

# HOMEWORK\_02\_JAIRO\_LEAL.R

jairo

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```
# ASIGNACIÓN 2: Uso de restricciones y estadísticas descriptivas
```

```
# Maestría en Ciencias Forestales UANL
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```
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```
# OBJETIVO: Selección de conjunto de datos en R mediante restricciones
```

```
# Importar datos de trabajo -----
```

```
arboles <- read.csv ("C:/Users/jairo/OneDrive/Escritorio/MCF 2022-2023/PRIMER SEMESTRE/ANALISIS  
ESTADISTICO/DR. MARCO/HW_2/basedatos.csv", header = TRUE)
```

```
# Selección de datos -----
```

```
# Aplicar la función subset para la variable altura de acuerdo a las siguientes indicaciones:
```

```
## Incluir los datos iguales o menores a la media
```

```
Altura <- arboles$Altura  
Altura
```

```
## [1] 14.78 17.07 18.28 8.79 10.18 14.90 15.34 17.22 15.15 14.66 17.43 17.45  
## [13] 14.18 13.40 10.40 11.52 14.61 21.46 17.82 11.38 8.50 12.80 18.71 14.48  
## [25] 14.81 12.01 11.70 16.03 14.46 8.47 11.22 12.34 16.79 16.06 13.20 14.30  
## [37] 16.84 13.84 11.31 13.20 13.75 14.60 12.56 10.88 13.93 12.68 10.00 8.69  
## [49] 16.73 16.25
```

```
H.media <- subset(Altura, Altura <= mean(Altura))  
H.media
```

```
## [1] 8.79 10.18 13.40 10.40 11.52 11.38 8.50 12.80 12.01 11.70 8.47 11.22  
## [13] 12.34 13.20 13.84 11.31 13.20 13.75 12.56 10.88 13.93 12.68 10.00 8.69
```

```
mean(Altura)
```

```
## [1] 13.9432
```

```
## Incluir los datos menores a 16.5 metros
```

```
H.16 <- subset(Altura, Altura < 16.50)
H.16
```

```
## [1] 14.78 8.79 10.18 14.90 15.34 15.15 14.66 14.18 13.40 10.40 11.52 14.61
## [13] 11.38 8.50 12.80 14.48 14.81 12.01 11.70 16.03 14.46 8.47 11.22 12.34
## [25] 16.06 13.20 14.30 13.84 11.31 13.20 13.75 14.60 12.56 10.88 13.93 12.68
## [37] 10.00 8.69 16.25
```

```
# Aplicar la función subset para la variable Vecinos
```

```
## Incluir los arboles que tengan un numero de vecinos iguales o menores a 3
```

```
Vecinos <- arboles$Vecinos
Vecinos
```

```
## [1] 4 3 5 4 6 3 2 2 4 5 3 6 2 2 4 3 0 1 4 3 5 4 1 4 2 4 3 3 0 1 3 5 4 6 4 2 0 3
## [39] 4 6 3 3 4 5 4 3 6 5 1 3
```

```
Vecinos.3 <- subset(Vecinos, Vecinos <= 3)
Vecinos.3
```

```
## [1] 3 3 2 2 3 2 2 3 0 1 3 1 2 3 3 0 1 3 2 0 3 3 3 3 1 3
```

```
## Incluir los arboles que tengan un numero de vecinos mayores a 4
```

```
Vecinos.4 <- subset(Vecinos, Vecinos > 4)
Vecinos.4
```

```
## [1] 5 6 5 6 5 5 6 6 5 6 5
```

```
# Aplicar la función subset para la variable Diametro
```

```
## Incluir los diámetros mayores a la media
```

```
Diametro <- arboles$Diametro
Diametro
```

```
## [1] 15.3 17.8 18.2 9.7 10.8 14.1 17.1 20.6 18.2 16.1 14.2 14.8 19.1 16.7 18.9
## [16] 12.4 17.3 22.7 15.1 17.7 13.4 16.2 18.5 15.0 18.8 15.8 16.1 15.4 17.8 18.5
## [31] 14.1 14.8 15.5 13.8 13.0 18.2 22.3 17.8 13.1 12.8 13.3 15.6 16.6 13.0 10.2
## [46] 14.4 7.7 9.9 20.4 20.9
```

```
DBH.media <- subset(Diametro, Diametro < mean(Diametro))
DBH.media
```

```
## [1] 15.3  9.7 10.8 14.1 14.2 14.8 12.4 15.1 13.4 15.0 15.4 14.1 14.8 15.5 13.8
## [16] 13.0 13.1 12.8 13.3 15.6 13.0 10.2 14.4  7.7  9.9
```

```
mean(Diametro)
```

```
## [1] 15.794
```

```
## Incluir los diámetros mayores a 16
```

```
DBH.16 <- subset(Diametro, Diametro > 16)
DBH.16
```

```
## [1] 17.8 18.2 17.1 20.6 18.2 16.1 19.1 16.7 18.9 17.3 22.7 17.7 16.2 18.5 18.8
## [16] 16.1 17.8 18.5 18.2 22.3 17.8 16.6 20.4 20.9
```

