

R Markdown Demo PDF

Based on 'RMarkdownPDFExample.Rmd' by Garret Christensen

Julia Clark

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Abstract

If I were writing an article and had an abstract, it would go here!

1 What is R Markdown?

This is an R Markdown document. Markdown is a simple formatting syntax for reports with embedded R code that can be exported as an html, pdf, MS Word, ODT, RTF, or markdown document; or as an html or pdf-based (Beamer) slide show.

Essentially, you write a document—like this one—in RStudio using Markdown syntax. Then you embed chunks of R code in the document, like this:

```
summary(iris)
```

```
##      Sepal.Length      Sepal.Width      Petal.Length      Petal.Width
##  Min.       :4.300    Min.       :2.000    Min.       :1.000    Min.       :0.100
##  1st Qu.:5.100    1st Qu.:2.800    1st Qu.:1.600    1st Qu.:0.300
##  Median :5.800    Median :3.000    Median :4.350    Median :1.300
##  Mean   :5.843    Mean   :3.057    Mean   :3.758    Mean   :1.199
##  3rd Qu.:6.400    3rd Qu.:3.300    3rd Qu.:5.100    3rd Qu.:1.800
##  Max.    :7.900    Max.    :4.400    Max.    :6.900    Max.    :2.500
##      Species
##  setosa      :50
##  versicolor :50
##  virginica   :50
##
##
##
```

When you click the **Knit** button, a document (e.g., HTML, PDF) will be generated that includes the content you've typed as well as the output of any embedded R code chunks within the document.

This means that your code, analysis, and output are all in the same place! You never have to copy-and-paste a table or figure again! If you change your code and get an estimated effect size of 0.3 instead of 0.5, you don't need to scour your results section or use find and replace to change this result.

For more details on using R Markdown see <http://rmarkdown.rstudio.com>. Also check out [this tutorial](#) and [this cheatsheet](#).

2 Getting Started

2.1 Installing and Loading

To use R Markdown, you need R and RStudio installed. Let's do that now:

1. Download and install [R](#)
2. Download and install [RStudio](#)—an “integrated development environment” or IDE for R

Once you've got **RStudio open**, then

3. Install the R Markdown package by typing `install.packages("rmarkdown")` into the console
4. Open a new .Rmd document [File > New File > R Markdown ...]

2.2 Basic Syntax

The content of an .Rmd file is a mixture of different types of syntax and code, including:

- An (optional) YAML header at the beginning surrounded by “---”—this header gives basic document metadata and sets key style and other options, as desired
- Text using Markdown formatting—like this!
- R code chunks, which are the same bits of code you would write in a .R script file
- \LaTeX syntax—enclose text in “\$” for inline equations, e.g., $\hat{\beta} = (X'X)^{-1}X'y$ or “\$\$” for displayed equations:

$$\hat{\beta} = (X'X)^{-1}X'y$$

2.3 Basic Options

Within the R code chunks, you can see the following options:

- `echo=FALSE`—prevents R source code from displaying
- `eval=FALSE`—prevents Knitr from evaluating the R code
- `results='hide'`—hides the results of the code
- `include=FALSE`—Knitr will run the code but not include in the final doc
- `warning=FALSE`—turns off warnings
- `message=FALSE`—turns off messages

3 Analysis Example

Let's first begin by clearing our workspace and setting our working directory:

```
rm(list = ls()) # clear workspace; always a good idea when starting
#setwd("~/Documents/RA/India_BITSS/rmarkdown") # change your working directory
```

Then, let's load our packages:

```

need <- c("foreign", "sandwich", "ggplot2", "stargazer") # list packages you need
have <- need %in% rownames(installed.packages()) # see which are already
if(any(!have)) install.packages(need[!have]) # installs the missing ones
invisible(lapply(need, library, character.only=T)) # then loads them all

```

Load the data:

```

washb <- haven::read_dta("WASHBpublic_mock.dta")

```

Run the models:

```

model1 <- lm(free_chl_yn ~ treatw, data = washb)
model2 <- lm(free_chl_yn ~ treatw + kiswahili + english, data = washb)
robust.se1 <- sqrt(diag(vcovHC(model1, type = "HC")))
robust.se2 <- sqrt(diag(vcovHC(model2, type = "HC")))

