

# Medidas

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Se llama la base de datos a Markdown

```
library(readxl)
penguins <- read_excel("penguins.xlsx", col_types = c("skip",
  "text", "text", "numeric", "numeric",
  "numeric", "numeric", "text", "numeric"))
```

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

*Tendencia central*

## 1.- Media y mediana

```
summary(penguins)
```

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

## 2.- Moda

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

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

### 2.2.- Se abre la librería

```
library(modeest)
```

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

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

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

```
mfv(penguins$largo_pico_mm) # numerica
```

```
## [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 variacion

```
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)
```

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

## Percentil

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

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

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