



UNIVERSIDAD AUTONOMA DE NUEVO LEÓN

FACULTAD DE CIENCIAS FORESTALES

MAESTRIA EN CIENCIAS FORESTALES

UNIDAD DE APRENDIZAJE:

ANALISIS ESTADISTICOS POSGRADO ORDINARIO

Responsable: Dr. Marco Aurelio González Tagle

Ing. Diego Axayacatl González Cuellar

05 de septiembre de 2022

Tarea_4_DiegoAxayacatl.R

FCF

2022-09-05

```
#Tarea 4

# Problema 1 -----

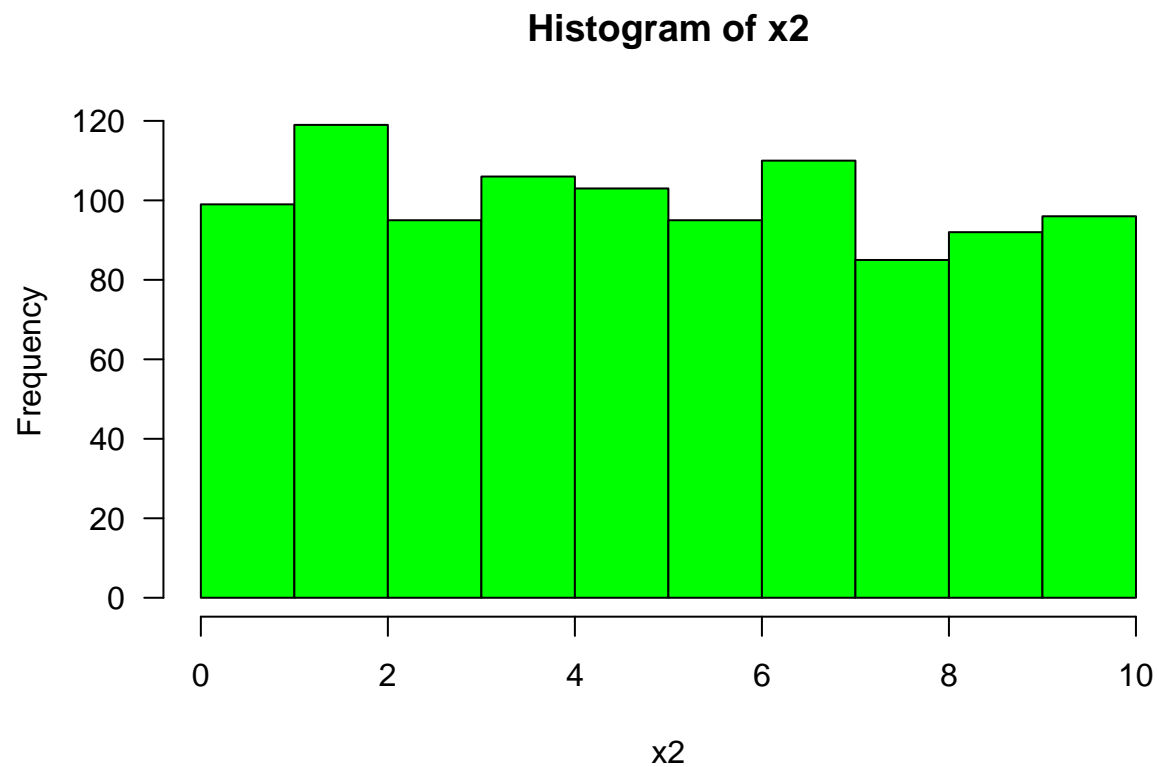
#Histogramas

set.seed(9875)
size <- 1000
x2 <- round(runif(n = size, min = 0, max = 10),2)
x2
```

