



PERÚ

Ministerio
de Desarrollo Agrario
y Riego



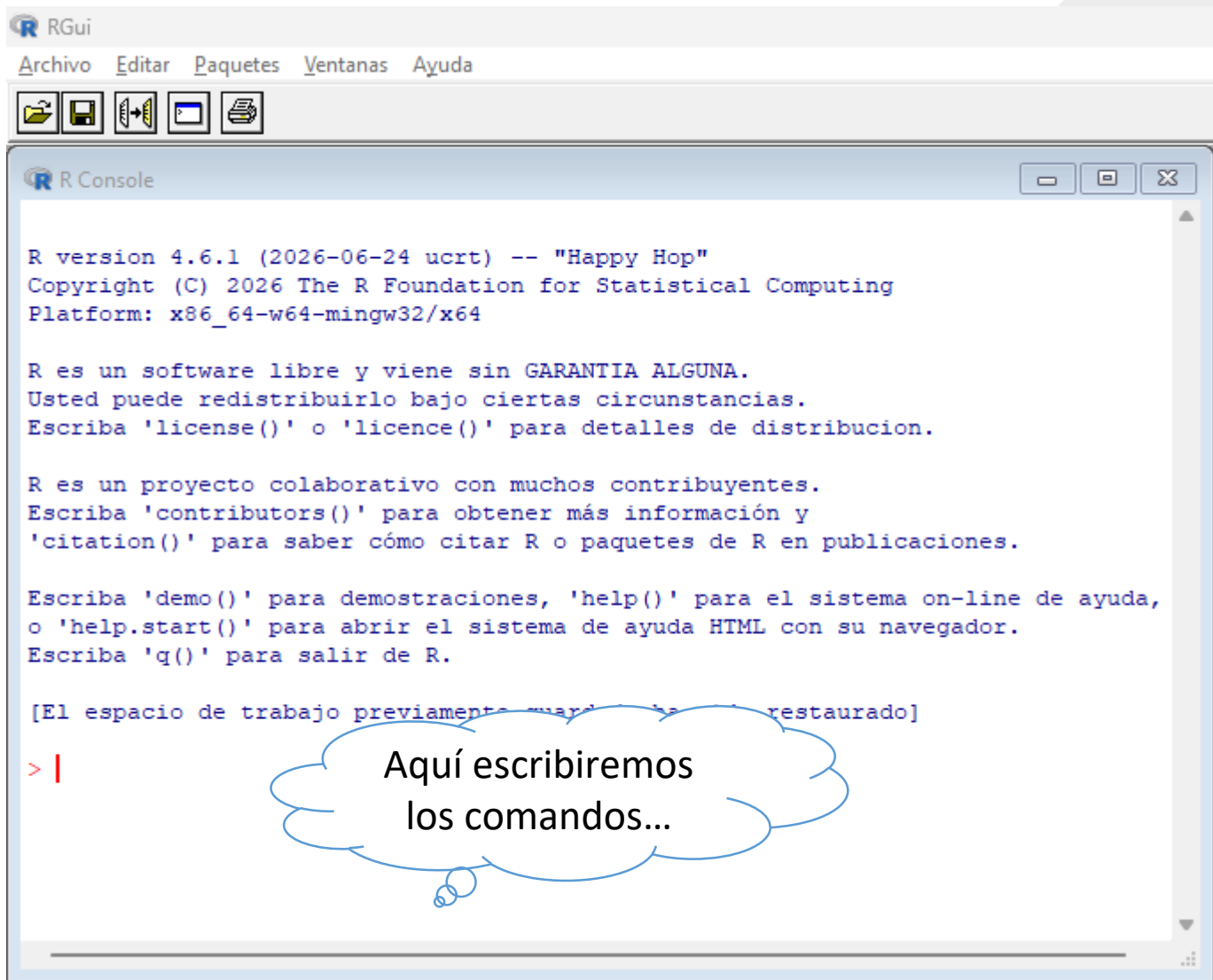
CURSO TALLER:

“Ciencia de Datos con aplicada a Estudios e Investigaciones Agrarios”

*DIDET - PROFRUT
2026*



*Plataforma de R



```
RGui
Archivo Editar Paquetes Ventanas Ayuda

R Console

R version 4.6.1 (2026-06-24 ucrt) -- "Happy Hop"
Copyright (C) 2026 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64

R es un software libre y viene sin GARANTIA ALGUNA.
Usted puede redistribuirlo bajo ciertas circunstancias.
Escriba 'license()' o 'licence()' para detalles de distribucion.

R es un proyecto colaborativo con muchos contribuyentes.
Escriba 'contributors()' para obtener más información y
'citation()' para saber cómo citar R o paquetes de R en publicaciones.

Escriba 'demo()' para demostraciones, 'help()' para el sistema on-line de ayuda,
o 'help.start()' para abrir el sistema de ayuda HTML con su navegador.
Escriba 'q()' para salir de R.

[El espacio de trabajo previamente guardado ha sido restaurado]

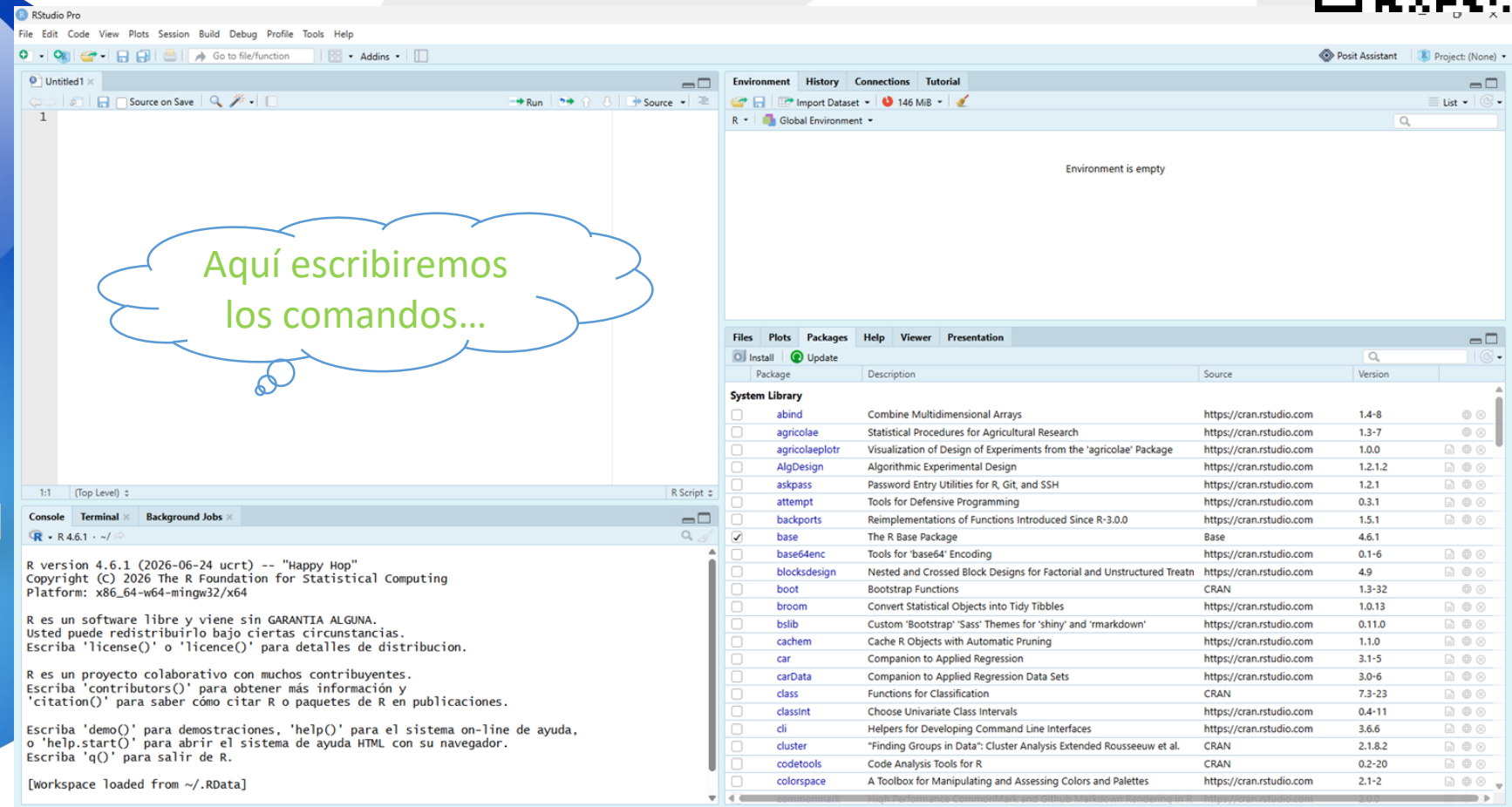
> |
```

