

# Medidas

Mónica Mejía Antonio

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## MEDIDAS

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Se trabajará con la matriz de datos “penguins.xlsx”

### 1.- Importación de matriz

Import Dataset/ from excel/ Browser/ seleccionar archivo/ aceptar/ (visualizar)/ import

### Librerías

1. Abrir librería

```
library(readxl)
```

```
penguins<-read_excel("penguins.xlsx")
```

### 2.- Acortar el nombre de la matriz de datos

```
BD<-penguins
```

```
#----- # Exploracion de matriz #-----
```

```
dim(BD)
```

```
## [1] 344 9
```

```
str(BD)
```

```
## 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 ...
```

```
colnames(BD)
```

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

```
## [9] "año"
```

```
anyNA(BD)
```

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

```
#----- # Tendencia central #-----
```

## 1.- Media y mediana

```
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
```

## 2.- Moda

### 2.1.- Se descarga el paquete “modeest”

```
install.packages("modeest")
```

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

### 2.2.- Se abre la librería

```
library(modeest)
```

### 2.3.- Cálculo de la moda para la variable isla y largo del pico

```
mfv(BD$isla) # categorica
```

```
## [1] "Biscoe"
mfv(BD$largo_pico_mm) # numerica

## [1] 41.1
mfv(BD$largo_aleta_mm) # numerica

## [1] 190
mfv(BD$grosor_pico_mm) # numerica

## [1] 17

#----- # Medidas de dispersión #-----
```

## 1.- Cálculo de la varianza (sólo para variables cuantitativas)

```
var(BD$grosor_pico_mm)
```

```
## [1] 3.884256
```

## 2.- Cálculo de la desviación estándar

```
sd(BD$grosor_pico_mm)
```

```
## [1] 1.970852
```

## 3.- Error

```
media_pico<-mean(BD$largo_pico_mm)
```

```
media_pico
```

```
## [1] 43.92413
```

```
error<-(BD$largo_pico_mm-(media_pico))
```

```
error
```

```
## [1] -4.82412791 -4.42412791 -3.62412791 -6.12412791 -7.22412791
## [6] -4.62412791 -5.02412791 -4.72412791 -9.82412791 -1.92412791
## [11] -6.12412791 -6.12412791 -2.82412791 -5.32412791 -9.32412791
## [16] -7.32412791 -5.22412791 -1.42412791 -9.52412791 2.07587209
## [21] -6.12412791 -6.22412791 -8.02412791 -5.72412791 -5.12412791
## [26] -8.62412791 -3.32412791 -3.42412791 -6.02412791 -3.42412791
## [31] -4.42412791 -6.72412791 -4.42412791 -3.02412791 -7.52412791
## [36] -4.72412791 -5.12412791 -1.72412791 -6.32412791 -4.12412791
## [41] -7.42412791 -3.12412791 -7.92412791 0.17587209 -6.92412791
## [46] -4.32412791 -2.82412791 -6.42412791 -7.92412791 -1.62412791
## [51] -4.32412791 -3.82412791 -8.92412791 -1.92412791 -9.42412791
## [56] -2.52412791 -4.92412791 -3.32412791 -7.42412791 -6.32412791
## [61] -8.22412791 -2.62412791 -6.32412791 -2.82412791 -7.52412791
## [66] -2.32412791 -8.42412791 -2.82412791 -8.02412791 -2.12412791
## [71] -10.42412791 -4.22412791 -4.32412791 1.87587209 -8.42412791
## [76] -1.12412791 -3.02412791 -6.72412791 -7.72412791 -1.82412791
```

