Multiple Comparison Procedures To A Control

For AN(C)OVA Models

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Contents

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Basic Information

Automatic statistics for the file:

File
litter.csv

Your selection for the encoding: UTF-8
Your selection for the decimal character: .
Observations (rows with at least one non-missing value): 74
Variables (columns with at least one non-missing value): 4
Variables considered continuous: 2

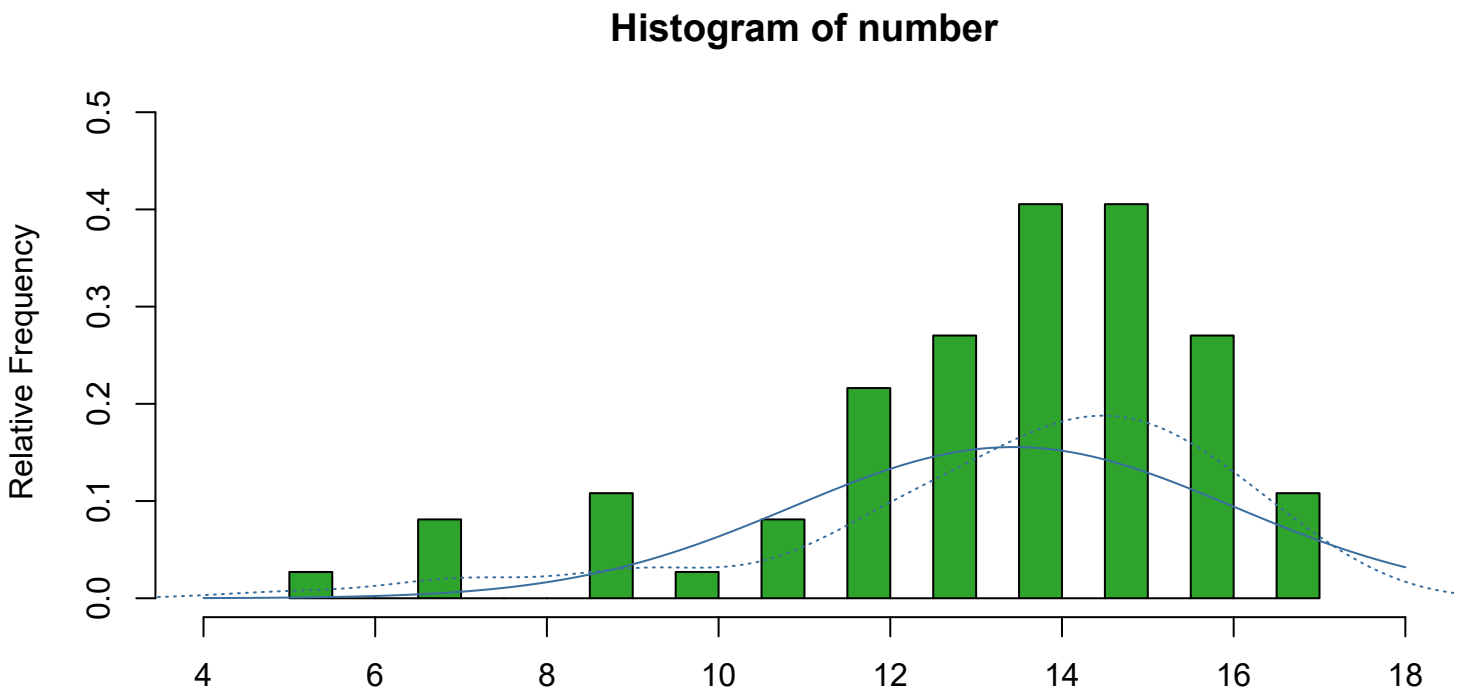
Variables considered continuous
