Lab 2: Perception et couleurs

2019-2020

Dr. Antoine Neuraz

AHU Informatique médicale

Hôpital Necker-Enfants malades,
Université de Paris

Perception des différentes marques dans ggplot2

TODO: échauffement

Générer un dataset aléatoire avec la fonction vizoR::generate_dataset_uniform

```
size <- list(100, 2)
min_x <- 0
max_x <- 1
seed <- 34
```

TODO: perception

1. Réaliser des plots avec les échelles suivantes sur la variable group :

- couleur
- forme
- angle
- taille
- luminosité
- courbe
- encapsulage
- remplissage

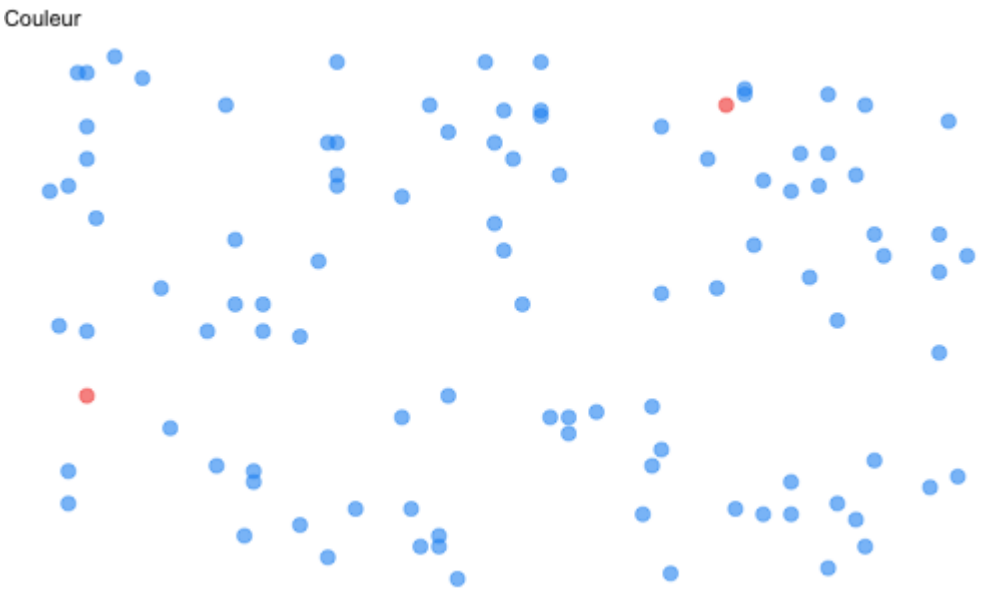
Certaines échelles sont très simples à mettre en place (e.g. couleur, forme) mais d'autres n'existent pas directement. Il faut trouver une alternative.

2. Comparer l'efficacité des différentes échelles pour distinguer les 2 groupes

Couleur

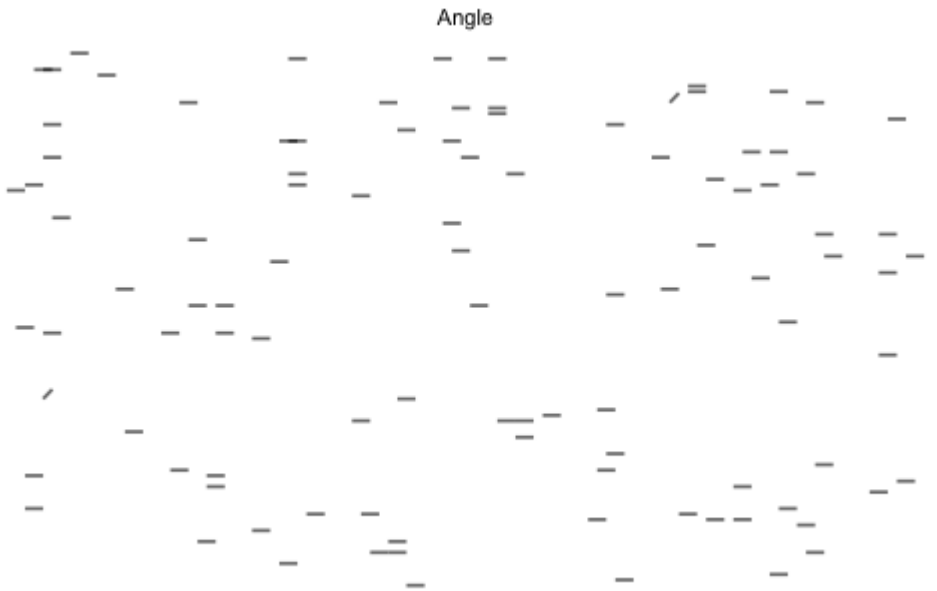
```
p_color <- ggplot( data = dt,
                   aes(x = x, y = y, color = group)) +
  geom_point(size = 3, alpha = .6) +
  see::scale_color_material_d() +
  vizoR::theme_void_complete() +
  labs(subtitle= "Couleur")

p_color
```



