Package 'ekioplot'

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Type Package

Title EKIO Visual Identity for 'ggplot2'

Version 1.1.0

Description Implements EKIO's visual identity for data visualization with 'ggplot2'. Supplies a coordinated theme, color palettes, discrete and continuous scales, and helpers for accessible text contrast. Includes high-level recipes for common charts so analysts can create consistent, publication-ready graphics with concise code.

URL https://viniciusoike.github.io/ekioplot/, https://github.com/viniciusoike/ekioplot

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RoxygenNote 7.3.3

Imports cli, ggplot2 (>= 4.0.0), grDevices, rlang, systemfonts

Suggests dplyr, knitr, rmarkdown, testthat (>= 3.0.0), tibble, yaml

VignetteBuilder knitr

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Author Vinicius Oike [aut, cre, cph] (ORCID: <https://orcid.org/0009-0005-8015-9189>)

Maintainer Vinicius Oike <viniciusor@ekio.io>

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Contents

`brazil_agriculture` *Brazilian municipal crop production, 2022*

Description

Municipal production of soybeans, corn and sugarcane from IBGE's Municipal Agricultural Production Survey (PAM).

Usage

```
brazil_agriculture
```

Format

A tibble with 16,689 rows and 12 variables:

code_muni IBGE municipality code (numeric)

name_muni Municipality name (character)

name_state State name (character)

name_region Brazilian region (character)

crop Crop name (character)

production_tonnes Production volume, tonnes (numeric)

area_harvested_ha Harvested area, hectares (numeric)

yield Productivity, tonnes per hectare (numeric)

crop_type Crop cycle (character)

crop_category Crop category (character)

crop_importance Economic importance (character)

production_scale Production-scale category (integer)

Source

IBGE, Table 1612: Municipal Agricultural Production (PAM). https://sidra.ibge.gov.br/tabela/1612

References

IBGE. (2023). Produção Agrícola Municipal - PAM 2022.

`brazil_agriculture_states`

Brazilian state crop production, 1974–2023

Description

Annual production of seven major crops by Brazilian state from IBGE's Municipal Agricultural Production Survey (PAM).

Usage

```
brazil_agriculture_states
```

Format

A tibble with 9,450 rows and 8 variables:

code_state IBGE state code (numeric)

name_state State name (character)

year Observation year (numeric)

crop Crop name (character)

production_tonnes Production volume, tonnes (numeric)

area_harvested_ha Harvested area, hectares (numeric)

yield_kg_per_ha Productivity, kilograms per hectare (numeric)

production_value_brl_k Production value, thousands of Brazilian reais (numeric)

Details

Crops are beans, corn, cotton, rice, soybeans, sugarcane and wheat.

Source

IBGE, Table 1612: Municipal Agricultural Production (PAM). https://sidra.ibge.gov.br/tabela/1612

References

IBGE. (2023). Produção Agrícola Municipal - PAM 2022.

`brazil_gdp` *Brazilian municipal GDP, 2021*

Description

Municipal GDP for all 5,570 Brazilian municipalities, at current prices.

Usage

```
brazil_gdp
```

Format

A tibble with 5,570 rows and 7 variables:

code_muni IBGE municipality code (numeric)

name_muni Municipality name (character)

code_state IBGE state code (numeric)

name_state State name (character)

year Observation year (numeric)

gdp_brl_k GDP, thousands of Brazilian reais (numeric)

gdp_brl_m GDP, millions of Brazilian reais (numeric)

Source

IBGE, Table 5938: GDP and other aggregates by municipality. https://sidra.ibge.gov.br/tabela/5938

References

IBGE. (2023). Produto Interno Bruto dos Municípios - 2021.

brazil_population *Brazilian municipal population, 2025*

Description

Population estimates for Brazil's 338 municipalities with more than 100,000 inhabitants.

Usage

```
brazil_population
```

Format

A tibble with 338 rows and 5 variables:

rank Population rank (numeric)

name_muni Municipality name (character)

abbrev_state State abbreviation (character)

population 2025 population estimate (numeric)

category Ordered city-size category (factor)

Details

Categories are Metropolis (1M+), Large city (500K–1M), Medium city (200K–500K) and Small city (100K–200K).

Source

IBGE, Table 6579: Municipal population estimates. https://sidra.ibge.gov.br/tabela/6579

ekio_areaplot *EKIO Area Plot*

Description

Professional area plot with smart aesthetic detection. Supports stacked and filled (proportional) area charts.

