

Laboratorio_Sem_4.R

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2021-08-29

```
# Laboratorio semana 4
# Resumir datos gráficamente
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```

```
# Importar datos csv -----

esp.url <- paste0("https://raw.githubusercontent.com/mgtagle/",
                  "PrincipiosEstadistica2021/main/cuadro1.csv")
inventario <- read.csv(esp.url)
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
## 7	7	10	C	C	2	17.1	15.34
## 8	8	12	C	D	2	20.6	17.22
## 9	9	16	F	C	4	18.2	15.15
## 10	10	14	F	I	5	16.1	14.66
## 11	11	8	H	D	3	14.2	17.43
## 12	12	5	H	D	6	14.8	17.45
## 13	13	12	F	I	2	19.1	14.18
## 14	14	5	C	I	2	16.7	13.40
## 15	15	12	C	S	4	18.9	10.40
## 16	16	20	H	S	3	12.4	11.52
## 17	17	15	H	C	0	17.3	14.61
## 18	18	20	F	D	1	22.7	21.46
## 19	19	15	C	C	4	15.1	17.82
## 20	20	14	C	I	3	17.7	11.38
## 21	21	14	C	S	5	13.4	8.50
## 22	22	13	C	I	4	16.2	12.80
## 23	23	14	F	D	1	18.5	18.71
## 24	24	20	F	I	4	15.0	14.48
## 25	25	21	F	C	2	18.8	14.81
## 26	26	5	H	I	4	15.8	12.01
## 27	27	2	H	I	3	16.1	11.70
## 28	28	22	C	C	3	15.4	16.03
## 29	29	22	C	I	0	17.8	14.46

```
## 30    30    18      C      S      1      18.5    8.47
## 31    31    16      C      I      3      14.1   11.22
## 32    32    16      C      C      5      14.8   12.34
## 33    33    17      F      C      4      15.5   16.79
## 34    34    17      F      I      6      13.8   16.06
## 35    35    18      F      S      4      13.0   13.20
## 36    36    20      H      C      2      18.2   14.30
## 37    37    22      H      C      0      22.3   16.84
## 38    38    20      H      I      3      17.8   13.84
## 39    39    17      C      I      4      13.1   11.31
## 40    40    17      C      I      6      12.8   13.20
## 41    41    16      C      C      3      13.3   13.75
## 42    42    23      F      C      3      15.6   14.60
## 43    43    23      H      C      4      16.6   12.56
## 44    43    22      C      I      5      13.0   10.88
## 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
```

```
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
```

```
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
```

```
names(inventario)
```

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

```
colnames(inventario)
```

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

```
summary(inventario[,3:5])
```

```
##      Especie      Posicion      Vecinos  
## Length:50      Length:50      Min.   :0.00  
## Class :character    Class :character    1st Qu.:2.25  
## Mode  :character    Mode  :character    Median :3.00  
##                                     Mean   :3.34  
##                                     3rd Qu.:4.00  
##                                     Max.   :6.00
```

```
is.factor(inventario$Posicion)
```

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

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

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

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

```
freq_position <- table(inventario$Posicion)  
freq_position
```

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

```
#frecuencias relativas
```

```
prop_position <- freq_position / sum(freq_position)  
prop_position
```

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

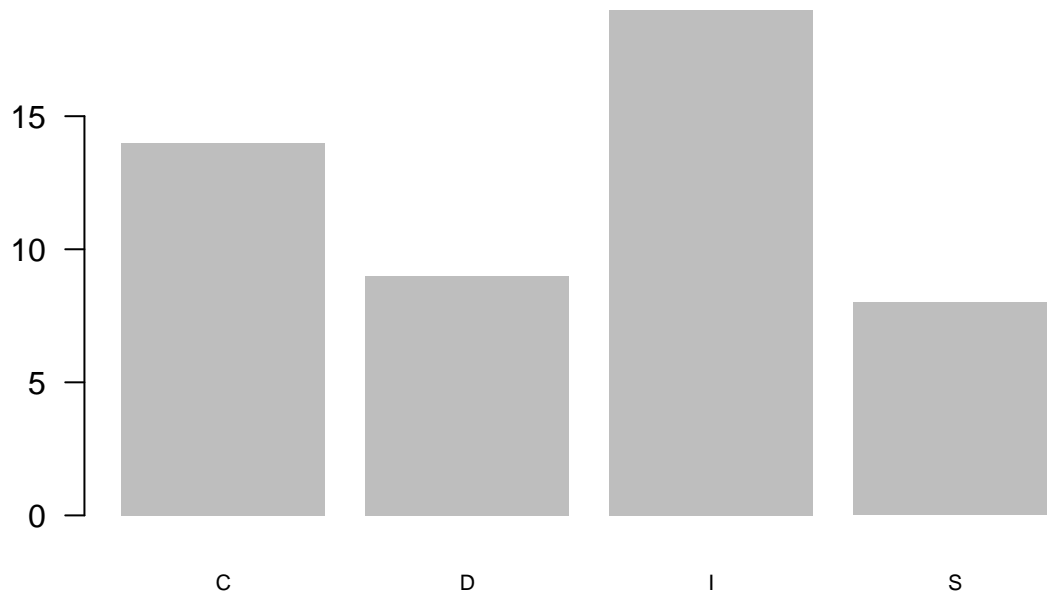
# si se desea expresar las proporciones como porcentajes

