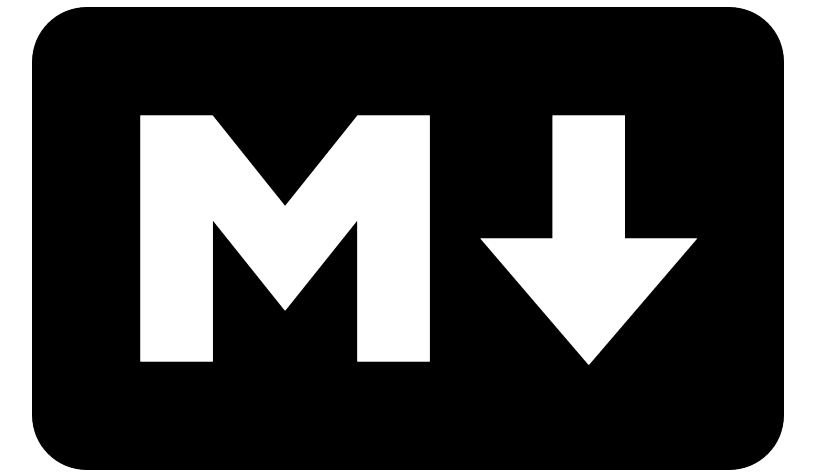


# Composing prose with markdown

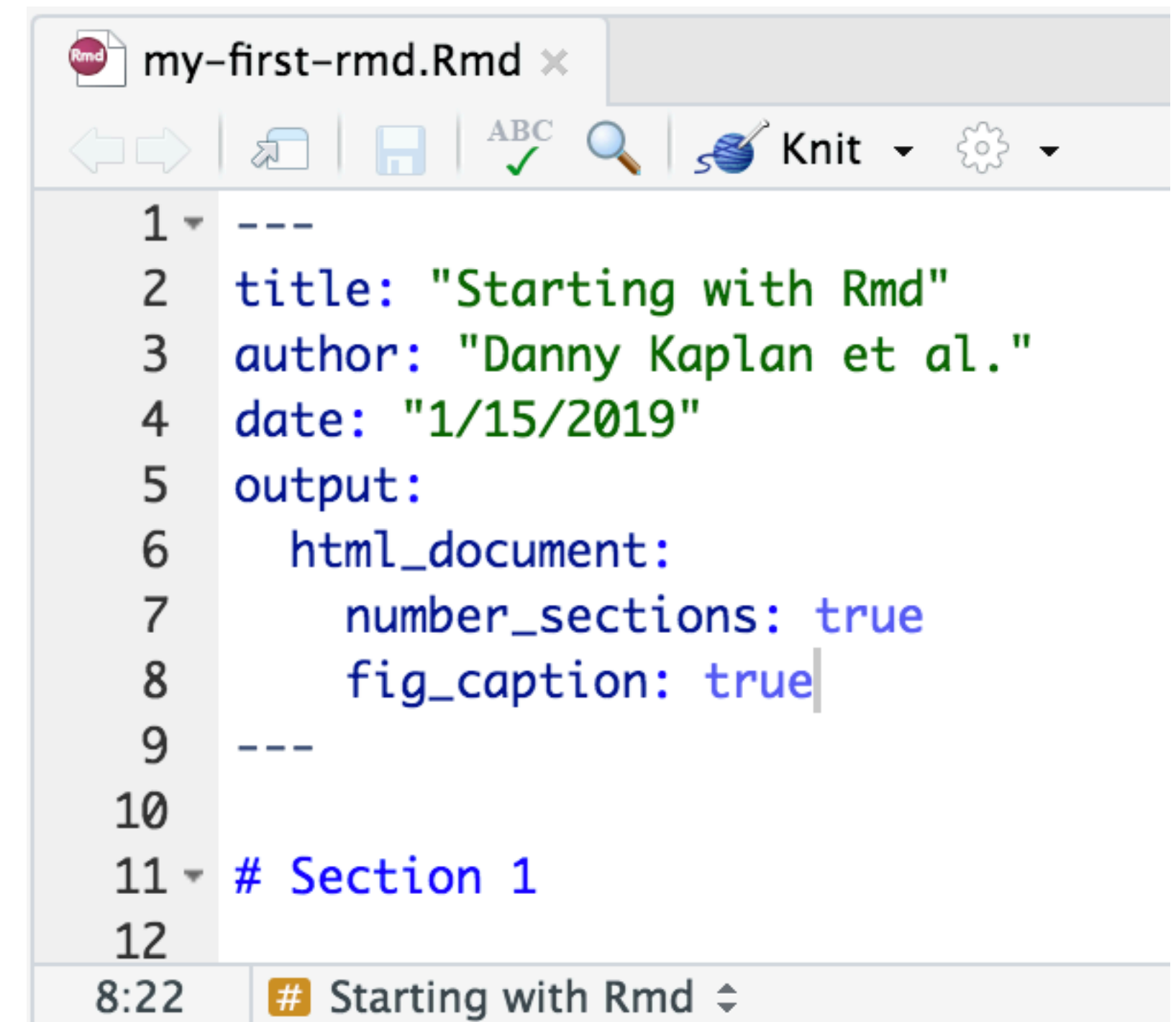
Danny Kaplan



*dtkaplan*   
*dtkaplan@gmail.com* 

# Structure of an Rmd file

- ▶ *Minimum requirement: File name ends with .Rmd*
- ▶ *A little richer: first several lines are YAML markup*
  - *Connect to other systems, e.g. Shiny, blowdown, book down*
  - *Set style and document output format*



The screenshot shows an RStudio editor window with a file named 'my-first-rmd.Rmd'. The editor displays the following YAML markup and text:

```
1 ---
2 title: "Starting with Rmd"
3 author: "Danny Kaplan et al."
4 date: "1/15/2019"
5 output:
6   html_document:
7     number_sections: true
8     fig_caption: true
9 ---
10
11 # Section 1
12
```

The status bar at the bottom indicates the current line is 8:22 and the document title is '# Starting with Rmd'.

# Text and headers

- ▶ Text can be plain text or decorated as *\*italic\** or **\*\*bold\*\***
- ▶ Headers use #s

*# Header 1*

*## Header 2*

*### Header 3*

# Markdown Quick Reference

*In RStudio: Help ➔ Markdown Quick Reference*

## Markdown Quick Reference

R Markdown is an easy-to-write plain text format for creating dynamic documents and reports.  
See [Using R Markdown](#) to learn more.

