Package ‘vangogh’

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Title Vincent van Gogh Colour Palette Generator

Version 0.1.3

Description Provides 'ggplot2'-compatible colour palettes inspired by Vincent van Gogh's paintings. Each palette contains five colours, manually selected by hexadecimal values. Includes tools for assessing colour vision deficiency (CVD) accessibility.

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Imports ggplot2, rlang, methods, graphics, stats, utils

Suggests scales, knitr, rmarkdown, colorspace, jsonlite, dplyr, testthat (>= 3.0.0)

VignetteBuilder knitr

URL https://github.com/cherylisabella/vangogh

BugReports https://github.com/cherylisabella/vangogh/issues

NeedsCompilation no

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Depends R (>= 3.5.0)

Repository CRAN

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Contents

`check_all_vangogh_cvd` *Batch Check CVD Accessibility for All Palettes*

Description

Runs CVD accessibility checks across all Van Gogh palettes and returns a summary data frame. Useful for generating documentation and identifying the most accessible palettes.

Usage

```
check_all_vangogh_cvd(simulate = FALSE)
```

Arguments

`simulate`	Logical. If TRUE, displays simulations for each palette. Default FALSE.

Value

A data frame with CVD scores for all palettes

Examples

```
## Not run:
# Get scores for all palettes
all_scores <- check_all_vangogh_cvd()

# Find the most accessible palettes
library(dplyr)
all_scores %>%
  group_by(palette) %>%
```

```
  summarise(avg_distance = mean(min_distance)) %>%
  arrange(desc(avg_distance))

## End(Not run)
```

`check_palette` *Check palette accessibility with colorblind simulations*

Description

Uses `colorspace` to simulate common forms of colorblindness.

Usage

```
check_palette(name, type = "discrete", n = NULL)
```

Arguments

`name`	Palette name (character)
`type`	Either "discrete" or "continuous" (default "discrete")
`n`	Number of colors for continuous palettes

Examples

```
## Not run:
vangogh::check_palette("StarryNight")

## End(Not run)
```

`check_vangogh_cvd` *Check Color Vision Deficiency (CVD) Accessibility of Van Gogh Palettes*

Description

Simulates how a Van Gogh palette appears under different types of color vision deficiency and provides accessibility scores. This function complements the existing check_palette() function by adding visual simulation and quantitative metrics.

Usage

```
check_vangogh_cvd(
  palette_name,
  n = NULL,
  simulate = TRUE,
  return_scores = FALSE
)
```

Arguments

palette_name	Character string specifying the palette name (e.g., "StarryNight")
n	Integer. Number of colors to extract from palette. Default is NULL (uses all colors).
simulate	Logical. If TRUE, displays simulations for each CVD type. Default TRUE.
return_scores	Logical. If TRUE, returns detailed scoring data. Default FALSE.

Details

This function evaluates palette accessibility across three main types of color vision deficiency:

- Deuteranopia (red-green, affects ~5% of males)
- Protanopia (red-green, affects ~2% of males)
- Tritanopia (blue-yellow, affects ~0.01% of population)

The function uses the colorspace package for CVD simulation and calculates minimum pairwise perceptual distance in CIELAB color space to assess distinguishability.

Value

If return_scores = TRUE, returns a data frame with CVD scores. Otherwise, displays visual simulations and prints a summary.

Examples

```
## Not run:
# Visual simulation of StarryNight palette
check_vangogh_cvd("StarryNight")

# Get detailed scores without plotting
scores <- check_vangogh_cvd("Irises", simulate = FALSE, return_scores = TRUE)

# Check subset of colors
check_vangogh_cvd("CafeTerrace", n = 3)

## End(Not run)
```

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compare_palettes *Compare multiple Van Gogh palettes in a facet-style visualization*

Description

Compare multiple Van Gogh palettes in a facet-style visualization

Usage

```
compare_palettes(
  palettes,
  show_hex = TRUE,
  colorblind = FALSE,
  type = "discrete",
  n = NULL
)
```

Arguments

palettes	Character vector of palette names
show_hex	Logical: display hex codes
colorblind	Logical: simulate colorblind view
type	"discrete" or "continuous"
n	Number of colors for continuous palettes

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get_cvd_safe_palettes *Get CVD-Safe Van Gogh Palettes*

Description

Returns a list of Van Gogh palettes that meet minimum accessibility standards for color vision deficiency.

