

Lab 5: Visualisation en R

Objectifs

- Installer les packages «ggplot2», «map», «mapdata», «rgl», «car»;
- Visualiser les types de graphiques disponibles sous R.

Commandes basiques

- **Line chart**

```
plot(AirPassengers, type="l")
```

- **Mosaic plot**

```
data("HairEyeColor")  
mosaicplot(HairEyeColor)
```

- **Heat map**

```
heatmap(as.matrix(mtcars))
```

- **Visualisation d'une carte géographique**

```
library(maps)  
library(mapdata)  
map("worldHires")  
map("worldHires", "Morocco")
```

- **Visualisation 3D**

```
data(iris)  
head(iris)  
sep.l <- iris$Sepal.Length  
sep.w <- iris$Sepal.Width  
pet.l <- iris$Petal.Length
```

```
library(car)
scatter3d(x = sep.l, y = pet.l, z = sep.w)
scatter3d(x = sep.l, y = pet.l, z = sep.w, groups = iris$Species)
scatter3d(x = sep.l, y = pet.l, z = sep.w, groups = iris$Species, grid = FALSE)
scatter3d(x = sep.l, y = pet.l, z = sep.w, groups = iris$Species, grid = FALSE, fit = "smooth")
```

- **Histogramme et estimateur de densité**

```
y <- rnorm(100,0,(1+2*rbinom(100,1,0.35)))
par(mfrow=c(1,3))
for (i in seq(0.5,1.5,by=0.5)) {
  hist(y,main=paste("adj=",i),ylim=c(0,0.3),ylab="Densité",proba=T)
  lines(density(y,adj=i),col="blue",lwd=2)
}
```

- **Graphique conditionnel**

```
library(ade4)
library(lattice)
data(deug)
x <- deug$tab$Algebra
y <- deug$result
densityplot(~x|y,xlab="algèbre",ylab="densité",panel=function(x,...) {
  panel.mathdensity(dmath=dnorm,args=list(mean=mean(x),sd=sd(x)),col="red")
  panel.histogram(x,breaks=NULL,col="cyan")})
```

- **Diagramme de dispersion**

```
a<-rnorm(100)
b<-2*a+rnorm(100)
c<-5*a+rnorm(100)+runif(100)*2
pairs(cbind(a,b,c))
```

- **Boîtes à moustaches**

```
x <- rnorm(20,mean=20,sd=2.5)
y <- rnorm(20,mean=22,sd=2.3)
boxplot(x,y)
points(c(rep(1,20),rep(2,20)),c(x,y),col='gray50')
points(c(1,2),c(mean(x),mean(y)),pch='x',cex=2,col=c('blue','red'))
```

- **Distributions univariées**

```
x1 <- c(23.2,34.5,76.3,65.8,12.6)
x2 <- c(15.6,12.4,21.8,20,5.2)
A <- gl(5,1,5,labels=c("a1","a2","a3","a4","a5"))
```

```
data <- cbind(x1,x2)
rownames(data) <- levels(A)
barplot(x1,names.arg=levels(A))
barplot(t(data),beside=T,ylim=c(0,100),legend.text=colnames(data),
  col=c("grey50","grey80"),ylab="Fréquence")
names(x1) <- levels(A)
pie(x1/100)
```

- **Représentations conjointes**

```
x <- rpois(500,lambda=2)
y <- rpois(500,lambda=2)
layout(t(matrix (1:2)))
plot(x,y,pch=19)
sunflowerplot(x,y,pch=19)
```

- **Représentations conditionnelles**

```
dotchart(VADeaths, main = "Death Rates in Virginia - 1940")
```