##	[1]	0.45	8.62	9.59	7.64	5.93	0.34	5.08	3.30	0.10	1.94	0.13	2.47
##	[13]	6.71	7.49	0.97	6.22	9.39	7.95	6.64	6.96	5.08	4.26	3.76	2.40
##	[25]	7.31	0.58	8.78	6.52	9.55	1.01	9.45	7.27	8.97	8.34	3.62	1.17
##	[37]	6.73	2.51	0.09	8.18	6.14	5.13	2.32	3.86	3.66	3.86	4.23	4.00
##	[49]	1.22	8.73	9.52	2.57	3.57	8.21	2.01	0.93	2.50	1.51	3.01	6.53
##	[61]	0.39	0.37	6.94	1.54	9.19	6.68	4.03	5.26	3.86	1.92	5.78	3.96
##	[73]	3.53	4.14	3.31	1.04	9.08	6.58	8.39	5.21	8.41	5.83	8.89	0.69
##	[85]	5.31	4.51	3.52	5.36	7.00	7.07	1.28	9.07	9.68	1.87	2.41	2.44
##	[97]	3.68	2.18	0.44	2.01	0.79	9.42	5.25	5.97	9.20	5.35	7.83	3.01
##	[109]	6.24	8.64	3.80	2.57	1.56	7.58	0.45	2.02	7.36	4.20	6.72	3.47
##	[121]	9.53	0.46	3.82	4.58	1.08	1.85	5.49	7.86	1.17	6.19	2.02	8.13
##	[133]	2.75	7.66	2.28	2.40	6.60	7.38	7.15	8.17	1.98	9.28	5.63	2.00
##	[145]	0.97	0.43	4.50	4.03	6.60	6.07	9.08	5.54	0.23	5.11	6.22	7.71
##	[157]	8.54	7.35	2.62	7.39	3.59	5.21	4.68	2.04	8.52	7.86	8.39	0.57
##	[169]	5.50	1.97	4.76	9.08	4.65	0.01	1.65	3.20	6.35	2.92	3.39	4.97
##	[181]	6.64	0.10	4.73	1.04	6.95	4.83	6.83	5.34	9.90	9.15	2.86	9.02
##	[193]	6.77	3.32	6.80	4.94	6.71	7.95	4.14	3.51	0.56	7.44	3.72	1.85
##	[205]	1.31	7.76	4.70	9.99	1.65	6.38	7.57	7.10	1.89	5.23	0.60	6.22
##	[217]	6.43	1.68	1.65	3.06	5.33	6.47	0.40	5.89	7.38	2.95	6.30	1.37
##	[229]	0.03	1.25	1.99	4.34	0.14	8.37	4.57	5.79	1.81	7.80	3.84	7.24
##	[241]	5.28	9.91	3.07	1.96	0.90	5.22	9.09	0.86	4.49	1.85	1.05	4.32
##	[253]	9.66	8.08	10.00	0.27	8.24	1.72	6.41	4.81	7.00	6.43	6.55	6.23
##	[265]	5.20	8.15	8.29	2.58	9.15	7.14	8.30	9.20	4.52	4.08	3.59	3.91
##	[277]	4.92	0.33	8.60	8.14	3.68	2.89	6.23	0.54	6.75	2.19	7.91	5.46
##	[289]	7.70	3.53	7.15	1.45	8.94	8.82	4.05	6.95	1.09	8.69	7.40	1.19
##	[301]	8.98	3.04	4.49	0.94	1.13	6.66	7.59	1.98	3.58	3.40	7.76	9.00
##	[313]	2.66	8.47	6.02	0.99	9.56	8.30	6.33	4.94	4.95	8.19	3.73	1.78
##	[325]	2.81	1.29	0.50	1.96	1.01	8.47	2.24	0.50	4.08	6.12	4.24	5.57
##	[337]	7.73	1.67	0.09	0.64	4.46	7.83	0.70	5.41	9.76	2.67	6.71	8.97
##	[349]	4.26	4.84	9.11	9.25	2.22	2.90	4.68	1.51	9.08	7.20	3.67	3.08
##	[361]	4.00	1.83	9.26	6.98	9.37	8.59	1.37	8.54	9.08	6.93	1.41	9.60

