

Medidas de tendencia central

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#_____MEDIDAS_____

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

```
library(readxl)
penguins <- read_excel("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/4.1'  
## (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(penguins$isla)
```

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

categorica

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

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

numerica

```
#----- # 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)
```

```
##      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
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```

```
## 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
```

Percentil

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

```
percentil
```

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

Interpretacion:

<192 = Bajo

192-209 = Intermedio

> 209 = Alto