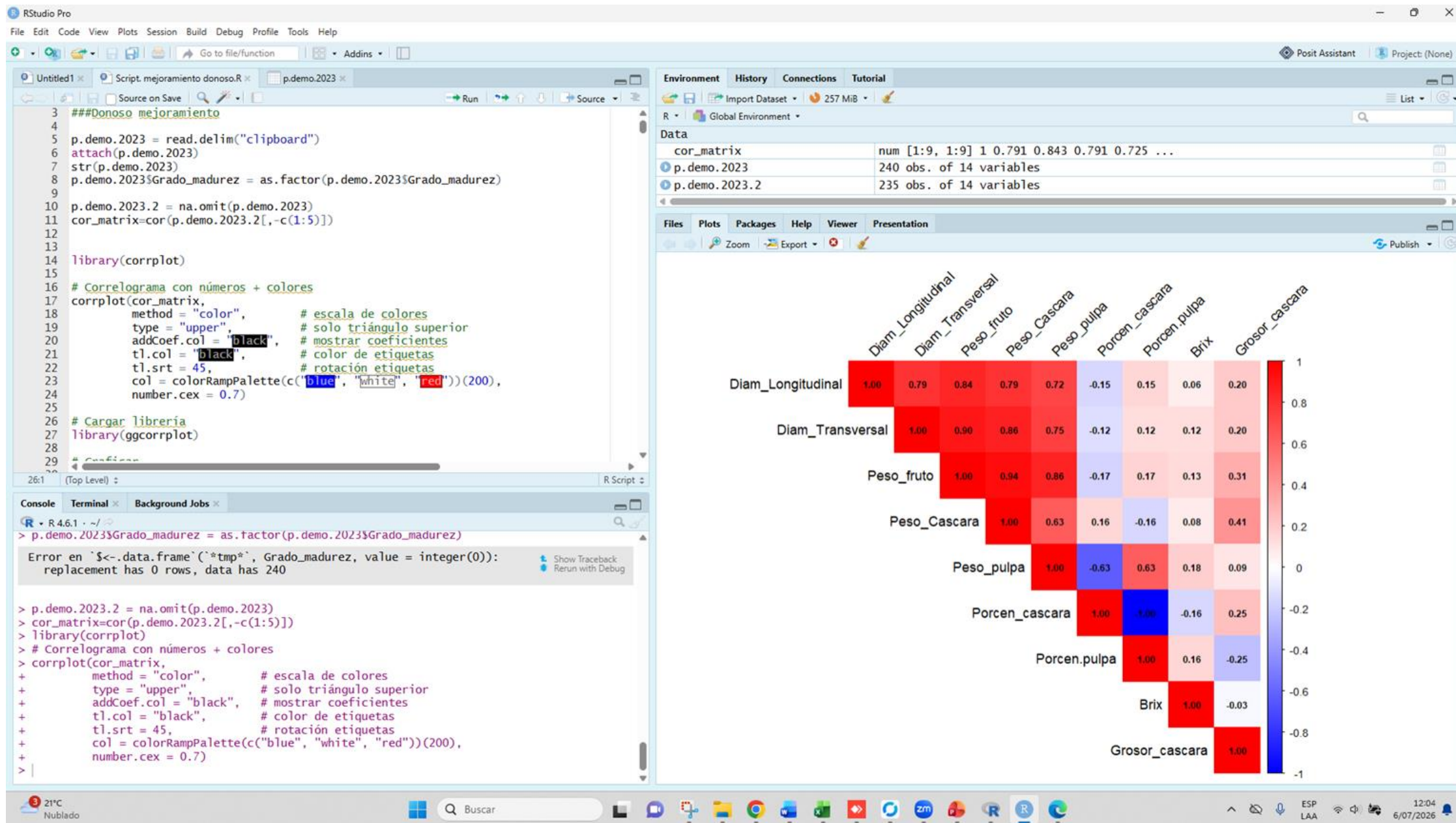


R es un ambiente de programación formado por un conjunto de herramientas muy flexibles que pueden ampliarse fácilmente mediante paquetes, librerías o la definición de nuestras propias funciones. Además, es gratuito y de código abierto, un software libre, parte del proyecto GNU, como Linux o Mozilla Firefox.

RStudio

La interfaz de Rstudio





LECTURA DE DATOS



1

`data<-read.delim('clipboard')` # en caso se requiera cargar del clipboard
(trabajaremos con los datos “iris”)
`View(data)`

2

	Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
1	5.1	3.5	1.4	0.2	setosa
2	4.9	3.0	1.4	0.2	setosa
3	4.7	3.2	1.3	0.2	setosa
4	4.6	3.1	1.5	0.2	setosa
5	5.0	3.6	1.4	0.2	setosa
6	5.4	3.9	1.7	0.4	setosa
7	4.6	3.4	1.4	0.3	setosa

Showing 1 to 7 of 150 entries

3

`summary(data)`

```
> summary(data)
 Sepal.Length      Sepal.width      Petal.Length
Min.   :4.300    Min.   :2.000    Min.   :1.000
1st Qu.:5.100    1st Qu.:2.800    1st Qu.:1.600
Median :5.800    Median :3.000    Median :4.350
Mean   :5.843    Mean   :3.057    Mean   :3.758
3rd Qu.:6.400    3rd Qu.:3.300    3rd Qu.:5.100
Max.   :7.900    Max.   :4.400    Max.   :6.900
 Petal.width      Species
Min.   :0.100    setosa   :50
1st Qu.:0.300    versicolor:50
Median :1.300    virginica :50
Mean   :1.199
3rd Qu.:1.800
Max.   :2.500
```

4

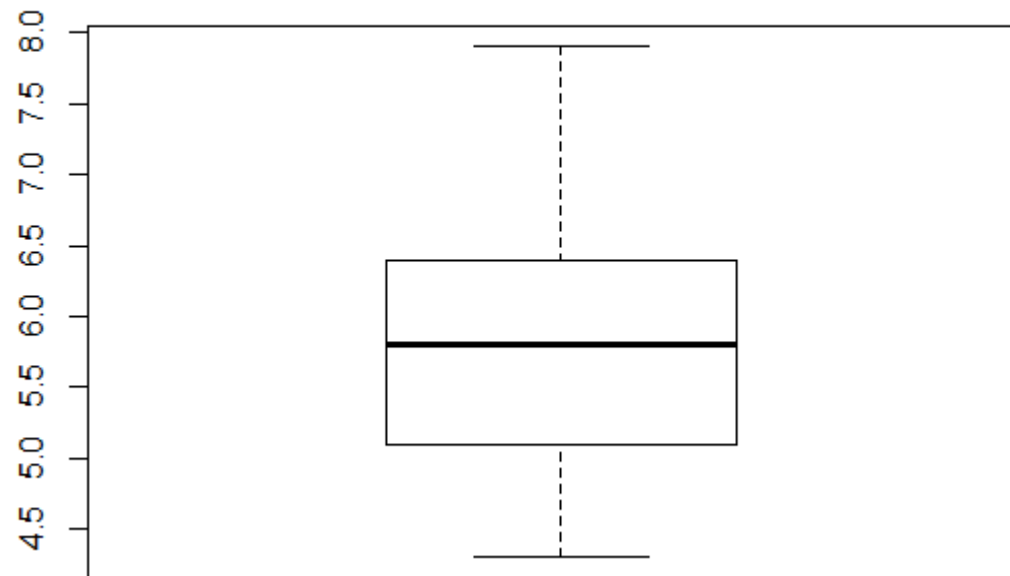
`str(data)`

```
> str(data)
'data.frame': 150 obs. of 5 variables:
 $ Sepal.Length: num 5.1 4.9 4.7 4.6 5 5.4 4.6 5 4.4 4.9 ...
 $ Sepal.width : num 3.5 3 3.2 3.1 3.6 3.9 3.4 3.4 2.9 3.1 ...
 $ Petal.Length: num 1.4 1.4 1.3 1.5 1.4 1.7 1.4 1.5 1.4 1.5 ...
 $ Petal.width : num 0.2 0.2 0.2 0.2 0.2 0.4 0.3 0.2 0.2 0.1 ...
 $ Species : Factor w/ 3 levels "setosa","versicolor",...: 1 1 1 1 1 1 1 1 1 1 ...
```