Usage

```
get_cvd_safe_palettes(
  min_distance = 15,
  cvd_types = c("deutan", "protan", "tritan")
)
```

Arguments

min_distance	Numeric. Minimum CIELAB distance threshold. Default 15.
cvd_types	Character vector. Which CVD types to check. Options: "deutan", "protan", "tritan". Default checks all.

Value

Character vector of palette names that meet the criteria

Examples

```
## Not run:
# Get highly accessible palettes
safe_palettes <- get_cvd_safe_palettes(min_distance = 20)

# Use a safe palette
ggplot(iris, aes(Sepal.Length, Sepal.Width, color = Species)) +
  geom_point() +
  scale_color_vangogh(safe_palettes[1])

## End(Not run)
```

`print_cvd_badge` *Print CVD Badge for README*

Description

Generates markdown badges for palette CVD accessibility ratings. Useful for including in README or documentation.

Usage

```
print_cvd_badge(palette_name)
```

Arguments

`palette_name`	Character string specifying the palette name

Value

Character string with markdown badge code

Examples

```
## Not run:
# Generate badge for StarryNight
print_cvd_badge("StarryNight")

# Generate badges for all palettes
for (p in names(vangogh_palettes)) {
  cat(p, ": ")
  print_cvd_badge(p)
}

## End(Not run)
```

safe_vangogh_palette *Generate a colorblind-safe Van Gogh palette*

Description

Returns the original palette (colorblind adjustment removed).

Usage

```
safe_vangogh_palette(name, type = "discrete", n = NULL, colorblind = FALSE)
```

Arguments

name	Palette name
type	Either "discrete" or "continuous"
n	Number of colors for continuous palettes
colorblind	Logical, kept for compatibility

scale_color_vangogh *Scale color with Van Gogh palettes*

Description

Scale color with Van Gogh palettes

Usage

```
scale_color_vangogh(name, discrete = TRUE, colorblind = FALSE, ...)

scale_colour_vangogh(name, discrete = TRUE, colorblind = FALSE, ...)
```

Arguments

name	Palette name
discrete	Logical: use discrete scale
colorblind	Logical: use colorblind-safe colors
...	Additional arguments to ggplot2 scale function

scale_fill_vangogh *Scale fill with Van Gogh palettes*

Description

Scale fill with Van Gogh palettes

Usage

```
scale_fill_vangogh(name, discrete = TRUE, colorblind = FALSE, ...)
```

Arguments

name	Palette name
discrete	Logical: use discrete scale
colorblind	Logical: use colorblind-safe colors
...	Additional arguments to ggplot2 scale function

summarize_cvd_accessibility *Summarize CVD Accessibility Across All Palettes*

Description

Creates a summary table of CVD accessibility for all palettes, useful for documentation and choosing palettes.

Usage

```
summarize_cvd_accessibility()
```

Value

A data frame with palette names and overall CVD metrics

Examples

```
## Not run:
summary <- summarize_cvd_accessibility()
print(summary)

# Find best palettes
best <- summary[summary$overall_rating == "Excellent", ]
print(best)

## End(Not run)
```

theme_vangogh *Theme inspired by Van Gogh (variants)*

Description

Theme inspired by Van Gogh (variants)

Usage

```
theme_vangogh(
  base_size = 12,
  base_family = "",
  variant = c("classic", "light", "dark", "sketch")
)
```

Arguments

base_size	numeric base font size
base_family	font family
variant	one of "classic", "light", "dark", "sketch"

vangogh_colors *Return all Van Gogh palettes as a tidy data frame*

Description

Return all Van Gogh palettes as a tidy data frame

Usage

```
vangogh_colors(
  n = NULL,
  type = "discrete",
  colorblind = FALSE,
  add_metadata = FALSE
)
```

Arguments

n	Number of colors per palette
type	"discrete" or "continuous"
colorblind	Logical (compatibility)
add_metadata	Logical: compute HCL metadata if colorspace available

vangogh_cvd_scores *CVD Accessibility Scores for Van Gogh Palettes*

Description

Pre-computed CVD accessibility scores for all Van Gogh palettes. This data is generated by running check_all_vangogh_cvd() and is included for quick reference without requiring the colorspace package.