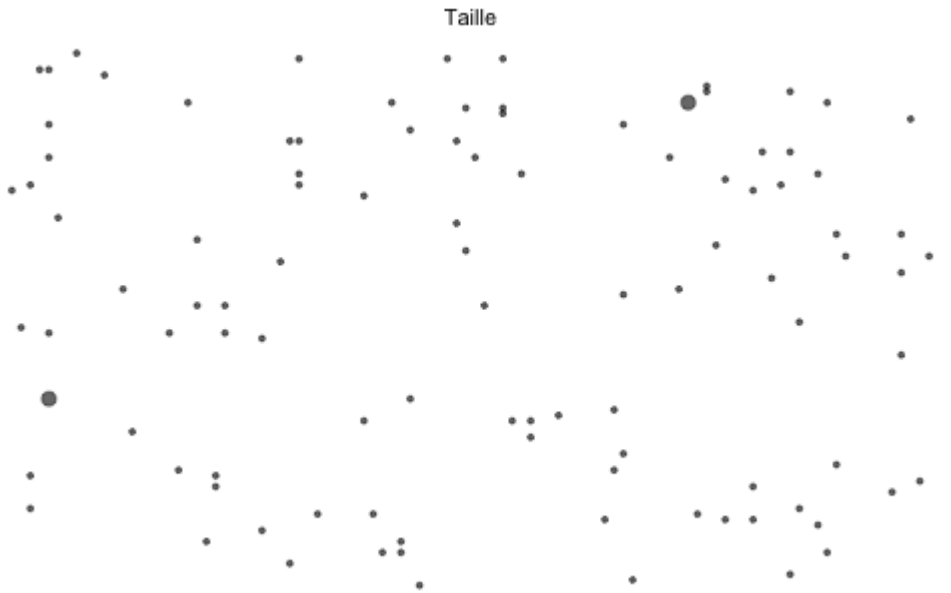
Angle

```
p_angle <- dt %>%
  mutate(angle = ifelse(group == "group1", 0, pi / 3)) %>%
  ggplot(
    data = ., aes( x = x, y = y, angle = angle ) ) +
  geom_spoke(radius = 0.02,size = .8, alpha = .6 ) +
  theme_void_complete() +
  scale_color_material_d() +
  ggtitle("Angle")
p_angle
```



