Análisis de datos

Grupos funcionales

David Vanegas-Alarcón

May 12, 2025

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[1] "RelocationStrategy_Rollers"
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[1] "Modelo test"
[[1]]
             Df Sum Sq Mean Sq F value Pr(>F)
BurningRegime  2    688   344.1   0.882  0.439
Residuals     12   4684   390.3

[1] "Post hoc Test"
[[1]]
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = Total ~ BurningRegime, data = dataST)

$BurningRegime
           diff       lwr      upr     p adj
Low-High   16.2 -17.13442 49.53442 0.4235814
Null-High   5.0 -28.33442 38.33442 0.9161189
Null-Low  -11.2 -44.53442 22.13442 0.6526969


[1] "Shapiro Test"
[[1]]

    Shapiro-Wilk normality test

data:  residuals(anova_result)
W = 0.94741, p-value = 0.4846


[1] "Levene Test"
[[1]]
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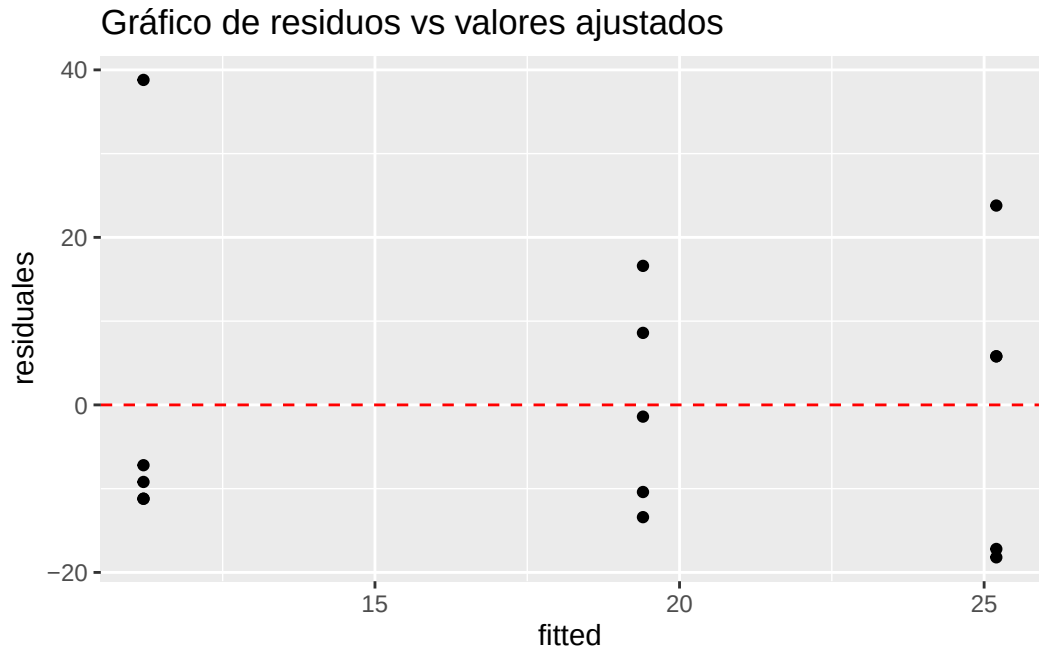
```
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  2  0.5744 0.5778
      12
```

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[[1]]
             Df Sum Sq Mean Sq F value Pr(>F)
BurningRegime  2    688   344.1   0.882  0.439
Residuals     12   4684   390.3

[1] "Post hoc Test"
[[1]]
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = Total ~ BurningRegime, data = dataST)

$BurningRegime
           diff       lwr      upr     p adj
```

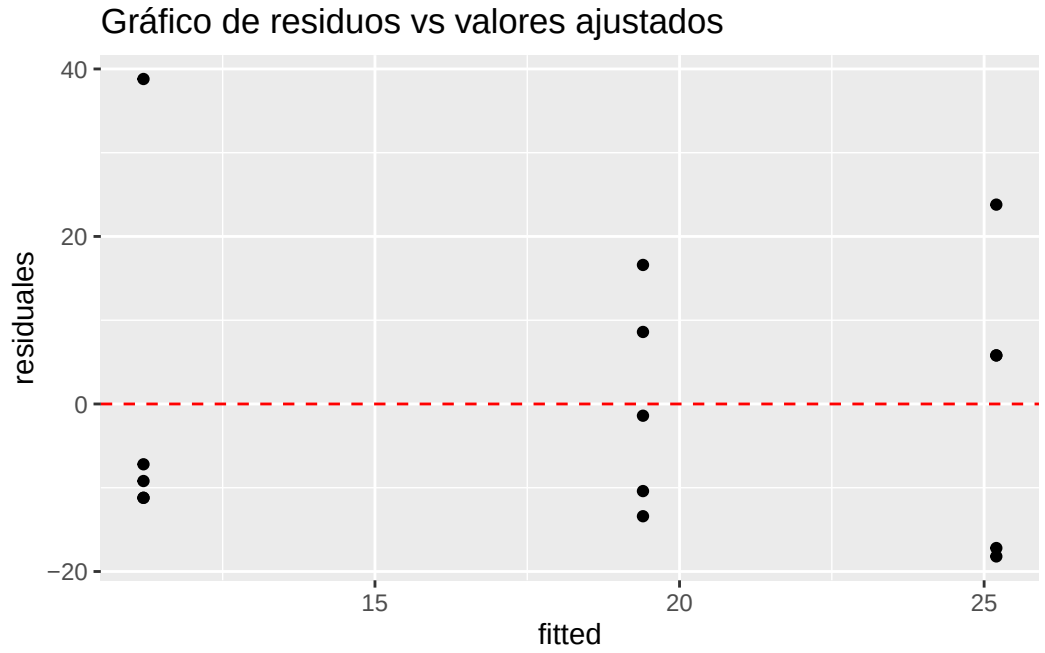
```
Low-High  -16.2 -49.53442 17.13442 0.4235814
Null-High  -5.0 -38.33442 28.33442 0.9161189
Null-Low   11.2 -22.13442 44.53442 0.6526969


[1] "Shapiro Test"
[[1]]

