# Package ‘viridis’

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<table>
<thead>
<tr>
<th>Type</th>
<th>Package</th>
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<tbody>
<tr>
<td>Title</td>
<td>Colorblind-Friendly Color Maps for R</td>
</tr>
<tr>
<td>Version</td>
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<tr>
<td>Maintainer</td>
<td>Simon Garnier <a href="mailto:garnier@njit.edu">garnier@njit.edu</a></td>
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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 package also contains `ggplot2` bindings for discrete and continuous color and fill scales. A lean version of the package called `viridisLite` that does not include the `ggplot2` bindings can be found at [https://cran.r-project.org/package=viridisLite](https://cran.r-project.org/package=viridisLite).

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**Encoding**  
UTF-8

**Depends**  
R (>= 2.10), viridisLite (>= 0.4.0)

**Imports**  
ggplot2 (>= 1.0.1), gridExtra

**Suggests**  
hexbin (>= 1.27.0), scales, MASS, knitr, dichromat, colorspace, htrr, mapproj, vdiffir, svglite (>= 1.2.0), testthat, covr, rmarkdown, maps, terra

**LazyData**  
true

**VignetteBuilder**  
knitr

**URL**  
https://sjmgarnier.github.io/viridis/,  
https://github.com/sjmgarnier/viridis/

**BugReports**  
https://github.com/sjmgarnier/viridis/issues

**RoxygenNote**  
7.3.1

**NeedsCompilation**  
no

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scale_fill_viridis

**Description**

Scale functions (fill and colour/color) for `ggplot2`. 

For `discrete == FALSE` (the default) all other arguments are as to `scale_fill_gradientn` or `scale_color_gradientn`. Otherwise the function will return a `discrete_scale` with the plot-computed number of colors. 

See `viridis` and `viridis.map` for more information on the color palettes.

**Usage**

```r
scale_fill_viridis(
  ..., 
  alpha = 1, 
  begin = 0, 
  end = 1, 
  direction = 1, 
  discrete = FALSE, 
  option = "D", 
  aesthetics = "fill"
)
```

```r
scale_color_viridis(
  ..., 
  alpha = 1, 
  begin = 0, 
  end = 1, 
  direction = 1, 
  discrete = FALSE, 
  option = "D",
```
scale_fill_viridis

    aesthetics = "color"
)

scale_colour_viridis(
    ...
    alpha = 1,
    begin = 0,
    end = 1,
    direction = 1,
    discrete = FALSE,
    option = "D",
    aesthetics = "color"
)

Arguments

... Parameters to discrete_scale if discrete == TRUE, or scale_fill_gradientn/
    scale_color_gradientn if discrete == FALSE.

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 as output by
    viridis_pal. If -1, the order of colors is reversed.

discrete Generate a discrete palette? (default: FALSE - generate continuous palette).

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")

aesthetics Character string or vector of character strings listing the name(s) of the aesthetic(s) that this scale works with. This can be useful, for example, to apply colour settings to the colour and fill aesthetics at the same time, via aesthetics = c("colour", "fill").

Author(s)

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Examples

library(ggplot2)

# Ripped from the pages of ggplot2
p <- ggplot(mtcars, aes(wt, mpg))
p + geom_point(size = 4, aes(colour = factor(cyl))) +
    scale_color_viridis(discrete = TRUE) +
    theme_bw()

# Ripped from the pages of ggplot2
dsub <- subset(diamonds, x > 5 & x < 6 & y > 5 & y < 6)
dsub$diff <- with(dsub, sqrt(abs(x - y)) * sign(x - y))
d <- ggplot(dsub, aes(x, y, colour = diff)) + geom_point()
d + scale_color_viridis() + theme_bw()

# From the main viridis example
dat <- data.frame(x = rnorm(10000), y = rnorm(10000))

ggplot(dat, aes(x = x, y = y)) +
    geom_hex() + coord_fixed() +
    scale_fill_viridis() + theme_bw()

library(ggplot2)
library(MASS)
library(gridExtra)

data("geyser", package="MASS")

ggplot(geyser, aes(x = duration, y = waiting)) +
    xlim(0.5, 6) + ylim(40, 110) +
    stat_density2d(aes(fill = ..level..), geom = "polygon") +
    theme_bw() +
    theme(panel.grid = element_blank()) -> gg

ggrid.arrange(
    gg + scale_fill_viridis(option = "A") + labs(x = "Viridis A", y = NULL),
    gg + scale_fill_viridis(option = "B") + labs(x = "Viridis B", y = NULL),
    gg + scale_fill_viridis(option = "C") + labs(x = "Viridis C", y = NULL),
    gg + scale_fill_viridis(option = "D") + labs(x = "Viridis D", y = NULL),
    gg + scale_fill_viridis(option = "E") + labs(x = "Viridis E", y = NULL),
    gg + scale_fill_viridis(option = "F") + labs(x = "Viridis F", y = NULL),
    gg + scale_fill_viridis(option = "G") + labs(x = "Viridis G", y = NULL),
    gg + scale_fill_viridis(option = "H") + labs(x = "Viridis H", y = NULL),
    ncol = 4, nrow = 2)

unemp

USA Unemployment in 2009
### Description

A data set containing the 2009 unemployment data in the USA by county.

### Usage

`unemp`

### Format

A data frame with 3218 rows and 8 variables:

- `id` the county ID number
- `state_fips` the state FIPS number
- `county_fips` the county FIPS number
- `name` the county name
- `year` the year
- `rate` the unemployment rate
- `county` the county abbreviated name
- `state` the state acronym

### Source


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### viridis_pal

#### Description

A wrapper function around `viridis` to turn it into a palette function compatible with `discrete_scale`.

#### Usage

```r
viridis_pal(alpha = 1, begin = 0, end = 1, direction = 1, option = "D")
```

#### Arguments

- `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")
• "plasma" (or "C")
• "viridis" (or "D")
• "cividis" (or "E")
• "rocket" (or "F")
• "mako" (or "G")
• "turbo" (or "H")

Details

See viridis and viridis.map for more information on the color palettes.

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Examples

library(scales)
show_col(viridis_pal()(12))
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