

# Overleaf + R Part 2: Practicing Open-Source, Cloud-Based Workflows for Science Writing

Recorded Peer Scholars Workshop

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## Today's Goal

Each person can successfully commit changes between RStudio & Overleaf, while getting acquainted with some of LaTeX & Overleaf's useful features.

~~0. Working installation of R/RStudio~~

~~1. Open RStudio to install necessary packages~~

~~2. Create GitHub account: <https://it.engr.ncsu.edu/services/github/>~~

~~3. Install Git to your machine: <https://git-scm.com/downloads>~~

~~4. Open RStudio > Tools > Global Options > Git/SVN > Git executable > Browse: git.exe~~

~~5. Create Overleaf account (free with NCSU email): <https://www.overleaf.com/edu/ncsu>~~

**6. In Overleaf:** New Project > Scroll to “Templates” & select “AMATH582 homework” (or use a template of choice)

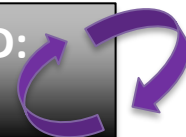
**7. In Overleaf:** Create GitHub repository from Overleaf

**8. In R:** File > New Project : Select from Version Control > Git

**9. In R:** Copy and Paste GitHub Repository URL (same repository created in Overleaf)

**10. Open your own .Rmd, annotate, name chunks, plot to figures folders! AND:**

**PULL > KNIT > STAGE > COMMIT > PUSH**



## General Tasks When Writing a Document

1. Pre-Writing/Brainstorming/Outlining
2. Writing!
3. Figures (**ggplot + other plot creation & \ref{}**)
4. Formatting (**Templates**)
5. Citations (**BibTex & /cite{}**)
6. Personal Editing (**Versioning**)
7. Peer-reviewed Edits/Revisions (**Overleaf Track Changes**)
8. File Management (**R Project & Overleaf folders**)
9. Storage & Back-Up (**Syncing to & from Github**)

# Scripting & File Management Best Practices

[https://kdestasio.github.io/post/r\\_best\\_practices/](https://kdestasio.github.io/post/r_best_practices/)

Directory of  
your repository

project

| 0\_get\_data.R

| 1\_preprocess\_data.R

| README.txt

| data

| doc

| figs

| output

| src

| myRProject.Rproj

| Example\_RNotebook.Rmd

} Sometimes helpful to have in a 'scripts' folder

What if my data is reallllly big  
or I don't want to push some  
content to Github?

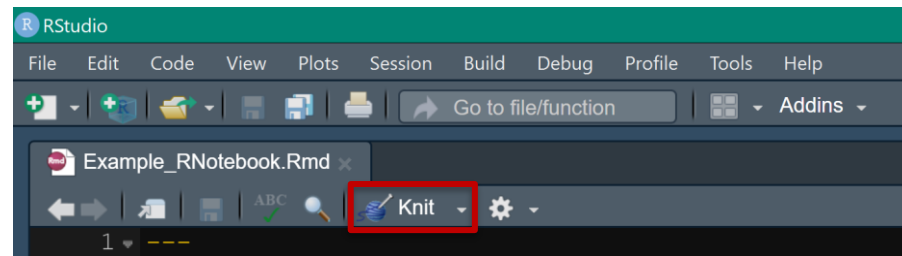
- **.gitignore**
- **Keep outside of repository**

# Knitting?

**If your code has errors, it won't knit...**



Knit = Render  
OR  
Code -> Pretty Format



↓  
HTML, PDF, etc.

**If you have problems knitting to pdf, do this:**  
`install.packages("tinytex")`  
`tinytex::install_tinytex()`

**...your knit document will get overwritten every time you 'knit'!**

## Handy things to know in R Notebooks

Shortcut to what?	Keys
Run a chunk	CTRL + SHIFT + ENTER
Run a line of code	CTRL + ENTER
Add a new chunk	CTRL + ALT + I

\*Code in chunks should still be written “sequentially” and run so, too, generally.