5 `attach(data)` # es para desagregar las variables del archivo data

6 `boxplot(Sepal.Length, main="Diagrama de caja de Iris_Sepal.Length")`

Diagrama de caja iris_Sepal.Length



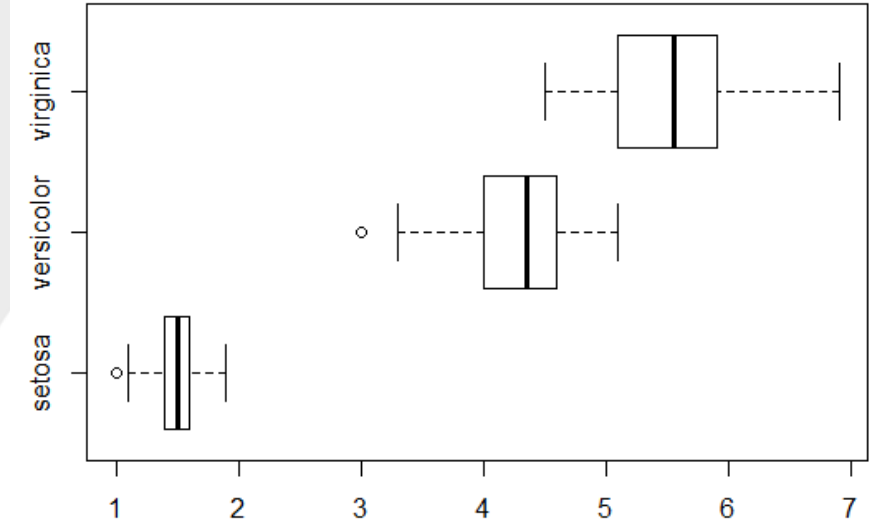
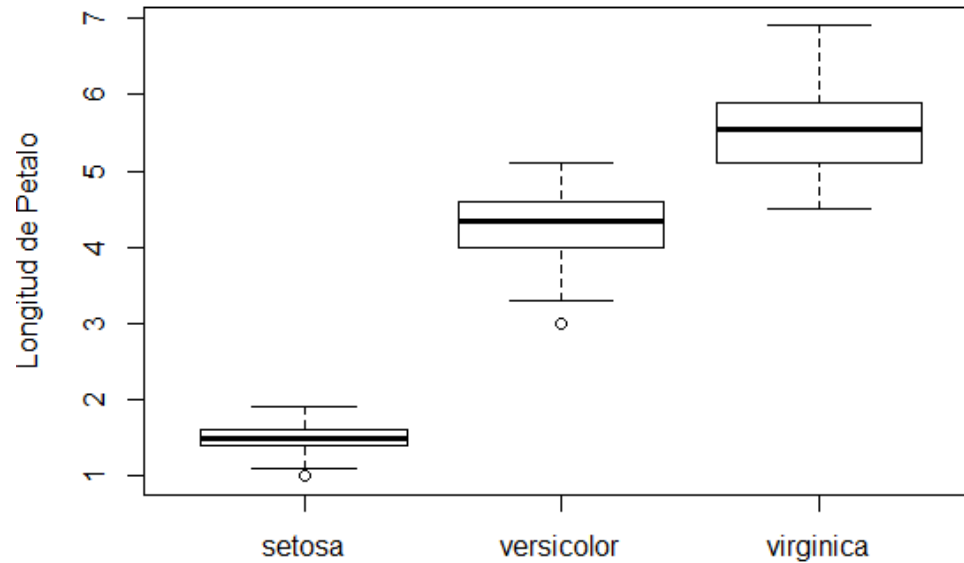
8

`boxplot(Petal.Length ~ Species, horizontal = TRUE)`

7

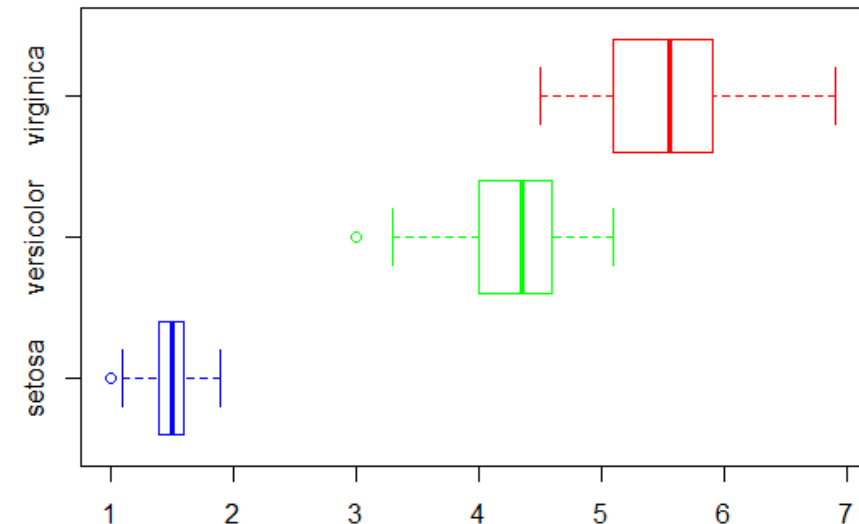
`boxplot(Petal.Length ~ Species, ylab="Longitud de Petalo")`

Diagrama de caja de Sepal.Length



9

`boxplot(Petal.Length ~ Species, Species, horizontal = TRUE, border = c("blue", "green", "red", "black"))`



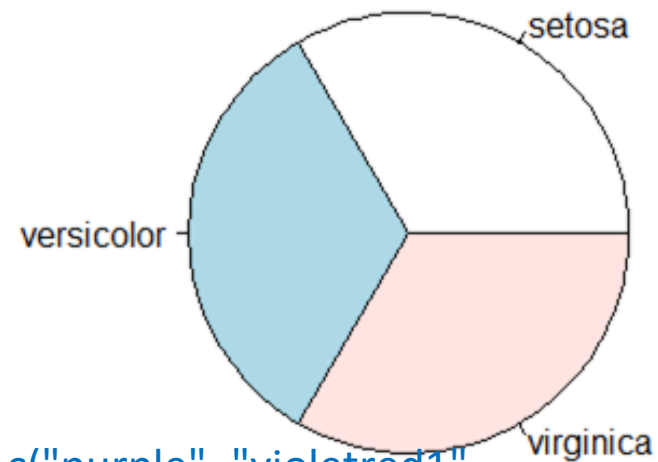
10

```
mytable <- table(Species) # crearas una tabla de frecuencia  
print(mytable)  
pie(mytable)
```

```
> print(mytable)  
Species  
setosa versicolor virginica  
    50      50      50
```

11

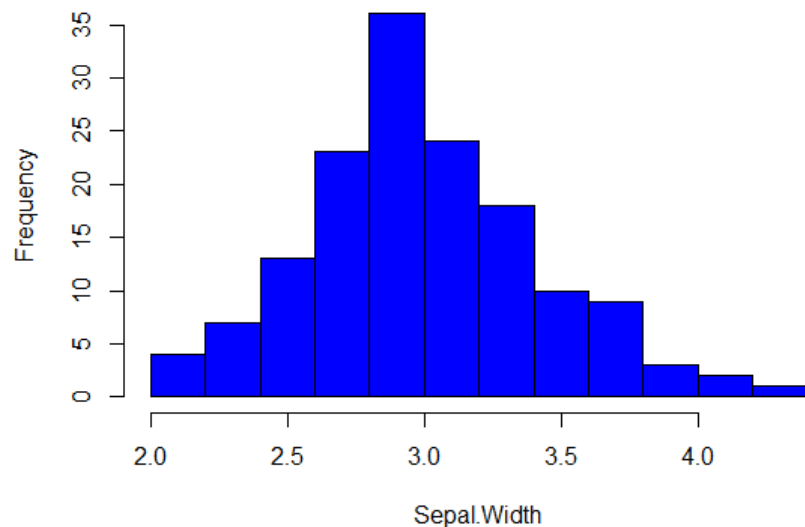
```
pie(mytable, col = c("purple", "violetred1",  
"green3"))
```



12

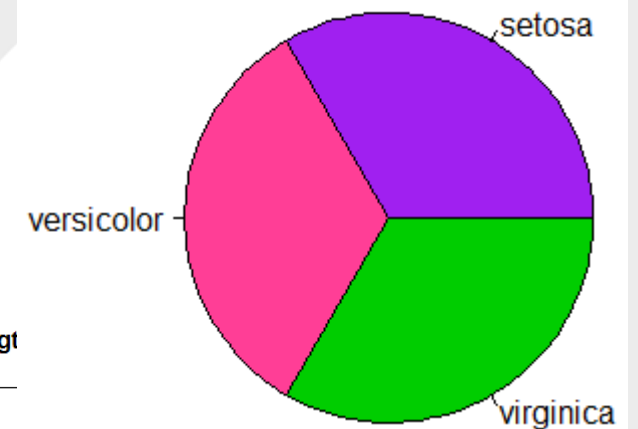
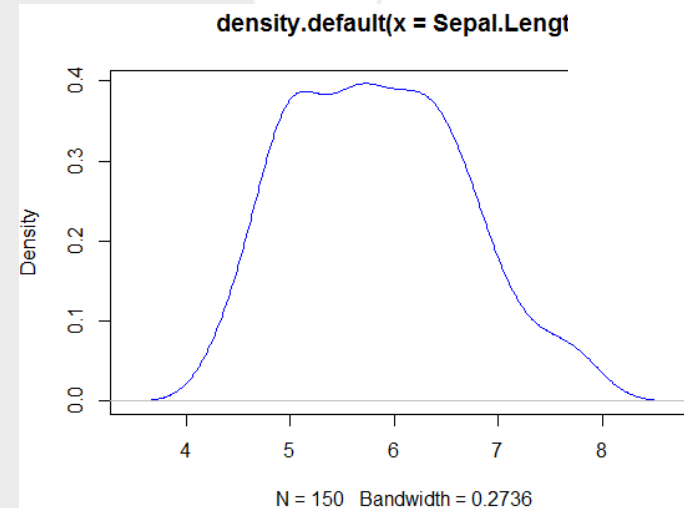
```
hist(Sepal.Width  
)
```

