Package ‘corx’

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Type Package
Title Create and Format Correlation Matrices
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Description Create correlation (or partial correlation) matrices. Correlation matrices are formatted with significance stars based on user preferences. Matrices of coefficients, p-values, and number of pairwise observations are returned. Send resultant formatted matrices to the clipboard to be pasted into excel and other programs. A plot method allows users to visualize correlation matrices created with ‘corx’.
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Author James Conigrave [aut, cre] (<https://orcid.org/0000-0002-8816-6229>)
Maintainer James Conigrave <james.conigrave@gmail.com>
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**Adjust P-values**

### Description

Adjust p-values.

### Usage

```r
adjust_pmat(pmat, p_adjust)
```

### Arguments

- `pmat` (matrix of p-values to adjust)
- `p_adjust` (character describing adjustment to make. See stats::p.adjust)

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**APA Matrix**

### Description

Creates an APA matrix.

### Usage

```r
apa_matrix(r_matrix, p_matrix, stars, round, remove_lead, triangle)
```

### Arguments

- `r_matrix` (correlation coefficient matrix)
- `p_matrix` (p-value matrix)
- `stars` (a vector of p-value stars)
- `round` (How many digits to round to?)
- `remove_lead` (a logical. Should leading zeros be removed?)
- `triangle` (can select lower upper or NULL)
Description

method for papaja::apa_table for corx objects

Usage

apa_table.corx(corx, ...)

Arguments

corx       corx object
...       Other arguments to papaja::apa_table

check_classes

Description

check all classes are as expected

Usage

check_classes(data, ok_classes, stop_message, stop = TRUE)

Arguments

data       the data object
ok_classes     a vector of allowed classes
stop_message  a character string provided to users if error triggers.
stop       should the variable stop, or create a warning?
Description
cormat_list

Usage
cormat_list(data, x, y, z, method, p_adjust)

Arguments
- data: data.frame
- x: character vector, row names
- y: character vector, column names
- z: character vector, partial variable names
- method: string, passed to cor.test
- p_adjust: string, passed to p.adjust

Description
corx

Calculates correlations matrices. Relevant values are stored in a list with methods for easy retrieval and formatting in publication ready tables.

Usage
corx(
  data,
  x = NULL,
  y = NULL,
  z = NULL,
  method = c("pearson", "spearman", "kendall"),
  stars = c(0.05, 0.01, 0.001),
  p_adjust = c("none", "holm", "hochberg", "hommel", "bonferroni", "BH", "BY", "fdr"),
  round = 2,
  remove_lead = TRUE,
  triangle = NULL,
  caption = NULL,
  note = NULL,
  describe = FALSE,
  grey_nonsig = TRUE,
  call_only = FALSE
)
corx

Arguments

data data.frame or matrix
x a vector of rownames. Defaults to all
y a vector of colnames. If not supplied, y is set to x.
z a vector of variable names. Control variables to be used in partial correlations -
defaults to NULL
method character. One of "pearson", "spearman", or "kendall"
stars a numeric vector. This argument defines cut-offs for p-value stars.
p_adjust character. What adjustment for multiple tests should be used? One of "none"
(default), "holm", "hochberg", "hommel", "bonferroni", "BH", "BY", or "fdr"
round numeric. Number of digits in printing
remove_lead logical. if TRUE (the default), leading zeros are removed in summaries
triangle character. one of "lower", "upper" or NULL (the default)
caption character. table caption. Passed to plots
note character. Text for a table note
describe list of named functions. If functions are supplied to describe, new columns will
be bound to the 'APA matrix' for each function in the list. Describe also accepts
a variety of shortcuts. If describe is set to TRUE, mean and standard deviation
are returned for all row variables. Describe can accept a character vector to call
the following descriptive functions: c('mean','sd','var','median','iqr','skewness','kurtosis').
These shortcuts are powered by 'tidyselect'. Skewness and kurtosis are calcu-
lated using the 'moments' package. All functions retrieved with shortcuts re-
move missing values.
grey_nonsig logical. Should non-significant values be grey in output? This argument does
nothing if describe is not set to FALSE
call_only logical. For debugging, if TRUE only the call is returned

Details

Constructs correlation matrices using 'stats::cor.test' unless z is specified. When z is specified
ppcor::ppcor.test is used instead. Character and factor variables are not accepted. To prevent errors,
users must first convert all variables to numeric.