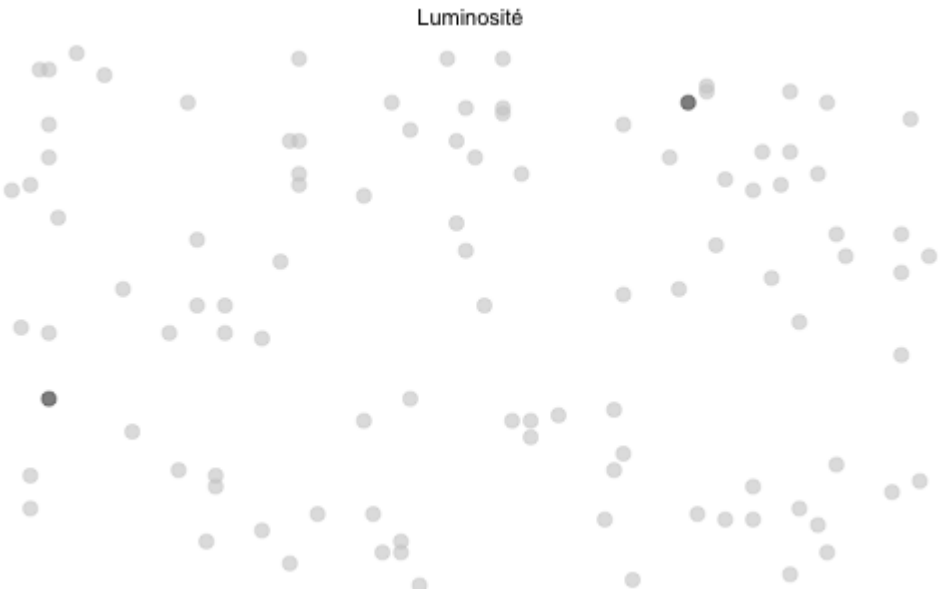
Taille

```
p_size <- dt %>%
  mutate(size = ifelse(group == "group1", 2, 3)) %>%
  ggplot( data = .,
          aes( x = x,y = y,size = size)) +
  geom_point(alpha = .6) +
  theme_void_complete() +
  scale_size(range = c(1, 3)) +
  ggtitle("Taille")
p_size
```



Luminosité

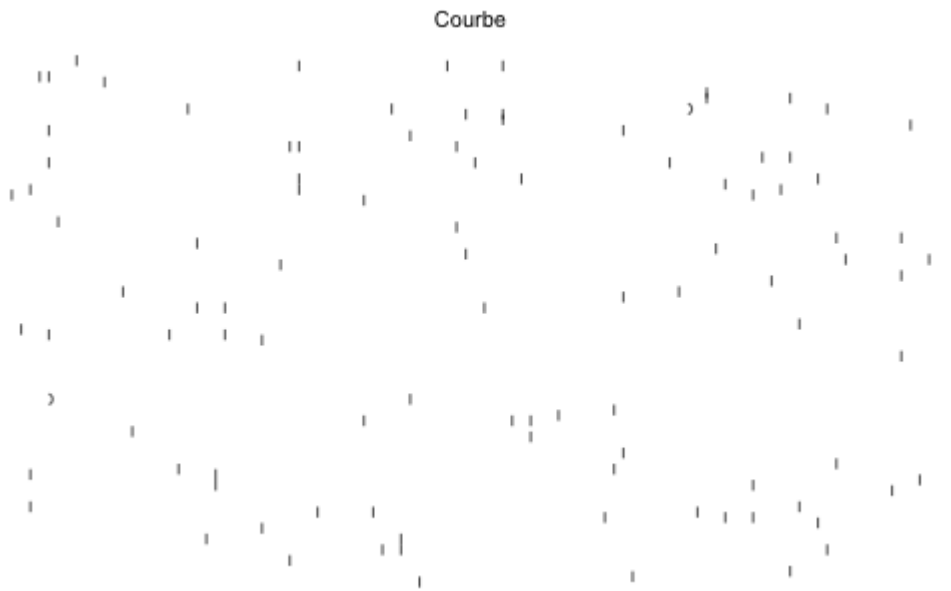
```
p_grey <- dt %>%
  ggplot(
    data = .,aes(x = x,y = y,color = group)) +
  geom_point(size = 3, alpha = .6) +
  theme_void_complete() +
  #scale_color_grey() +
  scale_color_grey(start=.8, end=.2)+
  ggtitle("Luminosité")
p_grey
```