Histogram of Sepal.Width



13

```
plot(density(Sepal.Length  
,col=c("blue"))
```

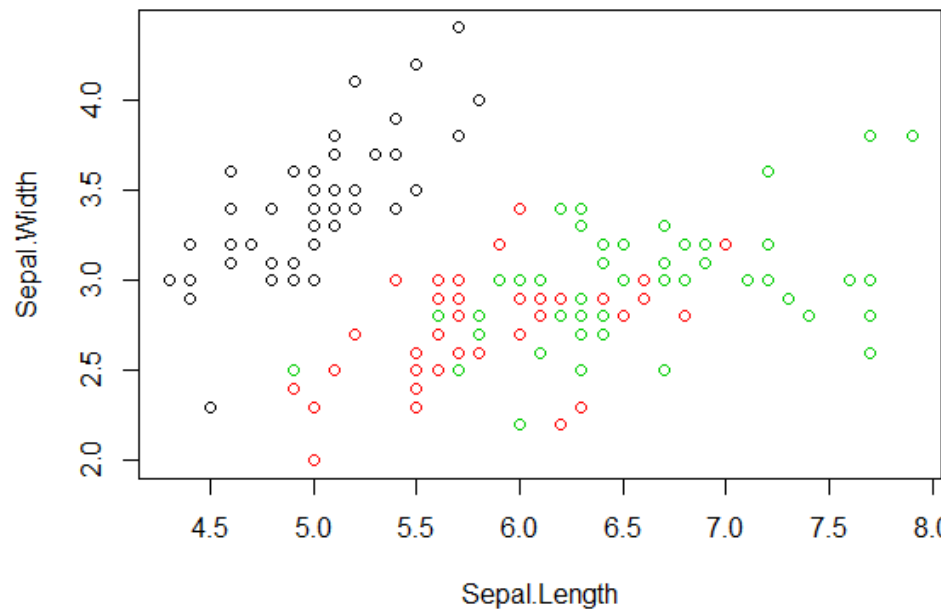


DIAGRAMAS DE DISPERSIÓN



14

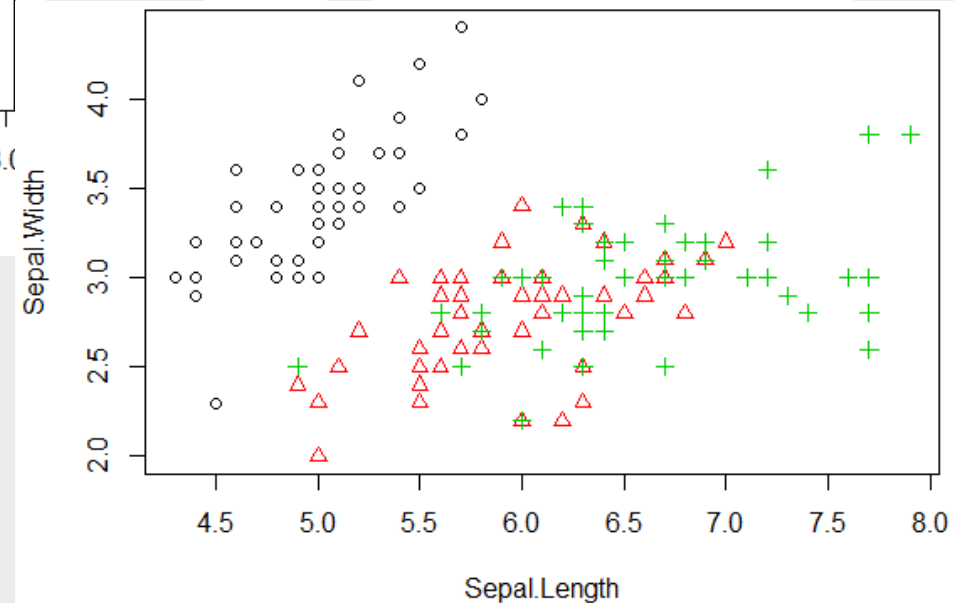
El ancho del sepalo vs el largo del sepalo
`plot(Sepal.Width~Sepal.Length,col=Species)`



15

equivalente

`plot(Sepal.Length, Sepal.Width,col=Species,
pch=as.numeric(Species))`



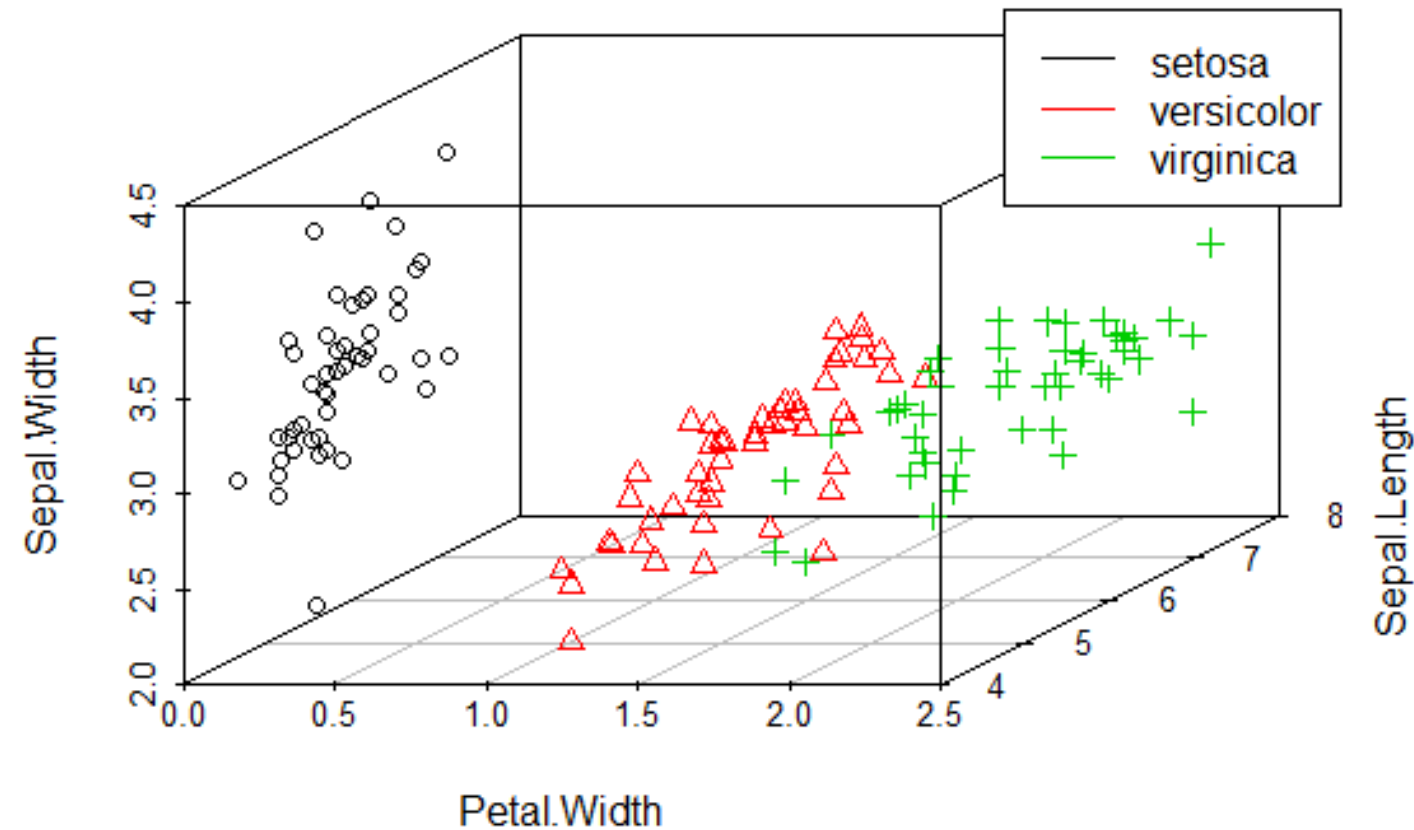
16

`legend('topright', levels(Species) , lty=1, col=1:3)`

*También se pueden crear SCATTERPLOTS en tres dimensiones

17

```
scatterplot3d(Petal.Width, Sepal.Length, Sepal.Width, color=as.numeric(Species), pch=as.numeric(Species))
```