perc_position = 100*prop_position
perc_position

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

# gráficas barplot y pie -----

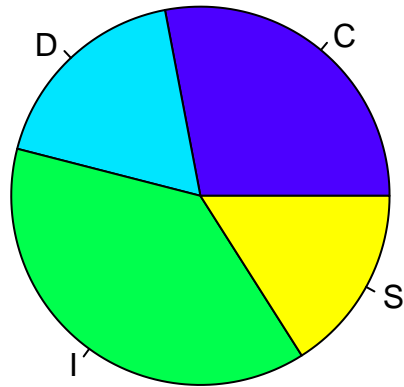
barplot(freq_position, las = 1, border = NA, cex.names = 0.7)
```



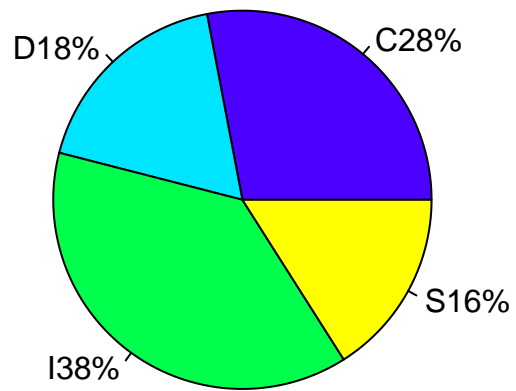
```
#cex.names = 0.7: reduce los tamaños de las etiquetas de categoria
#para que todas quepan en el gráfico

#gráfico circular o pie

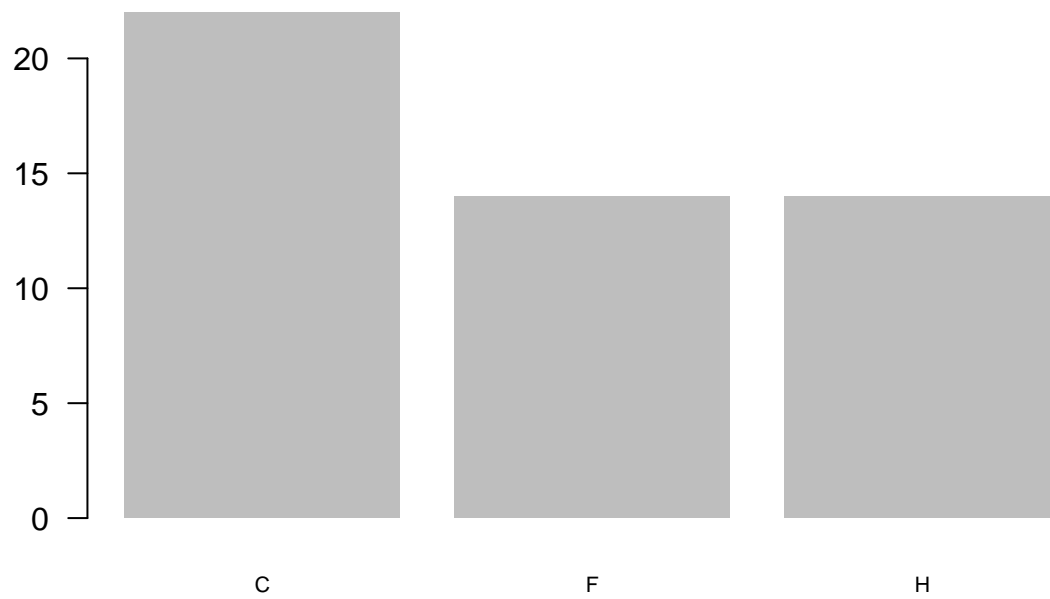
pie(freq_position, col = topo.colors(4))
```



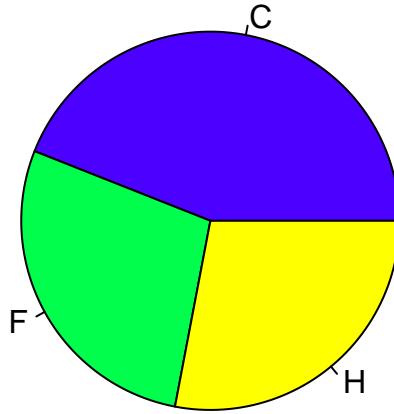
```
pie(freq_position,col = topo.colors(4),  
     labels = paste0(levels(inventario$Posicion), round(perc_position, 2),"%"))
```