##	[81]	-9.32412791	-1.02412791	-7.22412791	-8.82412791	-6.62412791
##	[86]	-2.62412791	-7.62412791	-7.02412791	-5.62412791	-5.02412791
##	[91]	-8.22412791	-2.82412791	-9.92412791	-4.32412791	-7.72412791
##	[96]	-3.12412791	-5.82412791	-3.62412791	-10.82412791	-0.72412791
##	[101]	-8.92412791	-2.92412791	-6.22412791	-6.12412791	-6.02412791
##	[106]	-4.22412791	-5.32412791	-5.72412791	-5.82412791	-0.72412791
##	[111]	-5.82412791	1.67587209	-4.22412791	-1.72412791	-4.32412791
##	[116]	-1.22412791	-5.32412791	-6.62412791	-8.22412791	-2.82412791
##	[121]	-7.72412791	-6.22412791	-3.72412791	-2.52412791	-8.72412791
##	[126]	-3.32412791	-5.12412791	-2.42412791	-4.92412791	0.17587209
##	[131]	-5.42412791	-0.82412791	-7.12412791	-6.42412791	-5.82412791
##	[136]	-2.82412791	-8.32412791	-3.72412791	-6.92412791	-4.22412791
##	[141]	-3.72412791	-3.32412791	-11.82412791	-3.22412791	-6.62412791
##	[146]	-4.92412791	-4.72412791	-7.32412791	-7.92412791	-6.12412791
##	[151]	-7.92412791	-2.42412791	2.17587209	6.07587209	4.77587209
##	[156]	6.07587209	3.67587209	2.57587209	1.47587209	2.77587209
##	[161]	-0.62412791	2.87587209	-3.02412791	5.07587209	1.57587209
##	[166]	4.47587209	1.87587209	5.37587209	-1.92412791	5.27587209
##	[171]	2.27587209	4.77587209	6.27587209	1.17587209	2.57587209
##	[176]	2.37587209	-1.02412791	2.17587209	0.57587209	3.87587209
##	[181]	4.27587209	6.07587209	3.37587209	-1.12412791	1.17587209
##	[186]	15.67587209	5.17587209	4.47587209	-1.32412791	0.47587209
##	[191]	0.07587209	4.77587209	-1.22412791	5.67587209	1.37587209
##	[196]	5.67587209	6.57587209	-0.32412791	1.57587209	6.57587209
##	[201]	0.97587209	1.27587209	2.67587209	4.57587209	1.17587209
##	[206]	6.17587209	2.57587209	1.07587209	-0.12412791	1.57587209
##	[211]	-0.72412791	6.47587209	1.37587209	2.27587209	1.77587209
##	[216]	10.37587209	1.87587209	5.87587209	2.27587209	5.57587209
##	[221]	-0.42412791	6.77587209	3.77587209	2.47587209	4.27587209
##	[226]	2.57587209	2.47587209	4.67587209	3.57587209	7.17587209
##	[231]	1.27587209	1.27587209	5.17587209	8.57587209	3.47587209
##	[236]	6.07587209	0.97587209	6.87587209	-0.52412791	7.37587209
##	[241]	3.57587209	8.17587209	3.57587209	8.27587209	1.57587209
##	[246]	5.57587209	0.57587209	6.87587209	5.47587209	2.97587209
##	[251]	4.47587209	7.17587209	4.57587209	11.97587209	3.27587209
##	[256]	5.17587209	3.37587209	2.87587209	-2.22412791	9.47587209
##	[261]	-0.62412791	4.17587209	6.57587209	5.87587209	-0.42412791
##	[266]	7.57587209	2.27587209	11.17587209	0.57587209	4.87587209
##	[271]	3.27587209	6.87587209	2.87587209	6.47587209	1.27587209
##	[276]	5.97587209	2.57587209	6.07587209	7.37587209	1.47587209
##	[281]	8.77587209	1.27587209	2.17587209	7.37587209	2.07587209
##	[286]	7.37587209	2.67587209	7.77587209	3.07587209	8.07587209
##	[291]	1.97587209	6.57587209	6.37587209	14.07587209	2.47587209
##	[296]	5.27587209	-1.52412791	4.57587209	-0.72412791	6.67587209
##	[301]	2.77587209	8.07587209	6.57587209	5.57587209	2.47587209
##	[306]	8.87587209	-3.02412791	10.27587209	-1.42412791	7.07587209
##	[311]	5.77587209	3.57587209	3.67587209	8.07587209	2.97587209
##	[316]	9.57587209	5.07587209	2.27587209	6.97587209	1.57587209
##	[321]	6.97587209	6.87587209	6.17587209	5.07587209	7.57587209
##	[326]	5.87587209	4.17587209	7.47587209	1.77587209	6.77587209
##	[331]	-1.42412791	8.27587209	1.27587209	5.37587209	6.27587209
##	[336]	1.67587209	7.97587209	2.87587209	1.77587209	11.87587209
##	[341]	-0.42412791	5.67587209	6.87587209	6.27587209	

