

**UNIVERSIDAD AUTÓNOMA DE NUEVO LEÓN**

**FACULTAD DE CIENCIAS FORESTALES**

**LABORATORIO SEIS**

**VARIABLES Y DATOS EN R**

**EMANUEL MOLINA MARCHAN**

**MATRÍCULA**

**2134498**

**SEPTIEMBRE, 2022**

Laboratorio06\_EmanuelMolina.R

Emanuel

2022-09-21

# 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"

# Manipular datos  
  
# 1er elemento de "wins"  
w[1]

## [1] 52

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

## [1] 25

# ultimo nombre en "teams"  
teams[15]

## [1] "HR"

length(teams)

## [1] 15

#cantidad de datos  
  
sort(w, decreasing = TRUE)

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

#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

# subconjunto de indices logicos  
  
#victorias de Utah Jazz  
w[teams == 'UJ']

## [1] 52

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

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

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

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

# facores y variables cualitativas  
  
#vector numerico  
  
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

#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

# secuencias  
  
#operador dos puntos :  
1:5

## [1] 1 2 3 4 5

1:10

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

-3:7

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

10:1

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

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

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

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

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

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

## [1] 1 3 5 7 9

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

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

# 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  
  
  
  
  
w[1] - w

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

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 Rating  
## 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 -10.13  
## 15 HR 17 55 0.2361111 35 108.8 116.7 -7.50

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

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