R Tutorials: Using R Markdown

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## R Markdown

The tutorial for <http://rmarkdown.rstudio.com>. The book on r Markdown: I should consult this for any more questions I might have 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.

Code chunks are deliniated with ```{r} and three more of those things to close it

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

### To add code chunks Press Command, Option and I

there is also an add chunk command in the tool bar

inside a code chunk {} can use incclude = false - chunk will not be in final doc echo = false - code is not presented but the results are in doc message = false - no messages from code in final doc warning =flase - no warnings will show in final fig.cap =“” will add a caption to any figures in final doc

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.

Global options apply to all code chunks

# Inline Code

You can insert functions by using r followed by the function name or dataframe name – have multiple defs for same code and then uncomment the one you want to try in the function R will include results of code and apply yext but not the code

R markdown can add code in bash and python + others To use another language use ```{CODE LANGUAGE NAME} insteaf of just R You can still use the code chunks

# Parameters:

They are good to use when want to do the same report with different datasets for dif regions or specific period of time you can use the params: command to determine parameters to determine which dataset to use  
use params$ to call dataset or other parameters can use render that will use a new set of parameters if you use knit with parameters button in dropdown menu it will let you preview the visualization with different parameters

# Tables

Usually in normal R formatting but can use knitr::kable to make fancier tables Make sure to use results = “asis” to keep knitr from doing too much formatting

Somw foos options for making tables \* [xtable](https://cran.r-project.org/web/packages/xtable/) \* [stargazer](https://cran.r-project.org/web/packages/stargazer/) \* [pander](http://rapporter.github.io/pander/) \* [tables](https://cran.r-project.org/web/packages/tables/) \* [ascii](http://eusebe.github.io/ascii/) \* etc.

Table code is here

library(knitr)  
kable(mtcars[1:5, ], caption = "A knitr kable.")

A knitr kable.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | mpg | cyl | disp | hp | drat | wt | qsec | vs | am | gear | carb |
| Mazda RX4 | 21.0 | 6 | 160 | 110 | 3.90 | 2.620 | 16.46 | 0 | 1 | 4 | 4 |
| Mazda RX4 Wag | 21.0 | 6 | 160 | 110 | 3.90 | 2.875 | 17.02 | 0 | 1 | 4 | 4 |
| Datsun 710 | 22.8 | 4 | 108 | 93 | 3.85 | 2.320 | 18.61 | 1 | 1 | 4 | 1 |
| Hornet 4 Drive | 21.4 | 6 | 258 | 110 | 3.08 | 3.215 | 19.44 | 1 | 0 | 3 | 1 |
| Hornet Sportabout | 18.7 | 8 | 360 | 175 | 3.15 | 3.440 | 17.02 | 0 | 0 | 3 | 2 |

Use Pandoc Markdown to deal with headers, footers, etc it says to check out the options in the R markdown general guide

*italics* **bold** code [links](https://rmarkdown.rstudio.com/lesson-8.html)

can also make equations and bibliographies []

# Output

use Render command or go up to the knit menu above in render use output = “pdf” “word\_document” or other things

Document examples html\_notebook ⧉ - Interactive R Notebooks html\_document ⧉ - HTML document w/ Bootstrap CSS pdf\_document ⧉ - PDF document (via LaTeX template) word\_document ⧉ - Microsoft Word document (docx) odt\_document ⧉ - OpenDocument Text document rtf\_document ⧉ - Rich Text Format document md\_document ⧉ - Markdown document (various flavors) Presentations (slides) ioslides\_presentation ⧉ - HTML presentation with ioslides revealjs::revealjs\_presentation ⧉ - HTML presentation with reveal.js slidy\_presentation ⧉ - HTML presentation with W3C Slidy beamer\_presentation ⧉ - PDF presentation with LaTeX Beamer powerpoint\_presentation ⧉: PowerPoint presentation More flexdashboard::flex\_dashboard - Interactive dashboards tufte::tufte\_handout ⧉ - PDF handouts in the style of Edward Tufte tufte::tufte\_html ⧉ - HTML handouts in the style of Edward Tufte tufte::tufte\_book ⧉ - PDF books in the style of Edward Tufte html\_vignette ⧉ - R package vignette (HTML) github\_document - GitHub Flavored Markdown document

# R\_Notebooks

R markdown has a notebook type that way more infor here <https://bookdown.org/yihui/rmarkdown/notebook.html> but it allows for iteration of code

###use output:html\_notebook to save as a notebook if want normal console can choose chunk output in console

In morkdown chunk is sent at once but in notebook only one line at a time can use fig.width, fig.heigt and fig.asp to change the size of figures in the notebook Graphs appear inline unless set up viewer

rmd\_stub = “examples/r-notebook-stub.Rmd” cat(readLines(rmd\_stub), sep = “”) — title: “R Notebook Stub” output: html\_notebook —

print("Hello, World!")

## [1] "Hello, World!"

# Presentations

can save as ppt, or other types of slides use \*\*\* to make manual slide break use >- to make bullets

# Dashboards

can hve dashboards that have multiple types of information on them [file here](https://rstudio.cloud/project/181966)

Each # begins a new page in dashboard each ## begins a new column each ### begins new box

can use{.sidebar} to make more chanes There is a whole seperate training on flexidash that i can check out later [flexidash](https://rmarkdown.rstudio.com/flexdashboard/using.html)

\*\*This would be cool to report the number of studies wrong for Kristen

each thing in a dashboard has a notes componant use > to add notes after it

Within flexidash can also make storyboards with the data \*\*\* adds commentary next to the code you are making

[can make websites too](https://bookdown.org/yihui/rmarkdown/rmarkdown-site.html)

# Interactive docs

Can use Java to make interactive visualizations - allows to look at maps or other things

[example](https://rstudio.cloud/project/181983)

## Leaflet

seems really cool and has been used for a lot of visualizations [Leaflet Link](http://rstudio.github.io/leaflet/) It is an API that can be opened in R –> I will take notes on it in a seperate document

## Shiny

A method of making web maps using R use runtime:shiny to start a shiny app

[Shiny example](https://rstudio.cloud/project/181983)

For other tutorial on Shiny use [this link](http://shiny.rstudio.com/)

# Cheatsheets

are built into the help window of R markdown