Microproyecto 3 - Estadística 2

```r
DB <- read.csv("/Users/rudiks/Desktop/microproyecto3.csv")
```

```r
factorA_PH <- factor(DB$PH)
factorB_Endulzante <- factor(DB$Endulzante)
Tiempo <- DB$Tiempo
```

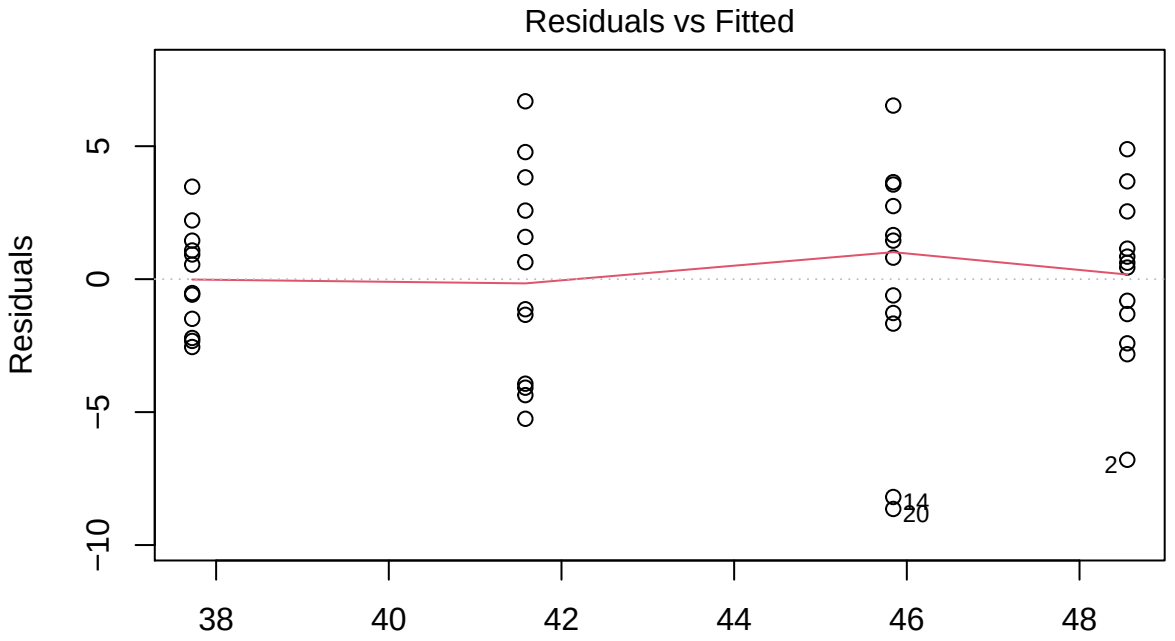
```r
modelo <- lm (Tiempo ~ (factorA_PH+factorB_Endulzante)^2)
summary(modelo)
```

