

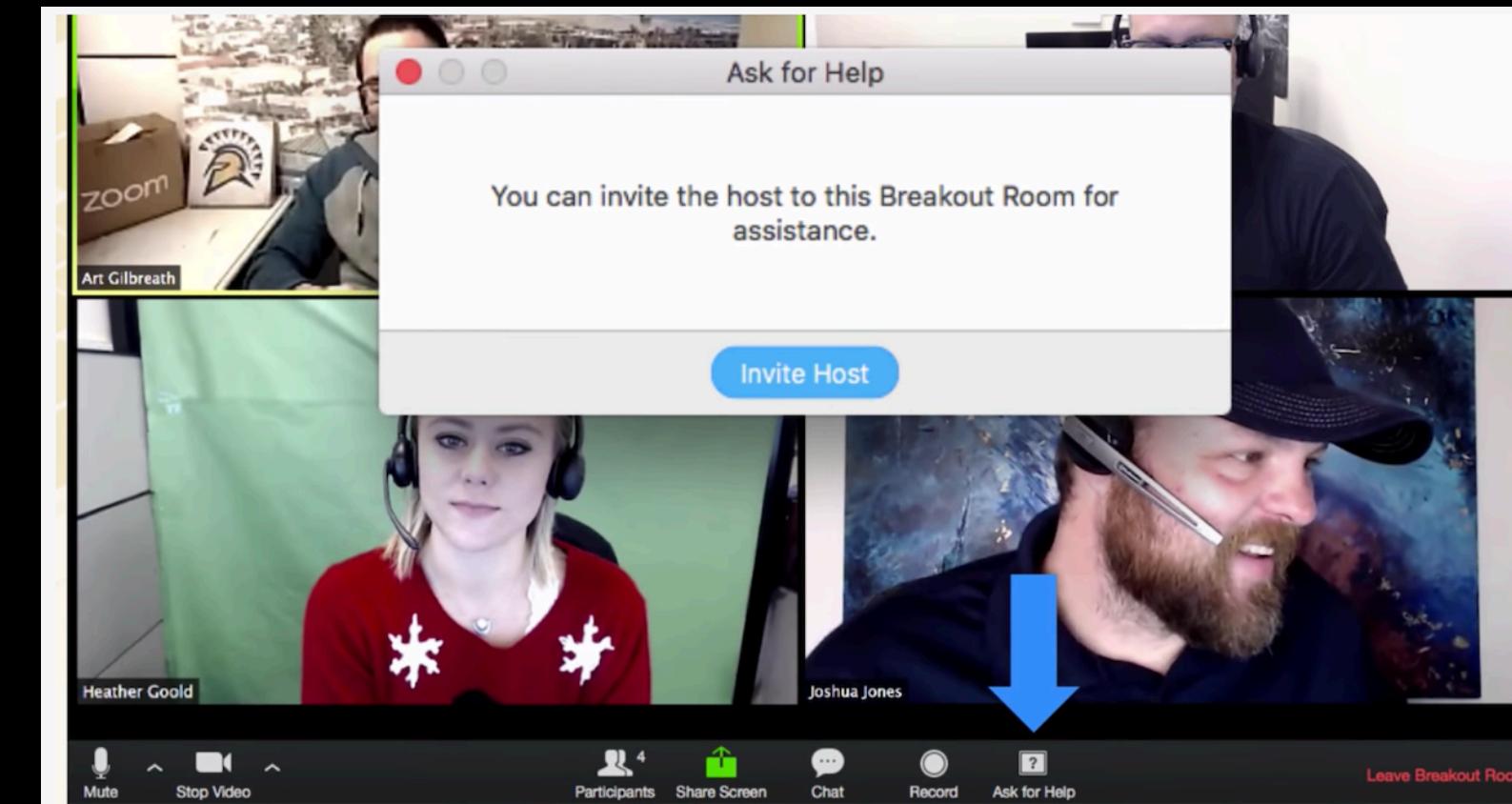
R Markdown

Ari Lamstein

Exercise: What do you already know?

Type into the chat window:

1. What do you already know about R Markdown?
2. What do you already know about plain old Markdown?



R Markdown

Main Ideas

Notes

R Markdown Cheat Sheet

learn more at rmarkdown.rstudio.com



.Rmd files

An R Markdown (.Rmd) file is a record of your research. It contains the code that a scientist needs to reproduce your work along with the narration that a reader needs to understand your work.

Reproducible Research
At the click of a button, or the type of a command, you can rerun the code in an R Markdown file to reproduce your work and export the results as a finished report.



I
Turn your Shiny doc

1 Add YAM

2 Call inpu

3 Call rea

4 Refe Run

Workflow

- 1 Open a new .Rmd file at File > New File > R Markdown. Use the wizard that opens to pre-populate the file with a template
- 2 Write document by editing template
- 3 Knit document to create report Use knit button or render() to knit
- 4 Preview Output in IDE window
- 5 Publish (optional) to web or server Synchronise publish button to accounts at • rpubs.com, shinyapps.io, RStudio Connect
- 6 Reload document Find in document File path to output document
- 7 Examine build log in R Markdown console
- 8 Use output file that is saved alongside .Rmd

R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents.

```
summary(cars)
```

	speed	dist
## Min :	4.0	2.00
## 1st Qu.:	12.0	26.00
## Median :	15.0	36.00
## Mean :	15.4	42.98
## 3rd Qu.:	19.0	56.00
## Max. :	25.0	120.00

For more details on using R Markdown see <http://rmarkdown.rstudio.com>.

render()

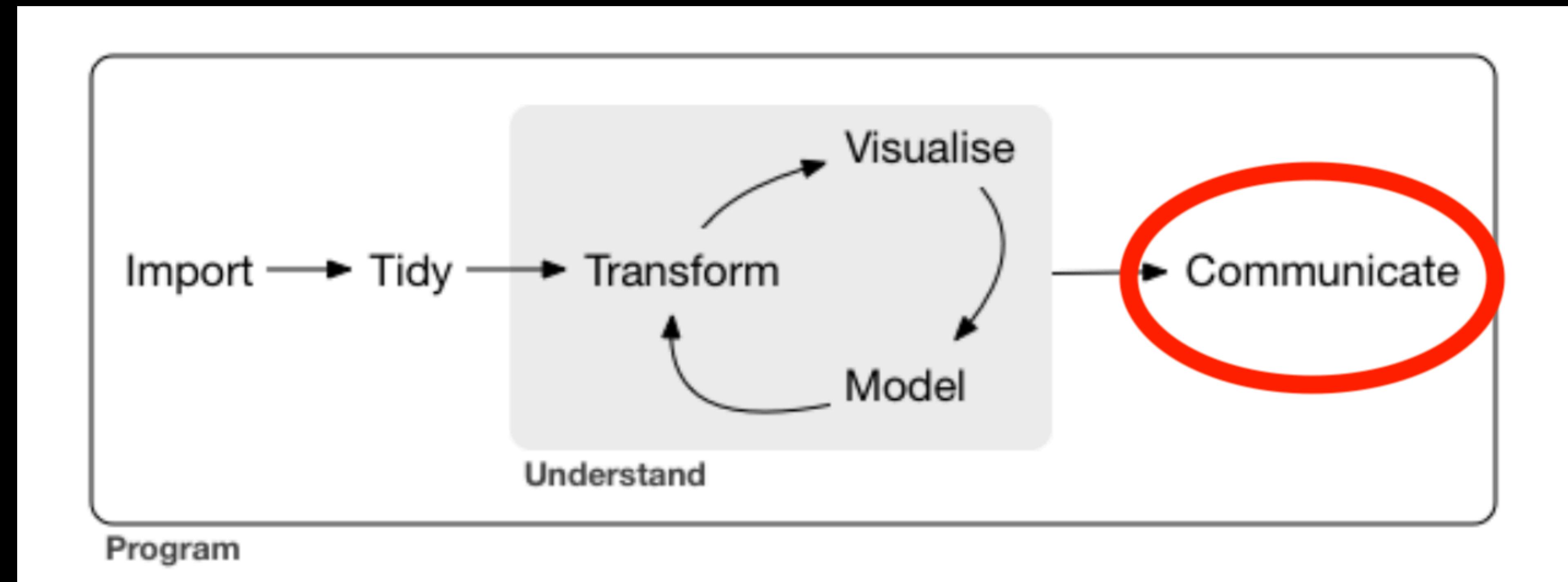
Use markdown::render() to render/knit at cmd line. Important args:

```
input - file to render
output_format
output_options - List of render options (as in YAML)
output_file
output_dir
params - list of params to use
envir - environment to evaluate code chunks in
encoding - encoding of input file
```

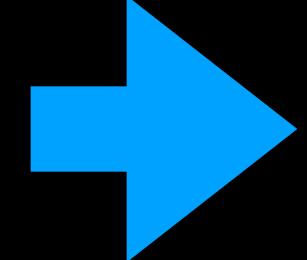
* Your report will not run unless you must choose a valid output format and set envir = "shiny"

Notes form & Cheat Sheet

Please take out



The Data Science Workflow



```
ABC Knit > |
```

```
---
```

```
params:
```

```
  state: california
```

```
  title: A map of California!
```

```
---
```

```
# Demographic Explorer
```

```
This is a simple demographic explorer. Up above, in the `YAML` section of the code below creates a choropleth (i.e. color-coded) map that shows county-level 2013.
```

```
Note: the YAML portion of the document is not rendered when you click "Knit".
```

```
```{r message = FALSE}
```

```
library(choroplethr)
```

```
library(choroplethrMaps)
```

```
library(stringr)
```

```
title = paste("2012 County-Level Population Estimates:", str_to_title(params$title))
```

```
data(df_pop_county)
```

```
county_choropleth(df_pop_county,
```

```
 title = params$title,
```

```
 legend = "Population",
```

```
 state_zoom = params$state)
```

```
```
```

Demographic Explorer

This is a simple demographic explorer. Up above, in the `YAML` section of the document, you set a `state` variable. The code below creates a choropleth (i.e. color-coded) map that shows county-level population estimates for that state in 2013.

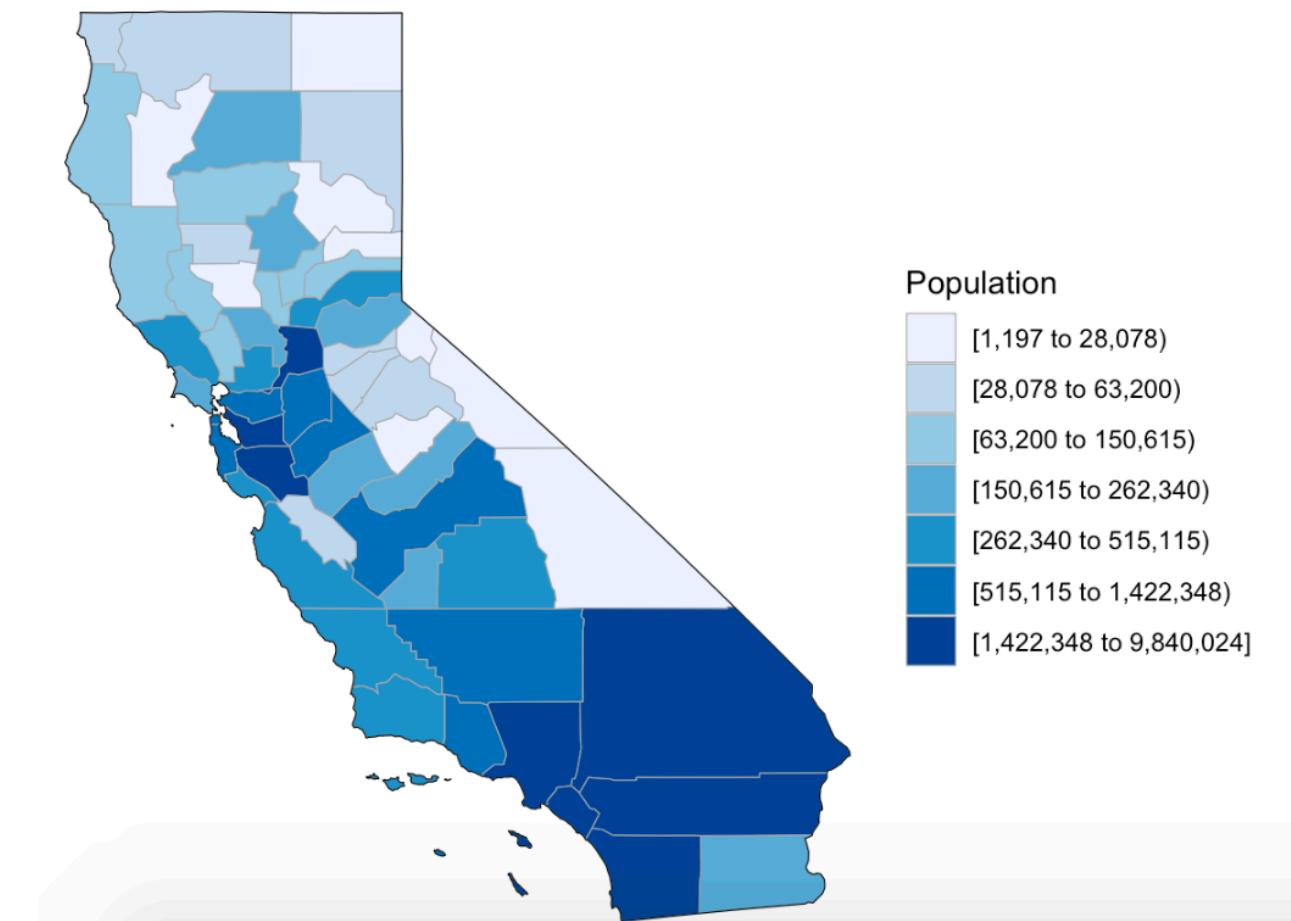
Note: the YAML portion of the document is not rendered when you click "Knit".

```
library(choroplethr)
library(choroplethrMaps)
library(stringr)

title = paste("2012 County-Level Population Estimates:", str_to_title(params$title))

data(df_pop_county)
county_choropleth(df_pop_county,
  title      = params$title,
  legend    = "Population",
  state_zoom = params$state)
```

A map of California!



The Good News

Easy and Safe

Mary
SHELLEY



Frankenstein

BIG CHEESE BOOKS

The Bad News

More Technology: Markdown, R, YAML

Mary
SHELLEY



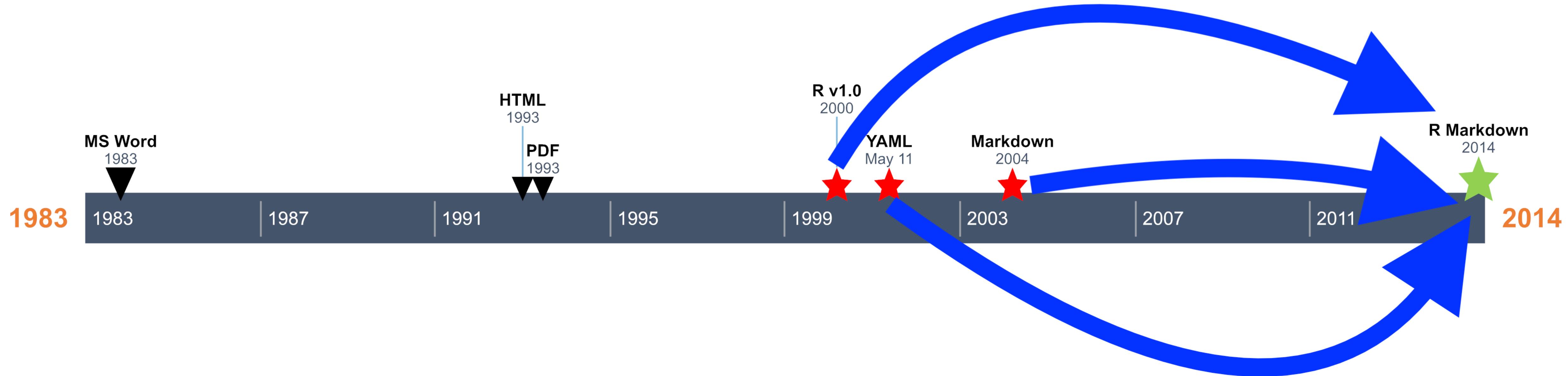
Frankenstein

BIG CHEESE BOOKS

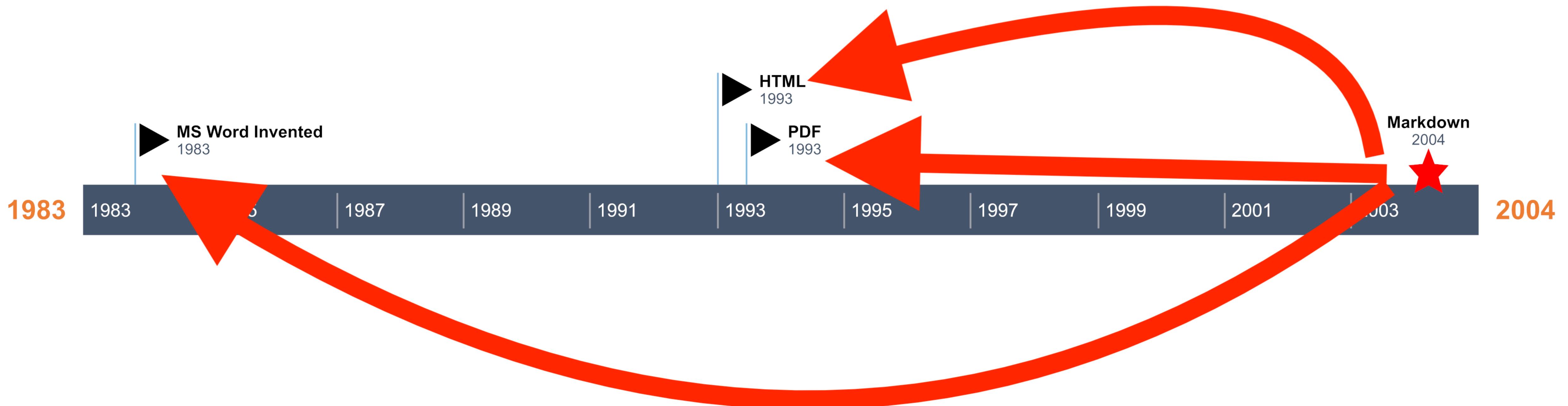
Even More Technology!

Pandoc, HTML, CSS, Javascript

Data Communication Timeline



Data Communication Timeline



Agenda

- Introduction
- **Markdown**
- R Chunks
- YAML
- Templates
- Styling

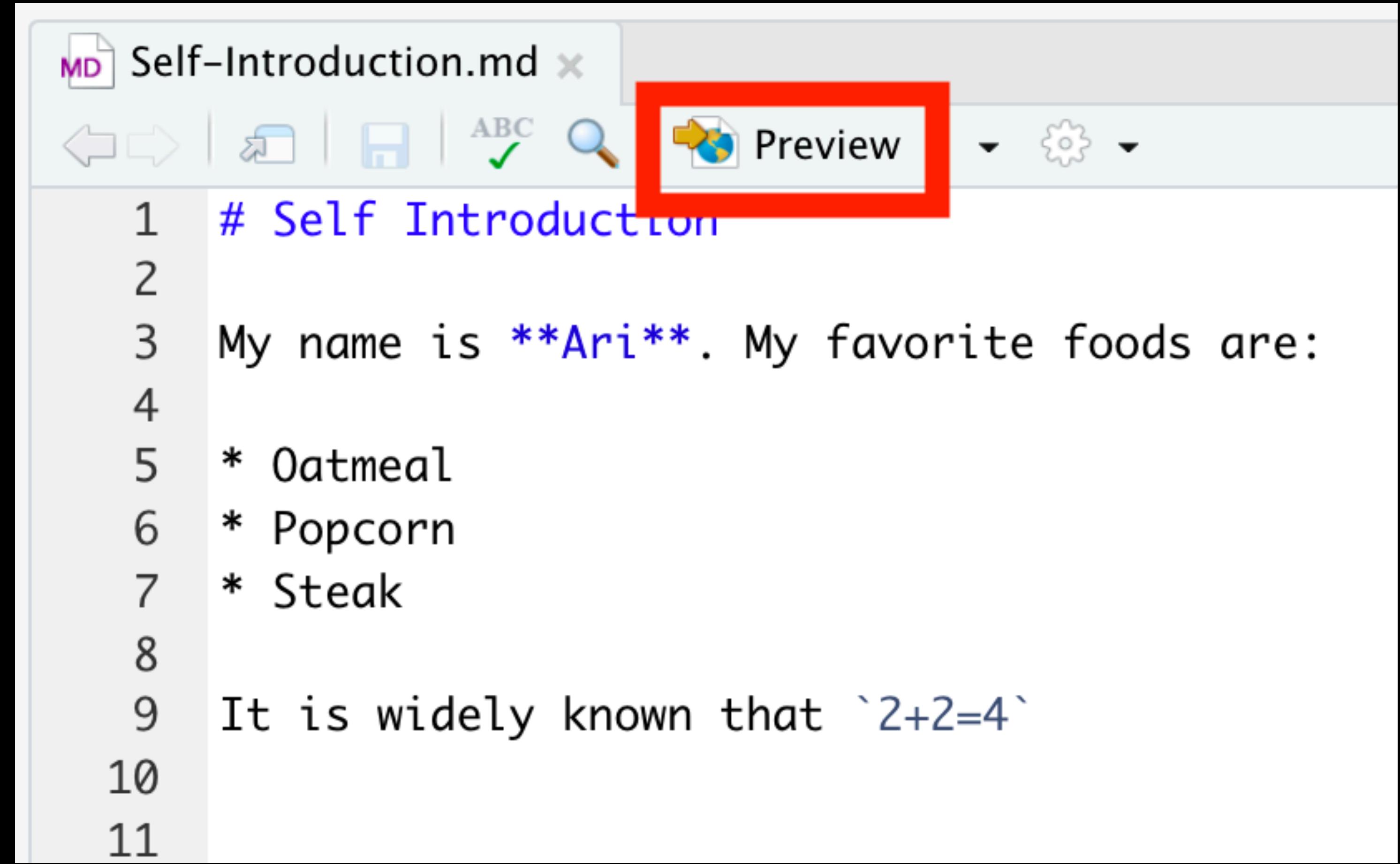
Self Introduction

My name is **Ari**. My favorite foods are:

- * Oatmeal
- * Popcorn
- * Steak

It is widely known that `2+2=4`

00-self-introduction.md



The screenshot shows a code editor window titled "Self-Introduction.md". The toolbar includes icons for back, forward, file operations, ABC, and search. A red box highlights the "Preview" button, which has a globe icon and the word "Preview". The code content is as follows:

```
1 # Self Introduction
2
3 My name is **Ari**. My favorite foods are:
4
5 * Oatmeal
6 * Popcorn
7 * Steak
8
9 It is widely known that `2+2=4`
10
11
```