    Shapiro-Wilk normality test

data:  residuals(anova_result)
W = 0.94741, p-value = 0.4846


[1] "Levene Test"
[[1]]
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  2  0.5744 0.5778
      12
```

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[1] "                                 "
[1] "Modelo test"
[[1]]
             Df Sum Sq Mean Sq F value Pr(>F)
BurningRegime  2  40.13   20.07   1.194  0.336
Residuals     12 201.60   16.80

[1] "Post hoc Test"
[[1]]
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = Total ~ BurningRegime, data = dataST)

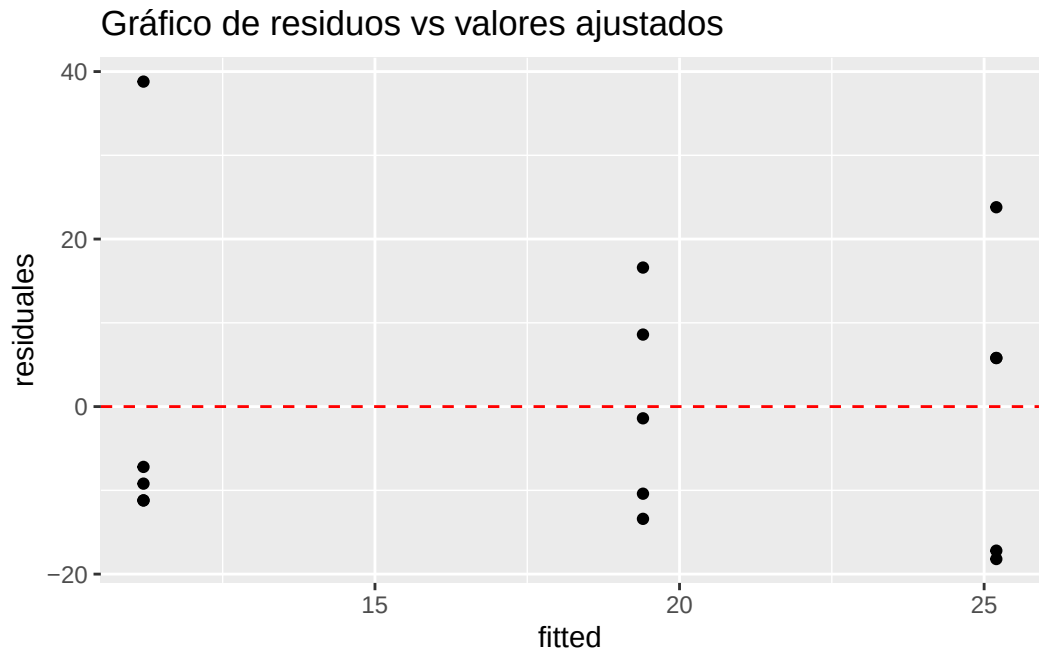
$BurningRegime
          diff        lwr      upr     p adj
Low-High  -1.8  -8.715893 5.115893 0.7711968
Null-High -4.0 -10.915893 2.915893 0.3066393
Null-Low  -2.2  -9.115893 4.715893 0.6812083


[1] "Shapiro Test"
[[1]]

    Shapiro-Wilk normality test

data:  residuals(anova_result)
W = 0.89301, p-value = 0.0745


[1] "Levene Test"
[[1]]
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  2  1.6258 0.2372
      12
```

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[1] "Modelo test"
[[1]]
             Df Sum Sq Mean Sq F value Pr(>F)
BurningRegime  2    833   416.3   0.943  0.416
Residuals     12   5296   441.4

[1] "Post hoc Test"
[[1]]
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = Total ~ BurningRegime, data = dataST)

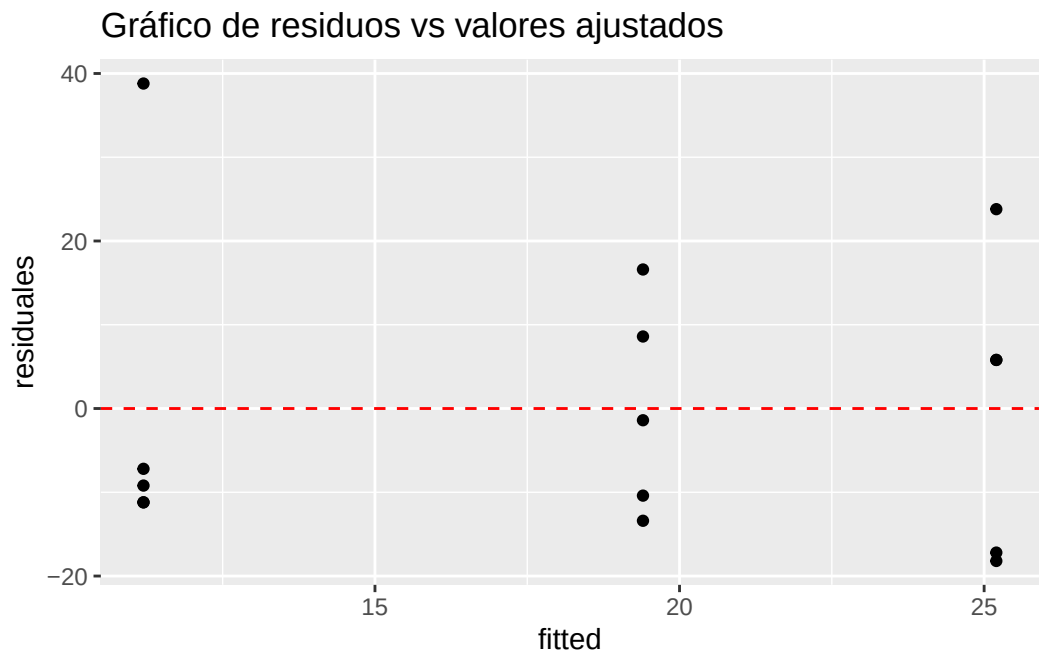
$BurningRegime
          diff       lwr      upr     p adj
Low-High  11.6 -23.84814 47.04814 0.6666652
Null-High 18.0 -17.44814 53.44814 0.3938656
Null-Low   6.4 -29.04814 41.84814 0.8811762
```

```
[1] "Shapiro Test"
[[1]]

    Shapiro-Wilk normality test

data:  residuals(anova_result)
W = 0.92782, p-value = 0.2531


[1] "Levene Test"
[[1]]
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  2   0.733 0.5008
      12
```

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[1] "                                "
[1] "Modelo test"
[[1]]
              Df Sum Sq Mean Sq F value Pr(>F)
BurningRegime  2    520   260.0   0.789  0.476
```

```
Residuals     12   3952   329.3

[1] "Post hoc Test"
[[1]]
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = Total ~ BurningRegime, data = dataST)

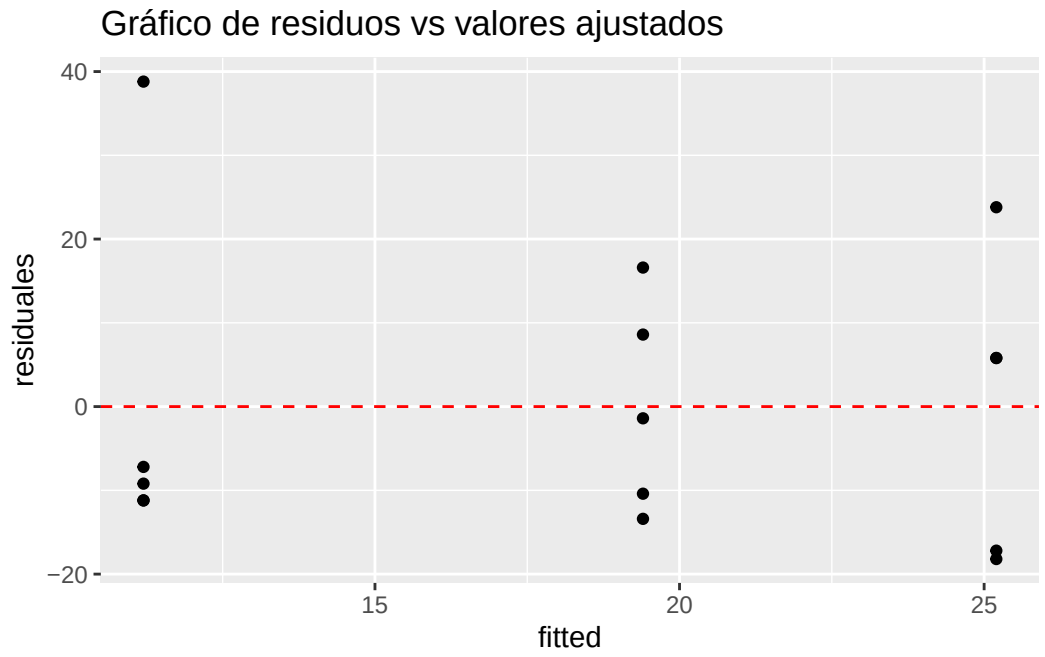
$BurningRegime
          diff       lwr      upr     p adj
Low-High   -10 -40.62044 20.62044 0.6677169
Null-High  -14 -44.62044 16.62044 0.4645985
Null-Low    -4 -34.62044 26.62044 0.9355950


[1] "Shapiro Test"
[[1]]

    Shapiro-Wilk normality test

data:  residuals(anova_result)
W = 0.90432, p-value = 0.1108


[1] "Levene Test"
[[1]]
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  2  0.7172 0.5079
      12
```

