

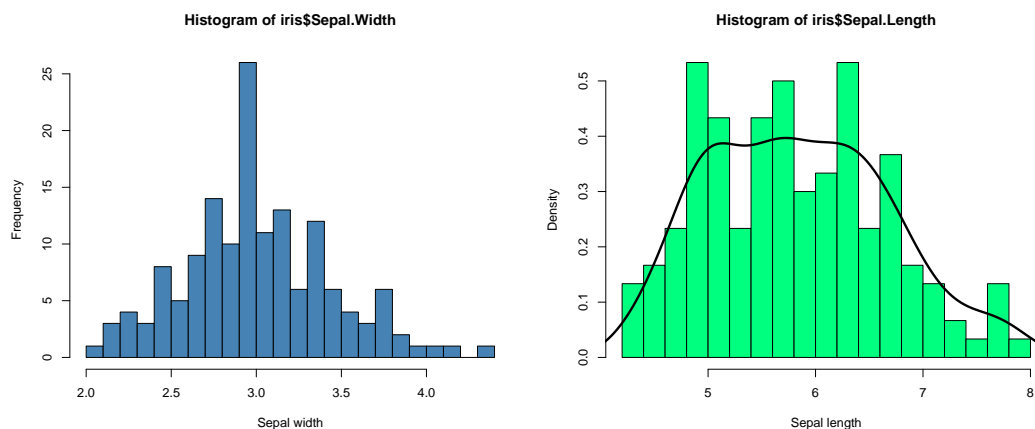
## Grau interuniversitari (UB-UPC) d'Estadística

### Software Estadístic: Solució de l'exercici sobre gràfics

Utilitzeu el *data frame* *iris* del paquet *datasets* per fer els gràfics que es veuen a continuació (Figures 1 a 5). Noteu que per a un dels gràfics a la Figura 5 necessiteu les funcions *qqnorm* i *qqline*. Per estudiar primer el conjunt de dades podeu executar les següents instruccions:

```
> data(iris)
> ?iris
> View(iris)
> str(iris)
> summary(iris)

> ## Figura 1
> myPar <- list(font = 2, font.lab = 2, font.axis = 4, las = 1)
> par(myPar, mfrow = c(1, 2))
> hist(iris$Sepal.Width, breaks = 20, col = "steelblue", xlab = "Sepal width")
> hist(iris$Sepal.Length, breaks = 20, col = "springgreen", xlab = "Sepal length",
+      freq = F)
> lines(density(iris$Sepal.Length), lwd = 3)
```



**Figura 1:** Histograms with and without a density function

```
> ## Figura 2
> par(myPar)
> plot(Sepal.Length~Sepal.Width, iris, col = Species, pch = 19, xlab = "Sepal width",
+       ylab = "sepal length")
> title("Sepal width and length by specie")
> legend("topright", levels(iris$Species), , text.width = strwidth("versicolor  "),
+       col = 1:3, pch = 19)
```

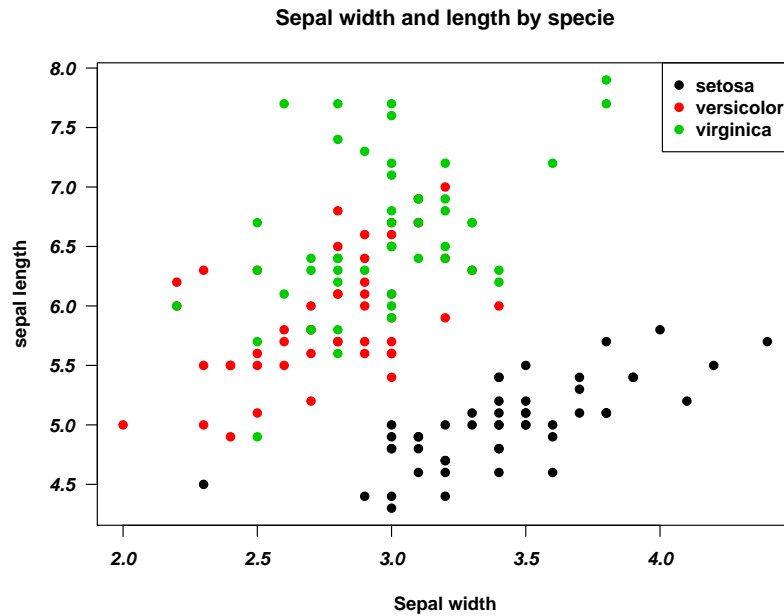


Figura 2: A scatterplot with subgroups

```
> ## Figura 3
> par(myPar)
> pairs(iris[, 1:4], pch = 19)
```