```
# autoestudio -----  
  
freq_positione <- table(inventario$Especie)  
freq_positione  
  
##  
## C F H  
## 22 14 14  
  
barplot(freq_positione, las = 1, border = NA, cex.names = 0.7)
```

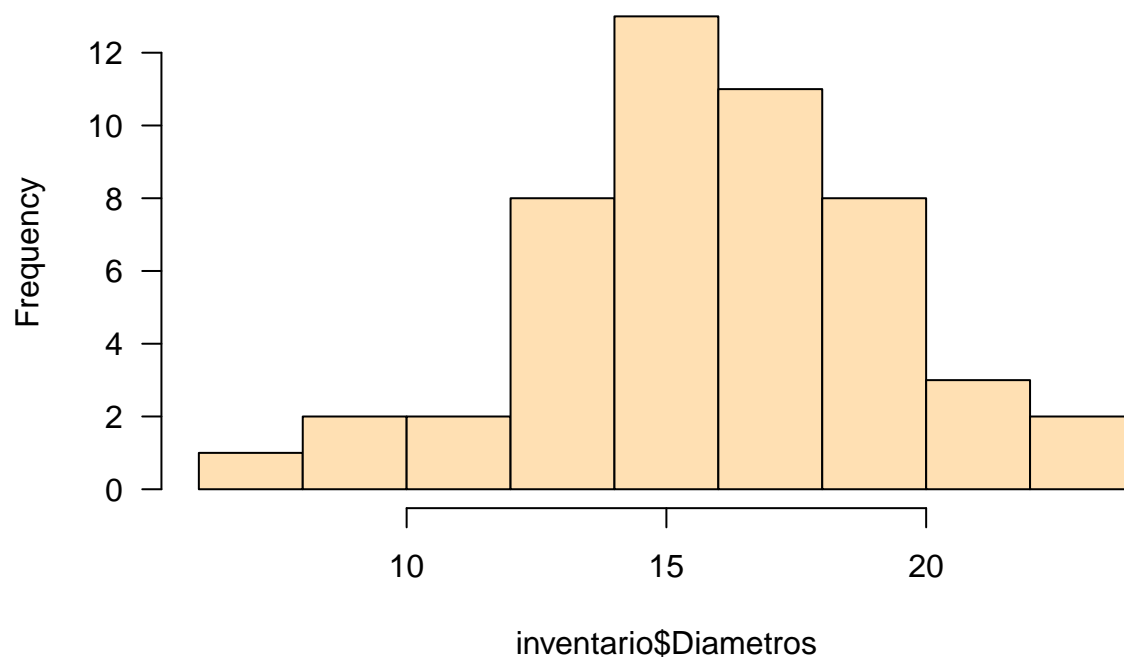


```
pie(freq_positione, col=topo.colors(3))
```



```
# histogramas -----  
hist(inventario$Diametros, las = 1, col = '#ffe0b3')  
diam.hist <- hist(inventario$Diametros, las = 1, col = '#ffe0b3')
```


Histogram of inventario\$Diametros



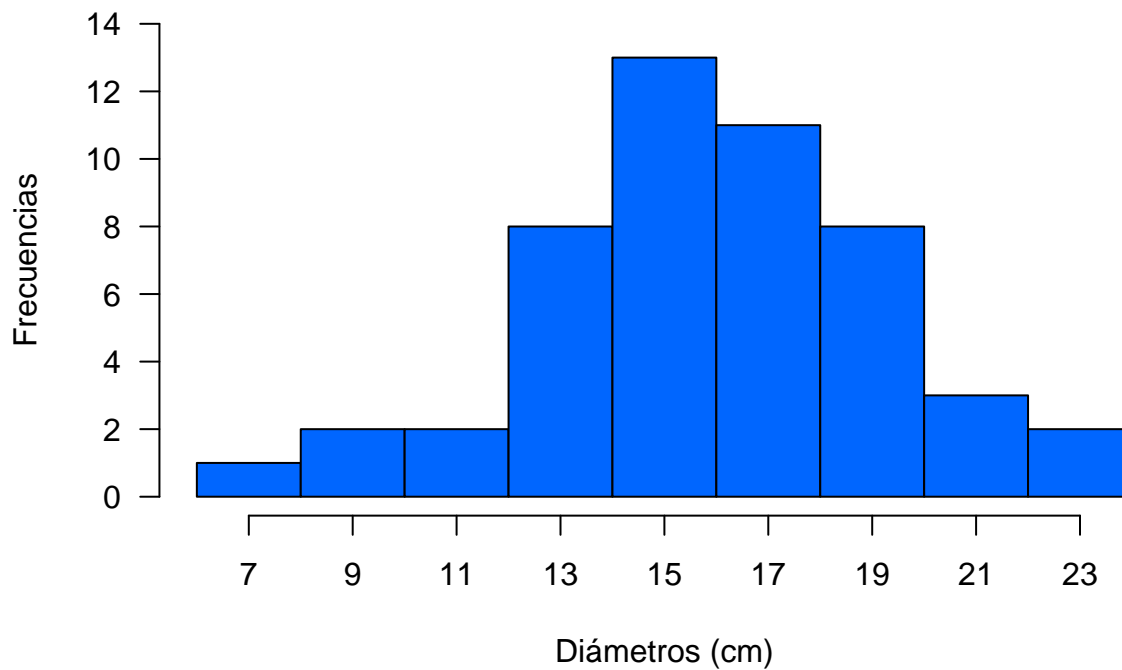
```
diam.hist
```