```
# Aplicar la funcion subset para la variable Especie
```

```
## Incluir la especie CEDRO ROJO
```

```
Especie <- arboles$Especie
Especie
```

```
## [1] "F" "F" "C" "H" "H" "C" "C" "C" "F" "F" "H" "H" "F" "C" "C" "H" "H" "F" "C"
## [20] "C" "C" "C" "F" "F" "F" "H" "H" "C" "C" "C" "C" "C" "F" "F" "F" "H" "H" "H"
## [39] "C" "C" "C" "F" "H" "C" "C" "F" "C" "C" "H" "H"
```

```
Cedro.rojo <- subset(Especie, Especie == "C")
Cedro.rojo
```

```
## [1] "C" "C" "C" "C" "C" "C" "C" "C" "C" "C" "C" "C" "C" "C" "C" "C" "C" "C"
## [20] "C" "C" "C"
```

```
## Incluir la especie Tsuga heterofila (H) y Douglasia verde (F)
```

```
Tsuga <- subset(Especie, Especie == "H")
Tsuga
```

```
## [1] "H" "H" "H" "H" "H" "H" "H" "H" "H" "H" "H" "H" "H" "H"
```

```
Douglasia <- subset(Especie, Especie == "F")
Douglasia
```

```
## [1] "F" "F" "F" "F" "F" "F" "F" "F" "F" "F" "F" "F" "F" "F" "F"
```

```
Tsuga.douglasia <- c(Tsuga, Douglasia)
Tsuga.douglasia
```

```
## [1] "H" "H" "H" "H" "H" "H" "H" "H" "H" "H" "H" "H" "H" "H" "F" "F" "F" "F" "F"
## [20] "F" "F" "F" "F" "F" "F" "F" "F" "F"
```

```
# Determinar cuantas observaciones son menores o iguales a 16.9 cm de Diametro
```

```
Diametro16.9 <- subset(Diametro, Diametro <= 16.9)
Diametro16.9
```

```
## [1] 15.3  9.7 10.8 14.1 16.1 14.2 14.8 16.7 12.4 15.1 13.4 16.2 15.0 15.8 16.1
## [16] 15.4 14.1 14.8 15.5 13.8 13.0 13.1 12.8 13.3 15.6 16.6 13.0 10.2 14.4  7.7
## [31]  9.9
```

```
##### 31 observaciones
```

```
# Determinar cuantas observaciones son mayores a 18.5 metros de Altura
```

```
Altura18.5 <- subset(Altura, Altura > 18.5)
Altura18.5
```

```
## [1] 21.46 18.71
```

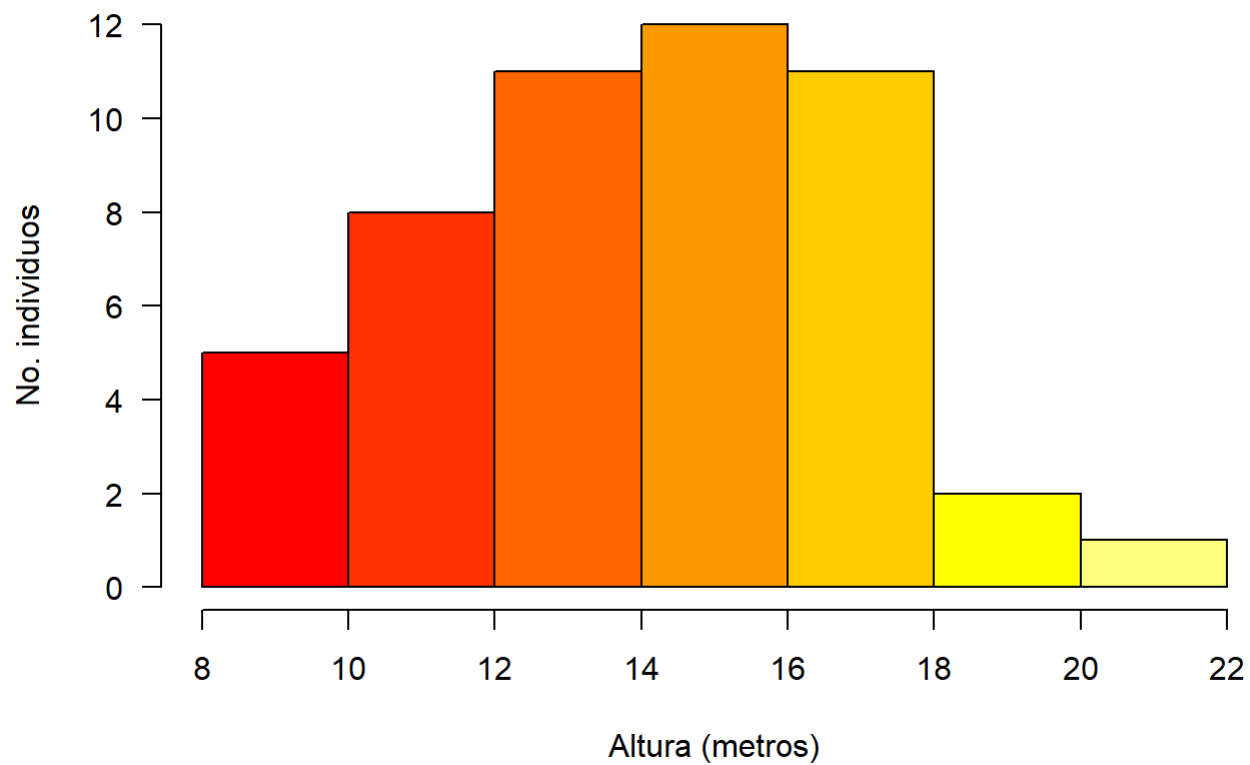
```
##### 2 observaciones
```