```

And make our table:

```

stargazer(model1, model2, se=list(robust.se1, robust.se2),
  title="Made Automatically in R",
  out="outputR.tex", header=FALSE)

```

Table 1: Made Automatically in R

	<i>Dependent variable:</i>	
	free_chl_yn	
	(1)	(2)
treatw	0.364*** (0.043)	0.364*** (0.043)
Constant	0.013 (0.009)	0.013 (0.045)
Observations	284	284
R ²	0.223	0.223
Adjusted R ²	0.220	0.220
Residual Std. Error (df = 282)	0.340	0.340
F Statistic (df = 1; 282)	81.002***	81.002***

Note: *p<0.1; **p<0.05; ***p<0.01

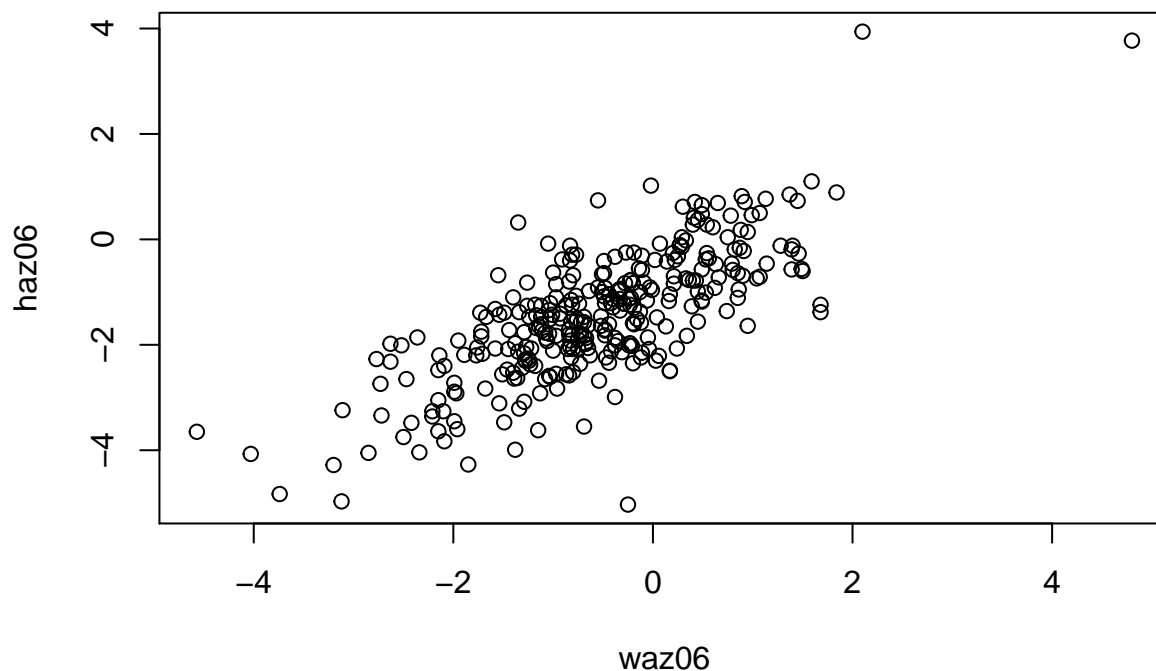
Note that we needed the `results = 'asis'` option to get the table to output correctly, otherwise we would have gotten the copy-and-paste L^AT_EX output like in R.

3.1 Referring to values

You can refer to values calculated in R by just surrounding “r” and the code with single accent marks. For example, the mean frequency is 0.4822888. The mean frequency rounded to two decimal place is 0.48.

