Package 'likert'

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Type Package

Title Functions to analyze and visualize likert type items

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Description Functions to analyze and visualize likert type itemss

License GPL

LazyLoad yes

Depends R (>= 3.0),ggplot2,gridExtra,xtable

Imports reshape,psych

Suggests devtools,shiny

Collate 'likert-package.R' 'likert.R' 'plot.likert.bar.r' 'plot.likert.heat.r' 'plot.likert.matrix.r' 'plot.likert.r' 'print.likert.r' 'summary.likert.r' 'xtable.likert.r' 'recode.r' 'label_wrap_mod.r' 'plot.likert.density.R' 'abs_formatter.R' 'shinyLikert.R' 'align.R' 'plot.histogram.R' 'reverse.levels.R'

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R topics documented:

`likert-package` *Likert Analysis and Visualization*

Description

Likert Analysis and Visualization

Author(s)

<jason@bryer.org>

`abs_formatter` *Absolute value formatter for* `continuous_scale`.

Description

This will print the absolute value for labeling on axis. Usefull for stacked bar plots where negative values are not negative percentages but represent negative groups.

Usage

```
abs_formatter(x)
```

Arguments

`x`	value to be reformatted.

`align.plots` *Adapted from ggExtra package which is no longer available. This is related to an experimental mlpsa plot that will combine the circular plot along with the two individual distributions.*

Description

Adapted from ggExtra package which is no longer available. This is related to an experimental mlpsa plot that will combine the circular plot along with the two individual distributions.

Usage

```
align.plots(gl, ...)
```

Arguments

`gl`	grid.layout
`...`	graphic elements to combine.

label_wrap_mod *Wrap label text.*

Description

Wrap label text.

Usage

```
label_wrap_mod(value, width = 25)
```

Arguments

value	vector (converted using as.character) to be wrapped.
width	the maximum width of each line in characters.
	Adapted from https://github.com/hadley/ggplot2/wiki/labeller

likert *Analyze Likert type items.*

Description

This function will provide various statistics about a set of likert items. The resulting object will have the following items:

Usage

```
likert(items, grouping = NULL,
  nlevels = length(levels(items[, 1])))
```

Arguments

items	data frame containing the likert based items. The variables in the data frame should be factors.
grouping	(optional) should the results be summarized by the given grouping variable.
nlevels	number of possible levels. Only necessary if there are missing levels.

Details

- results - this data frame will contain a column 'Item', 'Group' (if a grouping variable was specified, and a column for each level of the items (e.g. agree, disagree, etc.). The value within each cell corresponds to the percentage of responses for that level and group.
- items - a copy of the original items data frame.
- grouping - a copy of the original grouping vector.
- nlevels - the number of levels used in the calculations.

Value

a likert class with the following elements: results, items, grouping, nlevels, and summary.

See Also

plot.likert

summary.likert

Examples

```
data(pisaitems)
items29 <- pisaitems[,substr(names(pisaitems), 1,5) == 'ST25Q']
names(items29) <- c("Magazines", "Comic books", "Fiction",
                    "Non-fiction books", "Newspapers")
l29 <- likert(items29)
summary(l29)
plot(l29)
```

`likert.bar.plot` *Bar Plot for Likert Items.*

Description

Bar plot for the results of `likert`.

Usage

```
likert.bar.plot(likert, low.color = "#D8B365",
  high.color = "#5AB4AC", neutral.color = "grey90",
  neutral.color.ramp = "white", plot.percent.low = TRUE,
  plot.percent.high = TRUE, plot.percent.neutral = TRUE,
  plot.percents = FALSE, text.size = 3,
  text.color = "black", centered = TRUE,
  center = (likert$nlevels - 1)/2 + 1,
  include.center = TRUE, ordered = TRUE,
  wrap = ifelse(is.null(likert$grouping), 50, 100),
  wrap.grouping = 50, legend = "Response",
  legend.position = "bottom", panel.arrange = "v",
  panel.strip.color = "#F0F0F0", group.order, ...)
```

Arguments

`likert`	object of type likert.
`low.color`	color for low values.
`high.color`	color for high values.
`neutral.color`	color for middle values (if odd number of levels).