**Let's check out some of the plots in the RMD.**

**Why not write EVERYTHING in RMarkdown???**

## **Markdown vs. LaTeX**

[https://www.slant.co/versus/1903/13783/~markdown\\_vs\\_latex](https://www.slant.co/versus/1903/13783/~markdown_vs_latex)

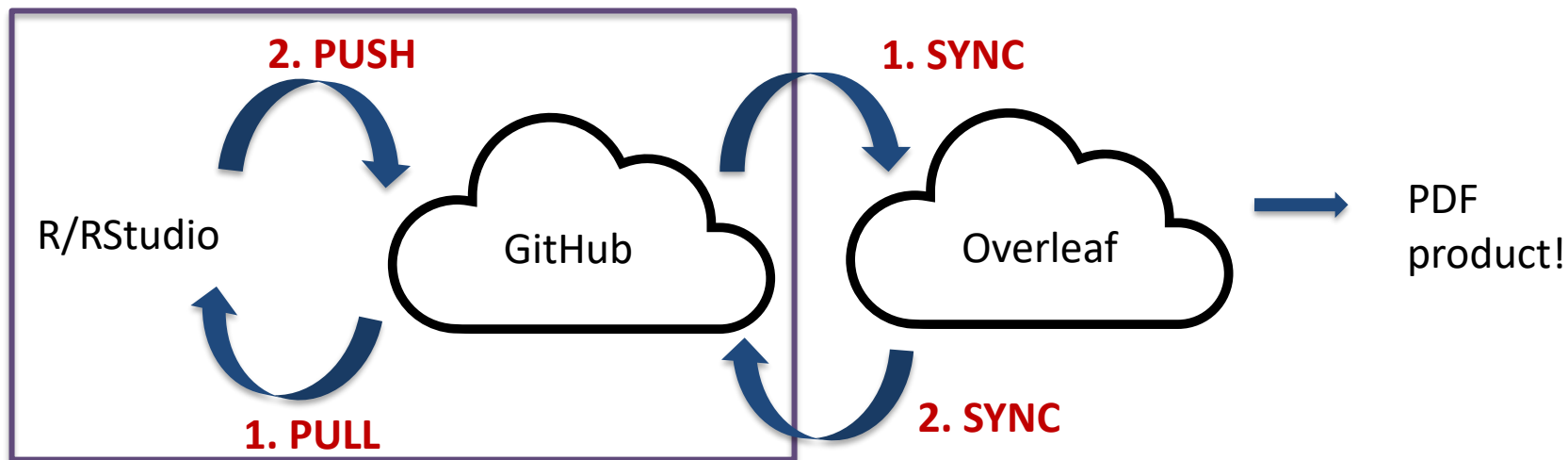
**Markdown Cheatsheet:** <https://rstudio.com/.../02/rmarkdown-cheatsheet.pdf>

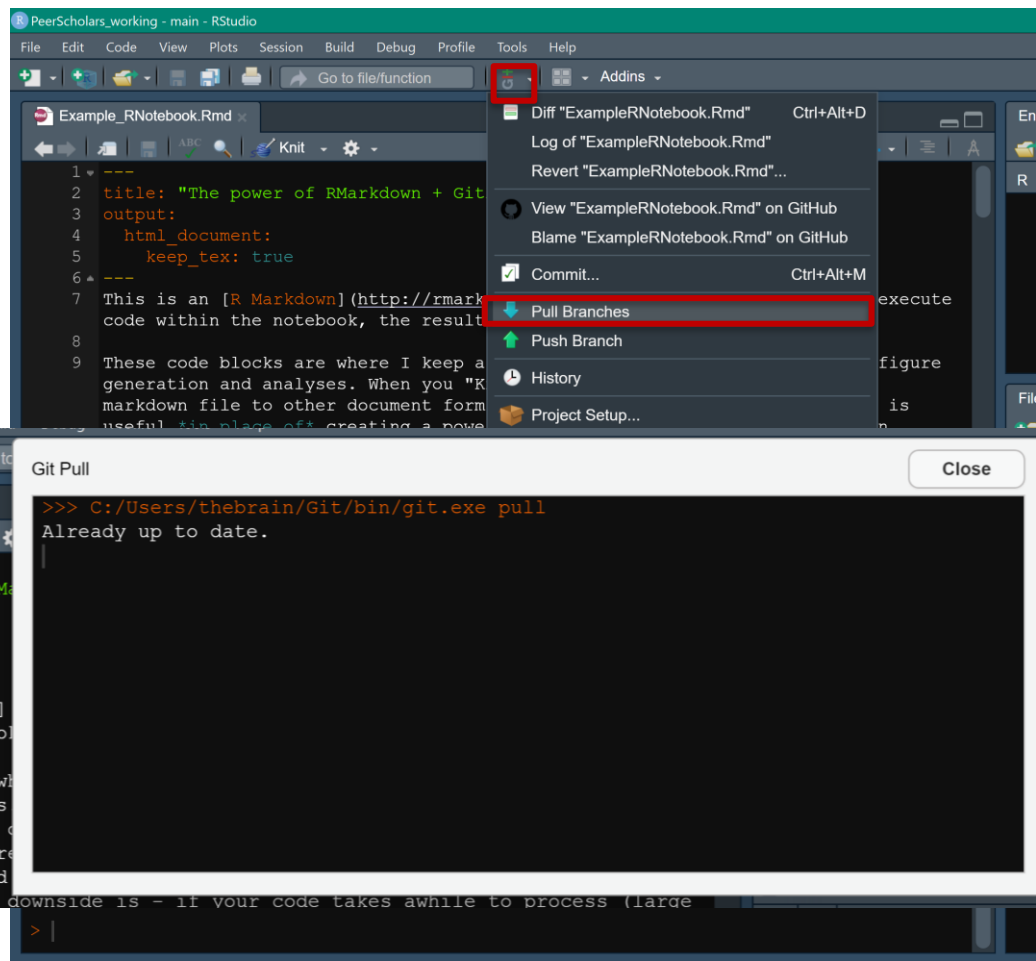
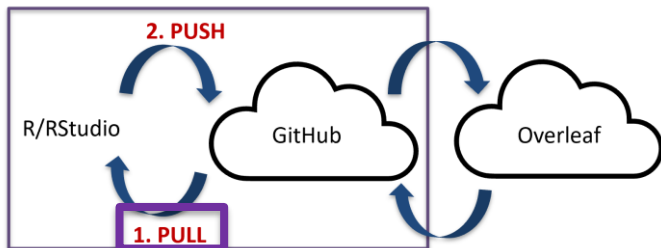
**LaTeX Cheatsheet:** <https://fr.overleaf.com/latex/templates/a-quick-guide-to-latex-overleaf-version/bphpqrdgjqy>

