

# Graficos

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## Gráficos

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### Matriz penguins, se encuentra en classroom

```
#----- # Importación de matriz #-----  
  
import data / from excel /browse / seleccionar archivo / aceptar  
  
#----- # Exploración #-----  
library(readxl)  
  
penguins<-read_excel("penguins.xlsx")  
  
dim(penguins)  
  
## [1] 344 9
```

### Nombre de las variables

```
colnames(penguins)  
  
## [1] "ID" "especie" "isla" "largo_pico_mm"  
## [5] "grosor_pico_mm" "largo_aleta_mm" "masa_corporal_g" "genero"  
## [9] "año"
```

### Tipo de variables

```
str(penguins)  
  
## tibble [344 x 9] (S3: tbl_df/tbl/data.frame)  
## $ ID : chr [1:344] "i1" "i2" "i3" "i4" ...  
## $ especie : chr [1:344] "Adelie" "Adelie" "Adelie" "Adelie" ...  
## $ isla : chr [1:344] "Torgersen" "Torgersen" "Torgersen" "Torgersen" ...  
## $ largo_pico_mm : num [1:344] 39.1 39.5 40.3 37.8 36.7 39.3 38.9 39.2 34.1 42 ...  
## $ grosor_pico_mm : num [1:344] 18.7 17.4 18 18.1 19.3 20.6 17.8 19.6 18.1 20.2 ...  
## $ largo_aleta_mm : num [1:344] 181 186 195 190 193 190 181 195 193 190 ...  
## $ masa_corporal_g: num [1:344] 3750 3800 3250 3700 3450 ...  
## $ genero : chr [1:344] "male" "female" "female" "female" ...  
## $ año : num [1:344] 2007 2007 2007 2007 2007 ...
```

## En busca de valores perdidos (NA's)

```
anyNA(penguins)
```

```
## [1] FALSE
```

## Estadística descriptiva

```
summary(penguins)
```

```
##      ID          especie          isla      largo_pico_mm
## Length:344      Length:344      Length:344      Min.   :32.10
## Class :character Class :character Class :character 1st Qu.:39.20
## Mode  :character Mode  :character Mode  :character Median :44.45
##                                           Mean  :43.92
##                                           3rd Qu.:48.50
##                                           Max.   :59.60
## grosor_pico_mm largo_aleta_mm masa_corporal_g genero
## Min.   :13.10   Min.   :172.0   Min.   :2700   Length:344
## 1st Qu.:15.60   1st Qu.:190.0   1st Qu.:3550   Class :character
## Median :17.30   Median :197.0   Median :4050   Mode  :character
## Mean   :17.15   Mean   :200.9   Mean   :4202
## 3rd Qu.:18.70   3rd Qu.:213.2   3rd Qu.:4756
## Max.   :21.50   Max.   :231.0   Max.   :6300
## año
## Min.   :2007
## 1st Qu.:2007
## Median :2008
## Mean   :2008
## 3rd Qu.:2009
## Max.   :2009
```

```
#-----# Configuración de la matriz #-----
```

```
penguins$especie
```

```
## [1] "Adelie" "Adelie" "Adelie" "Adelie" "Adelie" "Adelie"
## [7] "Adelie" "Adelie" "Adelie" "Adelie" "Adelie" "Adelie"
## [13] "Adelie" "Adelie" "Adelie" "Adelie" "Adelie" "Adelie"
## [19] "Adelie" "Adelie" "Adelie" "Adelie" "Adelie" "Adelie"
## [25] "Adelie" "Adelie" "Adelie" "Adelie" "Adelie" "Adelie"
## [31] "Adelie" "Adelie" "Adelie" "Adelie" "Adelie" "Adelie"
## [37] "Adelie" "Adelie" "Adelie" "Adelie" "Adelie" "Adelie"
## [43] "Adelie" "Adelie" "Adelie" "Adelie" "Adelie" "Adelie"
## [49] "Adelie" "Adelie" "Adelie" "Adelie" "Adelie" "Adelie"
## [55] "Adelie" "Adelie" "Adelie" "Adelie" "Adelie" "Adelie"
## [61] "Adelie" "Adelie" "Adelie" "Adelie" "Adelie" "Adelie"
## [67] "Adelie" "Adelie" "Adelie" "Adelie" "Adelie" "Adelie"
## [73] "Adelie" "Adelie" "Adelie" "Adelie" "Adelie" "Adelie"
## [79] "Adelie" "Adelie" "Adelie" "Adelie" "Adelie" "Adelie"
## [85] "Adelie" "Adelie" "Adelie" "Adelie" "Adelie" "Adelie"
## [91] "Adelie" "Adelie" "Adelie" "Adelie" "Adelie" "Adelie"
## [97] "Adelie" "Adelie" "Adelie" "Adelie" "Adelie" "Adelie"
## [103] "Adelie" "Adelie" "Adelie" "Adelie" "Adelie" "Adelie"
```

```
## [109] "Adelie"      "Adelie"      "Adelie"      "Adelie"      "Adelie"      "Adelie"
## [115] "Adelie"      "Adelie"      "Adelie"      "Adelie"      "Adelie"      "Adelie"
## [121] "Adelie"      "Adelie"      "Adelie"      "Adelie"      "Adelie"      "Adelie"
## [127] "Adelie"      "Adelie"      "Adelie"      "Adelie"      "Adelie"      "Adelie"
## [133] "Adelie"      "Adelie"      "Adelie"      "Adelie"      "Adelie"      "Adelie"
## [139] "Adelie"      "Adelie"      "Adelie"      "Adelie"      "Adelie"      "Adelie"
## [145] "Adelie"      "Adelie"      "Adelie"      "Adelie"      "Adelie"      "Adelie"
## [151] "Adelie"      "Adelie"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [157] "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [163] "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [169] "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [175] "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [181] "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [187] "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [193] "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [199] "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [205] "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [211] "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [217] "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [223] "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [229] "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [235] "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [241] "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [247] "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [253] "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [259] "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [265] "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [271] "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"      "Gentoo"
## [277] "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"
## [283] "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"
## [289] "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"
## [295] "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"
## [301] "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"
## [307] "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"
## [313] "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"
## [319] "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"
## [325] "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"
## [331] "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"
## [337] "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"   "Chinstrap"
## [343] "Chinstrap"   "Chinstrap"
```