"Preview" button

Self Introduction

My name is **Ari**. My favorite foods are:

- Oatmeal
- Popcorn
- Steak

It is widely known that $2+2=4$

The Output

Self Introduction

My name is **Ari**. My favorite foods are:

- Oatmeal
- Popcorn
- Steak

It is widely known that `2+2=4`

Header

Bold

List

Code

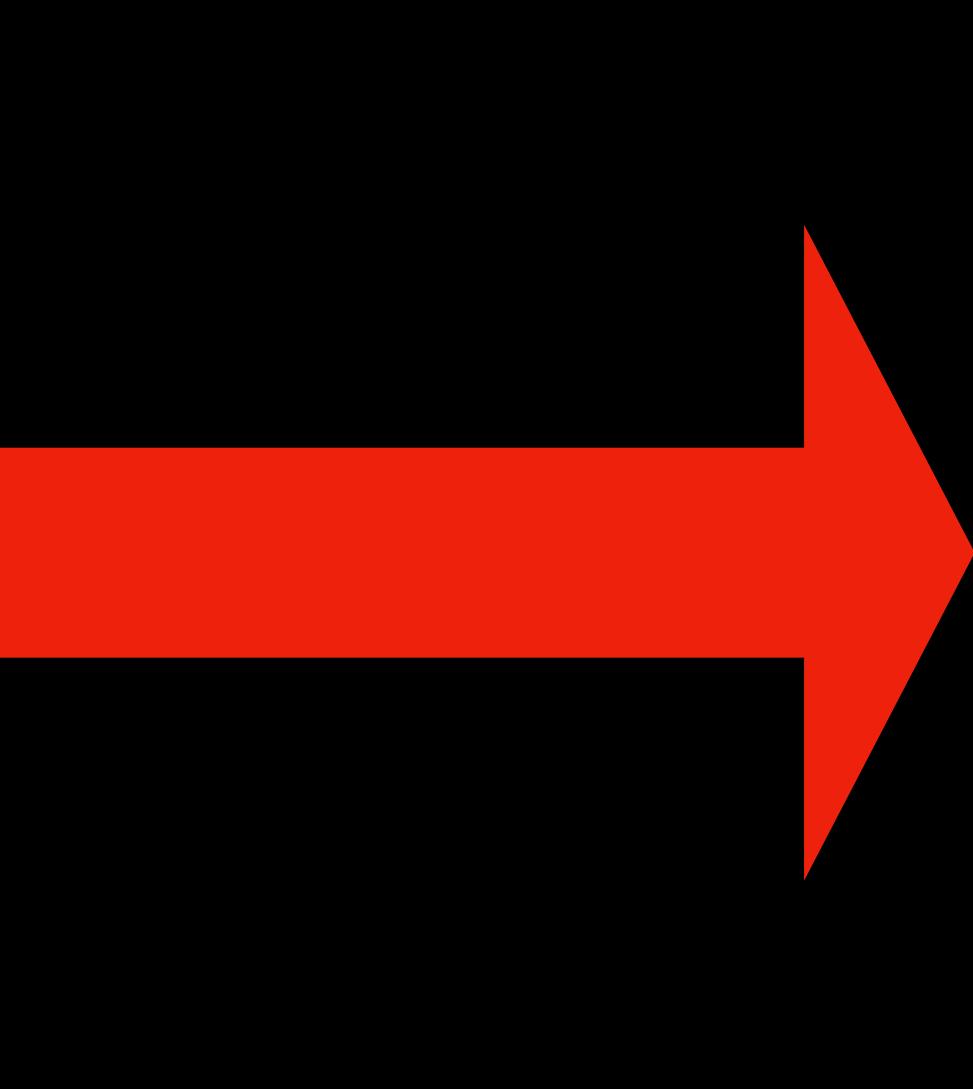
Different "Types" of text

Self Introduction

My name is ****Ari****. My favorite foods are:

- * Oatmeal
- Popcorn
- * Steak

It is widely known that ``2+2=4``



Self Introduction

My name is **Ari**. My favorite foods are:

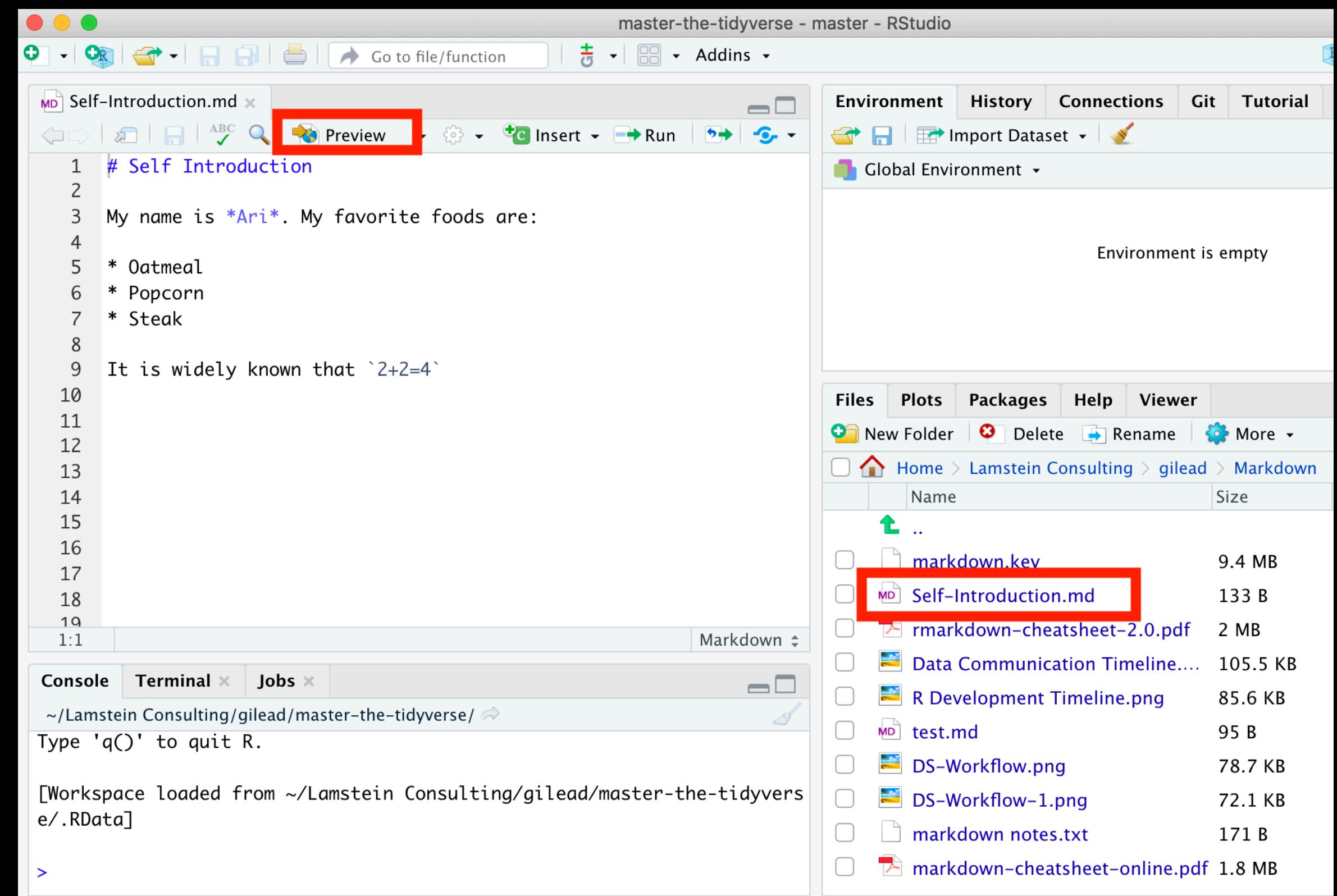
- Oatmeal
- Popcorn
- Steak

It is widely known that `2+2=4`

Input and Output

Exercise: Rendering 00-Self-Introduction.md

1. Load the file **00-Self-Introduction.md** into RStudio (click on it in the file pane).
2. Click the **Preview** button
3. *Update the file to contain your own name and favorite foods.*
4. Click the **Preview** button again.

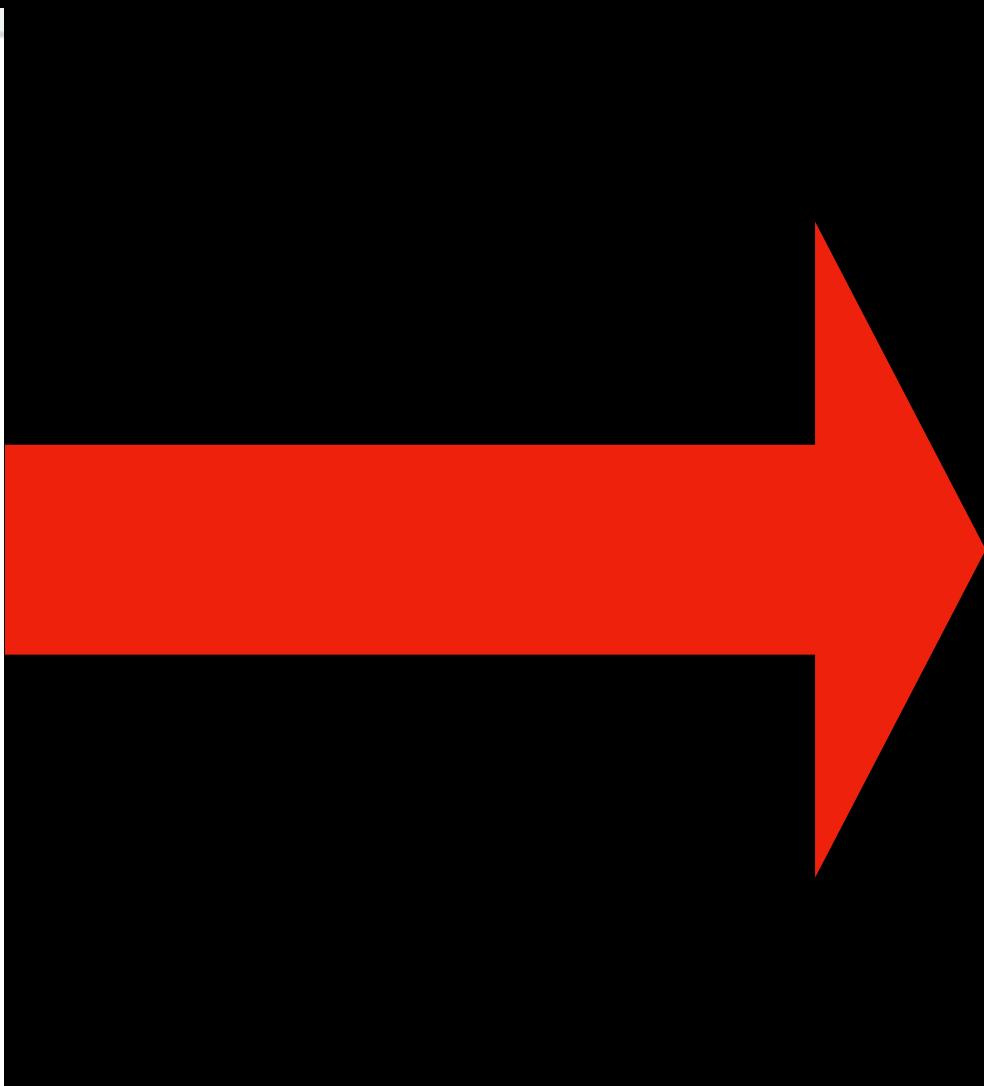


Self Introduction

My name is ****Ari****. My favorite foods are:

- * Oatmeal
- Popcorn
- * Steak

It is widely known that ``2+2=4``



Self Introduction

My name is **Ari**. My favorite foods are:

- Oatmeal
- Popcorn
- Steak

It is widely known that `2+2=4`

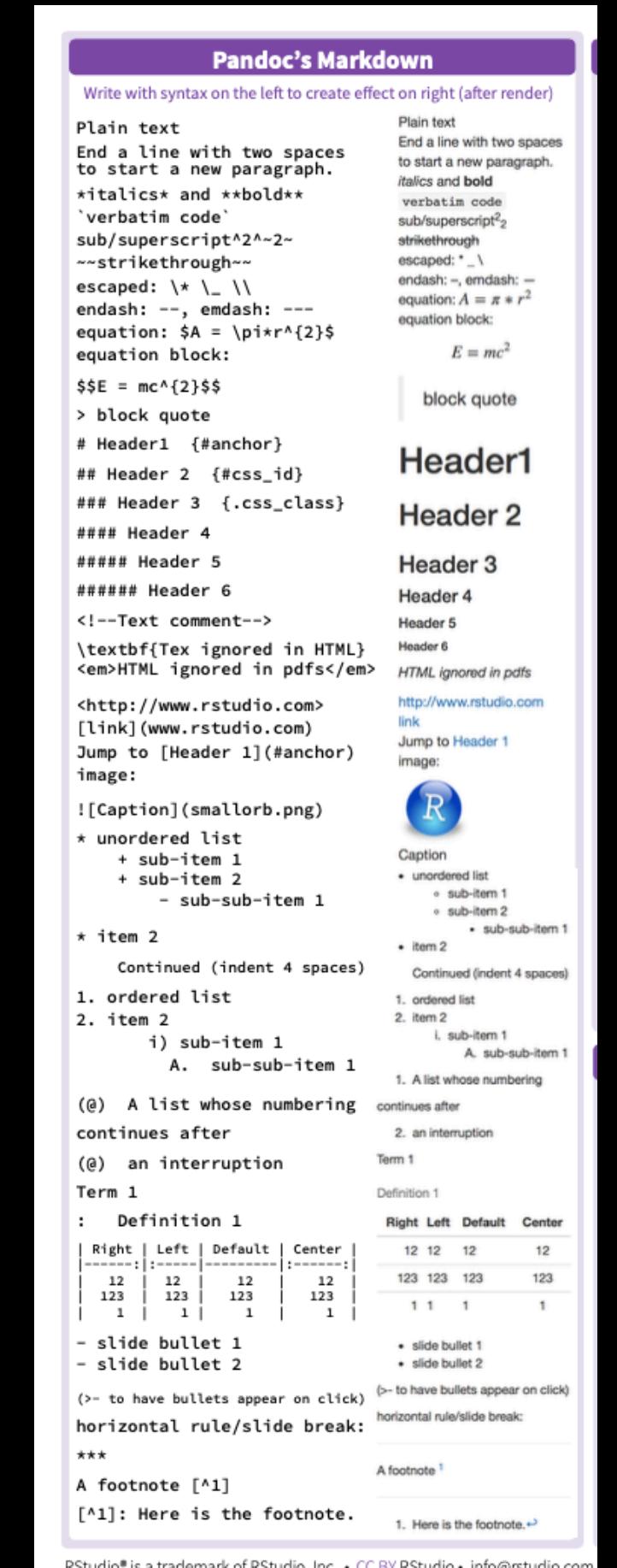
Input and Output

markdown-cheatsheet.pdf

All Markdown Formatting Options

The image shows a cheatsheet for Markdown syntax, organized into several sections:

- HEADERS**: Examples of `#`, `##`, and `#####` tags.
- LISTS**: Examples of Unordered (`* Item 1`) and Ordered (`1. Item 1`) lists.
- IMAGES**: Examples of images (`![GitHub Logo](/images/logo.png)`) and links (`[GitHub](http://github.com)`).
- EMPHASIS**: Examples of italic (`This text will be italic`), bold (`**This text will be bold**`), and combined styles (`You can combine them`).
- BLOCKQUOTES**: Examples of blockquotes, including nested ones.
- BACKSLASH ESCAPES**: A section explaining backslash escapes for characters like parentheses, hash marks, plus signs, minus signs, dots, and exclamation marks.



r-markdown-cheatsheet.pdf

All Markdown Formatting Options

Self Introduction

My name is *Ari*¹. My favorite foods are:

1. Oatmeal
2. Popcorn
3. Steak

It is widely known that $2+2=4$



1. Technically, my full name is Ari Lamstein²

More Advanced R Markdown

Embedded image, footnotes

Exercise:

Exploring Markdown

1. Open up **01-Self-Introduction.md**.
2. It has instructions for how to modify the document:
 1. Bold -> italics
 2. UL -> OL
 3. Footnote
 4. Embed Image

Self Introduction

My name is *Ari¹*. My favorite foods are:

1. Oatmeal
2. Popcorn
3. Steak

It is widely known that $2+2=4$



1. Technically, my full name is Ari Lamstein ↵

Self Introduction

My name is *Ari*[^1]. My favorite foods are:

1. Oatmeal
1. Popcorn
1. Steak

It is widely known that `2+2=4`

!□(popcorn.jpg)

[^1]: Technically, my full name is Ari Lamstein



Self Introduction

My name is Ari¹. My favorite foods are:

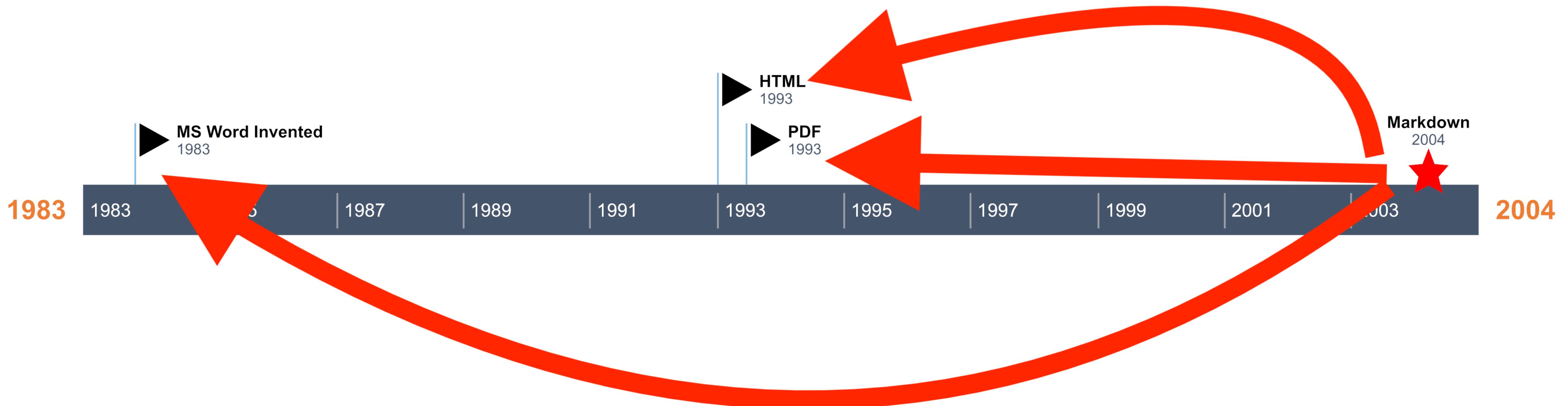
1. Oatmeal
2. Popcorn
3. Steak

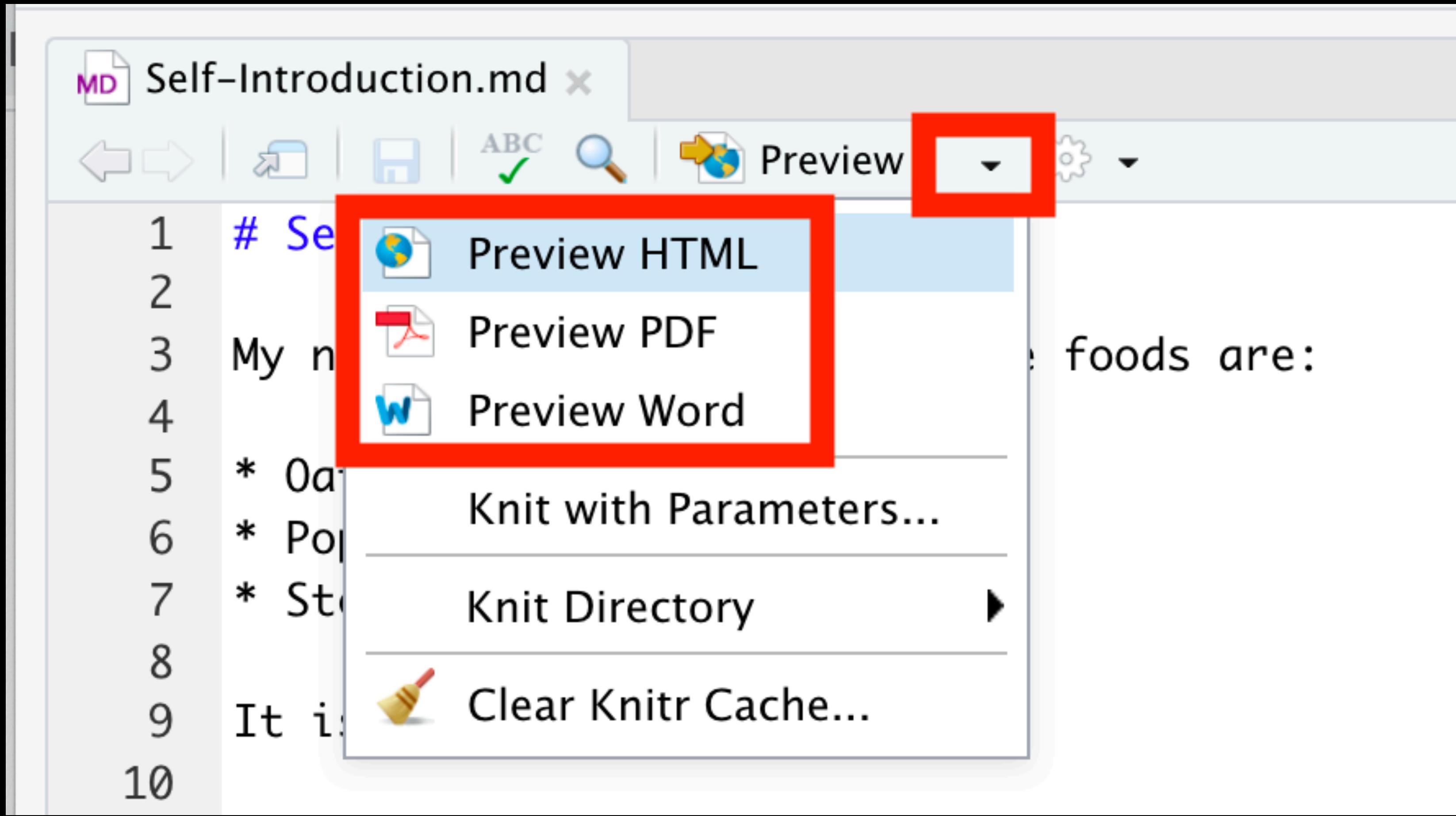
It is widely known that 2+2=4



1. Technically, my full name is Ari Lamstein

Data Communication Timeline





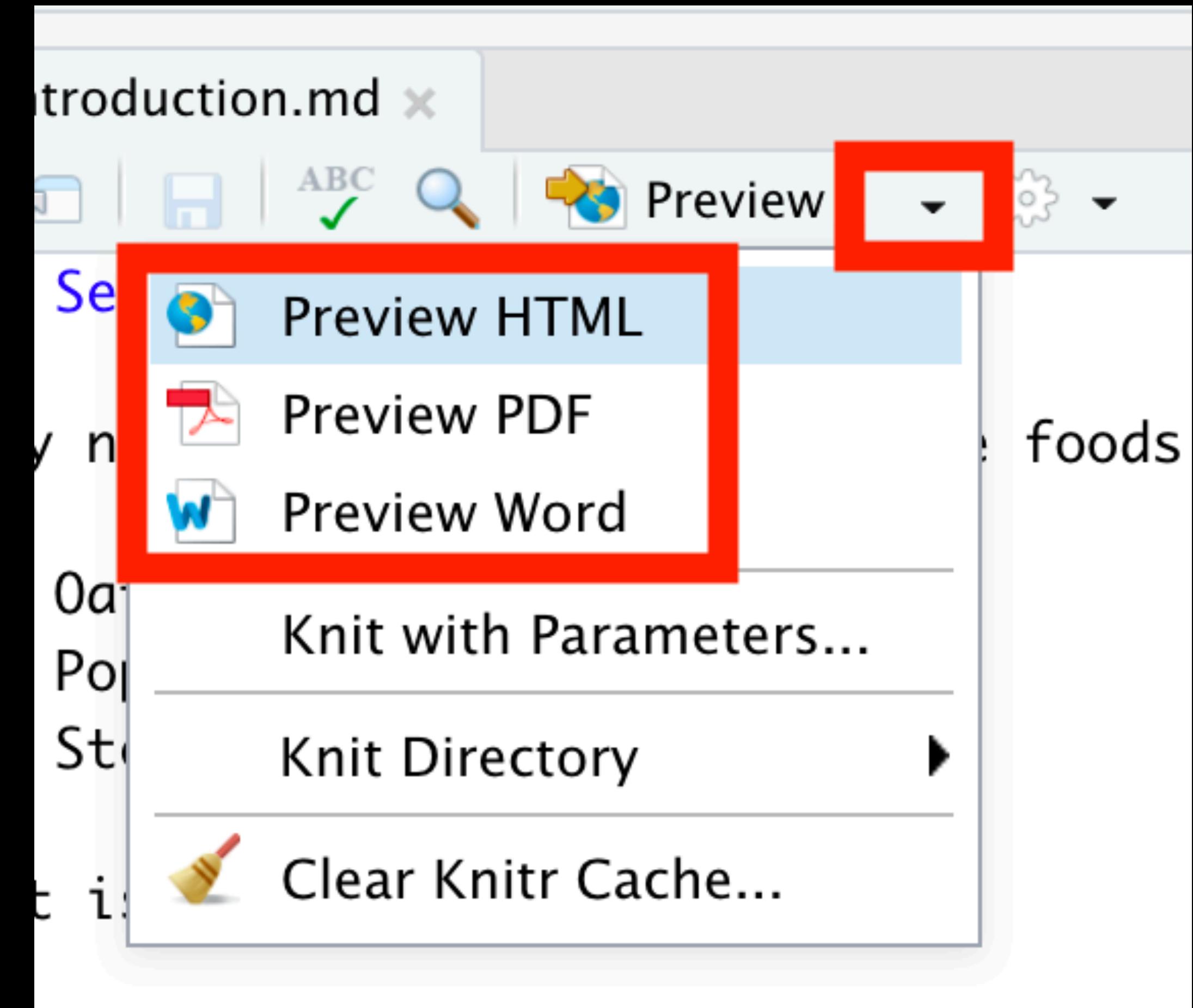
Little Dropdown Button

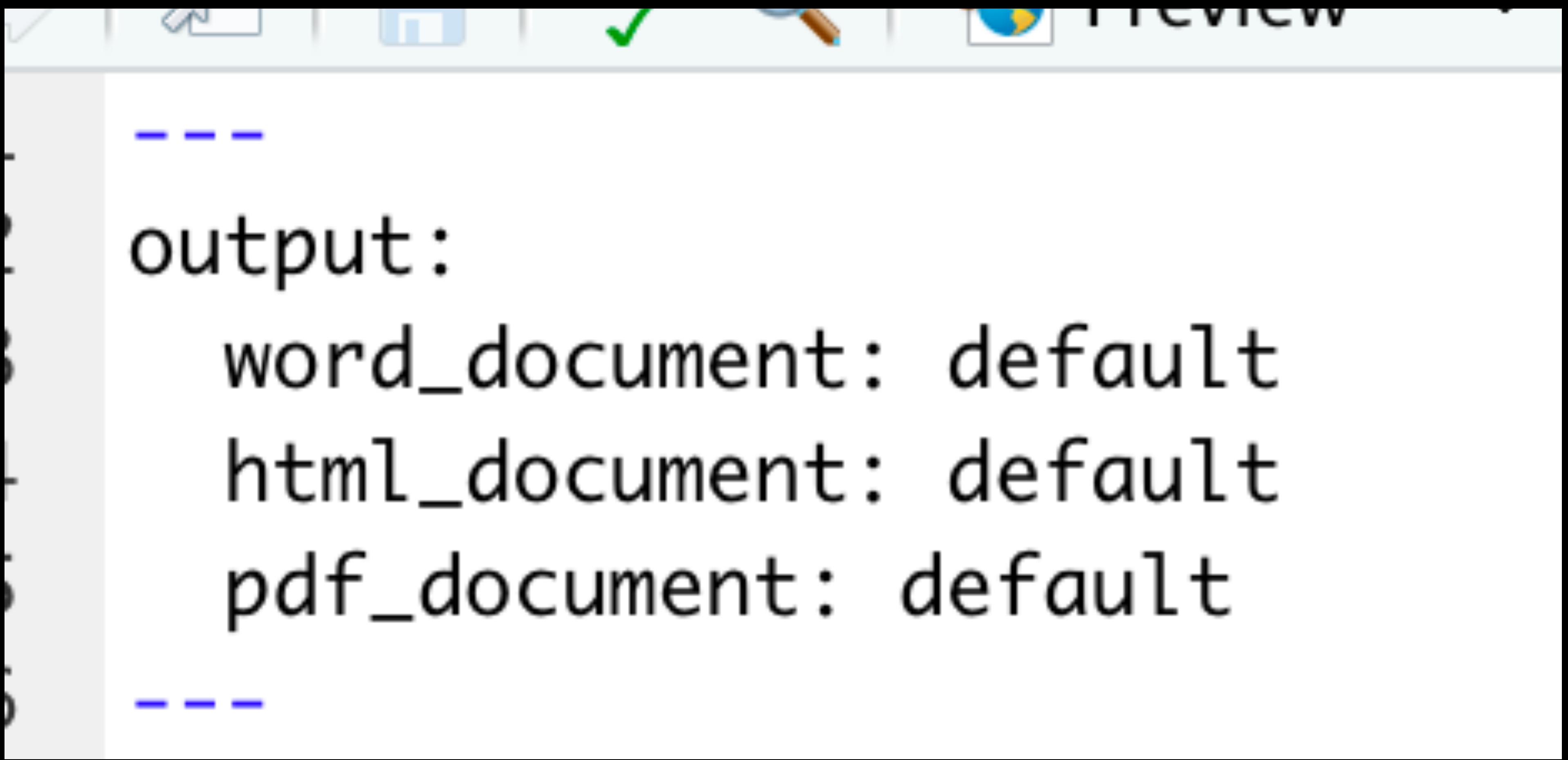
(Next to "Preview")

Exercise: Output Options

Use the "Preview" button to convert your document to HTML, PDF and Word.

Does the output look like you'd expect?





A screenshot of a text editor window titled "PREVIEW". The content area displays the following YAML configuration:

```
---  
output:  
  word_document: default  
  html_document: default  
  pdf_document: default  
---
```

YAML

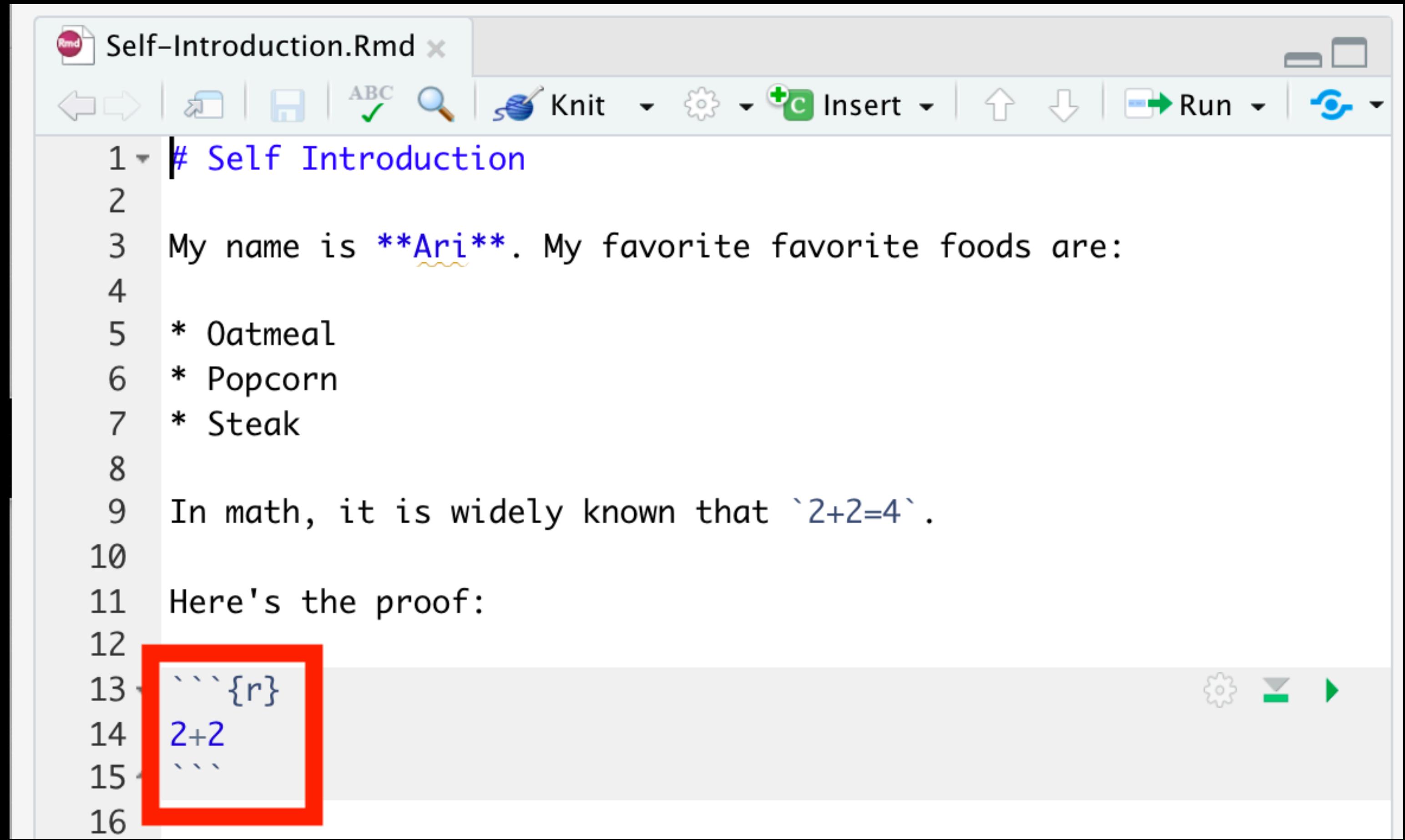
Yet Another Markup Language

Text and Styling is Markdown

*Or HTML / CSS

Agenda

- Introduction
- Markdown
- R Chunks
- YAML
- Templates
- Styling



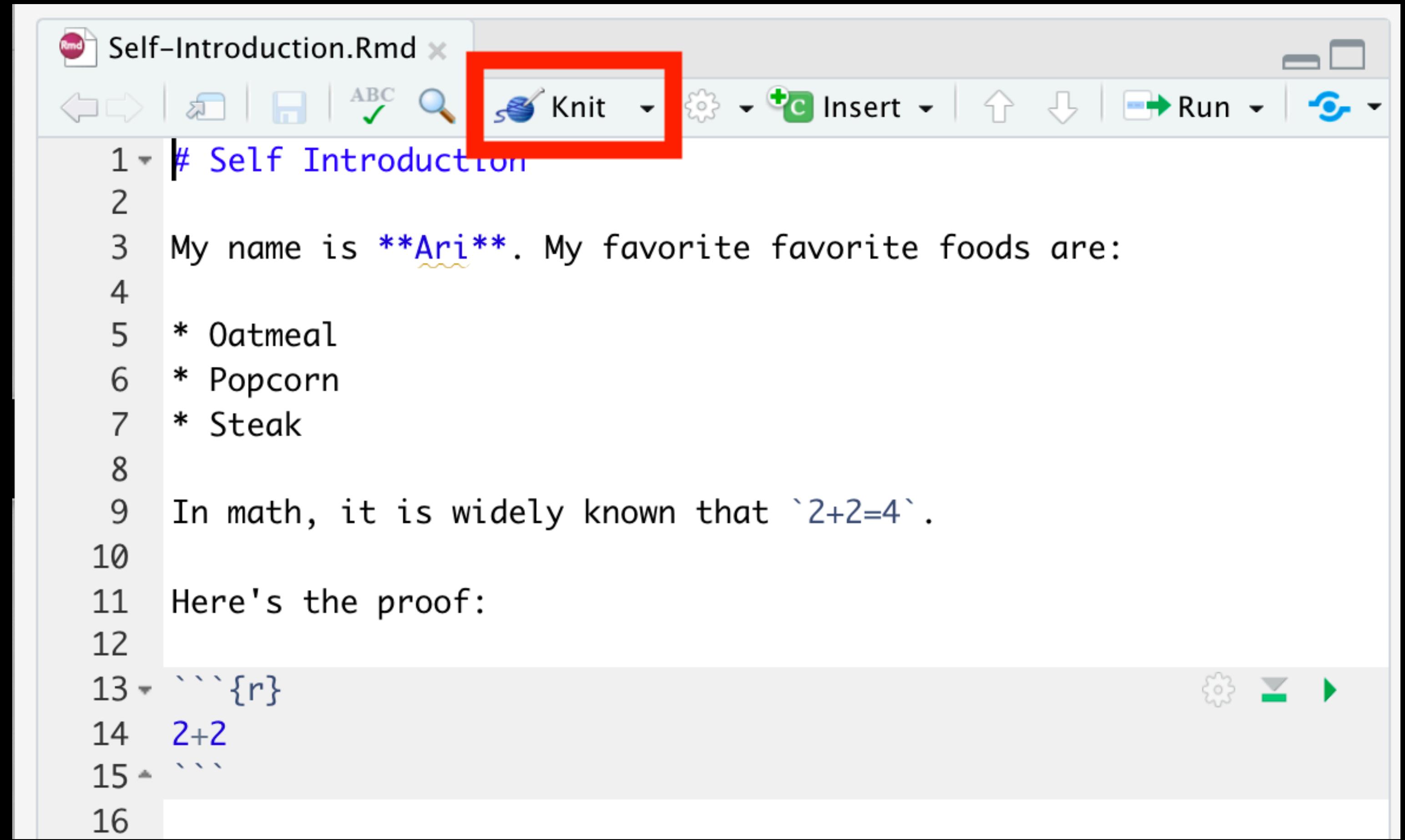
The screenshot shows the RStudio interface with a document titled "Self-Introduction.Rmd". The code editor contains the following R Markdown code:

```
1 # Self Introduction
2
3 My name is **Ari**. My favorite favorite foods are:
4
5 * Oatmeal
6 * Popcorn
7 * Steak
8
9 In math, it is widely known that `2+2=4`.
10
11 Here's the proof:
12
13 ````{r}
14 2+2
15 ````
```

The line of code `2+2` is highlighted with a red rectangle.

02-Self-Introduction.Rmd

````{r}



The screenshot shows the RStudio interface with a document titled "Self-Introduction.Rmd". The toolbar at the top includes icons for file operations, ABC, search, and various buttons. A red box highlights the "Knit" button, which has a icon of a ball of yarn and a needle. Below the toolbar, the Rmd code is displayed:

```
1 # Self Introduction
2
3 My name is **Ari**. My favorite favorite foods are:
4
5 * Oatmeal
6 * Popcorn
7 * Steak
8
9 In math, it is widely known that `2+2=4`.
10
11 Here's the proof:
12
13 ````{r}
14 2+2
15 ````
```

# "Knit", not "Preview"

knitr package

# Self Introduction

## # Self Introduction

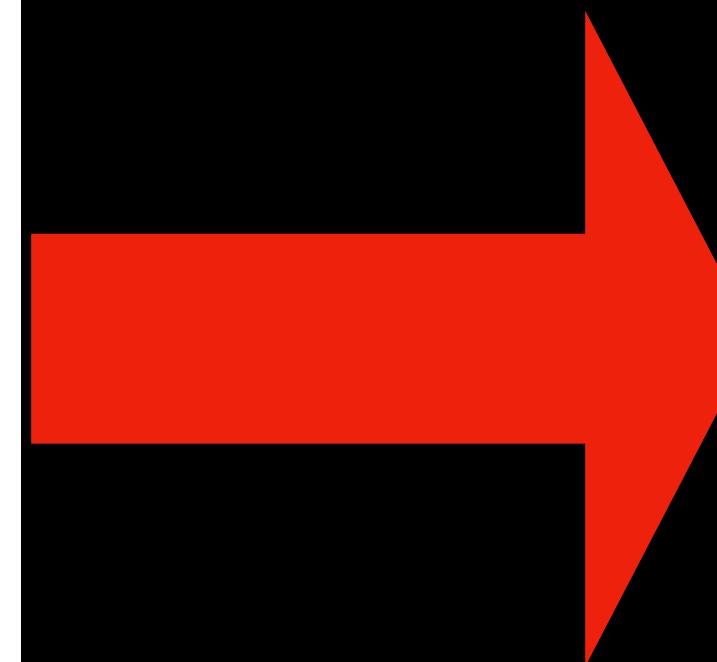
My name is \*\*Ari\*\*. My favorite favorite foods are:

- \* Oatmeal
- \* Popcorn
- \* Steak

In math, it is widely known that `2+2=4`

Here's the proof:

```
```{r}  
2+2  
```
```



My name is Ari. My favorite favorite foods are:

- Oatmeal
- Popcorn
- Steak

In math, it is widely known that  $2+2=4$

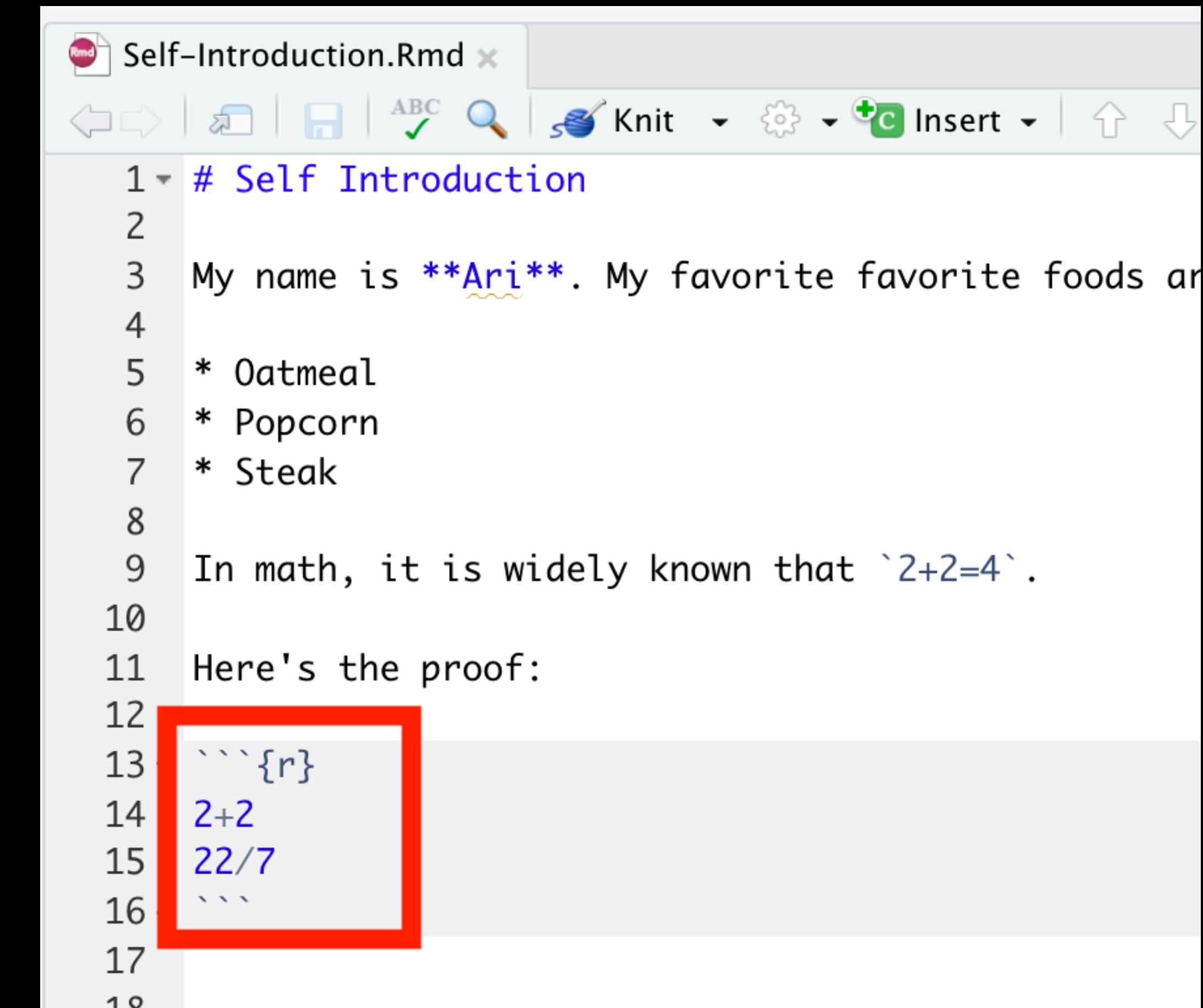
Here's the proof:

```
2+2
```

```
[1] 4
```

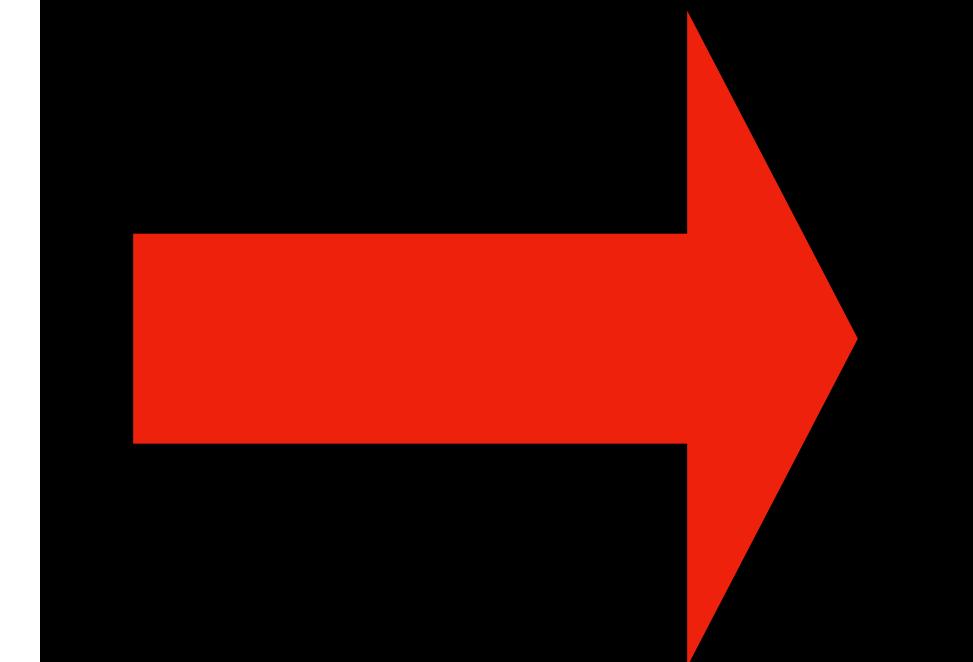
# Exercise: Modifying 02-Self-Introduction.Rmd

1. Convert the existing **02-Self-Introduction.Rmd** into HTML by clicking **Knit**.
2. Add the line **22/7** to the R chunk. Tell your partner what you expect the result to be. Click **Knit** to find out!