Usage

```
ekio_areaplot(
  data,
  x,
  y,
  fill = NULL,
  palette = NULL,
  position = "stack",
  alpha = 1,
  title = NULL,
  subtitle = NULL,
  caption = NULL,
  ...
)
```

Arguments

`data`	A data frame
`x`	X-axis variable (supports data-masking)
`y`	Y-axis variable (supports data-masking)
`fill`	Fill aesthetic. A color string or a discrete variable. A continuous variable is an error: bin it or wrap it in `factor()`.
`palette`	Character. Palette name for variable mappings.
`position`	Character. Stacking method: `"stack"` (default) or `"fill"` for proportional areas.
`alpha`	Numeric. Fill transparency (default: 1).
`title, subtitle, caption`	Plot labels. NULL (default) draws none.
`...`	Additional arguments passed to `ggplot2::geom_area()`. These override the recipe's own geom defaults.

Value

ggplot2 object

Examples

```
ekio_areaplot(ggplot2::economics, date, unemploy)

# Stacked area with normalized economic series
economic_series <- subset(
  ggplot2::economics_long,
  variable %in% c("pce", "psavert", "uempmed")
)
ekio_areaplot(economic_series, date, value01, fill = variable)
```

`ekio_barplot` *EKIO Bar Plot*

Description

Professional bar plot with smart aesthetic detection.

Usage

```
ekio_barplot(
  data,
  x,
  y,
  fill = NULL,
  palette = NULL,
  horizontal = FALSE,
  bar_width = 0.8,
  title = NULL,
  subtitle = NULL,
  caption = NULL,
  ...
)
```

Arguments

`data`	A data frame
`x`	X-axis variable (supports data-masking)
`y`	Y-axis variable (supports data-masking)
`fill`	Fill aesthetic. A color string or a discrete variable. A continuous variable is an error: bin it or wrap it in `factor()`.
`palette`	Character. Palette name for variable mappings.
`horizontal`	Logical. Create horizontal bar plot (default: FALSE)
`bar_width`	Bar width (default: 0.8)
`title, subtitle, caption`	Plot labels. NULL (default) draws none.
`...`	Additional arguments passed to `ggplot2::geom_col()`. These override the recipe's own geom defaults.

Value

ggplot2 object

Examples

```
cyl_counts <- as.data.frame(table(cyl = mtcars$cyl))
names(cyl_counts)[2] <- "n"
ekio_barplot(cyl_counts, cyl, n)
```

`ekio_contrast` *WCAG Contrast Ratio Between Two Colors*

Description

Computes the contrast ratio between foreground and background colors as defined by WCAG 2.1. Ratios range from 1 (no contrast) to 21 (black on white). WCAG requires at least 4.5 for normal text (level AA), 3.0 for large text (AA), and 7.0 for normal text at level AAA.

Usage

```
ekio_contrast(color, background = "white")
```

Arguments

`color`	Character. Foreground color(s) as hex codes or R color names.
`background`	Character. Background color(s) (default: `"white"`). Recycled against `color` if needed.

Value

Numeric vector of contrast ratios between 1 and 21

See Also

`ekio_text_on()` to pick a readable text color for a background

Examples

```
ekio_contrast("black", "white")
ekio_contrast(ekio_pal("blue")["700"])
ekio_contrast("white", ekio_pal("blue"))
```

`ekio_histogram` *EKIO Histogram*

Description

Professional histogram with smart aesthetic detection.

Usage

```
ekio_histogram(
  data,
  x,
  fill = NULL,
  palette = NULL,
  bins = "sturges",
  binwidth = NULL,
  border_color = "white",
  title = NULL,
  subtitle = NULL,
  caption = NULL,
  ...
)
```

Arguments

`data`	A data frame
`x`	Variable to plot (supports data-masking)
`fill`	Fill aesthetic. A color string or a discrete variable. NULL uses EKIO blue. A continuous variable is an error: bin it or wrap it in `factor()`.
`palette`	Character. Palette name for variable mappings.
`bins`	Binning method: "sturges", "FD", "scott", or numeric.
`binwidth`	Width of bins (overrides bins if specified)
`border_color`	Color for histogram outline (default: "white")
`title, subtitle, caption`	Plot labels. NULL (default) draws none.
`...`	Additional arguments passed to `ggplot2::geom_histogram()`. These override the recipe's own geom defaults.

Value

ggplot2 object

Examples

```
ekio_histogram(mtcars, mpg)
ekio_histogram(mtcars, mpg, fill = "steelblue")
ekio_histogram(mtcars, mpg, fill = factor(cyl), palette = "full")
```

`ekio_lineplot` *EKIO Line Plot*

Description

Professional line plot with smart aesthetic detection.