Courbe

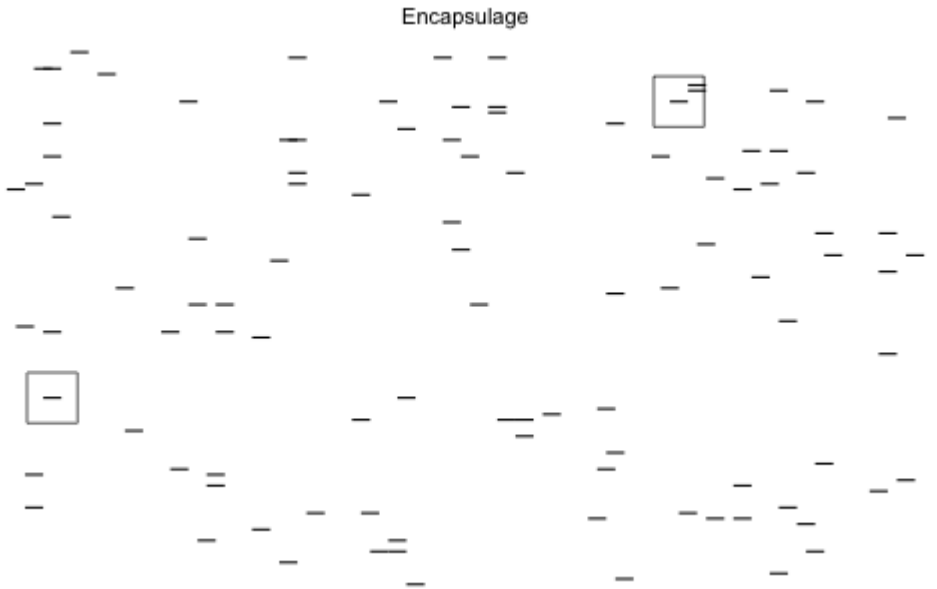
```
dt <- dt %>%
  mutate(curvature = ifelse(group == "group1", 0, 1))

p_curve <- dt %>%
  ggplot(data = .,aes(x = x,y = y,xend = x, yend = y+max_x/50, curvature = curvature)) +
  #geom_curve()+
  geom_curve(data = subset(dt, group == 'group1'), curvature = 0, alpha = .7) +
  geom_curve(data = subset(dt, group == 'group2'), curvature = .7, alpha = .7) +
  scale_color_material_d() +
  theme_void_complete() +
  ggtitle("Courbe")
p_curve
```



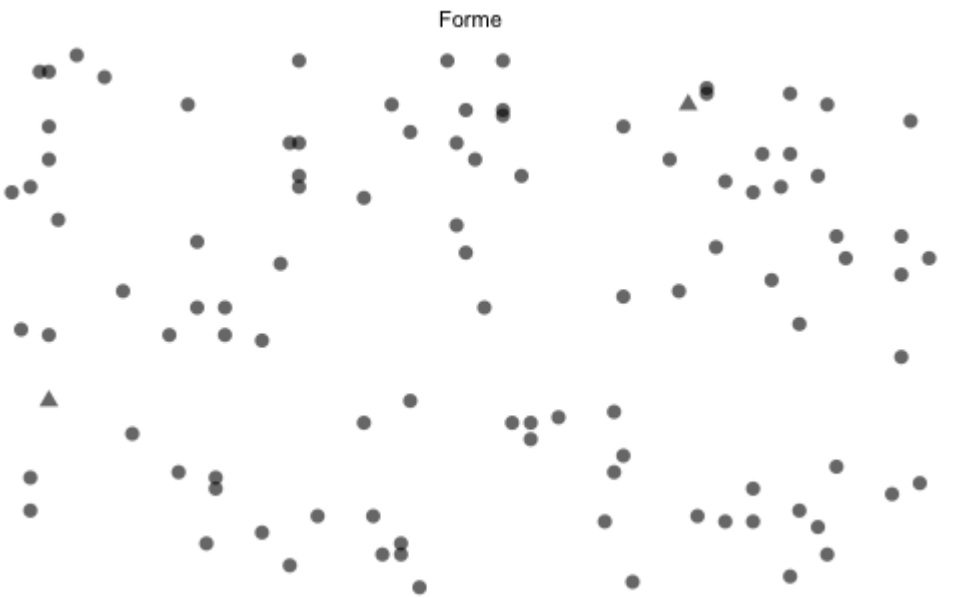
Encapsulage

```
p_box <- dt %>%
  ggplot(data = .,aes(x = x,xend = x+max_x/50,y = y,yend = y, group = group)) +
  geom_point(data = subset(dt, group=='group2'),aes(x = x+max_x/100), shape = 22, size =
  geom_segment() +
  scale_color_material_d() +
  theme_void_complete() +
  ggtitle("Encapsulage")
p_box
```