### **Emphasis**

```
*italic*    **bold**  
_italic_    __bold__
```

### **Headers**

```
# Header 1  
## Header 2  
### Header 3
```

### **Lists**

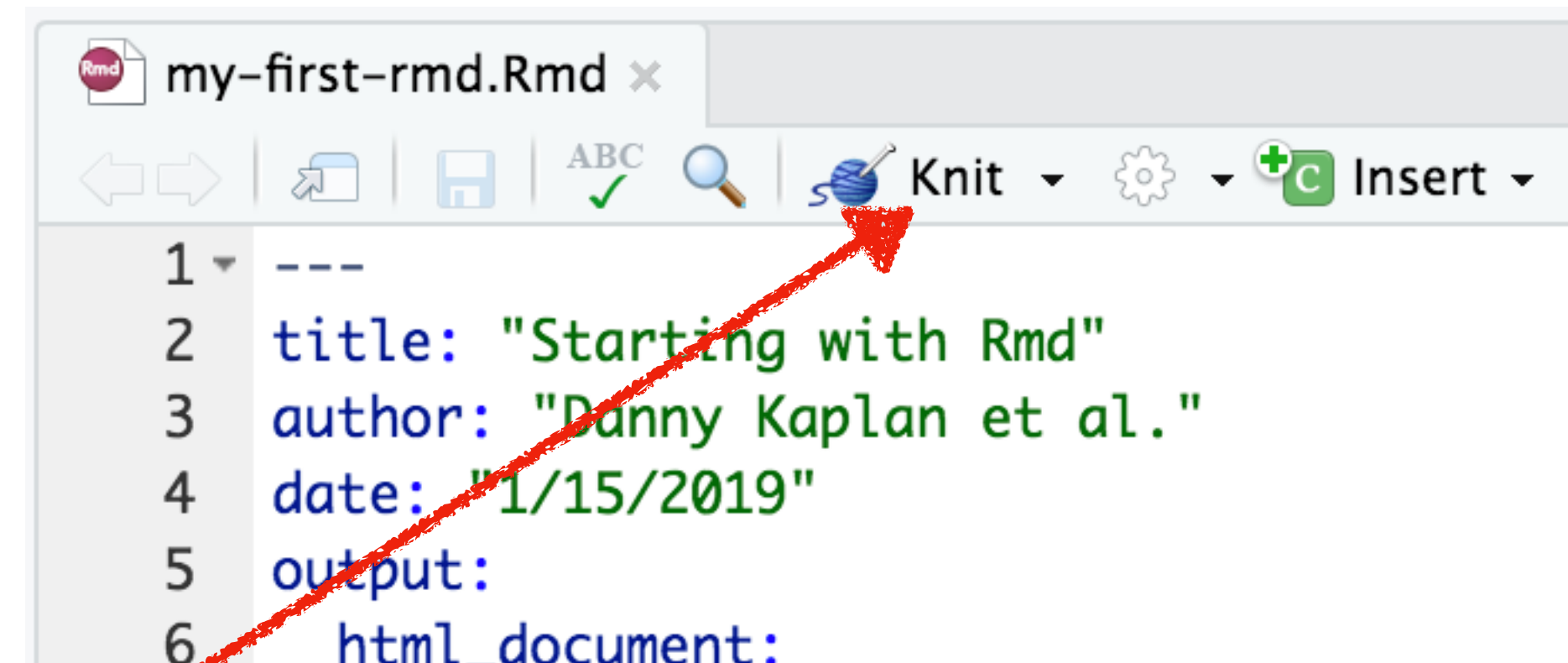
#### **Unordered List**

```
* Item 1  
* Item 2  
  + Item 2a  
  + Item 2b
```

