How to Use LaTex and R to Write a Paper

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Contents

1 Figures

This is a section for figures. Random citation[1] embeddeed in text. Random citation[2] embeddeed in text.

1.1 Regression Plots

We setup variable definitions without actually evaluating them, then we put the pieces together, result shown in Figure 1.1. Random citation[3] embeddeed in text.

```
> x <- 1:100
> y <- 3 + 0.25*x^(.315) + 2*x + 1.5*rnorm(x, 2, 15)
```

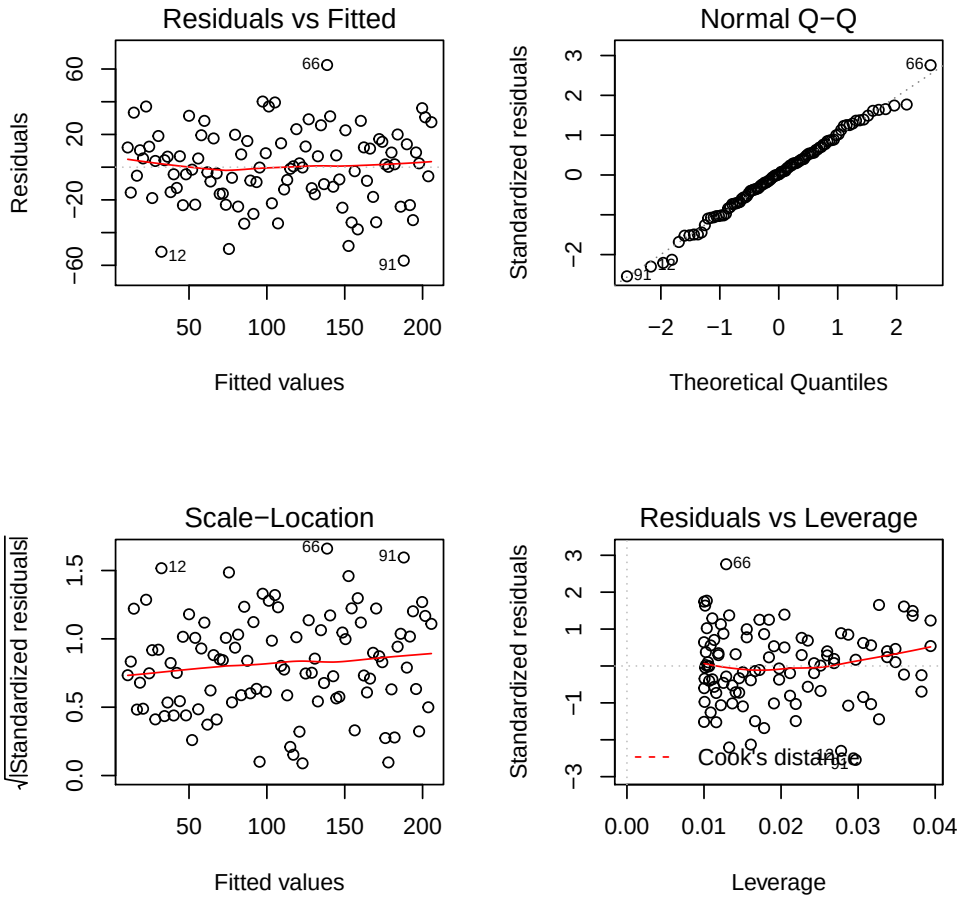


Figure 1: First Regression Plots

[1] John Doe. *The Book without Title One*. Dummy Publisher First, 2100, p. 91.
[2] Johnston Smith. *The Book without Title Two*. Dummy Publisher Second, 2200, p. 71.
[3] Noah C. Li. "They All Play Minecraft". In: *Gaming Industry Analysis*. Ed. by Clara Li. Vol. 17. How It Works 07. Nothing Impossible. 12345 Buiding Road, Cedar Hills, Utah 84056: Electronics House, 2014, pp. 78 –82, p. 11.

1.2 Regression Parameters

Here is the regression result. Random citation[4] embeddeed in text. Random citation[5] embeddeed in text.

```
Call:
lm(formula = y ~ x)

Residuals:
    Min      1Q  Median      3Q     Max
-57.149 -15.325   0.366  14.822  62.443

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  8.65813    4.59417   1.885   0.0624 .
x            1.96984    0.07898  24.941   <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 22.8 on 98 degrees of freedom
Multiple R-squared:  0.8639,        Adjusted R-squared:  0.8625
F-statistic:   622 on 1 and 98 DF,  p-value: < 2.2e-16
```

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	8.6581	4.5942	1.88	0.0624
x	1.9698	0.0790	24.94	0.0000

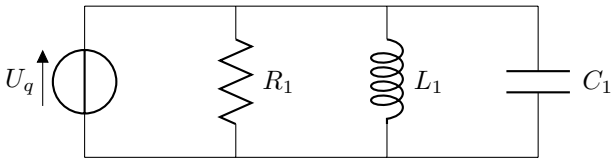
Table 1: Linear regression model for cats data.

[4] Ibid., p. 11.