18

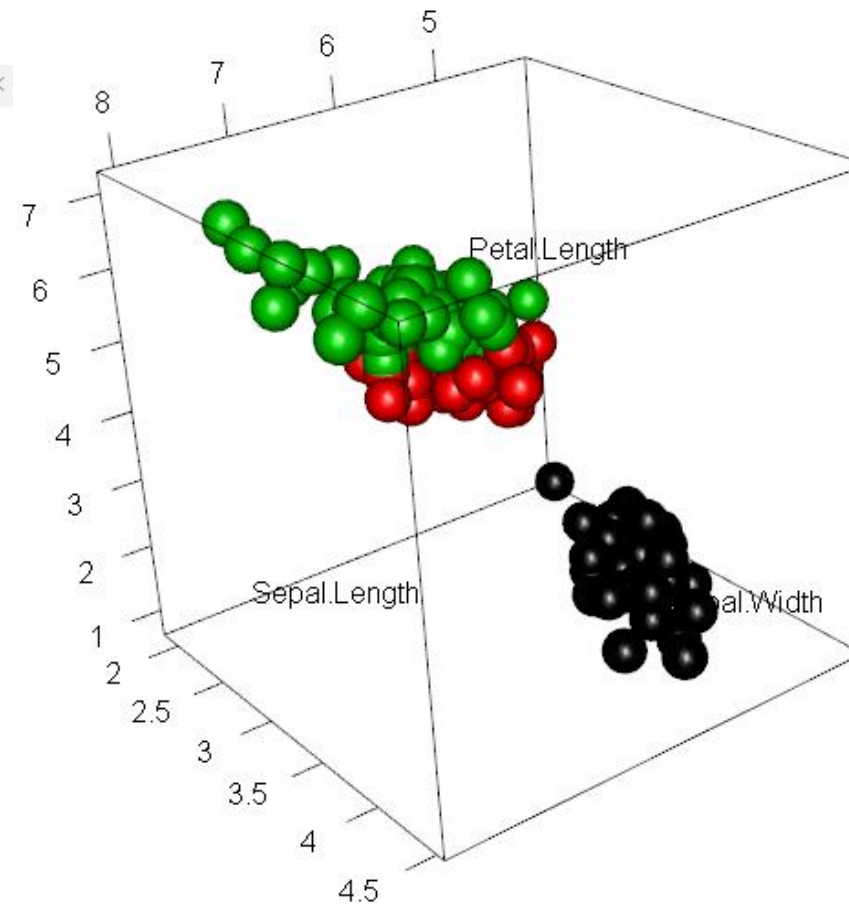
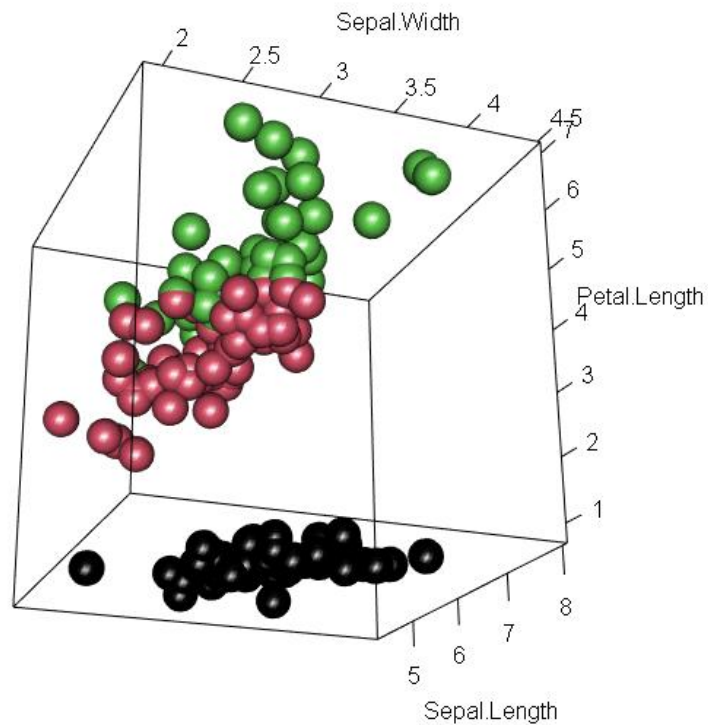
library(rgl)

iris

```
with(iris, plot3d(Sepal.Length, Sepal.Width, Petal.Length, type="s", col=as.integer(Species)))
```



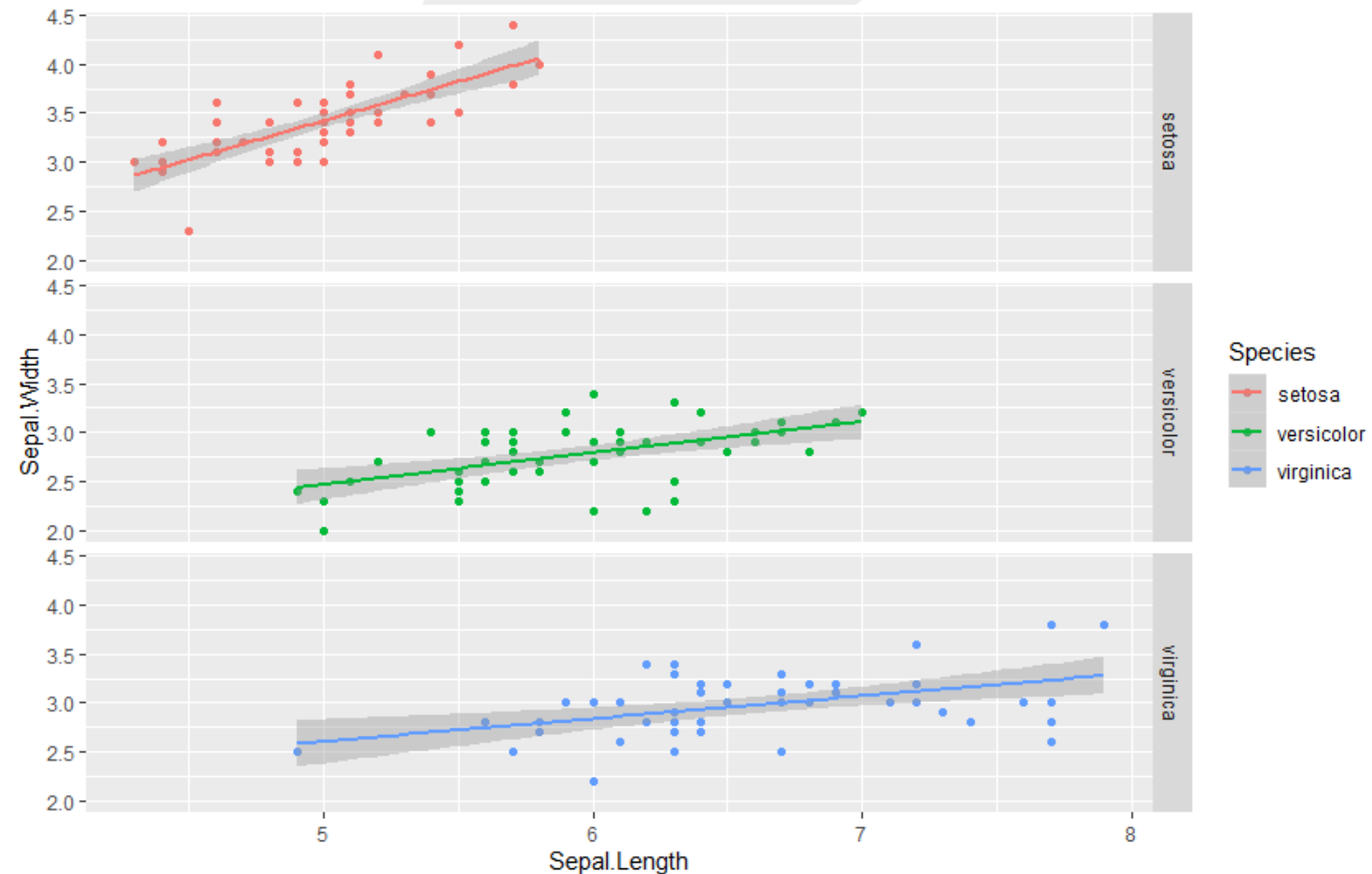
RGL device 1 [Focus]