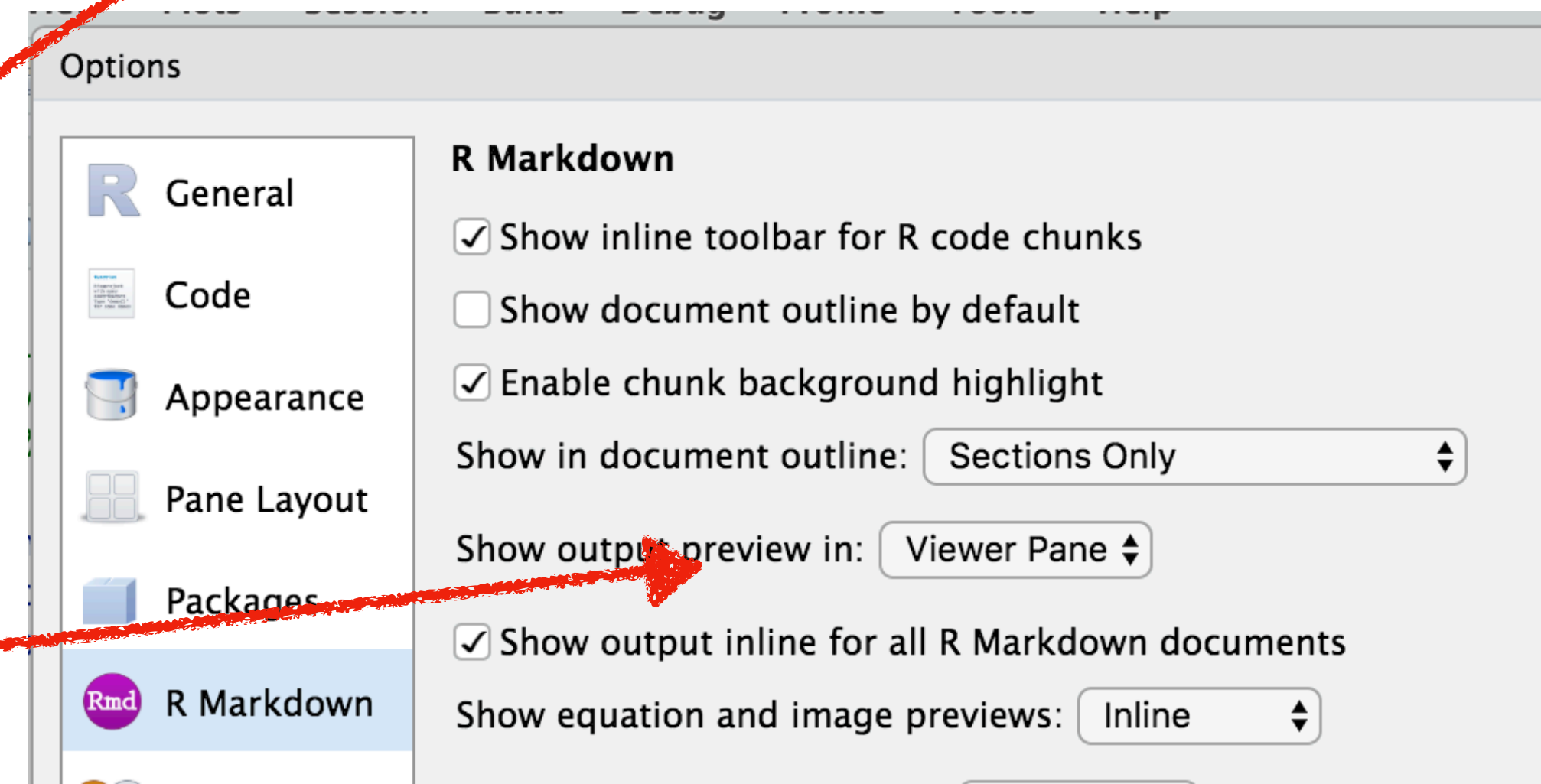


# Your turn

- Open up an Rstudio session
- Use File/New File/RMarkdown doc to create a new *\*source\** file.
- Write something as the contents.
- Adjust the title, author, ...
- Save your document as `my_first_rmd.Rmd`
- Compile document to HTML
- Arrange to view in the "Viewer" tab. Tools/Global Options



```
1 ---
2 title: "Starting with Rmd"
3 author: "Danny Kaplan et al."
4 date: "1/15/2019"
5 output:
6   html_document:
```