weight

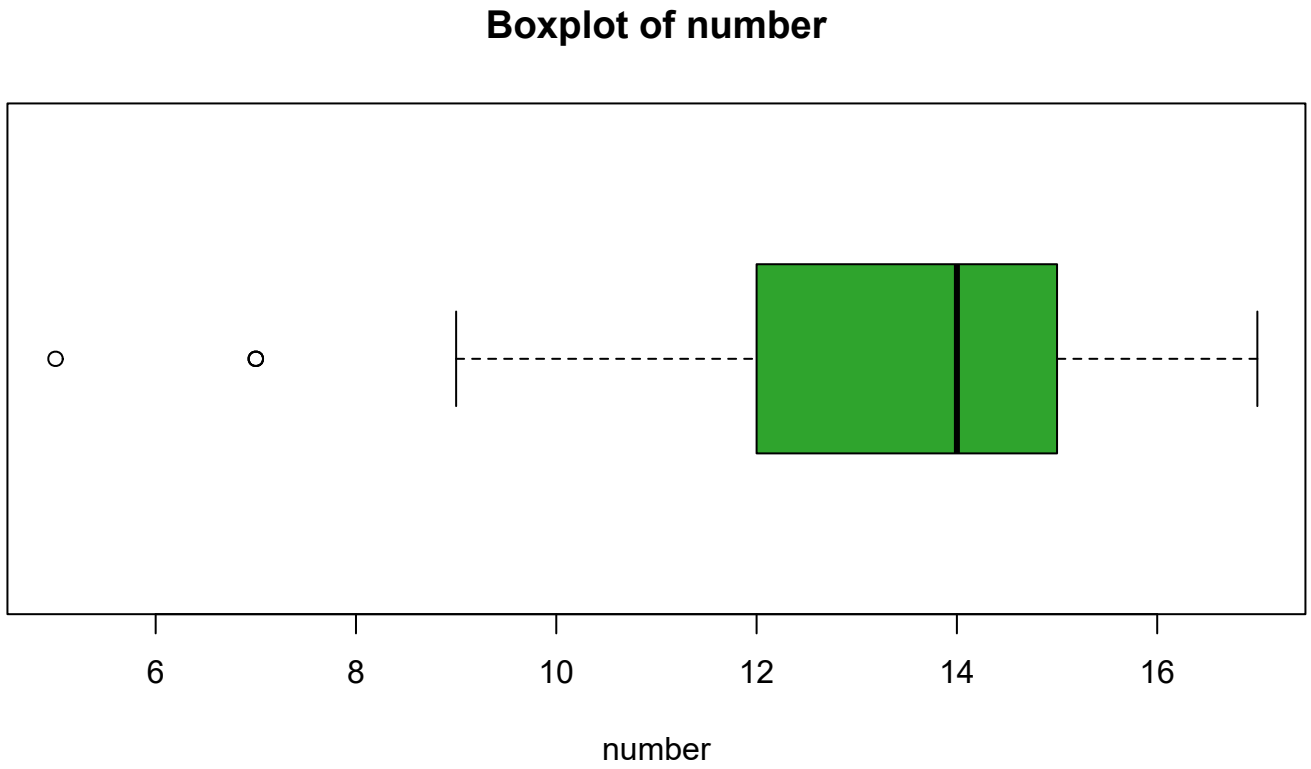
Variables considered categorical: 2

Variables considered categorical
gesttime
dose

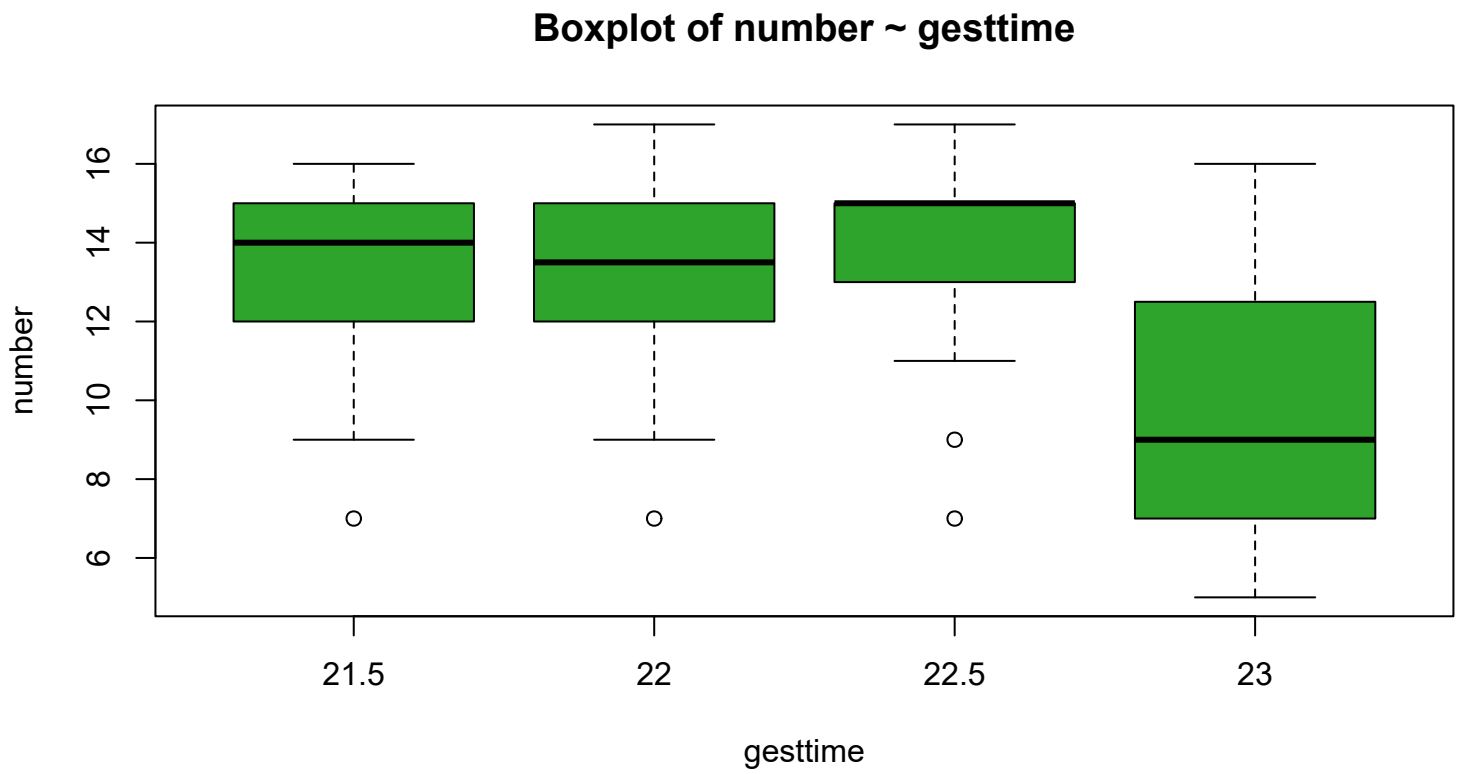
Descriptive Plots

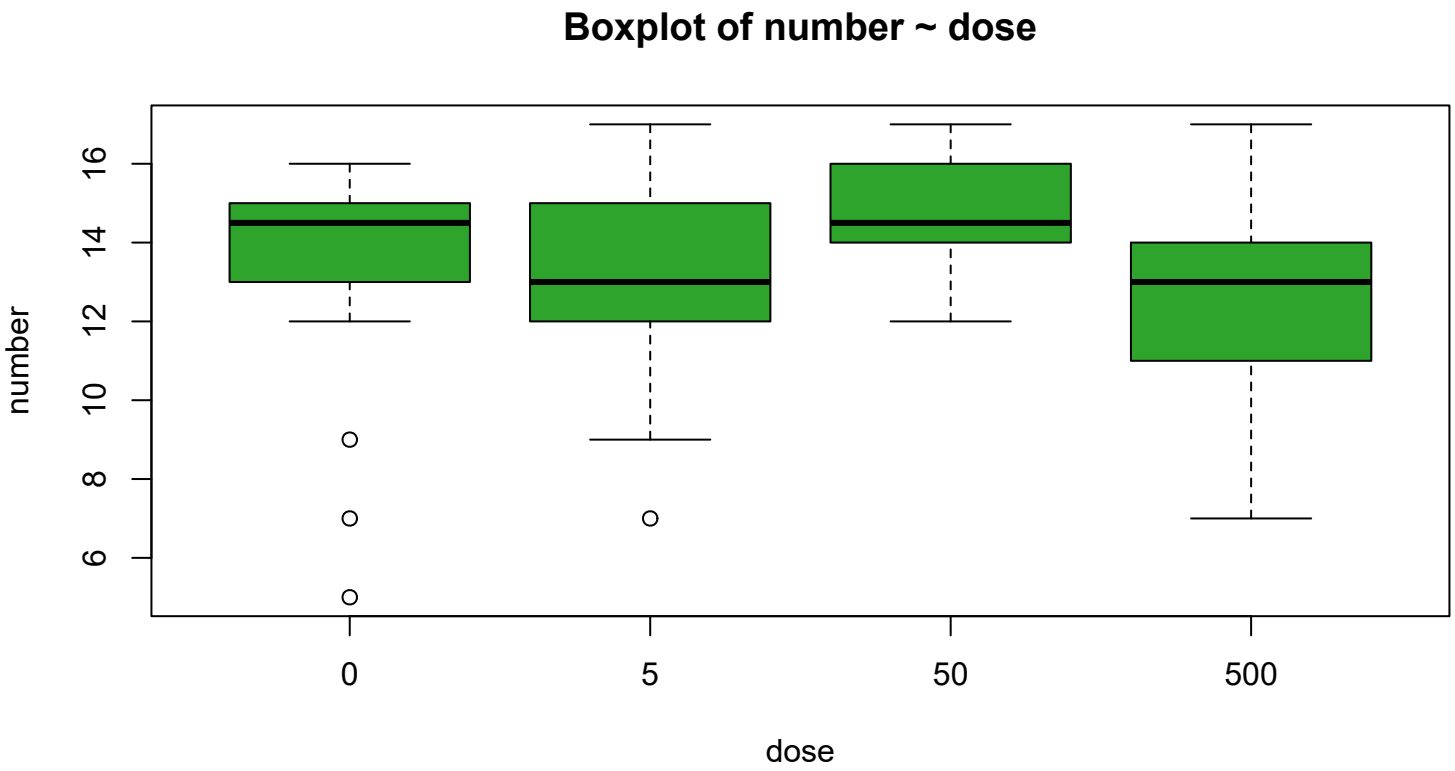
Histogram and Boxplot for dependent Variable