```
# Visualización de datos -----
```

```
## Altura, H.media y H.16
```

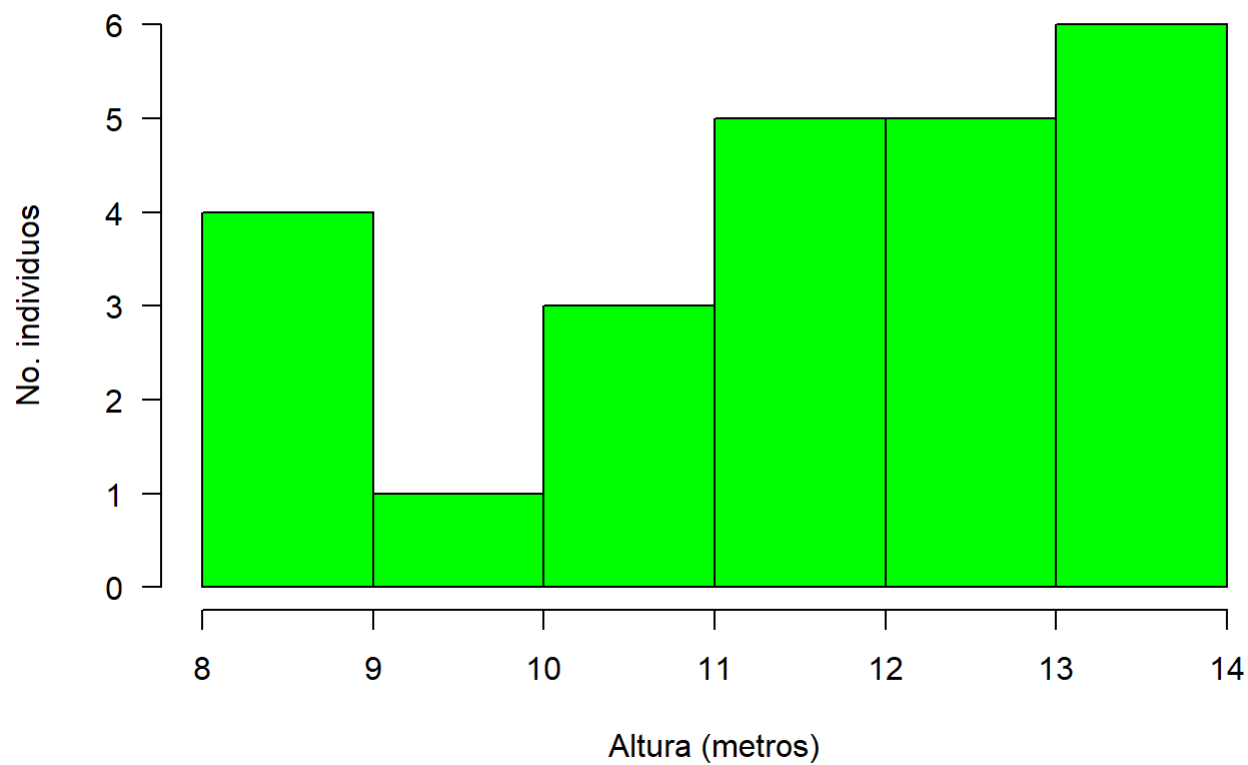
```
hist(Altura, main = "Histograma de Alturas",
     xlab = "Altura (metros)",
     ylab = "No. individuos",
     col = (heat.colors(7)),
     las = 1)
```

## Histograma de Alturas

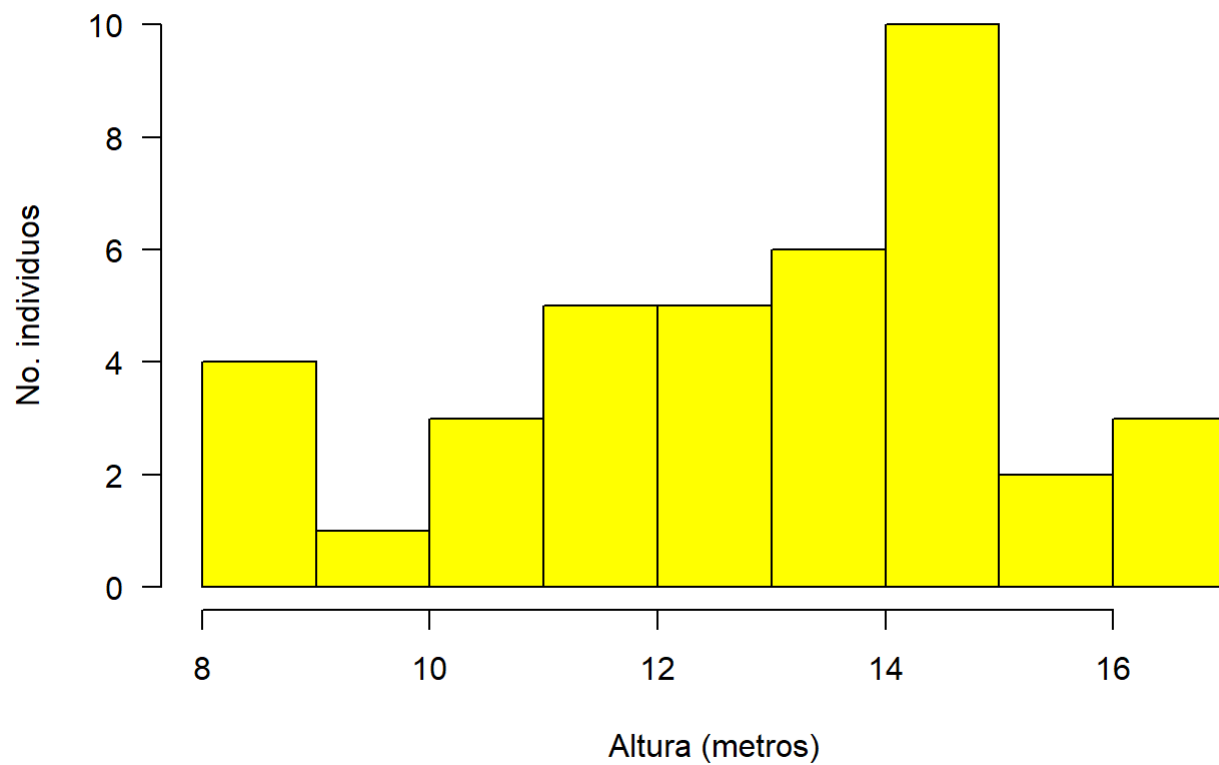


