Medidas1

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Medidas

Se trabajará con la matriz de datos penguins.

```
library("readxl")
```

```
penguins<-read_excel("/cloud/project/penguins.xlsx")
```

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 libreria.

```
library(modeest)
```

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

```
mfv(penguins$isla)
```

```
## [1] "Biscoe"
```

```
mfv(penguins$largo_pico_mm)
```

```
## [1] 41.1
```

Medidas de dispersión.

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

```
var(penguins$grosor_pico_mm)
```

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

2. Cálculo de la desviación estándar.

```
sd(penguins$grosor_pico_mm)
```

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

3.- Error

```
media_pico<-mean(penguins$largo_pico_mm)
error<-(penguins$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 variación.

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

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

5. Rango intercuartilico (IQR).

```
IQR(penguins$largo_pico_mm)
```

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

6. Rango.

```
pico<-penguins$largo_pico_mm
rango<-max(pico)-min(pico)
rango
```

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

Medidas de posición.

1. Cuartiles.

```
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. Quintil.

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

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

3. Decil.

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

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

Interpretación.

- 192: Bajo 192 - 209: Medio
- 209: Bajo