

Welcome to Intro to



Geoffrey Arnold

@geoffreylarnold 

geoffreylarnold 

geoffrey.arnold@pittsburghpa.gov 

Workshop materials

OPTION 1



bit.ly/2I1Jb66

log in and sit tight

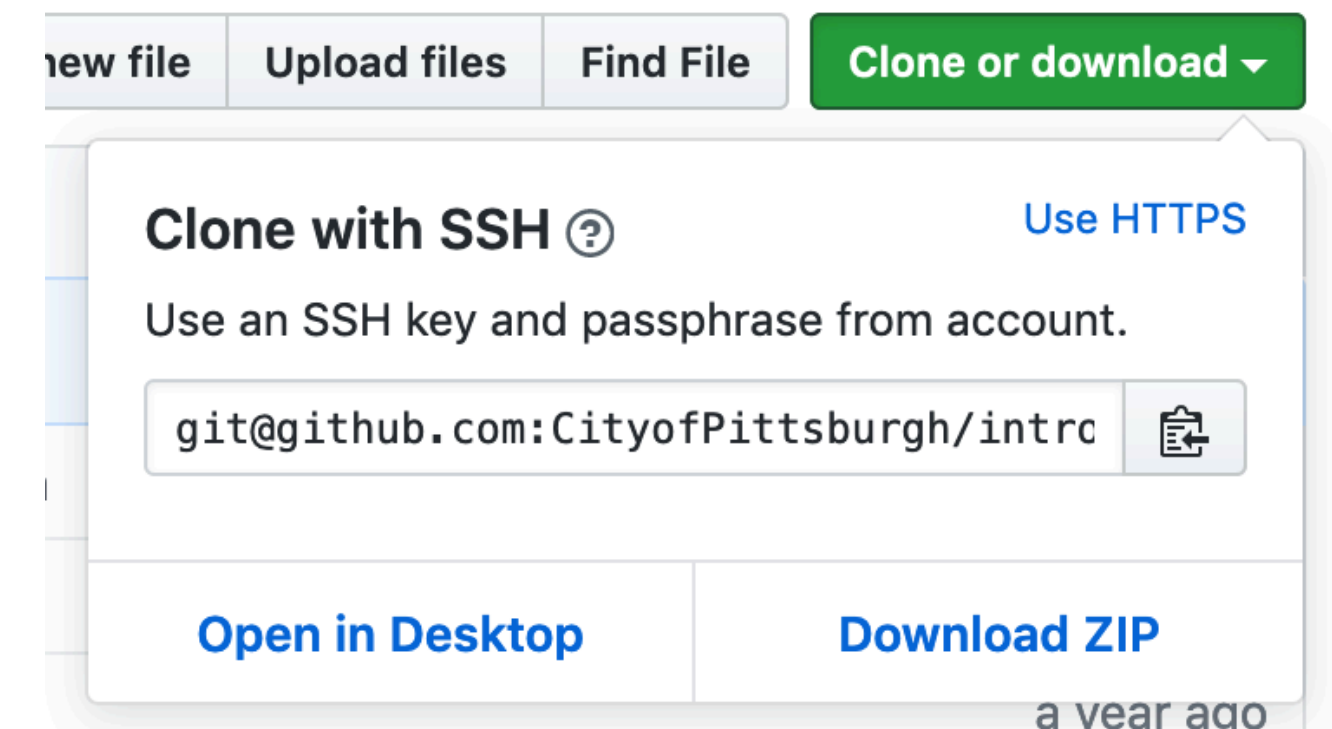
OPTION 2



bit.ly/2UwGGie

1. clone or download

2. launch intro-rmarkdown.Rproj




[new file](#) [Upload files](#) [Find File](#) [Clone or download](#)

Clone with SSH [?](#)

