

# Base-de-datos-Temperatura.R

Usuario

2025-08-21

```
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# Semana 2 (14/08/2025)
```

```
## Laboratorio 2
```

```
temperatura <- read.csv("C:/Repositorio GitHub/Posgrado_Estadistica_2025/temperatura.csv")  
View(temperatura)
```

```
head(temperatura) #Primeras 6 filas
```

```
##      Año  Ene  Feb  Mar  Abr  May  Jun  Jul  Ago  Sep  Oct  Nov  Dic  
## 1 2000 22.5 18.9 19.4 14.0 16.0 22.0 15.0 13.4 18.8 12.4 22.9 21.1  
## 2 2001 19.3 20.3 18.5 24.1 17.5 29.4 17.2 22.6 16.2 17.8 25.7 20.2  
## 3 2002 23.2 12.9 12.6 26.8 24.6 20.9 20.5 21.5 15.6 24.3 24.8 16.7  
## 4 2003 27.6 17.3 16.4 19.6 21.6 21.3 17.5 21.3 15.9 21.1 23.3 30.7  
## 5 2004 18.8 20.6 17.7 25.0 17.4 19.6 12.2 21.7 19.6 13.8 18.4 23.2  
## 6 2005 18.8 14.2 25.3 21.8 22.6 10.4 20.3 16.6 21.7 20.9 23.8 9.9
```

```
dim(temperatura) #Números de filas y columnas
```

```
## [1] 21 13
```

```
names(temperatura) #Nombre de las columnas
```

```
## [1] "Año" "Ene" "Feb" "Mar" "Abr" "May" "Jun" "Jul" "Ago" "Sep" "Oct" "Nov"  
## [13] "Dic"
```

```
str(temperatura) #Estructura del data frame
```

```
## 'data.frame': 21 obs. of 13 variables:  
## $ Año: int 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 ...  
## $ Ene: num 22.5 19.3 23.2 27.6 18.8 18.8 27.9 23.8 17.7 22.7 ...  
## $ Feb: num 18.9 20.3 12.9 17.3 20.6 14.2 21.9 17 18.5 17 ...  
## $ Mar: num 19.4 18.5 12.6 16.4 17.7 25.3 21.7 11.2 21.6 18.1 ...  
## $ Abr: num 14 24.1 26.8 19.6 25 21.8 16.8 21.8 27.7 19.8 ...  
## $ May: num 16 17.5 24.6 21.6 17.4 22.6 20.5 24.8 16.5 18.4 ...  
## $ Jun: num 22 29.4 20.9 21.3 19.6 10.4 19.9 20.3 32.3 19 ...  
## $ Jul: num 15 17.2 20.5 17.5 12.2 20.3 14.7 22.4 15.4 27.7 ...
```

```
## $ Ago: num 13.4 22.6 21.5 21.3 21.7 16.6 21.2 21.5 16.4 29.3 ...
## $ Sep: num 18.8 16.2 15.6 15.9 19.6 21.7 21.4 24.1 20.1 27.3 ...
## $ Oct: num 12.4 17.8 24.3 21.1 13.8 20.9 21.9 15.6 20.8 20.3 ...
## $ Nov: num 22.9 25.7 24.8 23.3 18.4 23.8 16.1 18.8 17.6 20.4 ...
## $ Dic: num 21.1 20.2 16.7 30.7 23.2 9.9 20.9 16.7 24.3 16 ...
```

```
summary(temperatura) #Resumen estadístico
```

```
##      Año      Ene      Feb      Mar      Abr
## Min.   :2000   Min.   :10.40   Min.   :10.2   Min.   :11.20   Min.   : 6.90
## 1st Qu.:2005   1st Qu.:17.20   1st Qu.:14.7   1st Qu.:16.60   1st Qu.:18.50
## Median :2010   Median :18.80   Median :18.9   Median :18.50   Median :20.50
## Mean   :2010   Mean   :19.53   Mean   :18.6   Mean   :19.25   Mean   :20.53
## 3rd Qu.:2015   3rd Qu.:22.70   3rd Qu.:21.0   3rd Qu.:21.70   3rd Qu.:24.10
## Max.   :2020   Max.   :27.90   Max.   :29.3   Max.   :25.30   Max.   :27.80
##      May      Jun      Jul      Ago      Sep
## Min.   :12.70   Min.   :10.4   Min.   :12.0   Min.   :13.40   Min.   :14.60
## 1st Qu.:17.40   1st Qu.:19.6   1st Qu.:15.0   1st Qu.:16.60   1st Qu.:16.20
## Median :18.40   Median :21.3   Median :18.4   Median :21.70   Median :19.60
## Mean   :18.88   Mean   :21.6   Mean   :18.8   Mean   :21.26   Mean   :20.43
## 3rd Qu.:21.30   3rd Qu.:24.0   3rd Qu.:21.3   3rd Qu.:23.90   3rd Qu.:22.40
## Max.   :24.80   Max.   :32.3   Max.   :27.7   Max.   :29.50   Max.   :33.60
##      Oct      Nov      Dic
## Min.   :12.40   Min.   :10.70   Min.   : 9.90
## 1st Qu.:15.60   1st Qu.:16.40   1st Qu.:16.70
## Median :21.10   Median :20.30   Median :20.20
## Mean   :20.67   Mean   :20.16   Mean   :20.08
## 3rd Qu.:22.60   3rd Qu.:23.40   3rd Qu.:23.20
## Max.   :39.30   Max.   :31.60   Max.   :30.70
```

```
names(temperatura) <- c("Anual", "Ene", "Feb", "Mar", "Abr", "May", "Jun", "Jul", "Ago", "Sep", "Oct", "Nov", "Dic", "media_anual")
temperatura$media_anual <- rowMeans(
  temperatura[,2:13])
head(temperatura)
```

```
##   Annual Ene Feb Mar Abr May Jun Jul Ago Sep Oct Nov Dic media_anual
## 1  2000 22.5 18.9 19.4 14.0 16.0 22.0 15.0 13.4 18.8 12.4 22.9 21.1    18.03333
## 2  2001 19.3 20.3 18.5 24.1 17.5 29.4 17.2 22.6 16.2 17.8 25.7 20.2    20.73333
## 3  2002 23.2 12.9 12.6 26.8 24.6 20.9 20.5 21.5 15.6 24.3 24.8 16.7    20.36667
## 4  2003 27.6 17.3 16.4 19.6 21.6 21.3 17.5 21.3 15.9 21.1 23.3 30.7    21.13333
## 5  2004 18.8 20.6 17.7 25.0 17.4 19.6 12.2 21.7 19.6 13.8 18.4 23.2    19.00000
## 6  2005 18.8 14.2 25.3 21.8 22.6 10.4 20.3 16.6 21.7 20.9 23.8  9.9    18.85833
```

```
rowMeans(temperatura)
```