```
hist(H.media, main = "Altura <= a la media",  
     xlab = "Altura (metros)",  
     ylab = "No. individuos",  
     col = "green",  
     las = 1)
```

### Altura <= a la media



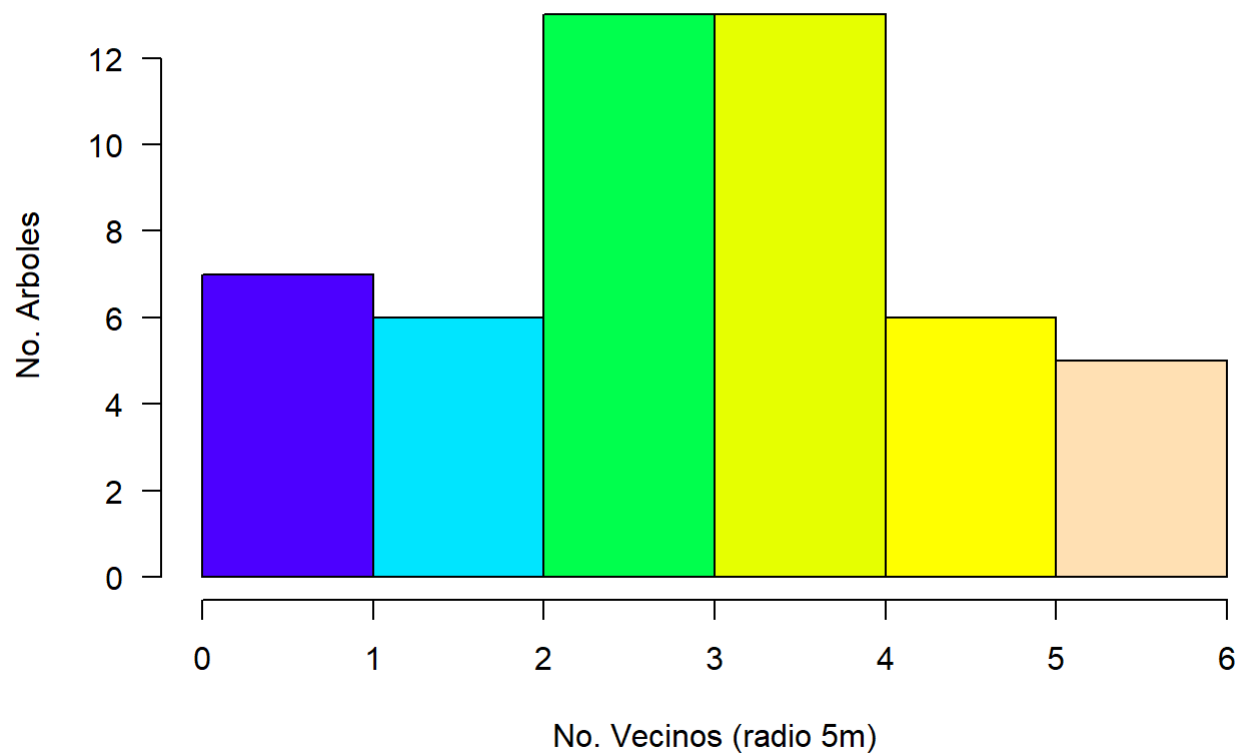
```
hist(H.16, main = "Altura < a 16.5",  
      xlab = "Altura (metros)",  
      ylab = "No. individuos",  
      col = "yellow",  
      las = 1)
```

**Altura < a 16.5**