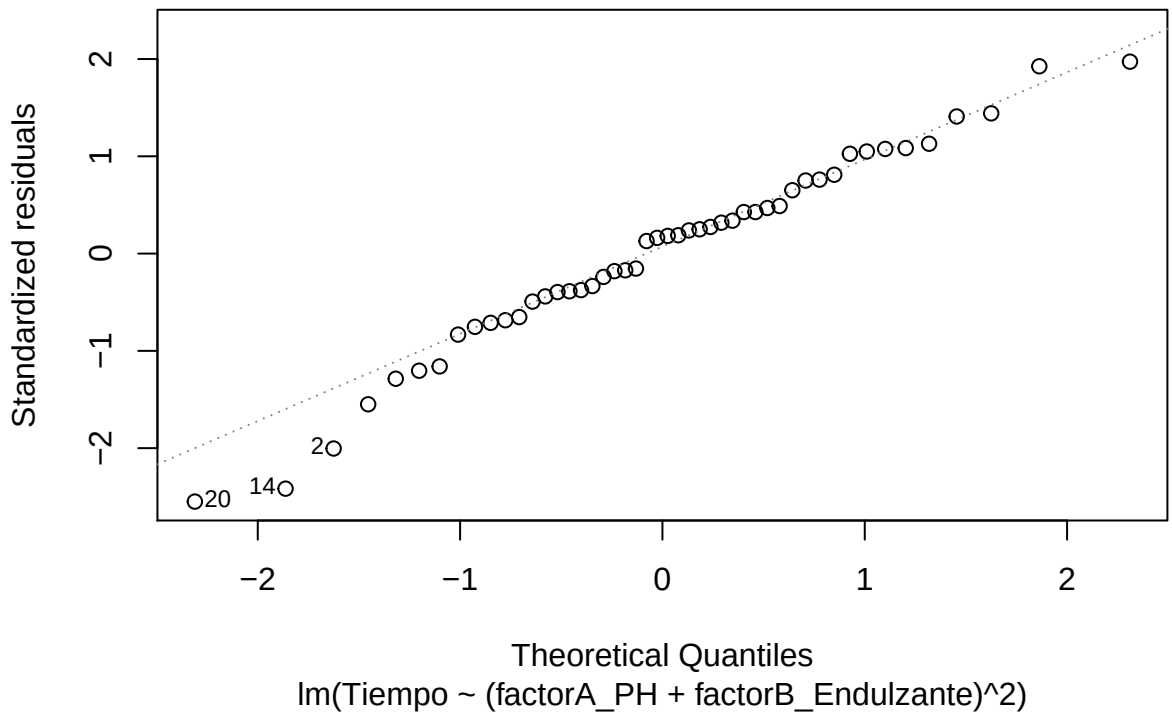
```
##
## Call:
## lm(formula = Tiempo ~ (factorA_PH + factorB_Endulzante)^2)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -8.6425 -1.8075  0.5821  2.2923  6.6883
##
## Coefficients:
##                                                 Estimate Std. Error t value
## (Intercept)                                       48.553      1.022  47.501
## factorA_PHLimonada                                -2.711      1.446  -1.875
## factorB_EndulzanteSin azúcar                      -6.972      1.446  -4.823
## factorA_PHLimonada:factorB_EndulzanteSin azúcar   -1.148      2.044  -0.562
##                                                 Pr(>|t|)
## (Intercept)                                      < 2e-16 ***
## factorA_PHLimonada                                0.0674 .
## factorB_EndulzanteSin azúcar                     1.73e-05 ***
## factorA_PHLimonada:factorB_EndulzanteSin azúcar   0.5772
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 3.541 on 44 degrees of freedom
## Multiple R-squared:  0.5969, Adjusted R-squared:  0.5694
## F-statistic: 21.71 on 3 and 44 DF,  p-value: 8.817e-09
```

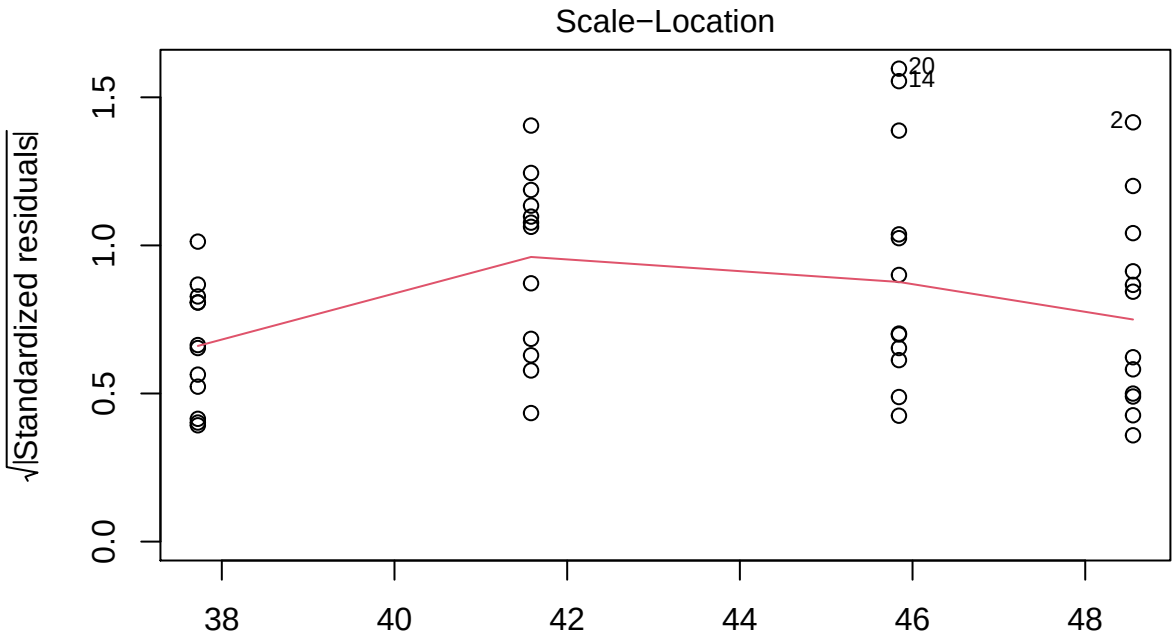
```r
ANOVA <- aov(modelo)
summary(ANOVA)
```