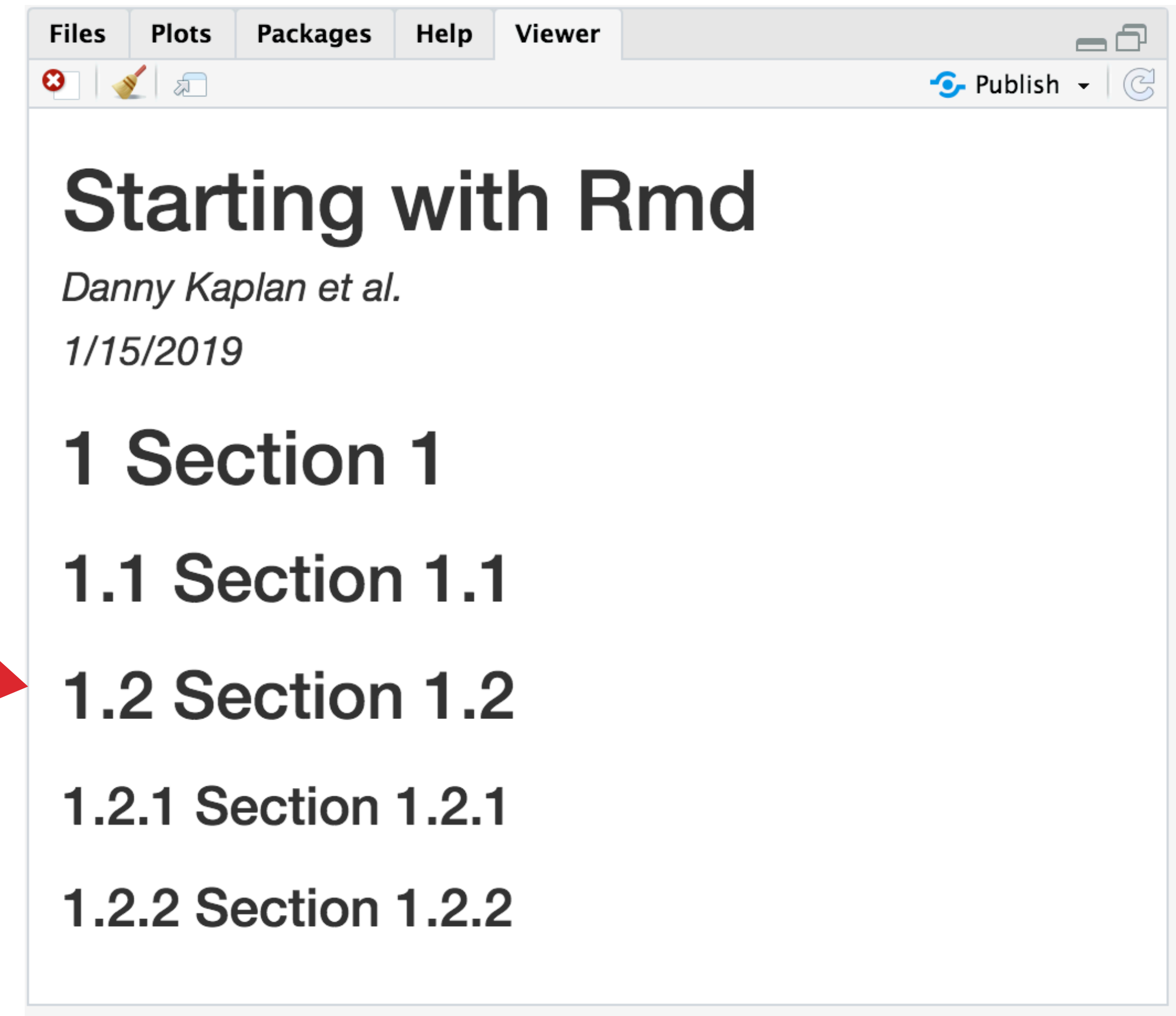


5m 00s



# Numbered sections

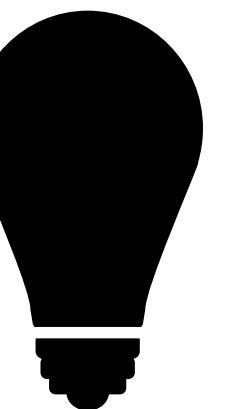
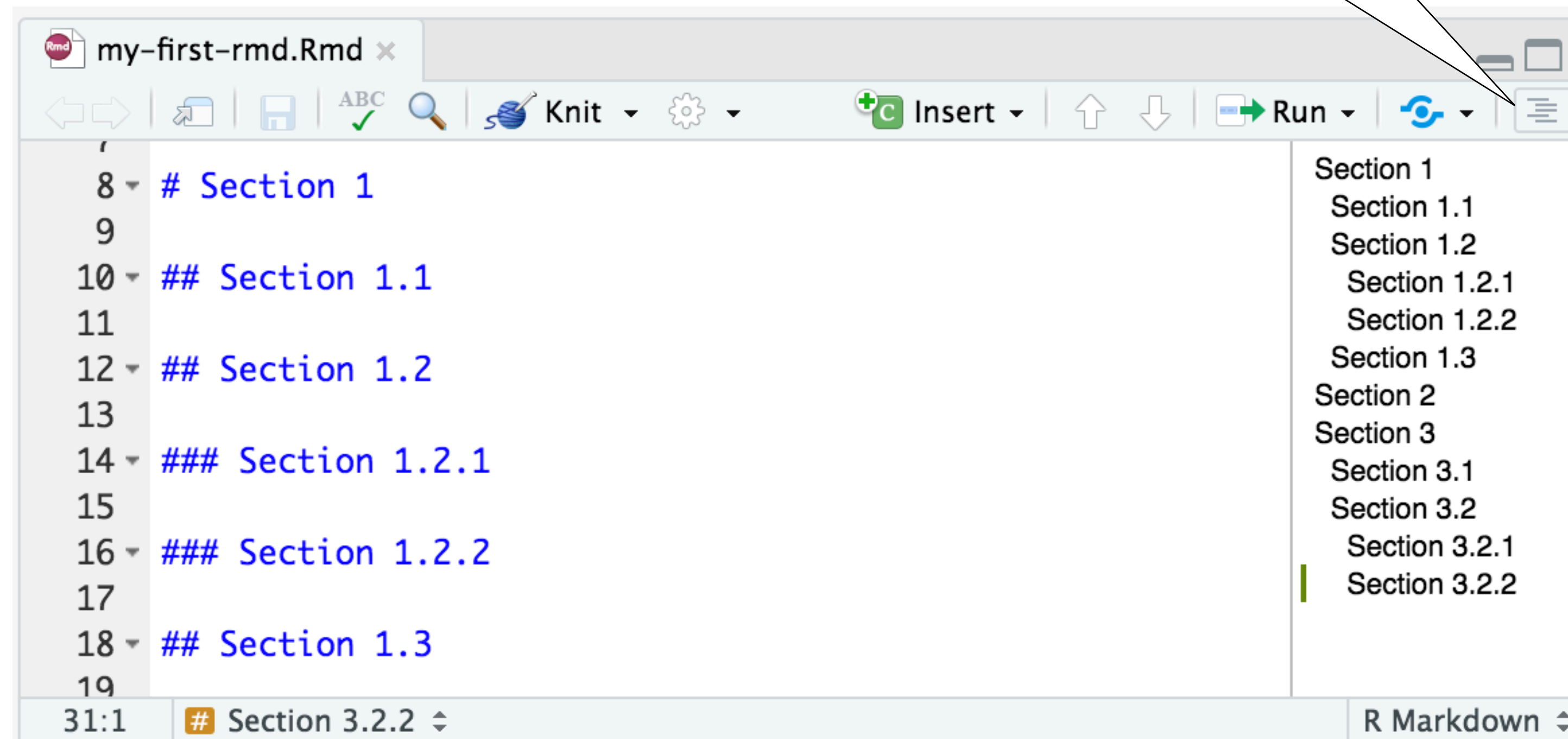
```
my-first-rmd.Rmd x
---
title: "Starting with Rmd"
author: "Danny Kaplan et al."
date: "1/15/2019"
output:
  html_document:
    number_sections: true
---
# Section 1
## Section 1.1
## Section 1.2
### Section 1.2.1
### Section 1.2.2
```





# Tips

Show / hide  
document  
outline



# Links

- ▶ *A link can be a plain http address or can underlie a phrase:*
  - *<http://rmarkdown.rstudio.com/>*
  - *[R Markdown website](<http://rmarkdown.rstudio.com/>)*
- ▶ *Long URLs with, e.g. query parameters, work just as well.*