```
## Vecinos, Vecinos.3, Vecinos.4
```

```
hist(Vecinos, main = "No. vecinos por arbolado",  
     xlab = "No. Vecinos (radio 5m)",  
     ylab = "No. Arboles",  
     col = c(topo.colors(6)),  
     las = 1)
```

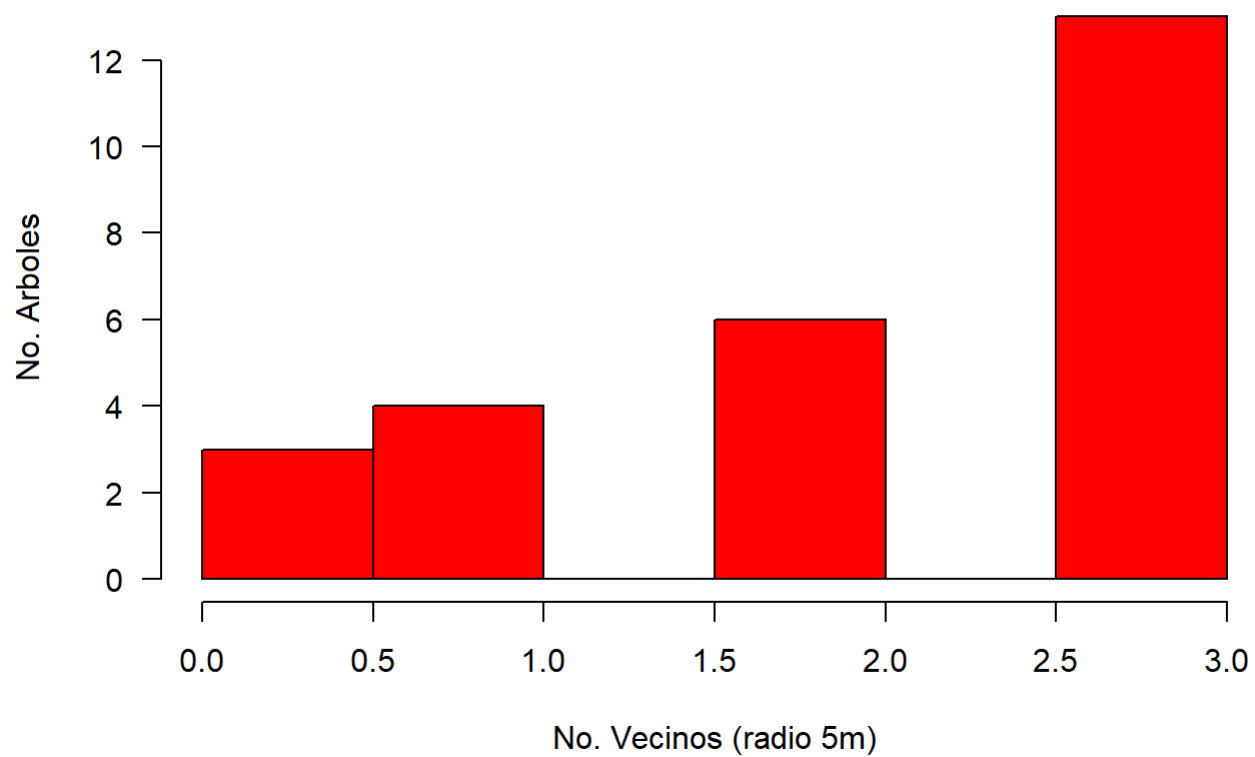
## No. vecinos por arbolado



