



R news and tutorials contributed by (573) R bloggers

- [Home](#)
- [About](#)
- [RSS](#)
- [add your blog!](#)
- [R jobs](#) 
- [Contact us](#)

Welcome!


Follow [@rbloggers](#) 21.4K

Here you will find daily **news and tutorials about R**, contributed by over 573 bloggers. There are many ways to **follow us** - [By e-mail:](#)

18521 readers


BY FEEDBURNER

[On Facebook:](#)



R blogg...
25k likes

Be the first of your friends to like this



If you are an R blogger yourself you are invited to [add your own R content feed to this site](#) (Non-English R bloggers should add themselves- [here](#))

[Jobs for R-users](#)

- [Data Scientist AWE](#)
- [Network Link analysis Consultant \(@ London\)](#)
- [Seeking R Programmers for long term contract role](#)
- [Senior Data Scientist \(for booking.com @ Amsterdam\)](#)
- [Senior Data Scientist – Machine Learning \(for booking.com @ Amsterdam\)](#)

Search & Hit Enter

Popular Searches

- [heatmap](#)
- [web scraping](#)
- [maps](#)
- [hadoop](#)
- [shiny](#)
- [twitterR](#)
- [boxplot](#)
- [animation](#)
- [trading](#)
- [ggplot2](#)
- [time series](#)
- [finance](#)
- [ggplot](#)
- [excel](#)
- [LaTeX](#)
- [pca](#)
- [quantmod](#)
- [eclipse](#)
- [market research](#)
- [googlevis](#)
- [rstudio](#)
- [how to import image file to R](#)
- [tutorial](#)
- [knitr](#)
- [rattle](#)
- [rmdr](#)
- [coplot](#)
- [GIS](#)
- [sweave](#)
- [ecdf](#)

Recent Posts

- [Going Bananas #2: A Needle In A Haystack](#)
- [Ternary Interpolation / Smoothing](#)
- [Producing a Control Chart in R – An Application in Analytical Chemistry](#)
- [Interview with a Data Scientist \(Hadley Wickham\)](#)
- [Survival Analysis – 1](#)
- [Two New R Packages – grencoder & passwordrandom](#)
- [Playing with leafletR](#)
- [Seattle's Fremont Bridge Bicyclists Again in the News](#)
- [\[ggtree\] annotate phylogenetic tree with local images](#)
- [Streamgraphs in R](#)
- [Rendering LaTeX Math Equations in GitHub Markdown](#)
- [Building a user interface for spatstat](#)
- [15 Questions All R Users Have About Plots](#)
- [MRAN's Packages Spotlight](#)
- [The little mixed model that could, but shouldn't be used to score surgical](#)

[performance](#)

Other sites

- [Jobs for R-users](#)
- [SAS blogs](#)
- [Statistics of Israel](#)

Choosing colour palettes. Part I: Introduction

May 29, 2012

By [ggplot2](#)Like Share 0 Tweet 0

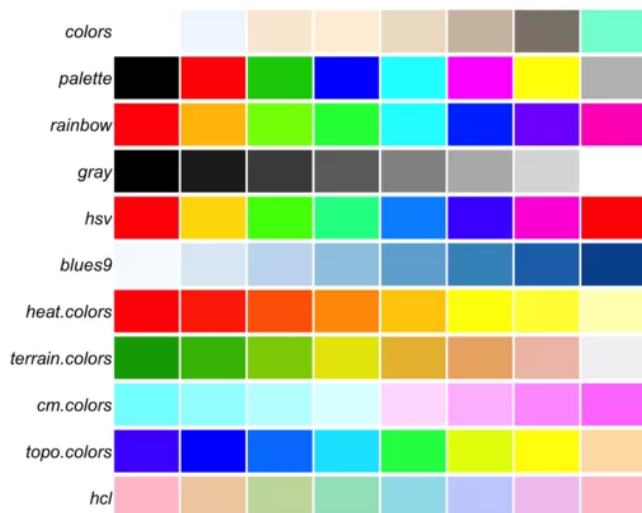
(This article was first published on [ggplot2](#), and kindly contributed to [R-bloggers](#))

In this series of three posts, we'll look at colours in R graphics produced with `ggplot2`: what are the available choices of colour schemes, and how to choose a colour palette most suitable for a particular graphic?