## 4.- Coeficiente de variacion

```
CV<- sd(BD$largo_pico_mm)/mean(BD$largo_pico_mm)*100
```

```
CV
```

```
## [1] 12.44487
```

## 5.- Rango intercuartilico (IQR)

```
IQR(BD$largo_pico_mm)
```

```
## [1] 9.3
```

## 6.- Rango

```
pico<-BD$largo_pico_mm
```

```
pico
```

```
## [1] 39.1 39.5 40.3 37.8 36.7 39.3 38.9 39.2 34.1 42.0 37.8 37.8 41.1 38.6 34.6
## [16] 36.6 38.7 42.5 34.4 46.0 37.8 37.7 35.9 38.2 38.8 35.3 40.6 40.5 37.9 40.5
## [31] 39.5 37.2 39.5 40.9 36.4 39.2 38.8 42.2 37.6 39.8 36.5 40.8 36.0 44.1 37.0
## [46] 39.6 41.1 37.5 36.0 42.3 39.6 40.1 35.0 42.0 34.5 41.4 39.0 40.6 36.5 37.6
## [61] 35.7 41.3 37.6 41.1 36.4 41.6 35.5 41.1 35.9 41.8 33.5 39.7 39.6 45.8 35.5
## [76] 42.8 40.9 37.2 36.2 42.1 34.6 42.9 36.7 35.1 37.3 41.3 36.3 36.9 38.3 38.9
## [91] 35.7 41.1 34.0 39.6 36.2 40.8 38.1 40.3 33.1 43.2 35.0 41.0 37.7 37.8 37.9
## [106] 39.7 38.6 38.2 38.1 43.2 38.1 45.6 39.7 42.2 39.6 42.7 38.6 37.3 35.7 41.1
## [121] 36.2 37.7 40.2 41.4 35.2 40.6 38.8 41.5 39.0 44.1 38.5 43.1 36.8 37.5 38.1
## [136] 41.1 35.6 40.2 37.0 39.7 40.2 40.6 32.1 40.7 37.3 39.0 39.2 36.6 36.0 37.8
## [151] 36.0 41.5 46.1 50.0 48.7 50.0 47.6 46.5 45.4 46.7 43.3 46.8 40.9 49.0 45.5
## [166] 48.4 45.8 49.3 42.0 49.2 46.2 48.7 50.2 45.1 46.5 46.3 42.9 46.1 44.5 47.8
## [181] 48.2 50.0 47.3 42.8 45.1 59.6 49.1 48.4 42.6 44.4 44.0 48.7 42.7 49.6 45.3
## [196] 49.6 50.5 43.6 45.5 50.5 44.9 45.2 46.6 48.5 45.1 50.1 46.5 45.0 43.8 45.5
## [211] 43.2 50.4 45.3 46.2 45.7 54.3 45.8 49.8 46.2 49.5 43.5 50.7 47.7 46.4 48.2
## [226] 46.5 46.4 48.6 47.5 51.1 45.2 45.2 49.1 52.5 47.4 50.0 44.9 50.8 43.4 51.3
## [241] 47.5 52.1 47.5 52.2 45.5 49.5 44.5 50.8 49.4 46.9 48.4 51.1 48.5 55.9 47.2
## [256] 49.1 47.3 46.8 41.7 53.4 43.3 48.1 50.5 49.8 43.5 51.5 46.2 55.1 44.5 48.8
## [271] 47.2 50.8 46.8 50.4 45.2 49.9 46.5 50.0 51.3 45.4 52.7 45.2 46.1 51.3 46.0
## [286] 51.3 46.6 51.7 47.0 52.0 45.9 50.5 50.3 58.0 46.4 49.2 42.4 48.5 43.2 50.6
## [301] 46.7 52.0 50.5 49.5 46.4 52.8 40.9 54.2 42.5 51.0 49.7 47.5 47.6 52.0 46.9
## [316] 53.5 49.0 46.2 50.9 45.5 50.9 50.8 50.1 49.0 51.5 49.8 48.1 51.4 45.7 50.7
## [331] 42.5 52.2 45.2 49.3 50.2 45.6 51.9 46.8 45.7 55.8 43.5 49.6 50.8 50.2
```

```
max(pico)
```

```
## [1] 59.6
```

```
min(pico)
```

```
## [1] 32.1
```

```
rango<-max(pico)-min(pico)
```

```
rango
```

```
## [1] 27.5
```

```
#-----# Medidas de posición #-----
```