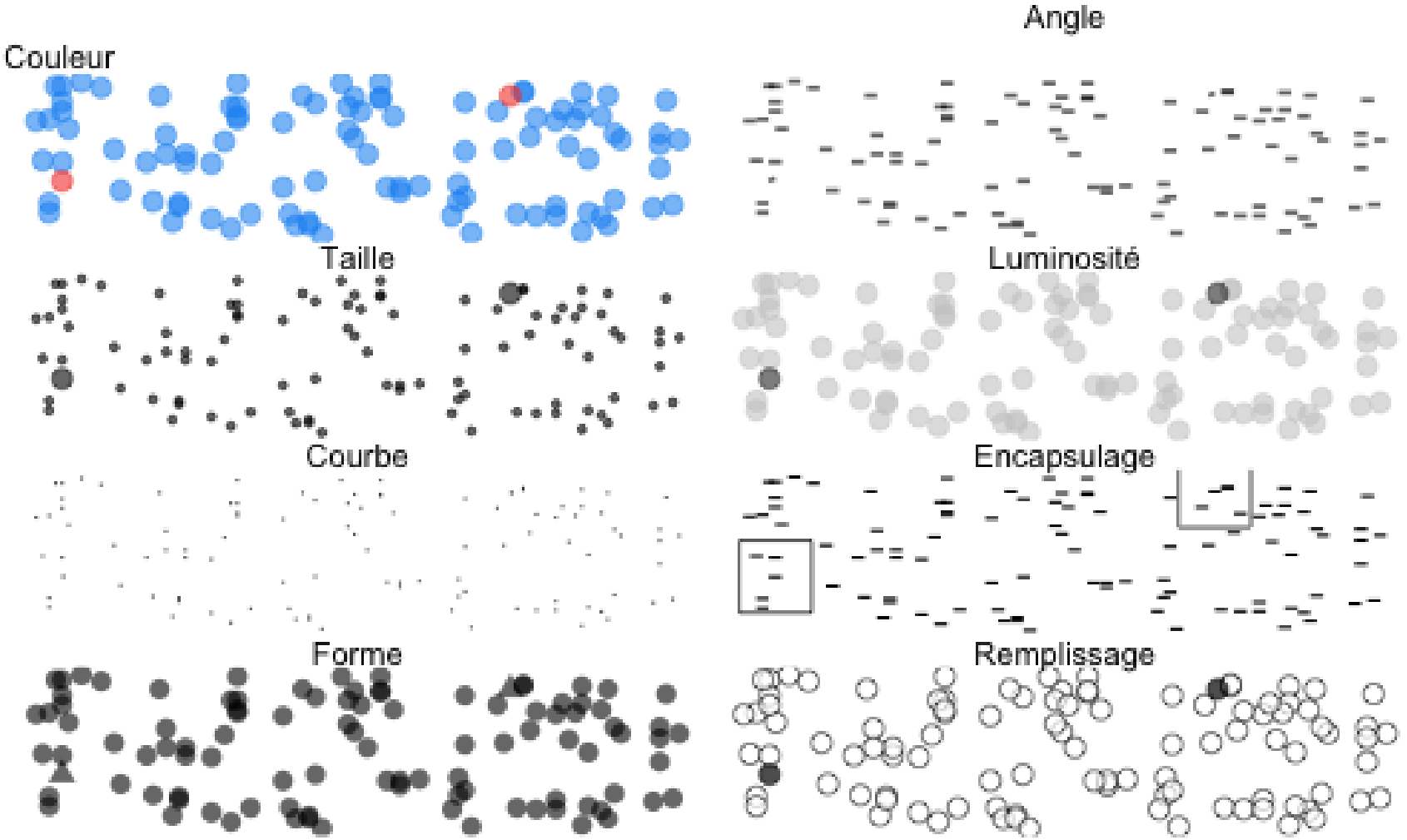
Forme

```
p_shape <- dt %>%
  ggplot(data = .,aes(x = x,y = y,shape = group)) +
  geom_point(size = 3, alpha = .6) +
  theme_void_complete() +
  ggtitle("Forme")
p_shape
```