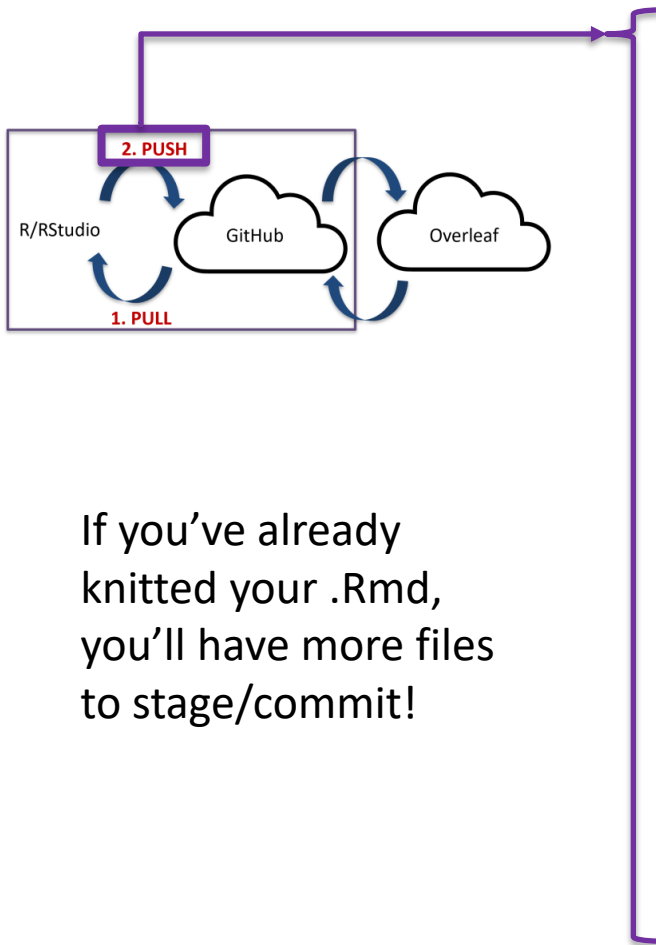


(R) PULL > (R) KNIT > (R) COMMIT > (R) PUSH > Sync (Overleaf)

