Package 'tableExtra'

October 28, 2021

Title Draws an Awesome Table

Version 1.0.1

Description An easy-to-use tool for drawing paper-quality tables with double-information encoded in grobs shapes and colors.

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Encoding UTF-8

LazyData true

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RoxygenNote 7.1.2

Suggests testthat,
dplyr,
tibble

Depends R (>= 3.5.0)

Imports gtable,
grid

R topics documented:

`draw_table_extra` *Graphical display of a table with gropbs of varying scales and colours.*

Description

Draw a table containing grobs of varying sizes and colors encoding two different kinds of information. The column names and row names of the table are displayed on the top and left sides of the table respectively.

Usage

```
draw_table_extra(
  dscale,
  theme,
  output,
  dcolor = NULL,
  dscale_min = NULL,
  dscale_max = NULL,
  cols_more = NULL,
  rows_more = NULL,
  dscale_title_legend = "Scale title",
  dcolor_title_legend = "Color title",
  margin_x = unit(1, "inches"),
  margin_y = unit(1, "inches")
)
```

Arguments

dscale	a matrix containing the values defining the grobs scales.
theme	a list of theme parameters. Use an instance of ttheme_awesome.
output	path to output file. Only pdf supported for now.
dcolor	(optional) a matrix of size (n,m) containing the values defining the grobs colors.
dscale_min	(optional) value for setting the minimum scale size of foreground grobs. Entries in the dscale matrix below dscale_min will have a scale of 0 (no grob).
dscale_max	(optional) value for setting the maximum scale size of foreground grobs. Entries in the dscale matrix above dscale_max will have a scale of 1.
cols_more	(optional) a named list of additional rows (top-part) of the plot for describing the columns The list names will be used as row headers.
rows_more	(optional) a named list of additional columns (right-part) of the plot for describing the rows. The list names will be used as column headers.
dscale_title_legend	(optional) title for the colorbar providing a legend for scales.
dcolor_title_legend	(optional) title for the colorbar providing a legend for colors
margin_x	(optional) use it to fine-tune the width of the plot if some elements are not displayed correctly.
margin_y	(optional) use it to fine-tune the height of the plot if some elements are not displayed correctly.

Value

No return value, the last instruction calls graphics.off() in order to write the plot to the .pdf file specified via output argument.

Author(s)

Yoann Pradat

See Also

ttheme_awesome(), gtable_table(), gtable_legend()

Examples

```
library(dplyr)
library(tableExtra)
library(tibble)

# load data
load(system.file("testdata", "pcawg_counts.rda", package="tableExtra"))
load(system.file("testdata", "sbs_aetiologies.rda", package="tableExtra"))

pcawg_plot_data <- function(){
  scale_breaks <- seq(from=0, to=1, by=0.1)
  color_palette <- c("#ffc651", "#ffa759", "#ff8962", "#ff6b6b", "#cc6999", "#9968c8",
                     "#6767f8", "#4459ce", "#224ba5","#013d7c")
  color_breaks <- c(0, 0.05, 0.1, 0.25, 0.5, 1, 2.5, 5, 10, 25, 1e6)
  color_bg <- c("#f8f9fa", "#e9ecef")

  theme <- ttheme_awesome(base_size=12,
                          rep_mode="col",
                          core_size=5,
                          scale_breaks=scale_breaks,
                          color_palette=color_palette,
                          color_breaks=color_breaks,
                          core=list(bg_params=list(fill=color_bg)))

  # define dscale and cols_more from PCAWG data
  dscale <- pcawg_counts %>%
    group_by(Cancer.Types) %>%
    mutate(n=n()) %>%
    summarize_at(vars(-Sample.Names, -Accuracy), ~sum(.x>0)) %>%
    mutate_at(vars(-Cancer.Types,-n), ~./n)

  cols_more <- list("n="=dscale$n)
  dscale$n <- NULL
  dscale <- column_to_rownames(.data=dscale, var="Cancer.Types")
  dscale <- t(as.matrix(dscale))

  # define dcolor and rows_more from PCAWG data
  mask <- sbs_aetiologies$Signature %in% rownames(dscale)
  rows_more <- list("Aetiology"=sbs_aetiologies[mask, "Aetiology"])

  dcolor <- pcawg_counts %>%
    group_by(Cancer.Types) %>%
    summarize_at(vars(-Sample.Names, -Accuracy), ~median(.[.!=0]*1e6/3.2e9)) %>%
    replace(is.na(.),0)

  dcolor <- column_to_rownames(.data=dcolor, var="Cancer.Types")
  dcolor <- t(as.matrix(dcolor))

 list(dscale=dscale, dcolor=dcolor, cols_more=cols_more, rows_more=rows_more, theme=theme)
}

# tables needed for the plot and graphical parameters in `theme`
plot_data <- pcawg_plot_data()

# draw
output <- file.path(tempdir(),"table_extra_pcawg.pdf")
```

```
draw_table_extra(dscale=plot_data$dscale, theme=plot_data$theme, output=output,
                 dcolor=plot_data$dcolor, cols_more=plot_data$cols_more,
                 rows_more=plot_data$rows_more,
                 dscale_title_legend="Prop of tumors with the signature",
                 dcolor_title_legend="Median mut/Mb due to signature")
```