`neutral.color.ramp`
: second color used when calling `colorRamp` with `low.color` and `high.color` to define the color palettes.

`plot.percent.low`
: whether to plot low percentages.

`plot.percent.high`
: whether to plot high percentages.

`plot.percent.neutral`
: whether to plot netural percentages.

`plot.percents`
: whether to label each category/bar.

`text.size`
: size of text attributes.

`text.color`
: color of text attributes.

`centered`
: if true, the bar plot will be centered around zero such that the lower half of levels will be negative.

`center`
: specifies which level should be treated as the center. For example, `center = 3` would use the third level as the center whereas `center = 3.5` would indicate no specific level is the center but <= 3 are low levels and >= 4 are high levels (i.e. used for forced choice items or those without a neutral option). This also influences where the color breaks from low to high.

`include.center`
: if TRUE, include the center level in the plot otherwise the center will be excluded.

`ordered`
: reorder items from high to low.

`wrap`
: width to wrap label text for item labels

`wrap.grouping`
: width to wrap label text for group labels.

`legend`
: title for the legend.

`legend.position`
: the position for the legend ("left", "right", "bottom", "top", or two-element numeric vector).

`panel.arrange`
: how panels for grouped likert items should be arrange. Possible values are `v` (vertical, the default), `h` (horizontal), and `NULL` (auto fill horizontal and vertical)

`panel.strip.color`
: the background color for panel labels.

`group.order`
: the order in which groups (for grouped items) or items (for non-grouped items) should be plotted.

`...`
: currently unused.

See Also

plot.likert

likert.heat.plot

likert.bar.plot

likert.density.plot

likert.density.plot *Creates a density plot for likert items.*

Description

This funciton will create a visualization that treats the likert items as a continuous variable.

Usage

```
likert.density.plot(likert, facet = TRUE, bw = 0.5,
  legend, ...)
```

Arguments

likert	object of type likert.
facet	for non-grouped items, should each density distribution be plotted in a separate facet.
bw	the smoothing bandwidth. This is often set to the standard deviation but this is often inadequate for Likert type items. The value of 0.5 is used since the difference between any two adjacent levels is one.
legend	title for the legend.
...	parameters passed to density.

See Also

plot.likert

likert.heat.plot *Internal method.*

Description

Internal method.

Usage

```
likert.heat.plot(likert, low.color = "white",
  high.color = "blue", text.color = "black",
  text.size = 4, wrap = 50, ...)
```

Arguments

likert	object of type likert.
low.color	color for low values.
high.color	color for high values.
text.size	size of text attributes.
text.color	color of text attributes.
wrap	width to wrap label text for non-grouped likert objects.
...	currently unused.

See Also

plot.likert

likert.bar.plot

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likert.histogram.plot *Histogram of number of responses.*

Description

Plots a histogram of the number of responses for each item and group (if specified). Negative values (in maroon by default) indicate the number of missing values for that item and group.

Usage

```
likert.histogram.plot(l, xlab = "n", plot.missing = TRUE,
  bar.color = "grey70", missing.bar.color = "maroon",
  label.completed = "Completed",
  label.missing = "Missing", legend.position = "bottom",
  wrap = ifelse(is.null(l$grouping), 50, 100), order,
  group.order, panel.arrange = "v",
  panel.strip.color = "#F0F0F0", ...)
```

Arguments

l	results of likert.
xlab	label used for the x-axis.
plot.missing	if TRUE, missing values will be plotted to the left of the x-axis.
bar.color	the bar color.
missing.bar.color	the color of the bar for missing values.
label.completed	the label to use in the legend representing the count of complete values.
label.missing	the label to use in the legend representing the count of missing values.

order	the order of the items.
...	other ggplot2 parameters.
legend.position	the position for the legend ("left", "right", "bottom", "top", or two-element numeric vector).
wrap	width to wrap label text for item labels
group.order	the order in which groups (for grouped items) or items (for non-grouped items) should be plotted.
panel.arrange	how panels for grouped likert items should be arrange. Possible values are v (vertical, the default), h (horizontal), and NULL (auto fill horizontal and vertical)
panel.strip.color	the background color for panel labels.