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[1] "Modelo test"
[[1]]
             Df Sum Sq Mean Sq F value Pr(>F)
BurningRegime  2   4798  2398.9   4.694 0.0312 *
Residuals     12   6133   511.1
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

[1] "Post hoc Test"
[[1]]
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = Total ~ BurningRegime, data = dataST)

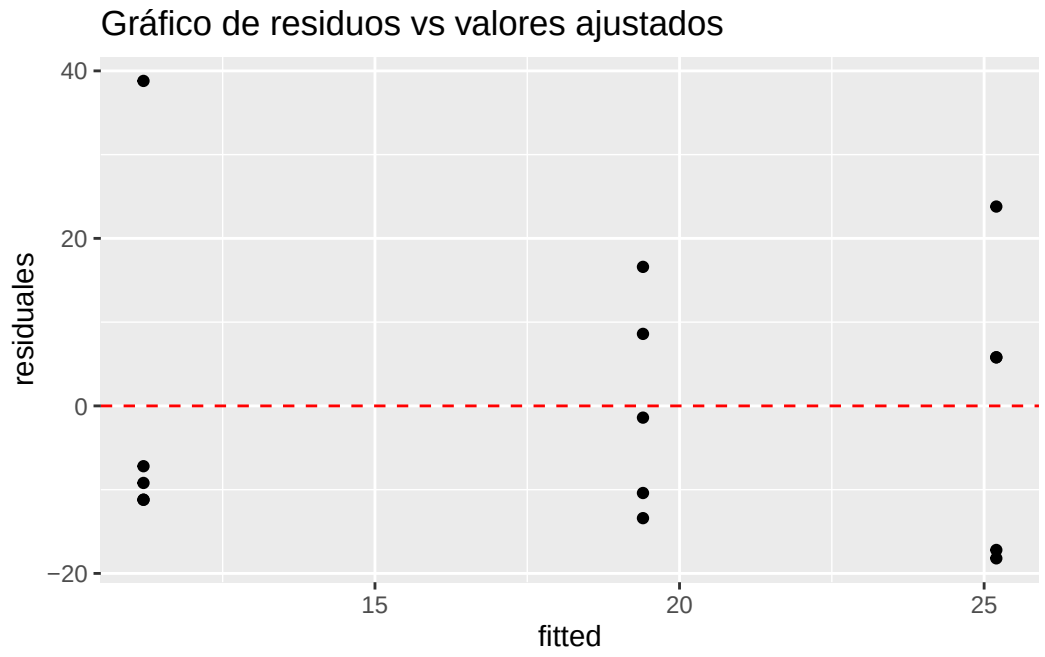
$BurningRegime
           diff       lwr       upr     p adj
Low-High  -21.2 -59.34579 16.945786 0.3330243
Null-High -43.8 -81.94579 -5.654214 0.0247504
Null-Low  -22.6 -60.74579 15.545786 0.2909670
```

```
[1] "Shapiro Test"
[[1]]

    Shapiro-Wilk normality test

data:  residuals(anova_result)
W = 0.95941, p-value = 0.6822


[1] "Levene Test"
[[1]]
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  2  1.3102 0.3057
      12
```

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[1] "Modelo test"
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             Df Sum Sq Mean Sq F value Pr(>F)
BurningRegime  2   78.5   39.27   0.187  0.832
Residuals     12 2517.2  209.77

[1] "Post hoc Test"
[[1]]
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = Total ~ BurningRegime, data = dataST)

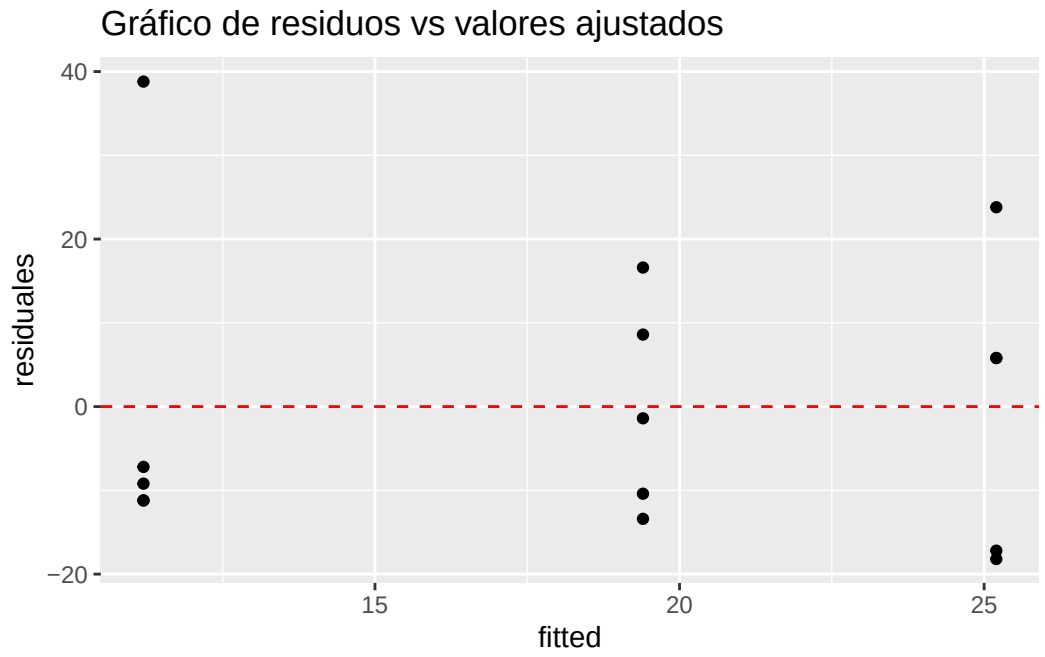
$BurningRegime
          diff       lwr      upr     p adj
Low-High   5.6 -18.83779 30.03779 0.8167497
Null-High  2.6 -21.83779 27.03779 0.9567187
Null-Low  -3.0 -27.43779 21.43779 0.9428653


[1] "Shapiro Test"
[[1]]

    Shapiro-Wilk normality test

data:  residuals(anova_result)
W = 0.92437, p-value = 0.2245


[1] "Levene Test"
[[1]]
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  2  0.2655 0.7712
      12
```

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[[1]]
             Df Sum Sq Mean Sq F value Pr(>F)
BurningRegime  2   4359  2179.3   5.299 0.0224 *
Residuals     12   4935   411.3
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

[1] "Post hoc Test"
[[1]]
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = Total ~ BurningRegime, data = dataST)

