

R Markdown

R Markdown is software included with RStudio that allows you to put text, data, R code, and Latex math notation in the same plain-text file, and then compile it to a nicely formatted file containing text, data, R code, textual output of R code, graphical output of R code, and math notation. By putting all these things in a single file, R Markdown greatly simplifies the otherwise tedious and error-prone process of writing and assembling a statistical report.

Here's all you have to know for STAT 327

- To open a new file, use RStudio's menu "File > New file > R Markdown ...", give your file a name ending ".Rmd", choose "HTML" under "Default Output Format:", and click "OK".
- Write R code inside "code chunks" delimited as follows:

```
```${r}  
 # R code
```
```

(These "backquotes" are on the upper-left corner of the keyboard.)

- Write plain text anywhere in the file except in code chunks.
- Click "Knit" to knit together your text, data, R code, and its output into a web page.
- For debugging, run a line of code in the console with "Ctrl-Enter" (Windows) or "Command-Enter" (Mac). See the "Chunks" menu for running a chunk at a time.

To learn more about R Markdown

Use RStudio's "Help" menu to choose "Markdown Quick Reference," "Cheatsheets > R Markdown Cheat Sheet" and "Cheatsheets > R Markdown Reference Guide."

Latex for mathematical notation (optional)

In R Markdown text, you may use Latex mathematical notation in sections delimited by `$... $` to show up inline, or by `$$... $$` to show up as a separate paragraph. Here are basics:

| Latex | Result |
|----------------------------------|-----------------------|
| <code>x^y</code> | x^y |
| <code>x_y</code> | x_y |
| <code>\alpha, \mu, \sigma</code> | α, μ, σ |
| <code>\bar{x}</code> | \bar{x} |
| <code>\hat{x}</code> | \hat{x} |
| <code>\sqrt{x}</code> | \sqrt{x} |
| <code>\sum</code> | \sum |
| <code>\frac{x}{y}</code> | $\frac{x}{y}$ |

e.g. `$Z = \frac{\bar{x} - \mu_0}{\sigma / \sqrt{n}}$` gives $Z = \frac{\bar{x} - \mu_0}{\sigma / \sqrt{n}}$.

e.g. `$$\bar{X} = \frac{1}{n} \sum_{i=1}^n X_i$$` gives

$$\bar{X} = \frac{1}{n} \sum_{i=1}^n X_i.$$

To learn more about Latex, see <http://en.wikibooks.org/wiki/LaTeX>.