```
1 # Self Introduction
2
3 My name is **Ari**. My favorite favorite foods are
4
5 * Oatmeal
6 * Popcorn
7 * Steak
8
9 In math, it is widely known that `2+2=4`.
10
11 Here's the proof:
12
13 ```{r}
14 2+2
15 22/7
16 ```

17
18
```



```
Rmd Self-Introduction.Rmd x
[Navigation icons] ABC Knit Insert Run

1 # Self Introduction
2
3 My name is **Ari**. My favorite favorite foods are:
4
5 * Oatmeal
6 * Popcorn
7 * Steak
8
9 In math, it is widely known that `2+2=4`.
10
11 Here's the proof:
12
13 ````{r}
14 2+2
15 22/7
16 ````
```

# Self Introduction

My name is **Ari**. My favorite favorite foods are:

- Oatmeal
- Popcorn
- Steak

In math, it is widely known that  $2+2=4$ .

Here's the proof:

```
2+2
[1] 4
22/7
[1] 3.142857
```

# R Chunks

- ~~Chunk Basics~~
- Chunk Options

# Self Introduction

## # Self Introduction

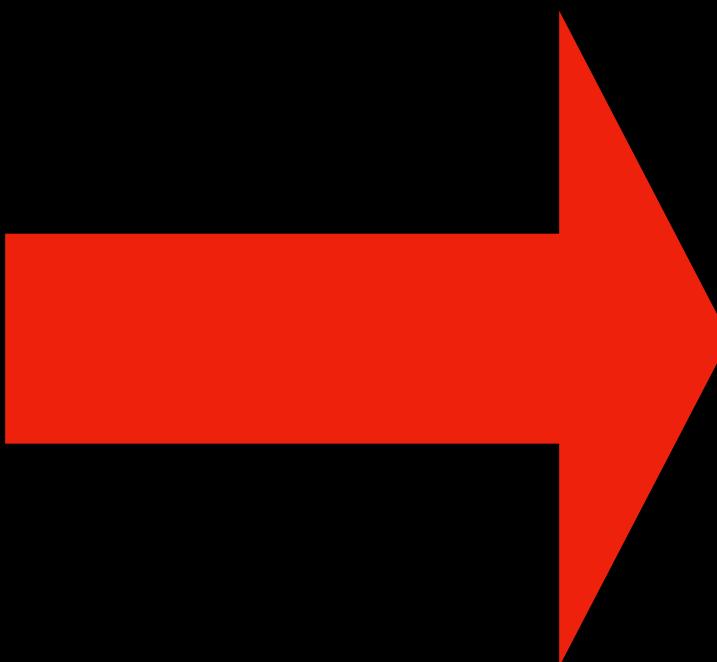
My name is \*\*Ari\*\*. My favorite favorite foods are:

- \* Oatmeal
- \* Popcorn
- \* Steak

In math, it is widely known that `2+2=4`

Here's the proof:

```
```{r}  
2+2  
```
```



My name is Ari. My favorite favorite foods are:

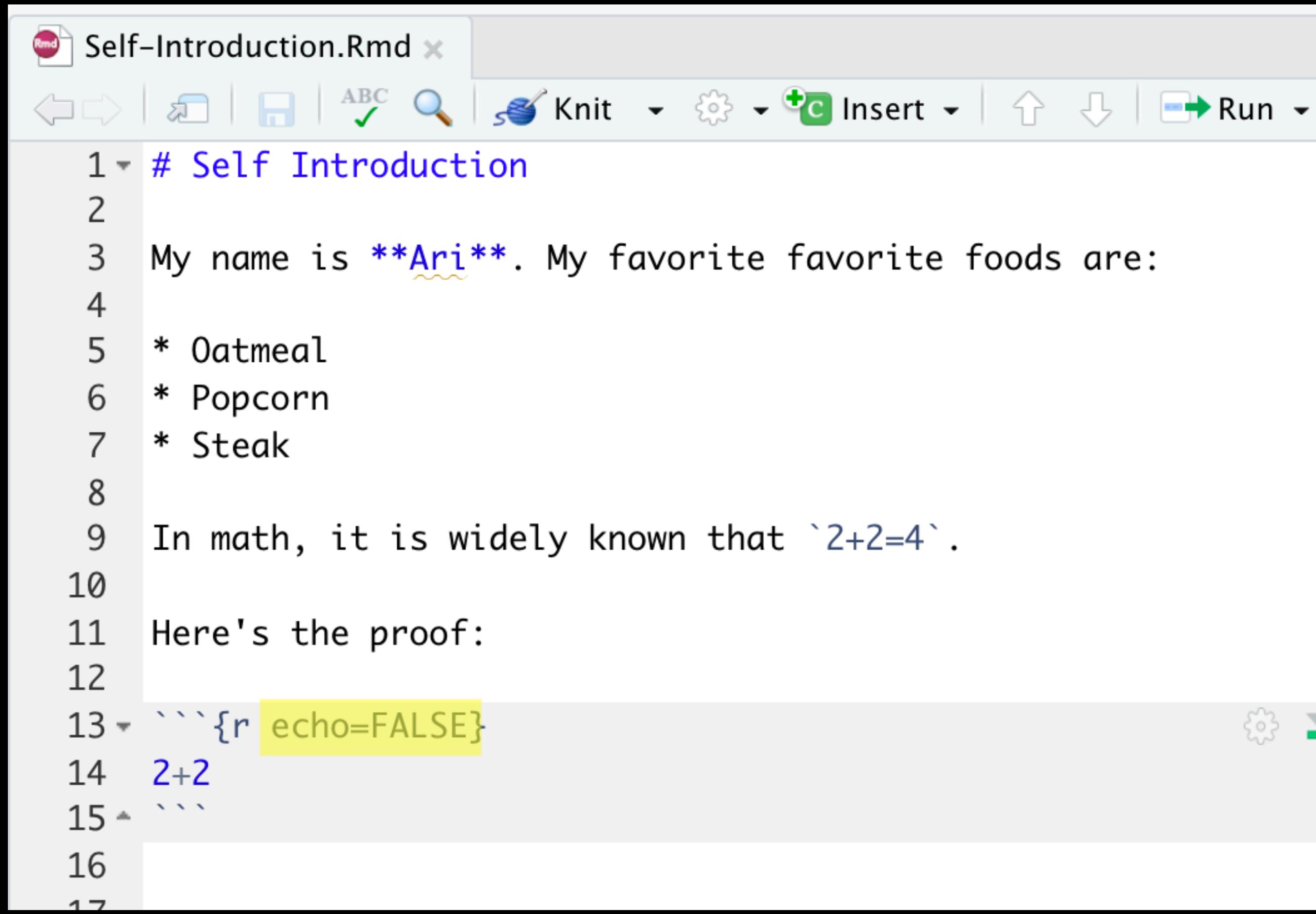
- Oatmeal
- Popcorn
- Steak

In math, it is widely known that  $2+2=4$

Here's the proof:

```
2+2
```

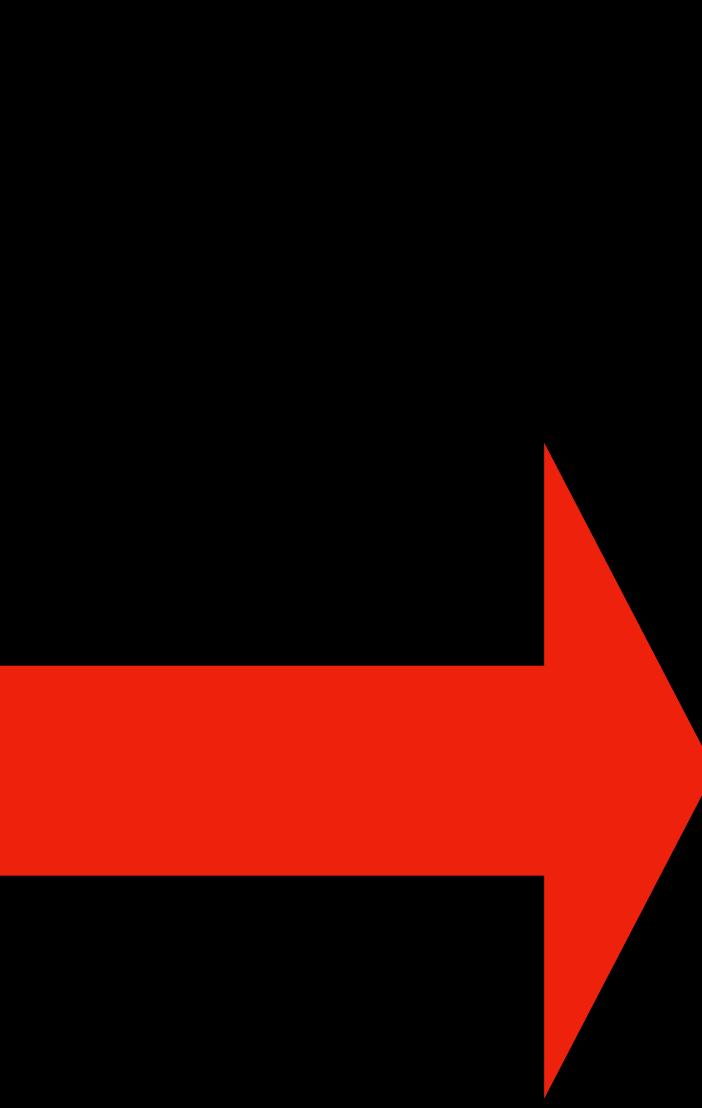
```
[1] 4
```



```
1 # Self Introduction
2
3 My name is **Ari**. My favorite favorite foods are:
4
5 * Oatmeal
6 * Popcorn
7 * Steak
8
9 In math, it is widely known that `2+2=4`.
10
11 Here's the proof:
12
13 ````{r echo=FALSE}
14 2+2
15 ````
```

# echo=FALSE

## Chunk Options



```
Self-Introduction.Rmd x
1 # Self Introduction
2
3 My name is **Ari**. My favorite favorite foods are:
4
5 * Oatmeal
6 * Popcorn
7 * Steak
8
9 In math, it is widely known that `2+2=4`.
10
11 Here's the proof:
12
13 ````{r echo=FALSE}
14 2+2
15 ````
```

# Self Introduction

My name is **Ari**. My favorite favorite foods are:

- Oatmeal
- Popcorn
- Steak

In math, it is widely known that  $2+2=4$ .

Here's the proof:

```
[1] 4
```

| Embed code with knitr syntax                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Inline code</b><br/>Insert with `r &lt;code&gt;`. Results appear as text without code.</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Built with<br/>`r getRversion()`</div>  <div style="border: 1px solid black; padding: 2px; display: inline-block;">Built with 3.2.3</div> <p><b>Important chunk options</b></p> <ul style="list-style-type: none"> <li><b>cache</b> - cache results for future knits (default = FALSE)</li> <li><b>cache.path</b> - directory to save cached results in (default = "cache/")</li> <li><b>child</b> - file(s) to knit and then include (default = NULL)</li> <li><b>collapse</b> - collapse all output into single block (default = FALSE)</li> <li><b>comment</b> - prefix for each line of results (default = '##')</li> </ul> <p>Options not listed above: R.options, aniopts, autodep, background, cache.comments, cache.lazy, cache.rebuild, cache.vars, dev, dev.args, dpi, engine.opts, engine.path, fig.asp, fig.env, fig.ext, fig.keep, fig.lp, fig.path, fig.process, fig.retina, fig.scap, fig.show, fig.showtext, fig.subcap, interval, out.extra, out.height, out.width, prompt, purl, ref.label, render, size, split, tidy.opts</p> | <p><b>Code chunks</b><br/>One or more lines surrounded with ```{r} and ```. Place chunk options within curly braces, after r. Insert with C</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">```{r echo=TRUE}<br/>getRversion()<br/>```</div>  <div style="border: 1px solid black; padding: 2px; display: inline-block;">getRversion()<br/>## [1] '3.2.3'</div> | <p><b>Global options</b><br/>Set with knitr::opts_chunk\$set(), e.g.</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">```{r include=FALSE}<br/>knitr::opts_chunk\$set(echo = TRUE)<br/>```</div>                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                |
| <p><b>cache</b> - cache results for future knits (default = FALSE)</p> <p><b>cache.path</b> - directory to save cached results in (default = "cache/")</p> <p><b>child</b> - file(s) to knit and then include (default = NULL)</p> <p><b>collapse</b> - collapse all output into single block (default = FALSE)</p> <p><b>comment</b> - prefix for each line of results (default = '##')</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p><b>dependson</b> - chunk dependencies for caching (default = NULL)</p> <p><b>echo</b> - Display code in output document (default = TRUE)</p> <p><b>engine</b> - code language used in chunk (default = 'R')</p> <p><b>error</b> - Display error messages in doc (TRUE) or stop render when errors occur (FALSE) (default = FALSE)</p> <p><b>eval</b> - Run code in chunk (default = TRUE)</p>                                                                                  | <p><b>fig.align</b> - 'left', 'right', or 'center' (default = 'default')</p> <p><b>fig.cap</b> - figure caption as character string (default = NULL)</p> <p><b>fig.height, fig.width</b> - Dimensions of plots in inches</p> <p><b>highlight</b> - highlight source code (default = TRUE)</p> <p><b>include</b> - Include chunk in doc after running (default = TRUE)</p> | <p><b>message</b> - display code messages in document (default = TRUE)</p> <p><b>results</b> (default = 'markup')<br/>'asis' - passthrough results<br/>'hide' - do not display results<br/>'hold' - put all results below all code</p> <p><b>tidy</b> - tidy code for display (default = FALSE)</p> <p><b>warning</b> - display code warnings in document (default = TRUE)</p> |

# r-markdown-cheatsheet.pdf

## All Chunk Options

# Exercise: Chunk Options

1. Convert the existing [01-Self-Introduction.Rmd](#) into HTML by clicking Knit.
2. Set the Chunk Option `eval=FALSE` and rerun Knit. What happens?
3. Try to set both `echo=FALSE` and `eval=FALSE` on the same Chunk. Click Knit again. (Trick question).

```
Self Introduction
```

My name is **\*\*Ari\*\***. My favorite favorite foo

- \* Oatmeal
- \* Popcorn
- \* Steak

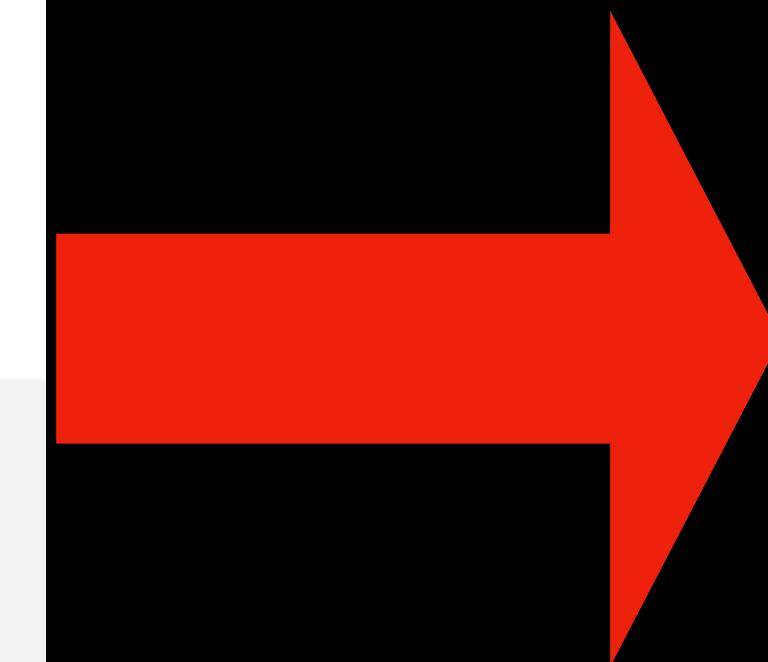
In math, it is widely known that `2+2=4`

Here's the proof:

```
```{r}
2+2
```
```

Here's the proof:

```
```{r echo=FALSE eval=FALSE}
2+2
```
```



Console Terminal × R Markdown × Jobs ×

.../For Students/01-Self-Introduction.Rmd

```
processing file: 01-Self-Introduction.Rmd
(*) NOTE: I saw chunk options "echo=FALSE eval=FALSE"
please go to https://yihui.org/knitr/options
(it is likely that you forgot to quote "character")
Error in parse(text = code, keep.source = FALSE)
<text>:1:19: unexpected symbol
1: alist(echo=FALSE eval
 ^
Calls: <Anonymous> ... parse_params -> withCallingHandlers
Execution halted
```

# Error!

Missing ,

# Self Introduction

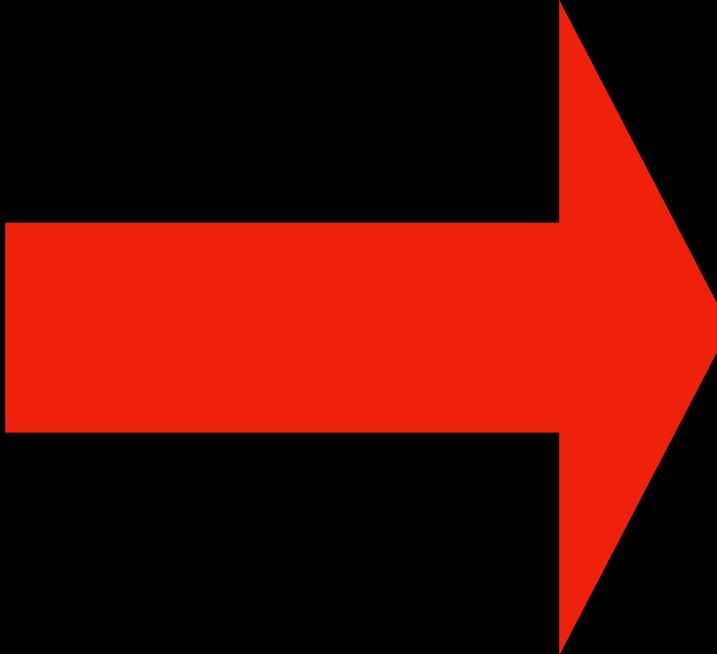
My name is **Ari**. My favorite favorite foods are:

- Oatmeal
- Popcorn
- Steak

In math, it is widely known that  $2+2=4$ .

Here's the proof:

```
```{r echo=FALSE, eval=FALSE}  
2+2  
```
```



No Echo, no Eval -> No Output

# R Chunks

- ~~Chunk Basics~~
- ~~Chunk Options~~
- Errors

# Exercise: Errors

1. Load the file **03-Self-Introduction-errors.Rmd**
2. Click **Knit**. Note that there is an error.
3. Try to fix all errors. There are 3.
4. Work with your partner!

The screenshot shows the RStudio interface with an R Markdown file named "Self-Introduction-errors.Rmd". The code contains several errors, particularly in the 17th line where it tries to run R code within a character string. The console window at the bottom shows the error message: "Line 14 Error in parse(text = x, srcfile = src) : attempt to use zero-length variable name Call <Anonymous> ... <Anonymous> -> parse\_all -> parse\_all.character -> parse Execution halted".