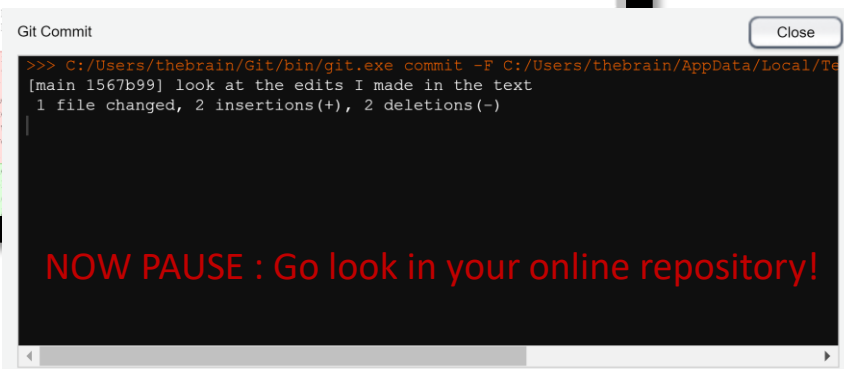
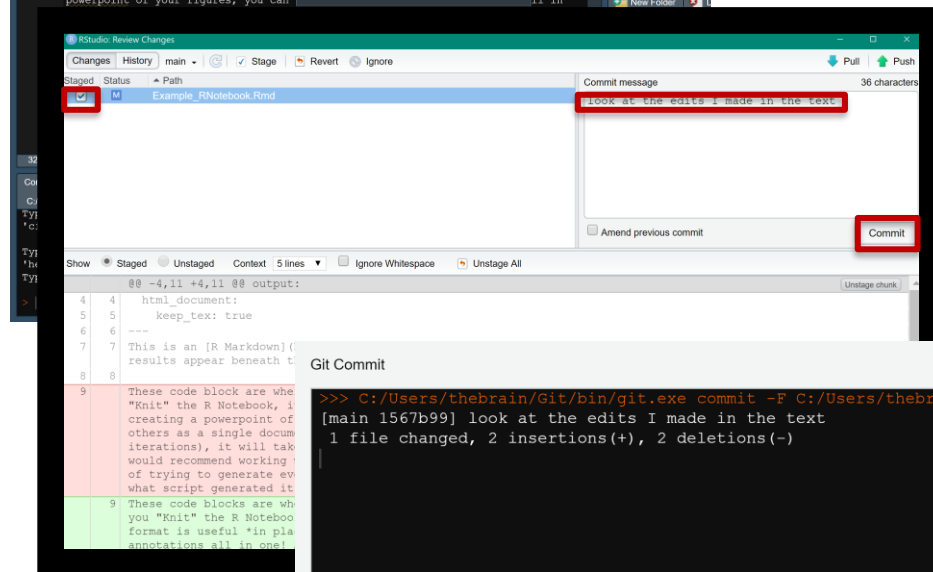
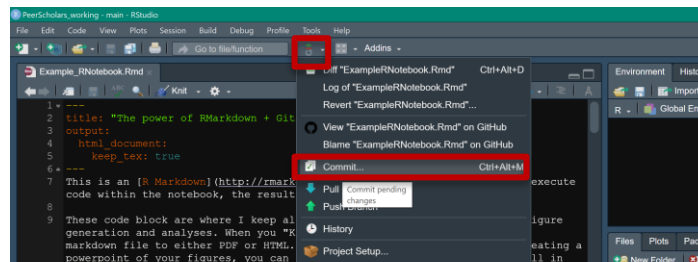
## Moving files between RStudio &amp; GitHub





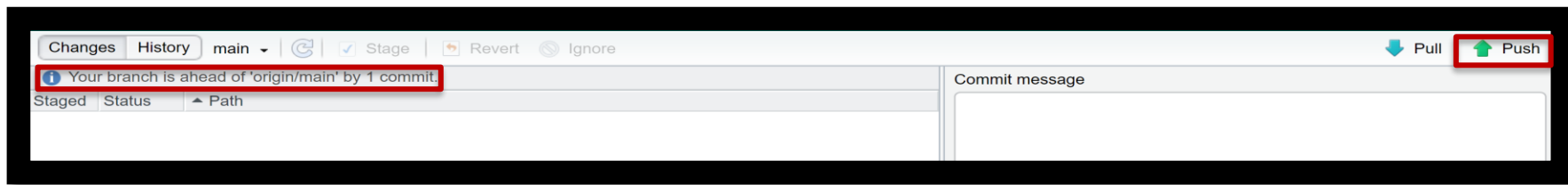


If you've already knitted your .Rmd, you'll have more files to stage/commit!