`gtable_extra` *Grob underlying graphical display of a table with grobs of varying scales and colours.*

Description

The code is inspired by the `tableGrob` function `gridExtra`.

Usage

```
gtable_extra(
  dscale,
  dcolor = NULL,
  dscale_min = NULL,
  dscale_max = NULL,
  rows = rownames(dscale),
  cols = colnames(dscale),
  rows_more = NULL,
  cols_more = NULL,
  theme = ttheme_awesome(),
  vp = NULL
)
```

Arguments

`dscale`	a matrix containing the values defining the grobs scales.
`dcolor`	(optional) a matrix of size (n,m) containing the values defining the grobs colors.
`dscale_min`	(optional) value for setting the minimum scale size of foreground grobs. Entries in the `dscale` matrix below `dscale_min` will have a scale of 0 (no grob).
`dscale_max`	(optional) value for setting the maximum scale size of foreground grobs. Entries in the `dscale` matrix above `dscale_max` will have a scale of 1.
`rows`	(optional) a character vector.
`cols`	(optional) a character vector.
`rows_more`	(optional) a named list of additional columns (right-part) of the plot for describing the rows. The list names will be used as column headers.
`cols_more`	(optional) a named list of additional rows (top-part) of the plot for describing the columns The list names will be used as row headers.
`theme`	a list of theme parameters. Use an instance of `ttheme_awesome`.
`vp`	optional viewport.

Value

A `gtable` object.

Author(s)

Yoann Pradat

See Also

ttheme_awesome()

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gtable_legend *Build a grob containing a legend.*

Description

Build a grob with a legend inside.

Usage

```
gtable_legend(
  d,
  labels,
  widths,
  heights,
  fg_fun,
  fg_params,
  bg_fun = NULL,
  bg_params = NULL,
  title_x = NULL,
  title_y = NULL,
  title_label = "Title",
  title_gp = gpar(fontsize = 10),
  labels_pad = -1,
  labels_gp = gpar(fontsize = 6),
  padding = 0.3,
  size_unit = "mm",
  name = "legend",
  vp = NULL,
  orientation = c("horizontal", "vertical"),
  ...
)
```

Arguments

d	data.frame or matrix
labels	tick labels displayed at legend tick marks
widths	optional unit.list specifying the grob widths
heights	optional unit.list specifying the grob heights
fg_fun	grob-drawing function
fg_params	named list of params passed to fg_fun
bg_fun	grob-drawing function
bg_params	named list of params passed to bg_fun

title_x	unit specifying the x position of the title
title_y	unit specifying the x position of the title
title_label	character vector
title_gp	graphical parameters of the title
labels_pad	padding between the text labels
labels_gp	graphical parameters of the text labels
padding	numeric vector specifying the padding between adjacent cells.
size_unit	character vector defining the unit used for sizes. See grid::unit for all possible specifications
name	name of the grob
vp	optional viewport
orientation	choose 'horizontal' or 'vertical'
...	additional parameters passed to add_table_params.