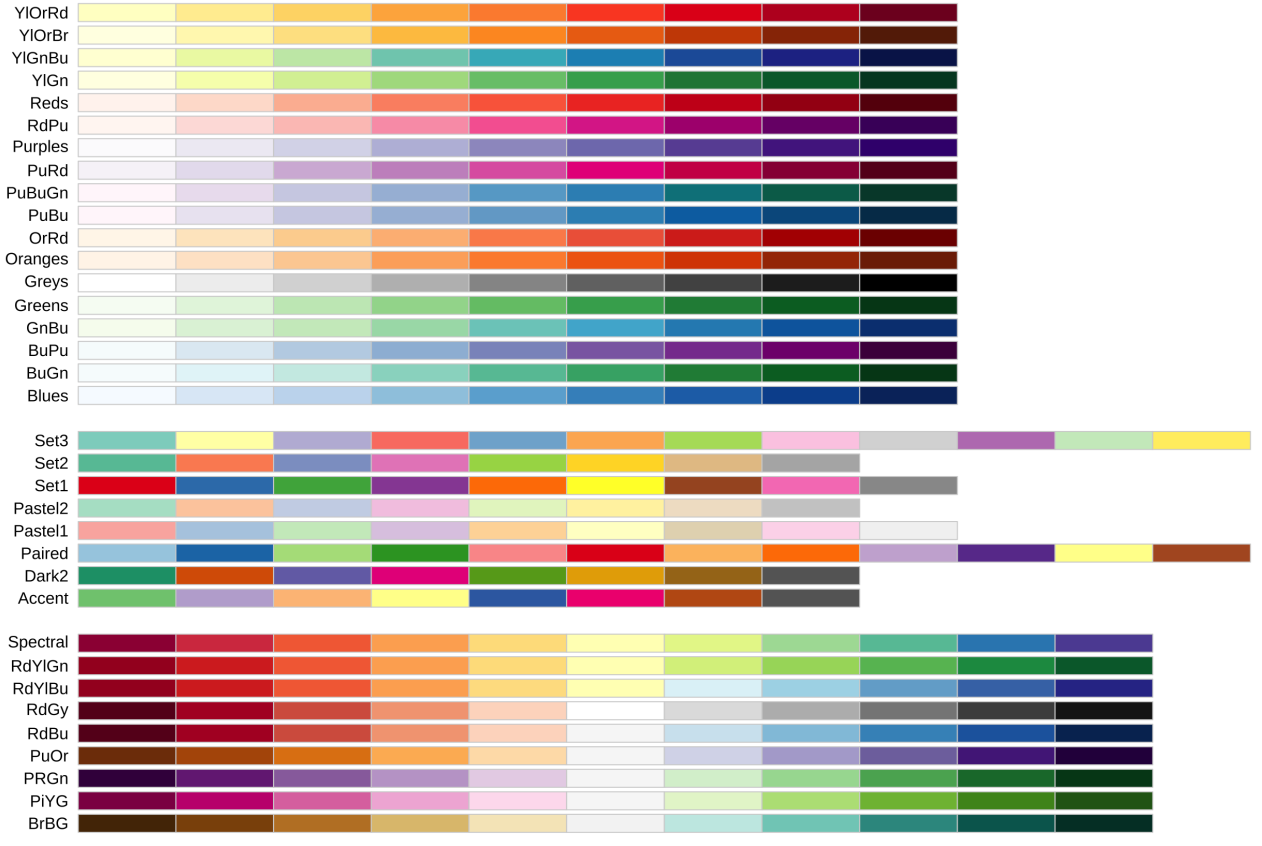


Remplissage

```
p_fill <- dt %>%
  ggplot(data = ., aes( x = x,y = y,fill = group)) +
  geom_point(size = 3, shape = 21, alpha = .7) +
  scale_fill_manual(values = c('group2' = 'black', 'group1' = 'white')) +
  theme_void_complete() +
  ggtitle("Remplissage")
p_fill
```