##	[373]	4.31	2.30	3.41	7.09	3.80	2.89	2.87	0.63	8.73	3.76	4.71	0.00
##	[385]	3.86	8.03	0.26	0.95	8.39	6.39	6.29	1.23	4.17	0.88	5.76	6.13
##	[397]	4.87	6.44	3.57	3.27	8.99	2.22	9.09	2.57	3.24	9.23	2.49	8.76
##	[409]	0.48	4.37	3.89	4.60	7.91	8.75	8.08	5.42	5.08	4.28	9.41	1.69
##	[421]	3.84	9.15	6.62	4.61	1.51	0.15	1.72	9.42	9.30	1.00	3.30	2.76
##	[433]	1.66	4.38	1.46	8.92	5.85	1.10	9.12	2.90	1.14	3.43	0.55	2.02
##	[445]	1.56	4.72	9.77	6.55	7.15	9.25	0.96	7.12	7.24	9.20	1.21	9.61
##	[457]	6.07	4.71	1.31	4.65	0.46	1.13	5.03	5.20	0.32	3.30	9.48	8.60
##	[469]	9.94	2.87	4.92	4.41	5.91	9.29	2.83	0.32	2.64	6.48	0.60	1.79
##	[481]	3.12	0.57	3.85	3.97	1.15	9.87	1.33	4.47	7.85	8.08	7.10	0.03
##	[493]	1.34	1.61	7.61	5.19	2.24	0.11	9.44	7.92	6.83	5.67	0.32	1.04
##	[505]	7.13	2.07	4.24	1.31	3.28	5.99	0.79	2.83	3.91	2.88	4.56	6.19
##	[517]	3.47	3.12	0.23	6.64	5.18	9.79	1.54	9.74	7.76	6.98	2.44	2.30
##	[529]	2.49	6.08	4.64	4.32	1.35	1.75	9.45	1.01	3.98	5.60	7.49	9.24
##	[541]	6.96	8.11	7.03	0.44	3.76	5.37	9.34	3.57	6.99	3.14	9.49	6.40
##	[553]	6.15	0.47	0.81	6.59	6.67	5.98	5.20	3.14	1.51	4.15	6.92	1.39
##	[565]	8.20	0.48	9.16	6.05	2.02	5.32	1.01	5.74	2.33	6.21	4.56	2.97
##	[577]	9.77	2.84	1.89	9.76	4.62	1.89	8.10	5.77	5.89	5.03	5.34	6.18
##	[589]	0.20	0.19	3.20	4.32	5.56	6.33	0.65	8.56	1.48	4.10	0.32	8.14
##	[601]	4.88	2.95	7.69	8.17	9.40	0.32	9.50	1.53	4.85	6.99	7.40	1.04
##	[613]	7.33	8.45	9.91	6.54	6.93	0.82	7.84	8.92	9.33	3.00	3.41	7.59
##	[625]	3.28	7.87	1.13	7.37	4.65	6.78	4.28	2.97	0.52	6.71	3.22	3.64
##	[637]	7.22	4.42	6.39	1.94	1.82	1.56	9.54	4.83	7.69	2.53	5.31	2.64
##	[649]	5.79	2.88	2.05	6.41	7.62	4.87	0.94	1.02	3.16	9.73	2.15	0.40
##	[661]	6.62	6.27	3.18	3.73	0.50	1.06	1.12	1.26	8.16	0.17	2.66	3.72
##	[673]	0.68	6.32	6.22	3.29	3.57	1.95	7.83	6.80	2.74	3.88	7.77	9.23
##	[685]	5.60	9.27	8.31	2.94	4.38	1.50	6.14	