Usage

```
ekio_lineplot(
  data,
  x,
  y,
  color = NULL,
  palette = NULL,
  add_zero = FALSE,
  line_width = 0.8,
  title = NULL,
  subtitle = NULL,
  caption = NULL,
  ...
)
```

Arguments

`data`	A data frame
`x`	X-axis variable (supports data-masking)
`y`	Y-axis variable (supports data-masking)
`color`	Color aesthetic. A color string or a discrete variable. A continuous variable is an error: bin it or wrap it in `factor()`.
`palette`	Character. Palette name for variable mappings.
`add_zero`	Logical. Add horizontal line at y=0 (default: FALSE)
`line_width`	Line thickness (default: 0.8)
`title, subtitle, caption`	Plot labels. NULL (default) draws none.
`...`	Additional arguments passed to `ggplot2::geom_line()`. These override the recipe's own geom defaults.

Value

ggplot2 object

Examples

```
ekio_lineplot(ggplot2::economics, date, unemploy)
```

`ekio_pal` *Get Color Palette*

Description

Returns colors for data visualization. Includes EKIO brand scales, accent and categorical palettes, and standard scientific palettes. When printed interactively, displays the palette as a colored swatch with hex labels.

Usage

```
ekio_pal(palette = "full", n = NULL, reverse = FALSE)
```

Arguments

`palette`	Character. Name of the palette. See `list_ekio_palettes()` for all available options.
`n`	Integer or NULL. Number of colors to return. If NULL, returns all, except `"accent_blue"` and `"accent_orange"`, which return four by default. For sequential and diverging palettes, `n` colors are interpolated across the full range. For the two variable-size accent palettes, `n` can be between 2 and 6. For `"gold"`, other categorical palettes, and scientific palettes, the first `n` colors are taken, interpolating only if `n` exceeds the palette length.
`reverse`	Logical. If TRUE, reverses the palette order.

Details

Brand scales (`"blue"`, `"gray"`, `"stone"`, `"teal"`, `"green"`, `"orange"`, `"red"`) are nine-step ramps running light to dark, named by shade. Position and shade are aligned by construction, so `ekio_pal("blue")[7]` and `ekio_pal("blue")["700"]` are the same color.

`"gold"` is an accent rather than a scale: three colors named `"light"`, `"mid"` and `"deep"`, because a nine-step gold ramp turns brown at the dark end. They sit on the same lightness rungs as scale shades 300, 400 and 500.

`"accent_blue"` and `"accent_orange"` put one main color before a sequence of receding grays. They return four colors by default; `n` can be set from 2 to 6 to match the number of series while keeping the main color first.

Value

Object of class `ekio_palette` (a character vector of hex codes). Printing displays a visual swatch. Use `as.character()` to strip the class.

Source

The brand scales are generated from one OKLCH specification in `data-raw/build-ramps.R`: a shared lightness spine anchored on the brand navy, a shared chroma arc, and a hue path per family. The scientific palettes come from matplotlib (`"viridis"`, `"inferno"`, `"plasma"`) and from Okabe & Ito (`"okabe_ito"`). Notices are in `inst/COPYRIGHTS`.

Examples

```
ekio_pal("full")
ekio_pal("full", n = 4)
ekio_pal("full", reverse = TRUE)
ekio_pal("accent_blue", n = 5)
ekio_pal("okabe_ito")

# Brand scales are named by shade; position i is shade i * 100
ekio_pal("blue")["700"]
ekio_pal("blue")[7]

# gold is an accent, named rather than numbered
ekio_pal("gold")["mid"]
```

---

ekio_scatterplot *EKIO Scatter Plot*

Description

Professional scatter plot with smart aesthetic detection.

Usage

```
ekio_scatterplot(
  data,
  x,
  y,
  color = NULL,
  size = NULL,
  palette = NULL,
  add_zero = FALSE,
  add_smooth = FALSE,
  smooth_method = "lm",
  point_size = 2.5,
  point_alpha = 0.8,
  title = NULL,
```

```
  subtitle = NULL,
  caption = NULL,
  ...
)
```

Arguments

`data`	A data frame
`x`	X-axis variable (supports data-masking)
`y`	Y-axis variable (supports data-masking)
`color`	Color aesthetic. A color string or a variable. A continuous variable warns and uses a sequential ramp.
`size`	Size aesthetic (optional variable)
`palette`	Character. Palette name for variable mappings.
`add_zero`	Logical. Add horizontal line at y=0 (default: FALSE)
`add_smooth`	Logical. Add smooth trend line (default: FALSE)
`smooth_method`	Smoothing method: "lm", "gam", "loess" (default: "lm")
`point_size`	Base point size (default: 2.5)
`point_alpha`	Point transparency (default: 0.8)
`title, subtitle, caption`	Plot labels. NULL (default) draws none.
`...`	Additional arguments passed to `ggplot2::geom_point()`. These override the recipe's own geom defaults.

