Package ‘likert’

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Description An approach to analyzing Likert response items, with an emphasis on visualizations. The stacked bar plot is the preferred method for presenting Likert results. Tabular results are also implemented along with density plots to assist researchers in determining whether Likert responses can be used quantitatively instead of qualitatively. See the likert(), summary.likert(), and plot.likert() functions to get started.
License GPL
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likert-package Likert Analysis and Visualization

Description

Likert Analysis and Visualization

Author(s)

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abs_formatter

**Absolute value formatter for continuous_scale**

**Description**

This will print the absolute value for labeling on axis. Useful 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.

**Value**

the absolute value of `x`.

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**

```
# S3 method for class 'plots'
align(gl, ...)
```

**Arguments**

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

**References**

http://groups.google.com/group/ggplot2/browse_thread/thread/1b859d6b4b441c90 http://ggextra.googlecode.com/svn/trunk/R/align.r
gap

Fictitious dataset with importance and satisfaction results across five different offices.

Description

This data set is used in the GapAnalysis demo and is used to demonstrate how the likert package handles a gap analysis.

Format

a data frame with 68 observations of 11 variables.

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, summary, grouping = NULL, factors = NULL, importance, nlevels = length(levels(items[, 1])))
likert

Arguments

items  data frame containing the likert based items. The variables in the data frame should be factors.
summary  a pre-summarized data frame. The first column must be the items and the remaining columns are the levels (e.g. strongly disagree, disagree, etc).
grouping  (optional) should the results be summarized by the given grouping variable.
factors  a vector with length(factors) == ncol(items) defining which factor each column belongs to. The values correspond to the factor label.
importance  a data frame of the same dimensions as items containing an importance rating for each item. The order of columns should match and the names from items will be used.
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")
129 <- likert(items29)
summary(129)
plot(129)
### likert.bar.plot

**Bar Plot for Likert Items.**

**Description**

Bar plot for the results of *likert*.

**Usage**

```r
likert.bar.plot(l, group.order, center = (l$nlevels - 1)/2 + 1, ...)
```

**Arguments**

- `l`: results of *likert*.
- `group.order`: the order in which groups (for grouped items) or items (for non-grouped items) should be plotted.
- `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.
- `...`: passed to *likert.options*
- `likert`: object of type *likert*.

**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 function will create a visualization that treats the likert items as a continuous variable.

**Usage**

```r
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

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.color  color of text attributes.
text.size  size of text attributes.
wrap  width to wrap label text for non-grouped likert objects.
...  currently unused.

See Also

plot.likert
likert.bar.plot
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", 
                   text.size = 2.5, ...)

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.

legend.position  location of the legend.

wrap  number of characters before warping the text in the panel strips.

order  the order of the items.

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

panel.arrange  v for vertical or h for horizontal.

panel.strip.color  the color for panels.

text.size  text size.

...  other ggplot2 parameters.
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.

likert.options  
Builds an object with options for plotting likert results.

Description
Builds an object with options for plotting likert results.

Usage
likert.options(low.color = "#D8B365", high.color = "#5AB4AC", neutral.color = "grey90", neutral.color.ramp = "white", colors = NULL, plot.percent.low = TRUE, plot.percent.high = TRUE, plot.percent.neutral = TRUE, plot.percents = FALSE, text.size = 3, text.color = "black", centered = TRUE, include.center = TRUE, ordered = TRUE, wrap = 50, wrap.grouping = 50, legend = "Response", legend.position = "bottom", panel.arrange = "v", panel.strip.color = "#F0F0F0", ...)

Arguments
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.
colors vector specifying the colors to use. This must be equal to the number of likert levels.
plot.percent.low whether to plot low percentages.
plot.percent.high whether to plot high percentages.
plot.percent.neutral whether to plot neutral 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.
include.center if TRUE, include the center level in the plot otherwise the center will be excluded.
ordered reorder items from high to low.
warp 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.
...

---

mass Results from an administration of the Math Anxiety Scale Survey.

Description

A data frame of results of the Math Anxiety Scale Survey administered to 20 students in a statistics course. This data frame contains the original data and can be used to verify the pre-summarized procedures.

Format

data frame with 14 rows and 6 columns.

References

MathAnxiety

Pre-summarized results from an administration of the Math Anxiety Scale Survey.

Description

A data frame of presummarized results of the Math Anxiety Scale Survey administered to 20 students in a statistics course.

Format

data frame with 14 rows and 6 columns.

References


MathAnxietyGender

Pre-summarized results from an administration of the Math Anxiety Scale Survey grouped by gender.

Description

A data frame of presummarized results of the Math Anxiety Scale Survey administered to 20 students in a statistics course grouped by gender.

Format

data frame with 28 rows and 7 columns.

References

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 observations 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