8.29	9.38	8.11	6.66	2.56
##	[697]	4.55	1.16	9.80	1.40	9.97	7.43	2.40	6.41	0.94	4.56	7.28	5.58
##	[709]	7.87	8.71	1.03	5.73	1.43	2.64	2.19	1.14	2.83	1.66	2.82	4.85
##	[721]	6.58	6.70	5.82	6.54	2.72	9.93	7.87	7.16	1.95	0.12	8.07	0.43
##	[733]	1.73	8.24	0.99	1.72	4.10	0.32	6.63	9.36	6.60	3.25	8.71	7.32
##	[745]	7.38	8.41	5.62	7.62	2.21	1.47	9.04	5.32	8.27	4.80	5.29	2.07
##	[757]	4.86	2.88	7.73	5.79	5.86	4.00	3.94	3.91	6.40	7.73	6.84	9.49
##	[769]	5.55	8.97	4.95	0.21	0.04	4.98	1.56	4.61	4.20	8.11	8.92	2.31
##	[781]	6.57	7.93	0.36	5.23	8.74	4.78	6.86	1.53	2.73	4.02	0.26	8.38
##	[793]	8.85	0.52	5.03	2.65	7.57	1.45	1.86	3.84	4.52	3.75	3.00	9.84
##	[805]	0.81	2.26	6.60	5.23	0.20	5.12	5.34	2.45	4.29	0.60	3.27	2.05
##	[817]	9.47	7.50	9.86	4.81	3.70	5.11	5.09	4.89	3.04	3.94	9.43	8.40
##	[829]	5.17	5.25	8.43	4.73	2.11	6.62	5.73	1.48	4.11	9.35	4.62	1.23
##	[841]	8.24	9.85	4.30	7.81	6.08	8.79	5.01	5.37	3.10	3.04	2.52	4.11
##	[853]	5.41	5.88	1.79	8.47	2.56	9.44	5.83	3.74	6.40	9.73	4.99	1.05
##	[865]	6.12	5.85	3.06	3.14	4.24	0.90	1.68	1.34	5.77	9.65	2.95	9.85
##	[877]	9.59	3.24	8.83	4.90	1.13	0.45	2.76	0.61	8.28	0.54	9.65	8.51
##	[889]	1.57	7.93	4.12	6.56	8.56	6.29	5.59	6.15	3.60	7.97	8.23	6.68
##	[901]	4.44	5.57	4.77	9.35	2.86	3.32	8.56	1.73	3.56	0.17	9.85	6.33
##	[913]	2.50	8.86	3.91	0.97	9.07	1.01	8.41	7.36	0.08	9.59	7.31	6.62
##	[925]	3.37	6.41	0.23	3.04	5.89	7.10	4.74	4.01	8.29	9.14	2.04	7.67
##	[937]	2.04	0.19	2.09	1.55	5.57	3.96	7.62	2.96	6.55	5.79	2.42	8.44
##	[949]	9.09	9.06	8.12	5.07	4.14	1.36	4.40	3.43	1.39	5.88	3.24	3.11
##	[961]	5.49	3.30	8.95	9.46	3.04	8.69	5.25	6.39	1.86	5.48	0.23	6.47
##	[973]	4.33	1.49	8.98	8.74	3.69	0.23	9.19	5.24	2.25	7.49	4.01	3.71
##	[985]	5.74	3.09	7.65	0.24	6.77	7.80	8.24	5.36	9.58	1.72	7.76	1.09
##	[997]	8.36	4.51	4.71	5.79								

```
hist_mil <- hist(x2, las= 1, col= "green")
```