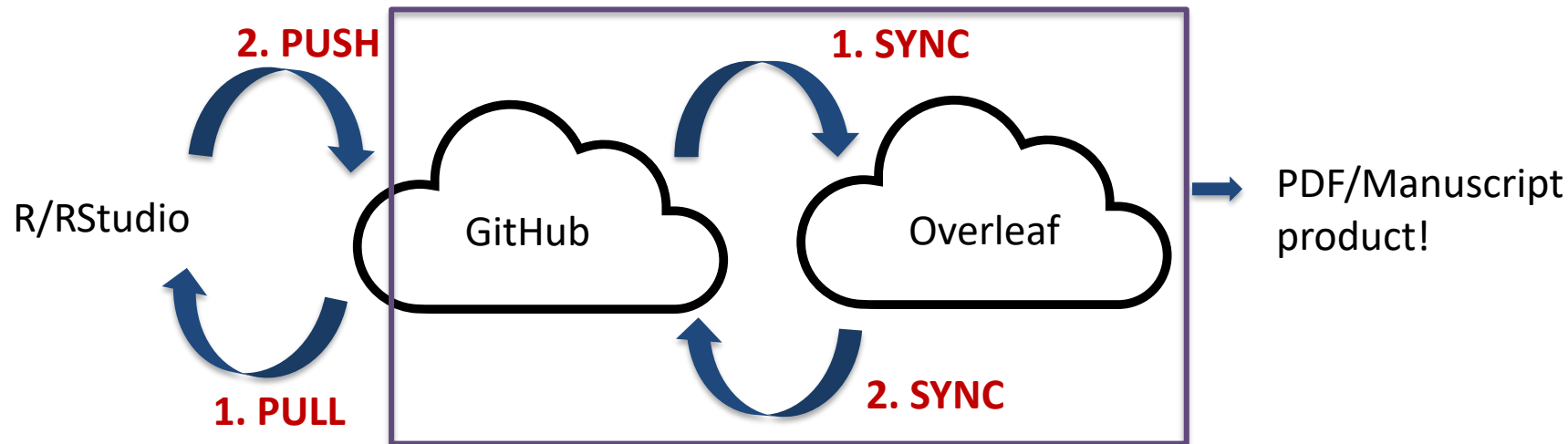
NOW PAUSE : Go look in your online repository!