#1.- Convertir las variables categóricas a factores

```
penguins$especie<-factor(penguins$especie,
                          levels=c("Adelie", "Gentoo", "Chinstrap"))
```

```
penguins$isla<-factor(penguins$isla,
                      levels=c("Torgersen", "Biscoe", "Dream"))
```

```
penguins$genero
```

```
## [1] "male"  "female" "female" "female" "female" "male"  "female" "male"
## [9] "female" "male"  "female" "female" "female" "male"  "male"  "female"
## [17] "female" "male"  "female" "male"  "female" "male"  "female" "male"
## [25] "male"  "female" "male"  "female" "female" "male"  "female" "male"
## [33] "female" "male"  "female" "male"  "male"  "female" "female" "male"
```



```
## [166] 2007 2007 2007 2007 2007 2007 2007 2007 2007 2007 2007 2007 2007 2007 2007
## [181] 2007 2007 2007 2007 2007 2007 2007 2008 2008 2008 2008 2008 2008 2008 2008 2008
## [196] 2008 2008 2008 2008 2008 2008 2008 2008 2008 2008 2008 2008 2008 2008 2008
## [211] 2008 2008 2008 2008 2008 2008 2008 2008 2008 2008 2008 2008 2008 2008 2008
## [226] 2008 2008 2008 2008 2008 2008 2008 2008 2009 2009 2009 2009 2009 2009 2009
## [241] 2009 2009 2009 2009 2009 2009 2009 2009 2009 2009 2009 2009 2009 2009 2009
## [256] 2009 2009 2009 2009 2009 2009 2009 2009 2009 2009 2009 2009 2009 2009 2009
## [271] 2009 2009 2009 2009 2009 2009 2007 2007 2007 2007 2007 2007 2007 2007 2007
## [286] 2007 2007 2007 2007 2007 2007 2007 2007 2007 2007 2007 2007 2007 2007 2007
## [301] 2007 2007 2008 2008 2008 2008 2008 2008 2008 2008 2008 2008 2008 2008 2008
## [316] 2008 2008 2008 2008 2008 2009 2009 2009 2009 2009 2009 2009 2009 2009 2009
## [331] 2009 2009 2009 2009 2009 2009 2009 2009 2009 2009 2009 2009 2009 2009 2009

penguins$año<-factor(penguins$año,
                    levels=c("2007", "2008", "2009"))

str(penguins)

## tibble [344 x 9] (S3: tbl_df/tbl/data.frame)
## $ ID          : chr [1:344] "i1" "i2" "i3" "i4" ...
## $ especie     : Factor w/ 3 levels "Adelie","Gentoo",...: 1 1 1 1 1 1 1 1 1 1 ...
## $ isla        : Factor w/ 3 levels "Torgersen","Biscoe",...: 1 1 1 1 1 1 1 1 1 1 ...
## $ largo_pico_mm : num [1:344] 39.1 39.5 40.3 37.8 36.7 39.3 38.9 39.2 34.1 42 ...
## $ grosor_pico_mm : num [1:344] 18.7 17.4 18 18.1 19.3 20.6 17.8 19.6 18.1 20.2 ...
## $ largo_aleta_mm : num [1:344] 181 186 195 190 193 190 181 195 193 190 ...
## $ masa_corporal_g: num [1:344] 3750 3800 3250 3700 3450 ...
## $ genero      : Factor w/ 2 levels "male","female": 1 2 2 2 2 1 2 1 2 1 ...
## $ año         : Factor w/ 3 levels "2007","2008",...: 1 1 1 1 1 1 1 1 1 1 ...

summary(penguins)

##      ID          especie      isla      largo_pico_mm
## Length:344      Adelie   :152   Torgersen: 52      Min.      :32.10
## Class :character  Gentoo   :124   Biscoe  :168     1st Qu.:39.20
## Mode  :character  Chinstrap: 68   Dream   :124     Median :44.45
##                                     Mean      :43.92
##                                     3rd Qu.:48.50
##                                     Max.      :59.60
## grosor_pico_mm largo_aleta_mm masa_corporal_g genero      año
## Min.      :13.10 Min.      :172.0 Min.      :2700 male :170 2007:110
## 1st Qu.:15.60 1st Qu.:190.0 1st Qu.:3550 female:174 2008:114
## Median :17.30 Median :197.0 Median :4050                2009:120
## Mean      :17.15 Mean      :200.9 Mean      :4202
## 3rd Qu.:18.70 3rd Qu.:213.2 3rd Qu.:4756
## Max.      :21.50 Max.      :231.0 Max.      :6300
```

