Package 'datavis'

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Type Package

Title Functions for data visualization

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Description These functions were designed to simplify and streamline the creation, manipulation and export of bar plots and box plots of publication-grade quality.

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Imports ggplot2,
 ggthemes,
 data.table,
 rlang,
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 stringr,
 measurements,
 Cairo

R topics documented:

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bar_point_plot   *Bar plots of grouped data with summary statistics*

Description

Creates a bar plot of grouped data means plus/minus standard deviations (or custom, manually calculated error measure).

Usage

```
bar_point_plot(
  d,
  x = NULL,
  y,
  color.group = NULL,
  x.axis = NULL,
  y.axis = NULL,
  legend.title = NULL,
  x.order = NULL,
  group.order = NULL,
  x.first = NULL,
  group.first = NULL,
  points = TRUE,
  barwidth = 0.7,
  jitterwidth = 1,
  pointsize = 1,
  whisker.width = 1,
  mean.type = "arithmetic",
  error.lower = NULL,
  error.upper = NULL
)
```

Arguments

d	data.frame with data to be plotted.
x	Character. The name of the column to be used for the x axis (categorical data). If NULL, color.group needs to be supplied. Defaults to NULL.
y	Character. The name of the column to be used for the y axis (numeric data).
color.group	Character. The name of the column to be used for color grouping (categorical data). If NULL, x needs to be supplied. Defaults to NULL.
x.axis	Character. Sets the title of the x axis. If NULL, x axis title is given the value of x. Defaults to NULL.
y.axis	Character. Sets the title of the y axis. If NULL, y axis title is given the value of y. Defaults to NULL.
legend.title	Character. Sets the title of the legend. If NULL, legend title is given the value of color.group. Defaults to NULL.
x.order	Character vector of length equal to the number of x categories. Sets the order of categories in the x axis. If NULL, x categories are ordered alphabetically. Defaults to NULL.

group.order	Character vector of length equal to the number of color grouping categories. Sets the order of color groups. If NULL, color groups are ordered alphabetically. Defaults to NULL.
x.first	Character. Places a specific x axis category first. Ignored if x.order is supplied. Defaults to NULL.
group.first	Character. Places a specific color group category first. Ignored if group.order is supplied. Defaults to NULL.
points	Logical. Sets whether or not to plot individual data points. Defaults to TRUE.
barwidth	Numeric. Sets the width of the bars. Defaults to 0.7.
jitterwidth	Numeric. The horizontal dispersion of individual data points. Defaults to 1.
pointsize	Numeric. Sets the size of individual data points. Defaults to 1.
whisker.width	Numeric. Sets the width of the error bar whiskers. Defaults to 1.
mean.type	Character, either "arithmetic" or "geometric". Sets which type of mean and standard deviation to plot. Defaults to "arithmetic".
error.lower	Character, name of a column in the d data.frame. Plot custom lower error bar, calculated by the user and included in the d data frame as a column. Defaults to NULL, which plots mean - SD.
error.upper	Character, name of a column in the d data.frame. Plot custom upper error bar, calculated by the user and included in the d data frame as a column. Defaults to NULL, which plots mean + SD.

Details

The calculations for mean and standard deviation are performed automatically. To show other error measure, calculate it manually and include it as two fields in the supplied data.frame (field names are supplied as error.lower and error.upper arguments). To change from arithmetic mean plus/minus standard deviation to the corresponding geometric parameters, set mean.type argument from "arithmetic" to "geometric".

The order of groups shown in the x axis and color groups defaults to alphabetical. To change it, supply x.order or group.order arguments. These should be character vectors with the desired order of each factor. Do not include categories that don't exist in the supplied data.frame. To bring just one category in first place, supply x.first or group.first arguments. If x.order is supplied, x.first will be ignored. The same holds for group.order and group.first.

Adjust other supplied arguments to customize the plot aesthetically.

Value

A plot based on ggplot2.

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box_mean_plot	*Box plots of grouped data with optional mean value*

Description

Creates a standard box plot of grouped data (line: median, box: 25 to 75 percentiles, whiskers: 1.5*IQR (interquartile range)).

Usage

```
box_mean_plot(
  d,
  x = NULL,
  y,
  color.group = NULL,
  x.axis = NULL,
  y.axis = NULL,
  legend.title = NULL,
  x.order = NULL,
  group.order = NULL,
  x.first = NULL,
  group.first = NULL,
  means = FALSE,
  boxwidth = 0.7,
  whisker.width = 1,
  mean.size = 1,
  points = TRUE,
  jitterwidth = 1,
  pointsize = 1,
  mean.type = "arithmetic"
)
```