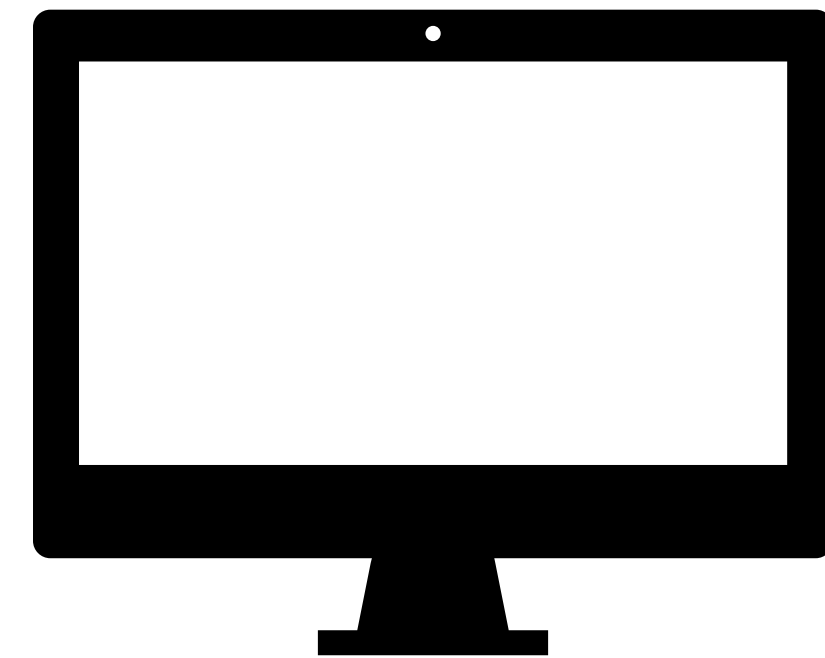
[Use HTTPS](#)

Use an SSH key and passphrase from account.

`git@github.com:CityofPittsburgh/intro` 

[Open in Desktop](#) [Download ZIP](#)