—Este paso no es necesario.—

2.- Creamos una nueva matriz de datos donde se seleccionan las columnas de la 2 a la 9.

```
colnames(penguins)
```

```
## [1] "ID"          "especie"      "isla"         "largo_pico_mm"
## [5] "grosor_pico_mm" "largo_aleta_mm" "masa_corporal_g" "genero"
## [9] "año"
```

```
penguins1<-penguins[,2:9]
```

```
#----- # Librerías #-----
```

```
install.packages("ggplot2")
```

```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.2'
## (as 'lib' is unspecified)
```

```
library(ggplot2)
```

---

## Boxplot

```
#-----
```

### 1.- Creación de un vector de color

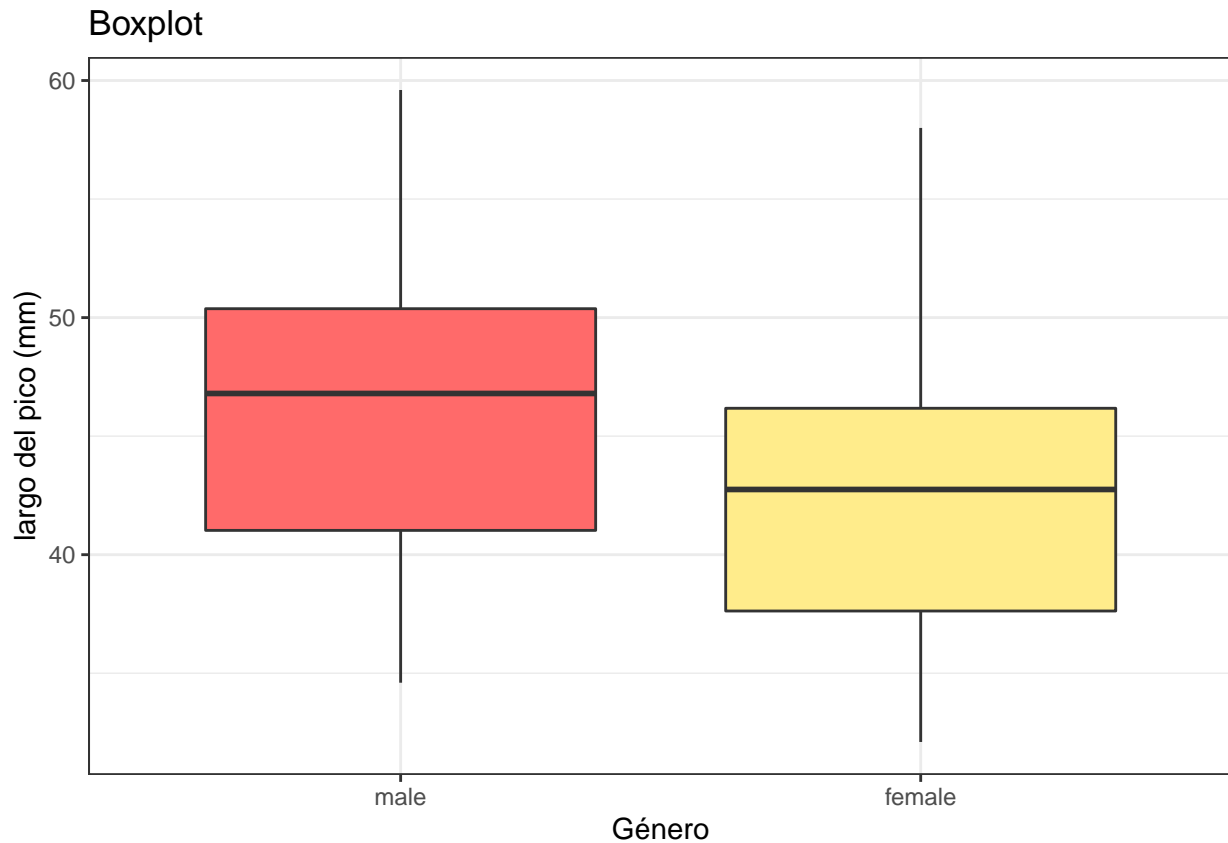
```
color=c("indianred1","lightgoldenrod1")
```

