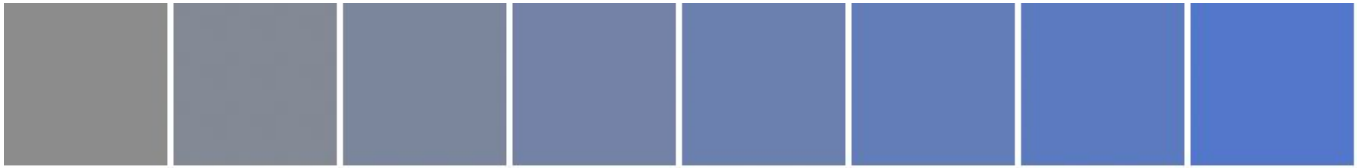
Colors in R, Python, and JS/HTML/CSS

Terminology

Hue

Lightness

Saturation /chroma

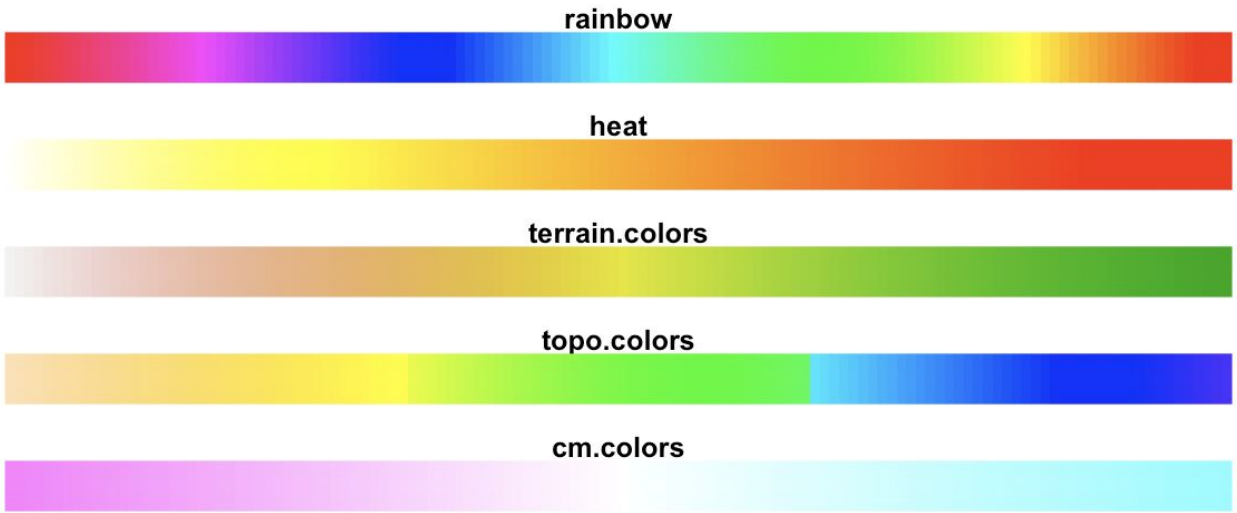


Colors Palettes in R

1. ***R base color palettes***
2. ***Packages:***
   - 2.1. ***Viridis***
   - 2.2. ***RColorBrewer***
   - 2.3. ***colorspace***

Colors Palettes in R

- ***R base color palettes:***
  - rainbow
  - heat.colors
  - cm.colors
  - terrain.colors
  - topo.colors