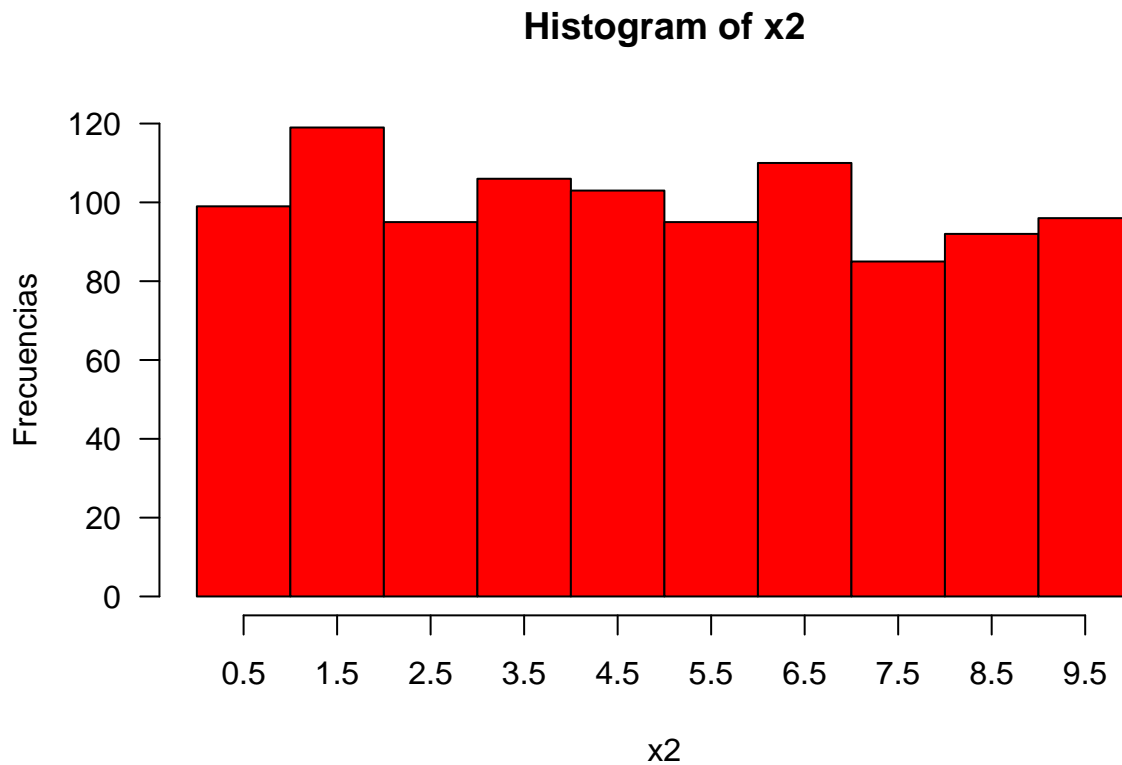


```
hist_mil
```

```
## $breaks
## [1] 0 1 2 3 4 5 6 7 8 9 10
##
## $counts
## [1] 99 119 95 106 103 95 110 85 92 96
##
## $density
## [1] 0.099 0.119 0.095 0.106 0.103 0.095 0.110 0.085 0.092 0.096
##
## $mids
## [1] 0.5 1.5 2.5 3.5 4.5 5.5 6.5 7.5 8.5 9.5
##
## $xname
## [1] "x2"
##
## $equidist
## [1] TRUE
##
## attr(,"class")
## [1] "histogram"
```

```
hist_mil$breaks
```

