

Package ‘tableExtra’

September 9, 2025

Title Draws an Awesome Table

Version 1.1

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

License Apache License (>= 2.0)

Encoding UTF-8

LazyData true

Roxygen list(markdown = TRUE)

RoxygenNote 7.3.3

Suggests testthat,
dplyr,
tibble

Depends R (>= 3.5.0)

Imports gtable,
grid

Contents

tableExtra-package	1
draw_table_extra	2
get_table_extra_dimensions	4
gtable_extra	5
gtable_legend	6
ttheme_awesome	8

Index	11
--------------	-----------

tableExtra-package	<i>An easy-to-use tool for drawing paper-quality tables.</i>
--------------------	--

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](https://doi.org/10.1038/s4158602019433)

Author(s)

Yoann Pradat

draw_table_extra

*Graphical display of a table with grobs 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 = NULL,
  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"),
  dframes = NULL,
  colors_frames = NULL,
  lwd_frames = 3
)
```

Arguments

dscale	a matrix containing the values defining the grobs scales.
theme	a list of theme parameters. Use an instance of <code>ttheme_awesome</code> .
output	(optional) path to output file. If NULL (default), the plot is drawn to the active graphics device. If a path is provided, a PDF is saved.
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.
dframes	(optional) list of matrices of size (n,m) defining if a frame should be added to each cell or not. 1 at position i,j indicates to add a frame, any other value is ignored.
colors_frames	(optional) list of colors. Names of this list should names of dframes.
lwd_frames	(optional) the line width of frames if any.

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")

```

```
get_table_extra_dimensions
```

Get width and height of the plot.

Description

Compute the width and height in user-specified unit required for drawing the plot.

Usage

```

get_table_extra_dimensions(
  dscale,
  dcolor,
  theme,
  rows_more = NULL,
  cols_more = NULL,
  unit = "inches",
  dscale_title_legend = NULL,
  dcolor_title_legend = NULL,

```

```
margin_x = unit(1, "inches"),
margin_y = unit(1, "inches")
)
```

Arguments

<code>dscale</code>	a matrix containing the values defining the grobs scales.
<code>dcolor</code>	(optional) a matrix of size (n,m) containing the values defining the grobs colors.
<code>theme</code>	a list of theme parameters. Use an instance of <code>ttheme_awesome</code> .
<code>rows_more</code>	(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.
<code>cols_more</code>	(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.
<code>unit</code>	(optional) choose any unit that is valid for <code>grid::unit</code> .
<code>dscale_title_legend</code>	(optional) title for the colorbar providing a legend for scales.
<code>dcolor_title_legend</code>	(optional) title for the colorbar providing a legend for colors
<code>margin_x</code>	(optional) use it to fine-tune the width of the plot if some elements are not displayed correctly.
<code>margin_y</code>	(optional) use it to fine-tune the height of the plot if some elements are not displayed correctly.

Value

a list with dimensions of the global plot and of parts of the plot.

Author(s)

Yoann Pradat

<code>gtable_extra</code>	<i>Grob underlying graphical display of a table with grobs of varying scales and colours.</i>
---------------------------	---

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

<code>dscale</code>	a matrix containing the values defining the grobs scales.
<code>dcolor</code>	(optional) a matrix of size (n,m) containing the values defining the grobs colors.
<code>dscale_min</code>	(optional) value for setting the minimum scale size of foreground grobs. Entries in the <code>dscale</code> matrix below <code>dscale_min</code> will have a scale of 0 (no grob).
<code>dscale_max</code>	(optional) value for setting the maximum scale size of foreground grobs. Entries in the <code>dscale</code> matrix above <code>dscale_max</code> will have a scale of 1.
<code>rows</code>	(optional) a character vector.
<code>cols</code>	(optional) a character vector.
<code>rows_more</code>	(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.
<code>cols_more</code>	(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.
<code>theme</code>	a list of theme parameters. Use an instance of <code>ttheme_awesome</code> .
<code>vp</code>	optional viewport.

Value

A `gtable` object.

Author(s)

Yoann Pradat

See Also

[ttheme_awesome\(\)](#)

`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

<code>d</code>	data.frame or matrix
<code>labels</code>	tick labels displayed at legend tick marks
<code>widths</code>	optional unit.list specifying the grob widths
<code>heights</code>	optional unit.list specifying the grob heights
<code>fg_fun</code>	grob-drawing function
<code>fg_params</code>	named list of params passed to <code>fg_fun</code>
<code>bg_fun</code>	grob-drawing function
<code>bg_params</code>	named list of params passed to <code>bg_fun</code>
<code>title_x</code>	unit specifying the x position of the title
<code>title_y</code>	unit specifying the y position of the title
<code>title_label</code>	character vector
<code>title_gp</code>	graphical parameters of the title
<code>labels_pad</code>	padding between the text labels
<code>labels_gp</code>	graphical parameters of the text labels
<code>padding</code>	numeric vector specifying the padding between adjacent cells.
<code>size_unit</code>	character vector defining the unit used for sizes. See <code>grid::unit</code> for all possible specifications
<code>name</code>	name of the grob
<code>vp</code>	optional viewport
<code>orientation</code>	choose 'horizontal' or 'vertical'
<code>...</code>	additional parameters passed to <code>add_table_params</code> .

Value

A gtable object.

Author(s)

Yoann Pradat

ttheme_awesome	<i>Define theme for awesome table plot.</i>
----------------	---

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 <code>grid::unit</code> 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 <code>theme\$colhead\$fontsize</code> .
legend_labels_fontsize	(optional) if NULL, font size is set to <code>theme\$colhead\$fontsize</code> .
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

Index

* **export**

gtable_legend, 6

draw_table_extra, 2

get_table_extra_dimensions, 4

gtable_extra, 5

gtable_legend, 6

gtable_legend(), 3

gtable_table(), 3

tableExtra (tableExtra-package), 1

tableExtra-package, 1

ttheme_awesome, 8

ttheme_awesome(), 3, 6