## 1.- Cuartiles

```
summary(BD)
```

```
##      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
```

## 2.- Quintil

```
quintil<-quantile(BD[["largo_aleta_mm"]],
                  p=c(.20, .40, .60, .80))
```

No poner .10 porque representa otro valor

```
quintil
```

```
## 20% 40% 60% 80%
## 188 194 203 215
```

## 3.- Decil

```
decil<-quantile(BD[["largo_aleta_mm"]],
                p=c(.10, .20, .30, .40, .50, .60,
                    .70, .80, .90))
```

```
decil
```

```
## 10% 20% 30% 40% 50% 60% 70% 80% 90%
```

```
## 185 188 191 194 197 203 210 215 221
```

## 4.- Percentil

```
percentil<-quantile(BD[["largo_aleta_mm"]],  
                    p=c(.33, .66, .99))
```

```
percentil
```

```
## 33% 66% 99%  
## 192 209 230
```

## Interpretacion:

<192 = Bajo 192-209 = Intermedio > 209 = Alto

#----- # Ejercicio 1 #----- # 1.- Media y mediana

```
summary(BD)
```

```
##      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
```

## Variable - masa corporal

La media es 4202 y la mediana 4050

## 2.- Moda

### Cálculo de la moda para la variable masa corporal

```
mfv(BD$masa_corporal_g) # numerica
```

```
## [1] 3700 3800
```

La moda de mi variable es 3700 y 3800

```
#-----# Medidas de dispersión #-----
```

## 1.- Cálculo de la varianza (sólo para variables cuantitativas)

```
var(BD$masa_corporal_g)
```

```
## [1] 641436.2
```

Mi varianza es de 641436.2

## 2.- Cálculo de la desviación estándar

```
sd(BD$masa_corporal_g)
```

```
## [1] 800.8971
```

Mi desviación estandar es 800.8971

## 3.- Error

```
media_masa<-mean(BD$masa_corporal_g)
```

```
media_masa
```

```
## [1] 4202.253
```

La media de mi masa es 4202.253

```
error<-(BD$masa_corporal_g-(media_masa))
```

```
error
```

```
## [1] -452.252907 -402.252907 -952.252907 -502.252907 -752.252907
## [6] -552.252907 -577.252907 472.747093 -727.252907 47.747093
## [11] -902.252907 -502.252907 -1002.252907 -402.252907 197.747093
## [16] -502.252907 -752.252907 297.747093 -877.252907 -2.252907
## [21] -802.252907 -602.252907 -402.252907 -252.252907 -402.252907
## [26] -402.252907 -652.252907 -1002.252907 -1052.252907 -252.252907
## [31] -952.252907 -302.252907 -902.252907 -302.252907 -877.252907
## [36] -52.252907 -252.252907 -652.252907 -902.252907 447.747093
## [41] -1052.252907 -302.252907 -1102.252907 197.747093 -1202.252907
## [46] 397.747093 -777.252907 -1227.252907 -752.252907 -52.252907
## [51] -702.252907 97.747093 -752.252907 -152.252907 -1302.252907
## [56] -502.252907 -652.252907 -402.252907 -1352.252907 -452.252907
## [61] -1052.252907 197.747093 -602.252907 -152.252907 -1352.252907
## [66] -252.252907 -852.252907 -102.252907 -1152.252907 247.747093
## [71] -602.252907 -302.252907 -652.252907 -52.252907 -502.252907
## [76] 47.747093 -502.252907 -302.252907 -652.252907 -202.252907
## [81] -1002.252907 497.747093 -402.252907 -2.252907 -852.252907
## [86] -652.252907 -402.252907 -702.252907 -252.252907 -602.252907
## [91] -652.252907 97.747093 -802.252907 247.747093 -902.252907
## [96] 97.747093 -502.252907 147.747093 -1302.252907 -102.252907
```



