# Tarea_5_Luis_Miguel_Toribio_Ferrer.R

toryf

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```
# Tarea 05: Asignacion 5: Correlacion
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# Ejercicio 01 ------------------------------------------------------------

#Abundancia de las efímeras de un arroyo y la velocidad de la corriente de un arroyo.

Speed <- c(2,3, 5, 9, 14, 24, 29, 34)
abundance <- c(6, 3, 5, 23, 16, 12, 48, 43)

emiferas <- data.frame(Speed, abundance)

plot(emiferas, pch =20, xlab=" variable independiente", ylab= "varable dependiente")

#Contestar las siguientes interrogantes: + ¿Es estadísticamente significativa la correlación?

cor.test(emiferas$Speed, emiferas$abundance)
```

```
##
##  Pearson's product-moment correlation
##
## data:  emiferas$Speed and emiferas$abundance
## t = 3.8568, df = 6, p-value = 0.008393
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.3442317 0.9711386
## sample estimates:
##       cor
## 0.8441408
```

```
# H1. Existe una correlación positiva entre la velocidad de los arroyos y la abundancia de efíme
ras (Ecdyonurus dispar)



# Ejercicio 2 -------------------------------------------------------------

datos_suelos <- read.csv("suelo.csv")
head(datos_suelos)
```

```
##   X Group Contour  Depth Gp Block   pH     N Dens   P    Ca   Mg    K   Na
## 1 1     1     Top   0-10 T0     1 5.40 0.188 0.92 215 16.35 7.65 0.72 1.14
## 2 2     1     Top   0-10 T0     2 5.65 0.165 1.04 208 12.25 5.15 0.71 0.94
## 3 3     1     Top   0-10 T0     3 5.14 0.260 0.95 300 13.02 5.68 0.68 0.60
## 4 4     1     Top   0-10 T0     4 5.14 0.169 1.10 248 11.92 7.88 1.09 1.01
## 5 5     2     Top oct-30 T1     1 5.14 0.164 1.12 174 14.17 8.12 0.70 2.17
## 6 6     2     Top oct-30 T1     2 5.10 0.094 1.22 129  8.55 6.92 0.81 2.67
##   Conduc
## 1   1.09
## 2   1.35
## 3   1.41
## 4   1.64
## 5   1.85
## 6   3.18
```

```
datoscolumnas <- subset(datos_suelos[ ,7:15])
# Realizar un análisis de correlación para las variables y reportar en un cuadro los valores de coeficiente de correlación y su valor de significancia (p-value):

cor.test(datos_suelos$pH, datos_suelos$N)
```

```
##
##  Pearson's product-moment correlation
##
## data:  datos_suelos$pH and datos_suelos$N
## t = 5.5994, df = 46, p-value = 1.149e-06
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.4303716 0.7797377
## sample estimates:
##      cor
## 0.636654
```

```
cor.test(datos_suelos$pH, datos_suelos$Dens)
```

```
##
##  Pearson's product-moment correlation
##
## data:  datos_suelos$pH and datos_suelos$Dens
## t = -4.9436, df = 46, p-value = 1.062e-05
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.7479775 -0.3661760
## sample estimates:
##        cor
## -0.5890264
```

```
cor.test(datos_suelos$pH, datos_suelos$P)
```

```
##
##  Pearson's product-moment correlation
##
## data:  datos_suelos$pH and datos_suelos$P
## t = 4.9694, df = 46, p-value = 9.74e-06
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.3688348 0.7493286
## sample estimates:
##       cor
## 0.5910303
```

```
cor.test(datos_suelos$pH, datos_suelos$Ca)
```

```
##
##  Pearson's product-moment correlation
##
## data:  datos_suelos$pH and datos_suelos$Ca
## t = 9.3221, df = 46, p-value = 3.614e-12
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.6809493 0.8885997
## sample estimates:
##       cor
## 0.8086293
```

```
cor.test(datos_suelos$pH, datos_suelos$Mg)
```

```
##
##  Pearson's product-moment correlation
##
## data:  datos_suelos$pH and datos_suelos$Mg
## t = -2.923, df = 46, p-value = 0.005361
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.6111857 -0.1257936
## sample estimates:
##       cor
## -0.3957821
```

```
cor.test(datos_suelos$pH, datos_suelos$K)
```

```
##
##  Pearson's product-moment correlation
##
## data:  datos_suelos$pH and datos_suelos$K
## t = 4.8236, df = 46, p-value = 1.585e-05
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.3536810 0.7415855
## sample estimates:
##       cor
## 0.5795727
```

