《R语言商务图表与数据可视化》

第五章——R语言数据可视化用色规范与案例实战

本章目录

5.1 R语言基础预设配色系统

基础预设色——colors（657）

colors()[1:5]

五大预设调色板

- Rainbow(n)
- heat.colors (n)
- terrain.colors (n)
- topo.colors (n)
- cm.colors (n)

自定义组合调色板

colorRampPalette(c("red", "green"))(n)

灰度调色板

gray(0:n/n)[1:
5]

hsv自定义调色板
（饱和度、亮度、色相、透明度）

hsv(h = 1, s = 1, v = 1, alpha)[1:n]

```
scale_fill_manual(values = sample(mycolor,7))
```

- limits   #可用类型（离散）/度量区间范围（连续）

- breaks   #指定显示刻度位置

- labels   #对应刻度位置图例文本标签

- values   #对应类别呈现的颜色（透明度、大小、形状、线条、线条等），仅用于自定义标度场景（scale_xxx_manual()）
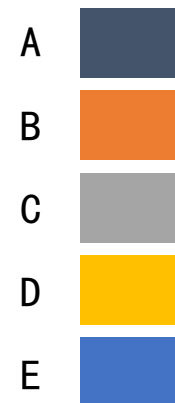
关于默认情况下显示的颜色与分类变量子类别顺序如何匹配，是否可以自定义？

A

1、如果分类变量不是有序因子变量：

B

1.1 默认情况下values顺序与类别变量的名称首字母顺序一一对应

C

1.2 如果values对应的色值向量是一个命名向量，且名称为类别变量的类别名称，则最终颜色会与类别一一对应

D

E

2、 有序因子变量情况下，图例顺序与颜色顺序一致，与因子顺序（自上而下由低到高）

```
color <- c('A' = 'red', 'B' = 'grey', 'C' = 'orange', 'D' = 'yellow',
'E' = 'green')
```

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5.2 配色系统及扩展包接口调用

配色函数接口　colorBrewer

- scale_fill/colour_brewer()
- scale_fill/colour_distiller()

- 离散颜色组合色板
- 离散颜色转化为连续化色彩空间

arguments

Type:	Direction	Palette
seq (sequential), div (diverging) or qual (qualitative)	Sets the order of colors in the scale. If 1, the default, colors are as output by brewer.pal. If -1, the order of colors is reversed.	If a string, will use that named palette. If a number, will index into the list of palettes of appropriate type

palettes

Diverging	Qualitative	Sequential
BrBG, PiYG, PRGn, PuOr, RdBu, RdGy, RdYlBu, RdYlGn, Spectral	Accent, Dark2, Paired, Pastel1, Pastel2, Set1, Set2, Set3	Blues, BuGn, BuPu, GnBu, Greens, Greys, Oranges, OrRd, PuBu, PuBuGn, PuRd, Purples, RdPu, Reds, YlGn, YlGnBu, YlOrBr, YlOrRd

5.2 配色系统及扩展包接口调用

配色函数接口

- `scales::brewer_pal()`

```
brewer_pal(type = "seq", palette = 1, direction = 1)


show_col(brewer_pal()(10))
show_col(brewer_pal("div")(5))
show_col(brewer_pal(palette = "Greens")(5))


# Can use with gradient_n to create a continous
gradient
cols <- brewer_pal("div")(5)
show_col(gradient_n_pal(cols)(seq(0, 1, length.out =
30)))
```

#A6611A	#AF6E28	#B77B36	#BF8843	#C79651	#CFA35E
#D6B16C	#DDBF7A	#E2C789	#E6CE9A	#EAD5AA	#EDDCBA
#F0E3CB	#F2EADC	#F4F1ED	#EDF2F1	#DEEDEA	#CEE7E3
#BFE2DC	#AFDCD4	#9ED7CD	#8DD1C6	#7DCABE	#6FC0B3
#61B6A7	#53AC9C	#45A291	#359886	#228F7C	#018571