##	[101]	-477.252907	522.747093	-1127.252907	47.747093	-1277.252907
##	[106]	-652.252907	-452.252907	-302.252907	-1027.252907	572.747093
##	[111]	-377.252907	397.747093	-1002.252907	72.747093	-302.252907
##	[116]	-127.252907	-1302.252907	-427.252907	-852.252907	-877.252907
##	[121]	-1052.252907	-702.252907	-752.252907	-327.252907	-1152.252907
##	[126]	-202.252907	-927.252907	97.747093	-1152.252907	-202.252907
##	[131]	-877.252907	-702.252907	-702.252907	272.747093	-777.252907
##	[136]	-302.252907	-1027.252907	-227.252907	-802.252907	47.747093
##	[141]	-802.252907	-727.252907	-1152.252907	-477.252907	-1202.252907
##	[146]	-552.252907	47.747093	-727.252907	-752.252907	-452.252907
##	[151]	-502.252907	-202.252907	297.747093	1497.747093	247.747093
##	[156]	1497.747093	1197.747093	347.747093	597.747093	997.747093
##	[161]	197.747093	947.747093	447.747093	1347.747093	447.747093
##	[166]	1647.747093	-2.252907	1647.747093	-52.252907	2097.747093
##	[171]	597.747093	1147.747093	1497.747093	797.747093	197.747093
##	[176]	847.747093	797.747093	897.747093	-102.252907	1447.747093
##	[181]	397.747093	1347.747093	1047.747093	497.747093	847.747093
##	[186]	1847.747093	947.747093	1197.747093	747.747093	1047.747093
##	[191]	147.747093	1147.747093	-252.252907	1497.747093	97.747093
##	[196]	547.747093	1347.747093	697.747093	-2.252907	1197.747093
##	[201]	897.747093	1097.747093	647.747093	1097.747093	197.747093
##	[206]	797.747093	697.747093	847.747093	97.747093	797.747093
##	[211]	247.747093	1347.747093	-2.252907	1097.747093	197.747093
##	[216]	1447.747093	497.747093	1497.747093	447.747093	1597.747093
##	[221]	497.747093	1347.747093	547.747093	797.747093	897.747093
##	[226]	997.747093	497.747093	1597.747093	397.747093	1797.747093
##	[231]	547.747093	1747.747093	422.747093	1247.747093	522.747093
##	[236]	1147.747093	547.747093	1397.747093	397.747093	1097.747093
##	[241]	672.747093	1347.747093	747.747093	1197.747093	547.747093
##	[246]	1447.747093	647.747093	997.747093	722.747093	672.747093
##	[251]	422.747093	1047.747093	647.747093	1397.747093	772.747093
##	[256]	1297.747093	522.747093	1297.747093	497.747093	1297.747093
##	[261]	372.747093	1297.747093	797.747093	1747.747093	447.747093
##	[266]	1297.747093	172.747093	1647.747093	672.747093	1797.747093
##	[271]	722.747093	672.747093	647.747093	1547.747093	997.747093
##	[276]	1197.747093	-702.252907	-302.252907	-552.252907	-677.252907
##	[281]	-477.252907	-252.252907	-952.252907	-452.252907	-52.252907
##	[286]	-502.252907	-402.252907	-427.252907	-502.252907	-152.252907
##	[291]	-627.252907	-152.252907	-902.252907	-502.252907	-752.252907
##	[296]	197.747093	-602.252907	-802.252907	-1302.252907	-402.252907
##	[301]	-902.252907	-52.252907	-802.252907	-402.252907	-502.252907
##	[306]	347.747093	-1002.252907	97.747093	-852.252907	-102.252907
##	[311]	-602.252907	-302.252907	-352.252907	597.747093	-1502.252907
##	[316]	297.747093	-252.252907	-552.252907	-652.252907	-702.252907
##	[321]	-527.252907	247.747093	-802.252907	97.747093	-952.252907
##	[326]	-527.252907	-877.252907	-252.252907	-602.252907	-152.252907
##	[331]	-852.252907	-752.252907	-952.252907	-152.252907	-402.252907
##	[336]	-677.252907	-252.252907	-552.252907	-552.252907	-202.252907
##	[341]	-802.252907	-427.252907	-102.252907	-427.252907	

## 4.- Coeficiente de variacion

```
CV<- sd(BD$masa_corporal_g)/mean(BD$masa_corporal_g)*100
```

```
CV
```

```
## [1] 19.05876
```