Arguments

d	`data.frame` with data to be plotted.
x	Character. The name of the column to be used for the x axis (categorical data). If `NULL`, `color.group` needs to be supplied. Defaults to `NULL`.
y	Character. The name of the column to be used for the y axis (numeric data).
color.group	Character. The name of the column to be used for color grouping (categorical data). If `NULL`,x needs to be supplied. Defaults to `NULL`.
x.axis	Character. Sets the title of the x axis. If `NULL`, x axis title is given the value of x. Defaults to `NULL`.
y.axis	Character. Sets the title of the y axis. If `NULL`, y axis title is given the value of y. Defaults to `NULL`.
legend.title	Character. Sets the title of the legend. If `NULL`, legend title is given the value of `color.group`. Defaults to `NULL`.
x.order	Character vector of length equal to the number of x categories. Sets the order of categories in the x axis. If `NULL`, x categories are ordered alphabetically. Defaults to `NULL`.
group.order	Character vector of length equal to the number of color grouping categories. Sets the order of color groups. If `NULL`, color groups are ordered alphabetically. Defaults to `NULL`.
x.first	Character. Places a specific x axis category first. Ignored if `x.order` is supplied. Defaults to `NULL`.
group.first	Character. Places a specific color group category first. Ignored if `group.order` is supplied. Defaults to `NULL`.
means	Logical. Sets whether or not to plot group means. Defaults to `FALSE`.
boxwidth	Numeric. Sets the width of the bars. Defaults to 0.7.

whisker.width	Numeric. Sets the width of the error bar whiskers. Defaults to 1.
mean.size	Numeric. Sets the size of group mean points. Defaults to 1.
points	Logical. Sets whether or not to plot individual data points. Defaults to TRUE. Note that, even if set to FALSE, outliers will still be shown as individual data points, as is the norm in box plots.
jitterwidth	Numeric. The horizontal dispersion of individual data points. Defaults to 1.
pointsize	Numeric. Sets the size of individual data points. Defaults to 1.
mean.type	Character. Sets from arithmetic to geometric mean. Defaults to "arithmetic".

Details

To include the mean value for each group, set means argument to TRUE. To change between arithmetic or geometric mean, set the mean.type argument to "arithmetic" or "geometric".

The order of groups shown in the x axis and color groups defaults to alphabetical. To change it, supply x.order or group.order arguments. These should be character vectors with the desired order of each factor. Do not include categories that don't exist in the supplied data.frame. To bring just one category first, supply x.first or group.first arguments. If x.order is supplied, x.first will be ignored. The same holds for group.order and group.first.

Adjust other supplied arguments to customize the plot aesthetically.

Value

A plot based on ggplot2.

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plot_save	*Plot export in multiple formats*

Description

Exports plots based on ggplot2 in vector (PDF, SVG), raster (PNG) and R data format (Rds).

Usage

```
plot_save(plot, filepath, height, width, unit = "in", dpi = 600)
```

Arguments

plot	Plot to be exported. Needs to be based on ggplot2 (datavis-created plots comply with this).
filepath	Character. The filepath for the exported plot, relative to the working directory. Do not add file extension, appropriate extension will be added to each exported file.
height	Numeric. The height of the exported plot in the desired length unit.
width	Numeric. The width of the exported plot in the desired length unit.
unit	Character. The unit to be used as height and width. "in" for inches, "cm" for centimeters and "mm" for millimeters. Defaults to "in".
dpi	Integer. The resolution of the exported PNG image in dots per inch. Defaults to 600.

Details

PNG and PDF files are exported using the `ggplot2`-based `ggsave` function. Exported PNG images are anti-aliased using the Cairo graphics library. Exported SVG graphics are drawn using the R-native SVG graphics device. This is because SVG graphics exported by `ggsave` are not rendered properly by the graphic design software Affinity Designer. The downside of exporting SVG with the native graphics device is that the text is drawn as paths instead of text, so it cannot be easily modified as text in graphic design software (e.g. set as bold, italics, etc).

Value

Exports plot without returning a value.

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plot_stats	*Add labels on top of plot bars or boxes*

Description

Adds text labels on top of bars or boxes of a `ggplot2`-based plot. Useful for annotating statistical analysis information.

Usage

```
plot_stats(plot, d, labels, position = "identity", size = 1, y.adj = 0)
```

Arguments

plot	Plot onto which to add labels. Requires a discrete x scale, optionally dodged by "fill" aesthetic.
d	data.frame containing the labels to be plotted. Must have categorical fields corresponding to the data used for the original plot.
labels	Character. The name of the column with the labels to be plotted.
position	Character, either "identity" or "dodge". Sets where (horizontally) the labels should be plotted. Defaults to "identity". If plot is dodged, "dodge" plots labels above each bar or box. "identity" plots them above the middle of each group of bars or boxes. If plot is not dodged, position is automatically set to "identity".
size	Numeric. Sets the size of labels. Defaults to 1.
y.adj	Numeric. Adjusts the height of labels above each bar, box or group. Defaults to 0. Positive sets it higher, negative sets it lower.

Details

`plot_stats` detects the maximum plotted value of each data group (bar, box, error bar or individual data point), and plots given labels above it.

The supplied plot needs to be based on `ggplot2` and to have a discrete x scale. The supplied `data.frame` needs to have a `character` field with the labels to be plotted (whose name is specified in the `labels` argument) and `factor` field(s) for the groups in which each label belongs.

Value

A plot based on `ggplot2`.

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