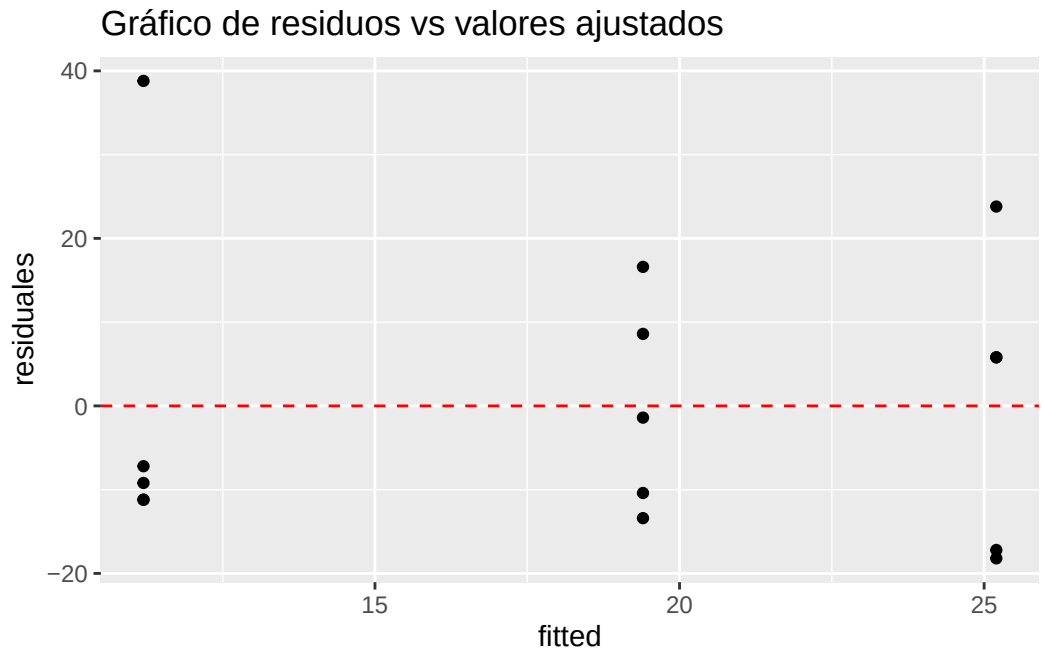
$BurningRegime
          diff       lwr      upr     p adj
Low-High  16.0 -18.21806 50.21806 0.4495810
Null-High 41.4   7.18194 75.61806 0.0184222
Null-Low  25.4  -8.81806 59.61806 0.1594957
```

```
[1] "Shapiro Test"
[[1]]

    Shapiro-Wilk normality test

data:  residuals(anova_result)
W = 0.95482, p-value = 0.6033


[1] "Levene Test"
[[1]]
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  2  1.9066  0.191
      12
```

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[1] "Modelo test"
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             Df Sum Sq Mean Sq F value Pr(>F)
BurningRegime  2   6459    3229   6.446 0.0126 *
Residuals     12   6012     501
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

[1] "Post hoc Test"
[[1]]
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = Total ~ BurningRegime, data = dataST)

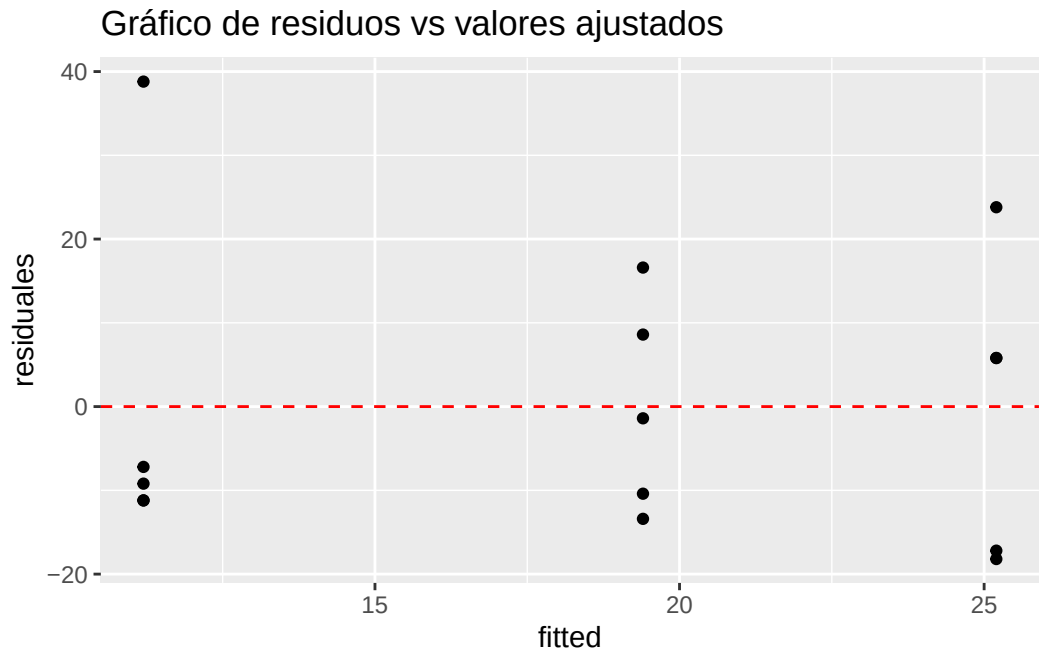
$BurningRegime
          diff        lwr      upr     p adj
Low-High  18.2 -19.565744 55.96574 0.4292577
Null-High 50.2  12.434256 87.96574 0.0103979
Null-Low  32.0  -5.765744 69.76574 0.1008386


[1] "Shapiro Test"
[[1]]

    Shapiro-Wilk normality test

data:  residuals(anova_result)
W = 0.98615, p-value = 0.9953


[1] "Levene Test"
[[1]]
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  2  1.6084 0.2405
      12
```

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[1] "Modelo test"
[[1]]
             Df Sum Sq Mean Sq F value Pr(>F)
BurningRegime  2   6459    3229   6.446 0.0126 *
Residuals     12   6012     501
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

[1] "Post hoc Test"
[[1]]
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = Total ~ BurningRegime, data = dataST)

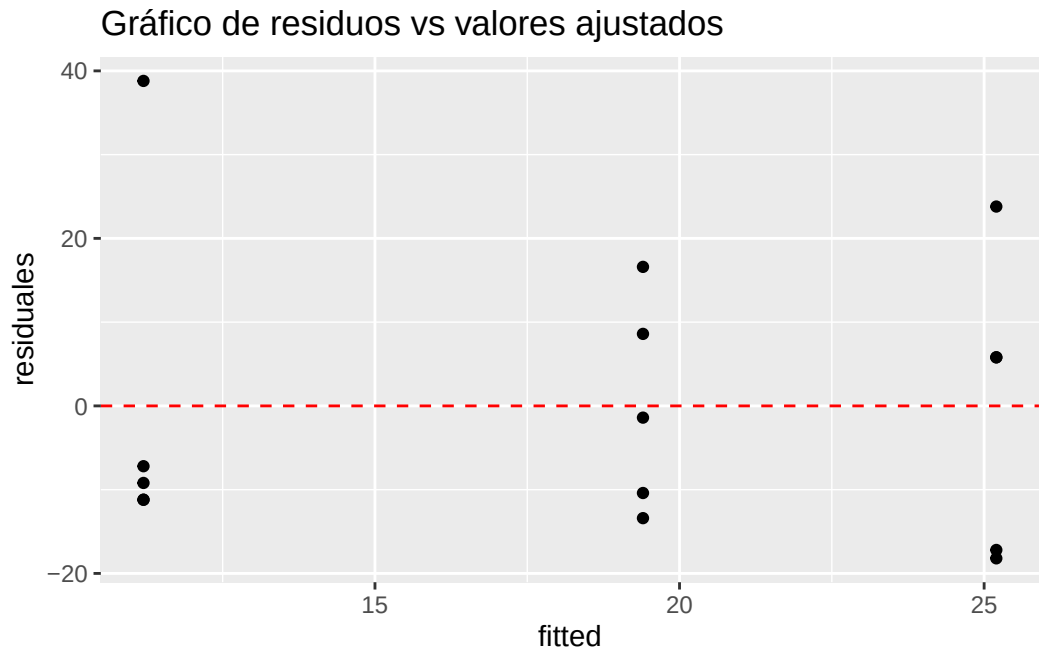
$BurningRegime
           diff       lwr        upr     p adj
Low-High  -18.2 -55.96574  19.565744 0.4292577
Null-High -50.2 -87.96574 -12.434256 0.0103979
Null-Low  -32.0 -69.76574   5.765744 0.1008386
```