### Partial correlations:
Supplying the argument z will call ppcor::pcor.test the correlation pair are supplied to arguments x
and y. The vector of z given to corx is passed to argument z in pcor.test.

### Missing data:
Observations containing missing data required to complete a correlation or partial correlation are
automatically removed.

### P-adjust:
P-values attained can be adjusted for multiple comparisons by using the 'p_adjust' argument. This
calls the function stats::p.adjust. When a matrix is symmetrical, p-values are only adjusted for
unique comparisons. When a correlation matrix is not symmetrical, all comparisons are assumed to
be unique.
Value
A list of class 'corx' which includes: * "call" The call which if evaluated reproduces the object * "apa" An 'APA' formatted correlation matrix with significance stars * "r" Raw correlation coefficients * "p" p-values * "n" Pairwise observations * "caption" Object caption * "note" Object note

Examples

cor_mat <- corx(mtcars, x = c(mpg, cyl, disp), y = c(wt, drat, disp, qsec),
z = wt, round = 2, stars = c(0.05),
caption = "Controlling for weight",
describe = list("mean" = function(x) mean(x, na.rm = TRUE)))

cor_mat
coef(cor_mat)
cor_mat$p
plot(cor_mat)
cor_2 <- corx(iris[-5], describe = c(median, IQR = iqr, kurt = kurtosis),
note = "Using shortcuts to select describe functions", triangle = "lower")
cor_2

digits

Description
Consistent rounding for strings

Usage
digits(x, n = 2)

Arguments

<table>
<thead>
<tr>
<th>x</th>
<th>number to round</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>number of digits</td>
</tr>
</tbody>
</table>

partial_n_matrix

Description
Calculate complete observations for a crosstab + a third variable

Usage
partial_n_matrix(data, x, y, z)
plot.corx

Arguments

- `data`: data.frame or matrix
- `x`: rownames
- `y`: colnames
- `z`: partial variable vector

Description

plot.corx

Usage

```r
## S3 method for class 'corx'
plot(x, ...
```

Arguments

- `x`: a corx object
- `...`: other arguments to ggcorrplot::ggcorrplot

plot_mds

Description

Perform multidimensional scaling of a corx object and plot results

Usage

```r
plot_mds(corx, k = NULL, abs = TRUE, ...
```

Arguments

- `corx`: corx object
- `k`: numeric. The number of clusters. If set to "auto" will be equal to the number of principal components that explain more than 5% of total variance.
- `abs`: logical. If TRUE (the default) negative correlations will be turned positive. This means items with high negative correlations will be treated as highly similar.
- `...`: additional arguments passed to ggpubr::gscatter
Details

plot_mds performs classic multidimensional scaling on a correlation matrix. The correlation matrix is first converted to a distance matrix using psych::cor2dist. This function employs the following formula:

\[ d = \sqrt{2 \times (1 - r)} \]

These distances are then passed to stats::cmdscale where k = 2. To compute latex, distances are predict from the cmdscale output and correlated with input distances. This correlation is squared. If the value of \( R^2 \) is less than 70%, a warning will inform users that two-dimensions may not be sufficient to represent item relationships. The position of variables is then plotted with ggplot2. Clusters of items are identified using stats::kmeans. The number of clusters is determined using principal component analysis unless specified.

References


rename_if_needed

rename if needed

rename_if_needed(data, x)
**star_matrix**

**Arguments**
- **data**
  - data object
- **x**
  - a character vector. If named, columns will be renamed

**Description**

Replaces p-values with stars

**Usage**

```r
star_matrix(m, stars)
```

**Arguments**
- **m**
  - matrix of p-values
- **stars**
  - a vector of p-value thresholds to replace with stars

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**to_clipboard**

**Description**

Sends a formatted corx table to the clipboard so that it can be pasted into excel.

**Usage**

```r
to_clipboard(x, ...)
```

**Arguments**
- **x**
  - a corx object, matrix, or data.frame
- **...**
  - additional arguments passed to `clipr::write_clip`
**Description**

Tabulate correlation matrices

**Usage**

```r
to_table(corx, include_p = FALSE)
```

**Arguments**

- `corx` a corx object
- `include_p` logical. should p-values be included?
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