5.3 R语言RcolorBrewer在线配色网站及其使用详解

作为视觉信号字典的颜色：
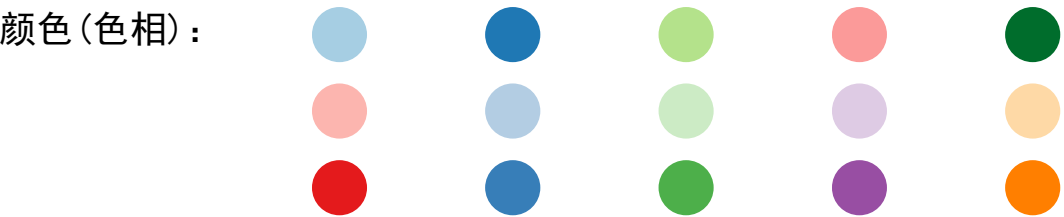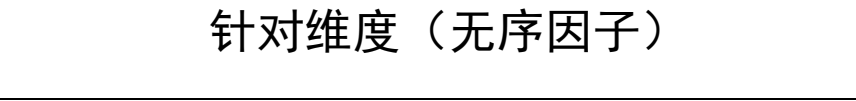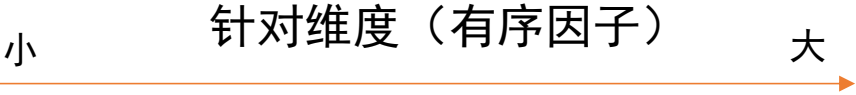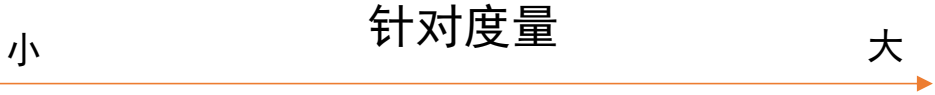
5.3 R语言RcolorBrewer在线配色网站及其使用详解