Usage

```
vangogh_cvd_scores
```

Format

A data frame with CVD accessibility metrics:

palette Name of the Van Gogh palette

cvd_type Type of colour vision deficiency

min_distance Minimum CIELAB distance between colours (higher = more distinguishable)

accessibility Rating: Poor, Fair, Good, or Excellent

overall_rating Average accessibility across all CVD types

Details

Distance interpretation:

- < 10: Poor - colours may be indistinguishable
- 10-20: Fair - some difficulty distinguishing
- 20-40: Good - generally distinguishable
- > 40: Excellent - highly distinguishable

Examples

```
## Not run:
# View CVD scores
data(vangogh_cvd_scores)

# Find most accessible palettes
palette_summary <- aggregate(
  min_distance ~ palette,
  data = vangogh_cvd_scores,
  FUN = mean
)
palette_summary[order(-palette_summary$min_distance), ]

# Filter by CVD type
```

```
deutan_scores <- vangogh_cvd_scores[
  vangogh_cvd_scores$cvd_type == "Deuteranopia (red-green)",
]
deutan_scores[order(-deutan_scores$min_distance), ]

## End(Not run)
```

`vangogh_export` *Export palettes to JSON or CSV*

Description

Export palettes to JSON or CSV

Usage

```
vangogh_export(
  file,
  format = c("json", "csv"),
  n = NULL,
  type = "discrete",
  add_metadata = FALSE
)
```

Arguments

`file`	File path including filename
`format`	"json" or "csv"
`n`	Number of colors (for continuous palettes)
`type`	"discrete" or "continuous"
`add_metadata`	Logical: include HCL metadata if available

`vangogh_interpolate` *Interpolate a Van Gogh palette*

Description

Interpolate a Van Gogh palette

Usage

```
vangogh_interpolate(palette, n)
```

Arguments

`palette`	Vector of hex colors
`n`	Number of colors desired

vangogh_palette *A Van Gogh color palette generator.*

Description

These are some color palettes from a selection of Vincent van Gogh's paintings.

Usage

```
vangogh_palette(name, n, type = c("discrete", "continuous"))
```

Arguments

name	Name of desired palette. Choices are: StarryNight, StarryRhone, SelfPortrait, CafeTerrace, Eglise, Irises, SunflowersMunich, SunflowersLondon, Rest ,Bedroom , CafeDeNuit, Chaise, Shoes, Landscape, Cypresses
n	Number of colors desired. All palettes have a standard of 5 colors. If omitted, uses all colors.
type	Either "continuous" or "discrete". Use "continuous" to automatically interpolate between colours. @importFrom graphics rgb rect par image text

Value

A vector of colors.

Examples

```
vangogh_palette("StarryNight")
vangogh_palette("SelfPortrait")
vangogh_palette("Cypresses")
vangogh_palette("Cypresses", 3)

# If you want a continous paletted based on the colors already found in the preset
# palettes, you can interpolate between existing colours accordingly.
pal <- vangogh_palette(21, name = "StarryRhone", type = "continuous")
```

vangogh_palettes *Complete list of palettes:*

Description

Use vangogh_palette to construct palettes of desired length.

Usage

```
vangogh_palettes
```

Format

An object of class `list` of length 15.

`vangogh_palette_info` *Return palette info as a data frame with optional HCL*

Description

Return palette info as a data frame with optional HCL

Usage

```
vangogh_palette_info(colorblind = FALSE, add_metadata = FALSE)
```

Arguments

`colorblind`	Logical (compatibility)
`add_metadata`	Logical: compute HCL hue/chroma/luminance if colorspace is installed

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`vangogh_palette_info_with_cvd`
Add CVD Information to Palette Documentation

Description

Helper function to add CVD accessibility information to your existing palette information functions.

Usage

```
vangogh_palette_info_with_cvd(palette_name)
```

Arguments

`palette_name`	Character string specifying the palette name

Value

List with palette info and CVD scores

Examples

```
## Not run:
# Get enhanced palette info with CVD data
info <- vangogh_palette_info_with_cvd("StarryNight")
print(info$cvd_accessibility$summary)

## End(Not run)
```

vangogh_suggest *Suggest a palette based on number of colors*

Description

Suggest a palette based on number of colors

Usage

```
vangogh_suggest(n = 5, type = "discrete")
```

Arguments

n	Number of colors needed
type	"discrete" or "continuous"

viz_palette *Visualise a Van Gogh palette with optional colorblind simulation*

Description

Visualise a Van Gogh palette with optional colorblind simulation

Usage

```
viz_palette(
  name,
  show_hex = TRUE,
  colorblind = FALSE,
  type = "discrete",
  n = NULL
)
```

Arguments

name	Palette name
show_hex	Display hex codes (TRUE/FALSE)
colorblind	Show colorblind simulation (TRUE/FALSE)
type	Either "discrete" or "continuous"
n	Number of colors for continuous palettes

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