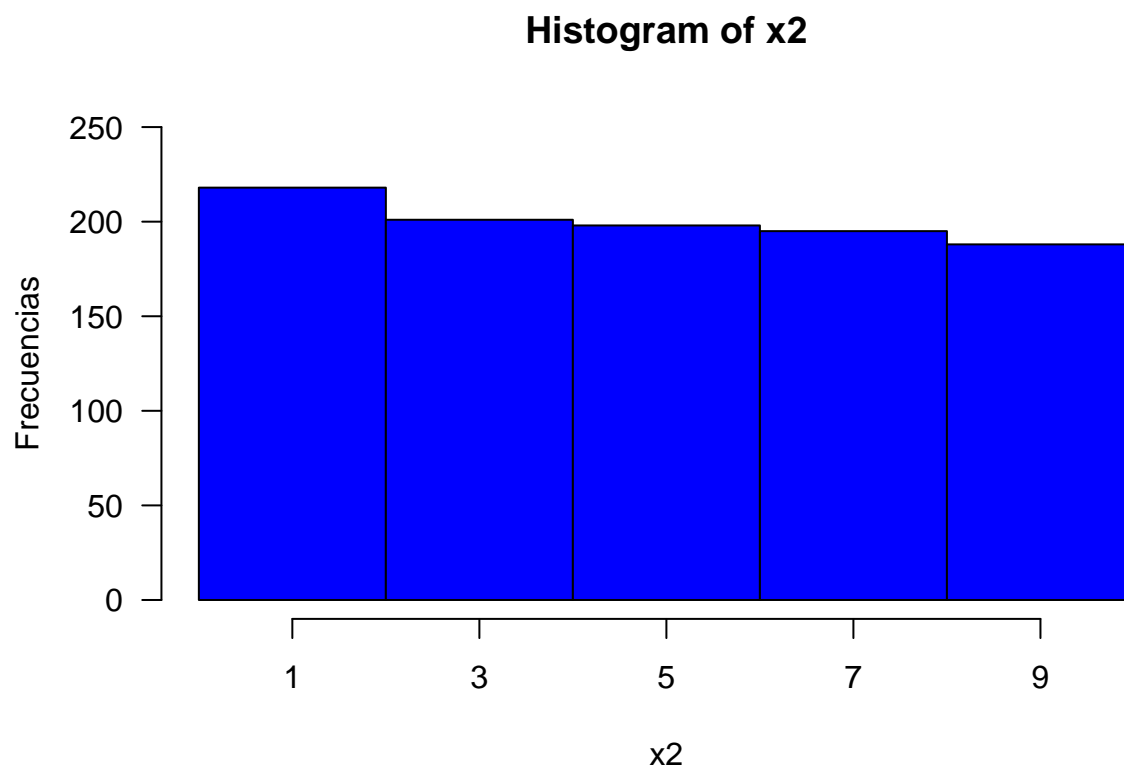
```
## [1] 0 1 2 3 4 5 6 7 8 9 10
hist_mil1 <- hist(x2, xaxt = "n",
breaks = c(0,1,2,3,4,5,6,7,8,9,10),
col = "#ff0000",
ylab = "Frecuencias",
las = 1,
ylim = c(0,120))
axis(1,hist_mil1$mids)
```



```
hist_mil1

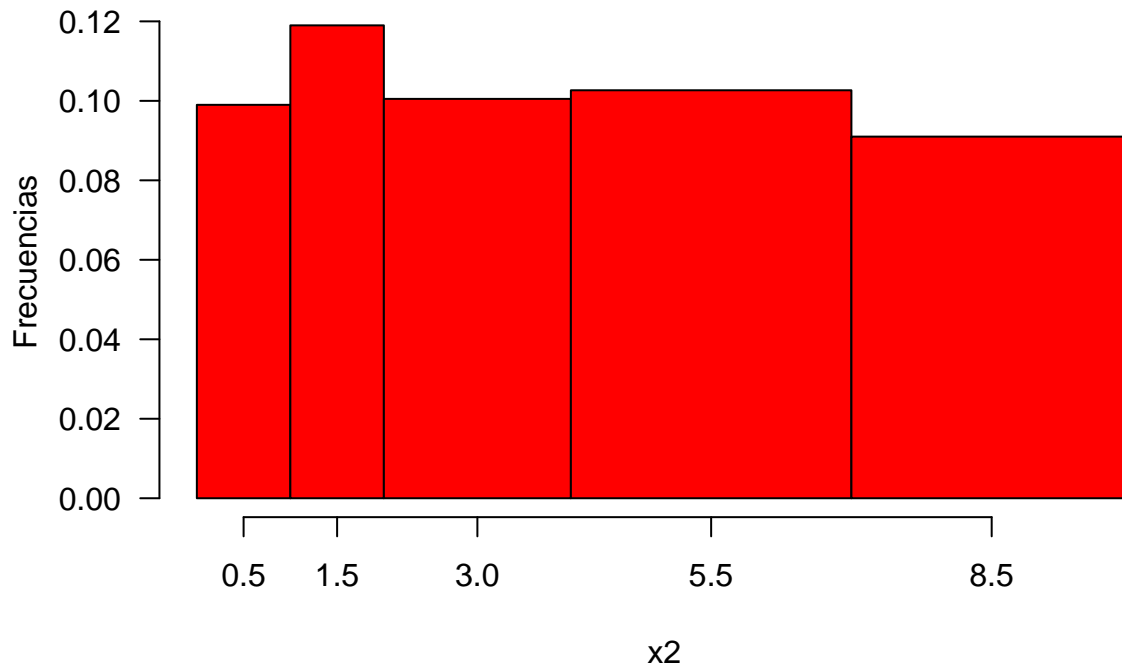
## $breaks
## [1] 0 1 2 3 4 5 6 7 8 9 10
##
## $counts
## [1] 99 119 95 106 103 95 110 85 92 96
##
## $density
## [1] 0.099 0.119 0.095 0.106 0.103 0.095 0.110 0.085 0.092 0.096
##
## $mids
## [1] 0.5 1.5 2.5 3.5 4.5 5.5 6.5 7.5 8.5 9.5
##
## $xname
## [1] "x2"
##
```

```
## $equidist
## [1] TRUE
##
## attr("class")
## [1] "histogram"
hist_mil2 <- hist(x2, xaxt = "n",
                  breaks = c(0,2,4,6,8,10),
                  col = "#0000ff",
                  ylab = "Frecuencias",
                  las = 1,
                  ylim = c(0,250))
axis(1,hist_mil2$mids)
```



```
hist_mil3 <- hist(x2, xaxt = "n",
                  breaks = c(0,1,2,4,7,10),
                  col = "#ff0000",
                  ylab = "Frecuencias",
                  las = 1,)
axis(1,hist_mil3$mids)
```