```
hist(Vecinos.3, main = "Arbolado <= a 3 vecinos",  
     xlab = "No. Vecinos (radio 5m)",  
     ylab = "No. Arboles",  
     col = "red",  
     las = 1)
```

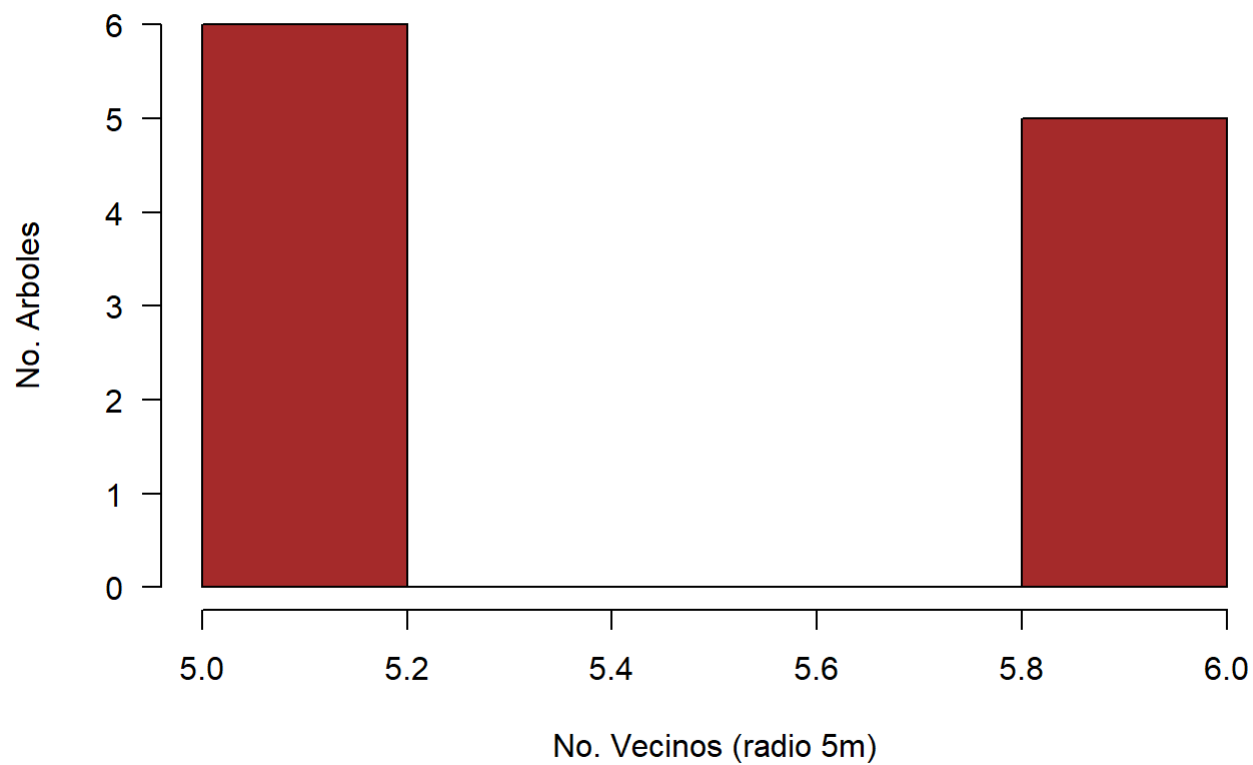


## Arbolado <= a 3 vecinos