[5] Clara M. Li. “The Comprehensive Animation Analysis Guide (CLARA)”. in: *DreamWorks* 14.3 (2019), pp. 123–456, p. 71.

2 Applied Circuits

Paragraph1 If there is a very simple circuit, use package "circuitikz". Random citation[6] embeddeed in text. Random citation[7] embeddeed in text. Random citation[8] embeddeed in text. Random citation[9] embeddeed in text. Random citation[10] embeddeed in text.



[6] Doe, *The Book without Title One*, op. cit., p. 121.
[7] Smith, *The Book without Title Two*, op. cit., p. 47.
[8] George D. Greenwade. "The Comprehensive Tex Archive Network (CTAN)". in: *TUGBoat* 14.3 (1993), pp. 342–351, p. 47.
[9] Michel Goossens, Frank Mittelbach, and Alexander Samarin. *The LaTeX Companion*. Reading, Massachusetts: Addison-Wesley, 1993, p. 47.
[10] Li, "The Comprehensive Animation Analysis Guide (CLARA)", op. cit., p. 47.

3 More Figures

This is section "More Figures", shown in Figure 3. Random citation[11] embeddeed in text. Random citation[12] embeddeed in text. Random citation[13] embeddeed in text.

```
> x <- 1:100
> y <- 3 + 0.25*x^(.315) + 2*x + 1.5*rnorm(x, 2, 15)
> par(mfrow=c(1,3))
> plot(x, y, main = "Linear Regression Plot")
> abline(lm(y~x))
> hist(y, breaks=10)
> hist(residuals(lm(y~x)), breaks=5)
```

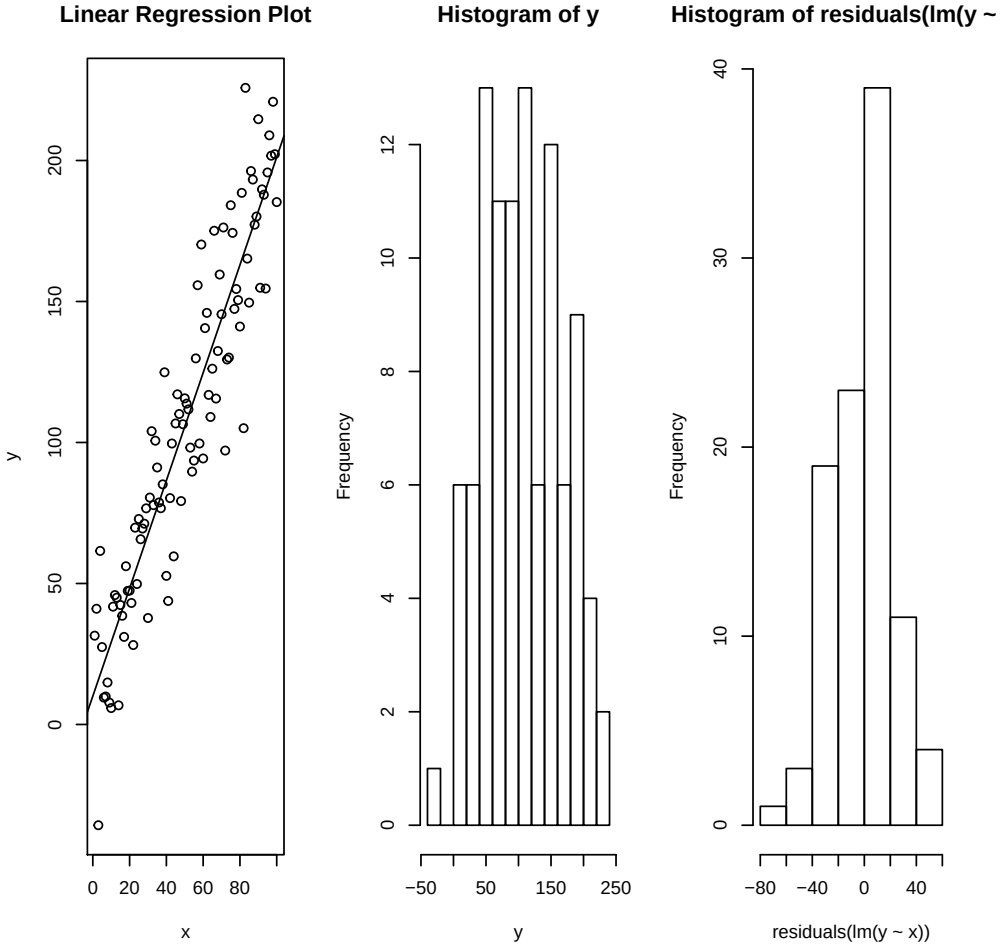


Figure 2: XY Plot and Histograms

[11] Smith, *The Book without Title Two*, op. cit., p. 121.
[12] Greenwade, "The Comprehensive Tex Archive Network (CTAN)", op. cit., p. 47.
[13] Goossens, Mittelbach, and Samarin, *The LaTeX Companion*, op. cit., p. 47.