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likert.matrix.plot *Matrix plot (experimental)*

Description

Matrix plot (experimental)

Usage

```
likert.matrix.plot(likert, nSample = nrow(likert$items),
  ...)
```

Arguments

likert	results of likert.
nSample	random sample of all rows. This function may take a while to run with large datasets (including the pisaitems data). Plotting a random subsample allows for quicker development.
...	parameters passed to pairs.ordered.categorical.

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pisaitems *Programme of International Student Assessment*

Description

North American (i.e. Canada, Mexico, and United States) results from the 2009 Programme of International Student Assessment (PISA) as provided by the Organization for Economic Co-operation and Development (OECD). See http://www.pisa.oecd.org/ for more information including the code book.

Format

a data frame 66,690 ovservations of 81 variables from North America.

Source

Organization for Economic Co-operation and Development

`plot.likert` *Plots a set of likert items.*

Description

This is an implementation of the S3 plot generic function. Based upon the `type` parameter this function will call either `likert.bar.plot`, `likert.heat.plot`, or `likert.density.plot`. See the help pages for those functions for all the available parameters to customize the aesthetics of the figure. Although those functions can be plotted directly, we recommend call the generic `plot` function.

Usage

```
  ## S3 method for class 'likert'
plot(x,
   type = c("bar", "heat", "density"),
   include.histogram = FALSE, panel.widths = c(3, 1),
   panel.arrange = "v", panel.strip.color = "#F0F0F0",
   legend.position = "bottom",
   panel.background = element_rect(size = 1, color = "grey70", fill = NA),
   ...)
```

Arguments

`x`	the likert items to plot
`type`	the type of plot to create. Current values are bar and heat.
`...`	other parameters passed passed to `likert.bar.plot` or `likert.heat.plot`.
`panel.background`	define background of the plot. See `theme`.
`include.histogram`	if TRUE, a histogram of count of responses is also plotted.
`panel.widths`	if `include.histogram=TRUE`, this vector of length two specifies the ratio of the left and right panels.
`legend.position`	the position for the legend ("left", "right", "bottom", "top", or two-element numeric vector).
`panel.arrange`	how panels for grouped likert items should be arrange. Possible values are `v` (vertical, the default), `h` (horizontal), and `NULL` (auto fill horizontal and vertical)
`panel.strip.color`	the background color for panel labels.

See Also

likert.bar.plot

likert.heat.plot

likert.density.plot

likert.histogram.plot

`print.likert` *Prints results table.*

Description

Prints results table.

Usage

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

Arguments

`x`	the likert class to print.
`...`	parameters passed to `print.data.frame`.

`print.likert.bar.plot` *Print method for* `likert.bar.plot`*. The primary purpose is to suppress the "Stacking not well defined when ymin != 0" warning printed by* `ggplot2` *for bar plots that have negative bars (i.e. the centered plots).*

Description

Print method for `likert.bar.plot`. The primary purpose is to suppress the "Stacking not well defined when ymin != 0" warning printed by `ggplot2` for bar plots that have negative bars (i.e. the centered plots).

Usage

```
## S3 method for class 'likert.bar.plot'
print(x, ...)
```

Arguments

`x`	a plot from `likert.bar.plot`.
`...`	other parameters passed to ggplot2.

print.likert.heat.plot *Print method for* likert.heat.plot.

Description

Print method for likert.heat.plot.

Usage

```
print.likert.heat.plot(p, ...)
```

Arguments

p	a plot from likert.heat.plot.
...	other parameters passed to ggplot2.

print.xlikert *Prints the results of* xtable.likert.

Description

Print method for xtable.likert.

