

MRLS

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MODELO DE REGRESIÓN LINEAL SIMPLE

Lectura de matriz de datos

Exportar la matriz penguins.xlsx

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

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

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

Configuración de matriz

```
1.- Convertir las variables categóricas a factores  
"r penguinsespecie <- factor(penguinsespecie,  
  levels=c("Adelie", "Gentoo", "Chinstrap"))  
  penguinsisla <- factor(penguinsisla,  
    levels=c("Torgersen", "Biscoe", "Dream"))  
  penguinsgenero <- factor(penguinsgenero,  
    levels=c("male", "female"))  
penguinsaño <- factor(penguinsaño, 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"

Selección de la especie Gentoo

```
penguins$especie
```

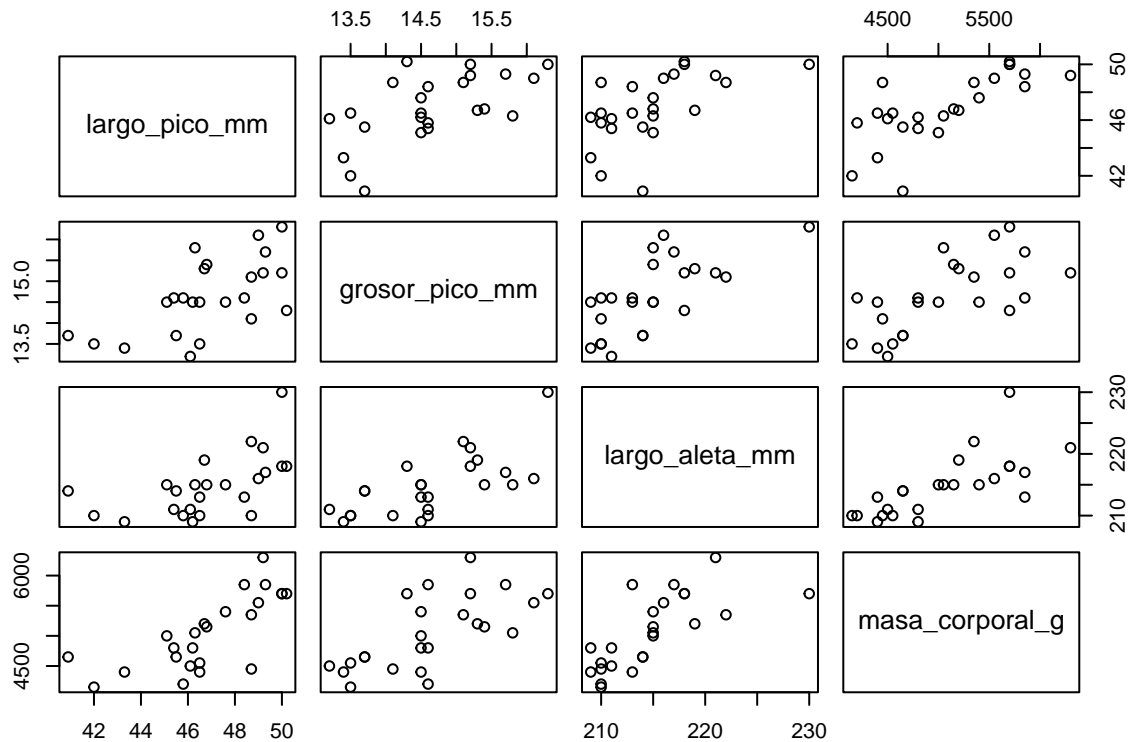
```
## [1] Adelie Adelie Adelie Adelie Adelie Adelie Adelie  
## [8] Adelie Adelie Adelie Adelie Adelie Adelie Adelie  
## [15] Adelie Adelie Adelie Adelie Adelie Adelie Adelie  
## [22] Adelie Adelie Adelie Adelie Adelie Adelie Adelie  
## [29] Adelie Adelie Adelie Adelie Adelie Adelie Adelie  
## [36] 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
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## [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)]
```

Gráfico 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
```

Grafico de dispersion con linea de regresion

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

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

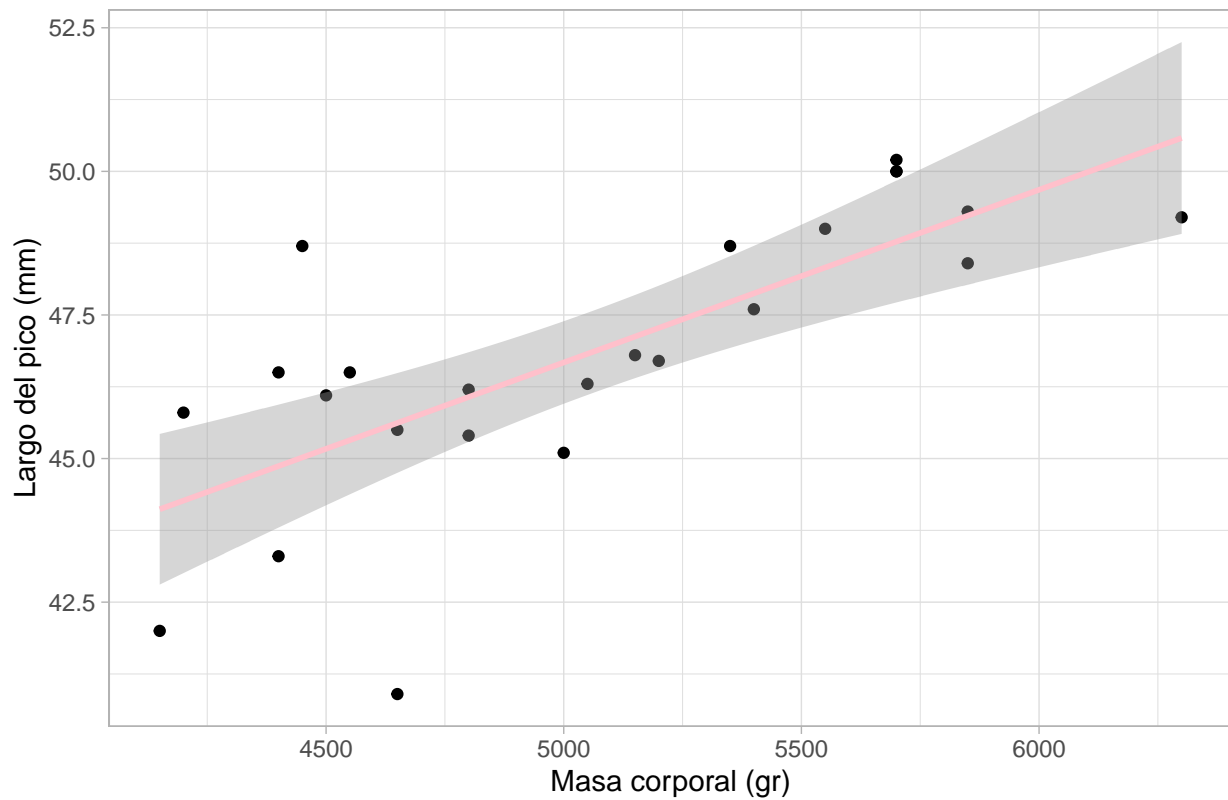
```
library(ggplot2)
```

Se crea el grafico

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

2.- Visualizacion del objeto

Modelo de Regresión Lineal Simple



Cálculo y representación de la recta
por mínimos cuadrados

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

```
summary(regresion)
```

Coeficiente de Correlacion de Pearson (r)

```
sqrt(0.5456)
```

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