```
1 # Self Introduction
2
3 My name is **Ari**. My favorite favorite foods are:
4
5 * Oatmeal
6 * Popcorn
7 * Steak
8
9 In math, it is widely known that `2+2=4`.
10
11 Here's the proof:
12
13 ````{r}
14 2+2
15
16
17 ````{r}
18 #library(tidyverse)
19 ggplot(data = mpg) +
20 geom_point(mapping = aes(x = displ, y = hwy))
21 ````
```

18:2 C Chunk 1

Console Terminal × R Markdown × Jobs ×

.../For Students/Self-Introduction-errors.Rmd

✗ Line 14 Error in parse(text = x, srcfile = src) : attempt to use zero-length variable name Call <Anonymous> ... <Anonymous> -> parse\_all -> parse\_all.character -> parse Execution halted

A screenshot of the RStudio interface. The code editor shows the following R code:

```
10
11 Here's the proof:
12
13 ````{r}
14 2+2
15 ``
16
17 ````{r}
18 #library(tidyverse)
19 ggplot(data = mpg) +
20 geom_point(mapping = aes(x = displ, y = hwy))
21 ````
```

A red arrow points from the error message in the console to the opening brace of the second code chunk on line 13.

The RStudio interface includes a toolbar at the top with icons for settings, zoom, and execution. Below the code editor is a status bar showing "18:2" and tabs for "Chunk 1" and "R Markdown". The bottom panel shows the "Console" tab active, displaying the error message:

.../For Students/Self-Introduction-errors.Rmd  
Line 14 Error in parse(text = x, srcfile = src) : attempt to use zero-length variable name Calls:  
<Anonymous> ... <Anonymous> -> parse\_all -> parse\_all.character -> parse Execution halted

# Invalid Chunk Syntax

```

A screenshot of the RStudio interface. The code editor at the top shows the following R code:

```
16
17 - ````{r}
18 # library(tidyverse)
19 ggplot(data = mpg) +
20   geom_point(mapping = aes(x = displ, y = hwy))
21 ````
```

The code editor has tabs for 'Console', 'Terminal', 'R Markdown', and 'Jobs'. The 'R Markdown' tab is selected. Below the code editor is the 'Output' pane, which displays the following error message:

18:3 | C Chunk 2 | R Markdown |

.../For Students/Self-Introduction-errors.Rmd

3 Line 18 Error in ggplot(data = mpg) : could not find function "ggplot" Calls: <Anonymous> ... handle ->
withCallingHandlers -> withVisible -> eval -> eval Execution halted

library(tidyverse)

or library(ggplot2)

Self Introduction

My name is **Ari*. My favorite favorite foods are:

- Oatmeal
- Popcorn
- Steak

Not technically an "Error"

```
library(tidyverse)
```

```
## — Attaching packages —
```

```
tidyverse 1.3.0 —
```

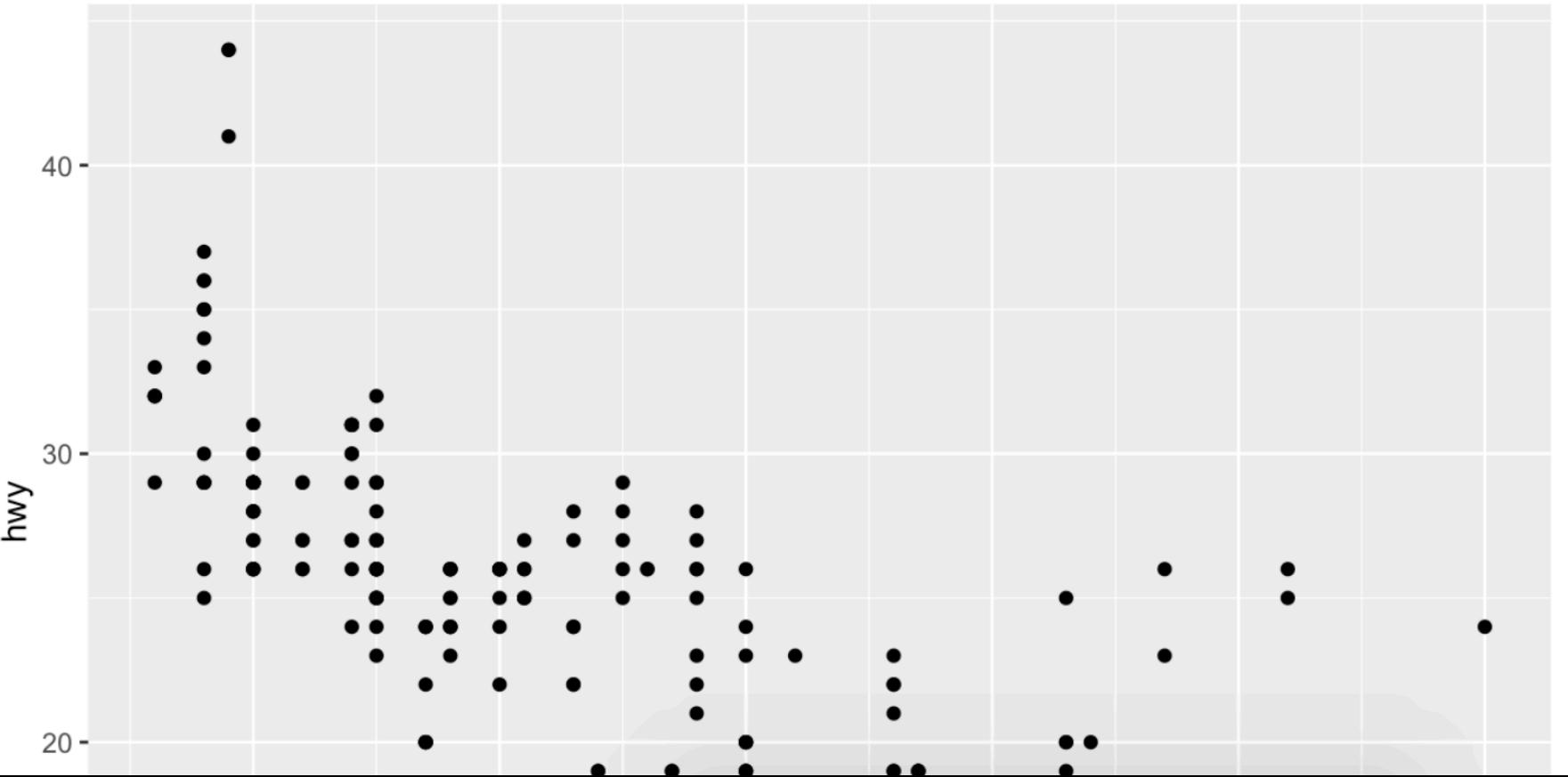
```
## ✓ ggplot2 3.3.1      ✓ purrr   0.3.4  
## ✓ tibble  3.0.1      ✓ dplyr    1.0.0  
## ✓ tidyverse 1.1.0     ✓ stringr 1.4.0  
## ✓ readr   1.3.1      ✓ forcats 0.5.0
```

```
## — Conflicts —
```

```
tidyverse_conflicts() —
```

```
## x dplyr::filter()  masks stats::filter()  
## x dplyr::lag()    masks stats::lag()
```

```
ggplot(data = mpg) +  
  geom_point(mapping = aes(x = displ, y = hwy))
```



What's this?

And how can I remove it?

Embed code with knitr syntax

Inline code

Insert with `r <code>`. Results appear as text without code.

Built with
`r getRversion()`

→ Built with 3.2.3

Important chunk options

cache - cache results for future knits
(default = FALSE)

cache.path - directory to save cached
results in (default = "cache/")

child - file(s) to knit and then include
(default = NULL)

collapse - collapse all output into single
block (default = FALSE)

comment - prefix for each line of results
(default = '##')

Options not listed above: R.options, aniopts, autodep, background, cache.comments, cache.lazy, cache.rebuild, cache.vars, dev, dev.args, dpi, engine.opts, engine.path, fig.asp, fig.env, fig.ext, fig.keep, fig.lp, fig.path, fig.pos, fig.process, fig.retina, fig.scap, fig.show, fig.showtext, fig.subcap, interval, out.extra, out.height, out.width, prompt, purl, ref.label, render, size, split, tidy.opts

Code chunks

One or more lines surrounded
with ```{r} and ```. Place
chunk options within curly
braces, after r. Insert with C

```
```{r echo=TRUE}  
getRversion()
```
```

```
getRversion()  
## [1] '3.2.3'
```

dependson - chunk dependencies for
caching (default = NULL)

echo - Display code in output document
(default = TRUE)

engine - code language used in chunk
(default = 'R')

error - Display error messages in doc
(TRUE) or stop render when errors occur
(FALSE) (default = FALSE)

eval - Run code in chunk (default =
TRUE)

fig.align - 'left', 'right', or 'center' (default
= 'default')

fig.cap - figure caption as character
string (default = NULL)

fig.height, fig.width - Dimensions of
plots in inches

highlight - highlight source code
(default = TRUE)

include - Include chunk in doc after
running (default = TRUE)

Global options

Set with knitr::opts_chunk\$set(), e.g.

```
```{r include=FALSE}  
knitr::opts_chunk$set(echo = TRUE)
```
```

message - display code messages in
document (default = TRUE)

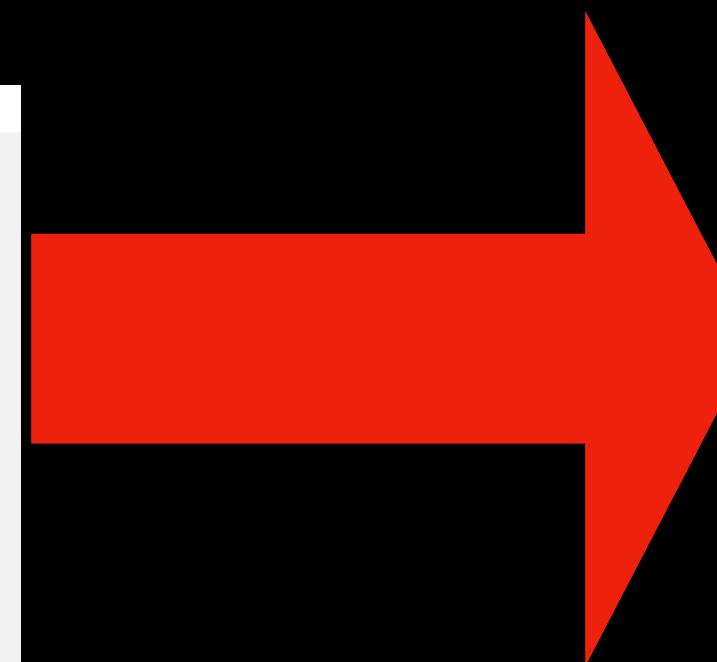
results (default = 'markup')
'asis' - passthrough results
'hide' - do not display results
'hold' - put all results below all code

tidy - tidy code for display (default =
FALSE)

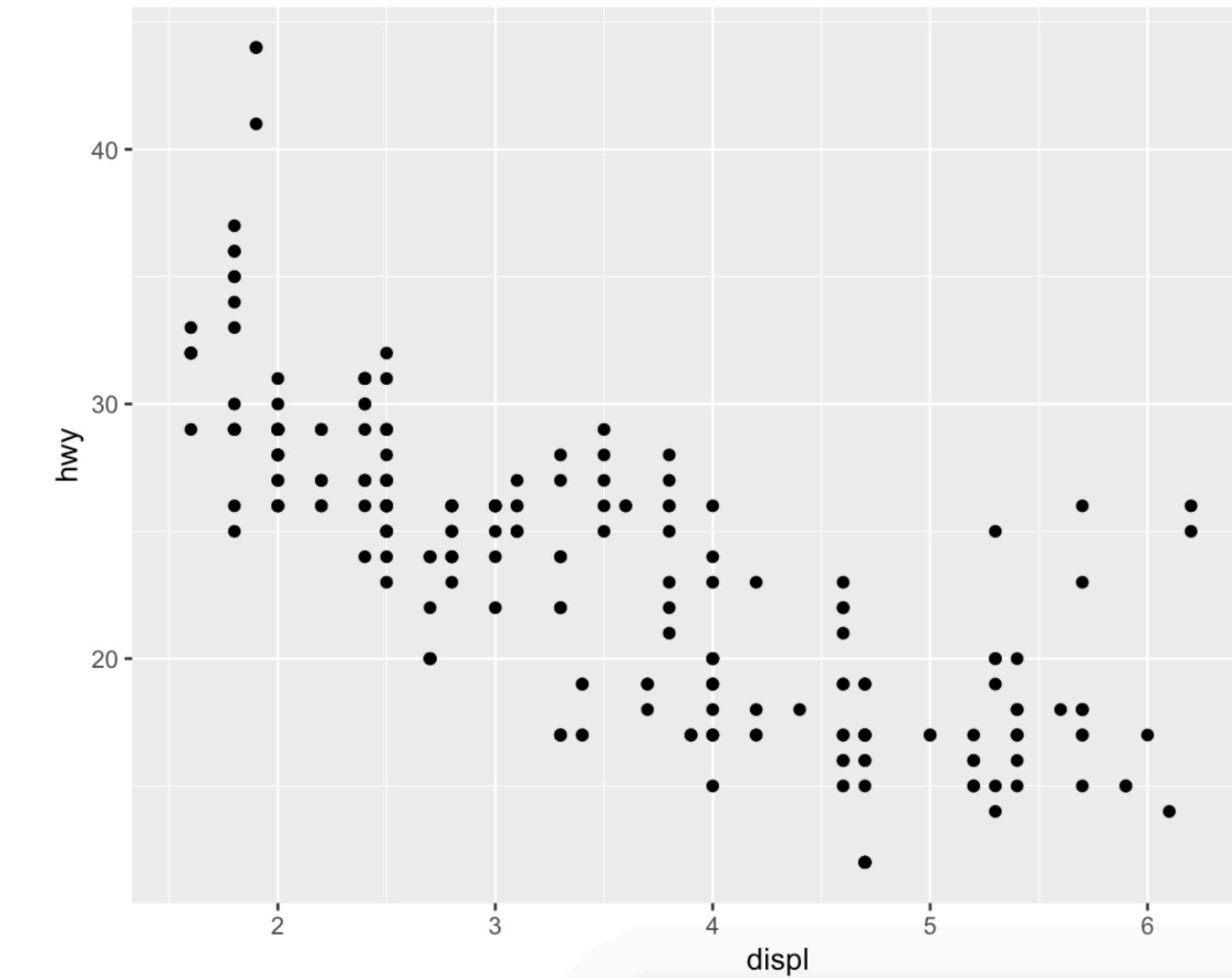
warning - display code warnings in
document (default = TRUE)

```
```{r message=FALSE}
library(tidyverse)
ggplot(data = mpg) +
 geom_point(mapping = aes(x = displ, y = hwy))
```

```



```
library(tidyverse)
ggplot(data = mpg) +
  geom_point(mapping = aes(x = displ, y = hwy))
```



message=FALSE

No diagnostic messages

Console

Terminal ×

R Markdown ×

Jobs ×



.../For Students/Self-Introduction-errors.Rmd

```
rmarkdown-str95911f390ef0.html --mathjax --variable 'mathjax-url:https://mathjs?config=TeX-AMS-MML_HTMLorMML' --lua-filter /Library/Frameworks/R.framework/y/rmarkdown/rmd/lua/pagebreak.lua --lua-filter /Library/Frameworks/R.framework/y/rmarkdown/rmd/lua/latex-div.lua  
output file: Self-Introduction-errors.knit.md
```

[WARNING] This document format requires a nonempty <title> element.
Please specify either 'title' or 'pagetitle' in the metadata,
e.g. by using --metadata pagetitle="..." on the command line.
Falling back to 'Self-Introduction-errors.utf8'

Output created: Self-Introduction-errors.html

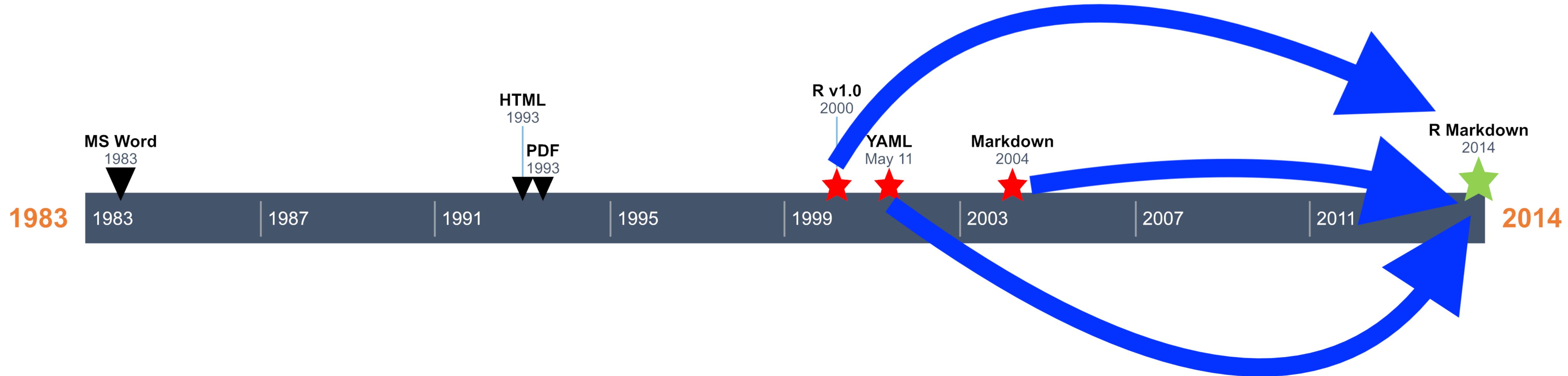
title?

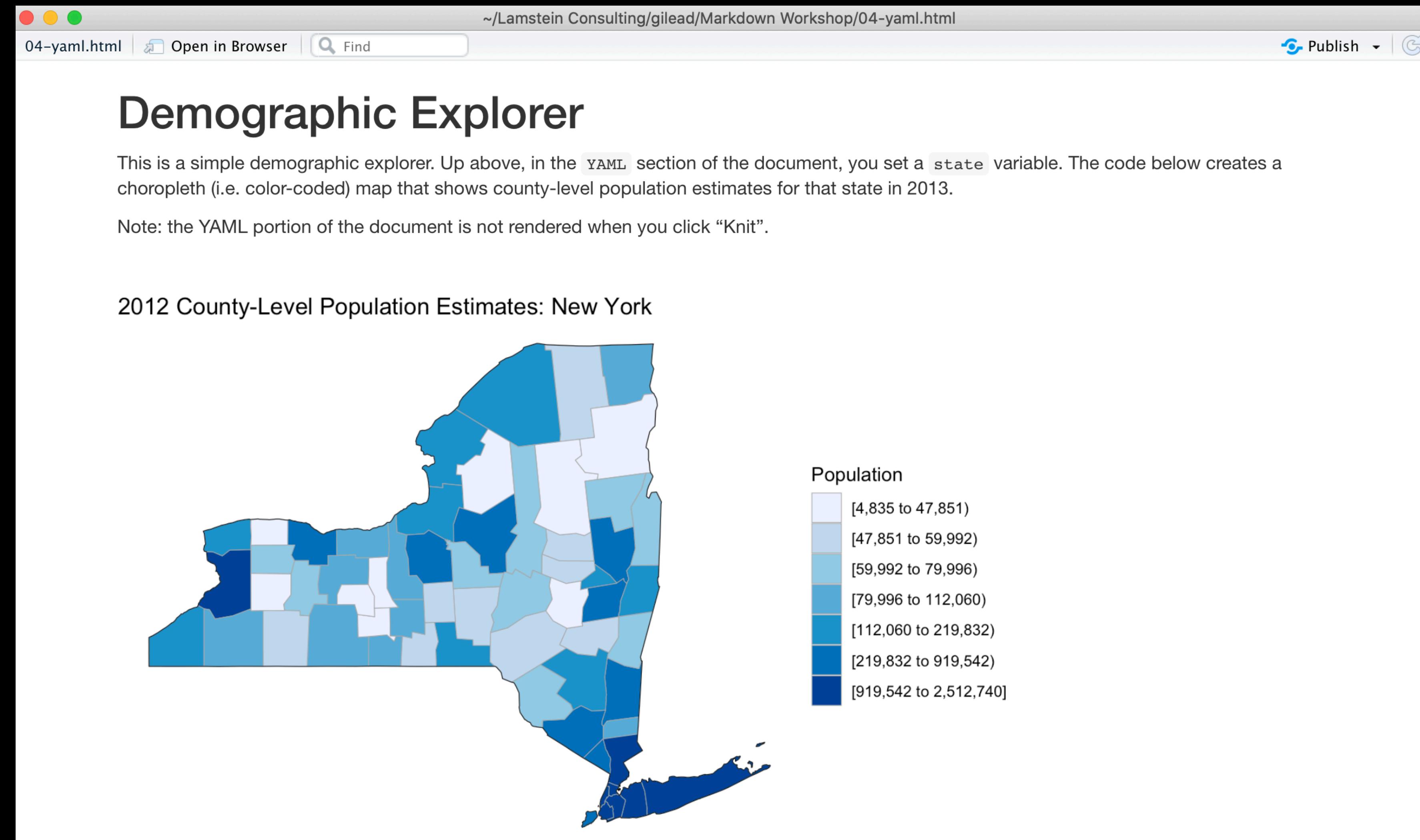
Need YAML for this

R Markdown

- Introduction
- Markdown
- R Chunks
- YAML
- Templates
- Styling

Data Communication Timeline





Document Parameterization

```
```{r echo = FALSE, message = FALSE}
library(choroplethr)
library(choroplethrMaps)
library(stringr)

title = paste("2012 County-Level Population Estimates:", str_to_title(params$state))

data(df_pop_county)
county_choropleth(df_pop_county,
 title = title,
 legend = "Population"
 state_zoom = params$state)
```

```

params\$state

```
---  
params:  
  state: new york  
---
```



YAML

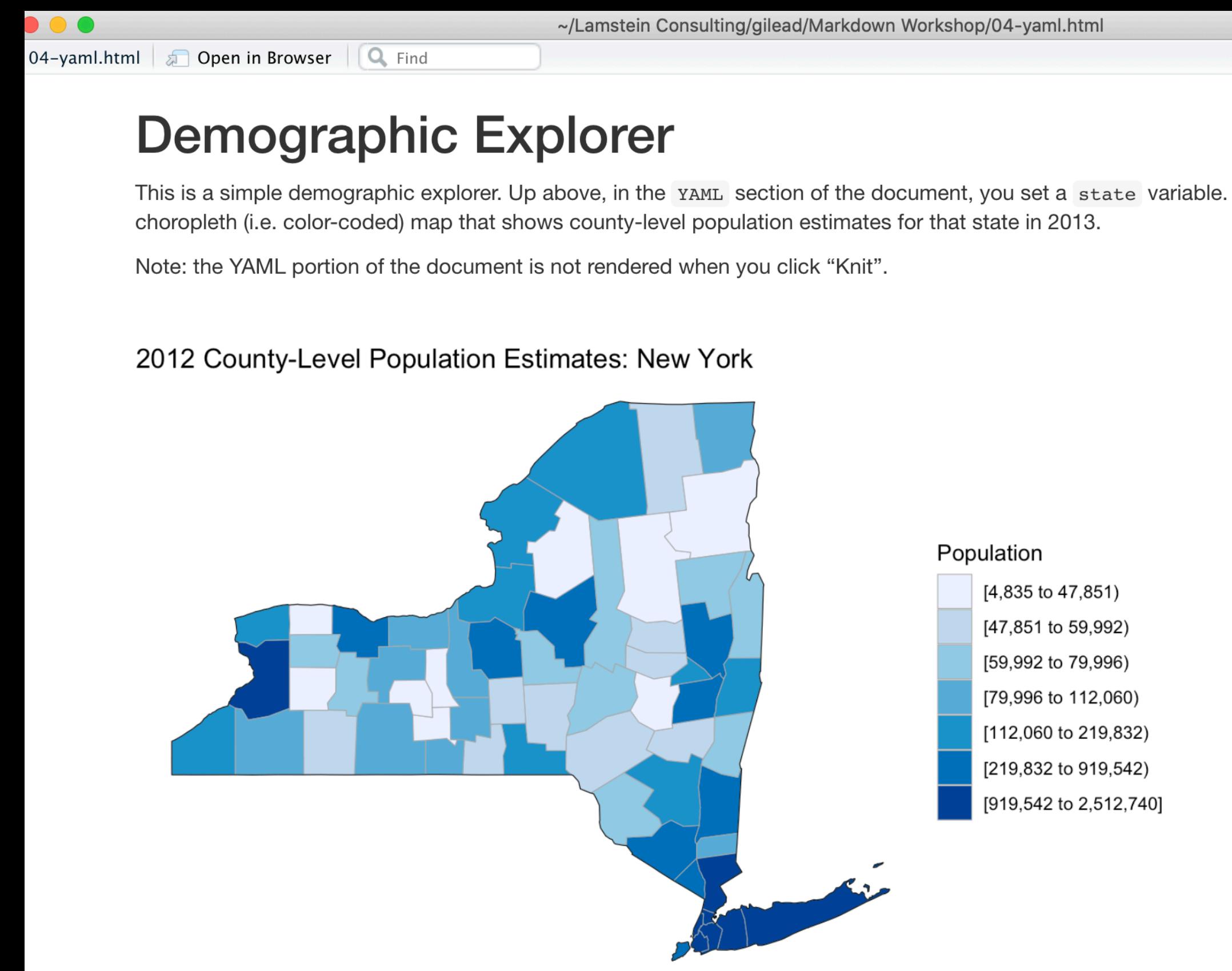
```
# Demographic Explorer
```

This is a simple demographic explorer. Up above, in the `YAML` section, the `state` variable. The code below creates a choropleth (i.e. color-coded) population estimates for that state in 2013.