Couleur
Angle
Taille
Luminosité
Courbe
Encapsulage
Forme
Remplissage

Les couleurs dans ggplot2 `display.brewer.all()`



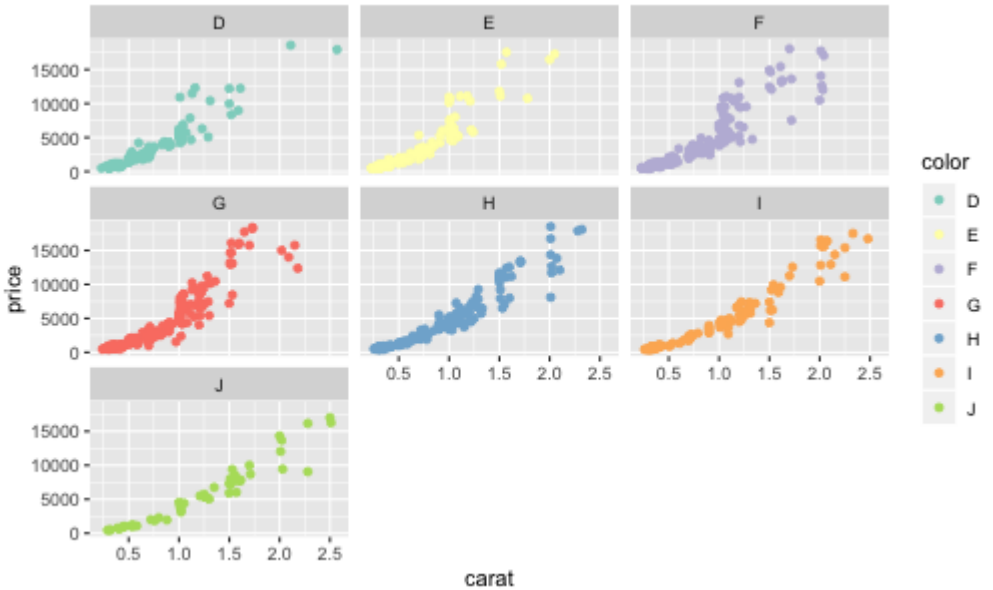
TODO: couleurs

Charger le dataset diamonds et créer un sous-dataset aléatoire de 1000 lignes

Plot carat en fonction du prix et de la couleur

changer la palette par défaut vers une autre palette disponible

```
dsamp <- diamonds[sample(nrow(diamonds), 1000), ]
ggplot(dsamp, aes(carat, price)) +
  geom_point(aes(colour = color)) +
  scale_color_brewer(palette = "Set3") +
  facet_wrap(~color)
```



TODO: couleurs 2

Plot carat en fonction du prix avec carat en double encodage

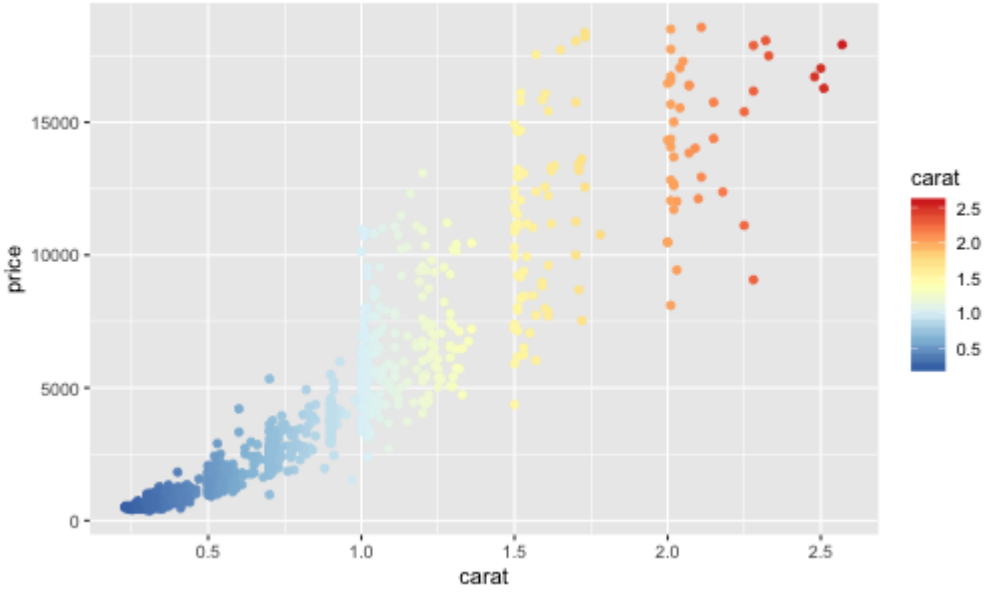
Aller sur http://colorbrewer2.org et trouver une palette divergente