### 2.- Creacion del grafico

```
BX<-ggplot(penguins, aes(x=genero, y=largo_pico_mm))+
  geom_boxplot(fill=color)+
  ggtitle("Boxplot")+
  xlab("Género")+
  ylab("largo del pico (mm)")+
  theme_bw()
```

### 3.- Visualización del boxplot

```
BX
```



# ----- # Gráfico de barras # -----

## 1.- Creación de un vector de color

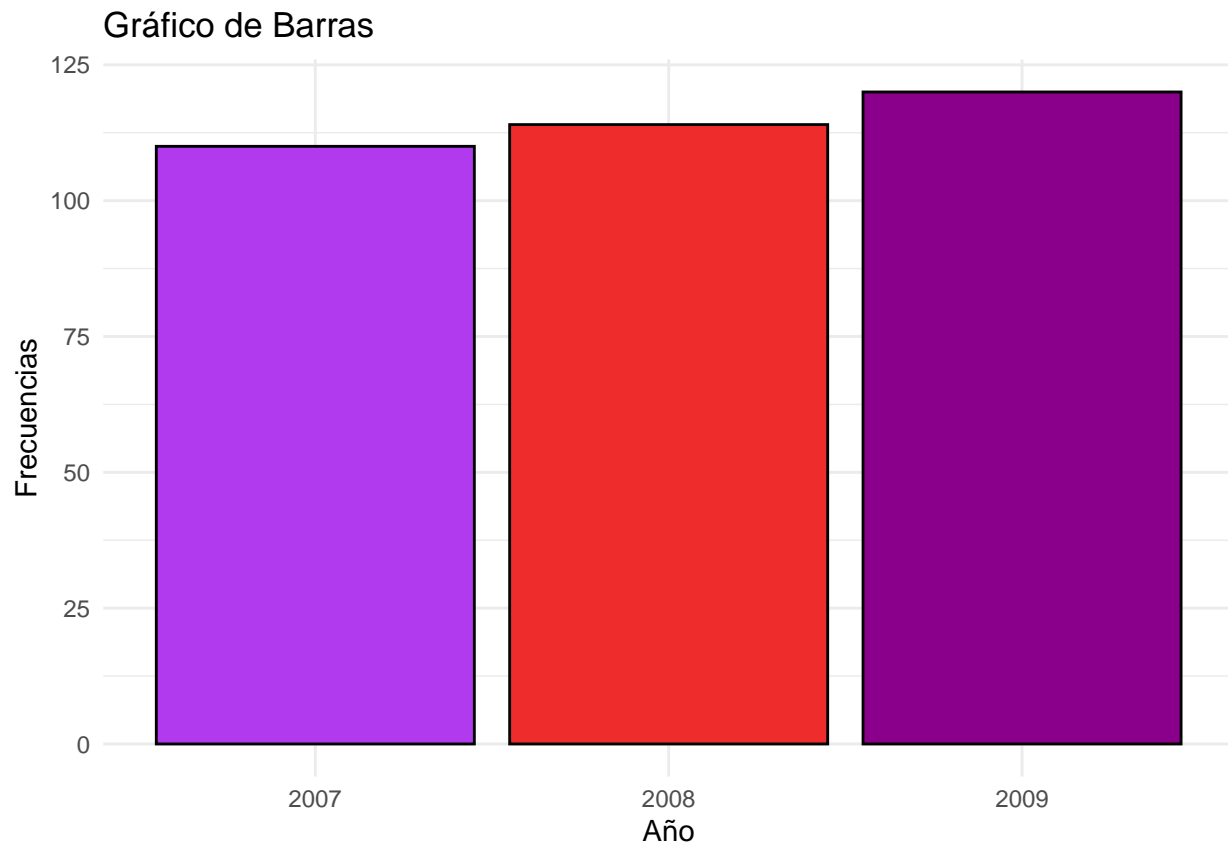
```
color=c("darkorchid2", "firebrick2", "darkmagenta")
```

