

Package ‘ipeaplot’

August 31, 2026

Type Package

Title Add Ipea Editorial Standards to 'ggplot2' Graphics

Version 1.0.0

Maintainer Pedro Ferreira <pedro.ferreira2@ipea.gov.br>

Description Convenient functions to create 'ggplot2' graphics following the editorial guidelines of the Institute for Applied Economic Research (Ipea).

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URL <https://github.com/ipeadata-lab/ipeaplot>

BugReports <https://github.com/ipeadata-lab/ipeaplot/issues>

Depends R (>= 3.3.2)

Imports checkmate, ggplot2, grDevices, paletteer, scales, rlang, ggthemes, svglite, ragg

Suggests abjData, data.table, dplyr, forcats, knitr, patchwork, purrr, reshape, rmarkdown, sf, sysfonts, testthat (>= 3.0.0), tidyr, withr

VignetteBuilder knitr

Encoding UTF-8

Config/roxygen2/version 8.0.0

Config/testthat/edition 3

NeedsCompilation no

Author Pedro Ferreira [aut, cre],
Pedro Jorge [aut],
Daniel Lima [aut],
Gustavo Coelho [aut],
Rafael H. M. Pereira [aut],
Lucas Mation [aut],
Fabio Vaz [ctb],
Ipea - Institute for Applied Economic Research [cph, fnd]

Repository CRAN

Date/Publication 2026-08-31 17:00:22 UTC

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ipeaplot	<i>ipeaplot: ggplot Graphics in Ipea Standard</i>
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Description

Convenient functions to create ggplot graphics following the editorial guidelines of the Institute for Applied Economic Research - Ipea.

Usage

Please check the vignettes and data documentation on the [website](#).

Author(s)

Maintainer: Pedro Ferreira <pedro.ferreira2@ipea.gov.br>

Authors:

- Pedro Ferreira <pedro.ferreira2@ipea.gov.br>
- Pedro Jorge <pedro.alves@ipea.gov.br>
- Daniel Lima <daniel.viegas@ipea.gov.br>
- Gustavo Coelho <gustavo.coelho@ipea.gov.br>
- Rafael H. M. Pereira <rafa.pereira.br@gmail.com>
- Lucas Mation <lucas.mation@ipea.gov.br>

Other contributors:

- Fabio Vaz <fabio.vaz@ipea.gov.br> [contributor]
- Ipea - Institue for Applied Economic Research [copyright holder, funder]

See Also

Useful links:

- <https://github.com/ipeadata-lab/ipeaplot>
- Report bugs at <https://github.com/ipeadata-lab/ipeaplot/issues>

ipea_contrast_color	<i>Contrasting text colour for labels drawn over a fill colour</i>
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Description

Given one or more fill/background colours, returns "white" or "black", whichever gives better contrast against that background. Useful for value labels drawn inside bars or over points/lines, matching the Ipea editorial guidelines for graphics, which alternate the colour of data labels according to how dark the colour behind them is. See <https://www.ipea.gov.br/manualeditorial/padroes/padroes-grafico-visuais/ilustracoes-pi.html>.

Usage

```
ipea_contrast_color(background)
```

Arguments

background	A character vector of colours (hex codes or R colour names) used as the fill/background behind the label.
------------	---

Value

A character vector the same length as background, containing "white" or "black".

See Also

Other ggplot2 theme functions: [ipea_label_size\(\)](#), [scale_color_ipea\(\)](#), [scale_fill_ipea\(\)](#), [theme_ipea\(\)](#)

Examples

```
ipea_contrast_color(c("#29112F", "#D2A0C9"))

library(ggplot2)
df <- data.frame(grupo = c("A", "B"), valor = c(22.6, 4.7),
                 cor = c("#29112F", "#D2A0C9"))
ggplot(df, aes(grupo, valor, fill = cor, label = valor)) +
  geom_col() +
  geom_text(aes(color = ipea_contrast_color(cor)), size = ipea_label_size(),
            fontface = "bold") +
  scale_fill_identity() +
  scale_color_identity() +
  theme_ipea()
```

ipea_label_size	<i>Font size for data labels in Ipea graphics</i>
-----------------	---

Description

Converts a font size in points (pt) into the size argument/aesthetic (in mm) expected by `ggplot2::geom_text()`, `ggplot2::geom_label()` and similar geoms. `ggplot2` specifies text size for geoms in mm and internally converts it to points by multiplying by 2.845276 (72.27/25.4); this helper performs the inverse conversion so that labels are rendered at an exact point size.