```
hist(Vecinos.4, main = "Arbolado > a 4 vecinos",  
     xlab = "No. Vecinos (radio 5m)",  
     ylab = "No. Arboles",  
     col = "brown",  
     las = 1)
```

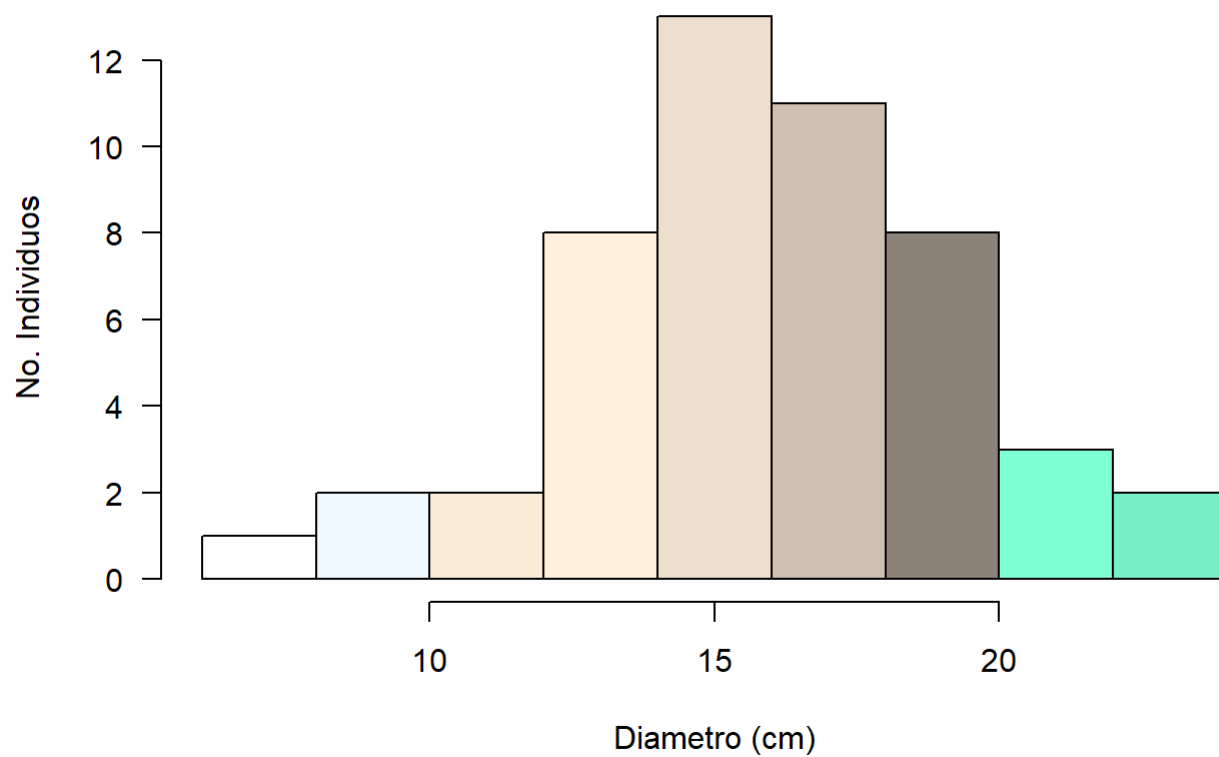
## Arbolado > a 4 vecinos



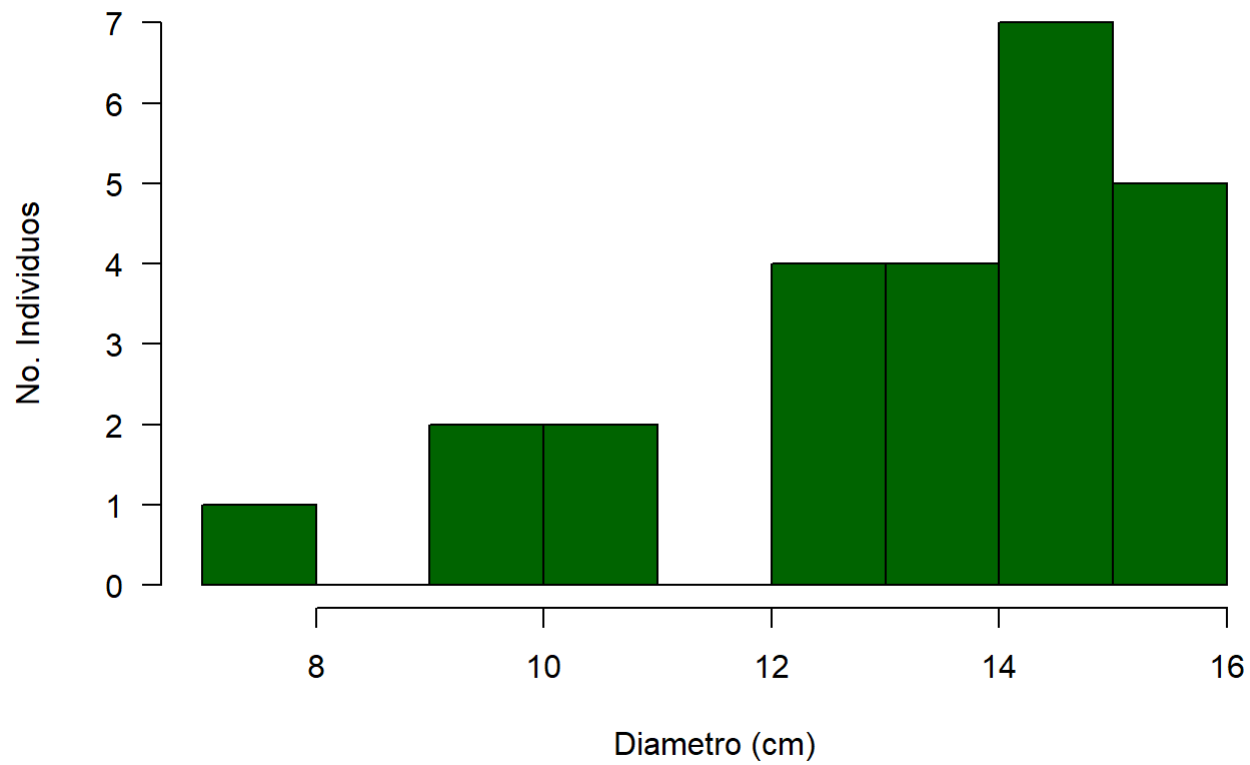
```
## Diametro, DBH.media, DBH.16
```

