

#swRk

R Markdown and Bookdown for Social Workers



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Getting Started

- ▶ **Next session: October 3, 2020**
- ▶ **You will receive a survey, later this weekend, regarding the workshop. Please complete the survey so we can continue to improve services. Thanks in advance!**

Getting Started

- ▶ If you would like an #swRk hex sticker, email your snail mail address to me.



Getting Started

- ▶ R Markdown is a way to share your code, results, and written commentary.
- ▶ You can choose lots of different formats such as PDFs, Word files, Power Point, etc.
- ▶ There is a lovely R Studio R Markdown cheatsheet here: <https://www.rstudio.com/wp-content/uploads/2015/02/rmarkdown-cheatsheet.pdf>

Setup, and Packages to Install:

```
setwd()
```

```
install.packages("tidyverse")
```

```
library(tidyverse)
```

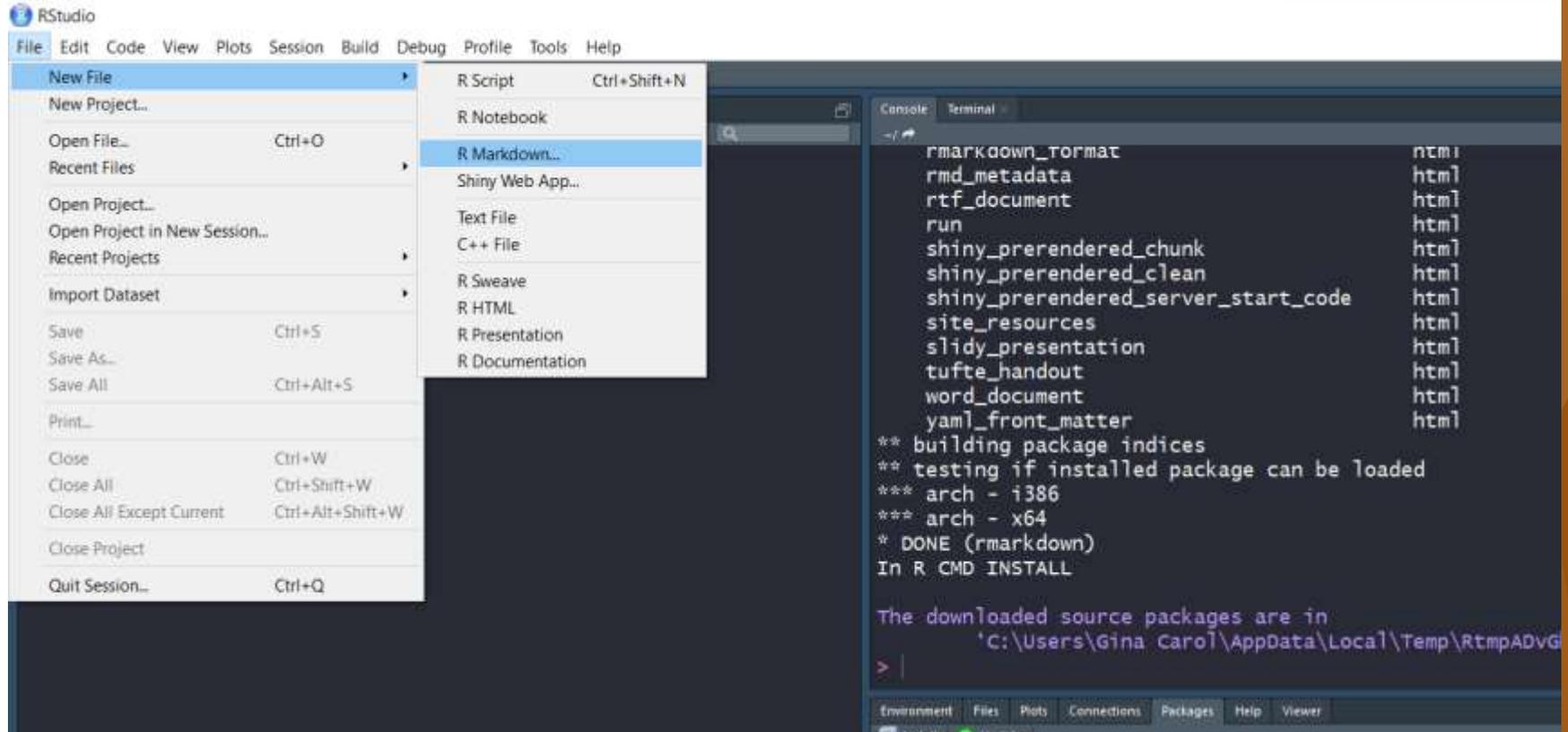
```
install.packages("rmarkdown")
```

```
library(rmarkdown)
```

```
install.packages("knitr")
```

```
library(knitr)
```