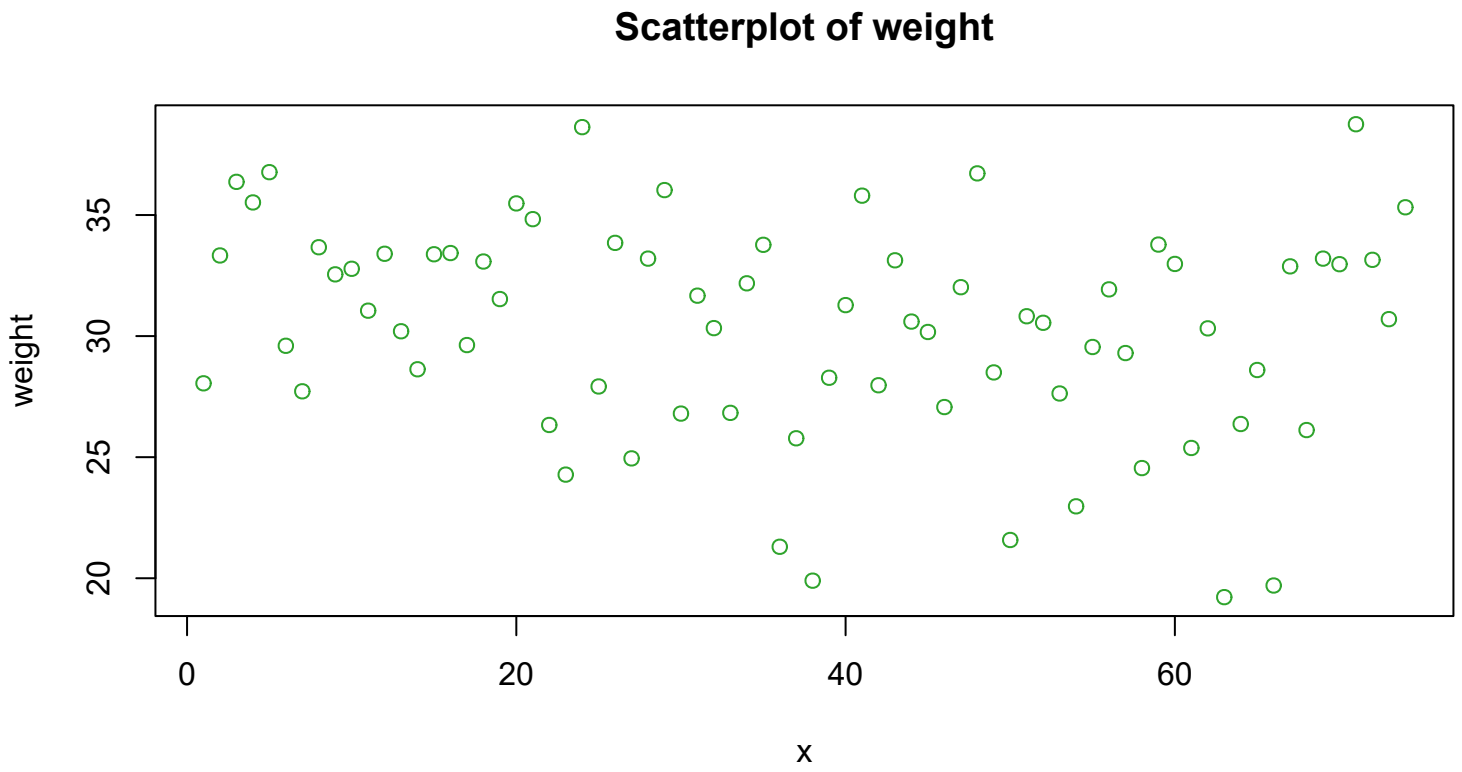

Boxplot of number
6
8
10
12
14
16
number

Boxplot for categorical independent Variables



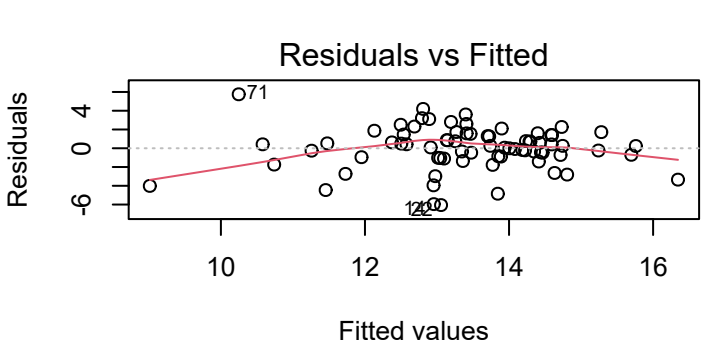

Boxplot of number ~ dose
number
6
8
10
12
14
16
0
5
50
500
dose

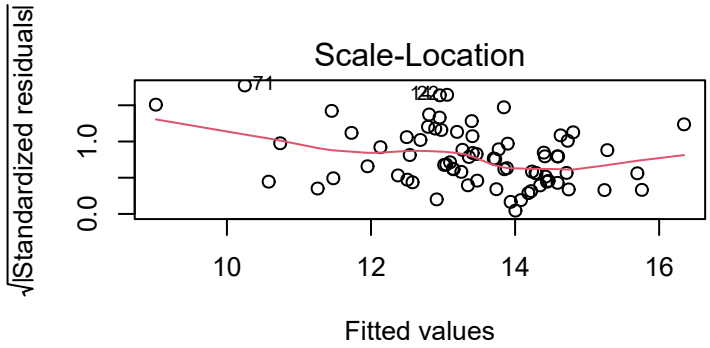
Scatterplot for numerical independent Variables

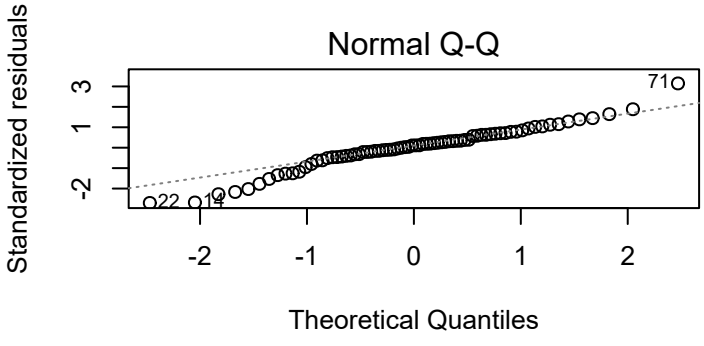


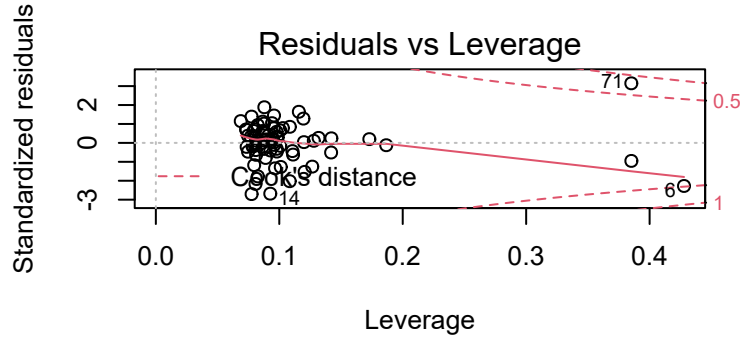

```
Anova Table (Type III tests)

Response: number
            Sum Sq Df F value    Pr(>F)
(Intercept)  67.60  1 12.4420 0.0007694 ***
dose         35.19  3  2.1586 0.1012266
weight       36.38  1  6.6954 0.0118753 *
gesttime     54.14  3  3.3212 0.0249986 *
Residuals   358.61 66
---
```

```
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```