# Images

► *Including an image is very similar to hyperlinking*

► *Images can be on the web:*

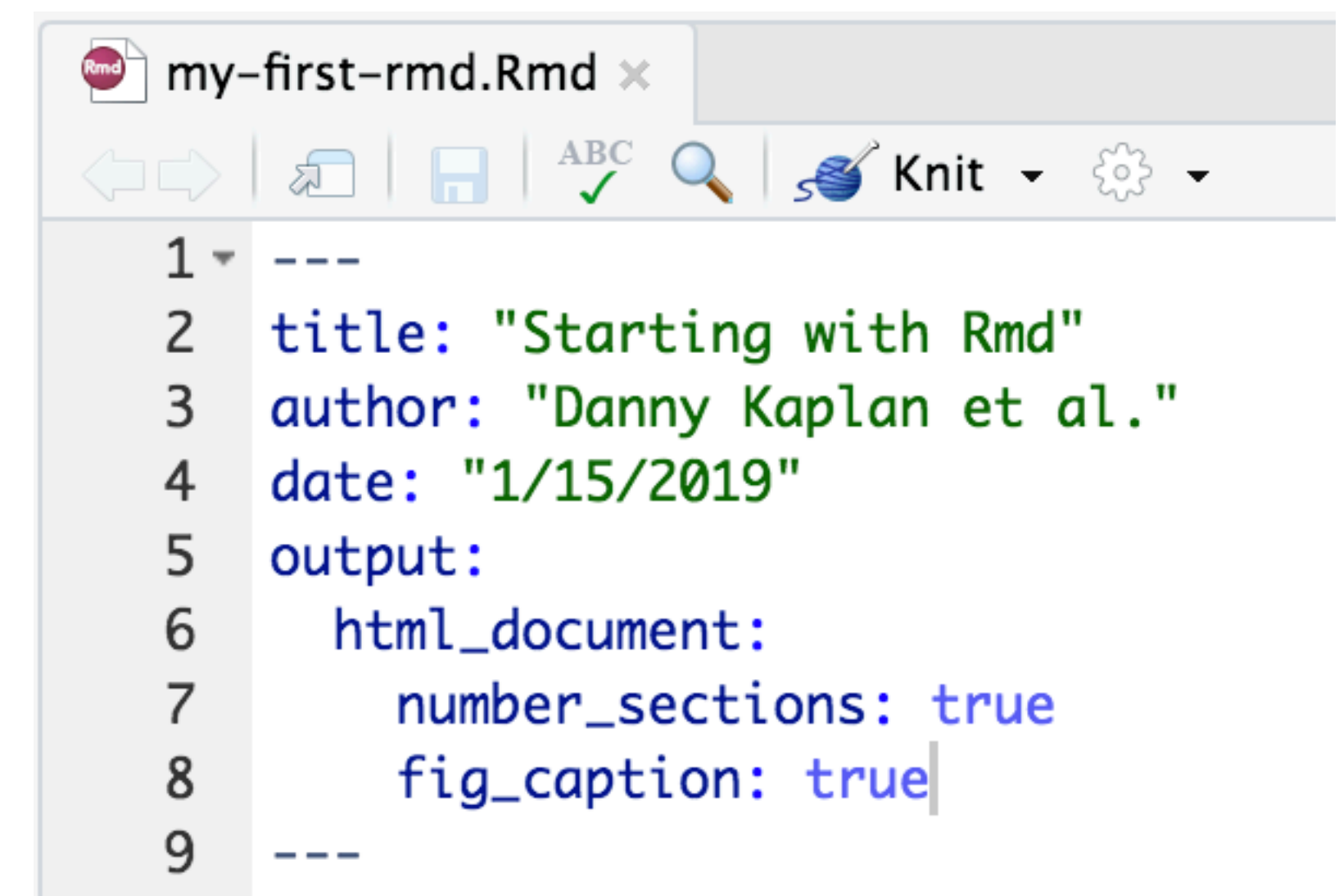
*! [RStudio logo] (<https://www.rstudio.com/wp-content/uploads/2014/04/rmarkdown.png>)*

► *Or they can be locally stored, e.g. in a directory "images"*

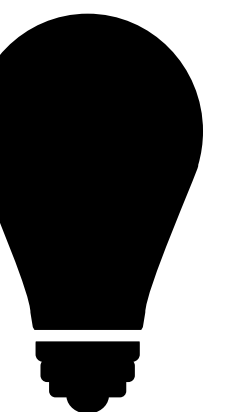
*! [RStudio logo] (images/rmarkdown.png)*

# Tips

- ▶ To improve the accessibility of your document, always add *alt text* to your images.
- ▶ To print the *alt text* underneath the image as a caption,
  - use *fig\_caption: true* in the YAML,
  - make sure there is a line break before the figure call.



```
1 ---  
2 title: "Starting with Rmd"  
3 author: "Danny Kaplan et al."  
4 date: "1/15/2019"  
5 output:  
6   html_document:  
7     number_sections: true  
8     fig_caption: true  
9 ---
```



# Reference style links and images

## ► **Links**

- A *[linked phrase][id]*
- At the bottom of the document: *[id]: http://example.com/ "Title"*

## ► **Images**

- *![alt text][id]*
- At the bottom of the document: *[id]: figures/img.png "Title"*

## ► **Useful if you'll be linking to the same target/image multiple times throughout the document**

# Math text

► *If you already know some LaTeX, you're good to go*

► *Equations can be inline:*

- `\bar{x} \sim N(\mu, \frac{\sigma}{\sqrt{n}})`

• Equations can be inline:  $\bar{x} \sim N\left(\mu, \frac{\sigma}{\sqrt{n}}\right)$