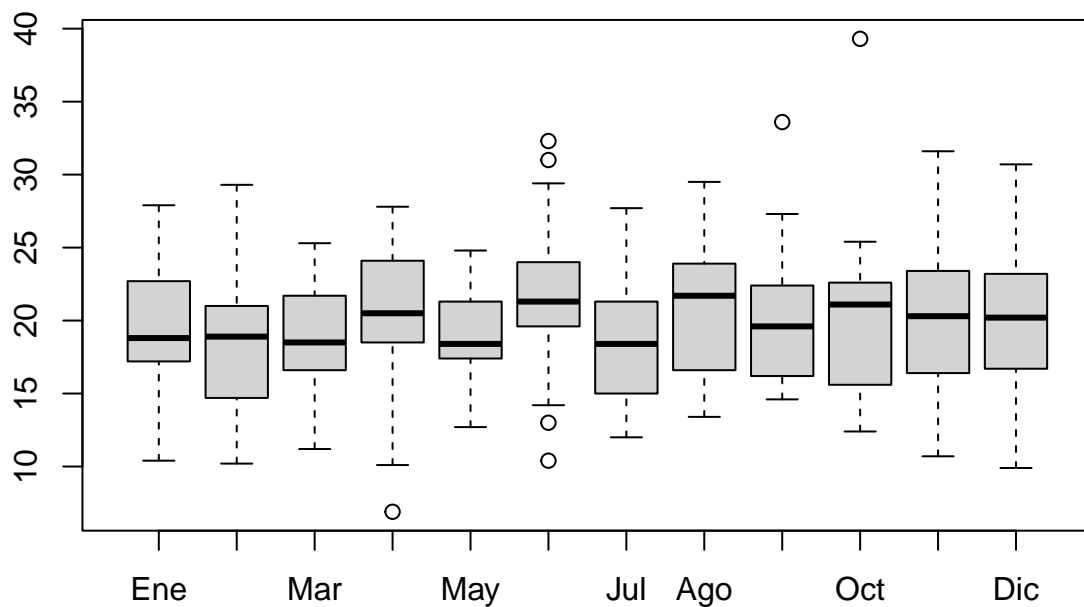
```
## [1] 159.6024 162.1810 161.9119 162.6952 160.7857 160.7256 162.2363 161.7738
## [9] 162.6887 163.3095 163.1798 160.7518 163.9804 161.0030 161.2060 163.3357
## [17] 158.2690 164.1131 162.2500 163.5054 165.1476
```

```
# Creación y edición de gráficas -----

# Crear gráficas con los datos

temp <- temperatura[,2:13]

boxplot(temp)
```



```
write.csv(temperatura, "temp_final.csv")
temp10 <- temperatura[11:21,2:13]
temperatura[2,2]
```

