Environmental Informatics

Ryan G

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Contents

        - Can I use my old `#tag` script?
    - How will i integrate this with theory notes from `Org` and `MD`?
    - How will I search Documents
        - Probably `FZF` and `RG`
    - When do i want to use RMD and when do I want to use MD?
- This will be clearer once I:
    1. remove duplicate notable notes
    2. Import TSA Scripts and RMD files

3 Original Material ATTACH

Chapman TextBook

1. Correlation a. Script
2. Confidence Intervals
    (a) Notes
        i. Source
    (b) Lecture Material
3. Tolerance Intervals 1.Lecture Material
    (a) Topic Notes
        i. Word Doc Source
    (b) Scripts
4. Linear Regression
    (a) Scripts
    (b) Working Exercises (PDF)
        i. LaTeX Source
    (c) Notes
        i. Source (DocX)
5. Multiple Linear Regression
    (a) Notes
        i. Applied Statistics Notes

A. Source (MS Word)

ii. Relevant Notes

A. Source (Ms Word)

(b) Lecture material

(c) Worked Exercise Solutions

i. Scripts

6. Time Series Analysis

(a) Notes

i. Source

(b) Old Notes Applied Stats

i. A

ii. B

(c) Exercises Worked Solutions

i. Scripts

(d) Lecture Material

7. Trend Estimation

(a) Notes

i. Source

(b) Exercises Worked Solutions

i. Scripts

ii. Worked Solutions

A. 7.1.1

B. 7.1.2

C. 7.1.3

D. 7.1.4

E. 7.1.5

F. 7.1.6

G. 7.2

(c) Lecture Material

8. AR, MA, ARMA and ARIMA

(a) Notes 1.Source

(b) Exercises Worked Solutions

i. 8.1

ii. 8.2

iii. 8.3

iv. Scripts

(c) Lecture Material

I haven't attached/linked anything beneath here for want of times and concern over file size.

1. Model Selection

   (a) Notes

      i. Source

   (b) Exercises Worked Solutions

      i. Scripts

   (c) Lecture Material

2. GeoSpatial

   (a) Notes

      i. Source

   (b) Exercises Worked Solutions

      i. Scripts

   (c) Lecture Material

3. Variograms

   (a) Notes

      i. Source

   (b) Exercises Worked Solutions

      i. Scripts

   (c) Lecture Material

4. GeoSpatial

   (a) Notes

      i. Source

   (b) Exercises Worked Solutions
      i. Scripts
   (c) Lecture Material

5. Spatio-Temporal Models
   (a) Notes
      i. Source
   (b) Exercises Worked Solutions
      i. Scripts
   (c) Lecture Material

4 (1) - Exercises

Week 1 | Material Due: 17 July 2017

4.1 Regulations relating to Environmental Hypotheses Testing

Things that require measurement's, ostensibly by law, would include fish populations, ocean acidity, $CO\eta_2$ levels, temperature, rainfall etc.ss

Finding which legislative instrument provides for this is difficult, a cursory glance through *Westlaw, LexisNexis, Google* and *Austlii* does not provide anything obvious.

4.2 Summary of Temperature Data

A table of data with rows as observations and columns as variables is a data frame.

4.2.1 First few Lines

4.2.2 Structure of the Data Set

4.2.3 Summary of the Data Frame

4.2.4 Correlation of Minimum and Maximum Temperature

The value provided by the cor function is the default *Pearson* method[1] ăwhich is a *linear correlation coefficient such that:*[2]

$$r = \frac{n \sum \text{xy} - (\sum x)(\sum y)}{\sqrt{n(\sum x^2) - (\sum x)^2} \times \sqrt{n(\sum y^2) - (\sum y)^2}}$$

The value of r measures the strength and direction of a linear relationship by comparing the variation, whereby a value of 1 would occur if all the data were to lie exactly on a straight line, a strong correlation is usually $r > \pm 0.8$.