In kindergarten, choosing a colour was easy, palettes were limited to [a few classics](#). As cool kids grow older and use R, the spectrum expands to present us with overwhelming choice of millions of colours, most of them with poorly defined labels such as "#A848F2" or "lavenderblush3". Inasmuch as scientific graphics resemble a paint-by-numbers game, R can help us design more elegant palettes with pertinent colour choices based on the data to display.

Overview of basic colour functions in R

Base graphics rely mostly on the [grDevices](#) package for the selection of colours, with a few palettes to choose from:



(some palettes can have many more colours, this image is only an illustration of their structure)

The package also provides a number of basic operations to convert colours (`adjustcolor`, `col2rgb`, `make.rgb`, `rgb2hsv`, `convertColor`) and create interpolating palettes (`rgb`, `hsv`, `hcl`, `gray`, `colorRamp`, `colorRampPalette`, `densCols`, `gray.colors`).

Beyond that, a good resource is the [colorspace](#) package which provides further utilities to convert from one colorspace to another (HLS, HSV, LAB, LUV, RGB, sRGB, XYZ) and perform various operations on colours.

A special note can be made of a few palette functions, "diverge_hcl", "diverge_hsv", "heat_hcl", "rainbow_hcl", "sequential_hcl", "terrain_hcl", which provide an easy way to produce colour palettes following a particular path in the colour space (varying hue with constant luminosity and saturation, for example).

Other packages such as [RColorBrewer](#), [munsell](#) and [dichromat](#) provide more colour palettes and utilities.

While the combination of these tools is quite flexible, the user interface becomes a little bit chaotic. More recently, the [scales](#)

package has provided wrappers around these functions to provide some consistency in the naming schemes and organise the different categories of palettes in a structured way:

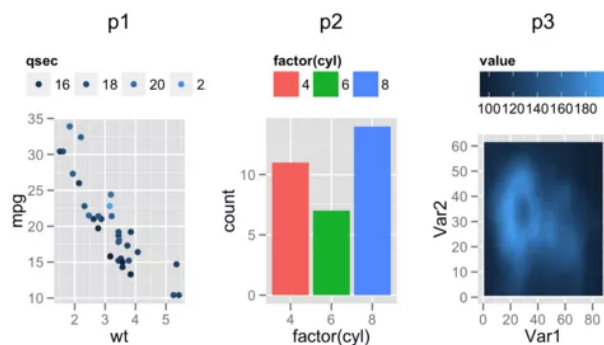
Utilities functions, such as `col2hcl`, `fullseq`, `muted`, `rescale`, `rescale_mid`, `rescale_none`, `rescale_pal`, `seq_gradient_pal`, `show_col`

Palettes with consistent interface, `brewer_pal`, `dichromat_pal`, `gradient_n_pal`, `div_gradient_pal`, `hue_pal`, `grey_pal`, `identity_pal`, `manual_pal`.

The `ggplot2` package uses scales internally, and mirrors this structure. In this first part, we'll review the basic commands to assign colours in `ggplot2`.

Colours in ggplot2

Let's consider three plots for illustration:



p1 maps the colour of points to a continuous variable, p2 maps the fill of bars to a discrete variable, and p3 maps the fill of tiles to a continuous variable.

Colour vs fill aesthetic

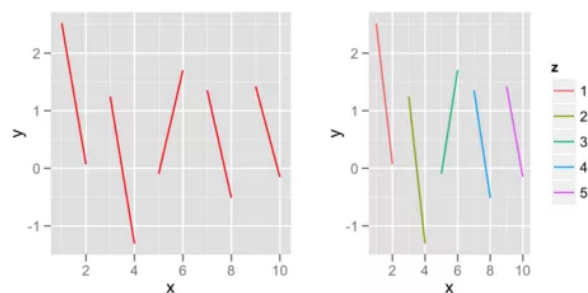
Fill and colour scales in `ggplot2` can use the same palettes. Some shapes such as lines only accept the colour aesthetic, while others, such as polygons, accept both colour and fill aesthetics. In the latter case, the colour refers to the border of the shape, and the fill to the interior.