```r
## 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", grouping, group.order,
     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.
- `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.
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.

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

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

panel.background define background of the plot. See theme.

... other parameters passed passed to likert.bar.plot or likert.heat.plot.

See Also
likert.bar.plot
likert.heat.plot
likert.density.plot
likert.histogram.plot

plot.likert.gap 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.gap'
plot(x, type = c("bar", "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),
  satisfaction.label = "Satisfaction", importance.label = "Importance",
  legend, ...)
Arguments

- `x`: the likert items to plot
- `type`: the type of plot to create. Current values are bar and heat.
- `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.
- `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.
- `legend.position`: the position for the legend ("left", "right", "bottom", "top", or two-element numeric vector).
- `panel.background`: define background of the plot. See `theme`.
- `satisfaction.label`: label used for satisfaction items.
- `importance.label`: label used for importance items.
- `legend`: title for the legend.
- `...`: other parameters passed to `likert.bar.plot` or `likert.heat.plot`.

See Also

- `likert.bar.plot`
- `likert.heat.plot`
- `likert.density.plot`
- `likert.histogram.plot`

print.likert  

Prints results table.

Description

Prints results table.

Usage

```r
## 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

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

Arguments

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

print.likert.gap  

Prints results table.

Description

Prints results table.

Usage

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

Arguments

- `x`: the likert class to print.
- `...`: parameters passed to print.data.frame.
print.likert.heat.plot

Print method for `likert.heat.plot`.

Description

Print method for `likert.heat.plot`.

Usage

```r
## S3 method for class 'likert.heat.plot'
print(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

```r
## 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

```r
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)))
```

---

**sasr**

*Results from the Survey of Academic Self-Regulation (SASR).*

---

**Description**

The Survey of Academic Self-Regulation (SASR) is comprised of six factors: self-regulation, intrinsic motivation, extrinsic motivation, self-efficacy, metacognition, and personal relevance and control.

**Format**

a data frame with 860 observations of 63 variables.

**References**


---

**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**

```r
shinyLikert()
```

**References**

http://rstudio.com/shiny
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 similar 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

```r
## S3 method for class 'likert'
summary(objectL 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.

summary.likertNgap

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 similar 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

```r
## S3 method for class 'likertNgap'
summary(object, ...)
```
Arguments

object the likert class to summarize.
... parameters passed to summary.likert

Value

a list with two data frames with summarized data for satisfaction and importance results separately.

---

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

Description

Create a LaTeX or HTML table of the `likert` results.

Usage

```r
## S3 method for class 'likert'
xtable(x, caption = NULL, label = NULL, align = NULL,
digits = NULL, display = NULL, auto = FALSE, include.n = TRUE,
include.mean = TRUE, include.sd = TRUE, include.low = TRUE,
include.neutral = (x$levels[2] != 0), include.high = TRUE,
include.levels = TRUE, include.missing = TRUE, center = (x$levels - 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.
- `auto` Logical, indicating whether to apply automatic format when no value is passed to align, digits, or display (see `xtable` for more information).
- `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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