Laboratorio_4.R

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```
# Laboratorio 4
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# 17.03.2021


# Importar_Datos ------------------------------------------------------
--

esp.url <-
paste0("https://raw.githubusercontent.com/mgtagle/PrincipiosEstadistica20
21/main/cuadro1.csv")
inventario <- read.csv(esp.url)
head(inventario)

##   Arbol Fecha Especie Posicion Vecinos Diametros Altura
## 1     1    12       F        C       4      15.3  14.78
## 2     2    12       F        D       3      17.8  17.07
## 3     3     9       C        D       5      18.2  18.28
## 4     4     9       H        S       4       9.7   8.79
## 5     5     7       H        I       6      10.8  10.18
## 6     6    10       C        I       3      14.1  14.90

tail(inventario)

##    Arbol Fecha Especie Posicion Vecinos Diametros Altura
## 45    45    24       C        I       4      10.2  13.93
## 46    46    23       F        I       3      14.4  12.68
## 47    47    24       C        S       6       7.7  10.00
## 48    48    25       C        S       5       9.9   8.69
## 49    49    25       H        D       1      20.4  16.73
## 50    50    24       H        D       3      20.9  16.25

# Funciones para revisar el conjunto de datos -------------------------
--

str(inventario)

## 'data.frame':    50 obs. of  7 variables:
##  $ Arbol    : int  1 2 3 4 5 6 7 8 9 10 ...
##  $ Fecha    : int  12 12 9 9 7 10 10 12 16 14 ...
##  $ Especie  : chr  "F" "F" "C" "H" ...
##  $ Posicion : chr  "C" "D" "D" "S" ...
```

```
##  $ Vecinos  : int  4 3 5 4 6 3 2 2 4 5 ...
##  $ Diametros: num  15.3 17.8 18.2 9.7 10.8 14.1 17.1 20.6 18.2 16.1
...
##  $ Altura   : num  14.78 17.07 18.28 8.79 10.18 ...

dim(inventario)

## [1] 50  7

names(inventario)

## [1] "Arbol"     "Fecha"     "Especie"   "Posicion"  "Vecinos"
"Diametros"
## [7] "Altura"

colnames(inventario)

## [1] "Arbol"     "Fecha"     "Especie"   "Posicion"  "Vecinos"
"Diametros"
## [7] "Altura"

names(inventario[ ,4:7])

## [1] "Posicion"  "Vecinos"   "Diametros" "Altura"

summary(inventario)

##      Arbol           Fecha         Especie            Posicion
##  Min.   : 1.00   Min.   : 2.00   Length:50          Length:50
##  1st Qu.:13.25   1st Qu.:12.00   Class :character   Class :character
##  Median :25.50   Median :16.00   Mode  :character   Mode  :character
##  Mean   :25.48   Mean   :15.94
##  3rd Qu.:37.75   3rd Qu.:20.75
##  Max.   :50.00   Max.   :25.00
##     Vecinos       Diametros         Altura
##  Min.   :0.00   Min.   : 7.70   Min.   : 8.47
##  1st Qu.:2.25   1st Qu.:13.88   1st Qu.:11.78
##  Median :3.00   Median :15.70   Median :14.24
##  Mean   :3.34   Mean   :15.79   Mean   :13.94
##  3rd Qu.:4.00   3rd Qu.:18.10   3rd Qu.:16.05
##  Max.   :6.00   Max.   :22.70   Max.   :21.46

is.factor(inventario$Especie)

## [1] FALSE

inventario$Especie <- factor(inventario$Especie)
is.factor(inventario$Especie)

## [1] TRUE

summary(inventario)
```

```
##      Arbol           Fecha       Especie   Posicion            Vecinos
##  Min.   : 1.00   Min.   : 2.00   C:22    Length:50          Min.
:0.00
##  1st Qu.:13.25   1st Qu.:12.00   F:14    Class :character   1st
Qu.:2.25
##  Median :25.50   Median :16.00   H:14    Mode  :character   Median
:3.00
##  Mean   :25.48   Mean   :15.94                              Mean
:3.34
##  3rd Qu.:37.75   3rd Qu.:20.75                              3rd
Qu.:4.00
##  Max.   :50.00   Max.   :25.00                              Max.
:6.00
##    Diametros         Altura
##  Min.   : 7.70   Min.   : 8.47
##  1st Qu.:13.88   1st Qu.:11.78
##  Median :15.70   Median :14.24
##  Mean   :15.79   Mean   :13.94
##  3rd Qu.:18.10   3rd Qu.:16.05
##  Max.   :22.70   Max.   :21.46

is.factor(inventario$Posicion)