a year ago



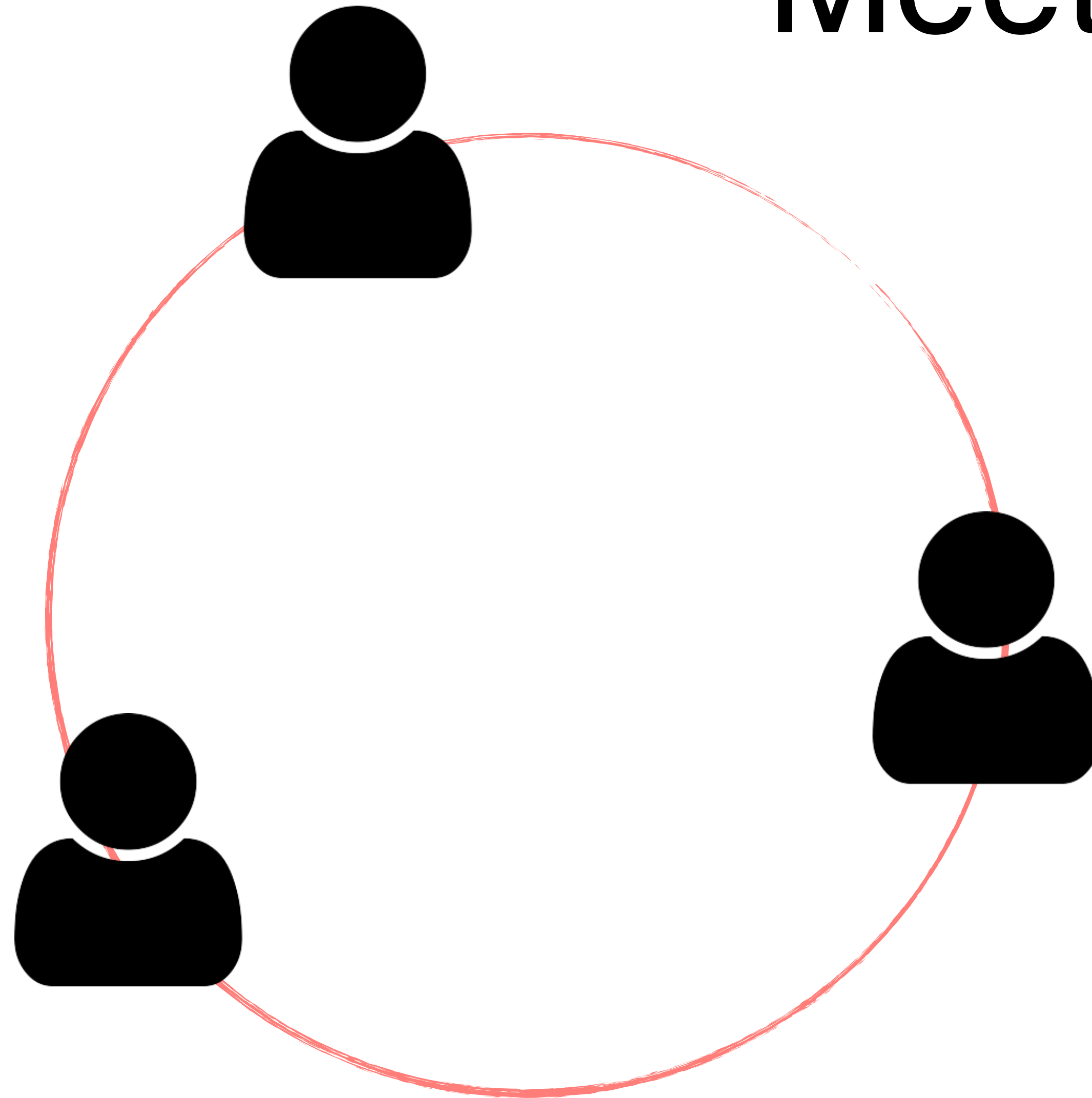
DEMO

Meet & greet



Geoffrey Arnold

Meet & greet



Asking for help








Overview

- Day 1: Intro to R Markdown
- Day 2: More Markdown
- Lots of info!
- Lots of “your turn” breaks
- Additional time for Q&A at the end of each day



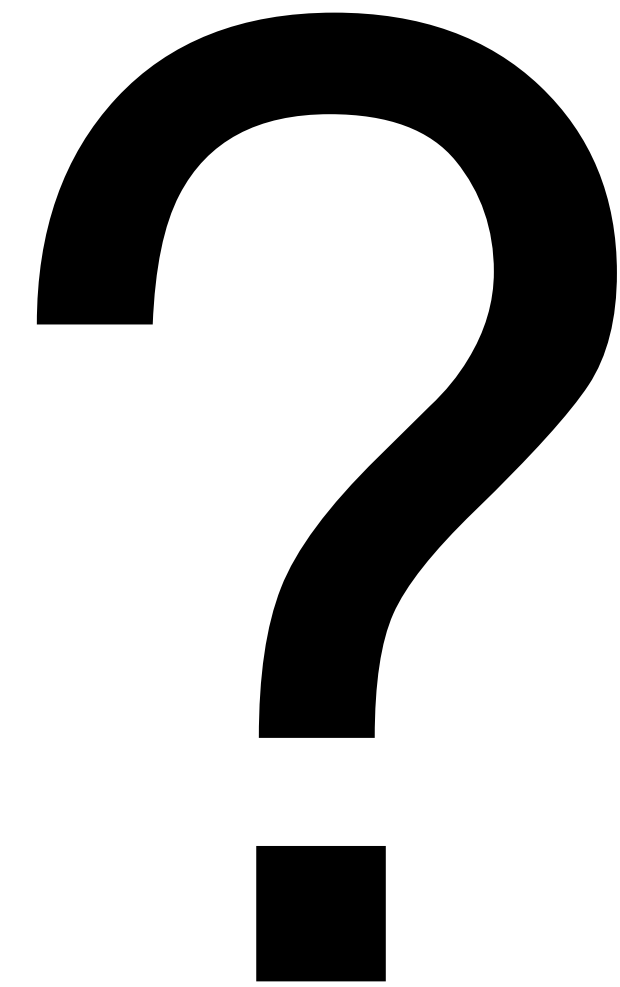
Outline

- Day 1
 - 12pm - 1:30pm - Getting started with Markdown 
 - 1:30pm - 2pm - Break  
 - 2pm - 3pm - Putting the R in R Markdown 
- Day 2
 - 10am - 12pm - Upping Your RMD Game 

Getting started with R Markdown



What is a the definition of a
reproducible data analysis? What
tools do you/others use to make their
data analysis reproducible?



Reproducible/repeatable data analysis

- Scriptability ➡ R
- Literate programming ➡ R Markdown
- Automation ➡ Make
- Version control ➡ Git / GitHub



Reproducibility checklist

- Are the tables and figures reproducible from the code and data?
- Does the code actually do what you think it does?
- In addition to what was done, is it clear **why** it was done? (e.g., how were parameter settings chosen?)
- Can the code be used for other data?
- Can you extend the code to do other things?