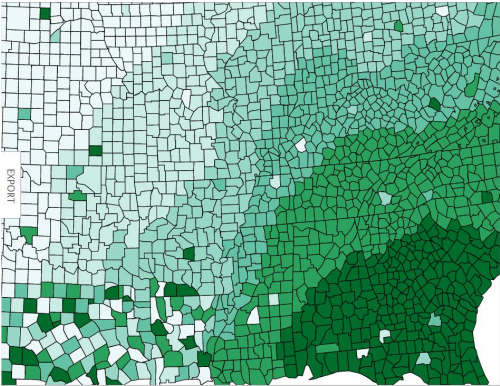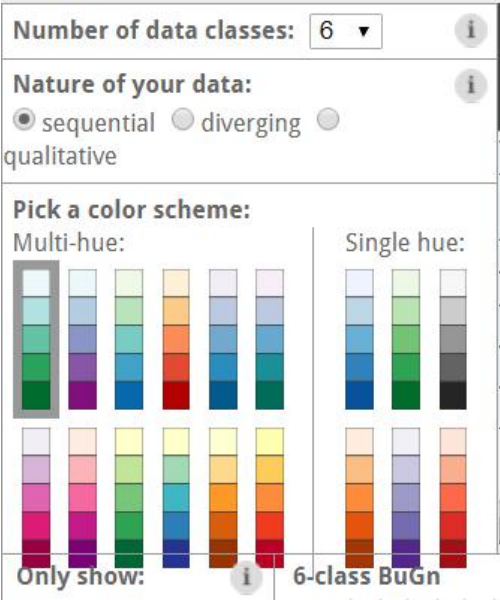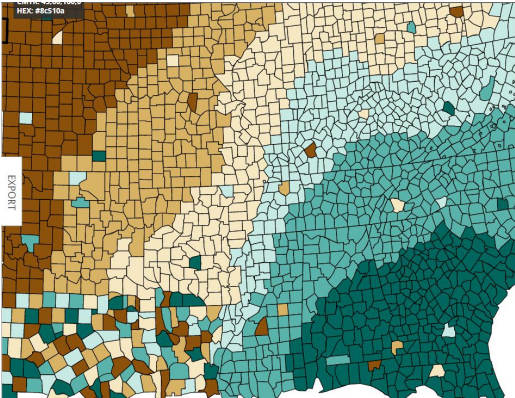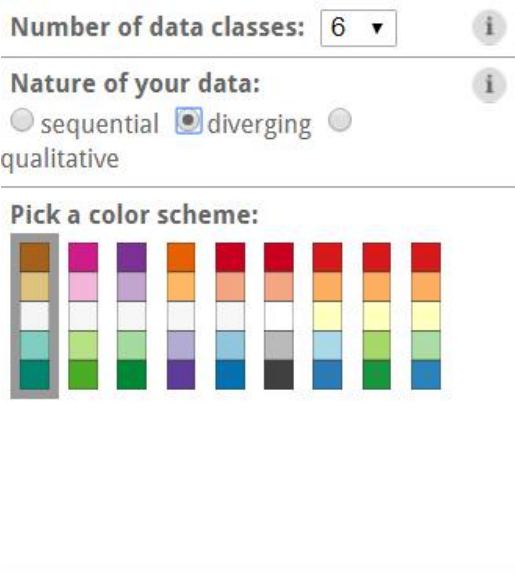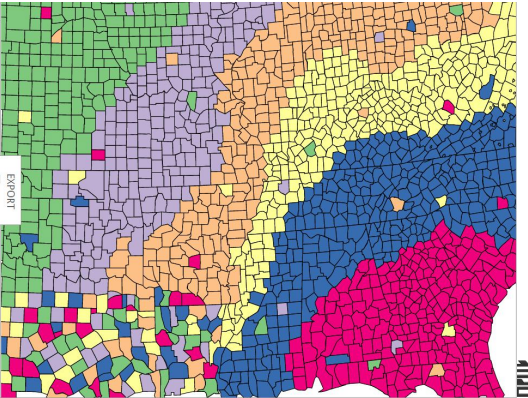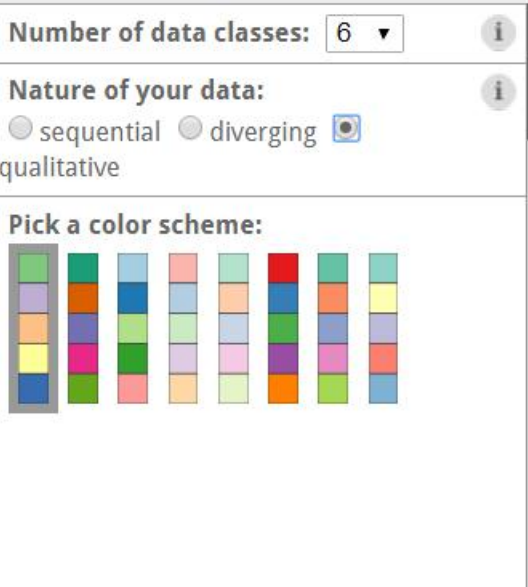
5.3 R语言RcolorBrewer在线配色网站及其使用详解

