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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Encoding UTF-8

LazyData true

URL https://github.com/conig/corx

Imports ppcor, crayon, ggcorrplot, glue, psych, clipr, tidyselect, moments, ggpubr, ggplot2, magrittr, stats

RoxygenNote 7.1.1

Suggests testthat

NeedsCompilation no

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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?

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apa_matrix

Description

Creates an apa matrix

Usage

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 pvalue stars
round How many digits to round to?
remove_lead a logical. Should leading zeros be removed?
triangle can select lower upper or NULL

apa_matrix apa matrix
**Description**

Creates an object of class 'corx'. This function calculates correlation matrices. It stores effect sizes, p-values, the number of pairwise observations, and a formatted correlation matrix in a list. The argument 'z' allows for control variables to be assigned. If z does not equal NULL, partial correlations are performed. Methods are exported for the generic functions 'print', 'plot', 'summary', 'data.frame' and 'coef'.

**Usage**

```r
corx(
  data,
  x = NULL,
  y = NULL,
  z = NULL,
  method = c("pearson", "spearman", "kendall"),
  stars = c(0.05),
  round = 2,
  remove_lead = TRUE,
  triangle = NULL,
  caption = NULL,
  note = NULL,
  describe = FALSE,
  grey_nonsig = TRUE,
  call_only = FALSE
)
```

**Arguments**

- `data`: A 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 colnames. Control variables to be used in partial correlations - defaults to NULL
- `method`: a string. One of "pearson", "spearman", or "kendall"
- `stars`: a numeric vector. This argument defines cut-offs for p-value stars.
- `round`: a scalar. Number of digits in printing
- `remove_lead`: a logical. if TRUE (the default), leading zeros are removed in summaries
- `triangle`: one of "lower", "upper" or NULL (the default)
- `caption`: table caption. Passed to plots
- `note`: table note
describe a list of 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 calculated using the 'moments' package. All functions retrieved with shortcuts remove missing values.

grey_nonsig a logical. Should non-significant values be grey in output? This argument does nothing if describe is not set to FALSE

call_only For debugging, if TRUE only the call is returned

Details

'corx' constructs intercorrelation matrices using 'psych::corr.test'. P-values attained are not adjusted for multiple comparisons. The argument z can be used to specify control variables. If control variables are specified, partial correlations are calculated using 'ppcor::ppcor.test'. Asymmetrical correlation matrices can be constructed using the arguments 'x' and 'y'. The arguments 'x', 'y', and 'z' are powered by 'tidyselect::vars_select'.

Value

A list of class 'corx' which includes:

- "call" The call
- "apa" An 'APA' formatted correlation matrix with significance stars
- "r" Raw correlation coefficients
- "p" Raw 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**
- x: number to round
- n: number of digits

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**get_cor**

**Description**
A flexible correlation function

**Usage**
get_cor(data, x, y, method, partial)

**Arguments**
- data: data
- x: variable 1
- y: variable 2
- method: correlation method
- partial: control for anything?
**Description**

Creates matrices of partial correlations including $r$, $n$, and $p$

**Usage**

partial_matrix(data, x, y, method, partial)

**Arguments**

data: the data object

x: rownames

y: colnames

method: the method

partial: variables to partial out

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**Description**

This function is used to construct final matrices

**Usage**

par_matrix(results, x, y)

**Arguments**

results: results dataset

x: one set of variables

y: another set of variables
**plot.corx**

*S3 class corx*

**Description**

S3 class corx

**Usage**

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

**Arguments**

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

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**plot_mds**

**plot_mds**

**Description**

plot the Classical multidimensional scaling of a corx object

**Usage**

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

**Arguments**

- **corx**
  - the corx object, or a matrix of correlation coefficients
- **k**
  - a 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**
  - 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::ggscatter
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:

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

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 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


print.corx

Description

print.corx

Usage

## S3 method for class 'corx'
print(x, ...)

Arguments

x

object

... extra arguments

star_matrix

Description

Replaces p-values with stars

Usage

star_matrix(m, stars)

Arguments

m matrix of p-values

stars a vector of p-value thresholds to replace with stars
to_clipboard

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to_clipboard  to_clipboard

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

**Usage**

to_clipboard(x, ...)

**Arguments**

<table>
<thead>
<tr>
<th>x</th>
<th>a corx object, matrix, or data.frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>...</td>
<td>additional arguments passed to 'clipr::write_clip'</td>
</tr>
</tbody>
</table>
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