Package ‘etable’

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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>

---

**combi_cell**  
*Dichotomous and continuous variable combination cell function*

**Description**

Calculates different statistics depending on the type of variable.

**Usage**

```r
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
**corr_p_cell**

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

```r
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=corbi_cell)
```

---

**corr_p_cell**

Correlation cell function

Description

Calculating Pearson product-moment correlation coefficient.

Usage

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

Factor level frequencies cell function

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

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

Description

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

Usage
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

```r
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

\[
iqr\_cell(x, y, z, w, \text{cell\_ids}, \text{row\_ids}, \text{col\_ids}, \text{vnames}, \text{vars}, \text{n\_min},
\text{digits} = 3, \text{add\_n=}FALSE)
\]

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 \(n<\text{n\_min}\) 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

```r
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"),
```
mean_sd_cell

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 mean 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 style 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
Examples

```r
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**

```r
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
mode_cell

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

```r
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:')
```

Description
Shows the most frequent value (mode)

Usage

```r
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.
\textbf{Author(s)}

Andreas Schulz <ades-s@web.de>

\textbf{Examples}

```r
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)
```

<table>
<thead>
<tr>
<th>n_cell</th>
<th>Frequency Cell FUN</th>
</tr>
</thead>
</table>

\textbf{Description}

For calculation of relative or absolute frequencies.

\textbf{Usage}

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

\textbf{Arguments}

- \textbf{x} The x variable (can be just 1:N if without missings values)
- \textbf{y} NOT USED
- \textbf{z} NOT USED
- \textbf{w} Weights for x variable. Only if calculating weighted frequencies.
- \textbf{cell_ids} Index vector for selecting values in cell.
n_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)
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Examples

```r
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 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)

stat_cell(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

```r
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**

```r
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)

Andreas Schulz <ades-s@web.de>

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