Package ‘sciplot’

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Title Scientific Graphing Functions for Factorial Designs
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Depends stats
Description A collection of functions that creates graphs with error bars for data collected from one-way or higher factorial designs.
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bargraph.CI  Bar Graph of Calculated Means and CI

Description

Barplot of the mean and standard error (or other summary statistics) of a response variable for one-way or higher experimental designs.
Usage

```r
bargraph.CI(x.factor, response, group=NULL, split=FALSE, 
col=NULL, angle=NULL, density=NULL, 
lc=TRUE, uc=TRUE, legend=FALSE, ncol=1, 
leg.lab=NULL, x.leg=NULL, y.leg=NULL, cex.leg=1, 
bty="n", bg="white", space=if(split) c(-1,1), 
err.width=if(length(levels(as.factor(x.factor))))>10) 0 else .1, 
err.col="black", err.lty=1, 
fun = function(x) mean(x, na.rm=TRUE), 
ci.fun= function(x) c(fun(x)-se(x), fun(x)+se(x)), 
ylim=NULL, xpd=FALSE, data=NULL, subset=NULL, ...)
```

Arguments

- `x.factor`: a factor (required) whose levels will form the x axis.
- `response`: a numeric variable giving the response.
- `group`: grouping factor (optional) whose levels will form groups of bars for each level of `x.factor`.
- `split`: logical. Should groups of bars be displayed back to back. See details below.
- `col`: default color(s) for bars.
- `angle`: default angle of shading lines.
- `density`: default density of shading lines.
- `lc`, `uc`: logical. Should upper or lower CI be drawn?
- `legend`: logical. Should a legend be included?
- `ncol`: number of columns to use for legend.
- `leg.lab`: legend labels for trace factors.
- `x.leg`, `y.leg`: optional values to over ride the default legend placement.
- `cex.leg`: character expansion value for legend labels.
- `bty`: line type of bounding box for legend. Defaults to 'none'.
- `space`: set spacing for bars.
- `err.width`: set width of whiskers for error bars.
- `err.col`: color for error bars. Defaults to "black".
- `err.lty`: line type for error bars.
- `bg`: background color of legend.
- `fun`: the function to compute the summary statistic. Should return a single real value. Defaults to mean with NA values removed.
- `ci.fun`: the functions to compute the CI. Should return a vector of length 2 defining the lower and upper limits of the CI’s. Defaults to the mean +/- 1 standard error, with NA values removed.
- `ylim`: range of y axis.
lineplot.CI

xpd defaults to xpd=FALSE (in contrast to barplot) to cut off the range of data plotted.

data an optional data frame.

subset an optional expression indicating the subset of the rows of 'data' that should be used in the plot.

... further graphical parameters. See barplot() for additional options.

Details

Plots a response as a function of treatment (factor) combinations for one-way and higher designs. This is a "wrapper" function for barplot that adds confidence intervals - barplot should be consulted for details. Note that the option "beside=TRUE" from barplot is hardcoded and that the default for value xpd is FALSE. If the option split is specified, the response associated with the second grouping factor will be made negative and displayed back-to-back with the first.

See Also

barplot, se

Examples

data(ToothGrowth)

# One way design
bargraph.CI(x.factor = dose, response = len, data = ToothGrowth)

# Two-way design with options
bargraph.CI(dose, len, group = supp, data = ToothGrowth,
  xlab = "Dose", ylab = "Growth", cex.lab = 1.5, x.leg = 1,
  col = "black", angle = 45, cex.names = 1.25,
  density = c(0,20), legend = TRUE)

lineplot.CI

Description

Lineplot of the mean and standard error (or other summary statistics) of a response variable for one-way or higher experimental designs.

Usage

lineplot.CI(x.factor, response, group=NULL, type="b", x.cont=false,
  legend=TRUE, trace.label=NULL, leg.lab=NULL, fixed=FALSE, x.leg=NULL,
  y.leg=NULL, cex.leg=1, ncol=1,
  pch=c(16, 21, 15, 22, 17, 24, c(3:14)),
  fun = function(x) mean(x, na.rm=TRUE),
ci.fun = function(x) c(fun(x)-se(x), fun(x)+se(x)),
err.width = if(length(levels(as.factor(x.factor))) > 10) 0 else 0.1,
err.col = col, err.lty = 1,
xlim=NULL, ylim=NULL, cex=NULL, lwd=NULL, col="black", cex.axis=1,
xaxt="s", data=NULL, subset=NULL, ...

Arguments

x.factor a factor (required) whose levels will form the x axis.
response a numeric variable giving the response.
group grouping factor (optional) whose levels will form the traces.
type the type of plot: lines, points, or both. Defaults to both.
x.cont logical. Treat x.factor as a continuous variable?
legend logical. Should a legend be included?
trace.label overall legend label.
leg.lab legend labels for trace factors.
fixed logical. Should the legend be in the order of the levels of 'trace.factor' or in the order of the traces at their right-hand ends?
x.leg, y.leg optional values to over ride the default legend placement.
cex.leg character expansion value for legend labels.
ncol number of columns to use for legend.
pch a vector of plotting symbols or characters.
fun the function to compute the summary statistic. Should return a single real value. Defaults to mean with NA values removed.
ci.fun the functions to compute the CI. Should return a vector of length 2 defining the lower and upper limits of the CI's. Defaults to the mean +/- 1 standard error, with NA values removed.
err.width set width of whiskers for error bars.
err.col color for error bars. Defaults to col.
err.lty line type for error bars.
xlim, ylim range for x and y axes.
cex overall plot character expansion value.
lwd determines line width.
col default color(s) for plot.
cex.axis character expansion value for axis labels.
xaxt should x-axis be drawn?
data an optional data frame.
subset an optional expression indicating the subset of the rows of 'data' that should be used in the plot.
... further graphical parameters.
Details

Plots a response as a function of treatment (factor) combinations for one-way and higher designs. This is a "wrapper" function for plot in one-way designs and interaction.plot in higher-way designs that adds confidence intervals - those functions should be consulted for details. Notable changes from the defaults for interaction.plot include the removal of NA values by default, options to specify a subset of data and greater flexibility in the placement of legends. This function replicates some of the functionality of plotmeans from the package gplots, with differences in the treatment of two-way and higher designs.

See Also

interaction.plot, se

Examples

data(ToothGrowth)

# One way design
lineplot.CI(x.factor = dose, response = len, data = ToothGrowth)

# Two-way design with options
lineplot.CI(dose, len, group = supp, data = ToothGrowth, cex = 2,
           xlab = "Dose", ylab = "Growth", cex.lab = 1.5, x.leg = 1,
           col = c("blue","red"), pch = c(16,16))

se(x, na.rm=TRUE)

Arguments

x a numeric vector.
na.rm logical. Should missing values be removed?

See Also

sd

Examples

se(1:10) ^ 2
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