```
[1] "Shapiro Test"
[[1]]

    Shapiro-Wilk normality test

data:  residuals(anova_result)
W = 0.98615, p-value = 0.9953


[1] "Levene Test"
[[1]]
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  2  1.6084 0.2405
      12
```

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[1] "Modelo test"
[[1]]
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```
             Df Sum Sq Mean Sq F value Pr(>F)
BurningRegime  2   84.9   42.47   0.174  0.842
Residuals     12 2930.4  244.20

[1] "Post hoc Test"
[[1]]
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = Total ~ BurningRegime, data = dataST)

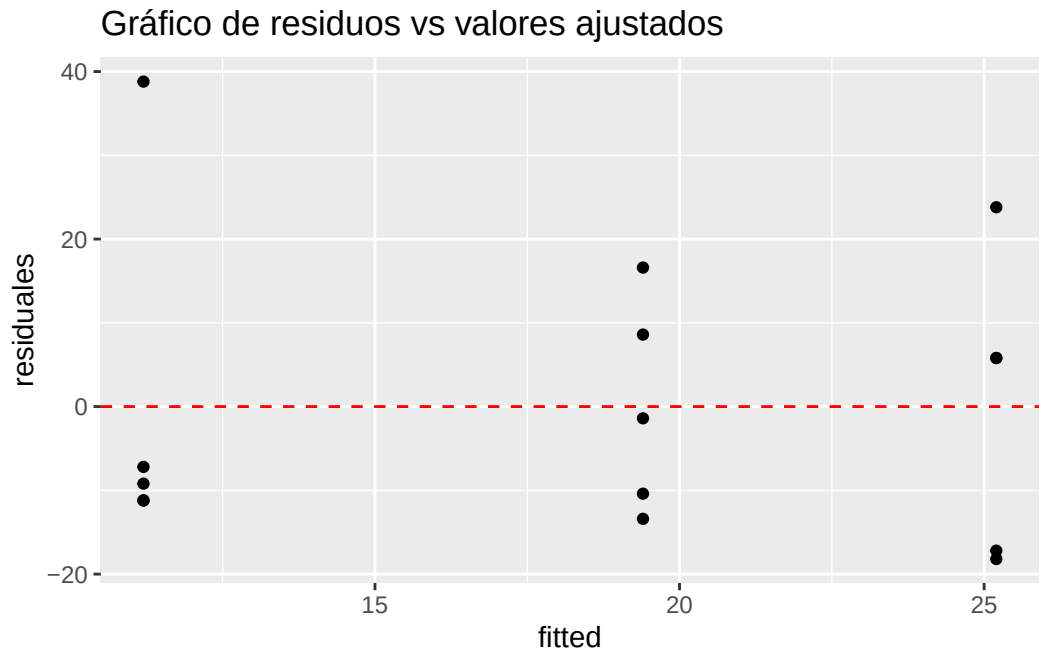
$BurningRegime
          diff       lwr      upr     p adj
Low-High   3.4 -22.96735 29.76735 0.9371832
Null-High -2.4 -28.76735 23.96735 0.9681015
Null-Low  -5.8 -32.16735 20.56735 0.8296270


[1] "Shapiro Test"
[[1]]

    Shapiro-Wilk normality test

data:  residuals(anova_result)
W = 0.85479, p-value = 0.02031


[1] "Levene Test"
[[1]]
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  2  0.4059 0.6752
      12
```

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[1] "Modelo test"
[[1]]
              Df Sum Sq Mean Sq F value Pr(>F)
BurningRegime  2    143    71.5   0.209  0.814
Residuals     12   4096   341.4

[1] "Post hoc Test"
[[1]]
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = Total ~ BurningRegime, data = dataST)

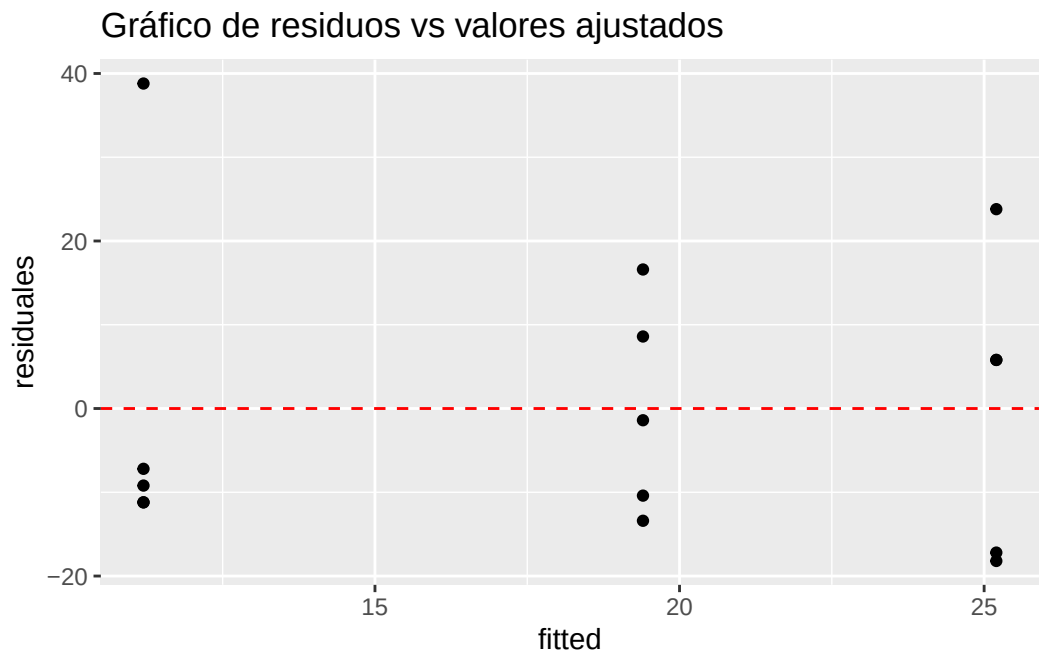
$BurningRegime
          diff       lwr      upr     p adj
Low-High   7.2 -23.97484 38.37484 0.8141895
Null-High  1.6 -29.57484 32.77484 0.9897261
Null-Low  -5.6 -36.77484 25.57484 0.8822896
```

```
[1] "Shapiro Test"
[[1]]