The Coefficient of determination is r^2:

$$r^2 = 0.7498076^2 = 0.562211$$

The Coefficient of determination is the percentage of variation that is explained by the linear function, so in this case 56% of the variation between maximum and minimum temperatures can be explained by a linear function between those two variables, the linear function can be found by using an RSS method, explained by .Simple\ Linear\ Regression.pdf.

This is the same method used with Excel:

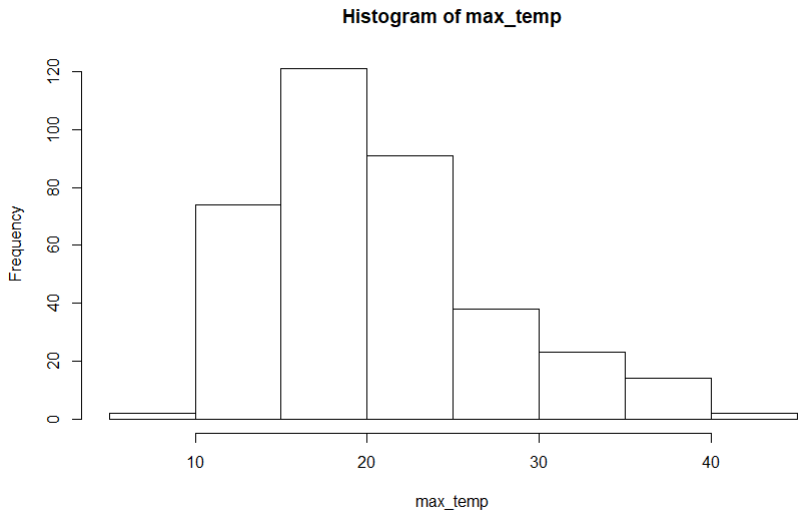
[CHART]

[1] Rdocumentation.org. (2017).ă/cor function | R Documentation/. [online] Available at: `https://www.rdocumentation.org/packages/stats/versions/3.4.1/topics/cor` [Accessed 21 Jul. 2017].

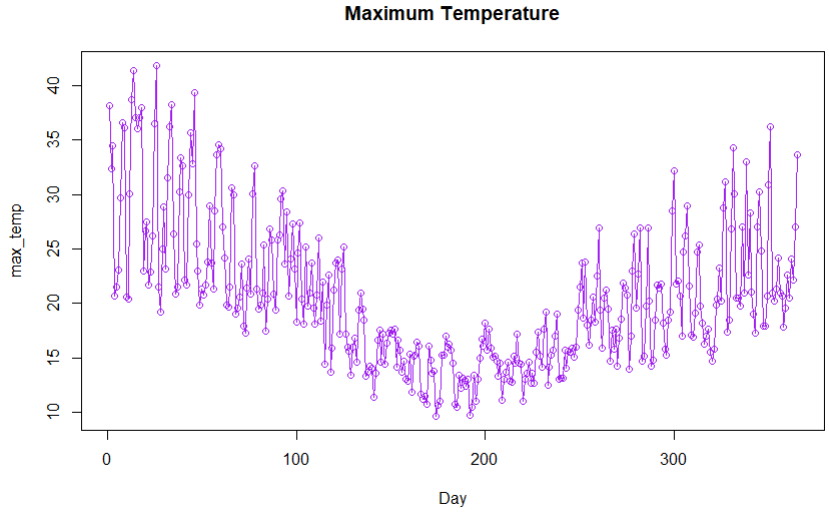
[2] Roberts, D. (2017).ă/Statistics 2 - Correlation Coefficient and Coefficient of Determination/. [online] Mathbits.com. Available at: `https://mathbits.com/MathBits/TISection/Statistics2/correlation.htm` [Accessed 21 Jul. 2017].

4.3 1.5 Re-Produce Figures[3]

4.3.1 Histogram



4.3.2 Line Plot



[3]Use this cite as a man page:
`https://www.tutorialspoint.com/r/r_line_graphs.htm`