Correlaciones

Yoel Domínguez

2023-10-04

#Coeficiente de correlacion de person

Para datos con distribucion normal. Area: estadistica parametrica. Utilizando la matriz "penguins.xlsx"

1. instalacion de paqueterias.

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

```
library(readxl)
```

#Exportacion de la matriz de datos

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

#2.1.- Nombre de las columnas

#Para conocer el nombre de las columnas de nuestra base de datos, se ocupa: # **colnames (BD)**

colnames(penguins)

```
colnames(penguins)
```

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

#3.-Exploración de la matriz

#3.1.-Dimensión de la matriz

#Se utiliza el siguiente comando para saber la dimensión de la matriz: **dim(BD)**

dim(penguins)

```
dim(penguins)
```

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

#4.- Tipo de variables

#Para observar las variables y el tipo, que tenemos ocupamos: **str(penguins)**

str(penguins)

```
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 ...
```

#5.- Enbusca de datos perdidos

#Buscamos si tenemos datos perdidos o no con: # **anyNA(penguins)**

anyNA(penguins)

```
anyNA(penguins)
```

```
## [1] FALSE
```

#Para sacar el coeficiente de correlación de Pearson

#1.-Seleccionar las variables que vayamos a correlacionar, ocupamos: # **str(penguins)**

penguins$especie

str(penguins)

```
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 ...
```

penguins$especie

```
penguins$especie
```

```
##   [1] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
##   [7] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
##  [13] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
##  [19] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
##  [25] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
##  [31] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
##  [37] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
##  [43] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
##  [49] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
##  [55] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
##  [61] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
##  [67] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
##  [73] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
##  [79] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
##  [85] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
##  [91] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
##  [97] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
## [103] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
## [109] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
## [115] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
```

```
## [121] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
## [127] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
## [133] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
## [139] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
## [145] "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"    "Adelie"
## [151] "Adelie"    "Adelie"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [157] "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [163] "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [169] "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [175] "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [181] "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [187] "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [193] "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [199] "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [205] "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [211] "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [217] "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [223] "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [229] "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [235] "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [241] "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [247] "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [253] "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [259] "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [265] "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [271] "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"    "Gentoo"
## [277] "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap"
## [283] "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap"
## [289] "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap"
## [295] "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap"
## [301] "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap"
## [307] "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap"
## [313] "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap"
## [319] "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap"
## [325] "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap"
## [331] "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap"
## [337] "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap" "Chinstrap"
## [343] "Chinstrap" "Chinstrap"
```

#2.- Se seleccionan las filas 1 a la 61, que corresponden a la especie Adeli y las variables cuantitativas.

adeli<-penguins[1:61,4:7]

adeli<-penguins[1:61,4:7]

```
adeli<-penguins[1:61,4:7]
```

#3.-Visualización de la matriz

#Para poder visualizar nuestro objeto

adeli

```
adeli
```

```
## # A tibble: 61 x 4
##    largo_pico_mm grosor_pico_mm largo_aleta_mm masa_corporal_g
```