第三方扩展配色包

• RcolorBrewer

通过display函数可以查看不同类型的色板：

```
display.brewer.all(type = "all")        #查看所有色板
display.brewer.all(type = "seq")        #查看单色渐变色
板
display.brewer.all(type = "div")        #查看双色渐变色
板
display.brewer.all(type = "qual")       #查看离散（分类）
色板
```
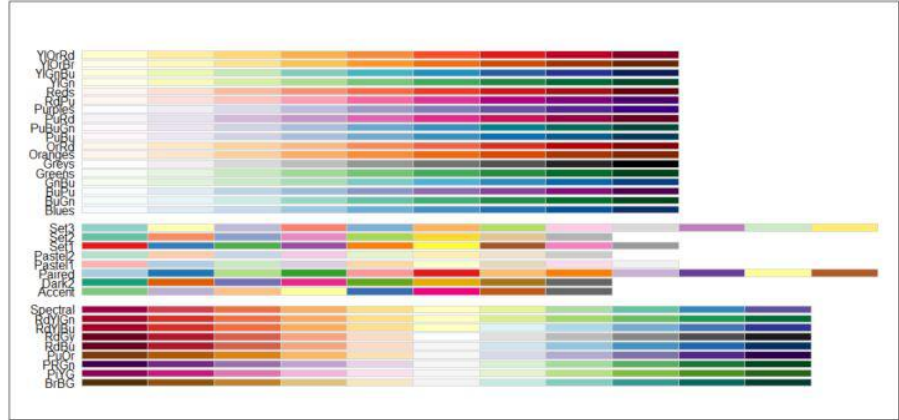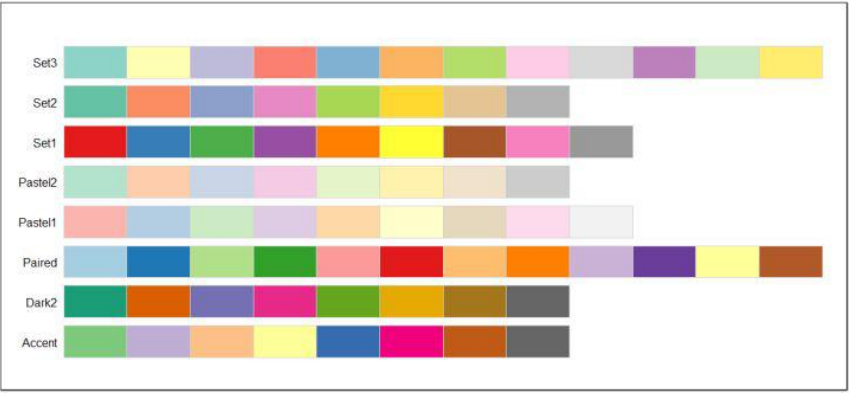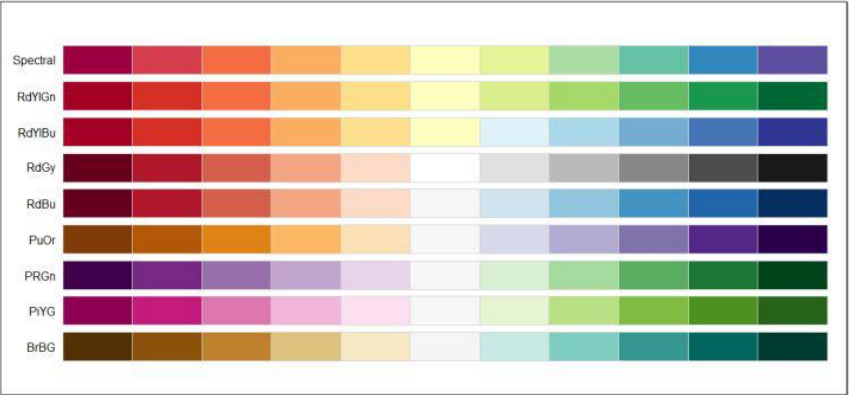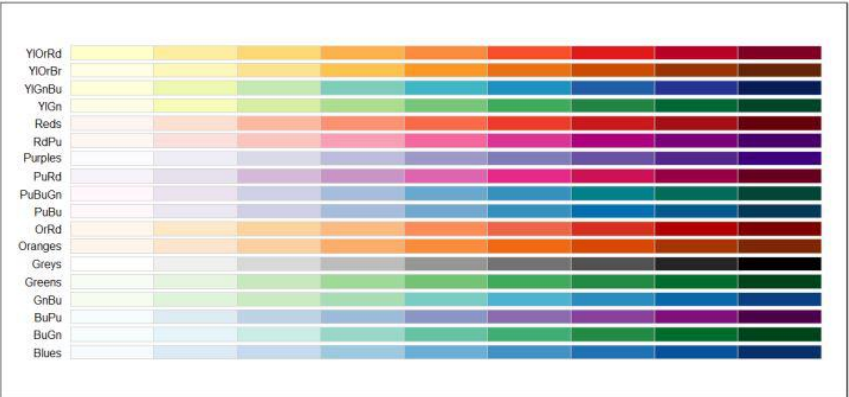
5.3 R语言RcolorBrewer在线配色网站及其使用详解

第三方扩展配色包

- RcolorBrewer

通过display函数可以查看不同类型的色板：

```
display.brewer.all(type = "all")        #查看所有色板
display.brewer.all(type = "seq")        #查看单色渐变色
板
display.brewer.all(type = "div")        #查看双色渐变色
板
display.brewer.all(type = "qual")       #查看离散（分类）
色板
display.brewer.pal(9, "BuGn")

brewer.pal(9, "BuGn")
```