```
hist(Diametro, main = "Histograma de Diametros",  
     xlab = "Diametro (cm)",  
     ylab = "No. Individuos",  
     col = c(colours(5)),  
     las = 1)
```

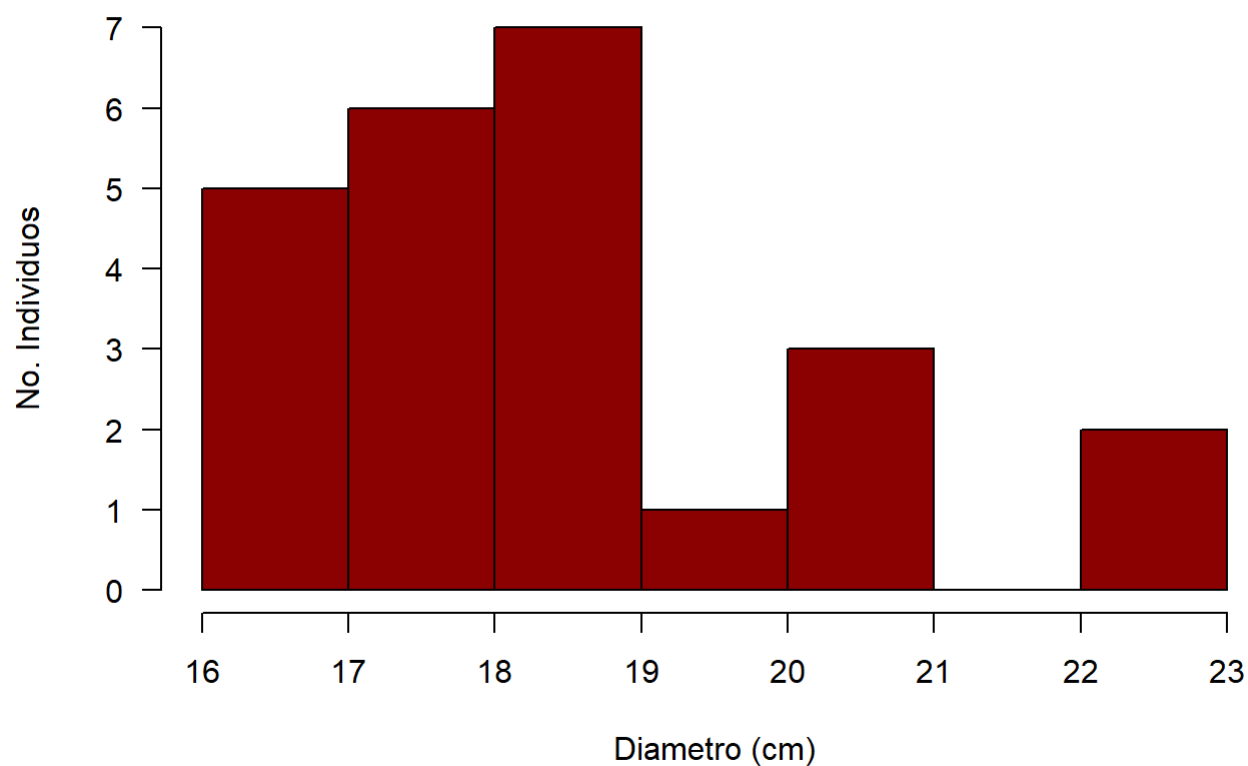
## Histograma de Diametros



```
hist(DBH.media, main = "DBH < a la media",  
     xlab = "Diametro (cm)",  
     ylab = "No. Individuos",  
     col = "darkgreen",  
     las = 1)
```

**DBH < a la media**

```
hist(DBH.16, main = "DBH > 16 cm",  
     xlab = "Diametro (cm)",  
     ylab = "No. Individuos",  
     col = "darkred",  
     las = 1)
```

**DBH > 16 cm**

```
# Estadísticas básicas -----
```

```
mean(Altura)
```

```
## [1] 13.9432
```

```
sd(Altura)
```

```
## [1] 2.907177
```

```
mean(H.media)
```

```
## [1] 11.53125
```

```
sd(H.media)
```

```
## [1] 1.74653
```

```
mean(H.16)
```

```
## [1] 12.85538
```

```
sd(H.16)
```

```
## [1] 2.210549
```

```
mean(Vecinos)
```

```
## [1] 3.34
```

```
sd(Vecinos)
```

```
## [1] 1.598596
```

```
mean(Vecinos.3)
```

```
## [1] 2.115385
```

```
sd(Vecinos.3)
```

```
## [1] 1.070586
```

```
mean(Vecinos.4)
```

```
## [1] 5.454545
```

```
sd(Vecinos.4)
```

```
## [1] 0.522233
```

```
mean(Diametro)
```

```
## [1] 15.794
```

```
sd(Diametro)
```

```
## [1] 3.227017
```

```
mean(DBH.media)
```

```
## [1] 13.256
```

```
sd(DBH.media)
```

```
## [1] 2.098627
```

```
mean(DBH.16)
```

```
## [1] 18.4375
```

```
sd(DBH.16)
```

```
## [1] 1.815588
```