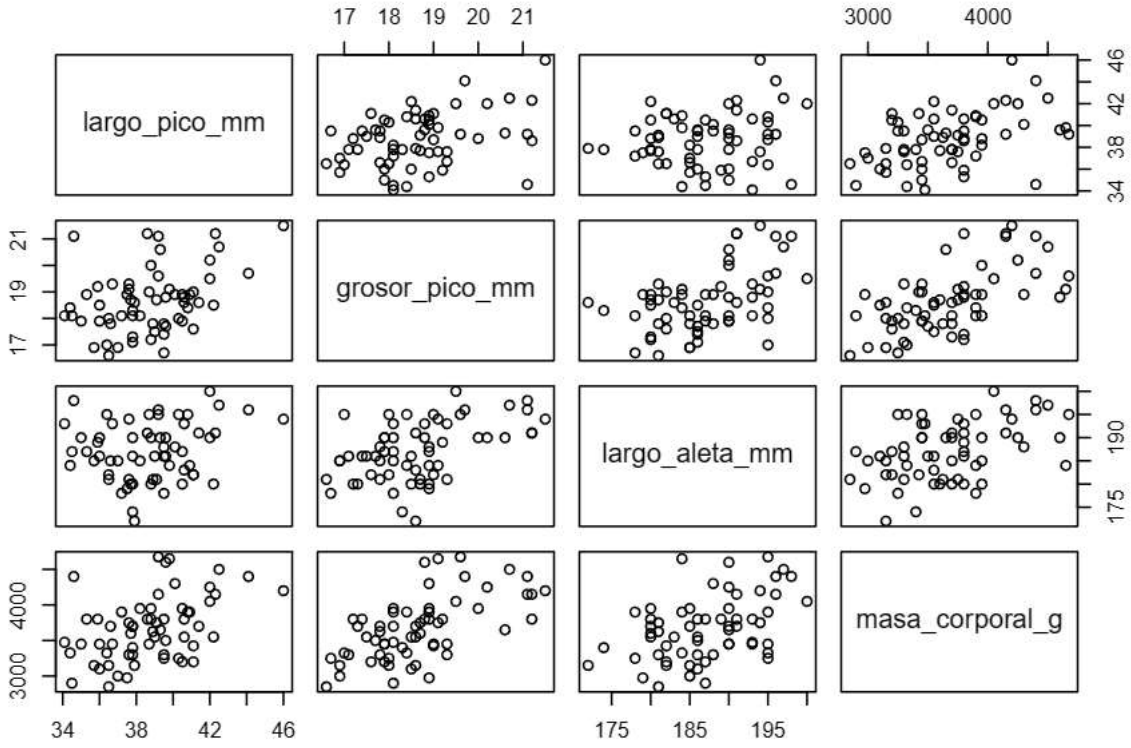
```
##            <dbl>          <dbl>          <dbl>          <dbl>
##  1          39.1           18.7            181           3750
##  2          39.5           17.4            186           3800
##  3          40.3           18              195           3250
##  4          37.8           18.1            190           3700
##  5          36.7           19.3            193           3450
##  6          39.3           20.6            190           3650
##  7          38.9           17.8            181           3625
##  8          39.2           19.6            195           4675
##  9          34.1           18.1            193           3475
## 10          42             20.2            190           4250
## # i 51 more rows
```

#4.-Generación del gráfico de correlación

plot(adeli)

plot(adeli)

```
plot(adeli)
```



#5.- Cálculo de la correlación de Pearson

cor(adeli)

cor(adeli)

```
cor(adeli)
```

```
##                largo_pico_mm grosor_pico_mm largo_aleta_mm masa_corporal_g
## largo_pico_mm      1.0000000      0.3778875      0.1766987       0.4535845
```

```
## grosor_pico_mm      0.3778875      1.0000000      0.4760336      0.6144894
## largo_aleta_mm      0.1766987      0.4760336      1.0000000      0.4458517
## masa_corporal_g     0.4535845      0.6144894      0.4458517      1.0000000
```

#6.- Organización visual de la tabla de correlaciones

#6.1 Se genera un nuevo objeto con el no,mbre de Pearson, es decir,

pearson<-cor(adeli)

```
pearson<-cor(adeli)
```

#6.2.- Se abre l alibreria knitr

library(knitr)

```
library(knitr)
```

#6.3.-Se utiliza la función Kable

kable(pearson)

```
kable(pearson)
```

	largo_pico_mm	grosor_pico_mm	largo_aleta_mm	masa_corporal_g
largo_pico_mm	1.0000000	0.3778875	0.1766987	0.4535845
grosor_pico_mm	0.3778875	1.0000000	0.4760336	0.6144894
largo_aleta_mm	0.1766987	0.4760336	1.0000000	0.4458517
masa_corporal_g	0.4535845	0.6144894	0.4458517	1.0000000