```
cor.test(datos_suelos$pH, datos_suelos$Na)
```

```
##
##  Pearson's product-moment correlation
##
## data:  datos_suelos$pH and datos_suelos$Na
## t = -6.5242, df = 46, p-value = 4.724e-08
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.8165520 -0.5094849
## sample estimates:
##        cor
## -0.6932614
```

```
cor.test(datos_suelos$pH, datos_suelos$Conduc)
```

```
##
##  Pearson's product-moment correlation
##
## data:  datos_suelos$pH and datos_suelos$Conduc
## t = -8.0515, df = 46, p-value = 2.484e-10
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.8616916 -0.6141322
## sample estimates:
##        cor
## -0.7648104
```

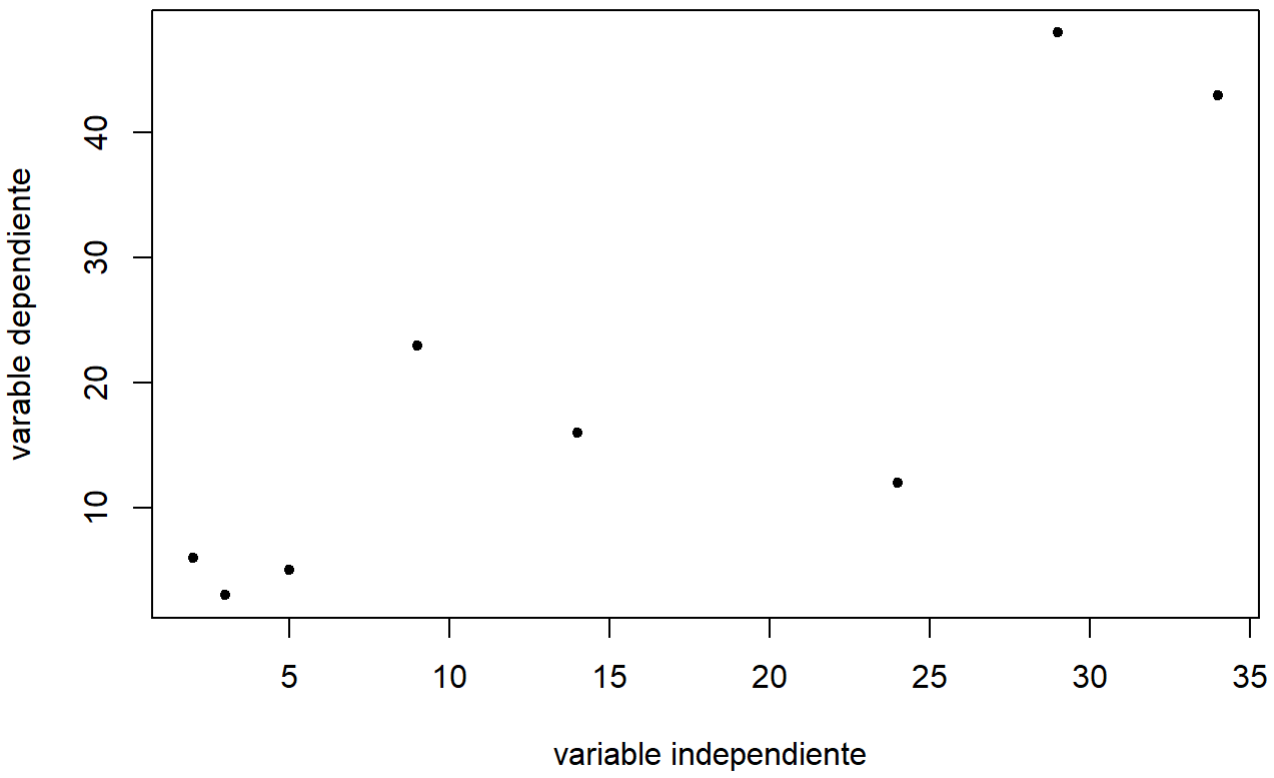
```
conjunto <- c("PH-N","pH-Dens", "pH-P","pH-Ca","pH-Mg","pH-K","pH-Na", "pH-conduc")
corre <- c(0.6366, -0.5890, 0.5910, 0.8086, -0.3957, 0.5795, -0.6932, -0.7648)
pvalue <- c(1.149e-06, 1.062e-05, 9.74e-06, 3.614e-12, 0.005361, 1.585e-05, 4.724e-08,2.484e-10)

cuadro_datos <- data.frame(conjunto, corre, pvalue)

