UNIVERSIDAD AUTÓNOMA DE NUEVO LEÓN

FACULTAD DE CIENCIAS FORESTALES

LABORATORIO SEIS

VARIABLES Y DATOS EN R

EMANUEL MOLINA MARCHAN

MATRÍCULA

2134498

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Laboratorio06_EmanuelMolina.R

Emanuel

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```
# nba datos

nba <- matrix(0,15,8)

colnames(nba) <- c("Western Conference","W","L","W/L%","GB","PS/G","PA/G"
,"SRS")

rownames(nba)<- c("1","2","3","4","5","6","7","8","9","10","11","12","13"
,"14","15")

teams <- c("UJ","PS","DN","LAC","DM","PTB","LAL","MG","GSW","SAS","NOP","
SK","MT", "OCT","HR")

nba [, 1] <- teams

w <- c(52,51,47,47,42,42,42,38,39,33,31,31,23,22,17)
nba [,2] <- w

l <- c(20,21,25,25,30,30,30,34,33,39,41,41,49,50,55)
nba [,3] <- l

wl <- w / (w + l)
nba [,4] <- wl

gb <- c(0,1,5,5,10,10,10,14,13,19,21,21,29,30,35)
nba [,5] <- gb

psg <- c(116.4,115.3,115.1,114,112.4,116.1,109.5,113.3,113.7,111.1,114.6,
113.7,
         112.1,105,108.8)
nba [,6] <- psg

pag <- c(107.2,109.5,110.1,107.8,110.2,114.3,106.8,112.3,112.7,112.8,114.
9,
         117.4,117.7,115.6,116.7)
nba [,7] <- pag

srs <- c(8.97,5.67,4.82,6.02,2.26,1.81,2.77,1.07,1.10,-1.58,-0.20,-3.45,-
5.25,
         -10.13,-7.50)
nba [,8] <- srs
```

```
nba
```

```
##    Western Conference W    L    W/L%                GB   PS/G    PA/G
## 1  "UJ"               "52" "20" "0.722222222222222" "0"  "116.4" "107.
2"
## 2  "PS"               "51" "21" "0.708333333333333" "1"  "115.3" "109.
5"
## 3  "DN"               "47" "25" "0.652777777777778" "5"  "115.1" "110.
1"
## 4  "LAC"              "47" "25" "0.652777777777778" "5"  "114"   "107.
8"
## 5  "DM"               "42" "30" "0.583333333333333" "10" "112.4" "110.
2"
## 6  "PTB"              "42" "30" "0.583333333333333" "10" "116.1" "114.
3"
## 7  "LAL"              "42" "30" "0.583333333333333" "10" "109.5" "106.
8"
## 8  "MG"               "38" "34" "0.527777777777778" "14" "113.3" "112.
3"
## 9  "GSW"              "39" "33" "0.541666666666667" "13" "113.7" "112.
7"
## 10 "SAS"              "33" "39" "0.458333333333333" "19" "111.1" "112.
8"
## 11 "NOP"              "31" "41" "0.430555555555556" "21" "114.6" "114.
9"
## 12 "SK"               "31" "41" "0.430555555555556" "21" "113.7" "117.
4"
## 13 "MT"               "23" "49" "0.319444444444444" "29" "112.1" "117.
7"
## 14 "OCT"              "22" "50" "0.305555555555556" "30" "105"   "115.
6"
## 15 "HR"               "17" "55" "0.236111111111111" "35" "108.8" "116.
7"
##    SRS
## 1  "8.97"
## 2  "5.67"
## 3  "4.82"
## 4  "6.02"
## 5  "2.26"
## 6  "1.81"
## 7  "2.77"
## 8  "1.07"
## 9  "1.1"
## 10 "-1.58"
## 11 "-0.2"
## 12 "-3.45"
## 13 "-5.25"
## 14 "-10.13"
## 15 "-7.5"
```