Value

A gtable object.

Author(s)

Yoann Pradat

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tableExtra *An easy-to-use tool for drawing paper-quality tables.*

Description

tableExtra provides a function to draw a table with grobs of varying size and colors to represent two different types of information about multiple variables in multiple samples. The package was originally developed to reproduce Figure 3 of Alexandrov, L.B., Kim, J., Haradhvala, N.J. et al. The repertoire of mutational signatures in human cancer. Nature 578, 94–101 (2020). doi: 10.1038/s4158602019433

Author(s)

Yoann Pradat

`ttheme_awesome` *Define theme for awesome table plot.*

Description

Define theme for awesome table plot.

Usage

```
ttheme_awesome(
  base_size = 8,
  base_colour = "black",
  base_family = "",
  core_size = 10,
  scale_breaks = 10,
  scale_ratio = 0.25,
  color_palette = "black",
  color_breaks = NULL,
  rep_mode = "col",
  parse = FALSE,
  size_unit = "mm",
  padding = c(0.3, 0.3),
  show_legend = TRUE,
  legend_position = NULL,
  legend_layout = NULL,
  legend_x = NULL,
  legend_y = NULL,
  legend_width = NULL,
  legend_height = NULL,
  legend_scale = 1.5,
  legend_title_fontsize = 12,
  legend_labels_fontsize = 10,
  legend_labels_pad = -1.2,
  ...
)
```

Arguments

`base_size`	default font size
`base_colour`	default font colour
`base_family`	default font family
`core_size`	cell size for core background grobs
`scale_breaks`	number of size categories for core foreground grobs or numeric vector of bin breaks
`scale_ratio`	ratio of minimum to maximum core foreground grobs sizes
`color_palette`	color palette for core foreground grobs
`color_breaks`	bin breaks for color palette for core foreground grobs
`rep_mode`	'col' or 'row'. Used when recycling fg_params or bg_params to make a matrix of params.

parse	logical, default behaviour for parsing text as plotmath
size_unit	character vector defining the unit used for sizes. See grid::unit for all possible specifications.
padding	length-2 vector specifying the horizontal and vertical padding of text within each cell
show_legend	(optional) set to FALSE to not draw any legend.
legend_position	(optional) choose between 'top_left', 'top_center' and 'top_right'.
legend_layout	(optional) Only 'columnwise' is supported for now.
legend_x	(optional) x position in 'npc' units of the left bottom corner of the viewport defining the scale legend. If NULL, the function will try to set it automatically using legend_position.
legend_y	(optional) y position in 'npc' units of the left bottom corner of the viewport defining the scale legend. If NULL, the function will try to set it automatically.
legend_width	(optional) width in 'npc' units of the viewport(s) defining legend(s). If NULL, the function will try to set it automatically.
legend_height	(optional) height in 'npc' units of the viewport(s) defining legend(s). If NULL, the function will try to set it automatically.
legend_scale	(optional) Scale factor that defines the size of the legend colorbar cells relatively to the main plot cells.
legend_title_fontsize	(optional) if NULL, font size is set to theme$colhead$fontsize.
legend_labels_fontsize	(optional) if NULL, font size is set to theme$colhead$fontsize.
legend_labels_pad	(optional) padding between the legend labels.
...	extra parameters added to the theme list

Value

a list of lists with each sublist defining parameters for the corresponding part of the plot. The parts are

- **core**: defines all graphical parameters for the grobs sizes, shapes and background of the table.
- **colhead**: defines all graphical parameters for the table column labels.
- **colmore**: defines all graphical parameters for the additional column descriptors.
- **rowhead**: defines all graphical parameters for the table row labels.
- **rowmore**: defines all graphical parameters for the additional row descriptors.
- **legend**: defines all graphical parameters for the legend.

Author(s)

Yoann Pradat

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