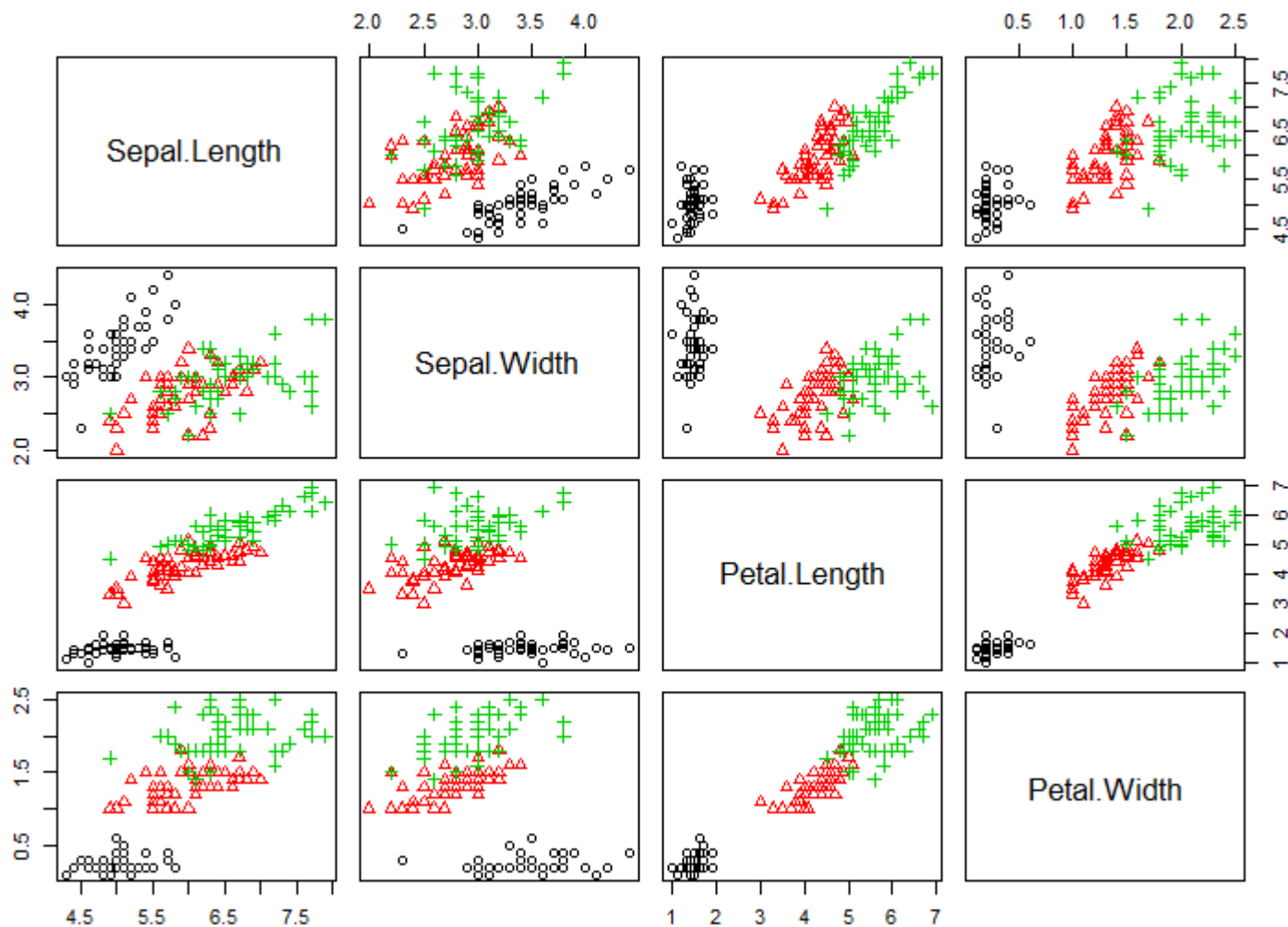
library(ggplot2)

19

```
ggplot(iris, aes(x=Sepal.Length, y=Sepal.Width, colour =Species))+  
geom_point()+ geom_smooth(method = "lm")+facet_grid(Species ~ .)
```

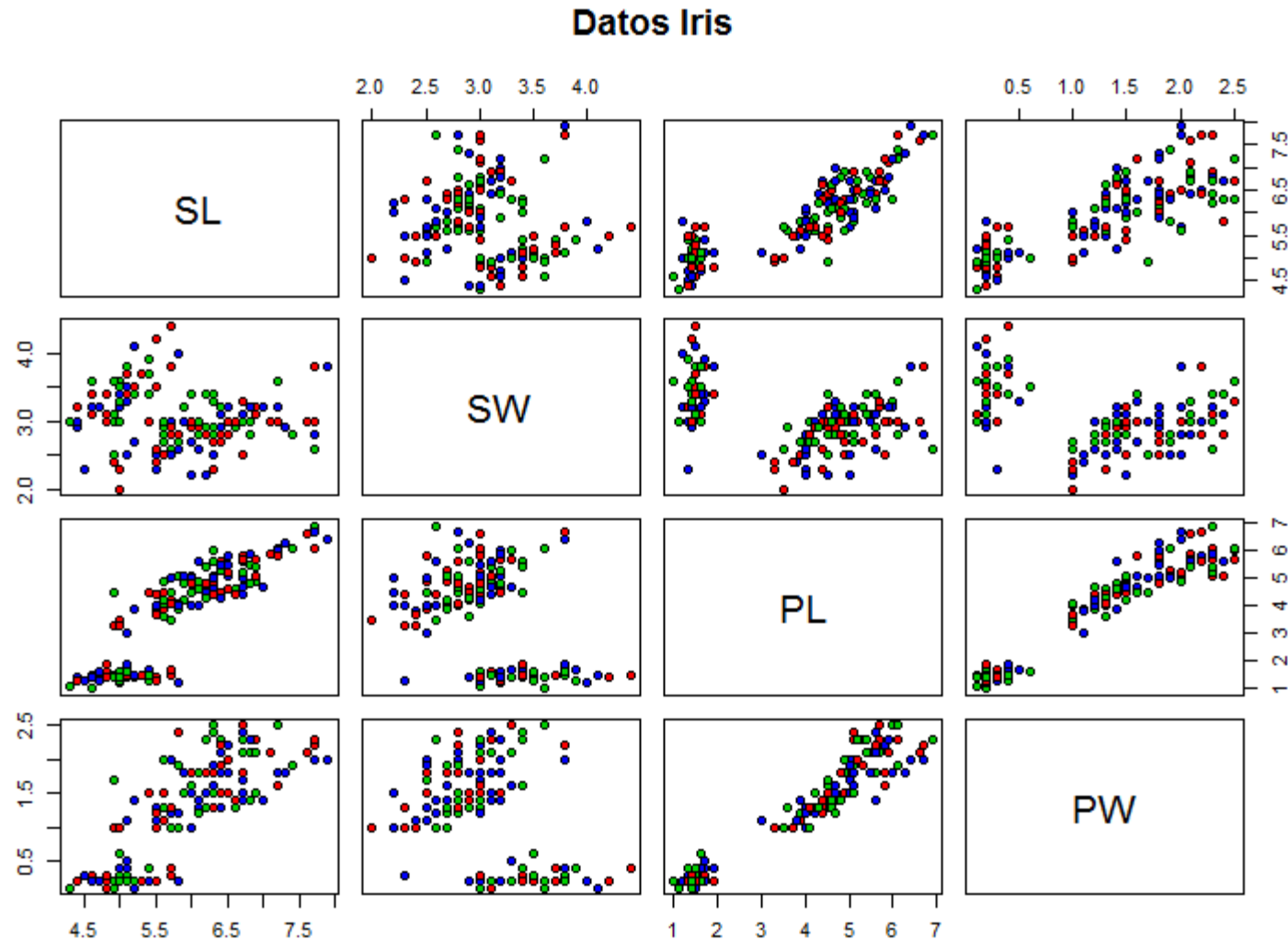


```
plot(iris[,1:4],pch=as.numeric(iris$Species),col=iris$Species)
```