Usage

```
ipea_label_size(pt = 6)
```

Arguments

pt	Numeric. Desired font size in points. Defaults to 6, the size used by the editorial guidelines of the Institute for Applied Economic Research (Ipea) for labels drawn over data (e.g. values on bars or lines). See https://www.ipea.gov.br/manualeditorial/padroes/padroes-grafico-visuais/ilustracoes-pi.html .
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Value

A numeric value (in mm) to be passed to the size argument/aesthetic of `ggplot2::geom_text()`, `ggplot2::geom_label()` or similar geoms.

See Also

Other `ggplot2` theme functions: [ipea_contrast_color\(\)](#), [scale_color_ipea\(\)](#), [scale_fill_ipea\(\)](#), [theme_ipea\(\)](#)

Examples

```
library(ggplot2)
ggplot(mtcars[1:5, ], aes(hp, mpg, label = round(mpg))) +
  geom_text(size = ipea_label_size(), colour = "black") +
  theme_ipea()
```

ipea_pal

*Ipea palette***Description**

Ipea palette

Usage

```
ipea_pal(
  palette = c("Blue", "Green", "Orange", "Pink", "Pink-Deep", "Green-Blue",
    "Green-Blue-White", "Red-Blue", "Red-Blue-White", "Orange-Blue", "Orange-Blue-White",
    "Viridis", "Inferno", "Magma", "Plasma", "Cividis", "NT", "NT-Categorical", "TD",
    "TD-Categorical"),
  alpha = 1,
  begin = 0,
  end = 1,
  palette_direction = 1
)
```

Arguments

palette	A character string indicating the color map option to use. These options are available: 'Blue', 'Green', 'Orange', 'Pink', 'Pink-Deep', 'Red-Blue', 'Orange-Blue', 'Green-Blue', 'Viridis', 'Inferno', 'Magma', 'Plasma', 'Cividis', 'NT', 'NT-Categorical', 'TD', 'TD-Categorical'.
alpha	The alpha transparency in a number between 0 and 1.
begin	The (corrected) hue in a number between 0 and 1 at which the color map begins.
end	The (corrected) hue in a number between 0 and 1 at which the color map ends.
palette_direction	Sets the order of colors in the scale. If 1, the default, colors are ordered from darkest to lightest. If -1, the order of colors is reversed.

Value

ipea_palette produces a character vector, cv, containing color hex codes. This vector can be utilized to establish a custom color scheme for future graphics using palette(cv), or it can be applied directly as a col = parameter in graphic functions or within par.

References

'Blue', 'Green', 'Orange', 'Pink', 'Pink-Deep', 'Green-Blue', 'Green-Blue-White', 'Red-Blue', 'Red-Blue-White', 'Orange-Blue', 'Orange-Blue-White', 'Viridis', 'Inferno', 'Magma', 'Plasma' and 'Cividis': https://pmassicotte.github.io/paletteer_gallery/ 'NT'/'TD' and their '-Categorical' variants: see ipea_palette().

Examples

```
scales::show_col(ipea_pal()(10))
scales::show_col(ipea_pal(palette_direction = -1)(6))
scales::show_col(ipea_pal(begin = 0.2, end = 0.8)(4))
scales::show_col(ipea_pal(palette = "Green")(6))
scales::show_col(ipea_pal(palette = "NT")(10))
scales::show_col(ipea_pal(palette = "TD-Categorical")(12))
```

ipea_palette

Ipea Color Palette and Scales

Description

This function creates a vector of n equally spaced colors along the selected color map.

Usage

```
ipea_palette(
  palette = c("Blue", "Green", "Orange", "Pink", "Pink-Deep", "Green-Blue",
    "Green-Blue-White", "Red-Blue", "Red-Blue-White", "Orange-Blue", "Orange-Blue-White",
    "Viridis", "Inferno", "Magma", "Plasma", "Cividis", "NT", "NT-Categorical", "TD",
    "TD-Categorical"),
  n,
  alpha = 1,
  begin = 0,
  end = 1,
  palette_direction = 1
)
```

Arguments

palette	A character string indicating the color map option to use. These options are available: 'Blue', 'Green', 'Orange', 'Pink', 'Pink-Deep', 'Red-Blue', 'Orange-Blue', 'Green-Blue', 'Red-Blue-White', 'Orange-Blue-White', 'Green-Blue-White', 'Viridis', 'Inferno', 'Magma', 'Plasma', 'Cividis', 'NT', 'NT-Categorical', 'TD', 'TD-Categorical'.
n	The number of colors (≥ 1) used in the palette.
alpha	The alpha transparency in a number between 0 and 1.
begin	The (corrected) hue in a number between 0 and 1 at which the color map begins.
end	The (corrected) hue in a number between 0 and 1 at which the color map ends.
palette_direction	Sets the order of colors in the scale. If 1, the default, colors are ordered from darkest to lightest. If -1, the order of colors is reversed.