```r
# Manipular datos

# 1er elemento de "wins"
w[1]
```

```
## [1] 52
```

```r
# 3er elemento de "loss"
l[3]
```

```
## [1] 25
```

```r
# ultimo nombre en "teams"
teams[15]
```

```
## [1] "HR"
```

```r
length(teams)
```

```
## [1] 15
```

```r
#cantidad de datos

sort(w, decreasing = TRUE)
```

```
##  [1] 52 51 47 47 42 42 42 39 38 33 31 31 23 22 17
```

```r
#ordenacion creciente o decreciente

rev(w) #invierte los valores
```

```
##  [1] 17 22 23 31 31 33 39 38 42 42 42 47 47 51 52
```

```r
# subconjunto de indices logicos

#victorias de Utah Jazz
w[teams == 'UJ']
```

```
## [1] 52
```

```r
#equipos con victorias > 40
teams[w > 40]
```

```
## [1] "UJ"  "PS"  "DN"  "LAC" "DM"  "PTB" "LAL"
```

```r
#nombre de los equipos con derrotas entre 10 y 29
teams[l >= 10 & l <= 29]
```

```
## [1] "UJ"  "PS"  "DN"  "LAC"
```

```r
# facores y variables cualitativas

#vector numerico
```

```r
num_vector <- c(1, 2, 3, 1, 2, 3, 2)

#crear un factor apartir de num_vector
first_factor <- factor(num_vector)
first_factor
```

```
## [1] 1 2 3 1 2 3 2
## Levels: 1 2 3
```

```r
#factor de teams
teams = factor(teams)
teams
```

```
##  [1] UJ  PS  DN  LAC DM  PTB LAL MG  GSW SAS NOP SK  MT  OCT HR
## Levels: DM DN GSW HR LAC LAL MG MT NOP OCT PS PTB SAS SK UJ
```

```r
# secuencias

#operador dos puntos :
1:5
```

```
## [1] 1 2 3 4 5
```

```r
1:10
```

```
##  [1]  1  2  3  4  5  6  7  8  9 10
```

```r
-3:7
```

```
##  [1] -3 -2 -1  0  1  2  3  4  5  6  7
```

```r
10:1
```

```
##  [1] 10  9  8  7  6  5  4  3  2  1
```

```r
#funcion secuencia
seq(from = 1, to = 10)
```

```
##  [1]  1  2  3  4  5  6  7  8  9 10
```

```r
seq(from = 1, to = 10, by = 1)
```

```
##  [1]  1  2  3  4  5  6  7  8  9 10
```

```r
seq(from = 1, to = 10, by = 2)
```

```
## [1] 1 3 5 7 9
```

```r
seq(from = -5, to = 5, by = 1)
```

```
##  [1] -5 -4 -3 -2 -1  0  1  2  3  4  5
```

```r
# vectores repetidos

rep(1, times = 5)

## [1] 1 1 1 1 1

#repetir 1 cinco veces

rep(c(1, 2), times = 3)

## [1] 1 2 1 2 1 2

#repetir 1 y 2 tres veces

rep(c(1, 2), each = 2)

## [1] 1 1 2 2

#repetir 1 y 2 dos veces cada uno

rep(c(1, 2), length.out = 5)

## [1] 1 2 1 2 1

#repite 1 y 2 hasta 5 veces

rep(c(3, 2, 1), times = 3, each = 2)

##  [1] 3 3 2 2 1 1 3 3 2 2 1 1 3 3 2 2 1 1

# repite 3, 2 y 1 cada uno 2 veces, en 3 ocaciones



# de vectores a estructura tabular - data frame

dat = data.frame(Teams = teams, #con esta funcion se cre aun data frame
                 w = w, l = l,WLperc = wl)
# funcion para crear un data frame
dat
```

```
##    Teams  w  l    WLperc
## 1     UJ 52 20 0.7222222
## 2     PS 51 21 0.7083333
## 3     DN 47 25 0.6527778
## 4    LAC 47 25 0.6527778
## 5     DM 42 30 0.5833333
## 6    PTB 42 30 0.5833333
## 7    LAL 42 30 0.5833333
## 8     MG 38 34 0.5277778
## 9    GSW 39 33 0.5416667
## 10   SAS 33 39 0.4583333
```

