

MRLS

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Medidas de Regresión Lineal Simple

Lectura de matriz de datos

Exportar la matriz penguins.xlsx

1.- Instalar paqueteria

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

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

2.-Abrir librería

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

3.- Exportación de la matriz de datos

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

Configuracion de matriz

1.- Convertir las variables categóricas a factores

```
penguins$especie<-factor(penguins$especie,  
                        levels=c("Adelie", "Gentoo", "Chinstrap"))
```

```
penguins$isla<-factor(penguins$isla,  
                     levels=c("Torgersen", "Biscoe", "Dream"))
```

```
penguins$genero<-factor(penguins$genero,  
                       levels=c("male", "female"))
```

```
penguins$año<-factor(penguins$año,  
                    levels=c("2007", "2008", "2009"))
```

Selección de variables

1.- se seleccionaran los datos de la especie gentoo y se crea una nueva matriz llamada "gentoo"

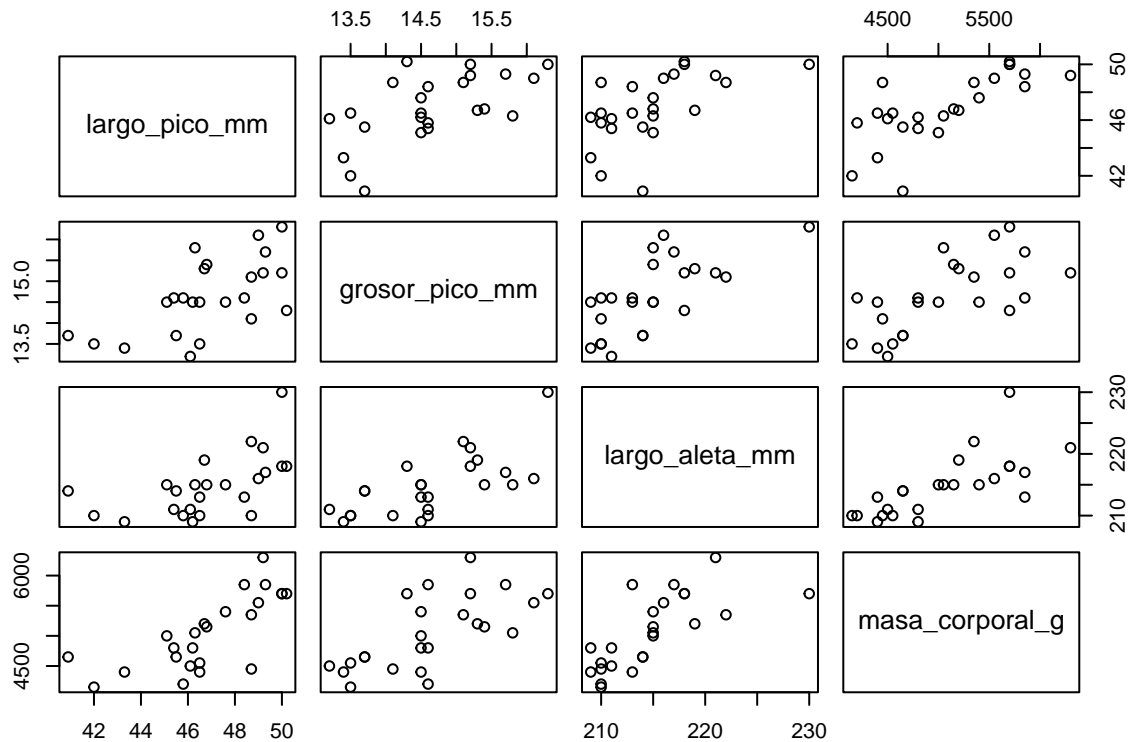
```
penguins$especie
```

```
##      [1] Adelie    Adelie    Adelie    Adelie    Adelie    Adelie    Adelie  
##      [8] Adelie    Adelie    Adelie    Adelie    Adelie    Adelie    Adelie  
##     [15] Adelie    Adelie    Adelie    Adelie    Adelie    Adelie    Adelie  
##     [22] Adelie    Adelie    Adelie    Adelie    Adelie    Adelie    Adelie
```

```
## [29] Adelie Adelie Adelie Adelie Adelie Adelie Adelie
## [36] Adelie Adelie Adelie Adelie Adelie Adelie Adelie
## [43] Adelie Adelie Adelie Adelie Adelie Adelie Adelie
## [50] Adelie Adelie Adelie Adelie Adelie Adelie Adelie
## [57] Adelie Adelie Adelie Adelie Adelie Adelie Adelie
## [64] Adelie Adelie Adelie Adelie Adelie Adelie Adelie
## [71] Adelie Adelie Adelie Adelie Adelie Adelie Adelie
## [78] Adelie Adelie Adelie Adelie Adelie Adelie Adelie
## [85] Adelie Adelie Adelie Adelie Adelie Adelie Adelie
## [92] Adelie Adelie Adelie Adelie Adelie Adelie Adelie
## [99] Adelie Adelie Adelie Adelie Adelie Adelie Adelie
## [106] Adelie Adelie Adelie Adelie Adelie Adelie Adelie
## [113] Adelie Adelie Adelie Adelie Adelie Adelie Adelie
## [120] Adelie Adelie Adelie Adelie Adelie Adelie Adelie
## [127] Adelie Adelie Adelie Adelie Adelie Adelie Adelie
## [134] Adelie Adelie Adelie Adelie Adelie Adelie Adelie
## [141] Adelie Adelie Adelie Adelie Adelie Adelie Adelie
## [148] Adelie Adelie Adelie Adelie Adelie Adelie Adelie
## [155] Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo
## [162] Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo
## [169] Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo
## [176] Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo
## [183] Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo
## [190] Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo
## [197] Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo
## [204] Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo
## [211] Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo
## [218] Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo
## [225] Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo
## [232] Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo
## [239] Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo
## [246] Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo
## [253] Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo
## [260] Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo
## [267] Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo Gentoo
## [274] Gentoo Gentoo Gentoo Chinstrap Chinstrap Chinstrap Chinstrap
## [281] Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap
## [288] Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap
## [295] Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap
## [302] Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap
## [309] Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap
## [316] Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap
## [323] Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap
## [330] Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap
## [337] Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap Chinstrap
## [344] Chinstrap
## Levels: Adelie Gentoo Chinstrap
gentoo<-penguins[153:176,c(4,5,6,7)]
```