BuGn (sequential)

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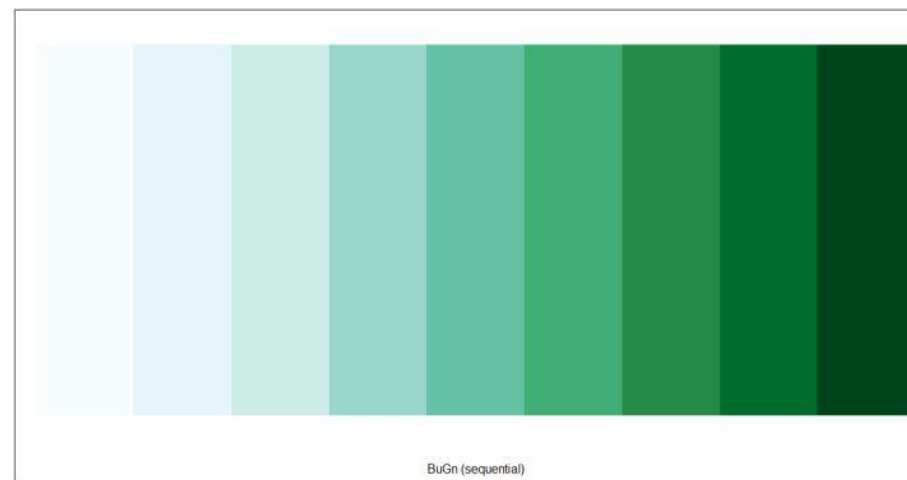
5.4 ggthemes主题包简介

第三方扩展配色包

- ggthemes

ggthemes包原本是转为ggplot2包开发的辅助包（前面加的前缀——gg就可以看出来，这种包还有很多），里面提供了大量高质量的主题、颜色方案。其中就有我们所熟知的economist主题方案以及wsj方案，还有诸如stata、excel、tableau、solarized、tufte等主题方案。

```
library(ggthemes)
m1<=economist_pal()(6)
show_col(m1)


scale_colour_economist(stata =
FALSE, ...)
scale_color_wsj(stata = FALSE, ...)
scale_fill_economist(stata =
FALSE, ...)
```

