Package ‘corrgram’

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Title Plot a Correlogram
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Type Package
Description Calculates correlation of variables and displays the results graphically. Included panel functions can display points, shading, ellipses, and correlation values with confidence intervals. See Friendly (2002) <doi:10.1198/000313002533>.

Imports graphics, grDevices, seriation, stats
Suggests gridBase, knitr, Matrix, psych, rmarkdown, sfsmisc, testthat
License GPL-3
LazyData yes
Encoding UTF-8

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BugReports https://github.com/kwstat/corrgram/issues/
VignetteBuilder knitr
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Statistics of 1979 automobile models

Description

Statistics for 74 automobiles in the 1979 model year as sold in the US.

Usage

auto

Format

A data frame with 74 observations on the following 14 variables.

Model  Make and model of car.
Origin  a factor with levels A,E,J
Price   Price in dollars.
MPG     Miles per gallon.
Rep78   Repair record for 1978 on 1 (worst) to 5 (best) scale.
Rep77   Repair record for 1978 on 1 to 5 scale.
Hroom   Headroom in inches.
Rseat   Rear seat clearance in inches.
Trunk   Trunk volume in cubic feet.
Weight  Weight in pounds.
Length  Length in inches.
Turn    Turning diameter in feet.
Displa  Engine displacement in cubic inches.
Gratio  Gear ratio for high gear.

Details

The data is from various sources, primarily Consumer Reports, April, 1979, and the United States government EPA statistics on fuel consumption.

Source

This data frame was created from http://euclid.psych.yorku.ca/ftp/sas/sssg/data/auto.sas

References

Examples

corrgram(auto[, -c(1:2)])

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**baseball**  
*Baseball Hitter’s Data*

**Description**

Data are for 322 Major Leaque Baseball regular and substitute hitters in 1986.

**Usage**

baseball

**Format**

A data frame with 322 observations on the following 22 variables.

- **Name**: The hitter/player’s name
- **League**: Player’s league (American/National) at the beginning of 1987
- **Team**: Player’s team at the beginning of 1987
- **Position**: Player’s position in 1986: 1B=First base, 2B=Second base, 3B=Third base, C=Catcher, OF=Outfield, DH=Designated hitter, SS=Short stop, UT=Utility
- **Atbat**: Number of times at bat in 1986
- **Hits**: Number of hits in 1986
- **Homer**: Number of home runs in 1986
- **Runs**: Number of runs in 1986
- **RBI**: Runs batted in during 1986
- **Walks**: Number of walks in 1986
- **Years**: Number of years in the major leagues
- **Atbatc**: Number of times at bat in his career
- **Hitsc**: Number of hits in career
- **Homerc**: Number of home runs in career
- **Runsc**: Number of runs in career
- **RBIC**: Number of Runs Batted In in career
- **Walksc**: Number of walks in career
- **Putouts**: Number of putouts in 1986
- **Assists**: Number of assists in 1986
- **Errors**: Number of errors in 1986
- **Salary**: Annual salary (in thousands) on opening day 1987
- **logSal**: Log of salary
Details

The levels of the player's positions have been collapsed to fewer levels for a simpler analysis. See the original data for the full list of positions.

The salary data were taken from Sports Illustrated, April 20, 1987. The salary of any player not included in that article is listed as an NA. The 1986 and career statistics were taken from The 1987 Baseball Encyclopedia Update published by Collier Books, Macmillan Publishing Company, New York.

Source


The version of the data used to create this data was found at http://euclid.psych.yorku.ca/ftp/sas/sssg/data/baseball.sas

References


Examples

```r
vars2 <- c("Assists","Atbat","Errors","Hits","Homer","logSal",
Putouts","RBI","Runs","Walks","Years")
corrgram(baseball[,vars2],
lower.panel=panel.shade, upper.panel=panel.pie)
```

corrgram  
**Draw a correlogram**

Description

The corrgram function produces a graphical display of a correlation matrix, called a correlogram. The cells of the matrix can be shaded or colored to show the correlation value.

Usage

```r
corrgram(x, type = NULL, order = FALSE, labels, panel = panel.shade,
lower.panel = panel, upper.panel = panel, diag.panel = NULL,
text.panel = textPanel, label.pos = c(0.5, 0.5), label.srt = 0,
cex.labels = NULL, font.labels = 1, rowlattop = TRUE, dir = "",
gap = 0, abs = FALSE, col.regions = colorRampPalette(c("red", "salmon",
"white", "royalblue", "navy")), cor.method = "pearson",
outer.labels = NULL, ...)
```
Arguments