Mi coeficiente de variacion es 19.05876

## 5.- Rango intercuartilico (IQR)

```
IQR(BD$masa_corporal_g)
```

```
## [1] 1206.25
```

Mi rango intercuartilico es 1206.25

## 6.- Rango

```
masa<-BD$masa_corporal_g
```

```
masa
```

```
## [1] 3750 3800 3250 3700 3450 3650 3625 4675 3475 4250 3300 3700 3200 3800 4400
## [16] 3700 3450 4500 3325 4200 3400 3600 3800 3950 3800 3800 3550 3200 3150 3950
## [31] 3250 3900 3300 3900 3325 4150 3950 3550 3300 4650 3150 3900 3100 4400 3000
## [46] 4600 3425 2975 3450 4150 3500 4300 3450 4050 2900 3700 3550 3800 2850 3750
## [61] 3150 4400 3600 4050 2850 3950 3350 4100 3050 4450 3600 3900 3550 4150 3700
## [76] 4250 3700 3900 3550 4000 3200 4700 3800 4200 3350 3550 3800 3500 3950 3600
## [91] 3550 4300 3400 4450 3300 4300 3700 4350 2900 4100 3725 4725 3075 4250 2925
## [106] 3550 3750 3900 3175 4775 3825 4600 3200 4275 3900 4075 2900 3775 3350 3325
## [121] 3150 3500 3450 3875 3050 4000 3275 4300 3050 4000 3325 3500 3500 4475 3425
## [136] 3900 3175 3975 3400 4250 3400 3475 3050 3725 3000 3650 4250 3475 3450 3750
## [151] 3700 4000 4500 5700 4450 5700 5400 4550 4800 5200 4400 5150 4650 5550 4650
## [166] 5850 4200 5850 4150 6300 4800 5350 5700 5000 4400 5050 5000 5100 4100 5650
## [181] 4600 5550 5250 4700 5050 6050 5150 5400 4950 5250 4350 5350 3950 5700 4300
## [196] 4750 5550 4900 4200 5400 5100 5300 4850 5300 4400 5000 4900 5050 4300 5000
## [211] 4450 5550 4200 5300 4400 5650 4700 5700 4650 5800 4700 5550 4750 5000 5100
## [226] 5200 4700 5800 4600 6000 4750 5950 4625 5450 4725 5350 4750 5600 4600 5300
## [241] 4875 5550 4950 5400 4750 5650 4850 5200 4925 4875 4625 5250 4850 5600 4975
## [256] 5500 4725 5500 4700 5500 4575 5500 5000 5950 4650 5500 4375 5850 4875 6000
## [271] 4925 4875 4850 5750 5200 5400 3500 3900 3650 3525 3725 3950 3250 3750 4150
## [286] 3700 3800 3775 3700 4050 3575 4050 3300 3700 3450 4400 3600 3400 2900 3800
## [301] 3300 4150 3400 3800 3700 4550 3200 4300 3350 4100 3600 3900 3850 4800 2700
## [316] 4500 3950 3650 3550 3500 3675 4450 3400 4300 3250 3675 3325 3950 3600 4050
## [331] 3350 3450 3250 4050 3800 3525 3950 3650 3650 4000 3400 3775 4100 3775
```

```
max(masa)
```

```
## [1] 6300
```

```
min(masa)
```

```
## [1] 2700
```

Mi valor maximo (Q3) de masa es 6300 y Mi valor minimo (Q1) de masa es 2700

```
rango<-max(pico)-min(pico)
```

```
rango
```

```
## [1] 27.5
```

Mi rango es 27.5

```
#----- # Medidas de posición #-----
```

## 1.- Cuartiles

```
summary(BD)
```

```
##      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
```

## 2.- Quintil

```
quintil<-quantile(BD[["masa_corporal_g"]],
                  p=c(.20, .40, .60, .80))
```

```
quintil
```

```
## 20% 40% 60% 80%
## 3475 3800 4300 4950
```

Mis quintiles son 3475 3800 4300 4950

## 3.- Decil

```
decil<-quantile(BD[["largo_aleta_mm"]],
                p=c(.10, .20, .30, .40, .50, .60,
                    .70, .80, .90))
```

```
decil
```

```
## 10% 20% 30% 40% 50% 60% 70% 80% 90%  
## 185 188 191 194 197 203 210 215 221
```

Mis deciles son 185 188 191 194 197 203 210 215 221

## 4.- Percentil

```
percentil<-quantile(BD[["largo_aleta_mm"]],  
                    p=c(.33, .66, .99))
```

```
percentil
```

```
## 33% 66% 99%  
## 192 209 230
```

Mis percentiles son 192 209 230