```
## 11   NOP 31 41 0.4305556
## 12    SK 31 41 0.4305556
## 13    MT 23 49 0.3194444
## 14   OCT 22 50 0.3055556
## 15    HR 17 55 0.2361111
```

```
dat$Teams
```

```
##  [1] UJ  PS  DN  LAC DM  PTB LAL MG  GSW SAS NOP SK  MT  OCT HR
## Levels: DM DN GSW HR LAC LAL MG MT NOP OCT PS PTB SAS SK UJ
```

```
# $ se utiliza para extraer datos de una columna de un dataset

# se pueden utilizar notaciones de corchetes en la columna, como se hace
con los vectores
```

```
dat$Wins[1]
```

```
## NULL
```

```
#para extraer el primer valor de "Wins"
```

```
dat$Wins[5]
```

```
## NULL
```

```
#para extraer el quinto valor de "Wins"

#subconjuntos logicos
dat$Wins[dat$Teams == 'UJ']
```

```
## NULL
```

```
#extrae las victorias

#dentro del data frame
dat$Teams[dat$Wins > 40]
```

```
## factor(0)
## Levels: DM DN GSW HR LAC LAL MG MT NOP OCT PS PTB SAS SK UJ
```

```
#extraer  valores  con victorias mayores a 40

dat$Teams[dat$Losses >= 10 & dat$Losses <= 29]
```

```
## factor(0)
## Levels: DM DN GSW HR LAC LAL MG MT NOP OCT PS PTB SAS SK UJ
```

```
#extraer  equipos entre 10 y 29 derrotas
```

```r
w[1] - w
```

```
##  [1]  0  1  5  5 10 10 10 14 13 19 21 21 29 30 35
```

```r
posiciones <- data.frame(Teams = teams, w = w, Losses = l, WLporc = wl,
                         GamesBehind = gb, PointsScored = psg,
                         PointsAgainst = pag, Rating = srs)
posiciones
```

```
##    Teams  w Losses    WLporc GamesBehind PointsScored PointsAgainst Ra
ting
## 1     UJ 52     20 0.7222222           0        116.4         107.2
8.97
## 2     PS 51     21 0.7083333           1        115.3         109.5
5.67
## 3     DN 47     25 0.6527778           5        115.1         110.1
4.82
## 4    LAC 47     25 0.6527778           5        114.0         107.8
6.02
## 5     DM 42     30 0.5833333          10        112.4         110.2
2.26
## 6    PTB 42     30 0.5833333          10        116.1         114.3
1.81
## 7    LAL 42     30 0.5833333          10        109.5         106.8
2.77
## 8     MG 38     34 0.5277778          14        113.3         112.3
1.07
## 9    GSW 39     33 0.5416667          13        113.7         112.7
1.10
## 10   SAS 33     39 0.4583333          19        111.1         112.8  -
1.58
## 11   NOP 31     41 0.4305556          21        114.6         114.9  -
0.20
## 12    SK 31     41 0.4305556          21        113.7         117.4  -
3.45
## 13    MT 23     49 0.3194444          29        112.1         117.7  -
5.25
## 14   OCT 22     50 0.3055556          30        105.0         115.6 -1
0.13
## 15    HR 17     55 0.2361111          35        108.8         116.7  -
7.50
```

```r
sort(posiciones$PointsScored, decreasing = FALSE)
```

```
##  [1] 105.0 108.8 109.5 111.1 112.1 112.4 113.3 113.7 113.7 114.0 114.6
115.1
## [13] 115.3 116.1 116.4
```

```r
sort(posiciones$PointsScored, decreasing = TRUE)
```

```
##  [1] 116.4 116.1 115.3 115.1 114.6 114.0 113.7 113.7 113.3 112.4 112.1
111.1
## [13] 109.5 108.8 105.0
```