LABORATORIO_4_ANGELICA_TORRES.R

acile

2023-02-27

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										
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39	##	37	37	22	Н	С	0	22.3	16.84	
39	##	38	38	20	Н	I	3	17.8	13.84	
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#funciones para inspeccionar sus propiedades y funciones y estructura básica:
#str(inventario): mostrar la estructura general de los datos
#dim(inventario): dimensiones (i.e. tamaño) del conjunto de datos
#head(inventario, n = 5): muestra las primeras n filas
#tail(inventario, n = 5): muestra las últimas n filas
#names(inventario): nombre de las columnas
#colnames(inventario): igual names(inventario)
#summary(inventario): resumen estadístico de las variables presentes en inventario
# mostrar la estructura general de los datos
str(inventario)
                   50 obs. of 7 variables:
## 'data.frame':
## $ 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 ...
# dimensiones (num filas y columnas)
dim(inventario)
## [1] 50 7
dim(inventario)
## [1] 50 7
#head(inventario, n = 5): muestra las primeras n filas
head(inventario, n=5)
    Arbol Fecha Especie Posicion Vecinos Diametros Altura
##
                      F
## 1
        1
             12
                               C
                                              15.3 14.78
## 2
        2
             12
                     F
                               D
                                      3
                                              17.8 17.07
        3 9
                      C
                               D
                                      5
## 3
                                              18.2 18.28
## 4
        4
              9
                      Н
                               S
                                       4
                                              9.7
                                                    8.79
## 5
        5
              7
                      Н
                               Ι
                                       6
                                              10.8 10.18
#tail(inventario, n = 5): muestra las últimas n filas
tail(inventario, n=5)
```

```
Arbol Fecha Especie Posicion Vecinos Diametros Altura
##
## 46
               23
                         F
                                  Ι
                                          3
         46
                                                 14.4 12.68
## 47
         47
               24
                        C
                                  S
                                          6
                                                  7.7 10.00
                        C
                                  S
         48
               25
                                          5
## 48
                                                  9.9
                                                        8.69
## 49
         49
               25
                        Н
                                  D
                                          1
                                                 20.4 16.73
## 50
         50
               24
                        Н
                                  D
                                          3
                                                 20.9 16.25
```

```
# nombre de las primeras cinco columnas
names(inventario [1:5])
```

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

```
names (inventario)
```

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

```
#colnames(inventario): igualnames(inventario)

colnames(inventario)
```

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

```
#summary(inventario): resumen estadístico de las variables presentes eninventario
summary(inventario)
```

```
##
       Arbol
                        Fecha
                                     Especie
                                                        Posicion
          : 1.00
                          : 2.00
                                   Length:50
                                                      Length:50
##
   Min.
                   Min.
   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
                         : 7.70
                                         : 8.47
##
   Min.
           :0.00
                  Min.
                                  Min.
   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
```

```
# Resumen estadístico básico de las columnas 3 a 5 columnas
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
##
                                             :6.00
                                        Max.
```

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

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

```
inventario$Posicion <- factor(inventario$Posicion)
is.factor(inventario$Posicion)</pre>
```

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

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

