# Package ‘viridisLite’

April 13, 2021

<table>
<thead>
<tr>
<th><strong>Type</strong></th>
<th>Package</th>
</tr>
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<tbody>
<tr>
<td><strong>Title</strong></td>
<td>Colorblind-Friendly Color Maps (Lite Version)</td>
</tr>
<tr>
<td><strong>Version</strong></td>
<td>0.4.0</td>
</tr>
<tr>
<td><strong>Maintainer</strong></td>
<td>Simon Garnier <a href="mailto:garnier@njit.edu">garnier@njit.edu</a></td>
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<tr>
<td><strong>Description</strong></td>
<td>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 <a href="https://cran.r-project.org/package=viridis">https://cran.r-project.org/package=viridis</a>.</td>
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<tr>
<td><strong>License</strong></td>
<td>MIT + file LICENSE</td>
</tr>
<tr>
<td><strong>Encoding</strong></td>
<td>UTF-8</td>
</tr>
<tr>
<td><strong>Depends</strong></td>
<td>R (&gt;= 2.10)</td>
</tr>
<tr>
<td><strong>Suggests</strong></td>
<td>hexbin (&gt;= 1.27.0), ggplot2 (&gt;= 1.0.1), testthat, covr</td>
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<tr>
<td><strong>URL</strong></td>
<td><a href="https://sjmgarnier.github.io/viridisLite/">https://sjmgarnier.github.io/viridisLite/</a>, <a href="https://github.com/sjmgarnier/viridisLite/">https://github.com/sjmgarnier/viridisLite/</a></td>
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<tr>
<td><strong>BugReports</strong></td>
<td><a href="https://github.com/sjmgarnier/viridisLite/issues/">https://github.com/sjmgarnier/viridisLite/issues/</a></td>
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<tr>
<td><strong>RoxygenNote</strong></td>
<td>7.1.1</td>
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<tr>
<td><strong>NeedsCompilation</strong></td>
<td>no</td>
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<tr>
<td><strong>Author</strong></td>
<td>Simon Garnier [aut, cre], Noam Ross [ctb, cph], Bob Rudis [ctb, cph], Marco Sciaini [ctb, cph], Antônio Pedro Camargo [ctb, cph], Cédric Scherer [ctb, cph]</td>
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<tr>
<td><strong>Repository</strong></td>
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<td><strong>Date/Publication</strong></td>
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**Viridis Color Palettes**

**Description**

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

**Usage**

- `viridis(n, alpha = 1, begin = 0, end = 1, direction = 1, option = "D")`
- `viridisMap(n = 256, alpha = 1, begin = 0, end = 1, direction = 1, option = "D")`
- `magma(n, alpha = 1, begin = 0, end = 1, direction = 1)`
- `inferno(n, alpha = 1, begin = 0, end = 1, direction = 1)`
- `plasma(n, alpha = 1, begin = 0, end = 1, direction = 1)`
- `cividis(n, alpha = 1, begin = 0, end = 1, direction = 1)`
- `rocket(n, alpha = 1, begin = 0, end = 1, direction = 1)`
- `mako(n, alpha = 1, begin = 0, end = 1, direction = 1)`
- `turbo(n, alpha = 1, begin = 0, end = 1, direction = 1)`

**Arguments**

- **n**: The number of colors (\( \geq 1 \)) to be in the palette.
- **alpha**: The alpha transparency, a number in [0,1], see argument alpha in `hsv`.
- **begin**: The (corrected) hue in [0,1] at which the color map begins.
- **end**: The (corrected) hue in [0,1] at which the color map ends.
- **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.
- **option**: A character string indicating the color map option to use. Eight options are available:
  - "magma" (or "A")
  - "inferno" (or "B")
Details

Here are the color scales:

- magma()
- plasma()
- inferno()
- cividis()
- rocket()
- mako()
- turbo()

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)

Simon Garnier: <garnier@njit.edu> / @sjmgarnier

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)

Simon Garnier: <garnier@njit.edu> / @sjmgarnier

References

- 'magma', 'inferno', 'plasma', and 'viridis': https://bids.github.io/colormap/
- '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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