## 2.- Creación del gráfico

```
GB1<-ggplot(penguins, aes(x=año))+
  geom_bar(colour= "black", fill=color)+
  ggtitle("Gráfico de Barras")+
  xlab("Año")+
  ylab("Frecuencias")+
  theme_minimal()
```

## 3.- Visualizacion del grafico

GB1



#### 4.- Barras verticales

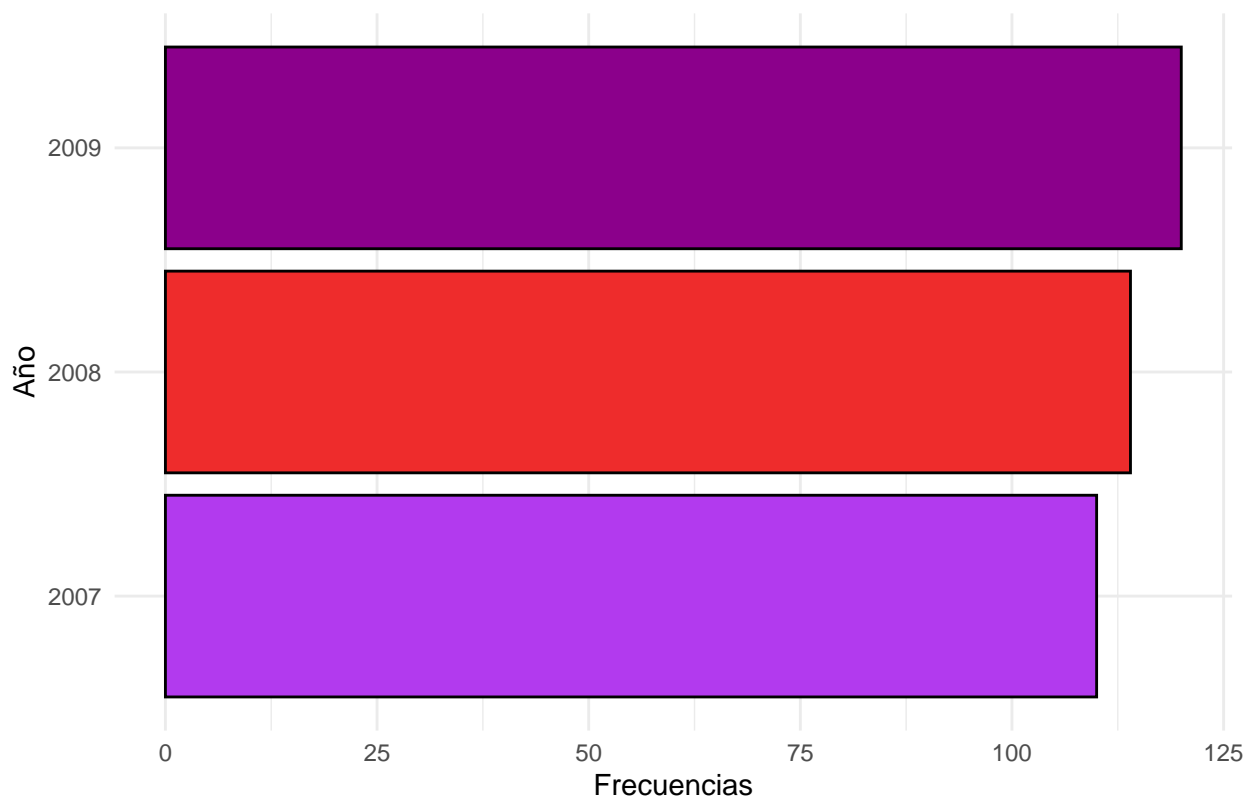
```
GB2<-ggplot(penguins, aes(x=año))+  
  geom_bar(colour= "black", fill=color)+  
  ggtitle("Gráfico de Barras")+  
  xlab("Año")+  
  ylab("Frecuencias")+  
  coord_flip()+  
  theme_minimal()
```