    Shapiro-Wilk normality test

data:  residuals(anova_result)
W = 0.91372, p-value = 0.1544


[1] "Levene Test"
[[1]]
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  2  1.3717 0.2907
      12
```

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[1] "                                "
[1] "Modelo test"
[[1]]
              Df Sum Sq Mean Sq F value Pr(>F)
BurningRegime  2  396.9   198.5   0.786  0.478
```

```
Residuals     12 3030.0   252.5

[1] "Post hoc Test"
[[1]]
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = Total ~ BurningRegime, data = dataST)

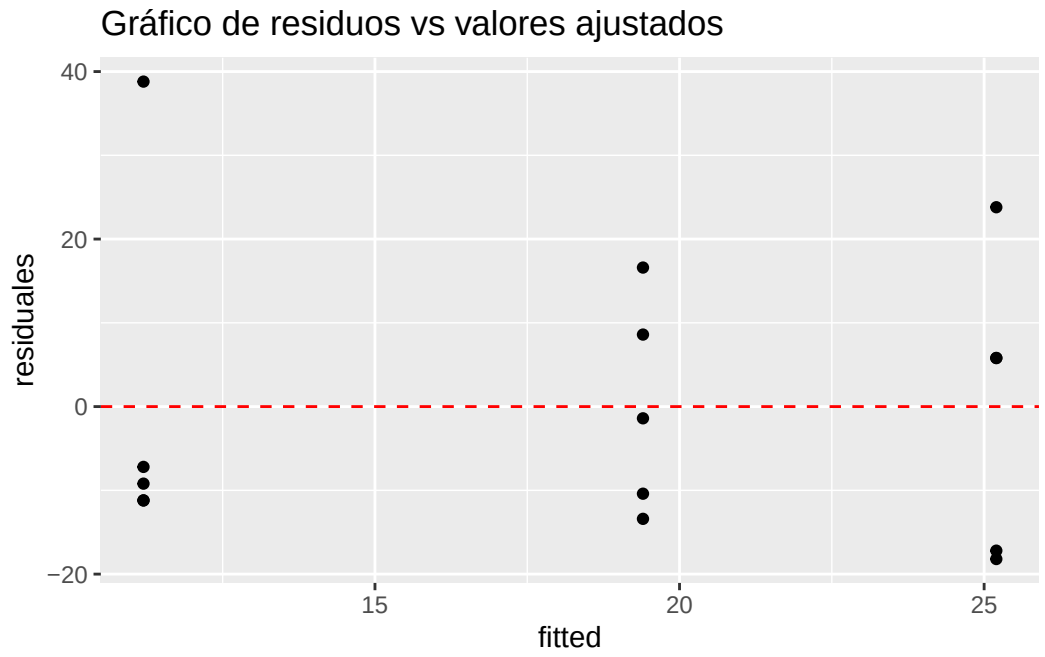
$BurningRegime
           diff      lwr     upr     p adj
Low-High  -10.6 -37.4117 16.2117 0.5584368
Null-High   0.6 -26.2117 27.4117 0.9980371
Null-Low   11.2 -15.6117 38.0117 0.5237462


[1] "Shapiro Test"
[[1]]

    Shapiro-Wilk normality test

data:  residuals(anova_result)
W = 0.95504, p-value = 0.6071


[1] "Levene Test"
[[1]]
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  2  0.6578 0.5357
      12
```

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[1] "                                "
[1] "                                "
[1] "Modelo test"
[[1]]
             Df Sum Sq Mean Sq F value Pr(>F)
BurningRegime  2  257.2   128.6   1.052  0.379
Residuals     12 1466.4   122.2

[1] "Post hoc Test"
[[1]]
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = Total ~ BurningRegime, data = dataST)

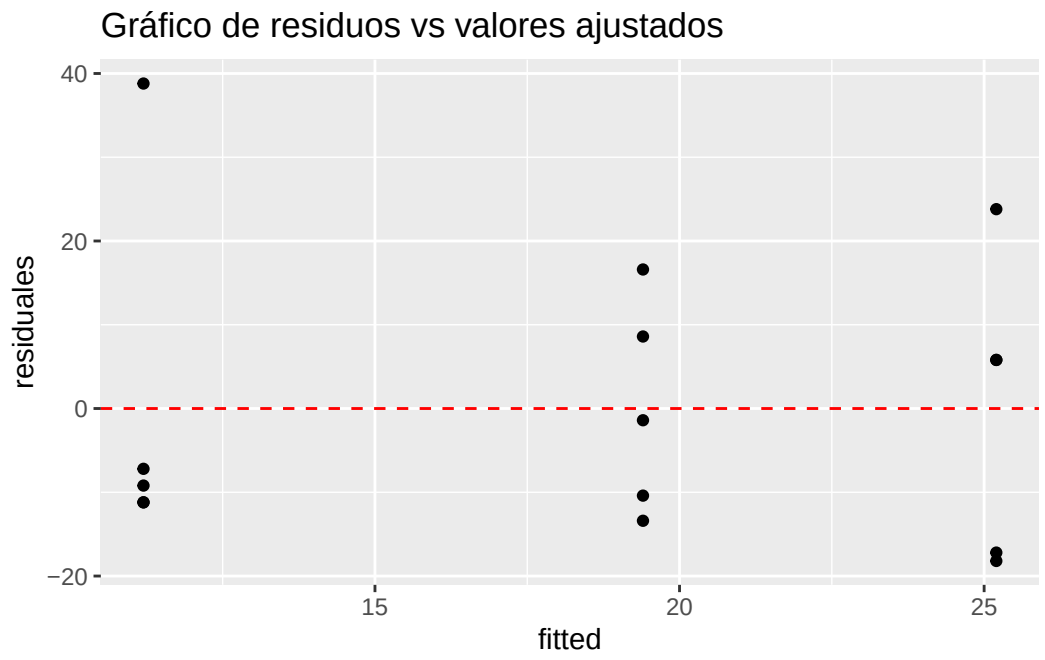
$BurningRegime
          diff       lwr       upr     p adj
Low-High   8.0 -10.65216 26.652164 0.5067078
Null-High -1.4 -20.05216 17.252164 0.9781771
Null-Low  -9.4 -28.05216  9.252164 0.3989846
```

```
[1] "Shapiro Test"
[[1]]

