

Data Analysis for Public Affairs

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Contents

1	Introduction	1
2	Topics Overview	1
3	A caucus-race and a long tale	1
4	Binary Choice	1
4.1	Stuff	2
4.2	Including Plots	3

1 Introduction

This book serves as an introduction to data analysis with R and RStudio. It can be subdivided into four main parts.

1. Probability
2. Statistics
3. Regression
4. Advanced Regression

2 Topics Overview

This is my first tex code: CO_2 emissions.

```
height = c(71,77,70,73,66,69,73,73,75,76)
sum(height)
```

```
## [1] 723
```

3 A caucus-race and a long tale

4 Binary Choice

Binary choice models (y takes two values: 0 or 1)

- Did you vote during the last election?
- Does an individual recidivate after being released from prison?

- Participation in the labor market
- Purchasing a home
- Model: $Pr(y = 1|x)$

Categorical dependent variable but naturally ordered

- What is your level of happiness? E.g., very happy, happy, ok, sad.

Categorical dependent variable but no ordering

- How do you commute to campus?
- Did you vote for the democratic, republican, or independent candidate during the last election?

```
bhat_logit = glm(buying~income,family=binomial(link="logit"),data=organic)
summary(bhat_logit)
```

```
##
## Call:
## glm(formula = buying ~ income, family = binomial(link = "logit"),
##      data = organic)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -1.8451  -0.5293  -0.1423   0.4093   1.9154
##
## Coefficients:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept) -5.87557    1.13842  -5.161 2.45e-07 ***
## income       0.11709    0.02247   5.211 1.87e-07 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##      Null deviance: 138.469  on 99  degrees of freedom
## Residual deviance:  70.931  on 98  degrees of freedom
## AIC: 74.931
##
## Number of Fisher Scoring iterations: 6
```

4.1 Stuff

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see <http://rmarkdown.rstudio.com>.

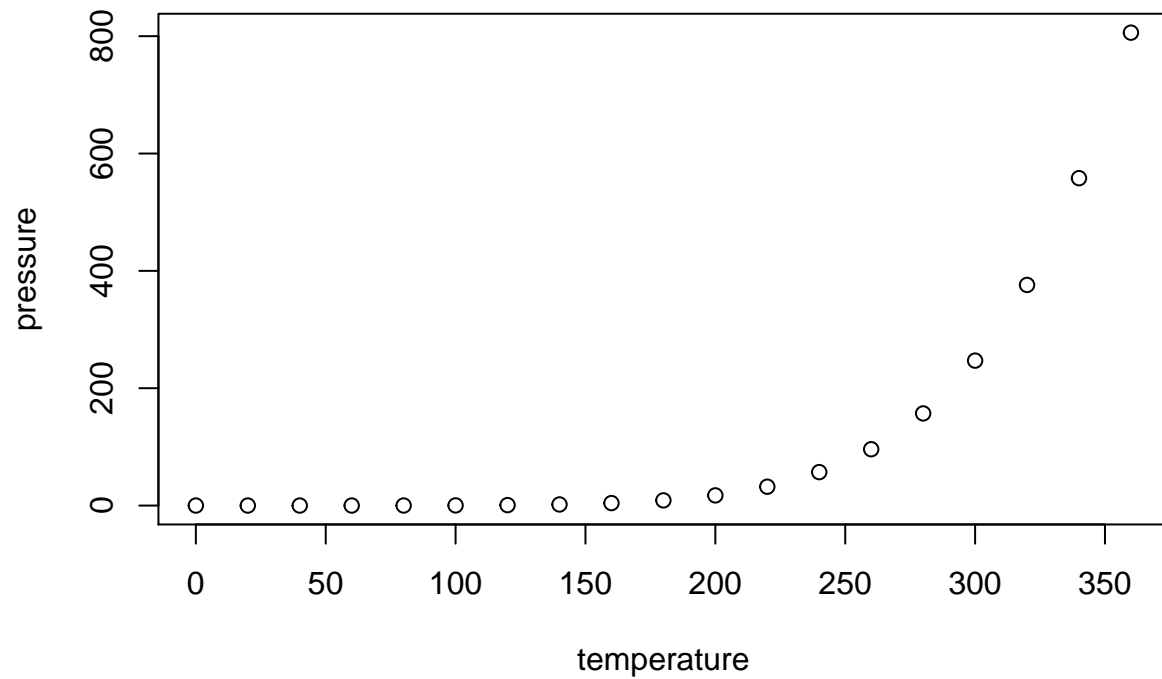
When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
summary(cars)
```

```
##      speed      dist
##  Min.   : 4.0    Min.   :  2.00
## 1st Qu.:12.0    1st Qu.: 26.00
##  Median :15.0    Median : 36.00
##   Mean  :15.4    Mean   : 42.98
## 3rd Qu.:19.0    3rd Qu.: 56.00
##   Max.  :25.0    Max.    :120.00
```

4.2 Including Plots

You can also embed plots, for example:



Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.