Is this new?

"Let us change our traditional attitude to the construction of programs: Instead of imagining that our main task is to instruct a computer what to do, let us concentrate rather on explaining to human beings what we want a computer to do."

–Donald Knuth (1984)

- These ideas have been around for years!
- and tools for putting them to practice have also been around
- but they have never been as accessible as the current tools

What is Markdown?

- Lightweight markup language with plain text formatting syntax
- Designed so that it can be converted to HTML (and many other formats)

README.md

```
1 # rstudioconf-2018-intro-shiny-rmarkdown
2
3 Materials for the "Intro to Shiny and R Markdown" 2-day workshop at [rstudio::conf 2018](https://www.rstudio.com/conference/).
4
5 ---
6
7 ## Outline
8
9 ### Day 1: January 31
10
11 #### :computer: 09:00 - 10:30: Session 1 - Introduction to R Markdown
12 - Welcome and motivation
13 - Demo: R, Markdown, knitr, Pandoc/YAML, Parameters, Templates, Tables, htmlwidgets, rpubs (and maybe shiny/shinyapps.io)
14 - Composing your prose (markdown)
15   - Text, headers, lists, hyperlinks
16   - Math text
17   - Images
18   - Tables
19   - Bibliographies and citations
20   - The Markdown Quick Reference
--
```



README

rstudioconf-2018-intro-shiny-rmarkdown

Materials for the "Intro to Shiny and R Markdown" 2-day workshop at [rstudio::conf 2018](https://www.rstudio.com/conference/).

Outline

Day 1: January 31

09:00 - 10:30: Session 1 - Introduction to R Markdown

- Welcome and motivation
- Demo: R, Markdown, knitr, Pandoc/YAML, Parameters, Templates, Tables, htmlwidgets, rpubs (and maybe shiny/shinyapps.io)
- Composing your prose (markdown)
 - Text, headers, lists, hyperlinks
 - Math text
 - Images
 - Tables
 - Bibliographies and citations
 - The Markdown Quick Reference

A Markdown-formatted document should be publishable as-is, as plain text, without looking like it's been marked up with tags or formatting instructions.

- John Gruber



What is R Markdown?

- Markdown + R
- Text + R code (in chunks) gets converted to text + R code + R output in HTML (and many other formats)



The screenshot shows the RStudio editor with a file named 'my-first-rmd.Rmd'. The code is as follows:

```
1 ---
2 title: "My First R Markdown Doc"
3 author: "Geoffrey Arnold"
4 date: "4/5/2019"
5 output: html_document
6 ---
7
8 ```{r setup, include=FALSE}
9 knitr::opts_chunk$set(echo = TRUE)
10 ```
11
12 ## R Markdown
13
14 This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS
15 Word documents. For more details on using R Markdown see <http://rmarkdown.rstudio.com>.
16
17 When you click the Knit button a document will be generated that includes both content as well as the
18 output of any embedded R code chunks within the document. You can embed an R code chunk like this:
19
20 ```{r cars}
21 summary(cars)
22 ```
```

my-first-rmd.Rmd

My First R Markdown Doc

Geoffrey Arnold

4/5/2019

R Markdown

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

my-first-rmd.html



bit.ly/2I1Jb66

Your turn

- In RStudio, File ➡ New File ➡ R Markdown...
- Title: My first R Markdown doc
- Author: [INSERT NAME]
- OK
- Knit the document, saving the file as my-first-rmd.Rmd

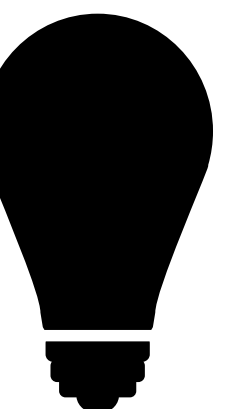


3_m 00_s



Tips

- Hitting knit is equivalent to running `rmarkdown::render()`.
- When you create an Rmd document, it will first ask you to give it a title, that is the **title** of the document. Use whatever capitalization you prefer in titles, and you can edit it later too.
- When you go to knit the file, it will ask for another name. This is the **filename**. You might want to keep it no-spaces-no-capitals.

