 6)

cnames   Labels for cols.

- a character string with the label for cols
- a vector of character strings with labels for rows, with same length as cols.

w   This numeric variable will be used to weight the table.

- a character string with the name of the factor variable in the data.frame

data   A data frame with all used variables.

FUN   An abstract cell function to calculate statistics in every cell of the table. See details.

allnames   Logical asking whether to fill every cell with labels or only the first one.

nonames   Logical asking whether to use dimnames for variable labels or make all labeling in the table self.

alllabel   Label for overall group without splitting in this factor.

inset   Inset text in each cell, '?' will be replaced with the value of the cell.

remove   Remove a character string from each cell.

n_min   min N in each cell, it will be only passed in the cell function. But it is necessary to suppress calculation of statistics using only few values.

...   additional parameters passed to the FUN

Details

FUN can be a cell function from this package or a custom cell function.

The custom cell function must take the following parameters, but it is not necessary to use them.

- x, The whole x variable.
- y, The whole y variable.
- z, The whole z variable.
- w, The whole w variable.
- cell_ids, Index vector to select values that belong in this cell.
- row_ids, Index vector to select values that belong in this row.
- col_ids, Index vector to select values that belong in this col.
- vnames, A vector of length 3, with labels of variables (x,y,z)
- vars, A vector of length 3, with names of variables (x,y,z)
- n_min , Min needed N for calculation.
- ... , additional custom parameters.

For an example with simple mean see below.

Value

A character Matrix.(Table)

Author(s)

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Examples

```
# 1) simple own FUN cell function.
s_mean<- function(x, y, z, w, cell_ids, row_ids, col_ids, vnames, vars, n_min, ds=3){
out<- ''
if(length(cell_ids)>= n_min){
out<-  format(mean(x[cell_ids], na.rm=TRUE), digits=ds)
}
return(out)
}
###########################################
# 2) simple 2 x 2 table of means
sex   <- factor(rbinom(5000, 1, 0.5), labels=c('Men', 'Women'))
age   <- round(runif(5000, 18, 89))
treat <- factor(rbinom(5000, 1, 0.3), labels=c('control', 'treated'))
d<-data.frame(sex, age, treat)

tabular.ade(x_vars='age', xname='Age [y]', rows='sex', rnames='Sex', cols='treat',
cnames='Treatment', data=d, nonames=FALSE, FUN=s_mean)

###########################################
```

```
# 3) Relative frequency table
d$dosis <- round(runif(5000, 0.5, 6.49))
tabular.ade(x_vars='age', xname='Age [y]', rows=c('sex', 'treat'),
rnames=c('Sex', 'Treatment'), cols='dosis', cnames='Dosis', data=d, FUN=n_cell,
type='pct')

###########################################
# 4) Weighted median table
d$w <- runif(5000, 0.1, 5)
d$bmi <- rnorm(5000, 30, 3)
tabular.ade(x_vars=c('age', 'bmi'), xname=c('Age', 'BMI'),
cols=c('sex', 'ALL', 'treat'),
cnames=c('Sex', 'Treatment'), w='w', data=d, FUN=quantile_cell)

###########################################
# 5) Correlation table between age and bmi
tabular.ade(x_vars='age', xname='Age', y_vars='bmi', yname='BMI',
rows=c('dosis'), rnames=c('Dosis'), cols=c('sex', 'treat'),
cnames=c('Sex', 'Treatment'), data=d, FUN=corr_p_cell)

###########################################
# 6) Multiple statistics
tabular.ade(x_vars=c('N', 'MEAN', 'SD', 'SKEW', 'KURT', 'RANGE'),
y_vars=c('age', 'bmi'), yname=c('Age', 'BMI'),
cols=c('sex', 'ALL', 'treat'), cnames=c('Sex', 'Treatment'),
w='w', data=d, FUN=stat_cell)
```

Index