## [1] FALSE

inventario$Posicion <- factor(inventario$Posicion)
is.factor(inventario$Posicion)

## [1] TRUE

summary(inventario)

##      Arbol           Fecha       Especie Posicion    Vecinos
##  Min.   : 1.00   Min.   : 2.00   C:22    C:14     Min.   :0.00
##  1st Qu.:13.25   1st Qu.:12.00   F:14    D: 9     1st Qu.:2.25
##  Median :25.50   Median :16.00   H:14    I:19     Median :3.00
##  Mean   :25.48   Mean   :15.94           S: 8     Mean   :3.34
##  3rd Qu.:37.75   3rd Qu.:20.75                    3rd Qu.:4.00
##  Max.   :50.00   Max.   :25.00                    Max.   :6.00
##    Diametros         Altura
##  Min.   : 7.70   Min.   : 8.47
##  1st Qu.:13.88   1st Qu.:11.78
##  Median :15.70   Median :14.24
##  Mean   :15.79   Mean   :13.94
##  3rd Qu.:18.10   3rd Qu.:16.05
##  Max.   :22.70   Max.   :21.46

# Tablas de frecuencia ----------------------------------------------
--

#Frecuencia absoluta
```

```r
freq.pos <- table(inventario$Posicion)
freq.pos
```

```
##
##  C  D  I  S
## 14  9 19  8
```

```r
sum(freq.pos)
```

```
## [1] 50
```

```r
#Frecuencia relativa
prop.pos <- freq.pos/sum(freq.pos)
prop.pos
```

```
##
##    C    D    I    S
## 0.28 0.18 0.38 0.16
```

```r
sum(prop.pos)
```

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

```r
#Frecuencia en porcentaje
prop.porce <- prop.pos * 100
prop.porce
```

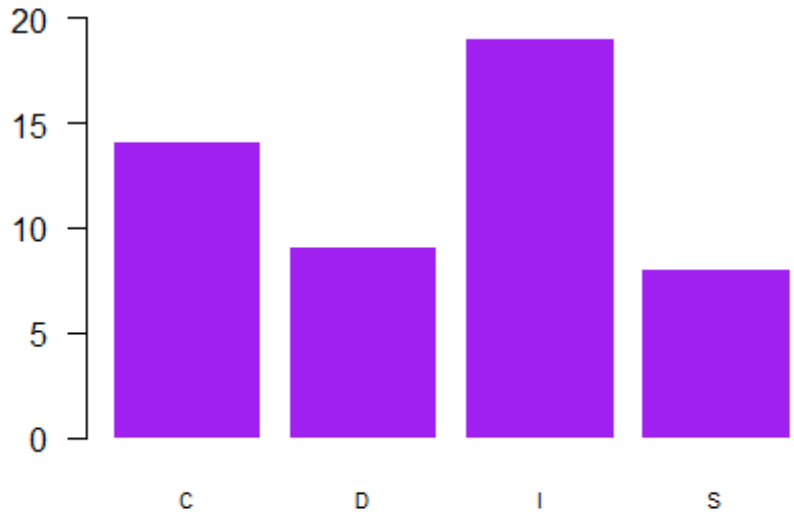
```
##
##  C  D  I  S
## 28 18 38 16
```

```r
sum(prop.porce)
```

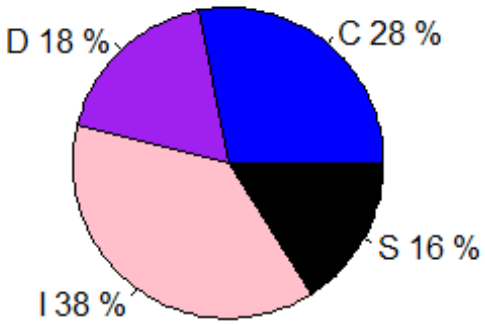
```
## [1] 100
```

