Script_6_ANOVA.R

Usuario

2025-05-07

```r
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# Importar datos de internet

url <-
"https://raw.githubusercontent.com/mgtagle/Exp_Met_Est_AD2023/refs/heads/
main/Scripts/localidades.csv"
datos <- read.csv(url, header = T)
datos$Paraje <- as.factor(datos$Paraje)

# H0 = No hay diferentes en el diametro de las localidades.
# H1 = Hay diferencias en los diametros de las localidades.

shapiro.test(datos$DAP)

##
##  Shapiro-Wilk normality test
##
## data:  datos$DAP
## W = 0.96548, p-value = 0.003575

boxplot(datos$DAP ~ datos$Paraje,
        col ="brown",
        xlab = "Localidades",
        ylab= "DAP (cm)")
```
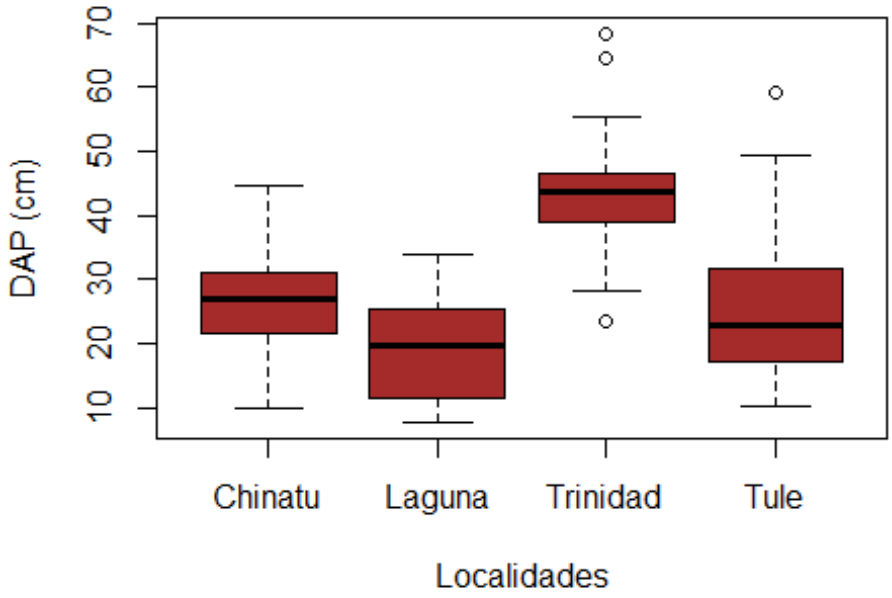




```
tapply(datos$DAP, datos$Paraje, mean)
```

```
##  Chinatu   Laguna Trinidad     Tule
## 26.10000 19.31333 43.67667 25.44667
```

```
tapply(datos$DAP, datos$Paraje, var)
```

```
##   Chinatu    Laguna  Trinidad      Tule
##  71.46414  61.71775  81.51840 146.52395
```

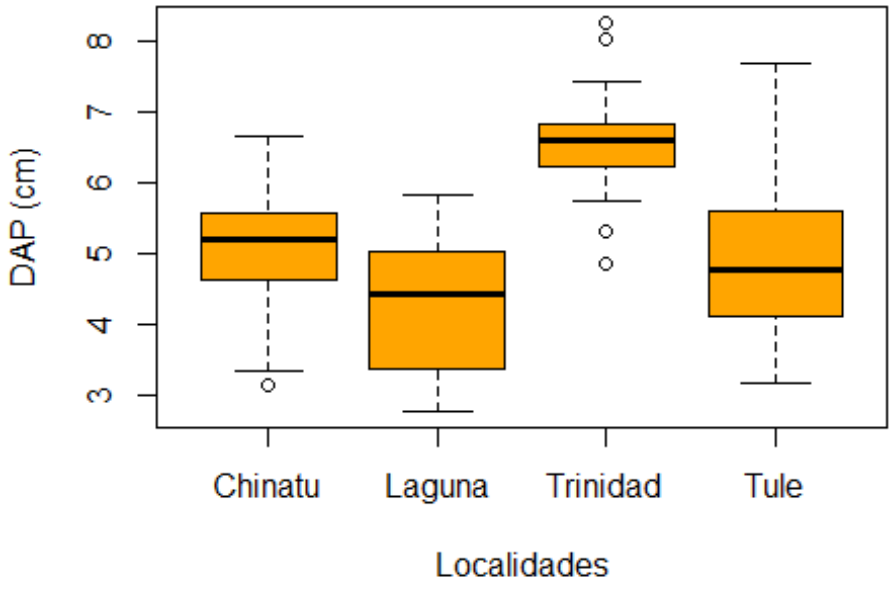
```
bartlett.test(datos$DAP ~ datos$Paraje)
```

```
##
##  Bartlett test of homogeneity of variances
##
## data:  datos$DAP by datos$Paraje
## Bartlett's K-squared = 6.6622, df = 3, p-value = 0.08348
```

```
# Transformacion de datos para analisis de capacidad
datos$tlog <- log10(datos$DAP + 1)

shapiro.test(datos$tlog)
```