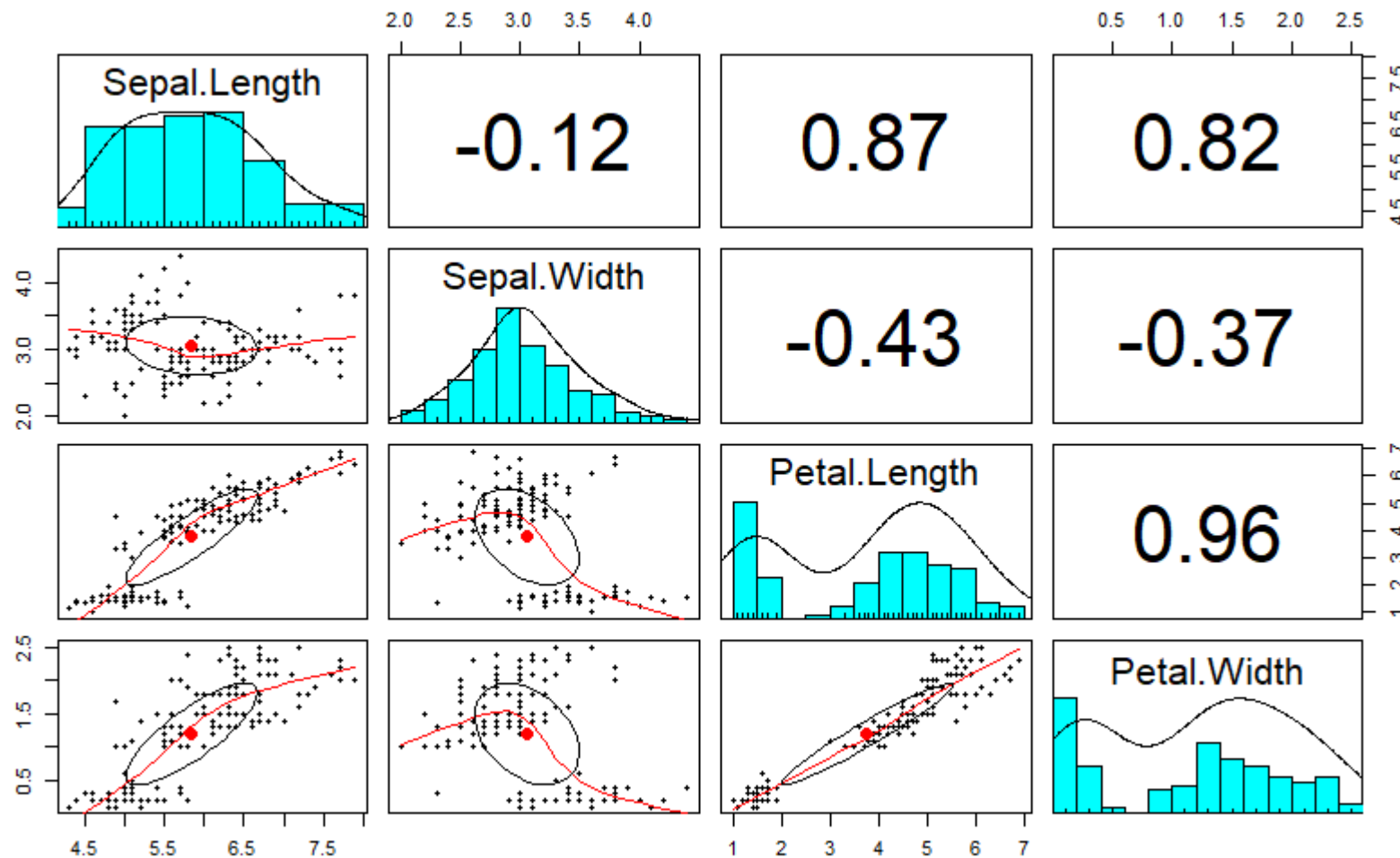


21

```
plot(iris[1:4], main = "Datos Iris", pch = 21, bg = c("red", "green3", "blue"),  
lower.panel=NULL, labels=c("SL", "SW", "PL", "PW"))
```



- `library(psych)`
- `pairs.panels(datos)`



##Combinación de gráficas

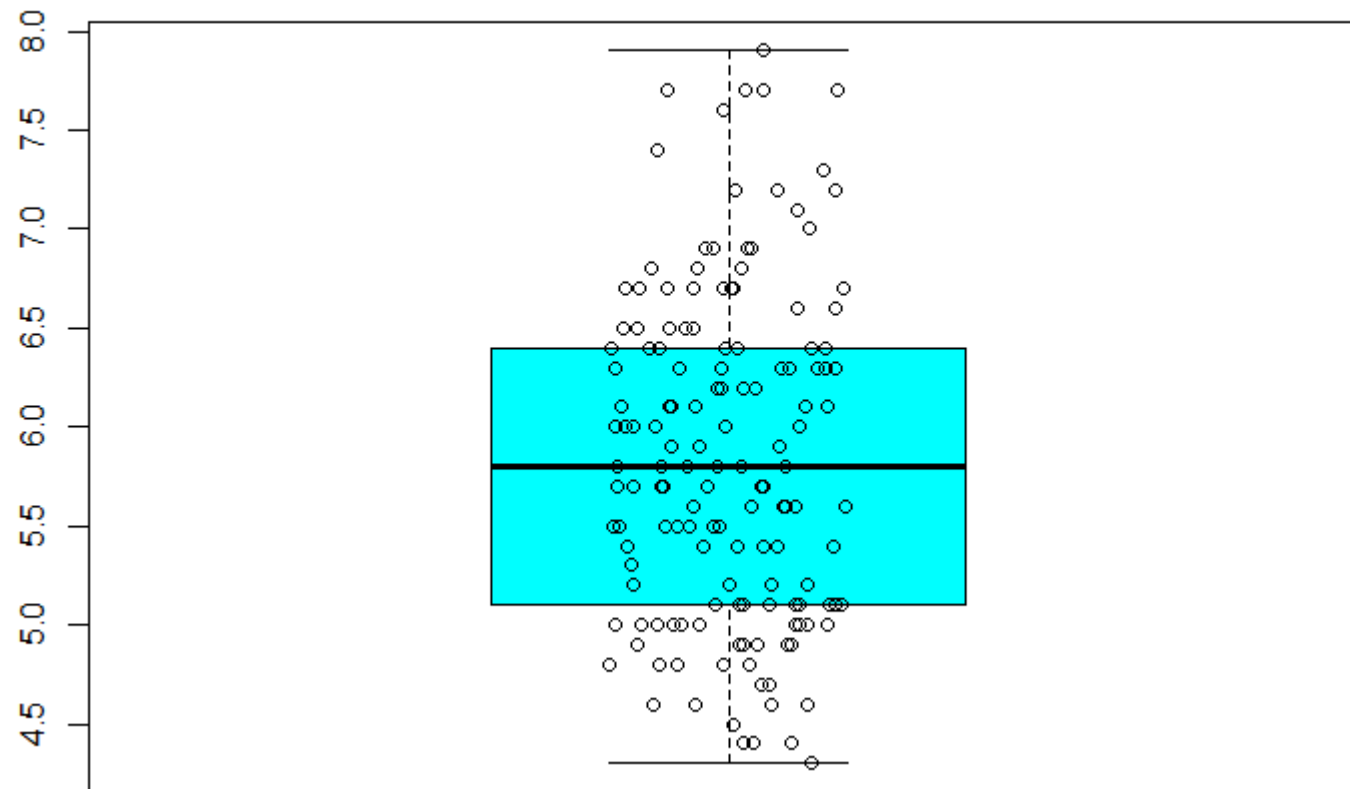
23

```
boxplot(Sepal.Length, main="Boxplot de la Longitud de Sepal-Datos Iris",  
ylab="Tamaño", col="5")
```

24

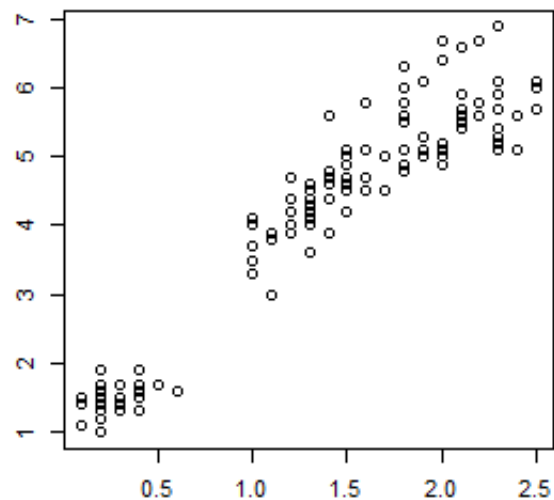
```
stripchart(Sepal.Length, method='jitter',vertical=TRUE,pch=1,  
main="Gráfica de Puntos", ylab="Rango de Datos", add=TRUE)
```

Boxplot de la Longitud de Sepal-Datos Iris

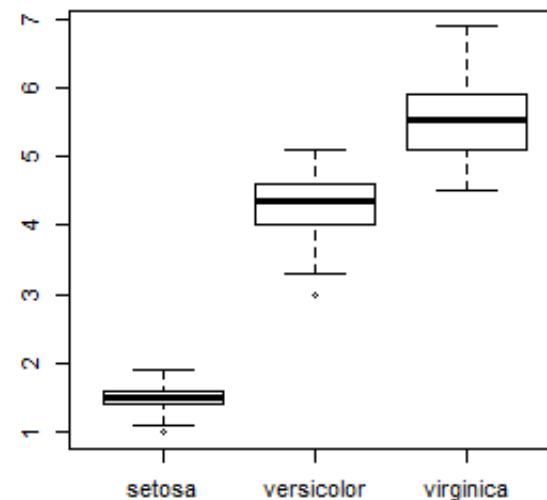
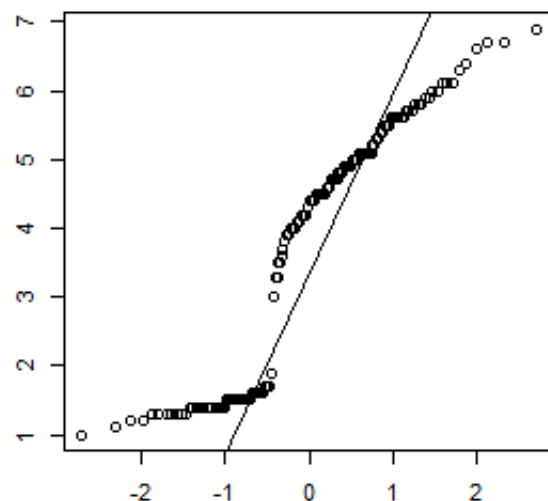