Créer une palette custom basée sur cette palette et l'appliquer au plot précédent

Caler la palette sur le carat moyen

Annoter le plot avec une ligne désignant le carat moyen et un texte expliquant cette ligne

```
ggplot(dsamp, aes(carat, price)) +
  geom_point(aes(colour = carat)) +
  scale_color_distiller(palette="RdYlBu")
```



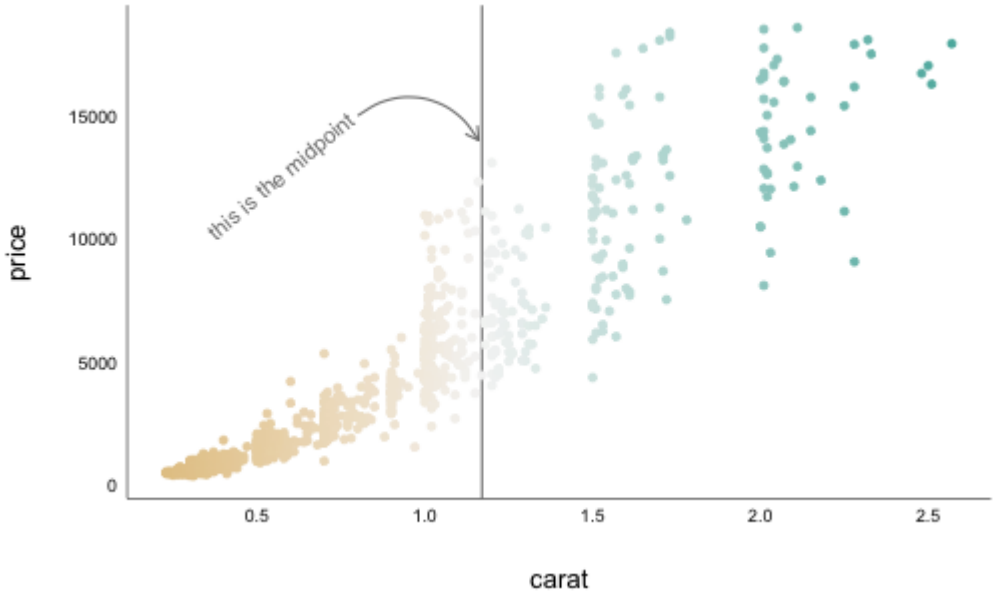
```
#showtext_auto()
#font_add_google("Schoolbell", "bell")

font_family = "sans"
annotate_color = "grey50"

midpoint = (max(dsamp$carat)-min(dsamp$carat))/2

ggplot(dsamp, aes(carat, price)) +
  geom_vline(xintercept = midpoint, color = annotate_color) +
  geom_point(aes(colour = carat)) +
  scale_color_gradient2(low = "#d8b365",
                        mid="#f5f5f5",
                        high="#5ab4ac",
                        midpoint = midpoint) +
  annotate("text",
           x=.78, y=15000, hjust=1, srt=40,
           label ="this is the midpoint",
           family=font_family,
           color=annotate_color) +
  annotate("curve",
           x = .8, xend=midpoint-.01, y=15000, yend = 14000,
           curvature = -.5,
           color=annotate_color ,
           arrow=arrow(length = unit(0.03, "npc") )) +

  theme_elegant() +
  theme(panel.grid.minor = element_blank(),
        panel.grid.major.x = element_blank(),
        legend.position = "none")
```


this is the midpoint
price
15000
10000
5000
0
0.5
1.0
1.5
2.0
2.5
carat