4 Figures/Plots

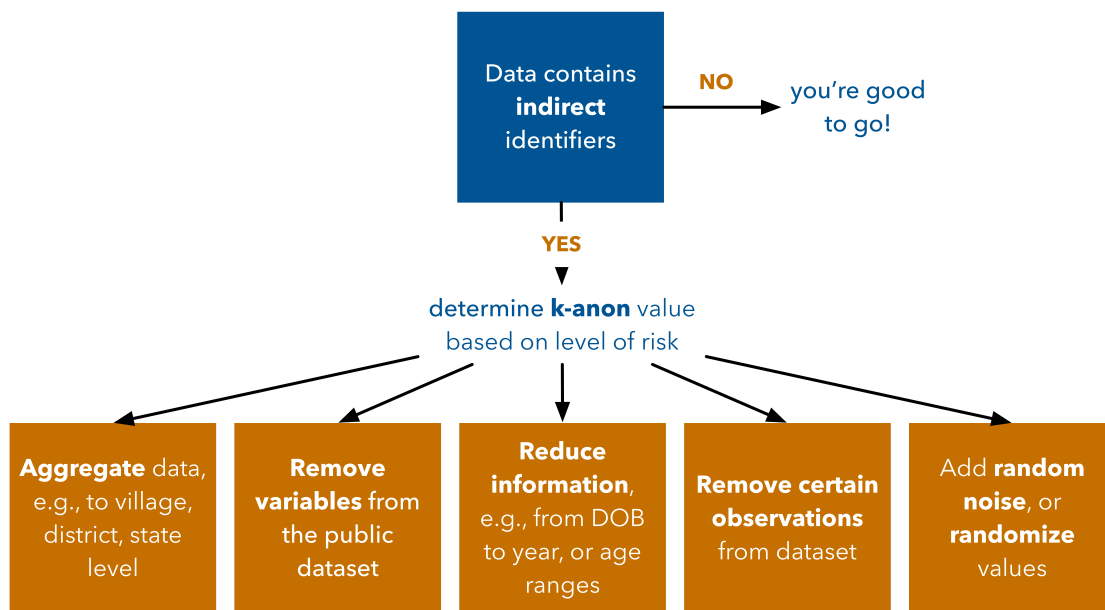
For figures generated in R, you can code them directly (here, the data comes from the `iris` dataset, which comes pre-loaded in R:



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

For external files that you want to include, use `image: `. Or you can use \LaTeX syntax if you want advanced formatting capacity, e.g.,

Figure 1: Options for De-Identifying Data



5 Basic Formatting in Markdown

5.1 Headers

Make yourself a header of different levels using # for level 1, ## for level 2 etc.

5.2 Typeface

Surround words in * for *italics*, and ** for **bold**.

5.3 Punctuation

Use "---" to get an em-dash (—) and "--" to get an en-dash (–). Use normal quotation marks ("", or '), unlike in L^AT_EX.

5.4 Lists

Make a numbered list using "1.", and a bulleted list using "-":

1. item 1
2. item 2
3. item 3

- item a
- item b
- item c

5.5 Hyperlinks

Rmarkdown will automatically format a copy-and-pasted URL as a hyperlink (e.g., <http://rmarkdown.rstudio.com>). If you want to add a link to a particular word, type “[Rstudio] (<http://rmarkdown.rstudio.com>)” to get [Rstudio](#).

5.6 Commenting

Commenting can get a little tricky to remember, as notation is different in R (#), L^AT_EX (%), and markdown (<!-- -->). In the preamble and code snippets, comment using # as in R (see above). In the rest of the document, comment by surrounding text with <!-- -->.

6 Footnotes and Citations

6.1 Footnotes

Add a footnote using `^[I am a footnote].1`

6.2 Citations

Here’s how you add a citation from your BibTex library (formatted in author-date style, using the natbib package loaded in the preamble):

- For a single source, use [citekey], e.g., “[@banerjee2010pitfalls]” gives us (?).
- For multiple sources, use [citekey1; citekey2; etc.], e.g., “[@banerjee2010pitfalls; @easterly2001elusive]” gives us (??).
- For an in-text citation, use @citekey with no brackets, e.g., “@banerjee2010pitfalls” gives us ?.

For more, see http://rmarkdown.rstudio.com/authoring_bibliographies_and_citations.html.

And the bibliography/references will automatically show up with the sources you’ve added using cite keys; no need to copy and paste citations or double check to make sure you’ve included/removed sources as necessary!...

¹I am a footnote.