YAML

Exercise: YAML

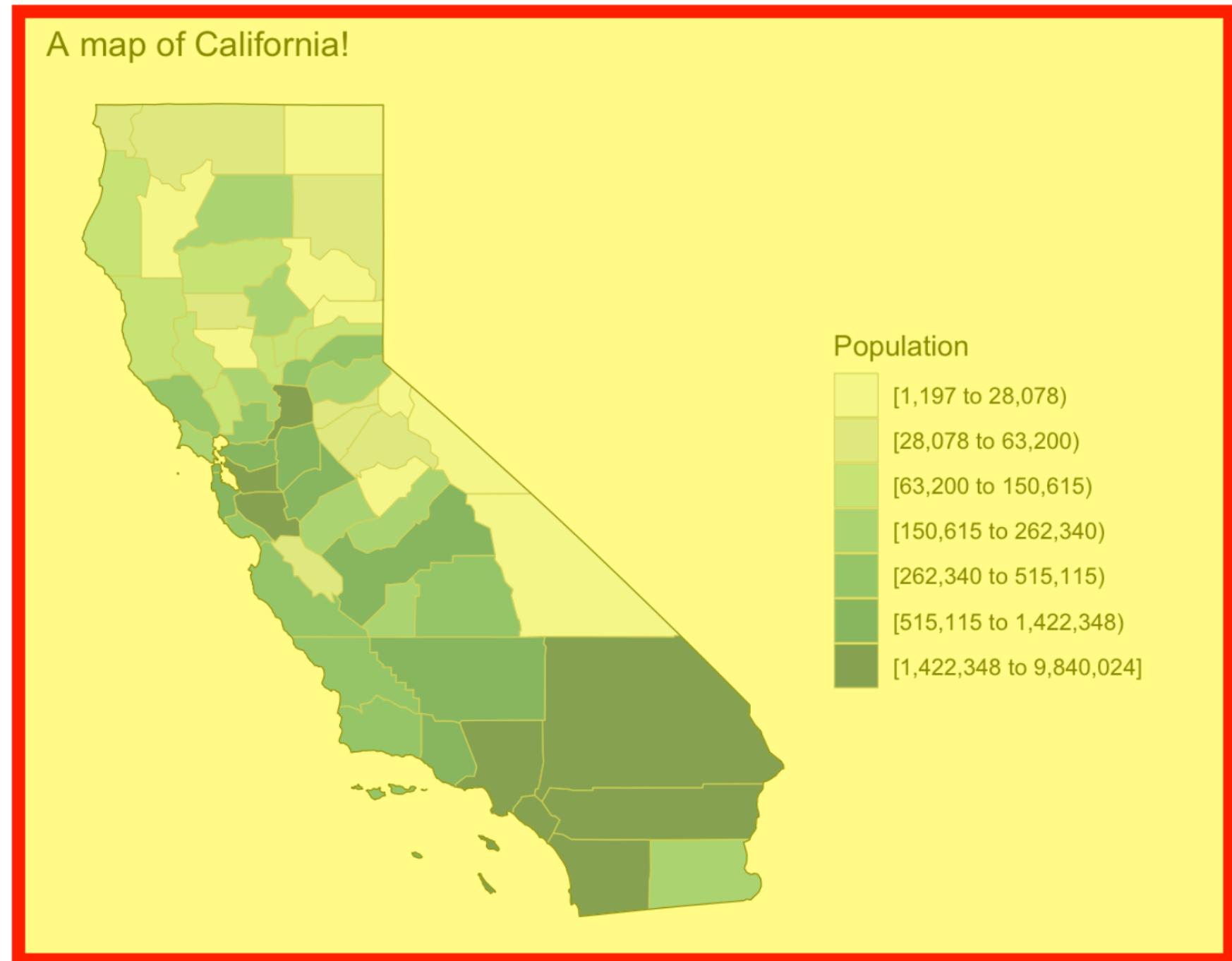
1. Load the file [04-YAML.Rmd](#). Click Knit to create the document.
2. Modify `params` to make the document analyze California instead of NY. Click `knit`.
3. Create a new parameter called `title`. Set the parameter to "A map of California!", and use it in the chunk.
4. Hints:
 1. You must install the `choroplethr` and `choroplethrMaps` packages
 2. State names in `choroplethr` are all lowercase



Demographic Explorer

This is a simple demographic explorer. Up above, in the `YAML` section of the document, you set a `state` variable. The code below creates a choropleth (i.e. color-coded) map that shows county-level population estimates for that state in 2013.

Note: the YAML portion of the document is not rendered when you click “Knit”.



The result

```
    ----  
params:  
  state: california  
  title: A map of California!  
    ----
```

Setting the YAML code

```
```{r echo = FALSE, message = FALSE}
library(choroplethr)
library(choroplethrMaps)
library(stringr)

#title = paste("2012 County-Level Population Estimates:", str_to_title(params$state))

data(df_pop_county)
county_choropleth(df_pop_county,
 title = params$title,
 legend = "Population",
 state_zoom = params$state)
```
...
```

Using the YAML code

Parameters

Parameterize your documents to reuse with different inputs (e.g., data sets, values, etc.)

1 Add parameters

Create and set parameters in the header as sub-values of **params**

```
---  
params:  
  n: 100  
  d: !r Sys.Date()  
---
```

2 Call parameters

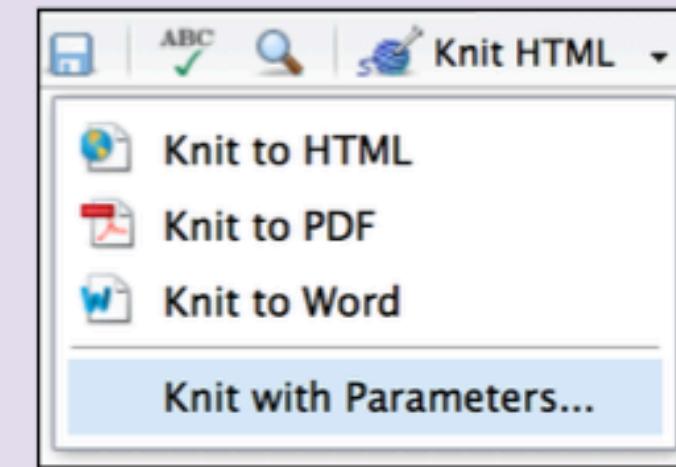
Call parameter values in code as **params\$<name>**

```
Today's date  
is `r params$d`
```

3 Set parameters

Set values wth **Knit with parameters** or the params argument of render():

```
render("doc.Rmd",  
      params = list(n = 1, d = as.Date("2015-01-01")))
```



r-markdown-cheatsheet.pdf

R Markdown

- Introduction
- Markdown
- R Chunks
- YAML
- Templates
- Styling

```
Console Terminal × R Markdown × Jobs ×
Rmd .../04-Markdown/05-yaml-warnings.Rmd
default.html --no-highlight --variable highlightjs=1 --variable theme=
der /var/folders/m7/ztk511fj6vl4m6bw7vh47nk40000gn/T//RtmpbYn0Vv/rmark
athjax --variable 'mathjax-url:https://mathjax.rstudio.com/latest/Math
MLorMML'
output file: 05-yaml-warnings.knit.md

[WARNING] This document format requires a nonempty <title> element.
Please specify either 'title' or 'pagetitle' in the metadata,
e.g. by using --metadata pagetitle="..." on the command line.
Falling back to '05-yaml-warnings.utf8'

Output created: 05-yaml-warnings.html
```

Warning!

But why?

```
Console Terminal × R Markdown × Jobs ×
Rmd .../04-Markdown/05-yaml-warnings.Rmd
default.html --no-highlight --variable highlightjs=1 --variable theme=dark
der /var/folders/m7/ztk511fj6vl4m6bw7vh47nk4000gn/T//RtmpbYn0Vv/rmark
athjax --variable 'mathjax-url:https://mathjax.rstudio.com/latest/Math
MLorMML'
output file: 05-yaml-warnings.knit.md

[WARNING] This document format requires a nonempty <title> element.
Please specify either 'title' or 'pagetitle' in the metadata,
e.g. by using --metadata pagetitle="..." on the command line.
Falling back to '05-yaml-warnings.utf8'

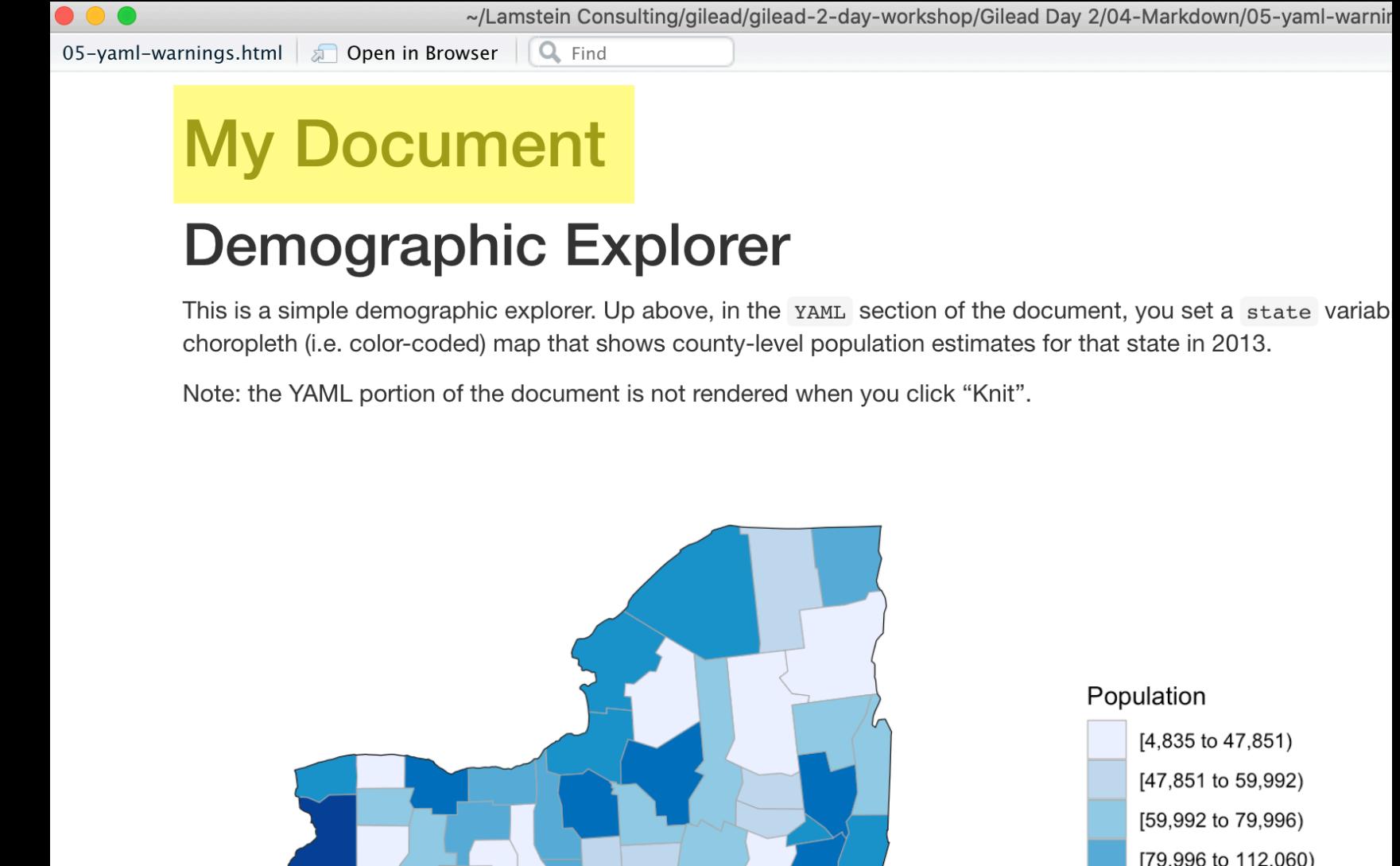
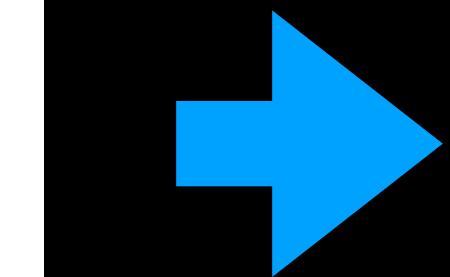
Output created: 05-yaml-warnings.html
```

```
---
title: My Document
params:
  state: new york
---
```

R Markdown / Pandoc Templates

A title is required

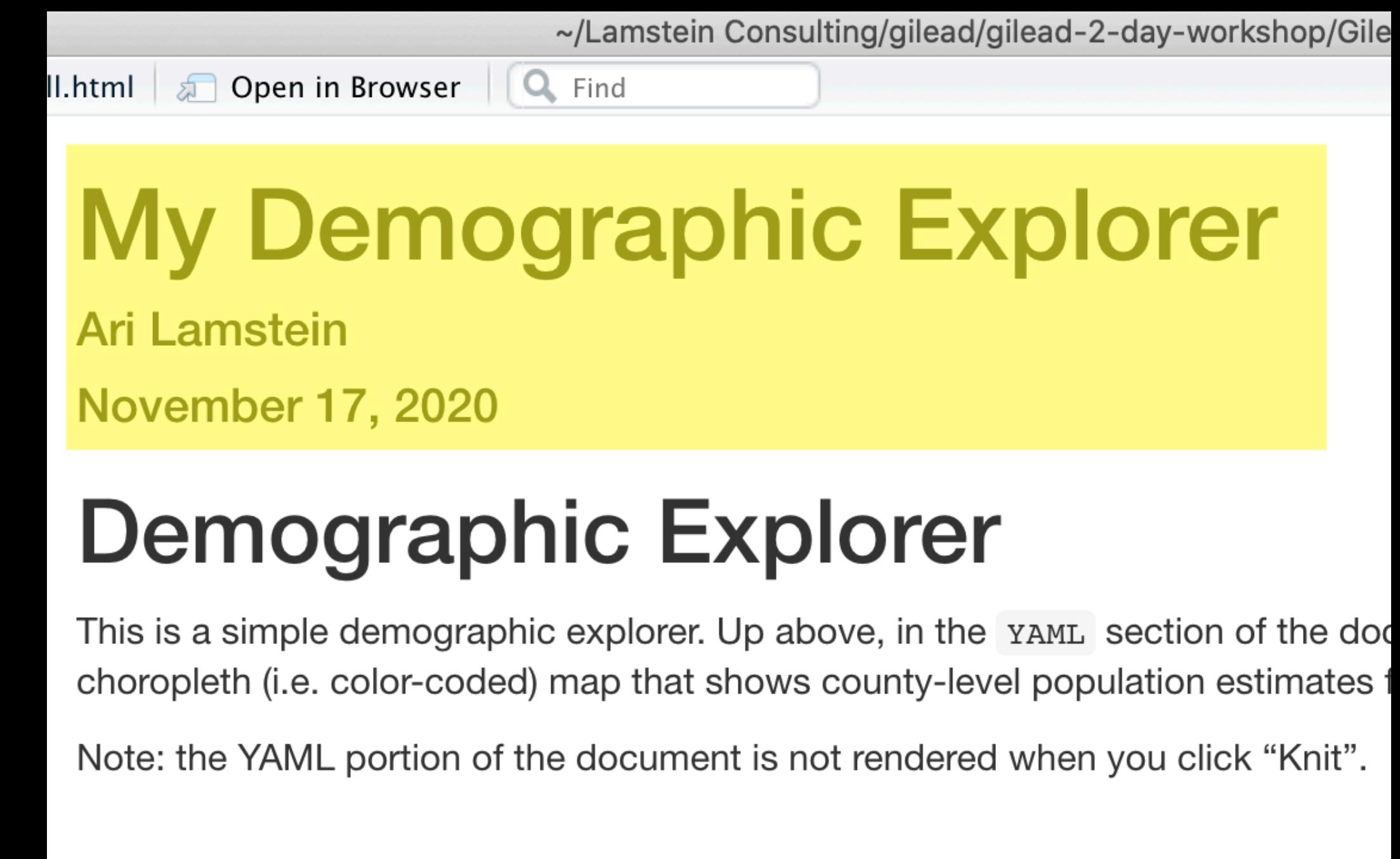
```
---  
title: My Document  
  
params:  
  state: new york  
---
```



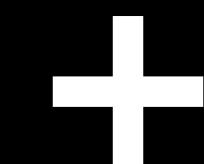
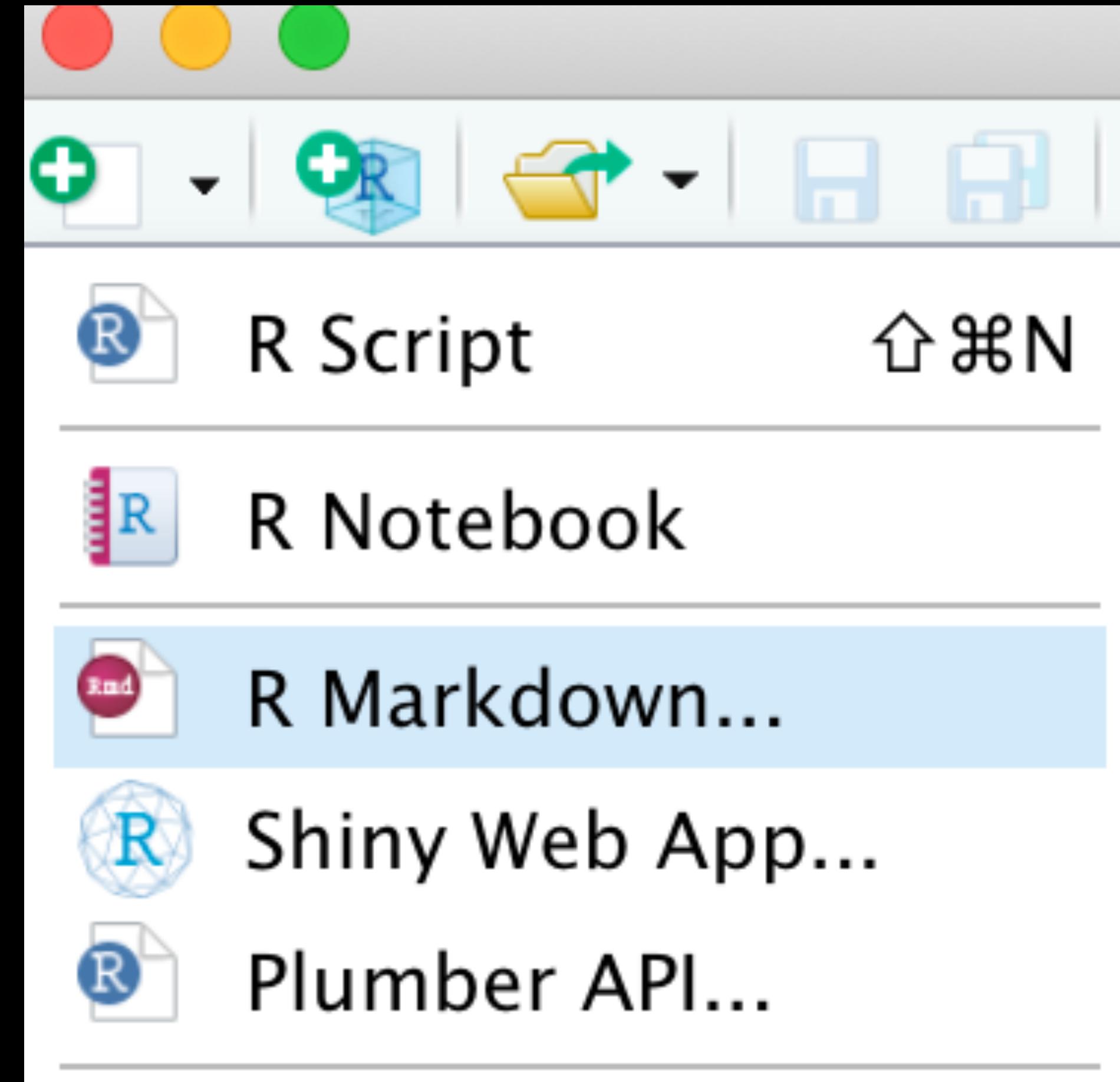
Title appears on the top

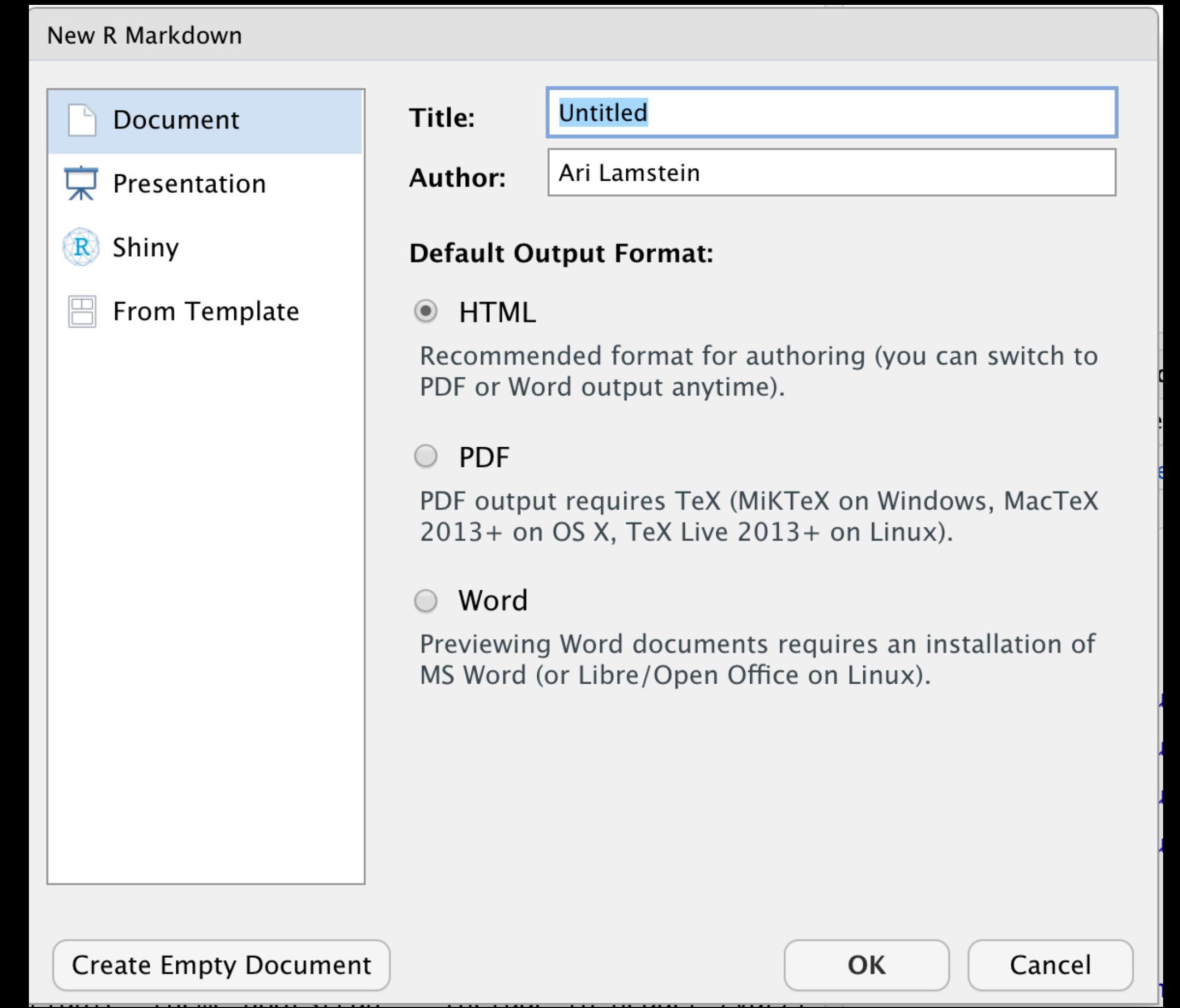
Exercise: YAML

1. Load the file [05-YAML-all.Rmd](#). Click **Knit** to create the document.
2. Add all the listed fields: title, date, author. Click **knit** again.