x  A *tall* data frame with one observation per row, or a correlation matrix.
type Use 'data' or 'cor'/corr' to explicitly specify that 'x' is data or a correlation matrix. Rarely needed.
order Should variables be re-ordered? Use TRUE/"PCA" for PCA-based re-ordering. Options from the 'seriate' package include "OLO" for optimal leaf ordering, "GW", and "HC".
labels Labels to use (instead of data frame variable names) for diagonal panels. If 'order' option is used, this vector of labels will be also be appropriately reordered by the function.
panel Function used to plot the contents of each panel.
lower.panel, upper.panel Separate panel functions used below/above the diagonal.
diag.panel, text.panel Panel function used on the diagonal.
label.pos Horizontal and vertical placement of label in diagonal panels.
label.srt String rotation for diagonal labels.
cex.labels, font.labels Graphics parameter for diagonal panels.
row1atop TRUE for diagonal like "\", FALSE for diagonal like "/".
dir Use dir="left" instead of 'row1atop'.
gap Distance between panels.
abs Use absolute value of correlations for clustering? Default FALSE.
col.regions A *function* returning a vector of colors.
cor.method Correlation method to use in panel functions. Default is 'pearson'. Alternatives: 'spearman', 'kendall'.
outer.labels A list of the form 'list(bottom,left,top,right)', each component of which is a list of the form 'list(labels,cex,srt)'. This is used to add labels along the outside edges of the corrgram. Defaults: 'cex=1', 'srt=90' (bottom/top), 'srt=0' (left/right).
... Additional arguments passed to plotting methods.

Details

Note: Use the 'col.regions' argument to specify colors.
Non-numeric columns in the data will be ignored.
The off-diagonal panels are specified with panel.pts, panel.pie, panel.shade, panel.fill, 'panel.bar', panel.ellipse, panel.conf, panel.cor.
Diagonal panels are specified with panel.txt, panel.minmax, panel.density.
Use a NULL panel to omit drawing the panel.
This function is basically a modification of the pairs.default function with the use of customized panel functions.
The panel.conf function uses cor.test and calculates Pearson correlations. Confidence intervals are not available in cor.test for other methods (kendall, spearman).

You can create your own panel functions by starting with one of the included panel functions and making suitable modifications. Note that because of the way the panel functions are called inside the main function, your custom panel function must include the arguments shown in the panel.pts function, even if the custom panel function does not use those arguments!

TODO: legend, grid graphics version.

Value

The correlation matrix used for plotting is returned. The 'order' and 'abs' arguments affect the returned value.

Author(s)

Kevin Wright

References


Examples

# To reproduce the figures in Michael Friendly's paper, see the # vignette, or see the file 'friendly.r' in this package's # test directory.

# Demonstrate density panel, correlation confidence panel
corrgram(iris, lower.panel=panel.pts, upper.panel=panel.conf, diag.panel=panel.density)

# Demonstrate panel.shade, panel.pie, principal component ordering
vars2 <- c("Assists","Atbat","Errors","Hits","Homer","logSal","Putouts","RBI","Runs","Walks","Years")
corrgram(baseball[vars2], order=TRUE, main="Baseball data PC2/PC1 order", lower.panel=panel.shade, upper.panel=panel.pie)

# CAUTION: The latticeExtra package also has a 'panel.ellipse' function # that clashes with the same-named function in corrgram. In order to use # the right one, the example below uses 'lower.panel=corrgram::panel.ellipse'. # If you do not have latticeExtra loaded, you can just use # 'lower.panel=panel.ellipse'.

# Demonstrate panel.bar, panel.ellipse, panel.minmax, col.regions
corrgram(auto, order=TRUE, main="Auto data (PC order)", lower.panel=corrgram::panel.ellipse,
vote

    upper.panel=panel.bar, diag.panel=panel.minmax,
    col.regions=colorRampPalette(c("darkgoldenrod4", "burlywood1",
                                "darkkhaki", "darkgreen")))

# 'vote' is a correlation matrix, not a data frame
corrgram(vote, order=TRUE, upper.panel=panel.cor)

# outer labels, all options, larger margins, xlab, ylab
labs=colnames(state.x77)
corrgram(state.x77, oma=c(7, 7, 2, 2),
         outer.labels=list(bottom=list(labels=labs,cex=1.5,srt=60),
                             left=list(labels=labels,cex=1.5,srt=30)))
mtext("Bottom", side=1, cex=2, line = -1.5, outer=TRUE, xpd=NA)
mtext("Left", side=2, cex=2, line = -1.5, outer=TRUE, xpd=NA)

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### Voting correlations

#### Description

Voting correlations

#### Usage

vote

#### Format

A 12x12 matrix.

#### Details

These are the correlations of traits, where each trait is measured for 17 developed countries (Europe, US, Japan, Australia, New Zealand).

#### Source


#### References

Examples

corrgram(vote, order=TRUE)
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