    Shapiro-Wilk normality test

data:  residuals(anova_result)
W = 0.91838, p-value = 0.182


[1] "Levene Test"
[[1]]
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  2  1.4557 0.2716
      12
```

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[1] "############################################################################"
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[1] "Group_RollMedium"
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[1] "############################################################################"
[1] "                                  "
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[1] "Modelo test"
[[1]]
              Df Sum Sq Mean Sq F value Pr(>F)
BurningRegime  2     84    41.9   0.093  0.912
```

```
Residuals     12   5380   448.3

[1] "Post hoc Test"
[[1]]
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = Total ~ BurningRegime, data = dataST)

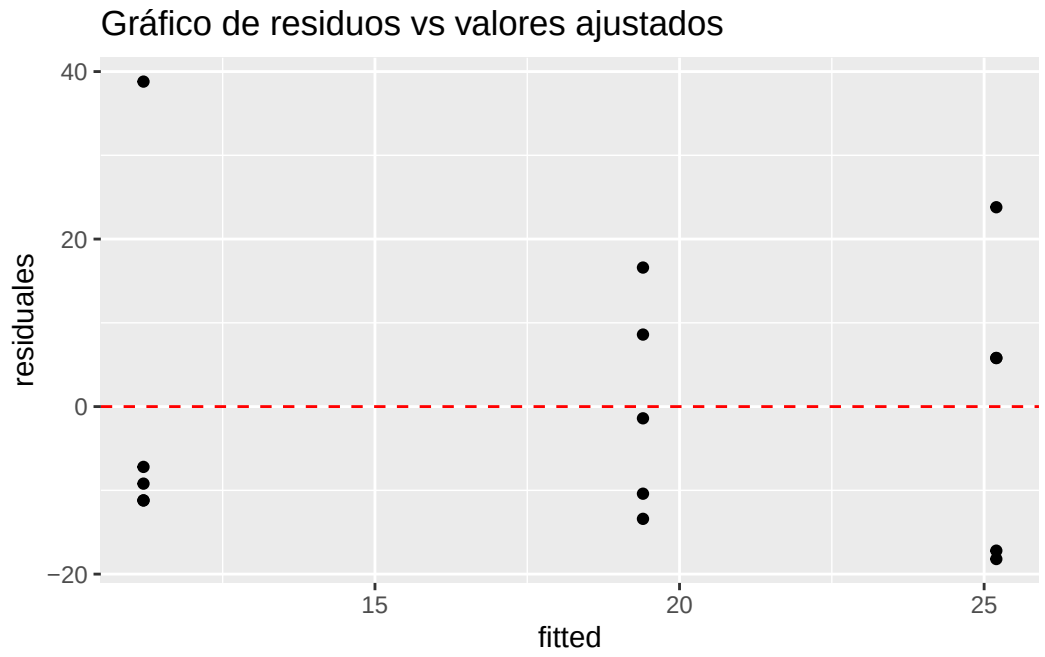
$BurningRegime
          diff      lwr     upr     p adj
Low-High   5.2 -30.5268 40.9268 0.9207846
Null-High  0.4 -35.3268 36.1268 0.9995083
Null-Low  -4.8 -40.5268 30.9268 0.9320249


[1] "Shapiro Test"
[[1]]

    Shapiro-Wilk normality test

data:  residuals(anova_result)
W = 0.92787, p-value = 0.2536


[1] "Levene Test"
[[1]]
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  2   1.535 0.2549
      12
```

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[1] "                                "
[1] "                                "
[1] "Modelo test"
[[1]]
              Df Sum Sq Mean Sq F value Pr(>F)
BurningRegime  2   96.1   48.07    0.86  0.448
Residuals     12  670.8   55.90

[1] "Post hoc Test"
[[1]]
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = Total ~ BurningRegime, data = dataST)

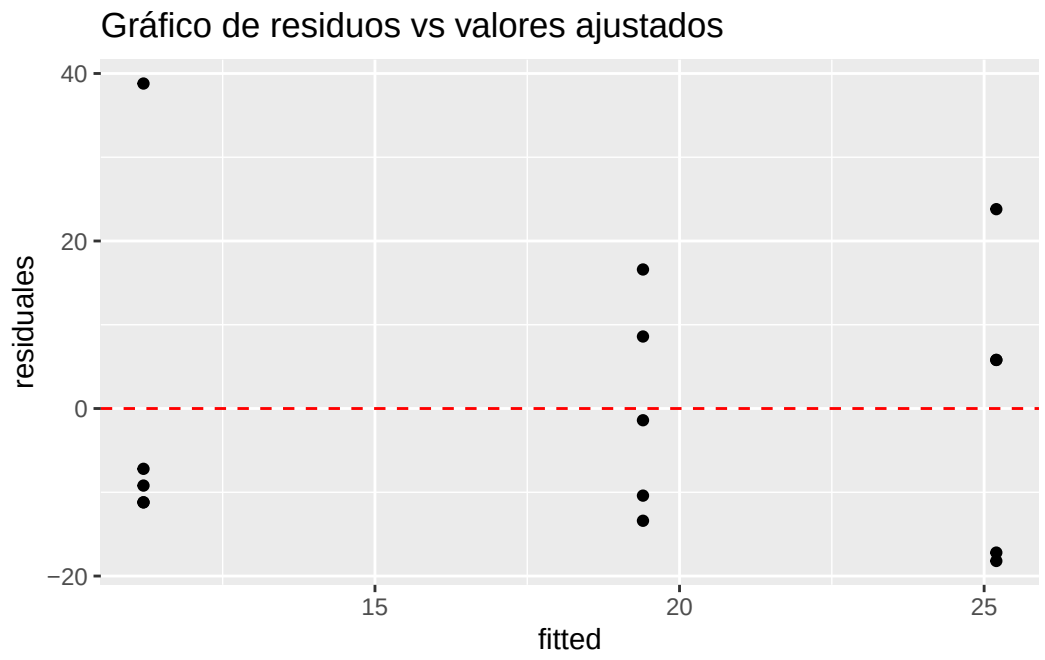
$BurningRegime
          diff       lwr      upr     p adj
Low-High   3.2 -9.415357 15.81536 0.7810951
Null-High  6.2 -6.415357 18.81536 0.4159959
Null-Low   3.0 -9.615357 15.61536 0.8043639
```

```
[1] "Shapiro Test"
[[1]]

    Shapiro-Wilk normality test

data:  residuals(anova_result)
W = 0.94201, p-value = 0.4084


[1] "Levene Test"
[[1]]
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  2  1.2721 0.3155
      12
```

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[1] "                                "
[1] "                                "
[1] "Modelo test"
[[1]]
              Df Sum Sq Mean Sq F value Pr(>F)
BurningRegime  2   64.1   32.07    0.38  0.692
```

```
Residuals     12 1013.6   84.47

[1] "Post hoc Test"
[[1]]
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = Total ~ BurningRegime, data = dataST)

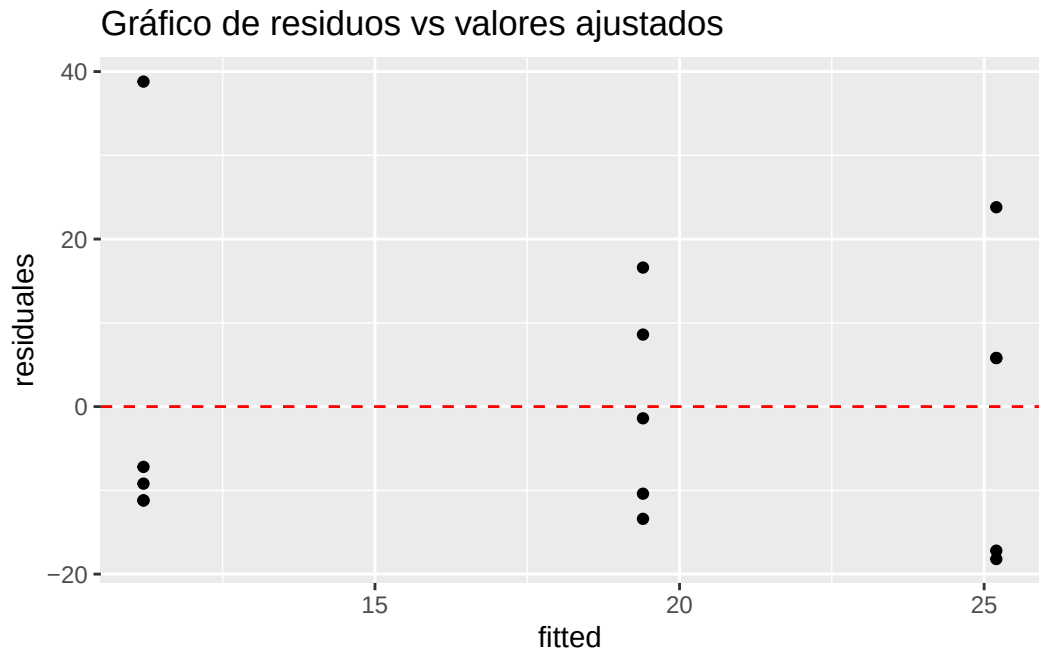
$BurningRegime
          diff      lwr     upr     p adj
Low-High  -4.8 -20.3073 10.7073 0.6948201
Null-High -1.0 -16.5073 14.5073 0.9838374
Null-Low   3.8 -11.7073 19.3073 0.7938239


[1] "Shapiro Test"
[[1]]

    Shapiro-Wilk normality test

data:  residuals(anova_result)
W = 0.73224, p-value = 0.000562


[1] "Levene Test"
[[1]]
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  2  0.4217 0.6653
      12
```

