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 303

- 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
`x^y`	x^y
`x_y`	x_y
`\alpha, \mu, \sigma`	α, μ, σ
`\bar{x}`	$\bar{x}$
`\hat{x}`	$\hat{x}$
`\sqrt{x}`	$\sqrt{x}$
`\sum`	$\sum$
`\frac{x}{y}`	$\frac{x}{y}$

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`.