```r
# Representación gráfica para variables cualitativas --------------------
------------------------------

barplot(freq.pos, col = "purple",
        border = NA, las = 1, ylim =c(0,20),cex.names = 0.7)
```

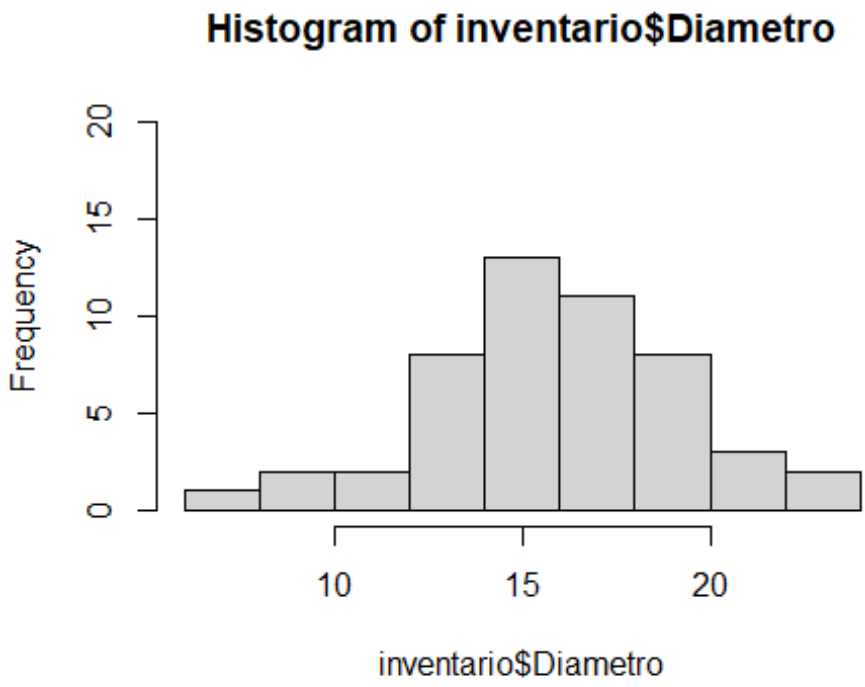



```
pie(freq.pos, labels = paste(levels(inventario$Posicion),
                             round(prop.porce,2),"%"),
    col = c("blue", "purple", "pink", "black"))
```

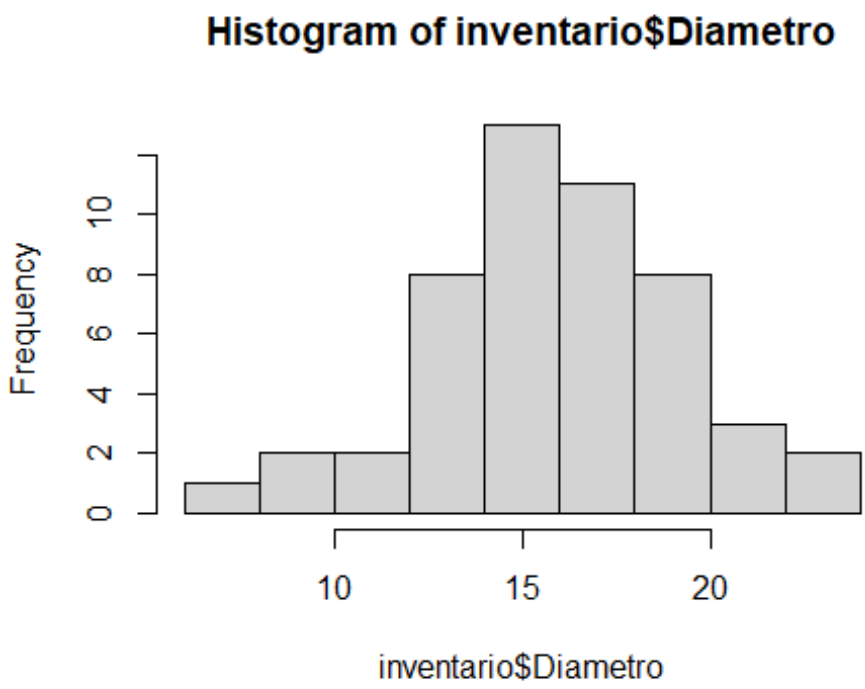