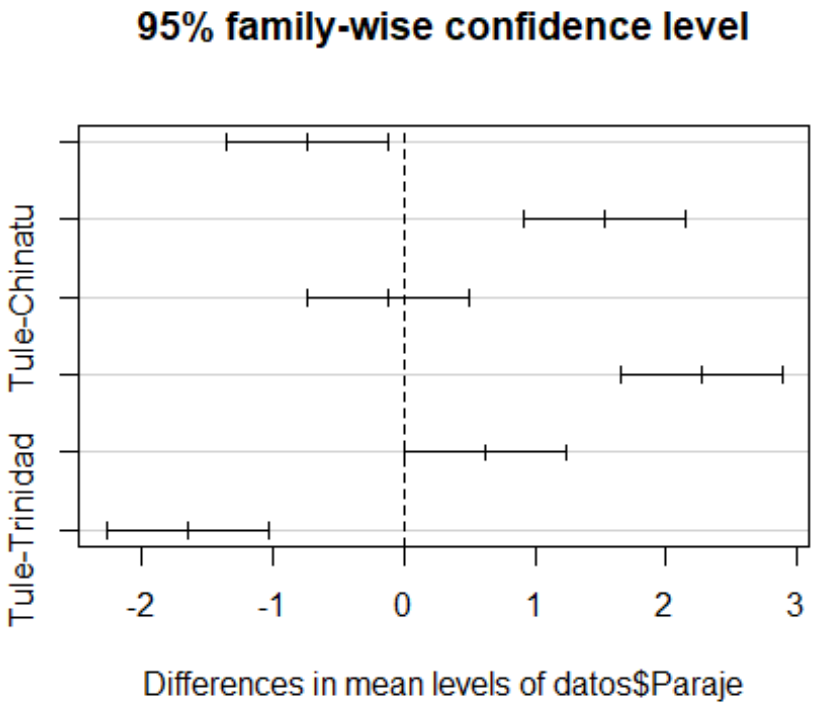
```
##
##  Shapiro-Wilk normality test
##
## data:  datos$tlog
## W = 0.97171, p-value = 0.01243
```

```r
datos$tsqrt <- sqrt(datos$DAP)
shapiro.test(datos$tsqrt)

##
##  Shapiro-Wilk normality test
##
## data:  datos$tsqrt
## W = 0.98341, p-value = 0.1473

bartlett.test(datos$tsqrt ~ datos$Paraje)

##
##  Bartlett test of homogeneity of variances
##
## data:  datos$tsqrt by datos$Paraje
## Bartlett's K-squared = 7.6911, df = 3, p-value = 0.05285

boxplot(datos$tsqrt ~ datos$Paraje,
        col= "orange",
        xlab = "Localidades",
        ylab= "DAP (cm)")
```




```r
bartlett.test(datos$tsqrt, datos$Paraje)

##
##  Bartlett test of homogeneity of variances
##
```

```
## data:  datos$tsqrt and datos$Paraje
## Bartlett's K-squared = 7.6911, df = 3, p-value = 0.05285

# Indicar con el AOV
par.aov <- aov(datos$tsqrt ~ datos $Paraje)
summary(par.aov)

##               Df Sum Sq Mean Sq F value   Pr(>F)
## datos$Paraje   3  84.09  28.029    33.2 1.45e-15 ***
## Residuals    116  97.94   0.844
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

# Identificar diferencias significativas prueba de Tukey
TukeyHSD(par.aov)

##   Tukey multiple comparisons of means
##     95% family-wise confidence level
##
## Fit: aov(formula = datos$tsqrt ~ datos$Paraje)
##
## $`datos$Paraje`
##                         diff          lwr        upr     p adj
## Laguna-Chinatu   -0.7331899 -1.351610796 -0.1147691 0.0131794
## Trinidad-Chinatu  1.5391985  0.920777631  2.1576194 0.0000000
## Tule-Chinatu     -0.1190328 -0.737453617  0.4993881 0.9585122
## Trinidad-Laguna   2.2723884  1.653967564  2.8908093 0.0000000
## Tule-Laguna       0.6141572 -0.004263685  1.2325780 0.0523230
## Tule-Trinidad    -1.6582312 -2.276652111 -1.0398104 0.0000000

plot(TukeyHSD(par.aov))
```


95% family-wise confidence level
Tule-Chinatu
Tule-Trinidad
-2
-1
0
1
2
3
Differences in mean levels of datos$Paraje