```
##
     Especie
                      Posicion
                                  Vecinos
                               Min.
##
   Length:50
                      C:14
                                      :0.00
                               1st Qu.:2.25
##
   Class:character D: 9
                               Median :3.00
##
   Mode :character
                      I:19
                                     :3.34
##
                      S: 8
                               Mean
##
                               3rd Qu.:4.00
##
                               Max.
                                      :6.00
```

TABLAS DE FRECUENCIA ------

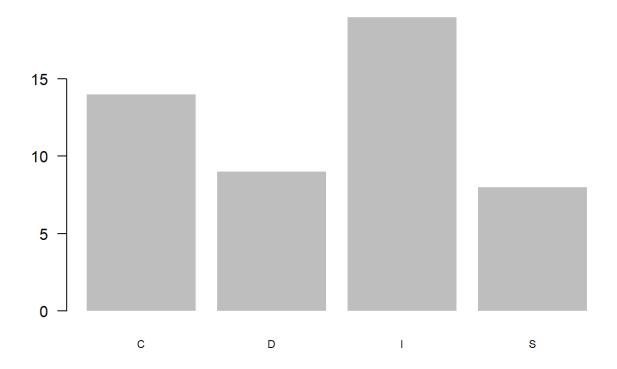
#Una tabla de frecuencias muestra los recuentos de cada categoría. En R, tenemos la función table () para obtener este tipo de tablas.

freq_position <- table(inventario\$Posicion)
freq_position</pre>

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

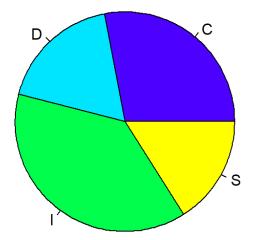
```
LABORATORIO_4_ANGELICA_TORRES.R
#frecuencias relativas.
prop_position <- freq_position / sum(freq_position)</pre>
prop position
##
##
     C
          D
                    S
               Ι
## 0.28 0.18 0.38 0.16
#Si desea expresar las proporciones como porcentajes, multiplique prop_position por 100:
perc_position = 100 * prop_position
perc_position
##
## C D I S
## 28 18 38 16
# GRAFICAS BARPLOT Y PIE -----
#Hay dos gráficos más comunes que se utilizan para visualizar frecuencias:
#Gráficas de barras (barplot)
#Gráficas de pastel (pie)
#El uso de barplot () incluye los argumentos las, border y cex.names:
#las = 1: muestra las frecuencias perpendiculares al eje-y.
#border = NA: elimina el borde negro alrededor de las barras.
#cex.names = 0.7: reduce los tamaños de las etiquetas de categoría (para que todas quepan en el gr
afico.
```

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

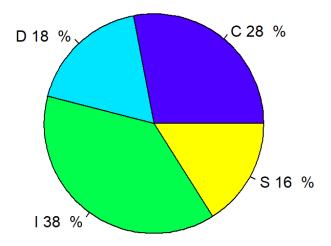


```
#Gráfico circular o pie.

# topo.colors es una paleta de colores pre establecidas en R y
# el paréntesis indica el # de colores a usar
pie(freq_position, col=topo.colors(4))
```



```
# Si se desea mostrar las frecuencias, se puede hacer algo como esto:
pie(freq_position, col = topo.colors(4),
    labels = paste(levels(inventario$Posicion), round(perc_position,)," %"))
```



AUTOESTUDIO -----

#Completar una tabla de frecuencia y su representación gráfica (barplot y pie) para la variable Es pecie del conjunto de datos inventario

#tablas de frecuencia

freq_position <- table(inventario\$Especie)
freq_position</pre>

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

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

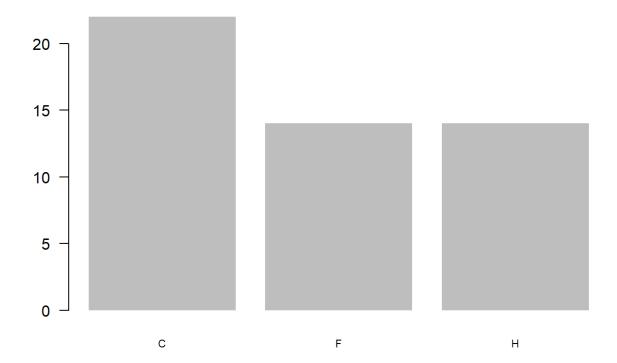
```
##
## C F H
## 0.44 0.28 0.28
```

```
#proporciones como porcentajes, multiplique prop_position por 100:

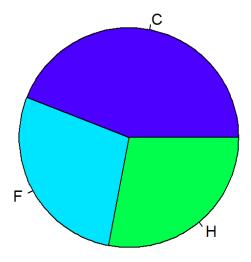
perc_position = 100 * prop_position
perc_position
```

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