25

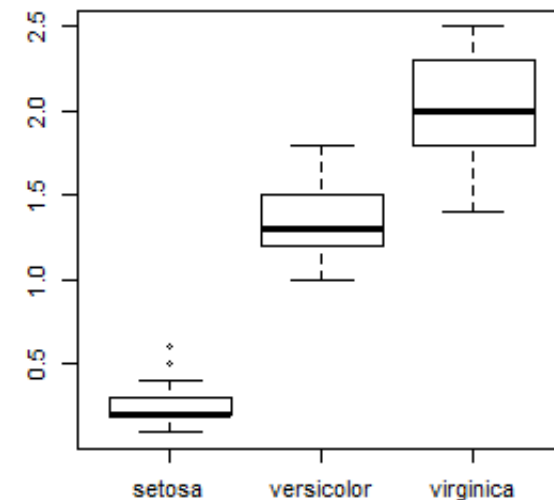
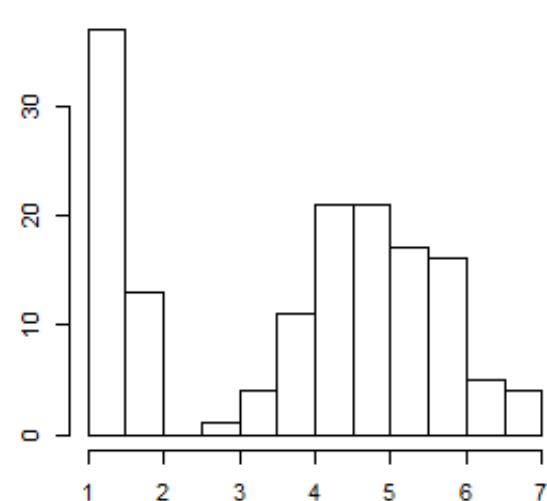
- # varios gráficos en uno
- `Conf3x2 = matrix(c(1:6), nrow=2, byrow=TRUE)`
- `layout(Conf3x2)`
- `layout.show(6)`
- `plot(iris$Petal.Length~iris$Petal.Width)`
- `boxplot(iris$Petal.Length~iris$Species)`
- `boxplot(iris$Petal.Width~iris$Species)`
- `qqnorm(iris$Petal.Length)`
- `qqline(iris$Petal.Length)`
- `hist(iris$Petal.Length)`
- `hist(iris$Petal.Width)`



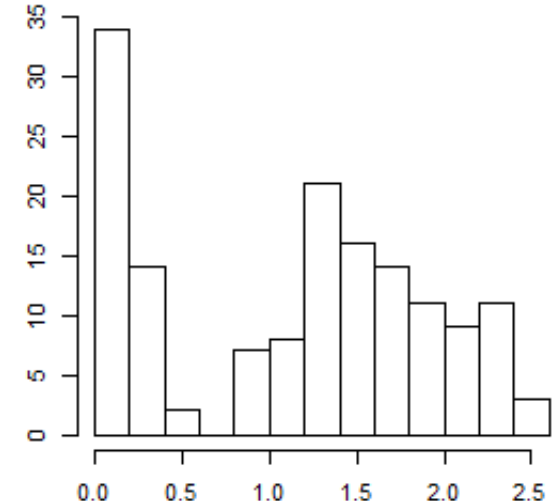
Normal Q-Q Plot



Histogram of iris\$Petal.Length



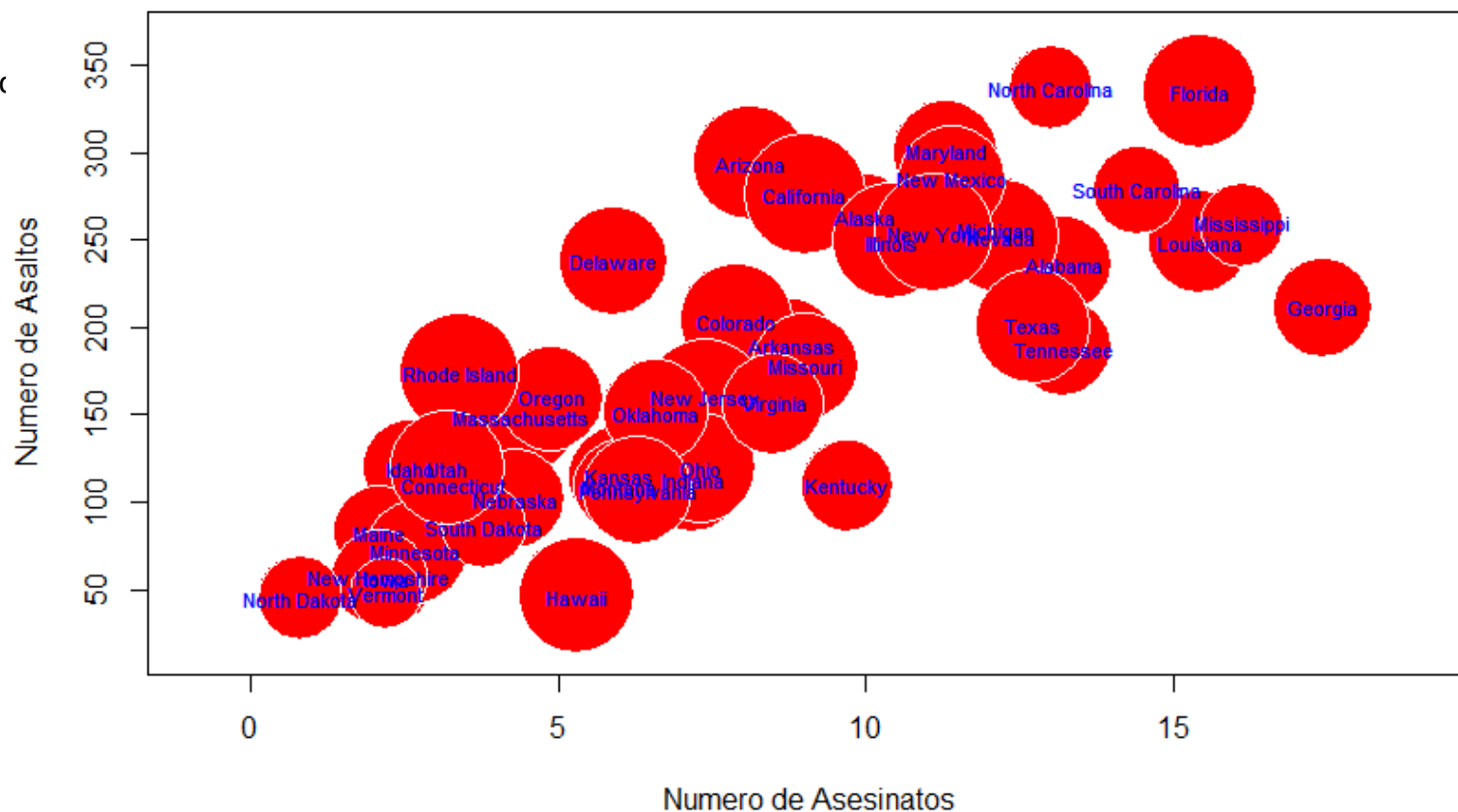
Histogram of iris\$Petal.Width





- `USArrests <- read.delim("clipboard")`
- `str(USArrests)`
- `data <- USArrests`
- `radio <- sqrt(USArrests$UrbanPop/pi)`
- `symbols(USArrests$Murder, USArrests$Assault, circles = radio)`
- `symbols(USArrests$Murder, USArrests$Assault, circles = radio, inches = 0.35, fg="white", bg="red",`
- `xlab="Numero de Asesinatos", ylab="Numero de Asaltos",`
`asesinatos- USA")`
- `text(USArrests$Murder, USArrests$Assault, USArrests$States, c`

UrbanPop en la dispersion de asaltos por asesinatos- USA



GRACIAS



PERÚ

Ministerio
de Desarrollo Agrario
y Riego

inia Instituto
Nacional de
Innovación
Agraria



Gobierno del Perú