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[1] "                                "
[1] "                                "
[1] "Modelo test"
[[1]]
             Df Sum Sq Mean Sq F value Pr(>F)
BurningRegime  2   12.4     6.2   0.148  0.864
Residuals     12  504.0    42.0

[1] "Post hoc Test"
[[1]]
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = Total ~ BurningRegime, data = dataST)

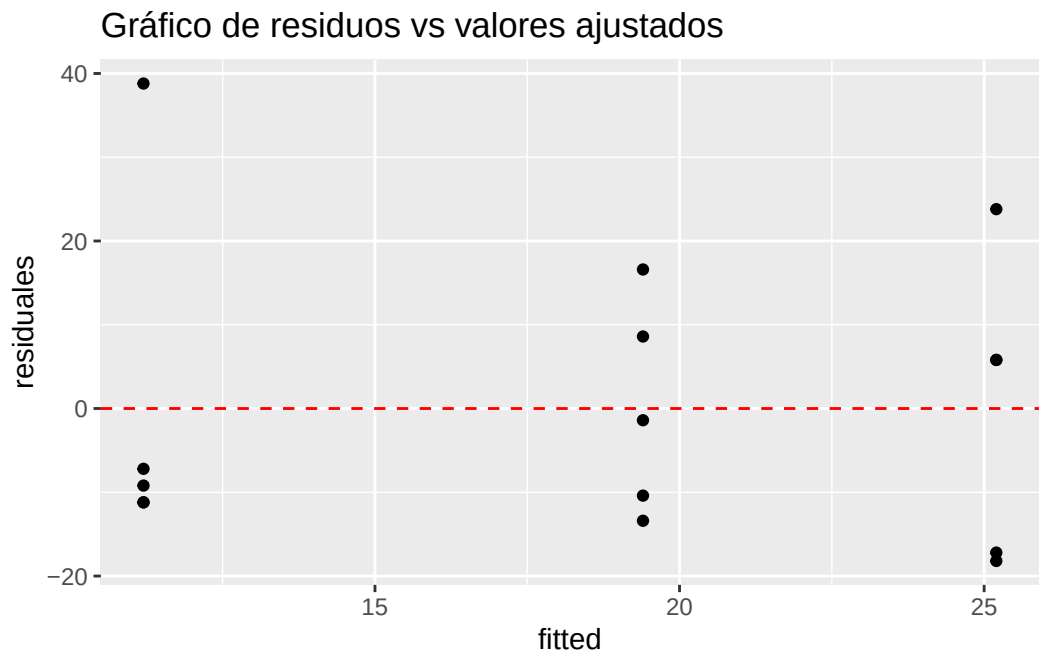
$BurningRegime
          diff        lwr      upr     p adj
Low-High   2.2  -8.734987 13.13499 0.8549924
Null-High  1.4  -9.534987 12.33499 0.9380413
Null-Low  -0.8 -11.734987 10.13499 0.9792539
```

```
[1] "Shapiro Test"
[[1]]

    Shapiro-Wilk normality test

data:  residuals(anova_result)
W = 0.96241, p-value = 0.7342


[1] "Levene Test"
[[1]]
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  2  0.3163 0.7347
      12
```

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[1] "                                "
[1] "##############################################################################"
[1] "                                "
[1] "                                "
[1] "Modelo test"
[[1]]
             Df Sum Sq Mean Sq F value Pr(>F)
BurningRegime  2    495   247.4   0.783  0.479
```

```
Residuals     12   3793   316.1

[1] "Post hoc Test"
[[1]]
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = Total ~ BurningRegime, data = dataST)

$BurningRegime
           diff       lwr      upr     p adj
Low-High  -14.0 -43.99736 15.99736 0.4508471
Null-High  -5.8 -35.79736 24.19736 0.8651578
Null-Low    8.2 -21.79736 38.19736 0.7513094


[1] "Shapiro Test"
[[1]]

    Shapiro-Wilk normality test

data:  residuals(anova_result)
W = 0.89247, p-value = 0.07309


[1] "Levene Test"
[[1]]
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  2  0.0647 0.9377
      12
```

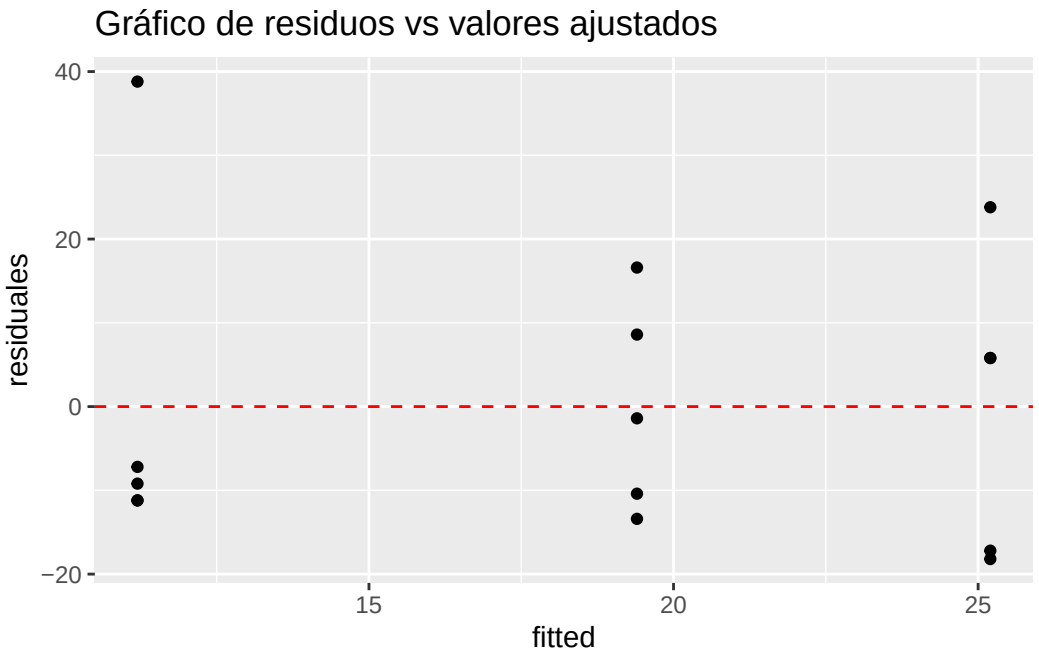
Gráfico de residuos vs valores ajustados
residuales
fitted
40
20
0
−20
15
20
25