```
#Gráficas barplot y pie
barplot(freq_position, las = 1, border = NA, cex.names = 0.7)
```

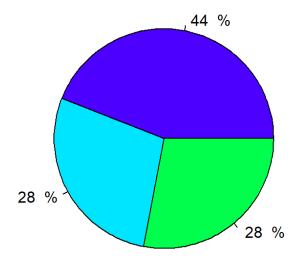


```
#Gráfico circular o pie.
pie(freq_position, col=topo.colors(4))
```



#mostrar frecuencias

pie(freq_position, col = topo.colors(4), labels = paste(levels(inventario\$Especie), round(perc_pos
ition, 2), " %"))



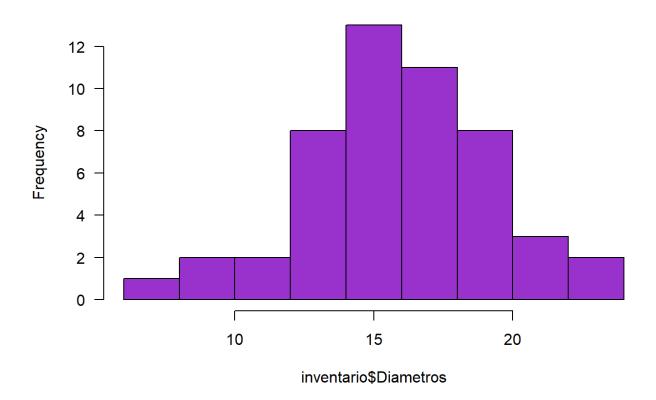
REPRESENTACIÓN DE VARIABLES CUANTITATIVAS -----

#Histogramas

#Vamos a aplicar las función hist para la variable Diametros del connunto invenatrio y guardar la salida en un objeto llamada diam_hist.

diam_hist <- hist(inventario\$Diametros, las = 1, col = '#9932CC')</pre>

Histogram of inventario\$Diametros

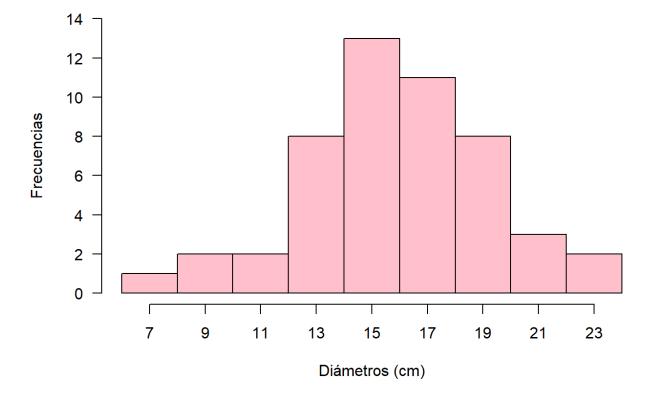


diam_hist

```
## $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"
```

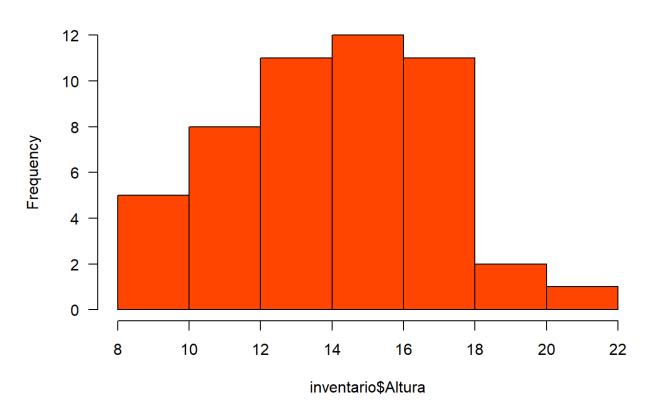
```
diam_hist$breaks
```

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



```
# AUTOESTUDIO -----
#Realizar el mismo procedimiento para la variable Altura
#HISTOGRAMA
alt_hist <- hist(inventario$Altura, las = 1, col = '#FF4500')</pre>
```

Histogram of inventario\$Altura



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