Creating a new R Markdown Document





New R Markdown Menu

Just click "OK"

Exercise: Create the default R Markdown

- Click File -> New File -> R Markdown
- Enter a title and create the default R Markdown document
- Click "Knit"

The screenshot shows a web browser window with the title bar reading "Untitled.html" and the URL " ~/Untitled.html". The browser interface includes standard buttons for close, minimize, and maximize, along with tabs for "Untitled.html" and "Open in Browser", and a search bar labeled "Find". The main content area displays an R Markdown document. It starts with a title "Untitled" and author information "Ari Lamstein" and "11/17/2020". Below this is a section titled "R Markdown" with a descriptive paragraph: "This is an R Markdown document. Markdown is a simple formatting syntax for authors and publishers. For more information on using R Markdown see <http://rmarkdown.rstudio.com>." A code block follows, containing the R command "summary(cars)". The output of this command is a table showing the distribution of variables "speed" and "dist". The table is as follows:

| | 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 |

At the bottom of the document, there is a section titled "Including Plots".

R Markdown Templates

HTML & CSS

Templates

Create reusable templates to quickly apply styling and content to your R Markdown document.

 **Journal of Statistical Software**
MMMMYY, Volume VV, Issue II. <http://www.jstatsoft.org/>

A Capitalized Title: Something about a Package foo

FirstName LastName
University/Company

Second Author
Affiliation

Abstract
The abstract of the article.

Keywords: keywords, not capitalized, Java.

1. Introduction

JSS

The JSS article template in the `rticles` package formats an R Markdown document to meet the style guidelines of the Journal of Statistical Software.

[Example Code](#)

CONTRIBUTED RESEARCH ARTICLE 1

Capitalized Title Here
by Author One, Author Two

Abstract An abstract of less than 150 words.

Introduction

Introductory section which may include references in parentheses (R Core Team, 2012), or cite a reference such as R Core Team (2012) in the text.

Section title in sentence case

This section may contain a figure such as Figure 1.


Figure 1: The logo of R.

Another section

There will likely be several sections, perhaps including code snippets, such as:

```
x <- 1:10
x
```

R Journal

The `rjournal` article template in the `rticles` package formats an R Markdown document to meet the style guidelines of the R Journal. [Example Code](#)

NAVTITLE

INSERT_TITLE_HERE

AUTHOR • 2016-06-03

Captain John Sheridan: You know, I just had a thought. You've been back and forth to your world so many times since you got here. How do I know you're the same Vorlon? Inside that encounter suit you could be anyone. Kosh Naranek: I have always been here. Captain John Sheridan: Oh, yeah? You said that about me too. Kosh Naranek: Yes. [starts to walk away] Captain John Sheridan: I really hate it when you do that. Kosh Naranek: [turns around] Good! Deleyn: I am Grey. I stand between the candle and the star. We are Grey. We stand between the darkness and the light.

Lt. Comin: Do we trust no-one then? Cmdr. Susan Ivanova: No, trust yourself, anybody else, shoot'em. Ta'Lon: Congratulations citizen G'Kar. You are now a religious icon. Susan Ivanova: So the next time we find out where the Shadows plan to strike, we can mine the area, and as soon as they come out of hyperspace... Citizen G'Kar: Then, as you so concisely say, Boom!

Section Title

G'Kar: It is said that the future is always born in pain. The history of war is the history of pain. If we are wise, what is born of that pain matures into the promise of a better world, because we learn that we can no longer afford the mistakes of the past. Dr. Stephen Franklin: Doesn't anyone listen to one damn word I say? Captain John Sheridan: No surrender, no retreat. [Opening narration, season 4] Lennier: It was the year of fire, Zack Alan: The year of destruction, Citizen G'Kar: The year we took back what was ours. Lyta Alexander: It was the year of rebirth, Ambassador Vir Cotto: The year of great sadness, Marcus Cole: The year of pain, Deleyn: And a year of joy. Ambassador Londo Mollari: It was a new age, Dr. Stephen Franklin: It was the end of history. Susan Ivanova: It was the year everything changed. Michael Garibaldi: The year is 2261. Captain John Sheridan: The place, Babylon 5. Sinclair: They say

Skeleton

The skeleton template is one of several provided in Bob Rudis' `markdowntemplates` package. [Example Code](#)

William Sealy Gosset

Chief Brewer, Arthur Guinness & Son
Guinness Brewery - Park Royal - London NW10 7RR, UK
guinness@consumer-care.net +353 1 408 4800 guinness.com

Employment
Arthur Guinness & Son
Chief Brewer (Park Royal)
Researcher (Dublin) 1935-1937
1899-1935

Education
New College, Oxford University, B.A. Chemistry 1899

Publications
Books
Pearson, E.S. and John Wishart (eds). 1943. "Student's" Collectif Papers London: Biometrika Office.

Journal Articles
Student. 1938. "Comparison between Balanced and Random Arrangements on Field Plots." *Biometrika* 29(3-4): 363-378.

CV

Steve Miller's CV template formats an R Markdown file into a Curriculum Vitae (CV). [Example Code](#)

New R Markdown

Document

Presentation

Shiny

From Template



Template:

? Using R Markdown Templates

| | |
|---|-----------------|
| R Journal Submission | {rticles} |
| Distill Article | {distill} |
| Flex Dashboard | {flexdashboard} |
| GitHub Document (Markdown) | {rmarkdown} |
| Package Vignette (HTML) | {rmarkdown} |
| ASA Journal Article | {rticles} |
| American Chemical Society | {rticles} |
| American Economics Association journals | {rticles} |

This template contains multiple files. Create a new directory for these files:

Name:

Untitled

Location:

~/Lamstein Consulting/gilead/gilead-2-day

Browse...

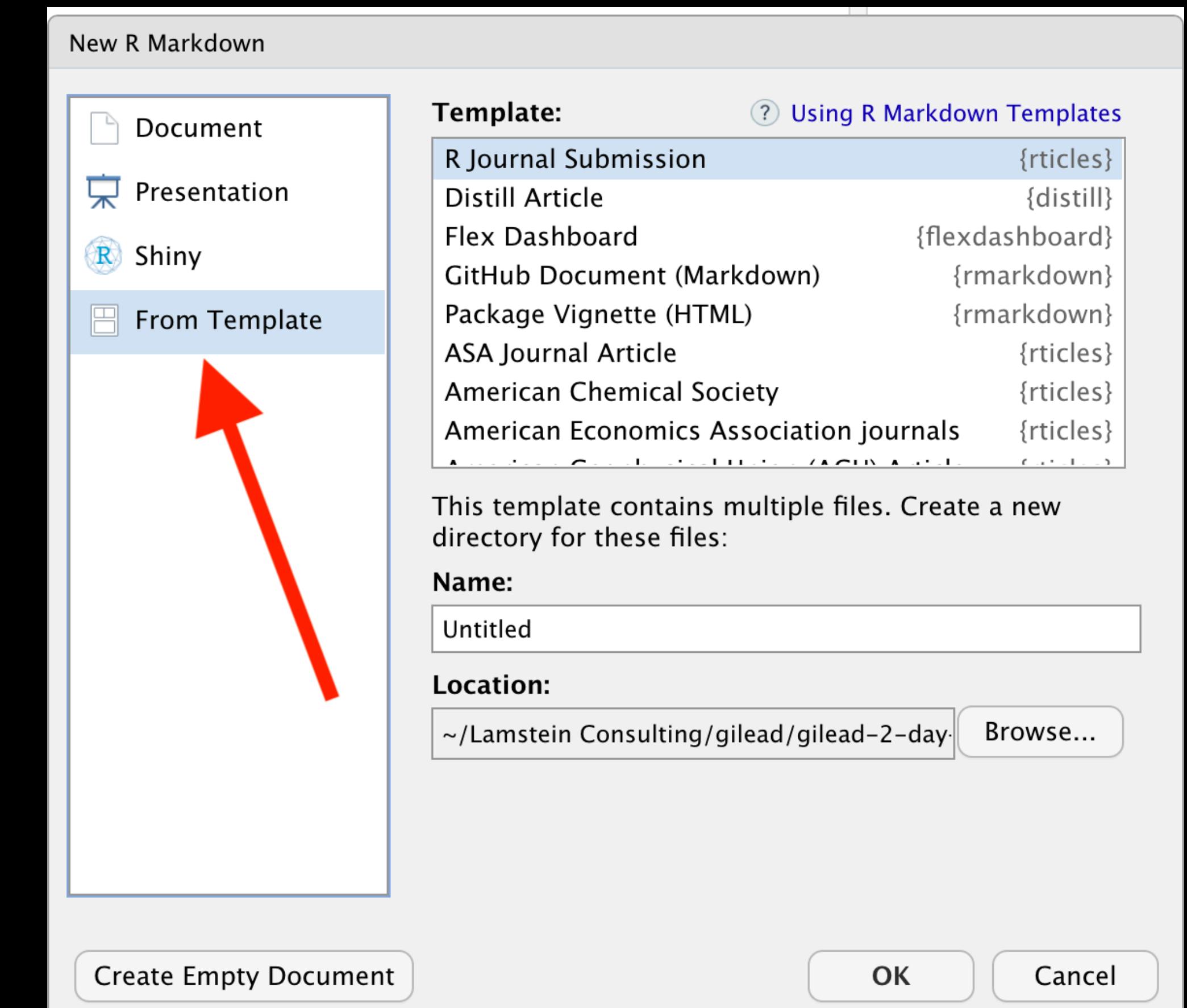
Create Empty Document

OK

Cancel

Exercise: Explore Templates

- Install the **rticles** package by typing
install.packages("rticles")
- Click File -> New File -> R Markdown ->
From Template
- Pick a new template and knit it.
- Then screen share with your partner to share it.



R Markdown Document Template

rstudio.github.io/rstudio-extensions/rmarkdown_templates.html

RStudio Extensions Addins Templates Themes Tutorials Viewer rstudioapi Snippets Connections

Overview Template Basics Supporting Files Custom Formats Examples Package Vignette rticles Package

R Markdown Document Templates

If there is a particular form of R Markdown document that you or those you work with create frequently, it may make sense to create a re-usable document template for it. R Markdown templates are typically re-distributed within R packages, and can be easily discovered from within RStudio using the **New R Markdown** dialog:

New R Markdown

Template: Using R Markdown Templates

- Document
- Presentation
- From Template

Journal of Statistical Software [rticles]
R Journal Submission [rticles]
useR Conference Abstract [rticles]

Name: Untitled

Directory: ~

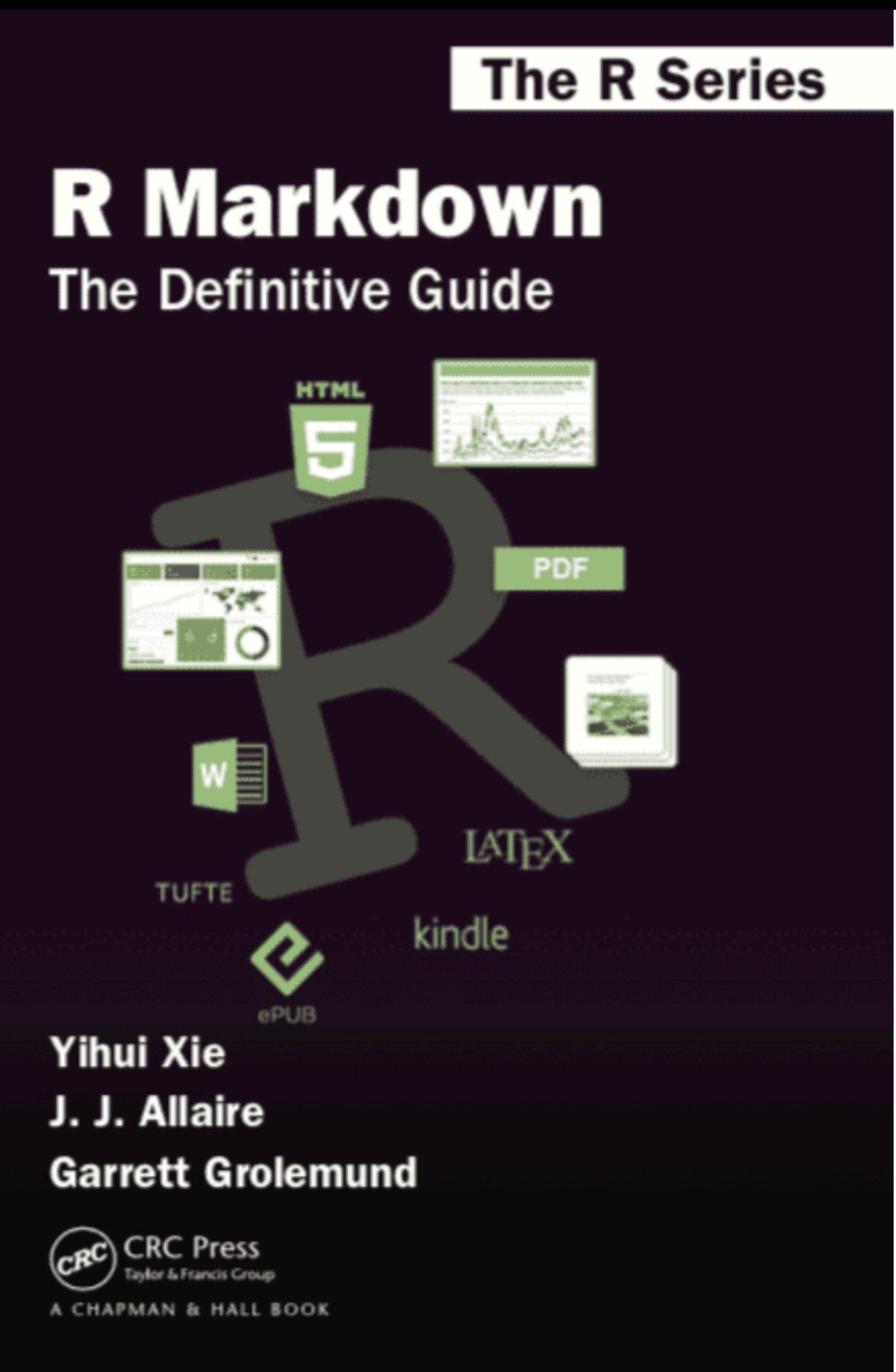
Create in New Directory
A new directory with the same name as the file will be created. The new R Markdown file and all its resources will be placed in the new directory.

OK Cancel

New R Markdown

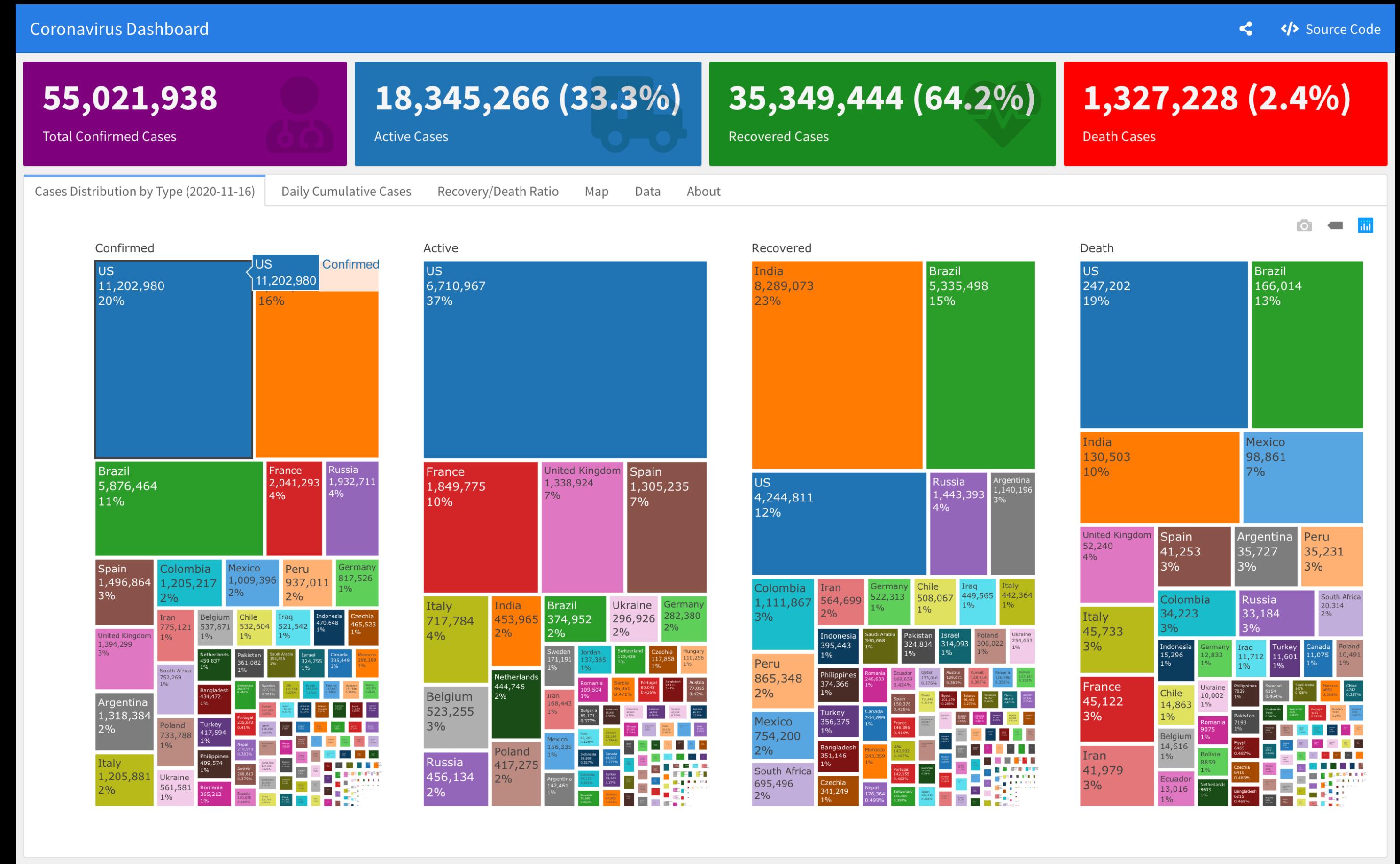
Note that if you are not using RStudio you can also create new documents based on templates using the `rmarkdown::draft` function:

```
rmarkdown::draft("my_article.Rmd", template = "jss_article", package = "rticles")
```