#### 5. Visualizacion del objeto

GB2



Gráfico de Barras



#-----# Histograma #-----

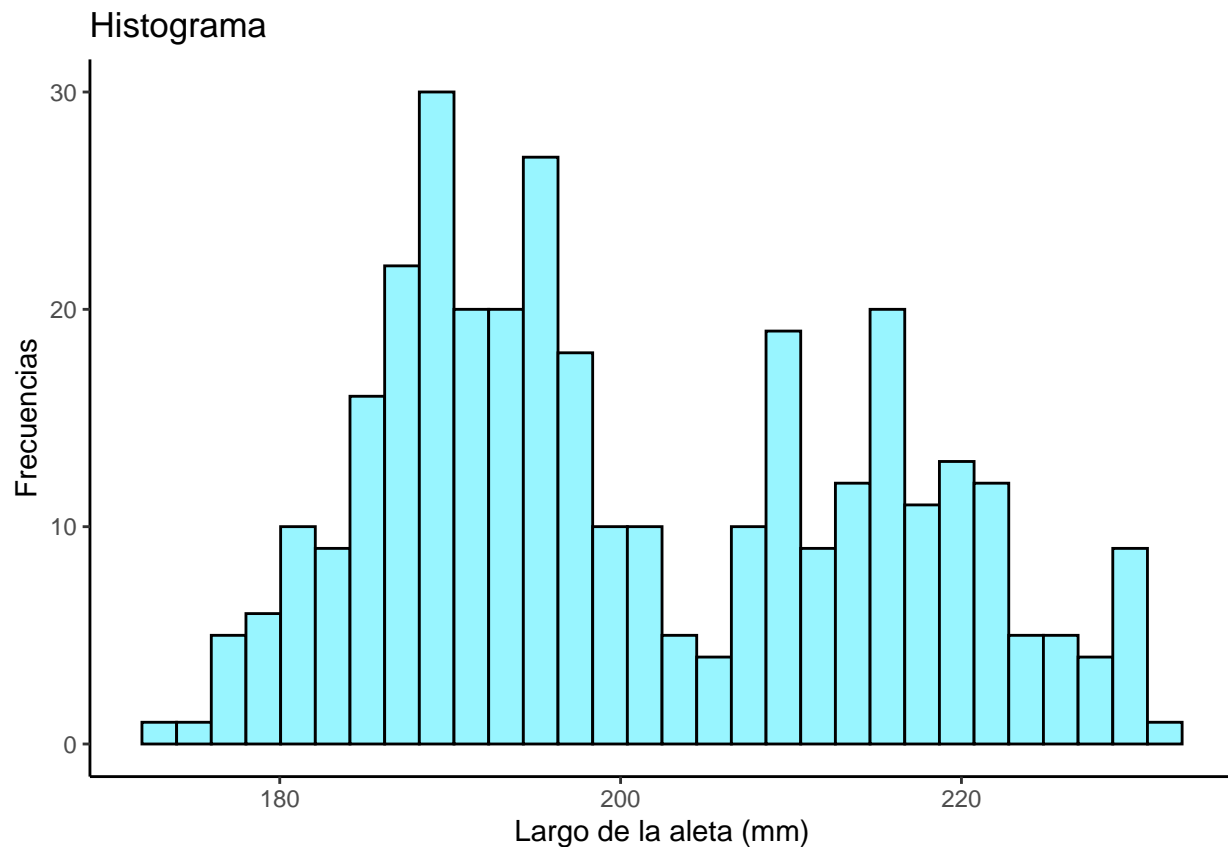
## 1.- Construcción del gráfico

```
HG<-ggplot(penguins, aes(x=largo_aleta_mm))+
  geom_histogram(col="black", fill="cadetblue1")+
  ggtitle("Histograma")+
  xlab("Largo de la aleta (mm)")+
  ylab("Frecuencias")+
  theme_classic()
```