```
     Simultaneous Tests for General Linear Hypotheses

Multiple Comparisons of Means: Dunnett Contrasts


Fit: lm(formula = modelfunction, data = df_factorized)

Linear Hypotheses:
             Estimate Std. Error t value Pr(<t)
5 - 0 >= 0    0.09686    0.79281   0.122  0.796
```

```
50 - 0 >= 0   1.51099    0.77781   1.943  0.998
500 - 0 >= 0 -0.41704    0.79920  -0.522  0.536
(Adjusted p values reported -- single-step method)
```

```
     Simultaneous Confidence Intervals

Multiple Comparisons of Means: Dunnett Contrasts


Fit: lm(formula = modelfunction, data = df_factorized)

Quantile = 2.1026
95% family-wise confidence level


Linear Hypotheses:
             Estimate lwr      upr
5 - 0 >= 0    0.09686     -Inf  1.76386
50 - 0 >= 0   1.51099     -Inf  3.14644
500 - 0 >= 0 -0.41704     -Inf  1.26338
```

```
     Simultaneous Tests for General Linear Hypotheses

Multiple Comparisons of Means: Dunnett Contrasts


Fit: lm(formula = modelfunction, data = df_factorized)

Linear Hypotheses:
             Estimate Std. Error t value Pr(<t)
5 - 0 >= 0    0.09686    0.79281   0.122  0.718
50 - 0 >= 0   1.51099    0.77781   1.943  0.972
500 - 0 >= 0 -0.41704    0.79920  -0.522  0.536
(Adjusted p values reported -- free method)
```

```
     Simultaneous Tests for General Linear Hypotheses

Multiple Comparisons of Means: Dunnett Contrasts


Fit: lm(formula = modelfunction, data = df_factorized)

Linear Hypotheses:
             Estimate Std. Error t value Pr(<t)
```

```
5 - 0 >= 0    0.09686    0.73167   0.132  0.766
50 - 0 >= 0   1.51099    0.70198   2.152  0.998
500 - 0 >= 0 -0.41704    0.87731  -0.475  0.523
(Adjusted p values reported -- single-step method)
```

```
     Simultaneous Confidence Intervals

Multiple Comparisons of Means: Dunnett Contrasts


Fit: lm(formula = modelfunction, data = df_factorized)

Quantile = 2.0679
95% family-wise confidence level


Linear Hypotheses:
             Estimate lwr      upr
5 - 0 >= 0    0.09686     -Inf  1.60991
50 - 0 >= 0   1.51099     -Inf  2.96263
500 - 0 >= 0 -0.41704     -Inf  1.39718
```

```
     Simultaneous Tests for General Linear Hypotheses

Multiple Comparisons of Means: Dunnett Contrasts


Fit: lm(formula = modelfunction, data = df_factorized)

Linear Hypotheses:
             Estimate Std. Error t value Pr(<t)
5 - 0 >= 0    0.09686    0.73167   0.132  0.691
50 - 0 >= 0   1.51099    0.70198   2.152  0.982
500 - 0 >= 0 -0.41704    0.87731  -0.475  0.523
(Adjusted p values reported -- free method)
```

References

Fox, John, and Sanford Weisberg. 2019. *An R Companion to Applied Regression*. Third. Thousand Oaks CA: Sage. https://socialsciences.mcmaster.ca/jfox/Books/Companion/.

Gross, Juergen, and Uwe Ligges. 2015. *Nortest: Tests for Normality*. https://CRAN.R-project.org/package=nortest.

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R Core Team. 2019. *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. https://www.R-project.org/.

Zeileis, Achim, and Torsten Hothorn. 2002. "Diagnostic Checking in Regression Relationships." *R News* 2 (3): 7–10. https://CRAN.R-project.org/doc/Rnews/.