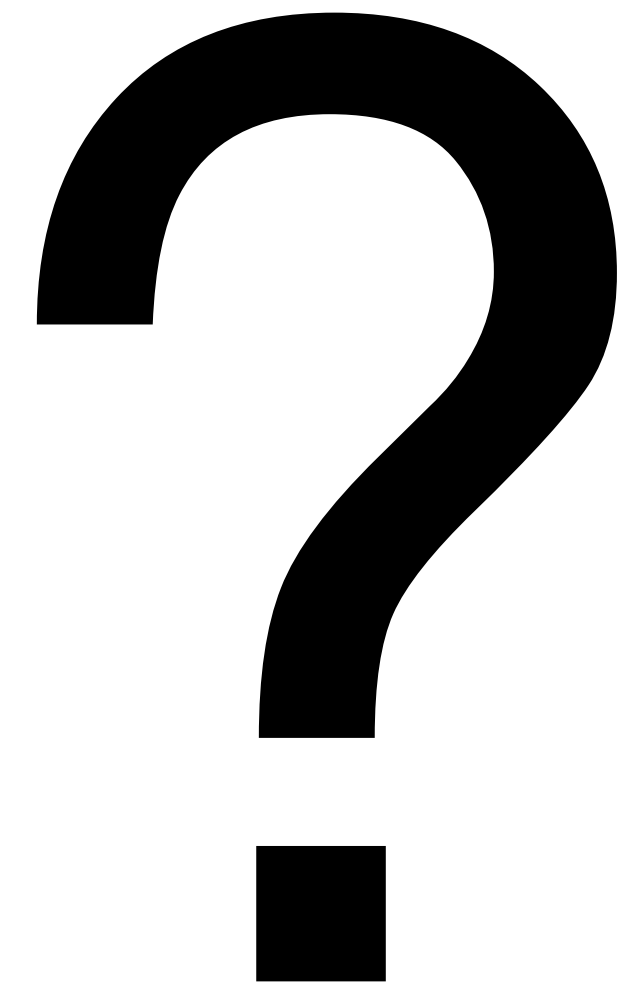


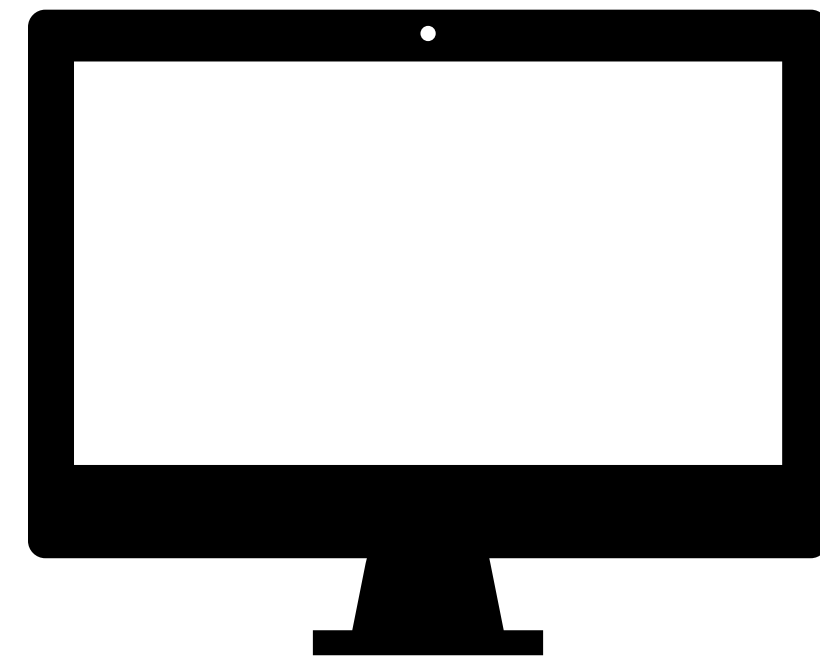
What's in an Rmd?

Three types of content:

- An (optional) YAML header surrounded by `---`
- Code chunks surrounded by `````
- Text with markdown formatting

What does YAML mean?





DEMO

Demo recap

- R, Markdown
- knitr
- Pandoc/YAML
- Parameters
- Templates
- Tables
- htmlwidgets
- RPubS

