Medidas de tendencia central

Ariadna Janeth Rosas Luna

2022-09-28

#Medidas

Se trabajará con la matriz de datos "penguins.xlsx"

```
library(readxl)
```

```
penguins_1_ <- read_excel("penguins (1).xlsx")
```

```
BD<-read_excel("/cloud/project/penguins (1).xlsx")
```

Tendencia central

1.- Media y mediana

```
summary(penguins_1_)
```

```
##      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")
```

2.2.- Se abre la librería

```
library(modeest)
```

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

```
#categoría
mfv(penguins_1_$isla)
```

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

```
#numérica
mfv(penguins_1_$largo_pico_mm)
```

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

Medidas de dispersión

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

```
var(penguins_1_$grosor_pico_mm)
```

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

2.- Cálculo de la desviación estándar

```
sd(penguins_1_$grosor_pico_mm)
```

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

3.- Error

```
media_pico<-mean(penguins_1_$largo_pico_mm)
```

```
error<-(penguins_1_$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_1_$largo_pico_mm)/mean(penguins_1_$largo_pico_mm)*100
CV
```

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

5.- Rango intercualtilico

```
IQR(penguins_1_$largo_pico_mm)
```

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

6.- Rango

```
pico<-penguins_1_$largo_pico_mm
rango<-max(pico)-min(pico)
rango
```

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

Medidas de posición

1.- Cuartiles

```
summary(penguins_1_)
```

```
##       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_1_[["largo_aleta_mm"]],
                  p=c(.20, .40, .60, .80))
```

```
quintil
```

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

3.- Decil

```
decil<-quantile(penguins_1_[["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_1_[["largo_aleta_mm"]],
                    p=c(.33, .66, .99))
```

```
percentil
```

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

Interpretacion:

< 192 = Bajo

192-209 = Intermedio

> 209 = Alto