Value

ggplot2 object

Examples

```
ekio_scatterplot(mtcars, wt, mpg)
ekio_scatterplot(mtcars, wt, mpg, color = factor(cyl))
```

---

ekio_text_on *Pick a Readable Text Color for a Background*

Description

Returns the text color (dark or light) with the higher WCAG contrast ratio against each background color. Useful for labels placed on colored fills, e.g. in `ggplot2::geom_text()`.

Usage

```
ekio_text_on(background, dark = "black", light = "white")
```

Arguments

background	Character. Background color(s) as hex codes or R color names.
dark	Character. Dark text color candidate (default: "black").
light	Character. Light text color candidate (default: "white").

Value

Character vector of text colors, one per background. Names of background are preserved.

See Also

ekio_contrast() for the underlying contrast ratios

Examples

```
ekio_text_on(ekio_pal("blue")["700"])
ekio_text_on(ekio_pal("blue"))
ekio_text_on(ekio_pal("full"), dark = ekio_pal("gray")["900"])
```

---

list_ekio_palettes *List Available Palettes*

Description

Returns names of all available palettes, optionally filtered by type.

Usage

```
list_ekio_palettes(type = "all")
```

Arguments

type	Character. Type of palettes to list: "accent", "categorical", "scientific", "sequential", "diverging", or "all" (default).

Value

Character vector of palette names, or named list if type = "all".

Examples

```
list_ekio_palettes()
list_ekio_palettes("categorical")
```

`scale_color_ekio_c` *Continuous Color Scale*

Description

Apply sequential or diverging palettes to continuous/numeric data.

Usage

```
scale_color_ekio_c(palette = "blue", reverse = FALSE, ...)

scale_colour_ekio_c(palette = "blue", reverse = FALSE, ...)

scale_fill_ekio_c(palette = "blue", reverse = FALSE, ...)
```

Arguments

`palette`	Character. Palette name (default: "blue"). See `list_ekio_palettes("sequential")` and `list_ekio_palettes("diverging")` for options.
`reverse`	Logical. If TRUE, reverses the color order.
`...`	Additional arguments passed to `ggplot2::scale_color_gradientn()`

Value

A ggplot2 scale object

See Also

`scale_fill_ekio_c()`, `list_ekio_palettes()`

Examples

```
library(ggplot2)
ggplot(mtcars, aes(wt, mpg, color = hp)) +
  geom_point(size = 3) +
  scale_color_ekio_c()

ggplot(mtcars, aes(wt, mpg, color = hp)) +
  geom_point(size = 3) +
  scale_color_ekio_c("stone")
```

scale_color_ekio_d *Discrete Color Scale*

Description

Apply qualitative palettes to discrete/categorical data.

Usage

```
scale_color_ekio_d(palette = "full", reverse = FALSE, ...)

scale_colour_ekio_d(palette = "full", reverse = FALSE, ...)

scale_fill_ekio_d(palette = "full", reverse = FALSE, ...)
```

Arguments

palette	Character. Palette name (default: "full"). See ekio_pal() for options.
reverse	Logical. If TRUE, reverses the palette order.
...	Additional arguments passed to ggplot2::discrete_scale()

Value

A ggplot2 scale object

See Also

ekio_pal(), scale_fill_ekio_d()

Examples

```
library(ggplot2)
ggplot(mtcars, aes(wt, mpg, color = factor(cyl))) +
  geom_point(size = 3) +
  scale_color_ekio_d()
```

theme_ekio *Apply EKIO Theme to ggplot2 Plots*

Description

A minimal, professional theme for EKIO visualizations built on ggplot2::theme_minimal().

Usage

```
theme_ekio(
  base_size = 11,
  font_title = "Lora",
  font_text = "Lato",
  title_align = "plot",
  grid = "y",
  ticks = "x",
  background = "offwhite",
  ...
)
```

Arguments

base_size	Numeric. Base font size in points (default: 11).
font_title	Character. Font family passed only to the chart title. Defaults to 'Lora'.
font_text	Character. Font family passed to all textual elements except the title. Defaults to 'Lato'.
title_align	Argument passed to ggplot2::theme(). Can be one of 'plot' or 'panel'.
grid	Character. Which major grid lines to show: "y" (default), "x", "xy", or "none". Only the requested grid themes are added.
ticks	Character. Which axis ticks and lines to show: "x" (default), "y", "xy", or "none". This is independent of grid.
background	Character. Plot and panel background: "offwhite" (default, #FEFEFE), "white" (#FFFFFF), "gray" (the brand gray.100), or "transparent".
...	Additional arguments passed to ggplot2::theme_minimal().

Value

A ggplot2 theme object

Examples

```
ggplot2::ggplot(mtcars, ggplot2::aes(wt, mpg)) +
  ggplot2::geom_point() +
  theme_ekio(font_title = "serif", font_text = "sans")
```

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