Histogram of x2



```
hist_mil3
```

```
## $breaks
## [1] 0 1 2 4 7 10
##
## $counts
## [1] 99 119 201 308 273
##
## $density
## [1] 0.0990000 0.1190000 0.1005000 0.1026667 0.0910000
##
## $mids
## [1] 0.5 1.5 3.0 5.5 8.5
##
## $xname
## [1] "x2"
##
## $equidist
## [1] FALSE
##
## attr(,"class")
## [1] "histogram"
```

```
# Problema 2 -----
```

```
#a)El histograma A
```

```

#b)El histograma D
#c)El histograma C
#d)El histograma B
#e)El histograma C

# Problema 3 -----

frec_terr <- table(quakes$mag) ##La funcion table() te ayuda a
frec_terr                      ##crear una tabla de frecuencias

##
##  4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9  5 5.1 5.2 5.3 5.4 5.5 5.6 5.7 5.9  6
## 46 55 90 85 101 107 101 98 65 54 47 43 29 21 20 14 9 8 2 3
## 6.1 6.4
##  1  1

propor_terr <- frec_terr / sum(frec_terr)
propor_terr

##
##  4  4.1  4.2  4.3  4.4  4.5  4.6  4.7  4.8  4.9  5  5.1  5.2
## 0.046 0.055 0.090 0.085 0.101 0.107 0.101 0.098 0.065 0.054 0.047 0.043 0.029
##  5.3  5.4  5.5  5.6  5.7  5.9  6  6.1  6.4
## 0.021 0.020 0.014 0.009 0.008 0.002 0.003 0.001 0.001

porc_terr = 100 * propor_terr
porc_terr

##
##  4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9  5 5.1 5.2 5.3 5.4 5.5
## 4.6 5.5 9.0 8.5 10.1 10.7 10.1 9.8 6.5 5.4 4.7 4.3 2.9 2.1 2.0 1.4
## 5.6 5.7 5.9  6 6.1 6.4
## 0.9 0.8 0.2 0.3 0.1 0.1

mags <- hist(quakes$mag, xaxt = "n",
             col = "#e6ac00", xlab="Magnitud de los terremotos",
             ylab= "Frecuencias",
             main = "",
             las = 1,
             cex.names = 0.1,
             ylim = c(0,260),
             labels = paste(levels(quakes$mag),
                             round(porc_terr,2),"%"))

## Warning in plot.window(xlim, ylim, "", ...): "cex.names" is not a graphical
## parameter

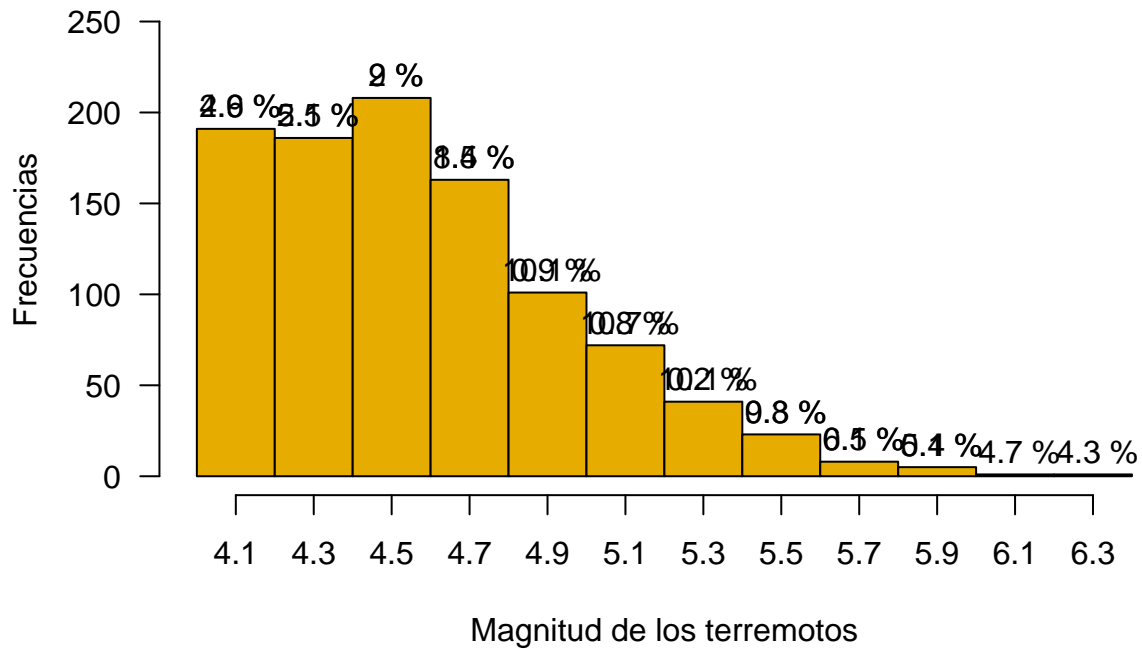
## Warning in title(main = main, sub = sub, xlab = xlab, ylab = ylab, ...):
## "cex.names" is not a graphical parameter

## Warning in axis(1, ...): "cex.names" is not a graphical parameter

## Warning in axis(2, at = yt, ...): "cex.names" is not a graphical parameter

axis(1, mags$mids)

