Package ‘viridisLite’

Type Package
Title Colorblind-Friendly Color Maps (Lite Version)
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Description Color maps designed to improve graph readability for readers with common forms of color blindness and/or color vision deficiency. The color maps are also perceptually-uniform, both in regular form and also when converted to black-and-white for printing. This is the 'lite' version of the 'viridis' package that also contains 'ggplot2' bindings for discrete and continuous color and fill scales and can be found at <https://cran.r-project.org/package=viridis>.
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Viridis Color Palettes

Description

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

Usage

\[
\text{viridis}(n, \alpha = 1, \text{begin} = 0, \text{end} = 1, \text{direction} = 1, \text{option} = "D")
\]
\[
\text{viridisMap}(n = 256, \alpha = 1, \text{begin} = 0, \text{end} = 1, \text{direction} = 1, \text{option} = "D")
\]
\[
\text{magma}(n, \alpha = 1, \text{begin} = 0, \text{end} = 1, \text{direction} = 1)
\]
\[
\text{inferno}(n, \alpha = 1, \text{begin} = 0, \text{end} = 1, \text{direction} = 1)
\]
\[
\text{plasma}(n, \alpha = 1, \text{begin} = 0, \text{end} = 1, \text{direction} = 1)
\]
\[
\text{cividis}(n, \alpha = 1, \text{begin} = 0, \text{end} = 1, \text{direction} = 1)
\]
\[
\text{rocket}(n, \alpha = 1, \text{begin} = 0, \text{end} = 1, \text{direction} = 1)
\]
\[
\text{mako}(n, \alpha = 1, \text{begin} = 0, \text{end} = 1, \text{direction} = 1)
\]
\[
\text{turbo}(n, \alpha = 1, \text{begin} = 0, \text{end} = 1, \text{direction} = 1)
\]

Arguments

- \text{\emph{n}}: The number of colors (\( \geq 1 \)) to be in the palette.
- \text{\emph{alpha}}: The alpha transparency, a number in [0,1], see argument alpha in \text{hsv}.
- \text{\emph{begin}}: The (corrected) hue in [0,1] at which the color map begins.
- \text{\emph{end}}: The (corrected) hue in [0,1] at which the color map ends.
- \text{\emph{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.
- \text{\emph{option}}: A character string indicating the color map option to use. Eight options are available:
  - "magma" (or "A")
  - "inferno" (or "B")
"plasma" (or "C")
"viridis" (or "D")
"cividis" (or "E")
"rocket" (or "F")
"mako" (or "G")
"turbo" (or "H")

Details

Here are the color scales:

magma(), plasma(), inferno(), cividis(), rocket(), mako(), and turbo() are convenience functions for the other color map options, which are useful when the scale must be passed as a function name.

Semi-transparent colors \((0 < \alpha < 1)\) are supported only on some devices: see rgb.

Value

viridis returns a character vector, cv, of color hex codes. This can be used either to create a user-defined color palette for subsequent graphics by palette(cv), a col = specification in graphics functions or in par.

viridisMap returns a \(n\) lines data frame containing the red (R), green (G), blue (B) and alpha (alpha) channels of \(n\) equally spaced colors along the selected color map. \(n = 256\) by default.
**Author(s)**

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**Examples**

```r
library(ggplot2)
library(hexbin)

dat <- data.frame(x = rnorm(10000), y = rnorm(10000))

ggplot(dat, aes(x = x, y = y)) +
  geom_hex() + coord_fixed() +
  scale_fill_gradientn(colours = viridis(256, option = "D"))

# using code from RColorBrewer to demo the palette
n = 200
image(
  1:n, 1, as.matrix(1:n),
  col = viridis(n, option = "D"),
  xlab = "viridis n", ylab = "", xaxt = "n", yaxt = "n", bty = "n"
)
```

---

**viridis.map**

**Color Map Data**

**Description**

A data set containing the RGB values of the color maps included in the package. These are:

- ‘magma’, ‘inferno’, ‘plasma’, and ‘viridis’ as defined in Matplotlib for Python. These color maps are designed in such a way that they will analytically be perfectly perceptually-uniform, both in regular form and also when converted to black-and-white. They are also designed to be perceived by readers with the most common form of color blindness. They were created by Stéfan van der Walt and Nathaniel Smith;
- ‘cividis’, a corrected version of ’viridis’, ’cividis’, developed by Jamie R. Nuñez, Christopher R. Anderton, and Ryan S. Renslow, and originally ported to R by Marco Sciaini. It is designed to be perceived by readers with all forms of color blindness;
- ‘rocket’ and ’mako’ as defined in Seaborn for Python;
- ‘turbo’, an improved Jet rainbow color map for reducing false detail, banding and color blindness ambiguity.

**Usage**

viridis.map
**Format**

A data frame with 2048 rows and 4 variables:

- R: Red value;
- G: Green value;
- B: Blue value;
- opt: The colormap "option" (A: magma; B: inferno; C: plasma; D: viridis; E: cividis; F: rocket; G: mako; H: turbo).

**Author(s)**

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**References**

- ‘cividis’: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0199239
- ‘rocket’ and ‘mako’: https://seaborn.pydata.org/index.html
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