Final Step: **PUSH**

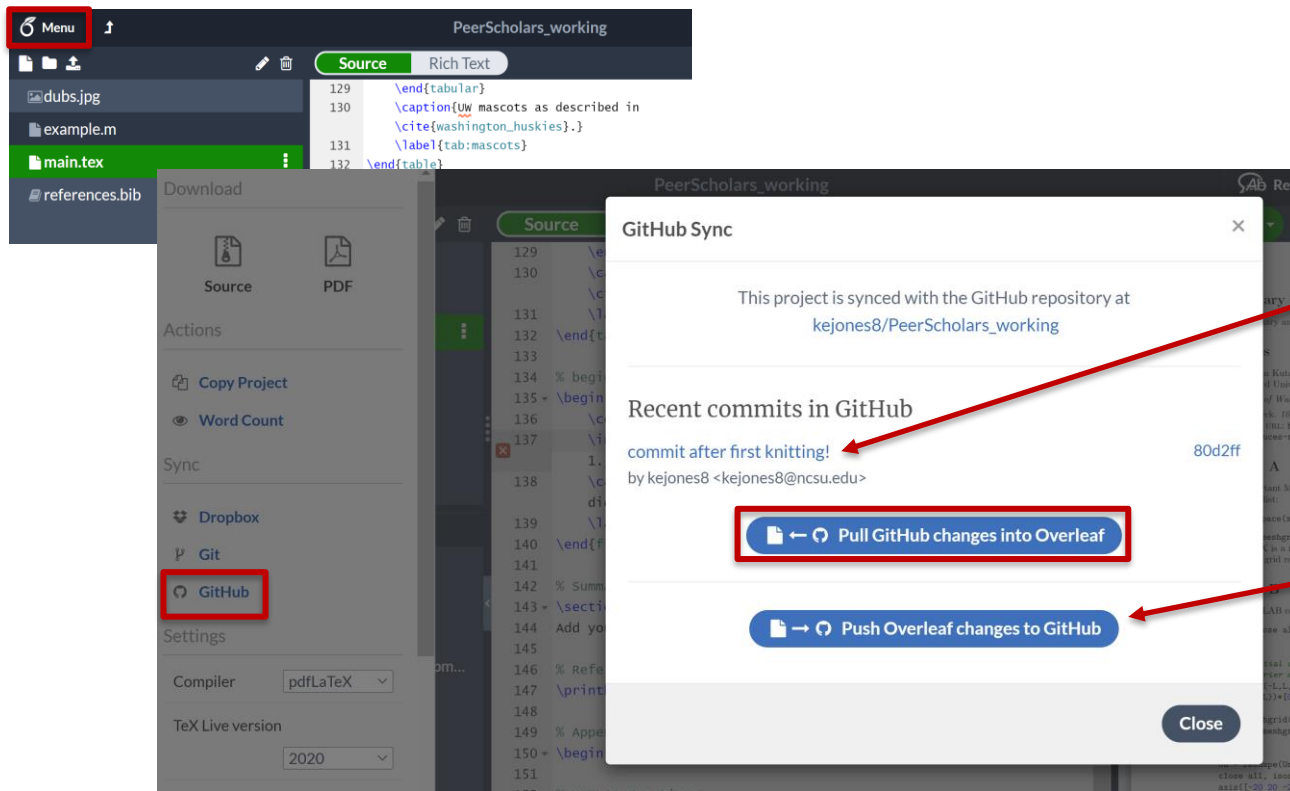


...now Github repository will update

## Moving files between Github &amp; Overleaf



And finally, once pushed from R, back to Overleaf to Sync.



Tells you what commits you're syncing.

After you've made changes in Overleaf, only 1 step to PUSH to Github.

Don't forget...you  
are technically  
writing code...

### Reserved characters

The following symbol characters are reserved by  $\text{\LaTeX}$  because they introduce a command and have a special meaning.

# \$ % ^ & \_ { } ~ \

These symbols and can be printed with special commands (in some cases - inside mathematical environment).

Character	Function	How to print it
#	Macro parameter	<code>\#</code>
\$	Math mode	<code>\$</code>
%	Comment	<code>\%</code>
^	Superscript (in math mode)	<code>\^{} or</code> <code>\textasciicircum</code>
&	Separate column entries in tables	<code>\&amp;</code>
_	Subscript (in math mode)	<code>\_</code>
{ }	Processing block	<code>\{ \}</code>
~	Unbreakable space, use it whenever you want to leave a space which is unbreakable	<code>\textasciitilde or \~</code> <code>{ }</code>
\	Starting commands, which extend until the first non-alphanumeric character	<code>\textbackslash or \</code>



- **Navigating the different panes**
  - Source -> Compiled -> PDF
  - Warnings
  - Commenting
  - .tex
  - Organization – folders, etc.
- **Templates in Overleaf**
  - Packages (no “installation”)
  - Some common/useful packages
  - `\begin{document}`
  - File outline (Sections & Subsections)
- **Aesthetics & Referencing**
  - Bold, italics, bulleted lists
  - In-text Citations & Referencing
  - Inserting Code
  - Tables
  - Location on page
- **Editing & Revisions**
  - Track Changes & Commenting
  - Versioning
  - Sharing

## When to forego this workflow?

- Large datasets (if something took 5 hours to run, calling it actively in line to knit will NOT be efficient either)
- Need the ability to work offline
- Your required submission does not have an Overleaf template, but has a word template
- Sometimes, it's just easier to do it how you know how to do it

## But remember! Why Overleaf + R?

- Reproducibility, reproducibility, reproducibility
  - Blending of open source tools
- Consistency & Efficiency – no manual data transfer/formatting

## Useful Resources:

[Intro to R \(opt. 1\)](#)

[Intro to R \(opt. 2\)](#)

[Intro to R \(opt. 3\)](#)

[Intro to R \(opt. 4\)](#)

[Intro to Advanced RMarkdown](#)

[Intro to RNotebooks](#)

[Excellent Beginner to Intermediate Rmarkdown run through](#)

[More on R & Github](#)

[More on R & Git/Github \(opt 2\)](#)

[LaTeX Quick Reference](#)

[LaTeX / Overleaf Tutorials for Common Tasks](#)

## Questions/Comments

Kate Jones,

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When somebody writes,  
"call if you have any  
questions," Do they really  
mean ANY questions?  
Because I'm really  
wondering about  
platypuses.

som<sup>ee</sup>cards  
user card