Grafico de dispersion

```
pairs(gentoo)
```



Calculo de la correlacion de Pearson

```
cor(gentoo)
```

```
##                largo_pico_mm grosor_pico_mm largo_aleta_mm masa_corporal_g
## largo_pico_mm      1.0000000      0.6185638      0.5781154      0.7386365
## grosor_pico_mm      0.6185638      1.0000000      0.6931901      0.6735989
## largo_aleta_mm      0.5781154      0.6931901      1.0000000      0.7205205
## masa_corporal_g      0.7386365      0.6735989      0.7205205      1.0000000
```

Gráfico de dispersion con linea de regresión

1. Paquete de ggplot2

1.1 Instalar paquetería

```
install.packages("ggplot2")
```

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

1.2 Abrir librería

```
library(ggplot2)
```

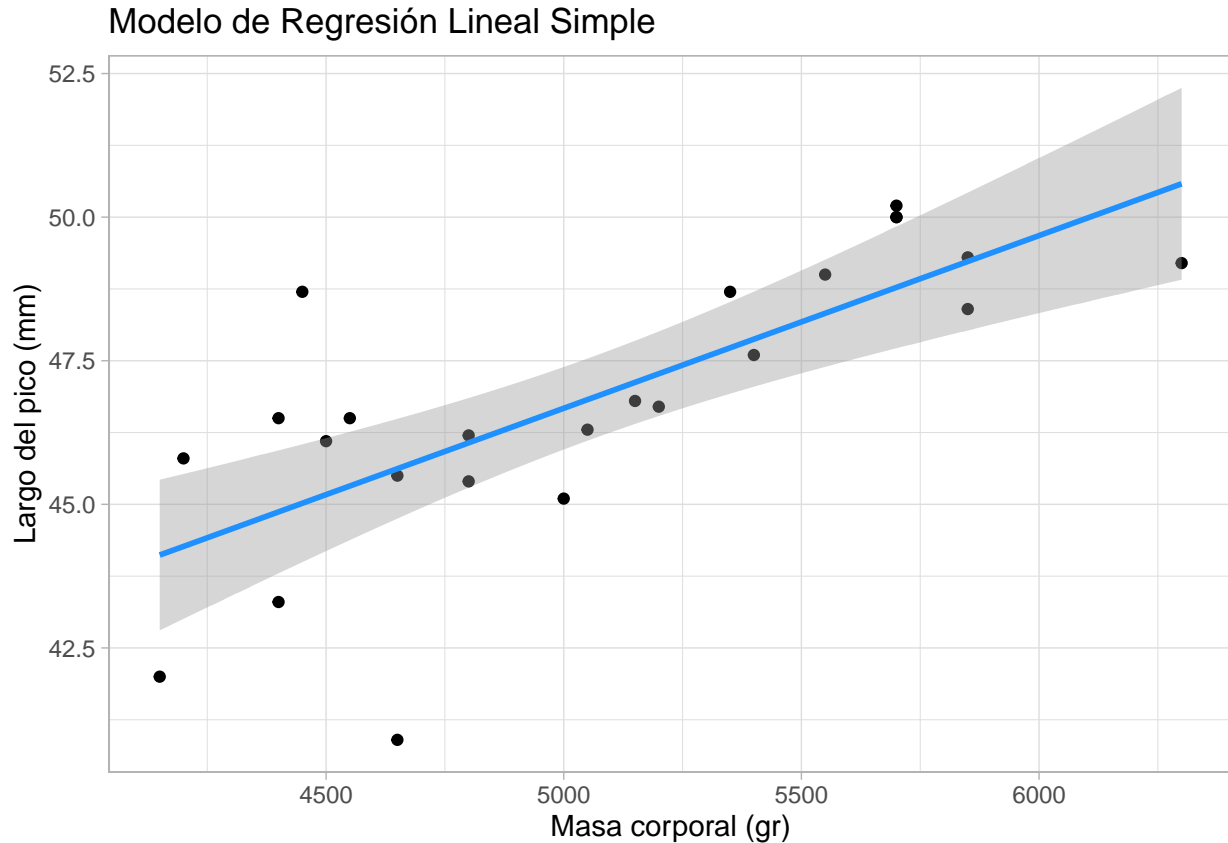
2.- Creación de gráfico

```
MRL<-ggplot(gentoo, aes(x=masa_corporal_g, y=largo_pico_mm))+
  geom_point()+
  geom_smooth(method = "lm", formula=y~x, col="dodgerblue1")+
  ggtitle("Modelo de Regresión Lineal Simple")+
  xlab("Masa corporal (gr)")+
```

```
ylab("Largo del pico (mm)") +  
theme_light()
```

2.- Visualización del objeto

MRL



Cálculo y representación de la recta por mínimos cuadrados

```
regresion<-lm(gentoo$largo_pico_mm~gentoo$masa_corporal_g,  
data=gentoo)
```

```
summary(regresion)
```

```
##  
## Call:  
## lm(formula = gentoo$largo_pico_mm ~ gentoo$masa_corporal_g, data = gentoo)  
##  
## Residuals:  
##      Min       1Q   Median       3Q      Max   
## -4.7203 -0.7105 -0.0242  1.1910  3.6810   
##  
## Coefficients:  
##              Estimate Std. Error t value Pr(>|t|)      
## (Intercept)    31.640147    2.977858  10.625 3.96e-10 ***  
## gentoo$masa_corporal_g  0.003007    0.000585   5.139 3.76e-05 ***  
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1  
##  
## Residual standard error: 1.69 on 22 degrees of freedom  
## Multiple R-squared:  0.5456, Adjusted R-squared:  0.5249  
## F-statistic: 26.41 on 1 and 22 DF,  p-value: 3.761e-05
```

Coeficiente de Correlacion de Pearson (r)

```
sqrt(0.5456)
```

```
## [1] 0.7386474
```