## 2.- Visualización del gráfico

HG

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```



# ————— - # Grafico de dispersion # —————

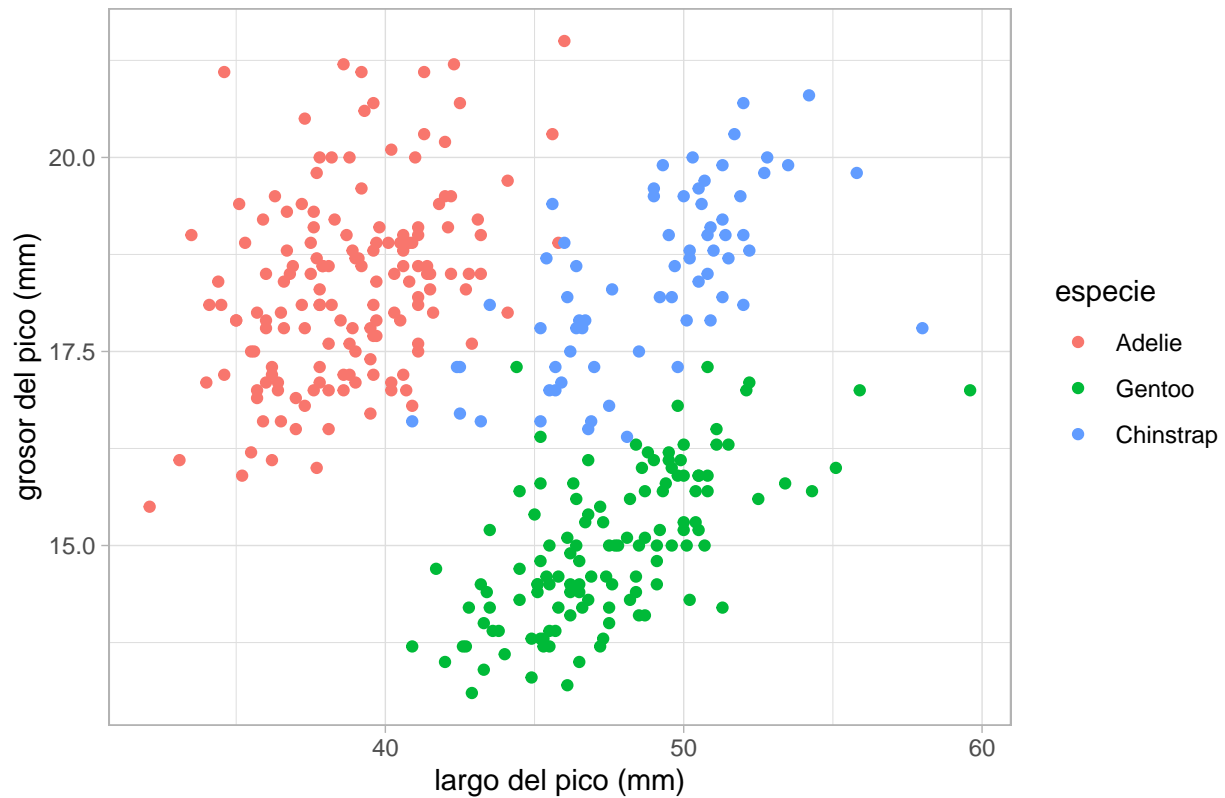
## 1.- Construcccion del grafico

```
GD<-ggplot(penguins, aes(x=largo_pico_mm, y=grosor_pico_mm))+
  geom_point(aes(color=especie))+
  ggtitle("Gráfico de dispersión")+
  xlab("largo del pico (mm)")+
  ylab("grosor del pico (mm)")+
  theme_light()
```

## 2.- Visualizacion del objeto

```
GD
```

Gráfico de dispersión



#-----# Organizacion de graficos #-----

## 1.- Descargar el paquete gridExtra

```
install.packages("gridExtra")
```

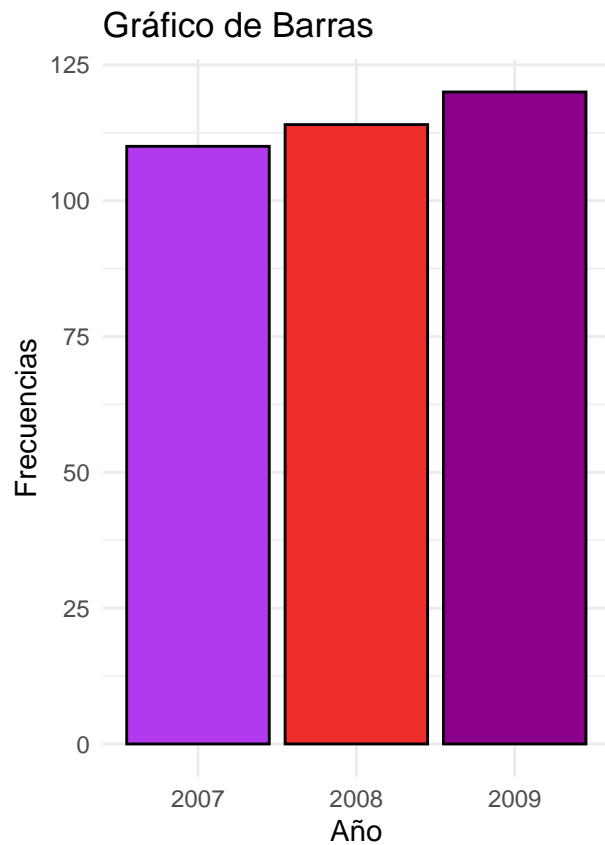
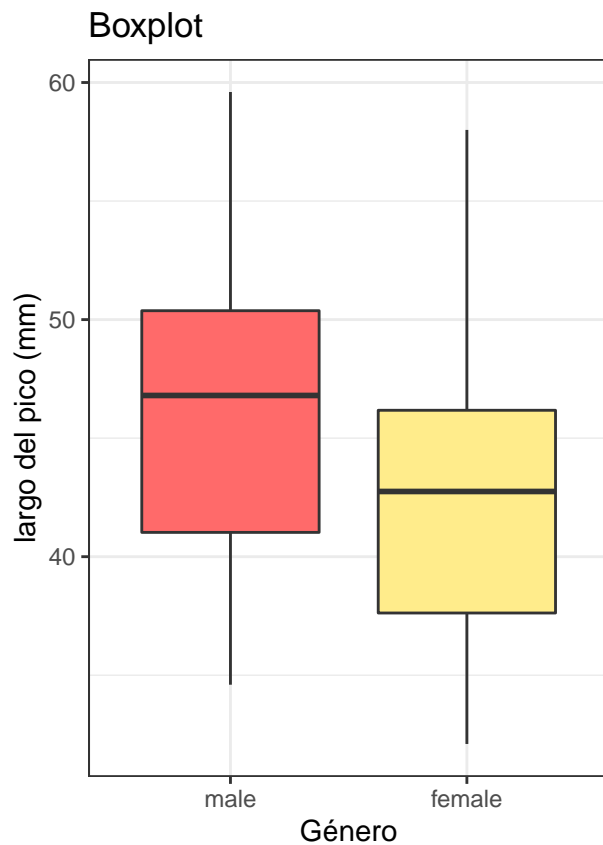
```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.2'  
## (as 'lib' is unspecified)
```