```
## $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
##
## $xname
## [1] "inventario$Diametros"
##
## $equidist
## [1] TRUE
##
## attr(,"class")
## [1] "histogram"
```

```
diam.hist$breaks
```

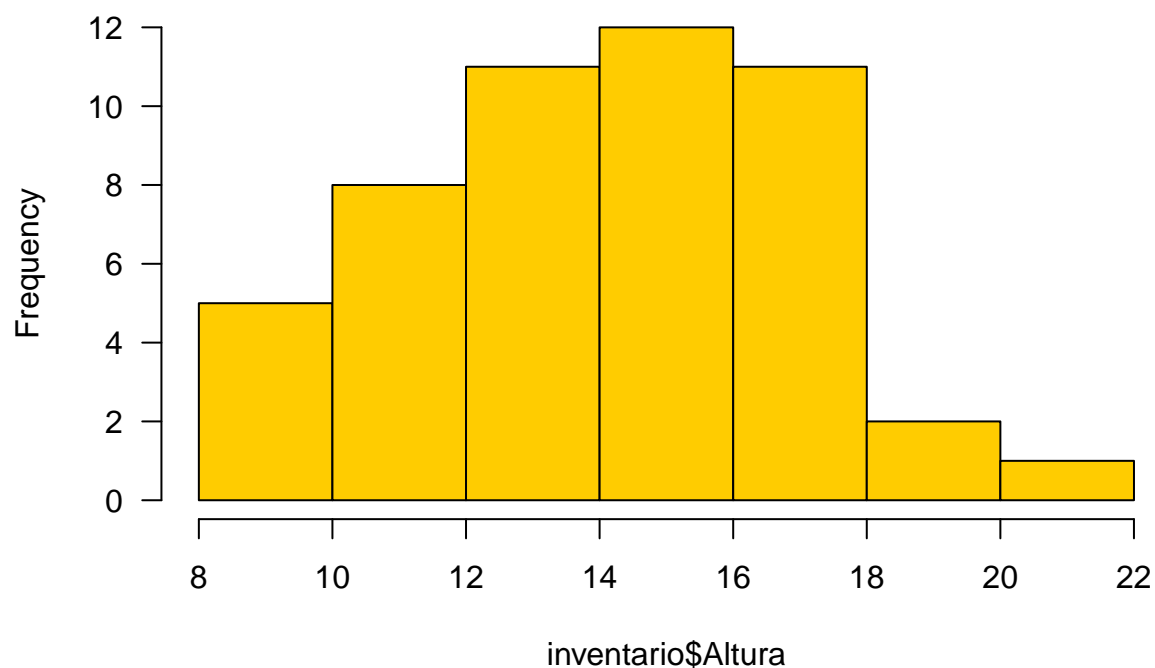
```
## [1]  6  8 10 12 14 16 18 20 22 24
```

```
h1 <- hist(inventario$Diametros, xaxt = "n",
           breaks = c(6,8,10,12,14,16,18,20,22,24),
           col = "#0066ff", xlab = "Diámetros (cm)",
           ylab = "Frecuencias",
           main = "",
           las = 1,
           ylim = c(0,14))
axis(1, h1$mids)
```



```
# autoestudio -----
hist(inventario$Altura, las = 1, col = "#ffcc00")
altura.hist <- hist(inventario$Altura, las = 1, col = "#ffcc00")
```

Histogram of inventario\$Altura



```
altura.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"
```

```
altura.hist$breaks
```

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

```
h2 <- hist(inventario$Altura, xaxt = "n",
           breaks = c(8,10,12,14,16,18,20,22),
           col = "#b38f00", xlab = "Altura (m)",
           ylab = "Frecuencias",
           main = "",
           las = 1,
           ylim = c(0,14))
axis(1,h2$mids)
```