```

#a) Tiene un sesgo a la derecha
 #b) El intervalo de 4.5
 #c) El rango es 4:6.4
 #d) 2.1%
 #e) 19.8%
 #f) 58.5%

Problema 4 -----

```
summary(quakes$mag)
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      4.00   4.30   4.60   4.62   4.90   6.40
```

##61%

##c)75%

Problema 5 -----

#a) la especie C
 #b) la especie F
 #C) la especie F
 #d) la especie C

```
#e) la especie H
#f) la especie F
#g) la especie C
#h) la especie F
#i) la especie H
#j) la especie F
```

```
# Problema 6 -----
```

```
fires <- c(78, 44, 47, 105, 126, 181, 277, 210, 155)
fires
```

```
## [1] 78 44 47 105 126 181 277 210 155
```

```
summary(fires)
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      44.0    78.0   126.0   135.9   181.0   277.0
```

```
quantile(fires)
```

```
##      0%   25%   50%   75%  100%
##      44    78   126   181   277
```

```
#1) 44
#2) 277
#3) 44:277
#4) 78
#5) 126
#6) 181
#7) 126
var(fires)
```

```
## [1] 6069.111
```

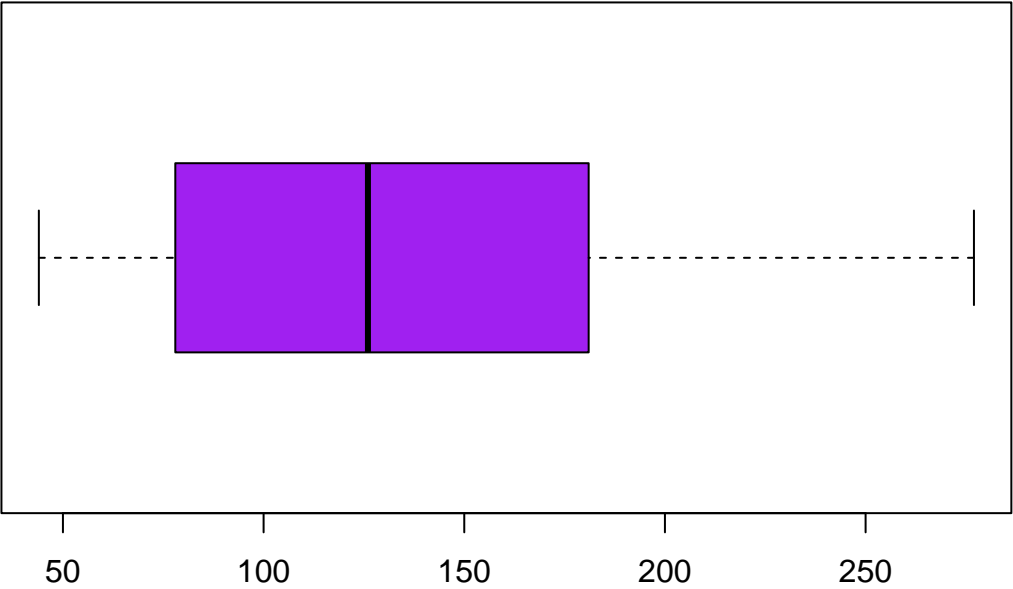
```
#8) 6069.11
sd(fires)
```

```
## [1] 77.9045
```

```
#9) 77.90
#10)
```

```
boxplot(fires, horizontal = T, col = "purple", xlab = "Frecuencuencias de los incendios", main = "Incendios")
```

Incendios forestales en México



Frecuencuencias de los incendios