## 2.- Abrir la libreria

```
library(gridExtra)
```

## 3.- Organizacion 2 graficos en una fila y dos columnas

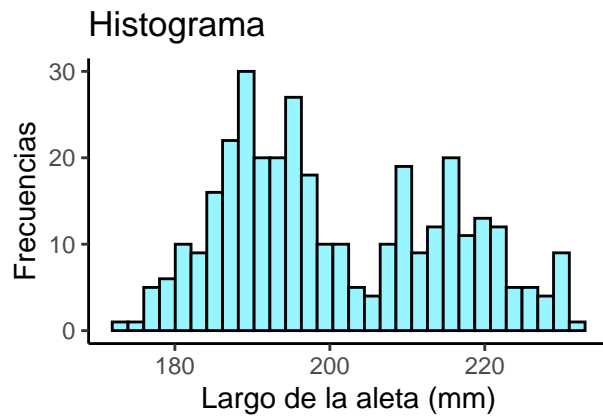
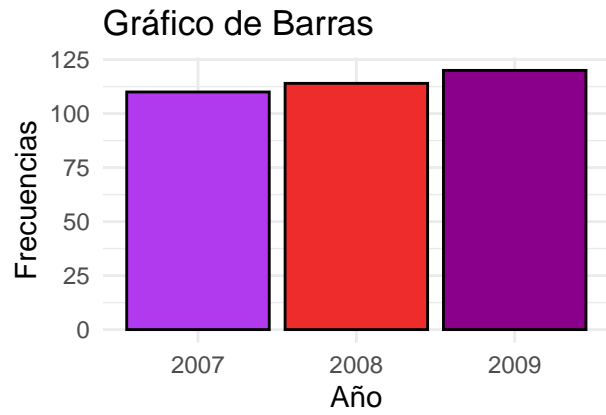
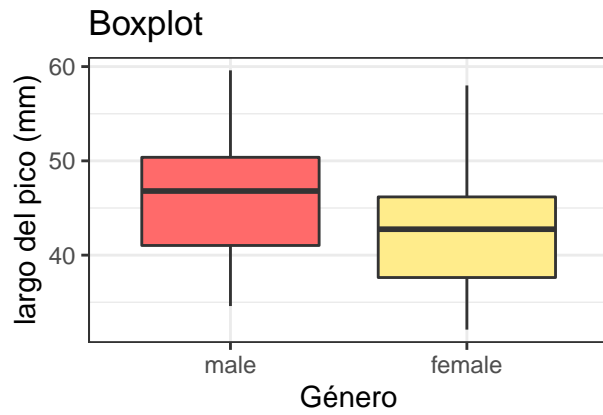
```
grid.arrange(BX,GB1, nrow=1, ncol=2)
```



#### 4.- Organizacion 3 graficos en dos filas y dos columnas

```
grid.arrange(BX,GB1,HG, nrow=2, ncol=2)
```

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```



## 5.- Organizacion 4 graficos en dos filas y dos columnas

```
grid.arrange(BX,GB1,HG,GD, nrow=2, ncol=2)
```

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```