```r
# Representación gráfica para variables cuantitativas ----------------
--

hist(inventario$Diametro, ylim = c(0,20))
```




```r
his.diam <- hist(inventario$Diametro)
```




```
his.diam
```

```
## $breaks
##  [1]  6  8 10 12 14 16 18 20 22 24
##
## $counts
## [1]  1  2  2  8 13 11  8  3  2
##
## $density
## [1] 0.01 0.02 0.02 0.08 0.13 0.11 0.08 0.03 0.02
##
## $mids
## [1]  7  9 11 13 15 17 19 21 23
##
## $xname
## [1] "inventario$Diametro"
##
## $equidist
## [1] TRUE
##
## attr(,"class")
## [1] "histogram"
```

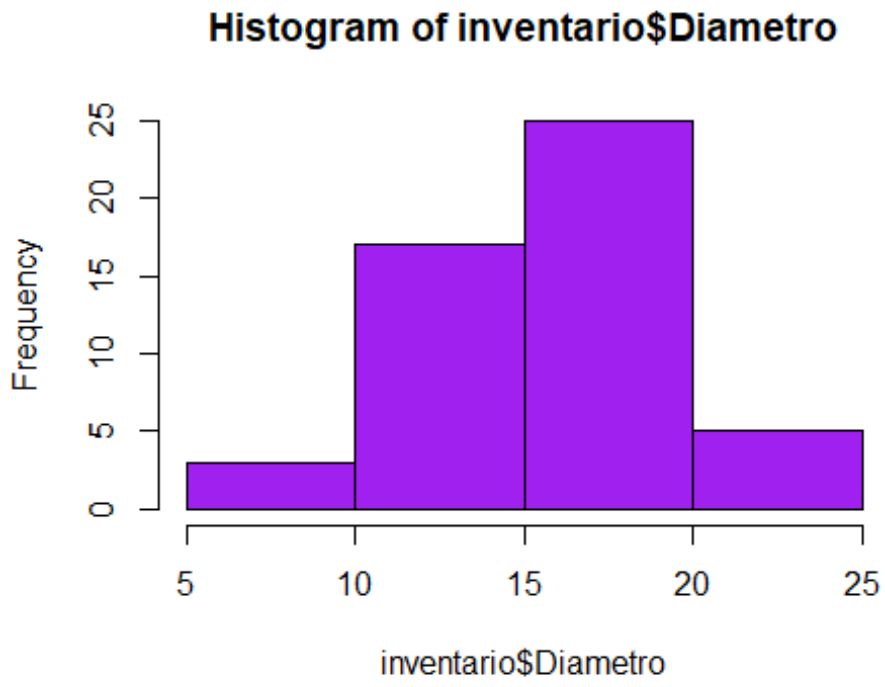
```
his.diam
```

```
## $breaks
##  [1]  6  8 10 12 14 16 18 20 22 24
```

```
##
## $counts
## [1]  1  2  2  8 13 11  8  3  2
##
## $density
## [1] 0.01 0.02 0.02 0.08 0.13 0.11 0.08 0.03 0.02
##
## $mids
## [1]  7  9 11 13 15 17 19 21 23
##
## $xname
## [1] "inventario$Diametro"
##
## $equidist
## [1] TRUE
##
## attr(,"class")
## [1] "histogram"
```

```
hist(inventario$Diametro,
     breaks = c(5,10,15,20,25), col = "purple")

hist_3 <- hist(inventario$Diametro,
               breaks = c(5,10,15,20,25), col = "purple")
```




```
# Autoestudio ------------------------------------------------------------
--
```

```r
# Tabla de frecuencias para la variable Especie

freq.Esp <- table(inventario$Especie)
freq.Esp
```

```
##
##  C  F  H
## 22 14 14
```

```r
prop.Esp <- freq.Esp/sum(freq.Esp)
prop.Esp
```

```
##
##    C    F    H
## 0.44 0.28 0.28
```

```r
prop.porce2 <- prop.Esp*100
prop.porce2
```

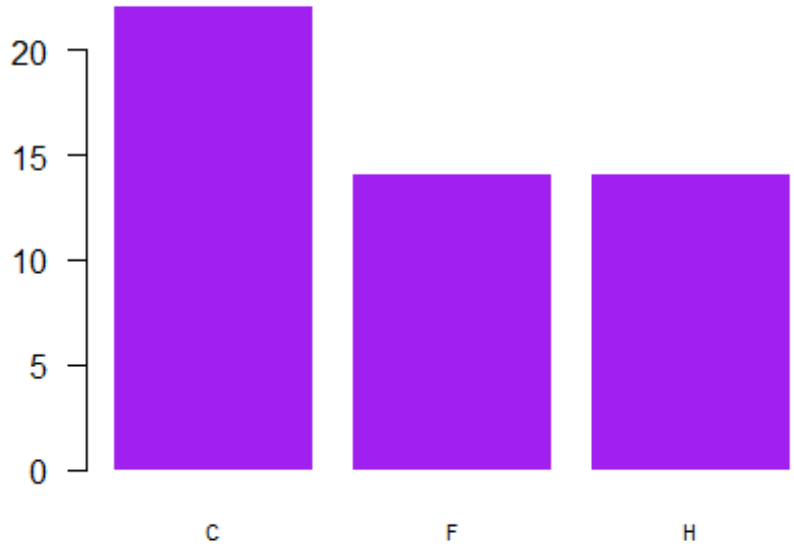
```
##
##  C  F  H
## 44 28 28
```

