

Medidas

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Se trabajará con la matriz de datos “penguins.xlsx” Obtenida de <https://allisonhorst.github.io/palmerpenguins/>

Descargar la matriz y subirla a la nube de trabajo

- 1.- Descargar la matriz desde classroom o github Nota: El archivo se encontrará en la carpeta de descargas
- 2.- En la ventana de visualización (ventana 4) seleccionar: Upload / Seleccionar archivo / abrir la carpeta en donde se encuentra descargado el archivo (carpeta de descargas)/ aceptar.

Exportación de la matriz

Environment /Import dataset/from excel/ Browser/ seleccionar el archivo/ aceptar/ (visualizar)/ import

- 1.- Instalar paqueteria

```
install.packages("readxl")
```

```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.3'  
## (as 'lib' is unspecified)
```

Abrir libreria

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

- 2.- Exportación de la matriz de datos

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

Exploración de la matriz

- 1.- Dimensión de la matriz

```
dim(penguins)
```

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

- 2.- Tipo de variables

```
str(penguins)
```

```
## 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 ...
```

3.- Nombre de las columnas

```
colnames(penguins)
```

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

4.- En busca de datos perdidos

```
anyNA(penguins)
```

```
## [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/4.3'
## (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 Isla-categoría

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

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

Largo pico-númeroica

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

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

Medidas de posición

.- Cuartiles (cuantiles)

```
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
```

1.1 Selección de una variable de la matriz de datos

```
largo_aleta_mm<-penguins$largo_aleta_mm
```

```
table(largo_aleta_mm)
```

```
## largo_aleta_mm
## 172 174 176 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194
##   1   1   1   4   1   5   7   3   2   7   9   7  16   6   7  23  13   7  15   5
## 195 196 197 198 199 200 201 202 203 205 206 207 208 209 210 211 212 213 214 215
##  17  10  10   8   6   4   6   4   5   3   1   2   8   5  14   2   7   6   6  12
## 216 217 218 219 220 221 222 223 224 225 226 228 229 230 231
##   8   6   5   5   8   5   7   2   3   4   1   4   2   7   1
```

2.- Quintil

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

2.1.- Visualización de la variable

```
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))
```

3.1.- Visualización de la variable

```
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))
```

4.1.- Visualización

```
percentil
```

```
## 33% 66%  
## 192 209
```

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

```
table(largo_aleta_mm)
```

```
## largo_aleta_mm  
## 172 174 176 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194  
## 1 1 1 4 1 5 7 3 2 7 9 7 16 6 7 23 13 7 15 5  
## 195 196 197 198 199 200 201 202 203 205 206 207 208 209 210 211 212 213 214 215  
## 17 10 10 8 6 4 6 4 5 3 1 2 8 5 14 2 7 6 6 12  
## 216 217 218 219 220 221 222 223 224 225 226 228 229 230 231  
## 8 6 5 5 8 5 7 2 3 4 1 4 2 7 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
```