Aesthetic mapping vs set values

Another common source of confusion, general to `ggplot2`, is the distinction between set values and mapped values in a layer. Consider the following example,

```
d = data.frame(x = 1:10, y = rnorm(10), z = gl(5, 2))
a = ggplot(d, aes(x, y, group=z))

grid.arrange(a + geom_path( colour = "red" ),
             a + geom_path( aes(colour = z ) ),
             nrow=1)
```



Continuous scales

The default continuous scale in `ggplot2` is a blue gradient, from low = `"#132B43"` to high = `"#56B1F7"` which can be reproduced as

```
scales::seq_gradient_pal(low = "#132B43", high = "#56B1F7", space = "Lab")
```



Discrete scales

The default discrete scale in `ggplot2` is a range of hues from `hcl`,

```
scales::hue_pal(h = c(0, 360) + 15, c = 100, l = 65, h.start = 0,
  direction = 1)
```



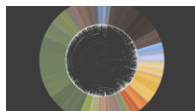
In the next post of this series we'll describe how one can fine-tune or change altogether these default colours, and, perhaps more importantly, give some pointers on choosing an appropriate colour scheme for a particular graphic.

[Source code for the graphs](#)

Related



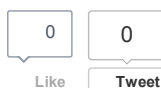
Choosing colour palettes. Part II: Educated Choices.
In "R bloggers"



Colourful Ecology Part I: Selecting colours for scientific figures from an image using community ecology methods
In "R bloggers"



Cindy Brewer: helping you choose better color scales for maps
In "R bloggers"



Share

To leave a comment for the author, please follow the link and comment on his blog: [ggplot2](#).

[R-bloggers.com](#) offers [daily e-mail updates](#) about [R](#) news and [tutorials](#) on topics such as: visualization ([ggplot2](#), [Boxplots](#), [maps](#), [animation](#)), programming ([RStudio](#), [Sweave](#), [LaTeX](#), [SQL](#), [Eclipse](#), [git](#), [hadoop](#), [Web Scraping](#)) statistics ([regression](#), [PCA](#), [time series](#), [trading](#)) and more...

If you got this far, why not **subscribe for updates** from the site?
Choose your flavor: [e-mail](#), [twitter](#), [RSS](#), or [facebook](#)...

Like Share Tweet

Tags: [colorspace](#), [colours](#), [dichromat](#), [ggplot2](#), [graphics](#), [grDevices](#), [munsell](#), [palette](#), [presentation](#), [R](#), [scales](#), [tutorial](#)

Comments are closed.

Top 3 Posts from the past 2 days

- [Interview with a Data Scientist \(Hadley Wickham\)](#)
- [In-depth introduction to machine learning in 15 hours of expert videos](#)
- [Installing R packages](#)

Search & Hit Enter

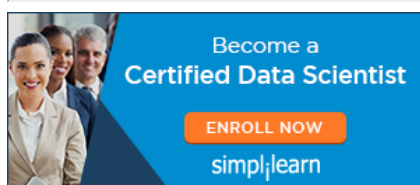
Top 9 articles of the week

1. [In-depth introduction to machine learning in 15 hours of expert videos](#)
2. [15 Questions All R Users Have About Plots](#)
3. [But I Don't Want to Be a Statistician!](#)
4. [Installing R packages](#)
5. [Using apply, sapply, lapply in R](#)
6. [R tutorial on the Apply family of functions](#)
7. [Hadley Wickham on why he created all those R packages](#)

8. [The most popular programming languages on StackOverflow](#)
9. [Streamgraphs in R](#)

Sponsors







Search & Hit Enter

[Full list of contributing R-bloggers](#)

[R-bloggers](#) was founded by [Tal Galili](#), with gratitude to the [R](#) community.

Is powered by [WordPress](#) using a [bavotasan.com](#) design.

Copyright © 2015 **R-bloggers**. All Rights Reserved. [Terms and Conditions](#) for this website