Details

A 9-color Ipea palette.

Value

ipea_palette produces a character vector, cv, containing color hex codes. This vector can be utilized to establish a custom color scheme for future graphics using palette(cv), or it can be applied directly as a col = parameter in graphic functions or within par.

References

'Blue', 'Green', 'Orange', 'Pink', 'Pink-Deep', 'Green-Blue', 'Green-Blue-White', 'Red-Blue', 'Red-Blue-White', 'Orange-Blue', 'Orange-Blue-White', 'Viridis', 'Inferno', 'Magma', 'Plasma' and 'Cividis': https://pmassicotte.github.io/paletteer_gallery/ 'NT' and 'TD' are sequential palettes taken from the cover, section-title and chart colours of two Ipea editorial series (Nota Técnica and Texto para Discussao, respectively). 'NT-Categorical' and 'TD-Categorical' are qualitative 12-colour sets built from the same two publications, interleaving 6 shades of each of their two hues so that adjacent categories stay visually distinct. scale_color_ipea()/scale_fill_ipea() switch automatically from 'NT'/'TD' to their '-Categorical' variant when the mapped variable is discrete, so most users never need to type the '-Categorical' suffix themselves.

save_ipeaplot	<i>Save ggplot in multiple formats</i>
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Description

Unified function to save ggplot objects in one or more formats.

Usage

```
save_ipeaplot(
  gplot = ggplot2::last_plot(),
  file.name,
  format = NULL,
  width = 6.3,
  height = 3.94,
  units = c("in", "mm", "cm", "px"),
  dpi = 300,
  background = "white",
  quality = 95,
  path = ".",
  scale = 1,
  overwrite = TRUE,
  include_date = FALSE,
  date_format = "%Y%m%d",
  use_cairo = TRUE,
  use_ragg = TRUE,
  quiet = TRUE,
  ...
)
```

Arguments

gplot	ggplot object. Default: ggplot2::last_plot().
file.name	Base name of the file (without extension). E.g., "results/figs/my_plot".
format	Vector with one or more of: "eps", "jpg", "pdf", "png", "svg". If NULL, uses getOption("ipea.plot.default_format", "eps").
width, height	Plot dimensions (default 160 x 100).
units	Units: "mm", "cm", "in", "px" (default "in").
dpi	DPI for raster formats (default 300).
background	Background color; use NA for transparent PNGs. For JPEG (no transparency), NA becomes "white".
quality	JPEG quality (0 to 100) (default 95).
path	Output directory (default ".").
scale	Scale factor passed to ggsave (default 1).
overwrite	If FALSE, does not overwrite existing files: creates suffixes _1, _2, ... (default TRUE).
include_date	If TRUE, appends the date to the file name: _YYYYMMDD (default FALSE).
date_format	Date format (default "%Y%m%d").
use_cairo	Prefer using Cairo for PDF/EPS (default TRUE).
use_ragg	Prefer using ragg for PNG/JPG when available (default TRUE).
quiet	Suppress messages from ggsave when supported (default TRUE).
...	Passed to ggplot2::ggsave() (and therefore to the underlying graphics devices when applicable).

Value

Named (invisible) vector with the paths of the saved files.

scale_color_ipea	<i>Scale color IPEA</i>
------------------	-------------------------

Description

Generate a color palette (continuous or discrete) following the editorial guidelines used by the Institute for Applied Economic Research - Ipea.