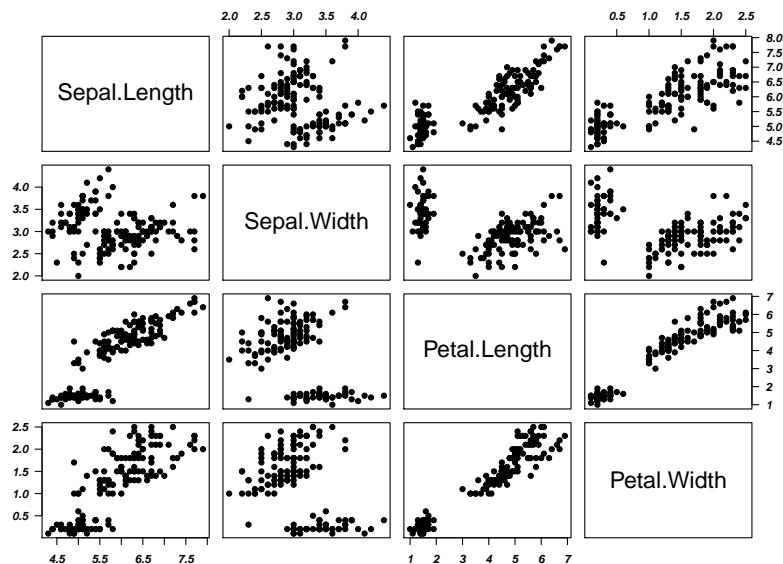


Figura 3: Plenty of scatterplots

```
> ## Figura 4
> library(beeswarm)
> par(myPar)
> boxplot(Sepal.Length~Species, iris, col = 2:4)
> beeswarm(Sepal.Length~Species, iris, add = T, pch = 19)
```

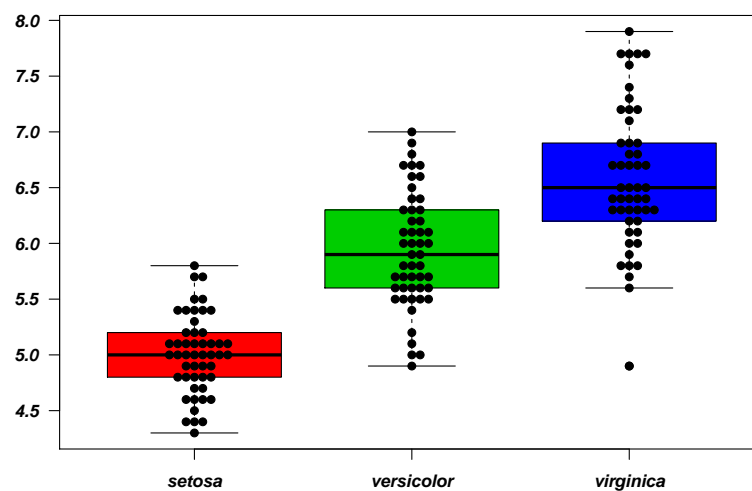
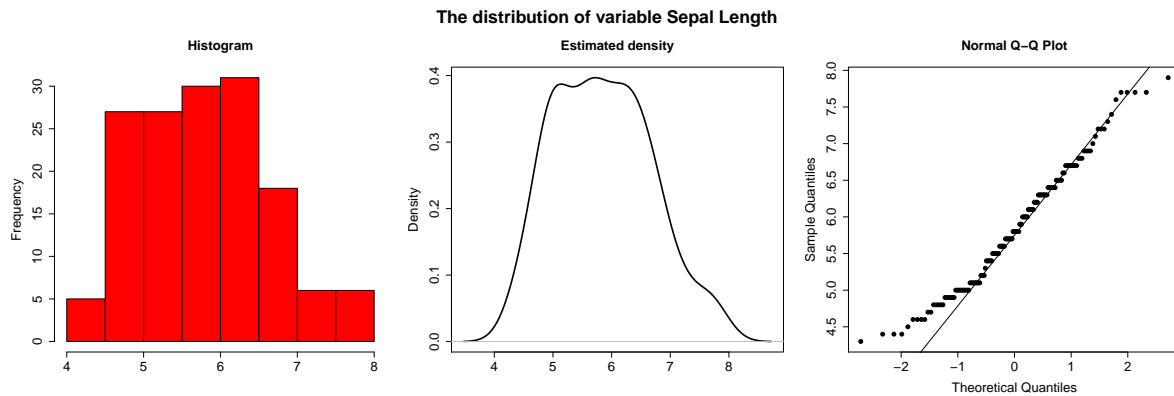


Figura 4: Boxplots with some bees inside the boxes

```

> ## Figura 5
> par(myPar, oma = c(0, 0, 1.5, 0), mfrow = c(1, 3), cex.lab = 1.5, cex.axis = 1.5)
> hist(iris$Sepal.Length, col = 2, freq = TRUE, main = "Histogram", xlab = "",
+      cex.main = 1.5)
> plot(density(iris$Sepal.Length), lwd = 2, main = "Estimated density", xlab = "",
+      cex.main = 1.5)
> qqnorm(iris$Sepal.Length, cex.main = 1.5, pch = 19)
> qqline(iris$Sepal.Length)
> title("The distribution of variable Sepal Length", out = TRUE, cex.main = 2)

```



**Figura 5:** Plots to study the distribution of the variable 'Sepal Length'