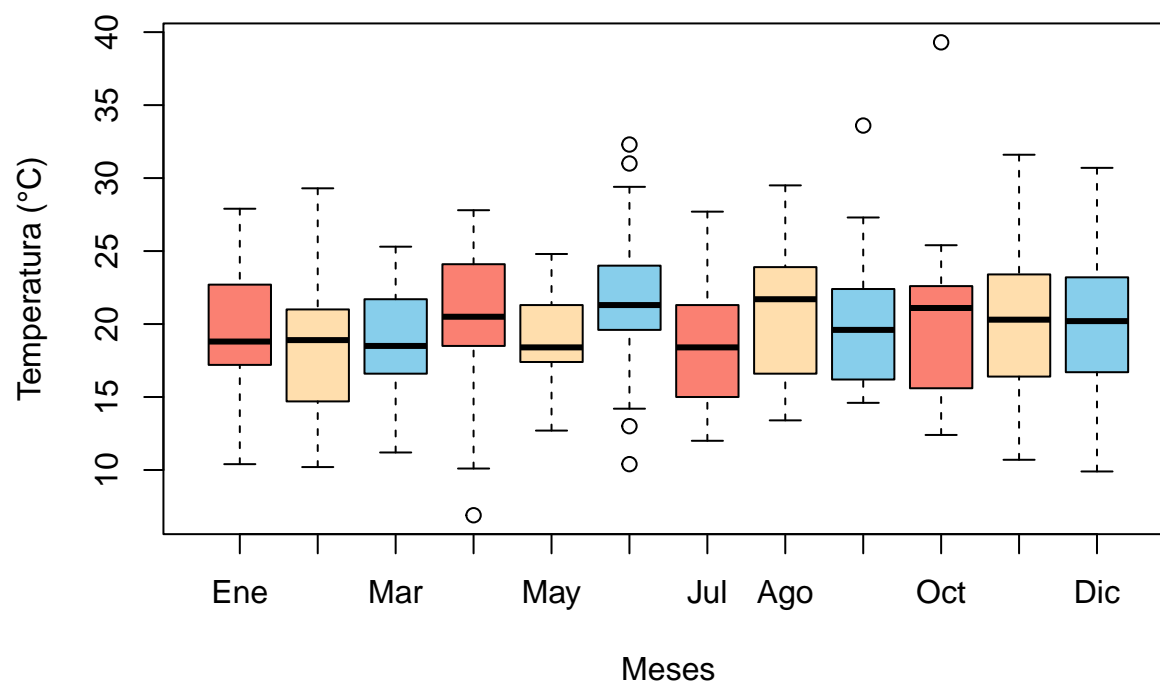
```
## [1] 19.3
```

```
# Personalizar la gráfica con la temperatura de 20 años de 2000 a 2020.
```

```
colores <- c("salmon","navajowhite","skyblue")

boxplot(temp, col = colores,
  main = "Comportamiento temperatura (2000 a 2020)",
  xlab = "Meses",
  ylab = "Temperatura (°C)")
```

## Comportamiento temperatura (2000 a 2020)



*# Personalizar la gráfica con la temperatura de 10 años de 2010 a 2020.*

```
boxplot(temp10, col = colores,  
        main = "Comportamiento temperatura (2010 a 2020)",  
        xlab = "Meses",  
        ylab = "Temperatura (°C)")
```

## Comportamiento temperatura (2010 a 2020)