Usage

```
scale_color_ipea(
  palette = c("Blue", "Green", "Orange", "Pink", "Pink-Deep", "Green-Blue",
    "Green-Blue-White", "Red-Blue", "Red-Blue-White", "Orange-Blue", "Orange-Blue-White",
    "Viridis", "Inferno", "Magma", "Plasma", "Cividis", "NT", "NT-Categorical", "TD",
    "TD-Categorical"),
  palette_direction = 1,
  decimal.mark = ",",
  barheight = NULL,
  barwidth = NULL,
  title.hjust = NULL,
  label.hjust = NULL,
  ...
)
```

Arguments

palette	A character vector specifying the available palette for the color palette. The default palette are "Blue", but we can also change to 'Green', 'Orange', 'Pink', 'Pink-Deep', 'Red-Blue', 'Orange-Blue', 'Green-Blue', 'Red-Blue-White', 'Orange-Blue-White', 'Green-Blue-White', 'Viridis', 'Inferno', 'Magma', 'Plasma', 'Cividis', 'NT', 'TD'. 'NT' and 'TD' automatically switch from their sequential (continuous) colours to a 12-colour qualitative set when the mapped variable is discrete – there is no need to request 'NT-Categorical'/'TD-Categorical' directly, though those names remain available for <code>ipea_pal()</code> / <code>ipea_palette()</code> .
palette_direction	A logical argument specifying if the ordering of the colors will follow the default of the palette (when the argument is 1) or if it will have an inverted ordering (for cases where it is -1).
decimal.mark	The character to be used to indicate the numeric decimal point and Character used between every 3 digits to separate thousands. By default, the function uses a comma ", ", following the format used in Brazilian Portuguese.
barheight	The height of the color gradient bar. This parameter is used when the direction is set to "horizontal".
barwidth	The width of the color gradient bar. This parameter is used when the direction is set to "horizontal".
title.hjust	A number specifying horizontal justification of the title text.
label.hjust	A number specifying vertical justification of the title text.
...	Additional arguments to be passed to the <code>scale_fill_gradientn</code> , <code>scale_color_gradientn</code> , <code>scale_fill_distiller</code> or <code>scale_color_distiller</code> function from the <code>ggplot2</code> package.

Value

A list object be added to a `ggplot` object to change color pallete.

See Also

Other ggplot2 theme functions: [ipea_contrast_color\(\)](#), [ipea_label_size\(\)](#), [scale_fill_ipea\(\)](#), [theme_ipea\(\)](#)

Examples

```
# Creating scale for ggplot2 graph using default arguments
library(ggplot2)
fig_raw <- ggplot() +
  geom_point(data = mtcars, aes(x = hp , y = mpg, color = cyl)) +
  scale_color_ipea()

# Creating scale for ggplot2 graph using green sequential palette
fig_raw <- ggplot() +
  geom_point(data = mtcars, aes(x = hp , y = mpg, color = cyl)) +
  scale_color_ipea(palette = "Green")

# "NT" uses the sequential magenta ramp for a numeric variable, and the
# 12-colour qualitative set for a discrete one, automatically
fig_raw <- ggplot() +
  geom_point(data = mtcars, aes(x = hp , y = mpg, color = factor(cyl))) +
  scale_color_ipea(palette = "NT")
```

scale_fill_ipea

Scale fill IPEA

Description

Generate a fill palette (continuous or discrete) in the formatting of texts published by the Institute for Applied Economic Research (IPEA)

Usage

```
scale_fill_ipea(
  palette = c("Blue", "Green", "Orange", "Pink", "Pink-Deep", "Green-Blue",
    "Green-Blue-White", "Red-Blue", "Red-Blue-White", "Orange-Blue", "Orange-Blue-White",
    "Viridis", "Inferno", "Magma", "Plasma", "Cividis", "NT", "NT-Categorical", "TD",
    "TD-Categorical"),
  palette_direction = 1,
  decimal.mark = ",",
  barheight = NULL,
  barwidth = NULL,
  title.hjust = NULL,
  label.hjust = NULL,
  ...
)
```