```r
sum(prop.porce2)
```

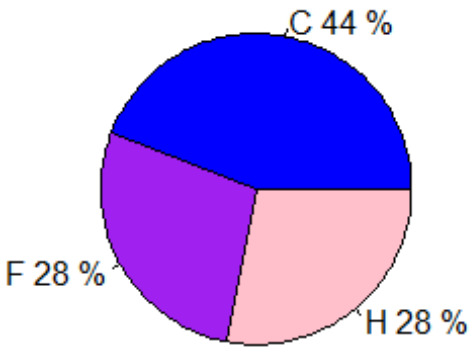
```
## [1] 100
```

```r
# Representación gráfica de la variable especie

barplot(freq.Esp, col = "purple",
        border = NA, las = 1, ylim =c(0,20),cex.names = 0.7)
```

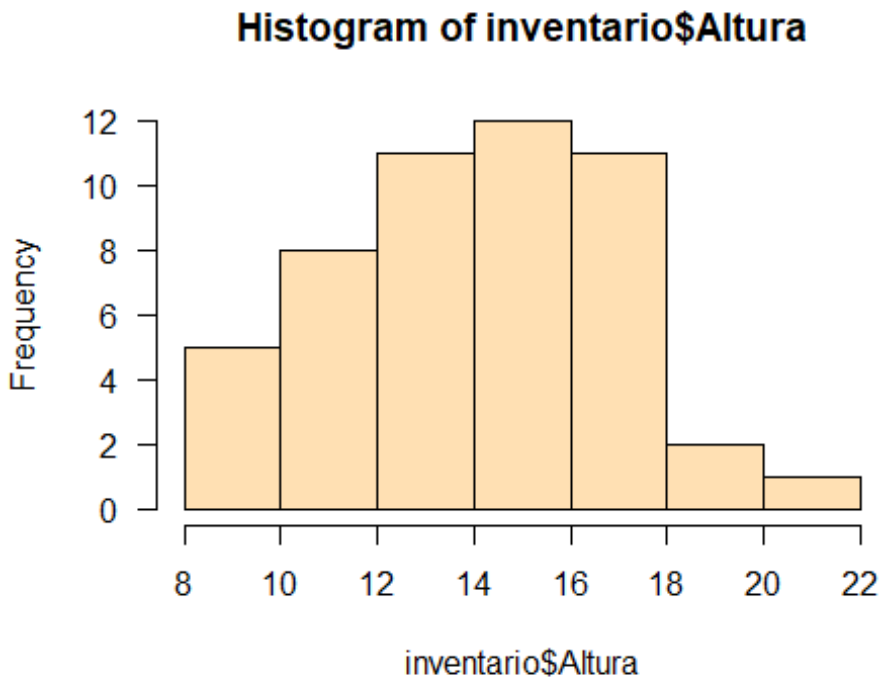



```
pie(freq.Esp, labels = paste(levels(inventario$Especie),
                             round(prop.porce2,2),"%"),
    col = c("blue", "purple", "pink"))
```



```r
# Histogramas

Alt_hist <- hist(inventario$Altura, las = 1, col ='#ffe0b3')
```




```r
Alt_hist
```

```
## $breaks
## [1]  8 10 12 14 16 18 20 22
##
## $counts
## [1]  5  8 11 12 11  2  1
##
## $density
## [1] 0.05 0.08 0.11 0.12 0.11 0.02 0.01
##
## $mids
## [1]  9 11 13 15 17 19 21
##
## $xname
## [1] "inventario$Altura"
##
## $equidist
## [1] TRUE
##
## attr(,"class")
## [1] "histogram"
```

```
Alt_hist$breaks

## [1]  8 10 12 14 16 18 20 22

h1 <-  hist(inventario$Altura, xaxt = "n",breaks = c(8, 10, 12, 14, 16,
18,
                                                     20, 22),col =
"#00cc99",
            xlab="Alturas (cm)",ylab= "Frecuencias",main =
              "Histograma de alturas del inventario",las = 1,ylim =
c(0,14))
```