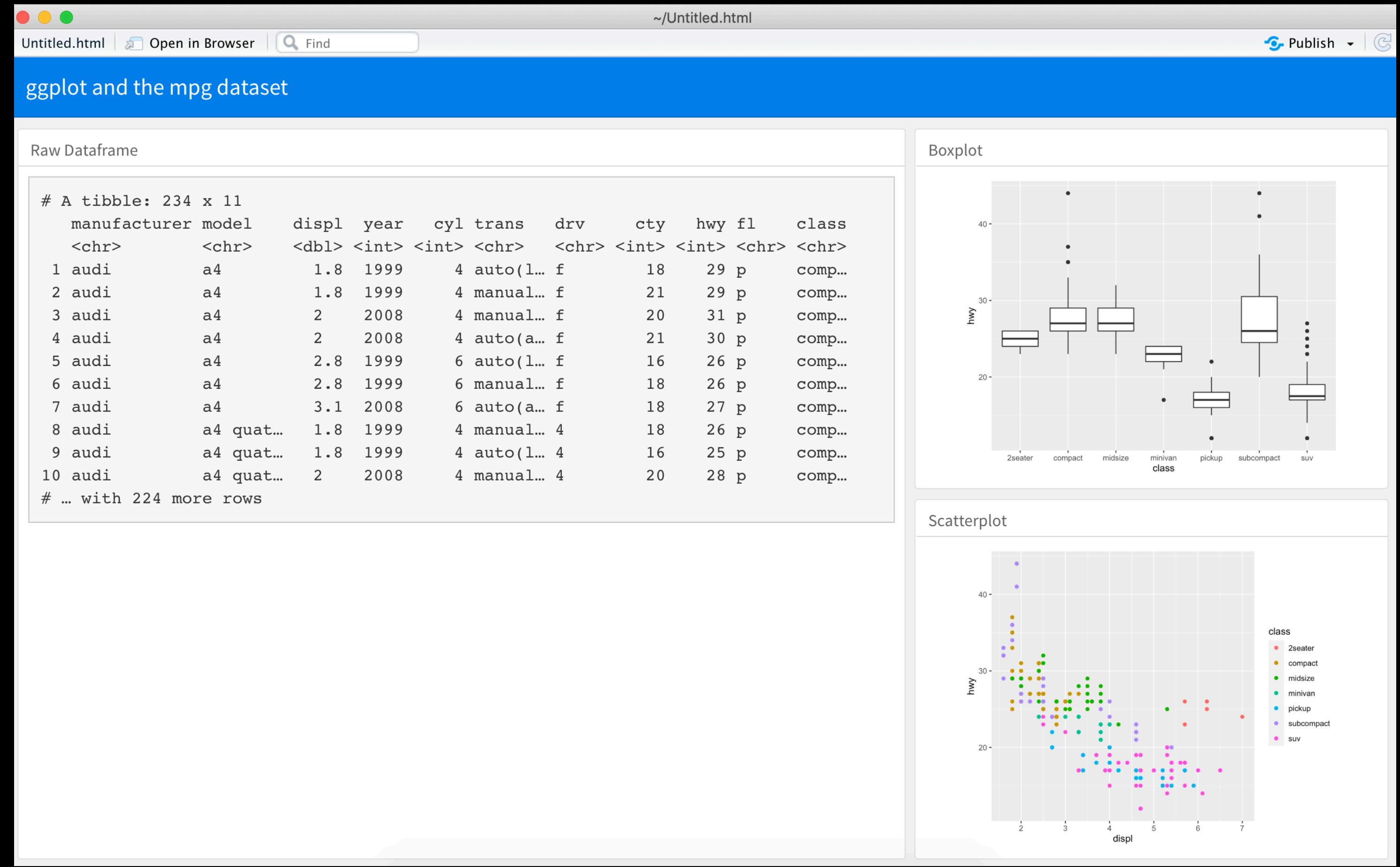


Creating a new Template

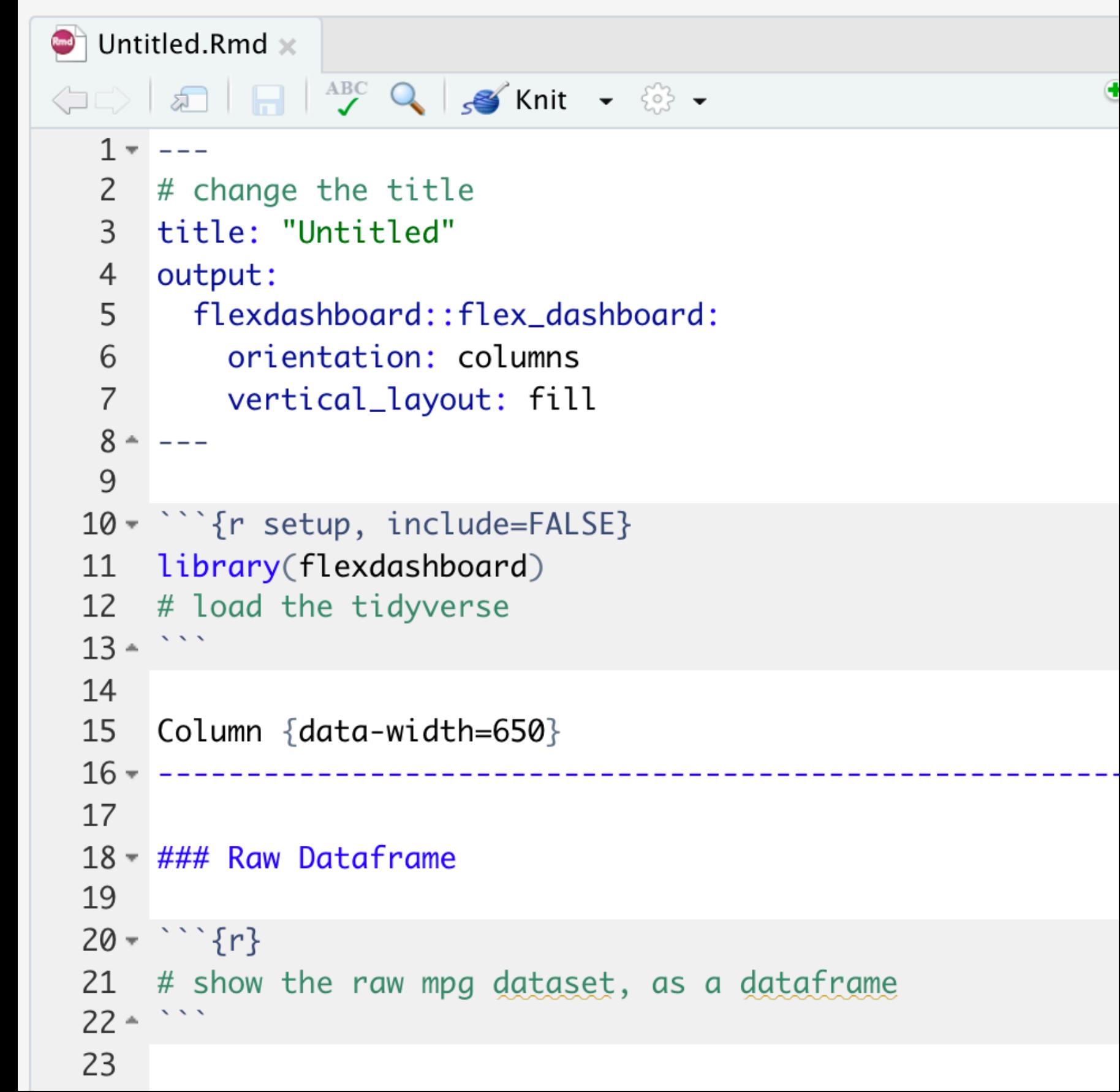
Distributed as a package



Flex Dashboards



Flex Dashboards



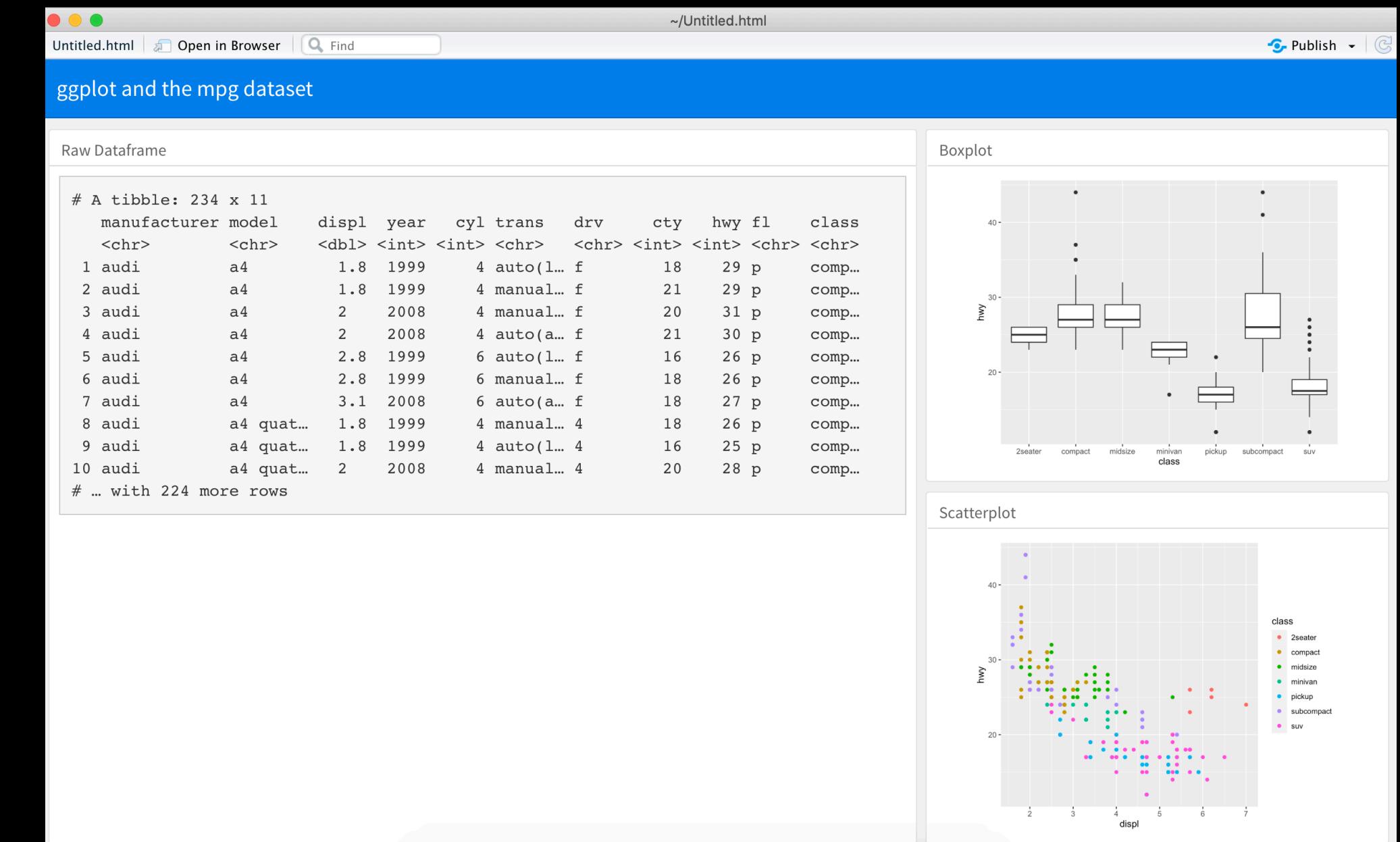
The screenshot shows an RStudio interface with an R Markdown file named "Untitled.Rmd". The code is as follows:

```
1 ---  
2 # change the title  
3 title: "Untitled"  
4 output:  
5   flexdashboard::flex_dashboard:  
6     orientation: columns  
7     vertical_layout: fill  
8 ---  
9  
10 ````{r setup, include=FALSE}  
11 library(flexdashboard)  
12 # load the tidyverse  
13 ````  
14  
15 Column {data-width=650}  
16 -----  
17  
18 ### Raw Dataframe  
19  
20 ````{r}  
21 # show the raw mpg dataset, as a dataframe  
22 ````  
23
```

Flex Dashboards

Exercise: Flex Dashboards

- Install the **flexdashboard** package by typing **install.packages("flexdashboard")**
- Open the file **06-flex-dashboard.Rmd**
- Knit the document
- One by one, replace all the comments with code, and knit as you go.



flexdashboard: Easy interactive dashboards for R

- Use [R Markdown](#) to publish a group of related data visualizations as a dashboard.
- Support for a wide variety of components including [htmlwidgets](#); base, lattice, and grid graphics; tabular data; gauges and value boxes; and text annotations.
- Flexible and easy to specify row and column-based [layouts](#). Components are intelligently re-sized to fill the browser and adapted for display on mobile devices.
- [Storyboard](#) layouts for presenting sequences of visualizations and related commentary.
- Optionally use [Shiny](#) to drive visualizations dynamically.

Getting Started

<https://rmarkdown.rstudio.com/flexdashboard/>

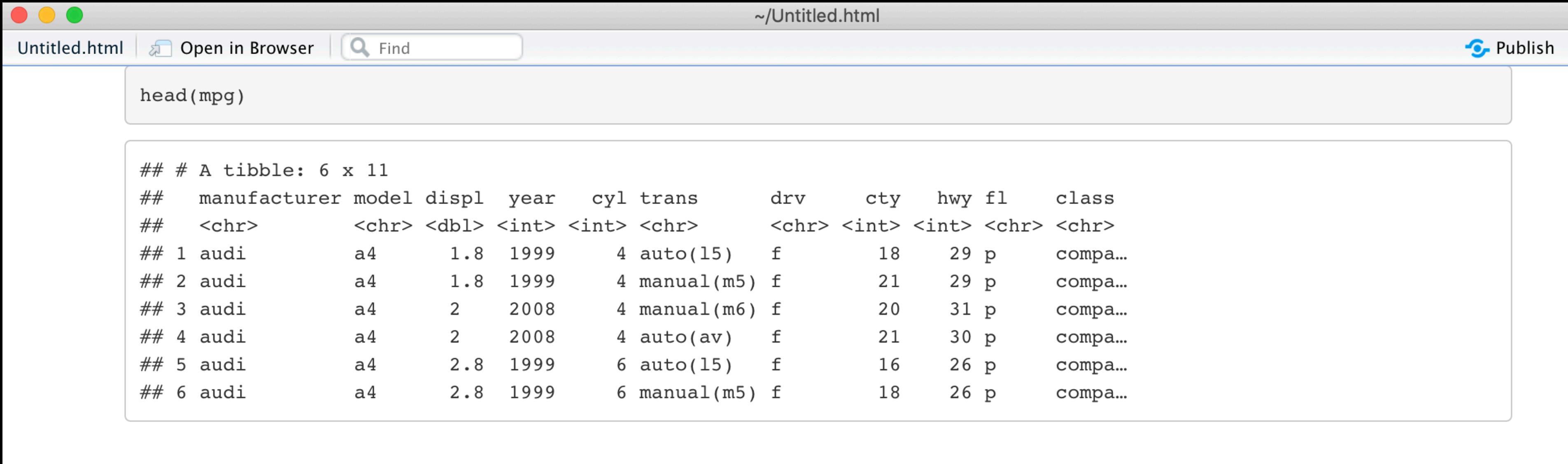
R Markdown

- Introduction
- Markdown
- R Chunks
- YAML
- Templates
- Styling

```
> head(mpg)
# A tibble: 6 x 11
  manufacturer model displ year cyl trans drv cty hwy fl class
  <chr>       <chr> <dbl> <int> <int> <chr> <chr> <int> <int> <chr> <chr>
1 audi         a4     1.8  1999    4 auto(l5) f      18    29 p   compact
2 audi         a4     1.8  1999    4 manual(m5) f     21    29 p   compact
3 audi         a4     2     2008    4 manual(m6) f     20    31 p   compact
4 audi         a4     2     2008    4 auto(av)   f     21    30 p   compact
5 audi         a4     2.8  1999    6 auto(l5) f     16    26 p   compact
6 audi         a4     2.8  1999    6 manual(m5) f     18    26 p   compact
```

Not so Pretty

"pretty print"



The screenshot shows a Jupyter Notebook interface with a single code cell containing the command `head(mpg)`. The output of this command is displayed as a table, which is identified as a tibble with dimensions `6 x 11`. The columns represent various vehicle attributes: manufacturer, model, displacement, year, cylinders, transmission, drive type, city fuel economy, highway fuel economy, and vehicle class. The data shows six rows for Audi vehicles from 1999 and 2008.

```
## # A tibble: 6 x 11
##   manufacturer model  displ  year   cyl trans     drv   cty   hwy fl class
##   <chr>        <chr>  <dbl> <int> <int> <chr>    <chr> <int> <int> <chr> <chr>
## 1 audi         a4      1.8  1999     4 auto(l5) f       18    29 p     compa...
## 2 audi         a4      1.8  1999     4 manual(m5) f      21    29 p     compa...
## 3 audi         a4      2.0  2008     4 manual(m6) f      20    31 p     compa...
## 4 audi         a4      2.0  2008     4 auto(av)   f      21    30 p     compa...
## 5 audi         a4      2.8  1999     6 auto(l5)  f      16    26 p     compa...
## 6 audi         a4      2.8  1999     6 manual(m5) f      18    26 p     compa...
```

Not so Pretty

"pretty print"

```
library(tidyverse)
library(knitr)

kable(head(mpg))
```

| manufacturer | model | displ | year | cyl | trans | drv | cty |
|--------------|-------|-------|------|-----|------------|-----|-----|
| audi | a4 | 1.8 | 1999 | 4 | auto(l5) | f | 18 |
| audi | a4 | 1.8 | 1999 | 4 | manual(m5) | f | 21 |
| audi | a4 | 2.0 | 2008 | 4 | manual(m6) | f | 20 |
| audi | a4 | 2.0 | 2008 | 4 | auto(av) | f | 21 |
| audi | a4 | 2.8 | 1999 | 6 | auto(l5) | f | 16 |
| audi | a4 | 2.8 | 1999 | 6 | manual(m5) | f | 18 |

knitr::kable(mpg)

Prettier

`kable(x)` when `x` is a list of data objects, but `kables()` accepts a list of `kable()` values directly data objects (see examples below).

Usage

```
kable(  
  x,  
  format,  
  digits =getOption("digits"),  
  row.names = NA,  
  col.names = NA,  
  align,  
  caption = NULL,  
  label = NULL,  
  format.args = list(),  
  escape = TRUE,  
  ...  
)
```

Lots of options

?knitr::kable

```
library(tidyverse)
library(knitr)
library(kableExtra)

kable(head(mpg)) %>%
  kableExtra::kable_styling()
```

| manufacturer | model | displ | year | cyl | trans | drv | cty | hwy | fl | c |
|--------------|-------|-------|------|-----|------------|-----|-----|-----|----|---|
| audi | a4 | 1.8 | 1999 | 4 | auto(l5) | f | 18 | 29 | p | o |
| audi | a4 | 1.8 | 1999 | 4 | manual(m5) | f | 21 | 29 | p | o |
| audi | a4 | 2.0 | 2008 | 4 | manual(m6) | f | 20 | 31 | p | o |
| audi | a4 | 2.0 | 2008 | 4 | auto(av) | f | 21 | 30 | p | o |
| audi | a4 | 2.8 | 1999 | 6 | auto(l5) | f | 16 | 26 | p | o |
| audi | a4 | 2.8 | 1999 | 6 | manual(m5) | f | 18 | 26 | p | o |

```
head(mpg) %>%
  kable() %>%
  kable_styling()
```

Bugs!

- If the `kableExtra` package is loaded, you cannot just type `kable(mpg)`.
 - You must type `kable(mpg) %>% kable_styling()` (or another `kableExtra` function)
 - This is a bug and will be fixed soon
 - Two other bugs in the `distill` package / template.

Ari Lamstein 28 minutes ago
Also, the package scoping syntax doesn't solve the problem. Try this:

```
library(tidyverse)
library(knitr)
# library(kableExtra)
knitr::kable(head(mpg))
```

followed by this:

```
library(tidyverse)
library(knitr)
library(kableExtra)
knitr::kable(head(mpg))
```

Ari Lamstein 27 minutes ago
At least on my computer, the output is dramatically different between the two.

Alison 24 minutes ago
Hi @Ari Lamstein we are investigating and will be pushing a fix to rmarkdown. You are right that this shouldn't happen. It won't be fixed until after your workshop though.

Alison 14 minutes ago
A quick fix is to use this in your setup chunk:

```
options(kableExtra.auto_format = FALSE)
```

Ari Lamstein 12 minutes ago
Oh that's hilarious that I found a legit bug. My students will love this story.

R: HTML table attributes ▾ Find in Topic

kable_styling {kableExtra} R Documentation

HTML table attributes

Description

This function provides a cleaner approach to modify the style of HTML tables other than using the `table.attr` option in `knitr:::kable()`. Note that those bootstrap options requires Twitter bootstrap theme, which is not available in some customized template being loaded.

Usage

```
kable_styling(  
  kable_input,  
  bootstrap_options = "basic",  
  latex_options = "basic",  
  full_width = NULL,  
  position = "center",  
  font_size = NULL,  
  row_label_position = "l",  
  repeat_header_text = "\\textit{(continued)}",  
  repeat_header_method = c("append", "replace"),  
  repeat_header_continued = FALSE,  
  stripe_color = "gray!6",  
  stripe_index = NULL,  
  latex_table_env = NULL,  
  protect_latex = TRUE,  
  table.envir = "table",  
  fixed_thead = FALSE,  
  htmltable_class = NULL,  
  html_font = NULL,  
  wraptable_width = "0pt")
```

Lots more options

?kableExtra::kable_styling

| manufacturer | model | displ | year | cyl | trans | drv | cty | hwy | fl | class |
|--------------|-------|-------|------|-----|------------|-----|-----|-----|----|---------|
| audi | a4 | 1.8 | 1999 | 4 | auto(l5) | f | 18 | 29 | p | compact |
| audi | a4 | 1.8 | 1999 | 4 | manual(m5) | f | 21 | 29 | p | compact |
| audi | a4 | 2.0 | 2008 | 4 | manual(m6) | f | 20 | 31 | p | compact |
| audi | a4 | 2.0 | 2008 | 4 | auto(av) | f | 21 | 30 | p | compact |
| audi | a4 | 2.8 | 1999 | 6 | auto(l5) | f | 16 | 26 | p | compact |
| audi | a4 | 2.8 | 1999 | 6 | manual(m5) | f | 18 | 26 | p | compact |

Striped Rows

| manufacturer | model | displ | year | cyl | trans | drv | cty | hwy | fl | class |
|--------------|-------|-------|------|-----|------------|-----|-----|-----|----|---------|
| audi | a4 | 1.8 | 1999 | 4 | auto(l5) | f | 18 | 29 | p | compact |
| audi | a4 | 1.8 | 1999 | 4 | manual(m5) | f | 21 | 29 | p | compact |
| audi | a4 | 2.0 | 2008 | 4 | manual(m6) | f | 20 | 31 | p | compact |
| audi | a4 | 2.0 | 2008 | 4 | auto(av) | f | 21 | 30 | p | compact |
| audi | a4 | 2.8 | 1999 | 6 | auto(l5) | f | 16 | 26 | p | compact |
| audi | a4 | 2.8 | 1999 | 6 | manual(m5) | f | 18 | 26 | p | compact |

Hover

Exercise: kable

- Open the file **07-kable.Rmd**
- (Make sure you have the **knitr** and **kableExtra** packages installed!)
- Follow the instructions, and render the table in a variety of ways.
- There are suggestions for other options to explore
- Share your output and opinion with your partner.

kable demo

Ari Lamstein

11/18/2020

Experiment with rendering `head(mpg)` several ways.

1. As-is
2. As the output of `?knitr::kable`
3. As the output of `?knitr::kable` piped to `?kableExtra::kable_styling`

Then experiment with various options. In particular, with your partner, cycle through all `kable_styling` function

```
head(mpg)
```

```
## # A tibble: 6 x 11
##   manufacturer model displ year cyl trans   drv   cty   hwy
##   <chr>        <chr> <dbl> <int> <int> <chr> <chr> <int> <int>
## 1 audi         a4     1.8  1999    4 auto(l5) f      18
## 2 audi         a4     1.8  1999    4 manual(m5) f      21
## 3 audi         a4     2    2008    4 manual(m6) f      20
## 4 audi         a4     2    2008    4 auto(av)  f      21
## 5 audi         a4     2.8  1999    6 auto(l5)  f      16
## 6 audi         a4     2.8  1999    6 manual(m5) f      18
```

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Main Ideas

Notes

Please take a moment to write notes