3.1 Part MF1

Random citation[14] embeddeed in text. This formula $f(x) = x^2$ is an example. $\frac{1}{\sqrt{x}}$, $\left(\frac{1}{\sqrt{x}}\right)$.
$\alpha and A$, $\gamma and \Gamma$,$\delta and \Delta$ $\theta and \Theta$ $\Lambda and \lambda$, $\forall x \in X, \quad \exists y \leq \epsilon$

$$\sum_{i=1}^{10} \sum_{j=1}^{i} t_(i,j)$$

$$\iiint f(x,y,z)dxdydz \log_a b$$

the quick brown fox jumps over a lazy dog

$$f(x) = x^2$$
$$g(x) = \frac{1}{x}$$
$$F(x) = \int_b^a \frac{y^(.0073 z_{i_j})}{x} x^3$$

3.2 Part MF2

3.2.1 part mf2-1

$$\begin{bmatrix} 2 & 0 & 1 \\ 4 & 1 & 2 \\ 6 & 2 & 3 \end{bmatrix} \begin{bmatrix} 2 & 0 & \dots & 1 \\ 4 & 1 & \dots & 2 \\ \vdots & \vdots & \ddots & \vdots \\ 6 & 2 & \dots & 3 \end{bmatrix}$$

3.3 Subsection MF3

4 Text

This is section "Text". Random citation[15] embeddeed in text. Random citation[16] embeddeed in text. Random citation[17] embeddeed in text.

4.1 Part T1 - Equations

We have write an equation her as Equation 1 and others, such as Equation 2, Equation 3, Equation 4 and Equation 5.

$$\frac{\hbar^2}{2m}\nabla^2\psi + V\psi = E\psi. \tag{1}$$

$$VG(t) = f(T2C(t), NG(t), IGV(t)) \tag{2}$$

$$X_t = VG(t) \tag{3}$$

$$X_t = \delta + AR_1X_{t-1} + AR_2X_{t-2} + /dots + AR_pX_{t-p} + A_t - MA_1A_{t-1} - MA_2A_{t-2} - \cdots - MA_qA_{t-q} \tag{4}$$

[14] Smith, *The Book without Title Two*, op. cit., p. 77.
[15] Doe, *The Book without Title One*, op. cit., p. 47.
[16] Greenwade, "The Comprehensive Tex Archive Network (CTAN)", op. cit., p. 47.
[17] Goossens, Mittelbach, and Samarin, *The LaTeX Companion*, op. cit., p. 47.

$$p(CompressorStall|N_{CombinedFlights}) = \beta_0 + \sum_{i=1}^{p} \beta_i * AR_i + \sum_{j=1}^{q} \beta_{j+p} * MA_j + \epsilon) \tag{5}$$

4.1.1 A Familar Equation

if

$$ax^2 + bx + c = 0$$

then

$$x = \frac{-b \pm \sqrt[2]{b^2 - 4ac}}{2a}$$

4.1.2 A Simple Laplace Transform

$$\mathcal{L}\{\cos \omega t\} = \int_0^{\infty} \mathrm{e}^{-st} \cos \omega t \mathrm{d}t = \left. \frac{e^{-st}(\omega \sin \omega t - s \cos \omega t)}{s^2 + \omega^2} \right|_0^{\infty} = \frac{s}{s^2 + \omega^2}$$

4.2 Part T2

Paragraph2 Random citation[18] embeddeed in text. Random citation[19] embeddeed in text.

Subparagraph Random citation[20] embeddeed in text. Random citation[21] embeddeed in text. Random citation[22] embeddeed in text.

4.3 Illustration of ARIMA-LRM Method in My Thesis

Here is to illustrate how my ARIMA-LRM method calculate the LRM coefficients (of Equation 5) handle the ARIMA coefficients (from Equation4):

$$\begin{pmatrix} y_1 \\ y_2 \\ \vdots \\ y_m \\ y_{m+1} \\ \vdots \\ y_n \end{pmatrix} \sim \begin{pmatrix} AR_{1_1} & AR_{2_1} & \dots & AR_{p_1} & MA_{1_1} & MA_{2_1} & \dots & MA_{q_1} \\ AR_{1_2} & AR_{2_2} & \dots & AR_{p_2} & MA_{1_2} & MA_{2_2} & \dots & MA_{q_2} \\ \vdots & \vdots & \ddots & \vdots & \vdots & \vdots & \ddots & \vdots \\ AR_{1_n} & AR_{2_n} & \dots & AR_{p_n} & MA_{1_n} & MA_{2_n} & \dots & MA_{q_n} \end{pmatrix}$$

[18] Doe, *The Book without Title One*, op. cit., p. 17.
[19] Smith, *The Book without Title Two*, op. cit., p. 27.
[20] Greenwade, "The Comprehensive Tex Archive Network (CTAN)", op. cit., p. 347.
[21] Goossens, Mittelbach, and Samarin, *The LaTeX Companion*, op. cit., p. 48.
[22] Li, "The Comprehensive Animation Analysis Guide (CLARA)", op. cit., p. 48.

List of Figures

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References

Doe, John. *The Book without Title One*. Dummy Publisher First, 2100.

Goossens, Michel, Frank Mittelbach, and Alexander Samarin. *The LaTeX Companion*. Reading, Massachusetts: Addison-Wesley, 1993.

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