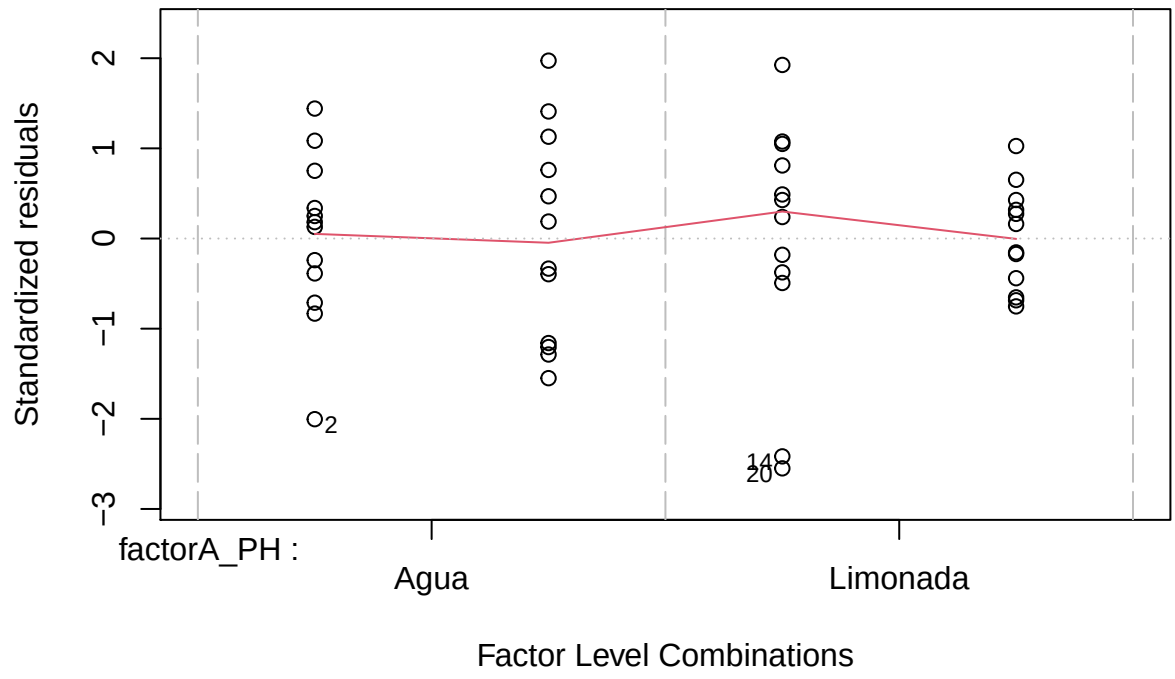
```
##                              Df Sum Sq Mean Sq F value   Pr(>F)
## factorA_PH                    1  129.5   129.5  10.328  0.00245 **
## factorB_Endulzante            1  683.3   683.3  54.498 3.16e-09 ***
## factorA_PH:factorB_Endulzante 1    4.0     4.0   0.316  0.57716
## Residuals                    44  551.7    12.5
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```r
plot(modelo)
```


Residuals vs Fitted
Residuals
5
0
−5
−10
38
40
42
44
46
48
2
14
20
Fitted values
lm(Tiempo ~ (factorA_PH + factorB_Endulzante)^2)


Normal Q−Q
Standardized residuals
2
1
0
−1
−2
20
14
2
−2
−1
0
1
2
Theoretical Quantiles
lm(Tiempo ~ (factorA_PH + factorB_Endulzante)^2)






```
shapiro.test(rstandard(modelo))
```

```
##
##  Shapiro-Wilk normality test
##
## data:  rstandard(modelo)
```

```
## W = 0.97676, p-value = 0.4519
```

```
coef(modelo)
```

```
##                                       (Intercept)
##                                         48.553333
##                                 factorA_PHLimonada
##                                         -2.710833
##                       factorB_EndulzanteSin azúcar
##                                         -6.971667
## factorA_PHLimonada:factorB_EndulzanteSin azúcar
##                                         -1.148333
```

```
modeloFinal <- lm(Tiempo ~(factorA_PH+factorB_Endulzante)^2)
modeloFinal
```

```
##
## Call:
## lm(formula = Tiempo ~ (factorA_PH + factorB_Endulzante)^2)
##
## Coefficients:
##                                       (Intercept)
##                                            48.553
##                                 factorA_PHLimonada
##                                            -2.711
##                       factorB_EndulzanteSin azúcar
##                                            -6.972
## factorA_PHLimonada:factorB_EndulzanteSin azúcar
##                                            -1.148
```

Predicciones

```
factor_PH_prueba <- factor(c("Agua","Limonada"))
factor_Endulzante_prueba <- factor(c("Sin azúcar","Con azúcar"))
predict(modeloFinal, data.frame(factorA_PH=factor_PH_prueba, factorB_Endulzante=factor_Endulzante_prueba
```

```
##        1        2
## 41.58167 45.84250
```