Usage

```
## S3 method for class 'xlikert'
print(x,
   tabular.environment = "longtable", floating = FALSE,
   ...)
```

Arguments

x	results of xtable.likert.
tabular.environment	see print.xtable.
floating	see print.xtable.
...	other parameters passed to print.xtable

recode *Recode a vector.*

Description

This utility function will recode values from an original character or factor vector with new values.

Usage

```
recode(x, from, to, to.class = NULL)
```

Arguments

x	the vector whose values will be recoded.
from	the old values in x to be recoded.
to	the new values.
to.class	an 'as.' function representing the desired vector type (i.e. as.character, as.numeric, as.logical, as.numeric).

Value

a vector with same length of x with recoded values.

Examples

```
test <- letters[sample(5, 10, replace=TRUE)]
recode(test, from=letters[1:5], to=paste('Letter', letters[1:5]))
```

reverse.levels *Reverse the levels of a factor.*

Description

Reverse the levels of a factor.

Usage

```
reverse.levels(x)
```

Arguments

x	a factor or a data.frame of factors whose levels will be reverse coded.

Examples

```
mylevels <- c('Strongly Disagree', 'Disagree', 'Neither', 'Agree', 'Strongly Agree')
test <- factor(sample(mylevels[1:5], 10, replace=TRUE))
cbind(test, as.integer(test), as.integer(reverse.levels(test)))
```

---

shinyLikert *Shiny App for the likert package.*

Description

This will start a shiny app included with the package to show many of the features available in the likert package.

Usage

```
shinyLikert()
```

References

http://rstudio.com/shiny

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summary.likert *Prints summary table of a Likert analysis.*

Description

The summary function returns a data frame that provides additional information. It contains 'Item' and 'Group' columns similiar to the results data frame as well as a column 'low' corresponding to the sum of levels below neutral, a column 'high' corresponding to the sum of levels above neutral, and columns 'mean' and 'sd' corresponding to the mean and standard deviation, respectively, of the results. The numeric values are determined by as.numeric which will use the values of the factors.

Usage

```
## S3 method for class 'likert'
summary(object,
   center = (object$nlevels - 1)/2 + 1, ordered = TRUE,
   ...)
```

Arguments

object	the likert class to summarize.
center	specifies which level should be treated as the center. For example, center = 3 would use the third level as the center whereas center = 3.5 would indicate no specific level is the center but <= 3 are low levels and >= 4 are high levels (i.e. used for forced choice items or those without a neutral option).
ordered	whether the results should be ordered. Currently unsupported for grouped analysis.
...	currently unused.

---

xtable.likert *Prints a LaTeX table of the likert items.*

Description

Crate a LaTeX or HTML table of the likert results.

Usage

```
  ## S3 method for class 'likert'
 xtable(x, caption = NULL, label = NULL,
    align = NULL, digits = NULL, display = NULL,
    include.n = TRUE, include.mean = TRUE,
    include.sd = TRUE, include.low = TRUE,
    include.neutral = (x$nlevels%%2 != 0),
    include.high = TRUE, include.levels = TRUE,
    include.missing = TRUE, center = (x$nlevels - 1)/2 + 1,
    ordered = TRUE, ...)
```

Arguments

x	likert class object.
caption	the table caption.
label	the table label.
align	column alignments.
digits	number of digits to use for numeric columns.
display	column formats.
include.n	option to include n
include.mean	option to include mean
include.sd	option to include sd
include.low	option to include low
include.neutral	option to include neutral

include.high	option to include high
include.levels	option to include levels
include.missing	option to include missing levels.
center	specifies which level should be treated as the center. For example, center = 3 would use the third level as the center whereas center = 3.5 would indicate no specific level is the center but <= 3 are low levels and >= 4 are high levels (i.e. used for forced choice items or those without a neutral option). This also influences which levels are summarized in the low and high groups.
ordered	whether the results should be ordered. See summary.likert
...	other parameters passed to xtable.

See Also

xtable, print.xtable

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