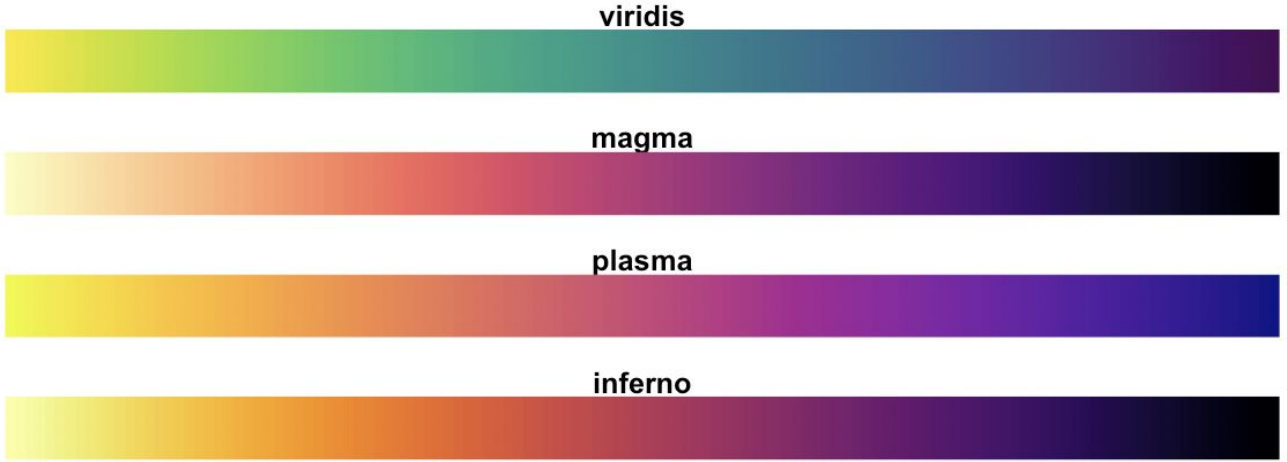


- Example

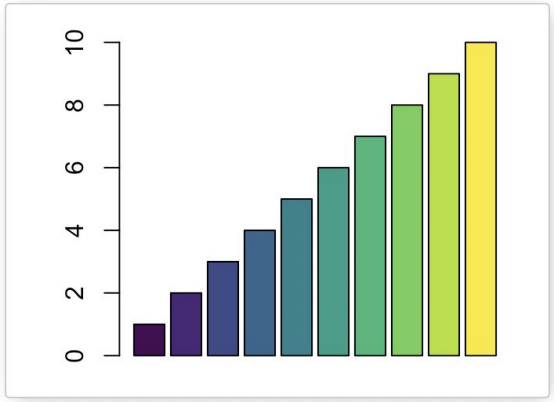
```
# Use heat.colors
barplot(1:5, col=heat.colors(5))
# Use terrain.colors
barplot(1:5, col=terrain.colors(5))
```

Colors Palettes in R

- ***Package: Viridis***
  - “viridis”
  - “magma”
  - “plasma”
  - “inferno”




```
barplot(1:10, col = viridis(10))
```



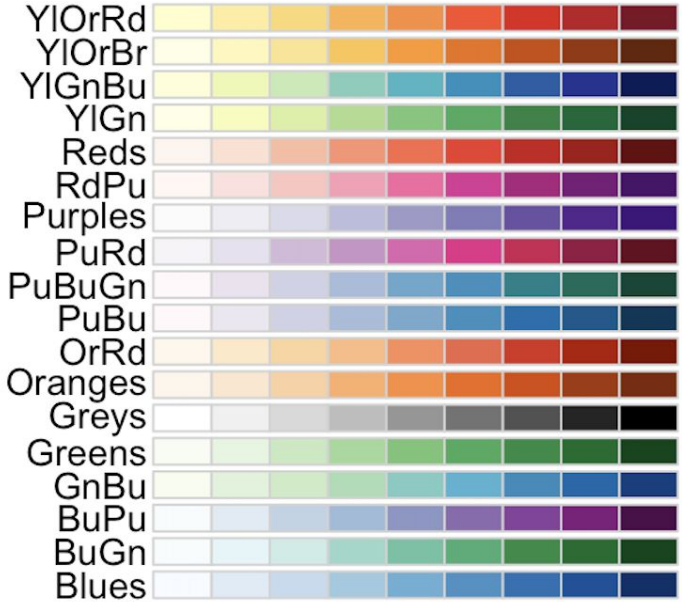
Eg.: viridis(n), where n is the number of colors to return

Colors Palettes in R

- ***Package: RColorBrewer***
  - scale_fill_brewer() for box plot, bar plot, violin plot, dot plot, etc
  - scale_color_brewer() for lines and points(eg. scatter plot)

```
library(RColorBrewer)
display.brewer.all()
```