Arguments

palette	A character vector specifying the available palette for the color palette. The default palette are "Blue", but we can also change to 'Green', 'Orange', 'Pink', 'Pink-Deep', 'Red-Blue', 'Orange-Blue', 'Green-Blue', 'Red-Blue-White', 'Orange-Blue-White', 'Green-Blue-White', 'Viridis', 'Inferno', 'Magma', 'Plasma', 'Cividis', 'NT', 'TD'. 'NT' and 'TD' automatically switch from their sequential (continuous) colours to a 12-colour qualitative set when the mapped variable is discrete – there is no need to request 'NT-Categorical'/'TD-Categorical' directly, though those names remain available for <code>ipea_pal()</code> / <code>ipea_palette()</code> .
palette_direction	A logical argument specifying if the ordering of the colors will follow the default of the palette (when the argument is 1) or if it will have an inverted ordering (for cases where it is 0).
decimal.mark	The character to be used to indicate the numeric decimal point and Character used between every 3 digits to separate thousands. By default, the function uses a comma ", ", following the format used in Brazilian Portuguese.
barheight	The height of the color gradient bar. This parameter is used when the direction is set to "horizontal".
barwidth	The width of the color gradient bar. This parameter is used when the direction is set to "horizontal".
title.hjust	A number specifying horizontal justification of the title text.
label.hjust	A number specifying vertical justification of the title text.
...	Additional arguments to be passed to the <code>scale_fill_gradientn</code> , <code>scale_color_gradientn</code> , <code>scale_fill_distiller</code> or <code>scale_color_distiller</code> function from the <code>ggplot2</code> package

Value

A list object be added to a `ggplot` object to change color pallete.

See Also

Other `ggplot2` theme functions: [ipea_contrast_color\(\)](#), [ipea_label_size\(\)](#), [scale_color_ipea\(\)](#), [theme_ipea\(\)](#)

Examples

```
# Creating scale for ggplot2 graph using default arguments
library(ggplot2)
fig_raw <- ggplot() +
  geom_col(data = mtcars, aes(x = hp , y = mpg, fill = cyl)) +
  scale_fill_ipea()

# Creating scale for ggplot2 graph using green sequential palette
fig_raw <- ggplot() +
  geom_col(data = mtcars, aes(x = hp , y = mpg, fill = cyl)) +
  scale_fill_ipea(palette = "Green")

# "TD" uses the sequential blue ramp for a numeric variable, and the
```

```
# 12-colour qualitative set for a discrete one, automatically
fig_raw <- ggplot() +
  geom_col(data = mtcars, aes(x = hp , y = mpg, fill = factor(cyl))) +
  scale_fill_ipea(palette = "TD")
```

 theme_ipea

Ggplot theme for Ipea charts and figures

Description

Applies a custom theme for ggplot figures following the editorial guidelines used by the Institute for Applied Economic Research - Ipea. The function includes standardized formatting of options for axis lines, text,

Usage

```
theme_ipea(
  axis_lines = "full",
  axis_values = TRUE,
  legend.position = "bottom",
  grid.adjust = "horizontal",
  x_breaks = NULL,
  y_breaks = NULL,
  expand_x_limit = TRUE,
  expand_y_limit = TRUE,
  x_text_angle = 0,
  include_x_text_title = TRUE,
  include_y_text_title = TRUE,
  include_ticks = TRUE,
  ...
)
```

Arguments

axis_lines	A character vector specifying the axis style. Valid options are "none" (no axis lines), "full" (full-length axis lines), and "half" (half-length axis lines), the default.
axis_values	Logical value indicating whether to show text elements. If TRUE, axis text will be displayed in black; otherwise, they will be hidden.
legend.position	A character vector specifying the position of the legend. Valid options are "bottom" (default, matching the Ipea editorial guidelines), "right", "left", and "top".
grid.adjust	Defines whether the grid lines should be "horizontal" (default) or "vertical".
x_breaks	Numeric. The number of breaks on the x-axis
y_breaks	Numeric. The number of breaks on the y-axis

expand_x_limit	Logical value that indicates whether the x-axis boundary should be expanded. If TRUE, the x-axis limits will be expanded; otherwise there will be no change
expand_y_limit	Logical value that indicates whether the y-axis boundary should be expanded. If TRUE, the x-axis limits will be expanded; otherwise there will be no change
x_text_angle	Numeric. Angle in degrees of the text in the x-axis.
include_x_text_title	Logical. Whether to include x text title Defaults to TRUE.
include_y_text_title	Logical. Whether to include x text title. Defaults to TRUE.
include_ticks	Logical. Whether to include ticks. Defaults to TRUE.
...	Additional arguments to be passed to the theme function from the ggplot2 package.

Value

A custom theme for IPEA graphics.

See Also

Other ggplot2 theme functions: [ipea_contrast_color\(\)](#), [ipea_label_size\(\)](#), [scale_color_ipea\(\)](#), [scale_fill_ipea\(\)](#)

Examples

```
# Creating theme for ggplot2 graph using default arguments
library(ggplot2)
fig_raw <- ggplot() +
  geom_col(data = mtcars, aes(x = hp , y = mpg, fill = cyl)) +
  theme_ipea()
```

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