cuadro_datos
```

```
##    conjunto   corre    pvalue
## 1      PH-N  0.6366 1.149e-06
## 2   pH-Dens -0.5890 1.062e-05
## 3      pH-P  0.5910 9.740e-06
## 4     pH-Ca  0.8086 3.614e-12
## 5     pH-Mg -0.3957 5.361e-03
## 6      pH-K  0.5795 1.585e-05
## 7     pH-Na -0.6932 4.724e-08
## 8 pH-conduc -0.7648 2.484e-10
```

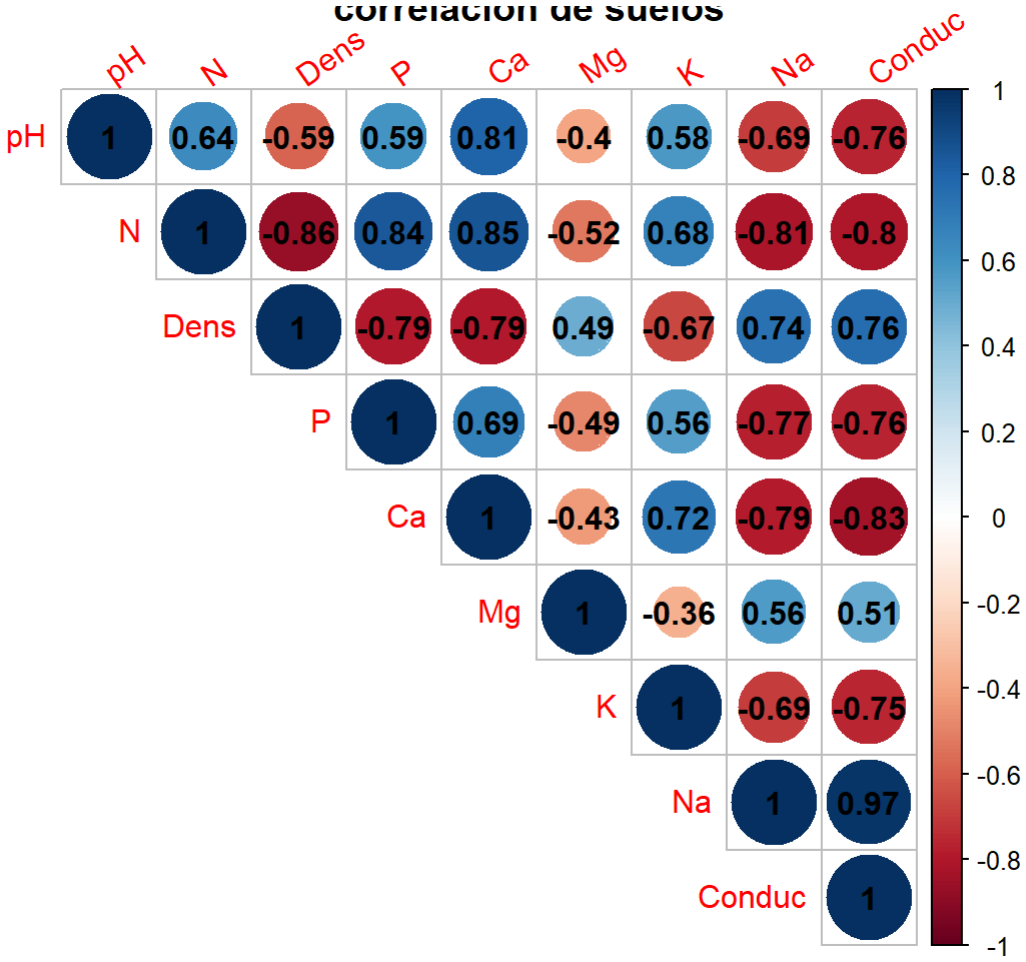
```
library(corrplot)
```

```
## corrplot 0.92 loaded
```

```
library(psych)
```




```
M <- cor(datoscolumnas)

corrplot(M, type = "upper", title = "correlacion de suelos", addCoef.col = "black", tl.srt = 35)
```


correlación de suelos
pH
N
Dens
P
Ca
Mg
K
Na
Conduc
1
0.64
-0.59
0.59
0.81
-0.4
0.58
-0.69
-0.76
1
-0.86
0.84
0.85
-0.52
0.68
-0.81
-0.8
1
-0.79
-0.79
0.49
-0.67
0.74
0.76
1
0.69
-0.49
0.56
-0.77
-0.76
1
-0.43
0.72
-0.79
-0.83
1
-0.36
0.56
0.51
1
-0.69
-0.75
1
0.97
1
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1