Sequential



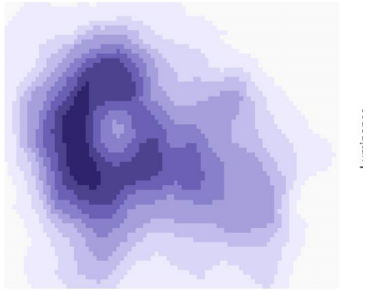
Qualitative

Diverging

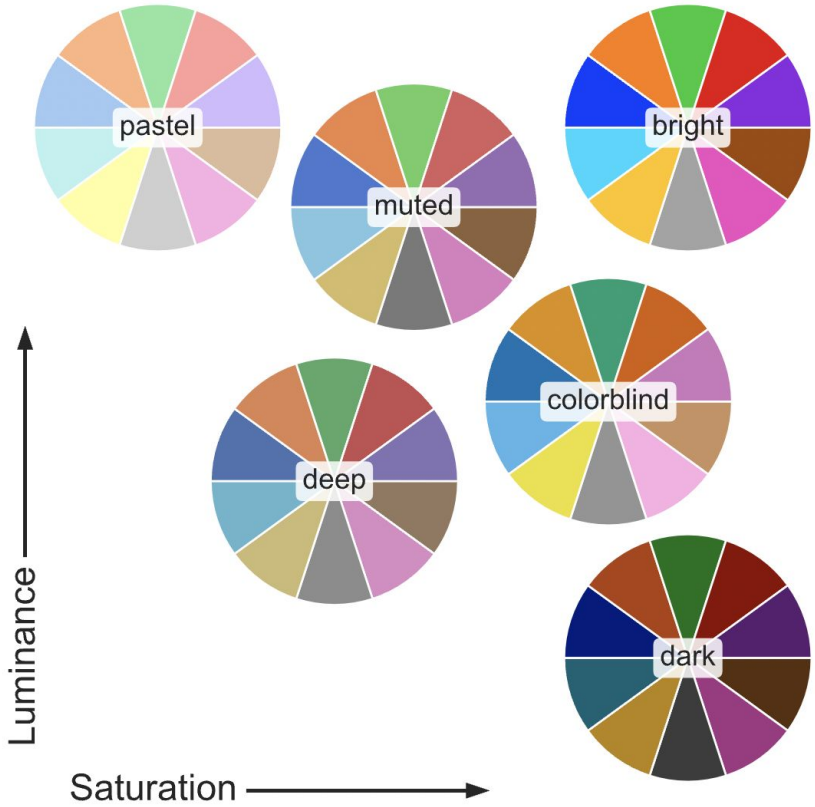
Colors Palettes in R

- ***Package: colorspace***
  - heat_hcl
  - rainbow_hcl
  - terrain_hcl
  - diverging_hcl
  - sequential_hcl
  - qualitative_hcl

```
s9 <- sequential_hcl(9, "Purples 3"
demoplot(s9, "heatmap")
hclplot(s9)
specplot(s9, type = "o")
```



Colors Palettes in Python



- ***Package: Seaborn (Qualitative palettes)***

--for categorical data

- pastel
- muted
- bright
- deep
- colorblind
- dark

Colors Palettes in Python

```
sns.color_palette("rocket", as_cmap=True)
```

suffix "_r" for reversed version

```
sns.color_palette("mako", as_cmap=True)
```

```
sns.color_palette("rocket_r", as_cmap=True)
```

```
sns.color_palette("flare", as_cmap=True)
```

```
sns.color_palette("magma", as_cmap=True)
```

```
sns.color_palette("crest", as_cmap=True)
```

```
sns.color_palette("viridis", as_cmap=True)
```

- ***Package: Seaborn (Sequential palettes)***

--for numerical data

- rocket
- mako
- flare
- crest
- magma
- viridis

Colors Palettes in Python

- ***Package: Seaborn (Sequential cubehelix palettes)***

```
sns.color_palette("cubehelix", as_cmap=True)
```

```
sns.cubehelix_palette(as_cmap=True)
```

```
sns.color_palette("ch:s=-.2,r=.6", as_cmap=True)
```

```
sns.cubehelix_palette(start=.5, rot=-.5, as_cmap=True)
```

```
sns.color_palette("ch:start=.2,rot=-.3", as_cmap=True)
```

```
sns.cubehelix_palette(start=.5, rot=-.75, as_cmap=True)
```

```
sns.cubehelix_palette(start=2, rot=0, dark=0, light=.95, reverse=True, as_cmap=True)
```

Colors Palettes in Python

- ***Package: Seaborn(Diverging palettes)***

```
sns.color_palette("Spectral", as_cmap=True)
```

```
sns.color_palette("coolwarm", as_cmap=True)
```

```
sns.color_palette("icefire", as_cmap=True)
```

```
sns.color_palette("vlag", as_cmap=True)
```

- *Customized diverging palettes*
- *(parameters: hue1, hue2, lightness(opt), saturation(opt))*

```
sns.diverging_palette(145, 300, s=60, as_cmap=True)
```

Colors in JS/HTML/CSS

Hexadecimal color is in the form of "#RRGGBB", where RR (red), GG (green) and BB (blue) are hexadecimal integers between 00 and FF specifying the intensity of the color.

#f0f0f0

```
rgb(240, 240, 240)
hsl(0, 0%, 94%)
```

HEX: #f0f0f0	HEX: #eaece5	HEX: #bccad6	HEX: #cfe0e8
HEX: #c5d5c5	HEX: #b2c2bf	HEX: #8d9db6	HEX: #b7d7e8
HEX: #9fa9a3	HEX: #c0ded9	HEX: #667292	HEX: #87bdd8
HEX: #e3e0cc	HEX: #3b3a30	HEX: #f1e3dd	HEX: #daebe8
HEX: #e4d1d1	HEX: #f0efef	HEX: #fbefcc	HEX: #fff2df
HEX: #b9b0b0	HEX: #ddeedd	HEX: #f9ccac	HEX: #d9ad7c
HEX: #d9ecd0	HEX: #c2d4dd	HEX: #f4a688	HEX: #a2836e
HEX: #77a8a8	HEX: #b0aac0	HEX: #e0876a	HEX: #674d3c
HEX: #c8c3cc	HEX: #e0e2e4	HEX: #f9d5e5	HEX: #5b9aa0
HEX: #563f46	HEX: #c6bcb6	HEX: #eeac99	HEX: #d6d4e0
HEX: #8ca3a3	HEX: #96897f	HEX: #e06377	HEX: #b8a9c9
HEX: #484f4f	HEX: #625750	HEX: #c83349	HEX: #622569

Colors in JS/HTML/CSS

Resources:

https://cran.r-project.org/web/packages/viridis/index.html

https://bids.github.io/colormap/

https://r-graph-gallery.com/38-rcolorbrewers-palettes.html

https://cran.r-project.org/web/packages/colorspace/index.html

https://seaborn.pydata.org/tutorial/color_palettes.html

https://www.w3schools.com/colors/colors_palettes.asp

https://htmlcolorcodes.com/