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```
show_col(ggthemes_data$wsj$bg)                          #背景色
show_col(ggthemes_data$wsj$palettes$rgby)               #rgby
show_col(ggthemes_data$wsj$palettes$red_green)          #red_green
show_col(ggthemes_data$wsj$palettes$black_green)        #black_green
show_col(ggthemes_data$wsj$palettes$dem_rep)            #dem_rep
show_col(ggthemes_data$wsj$palettes$colors6)            #colors6
```
《经济学人》
```
show_col(ggthemes_data$economist$bg)                    #背景色
show_col(ggthemes_data$economist$fg)                    #主题色
show_col(ggthemes_data$economist$stata)                 #基于stata的配
色方案
```

5.4 ggthemes主题包简介

第三方扩展配色包 • ggthemes

- 预设配色模板

  scale_colour/fill_economist(stata =
  FALSE, ...)
  scale_colour/fill_wsj(stata = FALSE, ...)

- 预设主题模板

theme_wsj()
theme_economist()

tableau_color_pal	Color Palettes based on Tableau (discrete)
tableau_div_gradient_pal	Tableau diverging colour gradient palettes (continuous)
tableau_seq_gradient_pal	Tableau sequential colour gradient palettes (continuous)
tableau_shape_pal	Tableau Shape Palettes (discrete)
theme_base	Theme Base
theme_calc	Theme Calc
theme_economist	ggplot color theme based on the Economist
theme_economist_white	ggplot color theme based on the Economist
theme_excel	ggplot color theme based on old Excel plots
theme_few	Theme based on Few's "Practical Rules for Using Color in Charts"
theme_fivethirtyeight	Theme inspired by fivethirtyeight.com plots
theme_foundation	Foundation Theme
theme_gdocs	Theme with Google Docs Chart defaults
theme_hc	Highcharts JS theme
theme_igray	Inverse gray theme
theme_map	Clean theme for maps
theme_pander	A ggplot theme originated from the pander package
theme_par	Theme which takes its values from the current 'base' graphics parameter values in 'par'.
theme_solarized	ggplot color themes based on the Solarized palette
theme_solarized_2	ggplot color themes based on the Solarized palette
theme_solid	Theme with nothing other than a background color
theme_stata	Themes based on Stata graph schemes
theme_tufte	Tufte Maximal Data, Minimal Ink Theme
theme_wsj	Wall Street Journal theme
tremmel_shape_pal	Shape palette from Tremmel (1995) (discrete)

scale_color_calc	LibreOffice Calc color scales
scale_color_canva	Discrete color scale using canva.com color palettes
scale_color_colorblind	Colorblind Color Palette (Discrete) and Scales
scale_color_continuous_tableau	Tableau sequential colour scale (continuous)
scale_color_economist	Economist color scales
scale_color_excel	Excel color scales
scale_color_few	Color scales from Few's "Practical Rules for Using Color in Charts"
scale_color_fivethirtyeight	fivethirtyeight.com color scales
scale_color_gdocs	Google Docs color scales
scale_color_gradient2_tableau	Tableau diverging colour scales (continuous)
scale_color_gradient_tableau	Tableau sequential colour scale (continuous)
scale_color_hc	Highcharts color and fill scales
scale_color_pander	Color scale from the pander package
scale_color_ptol	Color Scales from Paul Tol's "Colour Schemes
scale_color_solarized	Solarized color scales
scale_color_stata	Stata color scales
scale_color_tableau	Tableau color scales.
scale_color_wsj	Wall Street Journal color and fill scales
scale_colour_calc	LibreOffice Calc color scales
scale_colour_canva	Discrete color scale using canva.com color palettes
scale_colour_colorblind	Colorblind Color Palette (Discrete) and Scales
scale_colour_economist	Economist color scales
scale_colour_excel	Excel color scales
scale_colour_few	Color scales from Few's "Practical Rules for Using Color in Charts"
scale_colour_fivethirtyeight	fivethirtyeight.com color scales
scale_colour_gdocs	Google Docs color scales
scale_colour_gradient2_tableau	Tableau diverging colour scales (continuous)
scale_colour_gradient_tableau	Tableau sequential colour scale (continuous)
scale_colour_hc	Highcharts color and fill scales
scale_colour_pander	Color scale from the pander package
scale_colour_ptol	Color Scales from Paul Tol's "Colour Schemes
scale_colour_solarized	Solarized color scales
scale_colour_stata	Stata color scales
scale_colour_tableau	Tableau color scales.
scale_colour_wsj	Wall Street Journal color and fill scales
scale_fill_calc	LibreOffice Calc color scales
scale_fill_canva	Discrete color scale using canva.com color palettes
scale_fill_colorblind	Colorblind Color Palette (Discrete) and Scales
scale_fill_continuous_tableau	Tableau sequential colour scale (continuous)
scale_fill_economist	Economist color scales
scale_fill_excel	Excel color scales
scale_fill_few	Color scales from Few's "Practical Rules for Using Color in Charts"
scale_fill_fivethirtyeight	fivethirtyeight.com color scales
scale_fill_gdocs	Google Docs color scales
scale_fill_gradient2_tableau	Tableau diverging colour scales (continuous)

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5.5 其他配色类扩展包简介——ggtech、ggthemer、ggsci

第三方扩展配色包

ggtech、ggthemer、ggsci

```
library(ggtech)
library(ggthemer)
library(ggsci)
```

- ggtech

  ```
  scale_fill_tech(theme="airbnb")+
  theme_airbnb_fancy()
  ```

  ```
  theme_tech(theme="facebook") +
    scale_fill_tech(theme="facebook")
  ```

  ```
  theme_tech(theme="google") +
    scale_fill_tech(theme="google")
  ```

  ```
  theme_tech(theme="twitter") +
    scale_fill_tech(theme="twitter")
  ```

- ggthemr

  ```
  ggthemr('dust')
  ```

  ```
  ggplot()+geom_bar()......
  ```

  ```
  ggthemr_reset()
  ```

- ggsci

  ```
  scale_color_simpsons
  ```

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谢谢大家！