► *And equations can be centered in a new line:*

`$$\bar{x} \sim N(\mu, \frac{\sigma}{\sqrt{n}})$$`

• And equations can be centered in a new line:

$$\bar{x} \sim N\left(\mu, \frac{\sigma}{\sqrt{n}}\right)$$

# Tables

- ▶ *Tables are often a bit of a pain...*
- ▶ *Dashes separate the header row from content cells, and pipes separate the columns*
- ▶ *Colons can be used to align columns*

```
| Column A | Column B | Column C |  
|-----|:-----:|-----|  
| left   | center  | right   |  
| aligned | aligned | aligned |  
| text   | text    | text    |
```



Column A	Column B	Column C
left	center	right
aligned	aligned	aligned
text	text	text

# Your turn

Go back to *my-first-rmd.Rmd*.

1. Insert an image of Ultima Thule with an appropriate caption.
2. Recreate the following table on the right.
  - a) Hint: HTML code (mostly) works in markdown.
  - b) You can also use a helper tool like [https://www.tablesgenerator.com/markdown\\_tables](https://www.tablesgenerator.com/markdown_tables).

Roses	Violets	Markdown	R Markdown
are	are	is	is
Red	Blue	sweet	too



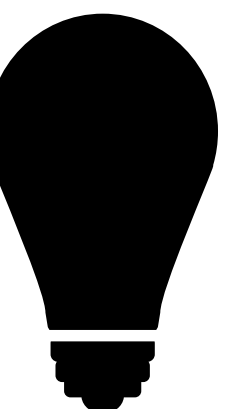
5<sub>m</sub> 00<sub>s</sub>





# Tips

- ▶ *The outer pipes (|) on a Markdown table are optional.*
- ▶ *You don't need to make the raw Markdown line up prettily.*
- ▶ *You can use inline Markdown within tables.*
- ▶ *For complicated tables, use R packages e.g. kable & kableExtra*



Analyze. Share. Reproduce.  
and do it all

## with R Markdown

Your data tells a joke story. Tell it with R Markdown. Turn your analyses into **high quality** documents, reports, presentations and dashboards – and don't forget to drink some H<sub>2</sub>O while you do that.<sup>1</sup>

R Markdown documents are fully reproducible. Use a productive [notebook interface](#)<sup>2</sup> to weave together narrative text and code to produce *elegantly formatted* output. Use multiple languages including

- R
- Python

and

- SQL

Do you need still need convincing to use R Markdown? See what a friend once said:

I used to use Sweave, and get terrible headaches. Now I use R Markdown, and life is much more pleasant.

1. Or coffee, whatever floats your boat. ↩

2. This link should point to [http://rmarkdown.rstudio.com/r\\_notebooks.html](http://rmarkdown.rstudio.com/r_notebooks.html). ↩



10<sub>m</sub> 00<sub>s</sub>



# Your turn

*Open `analyze-share-repro.Rmd` and add styling to the text to recreate the look on the left.*

***Done early?*** See the next slide for ***stretch goals***.

Analyze. Share. Reproduce.  
and do it all

with R Markdown 

Your data tells a ~~joke~~ story. Tell it with R Markdown. Turn your analyses into **high quality** documents, reports, presentations and dashboards – and don't forget to drink some H<sub>2</sub>O while you do that.<sup>1</sup>

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2. This link should point to [http://rmarkdown.rstudio.com/r\\_notebooks.html](http://rmarkdown.rstudio.com/r_notebooks.html). 



# Your turn

## ***Stretch goals:***

***(1) Change the theme***

***(2) Use a Font Awesome***

***icon for “boat” in the footnote. See <https://fontawesome.com/> for more on Font Awesome.***

***(3) Add R Markdown logo from <https://www.rstudio.com/about/logos/> and place it inline with text.***



# Tips

- ▶ *Keep your text to max ~80 characters across, especially if you use a version control system (like git)*
- ▶ *Starting a list? Leave an empty line before the first item on your list*
- ▶ *Need to test out bits of markdown code without knitting the entire document, use another document with bits and pieces of code to test out*