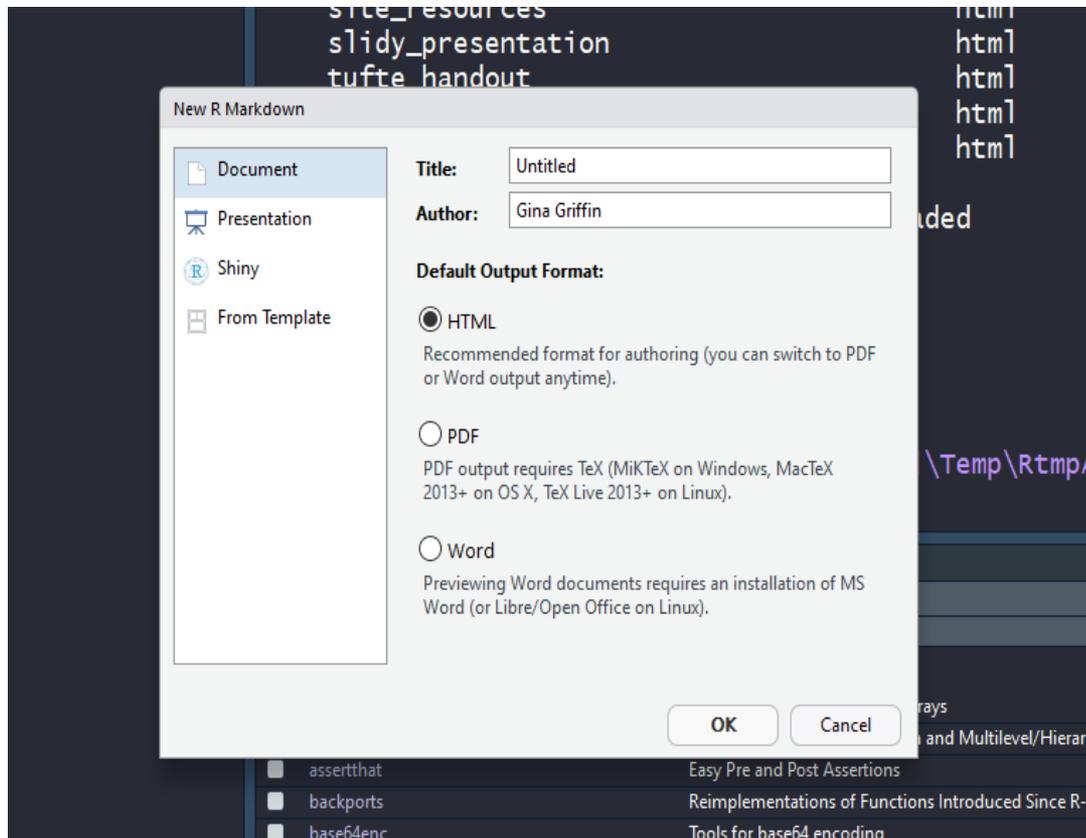
To create an R Markdown Document:



The screenshot shows the RStudio interface. The 'File' menu is open, and 'R Markdown...' is selected. The Console window displays the following output:

```
rmarkdown_format      ntml
rmd_metadata          html
rtf_document          html
run                   html
shiny_prerendered_chunk shiny_prerendered_server_start_code html
shiny_prerendered_clean shiny_prerendered_server_start_code html
site_resources        html
slidy_presentation    html
tufte_handout         html
word_document        html
yaml_front_matter     html
** building package indices
** testing if installed package can be loaded
*** arch - i386
*** arch - x64
* DONE (rmarkdown)
In R CMD INSTALL

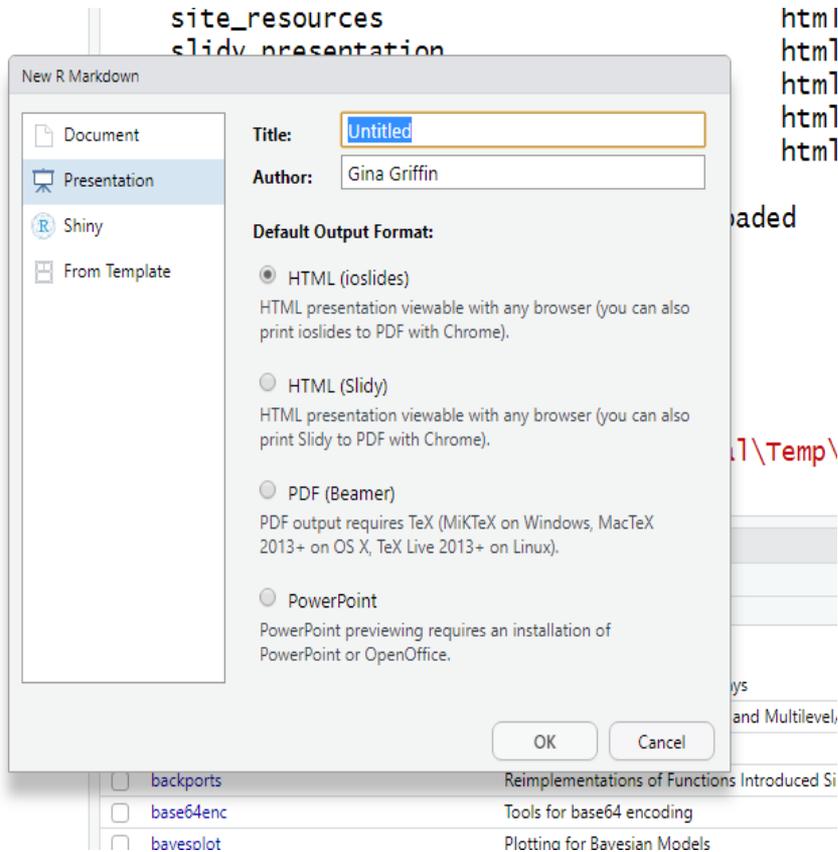
The downloaded source packages are in
  'C:\Users\Gina Carol\AppData\Local\Temp\RtmpADvG
> |
```



Types of document outputs include HTML (the default), PDF, Word...

Note for PDFs:

- ▶ If you want to generate PDF output, you will need to install LaTeX. For R Markdown users who have not installed LaTeX before, we recommend that you install TinyTeX (<https://yihui.name/tinytex/>):



...Also Shiny and Presentation documents. R Studio supports the ability to output PowerPoint files since 2018. (W00t!)

```
2 title: "Untitled"
3 author: "Gina Griffin"
4 date: "6/8/2019"
5 output: powerpoint_presentation
6 ---
7
8 ---{r setup, include=FALSE}
9 knitr::opts_chunk$set(echo = FALSE)
10 ---
11
12 ## R Markdown
13
14 This is an R Markdown presentation. Markdown is a simple
15 formatting syntax for authoring HTML, PDF, and MS Word
16 documents. For more details on using R Markdown see <http://rmarkdown.rstudio.com>.
17
18 When you click the Knit button a document will be
19 generated that includes both content as well as the output
20 of any embedded R code chunks within the document.
21
22 ## Slide with Bullets
23
24 - Bullet 1
```

```
History
install.packages("rmarkdown")
```

```
rma_meta
rtf_docu
run
shiny_pr
shiny_pr
shiny_pr
site_res
slidy_pr
tufte_ha
word_doc
yaml_fro
** building
** testing i
*** arch - i
*** arch - x
* DONE (rmar
In R CMD INS
```

```
The download
'C:\
>
```

Environment	Files
install	Update
Name	

User Library
<input type="checkbox"/> abind
<input type="checkbox"/> arm
<input type="checkbox"/> assertthat
<input type="checkbox"/> backports
<input type="checkbox"/> base64enc

This is what a default file looks like.

The Breakdown

- ▶ A basic R Markdown file is a .rmd file.
- ▶ It contains three types of content:
 - An optional YAML header, surrounded by ---
 - ▶ ---
title: “R Markdown Basics”
date: 2019-6-8
output: powerpoint_presentation

 - Chunks of code surrounded by ```
 - Text mixed with simple text formatting like # heading and *italics*.

- You can run chunks of code by clicking the **Run** icon.
- To produce a complete report, that includes all of the text, code, and results, click **KNIT** or use **Cmd/Ctrl-Shift-K**. This will show the report in the viewer pane. It will also give you a file that you can share with others.
- Direct quote from “R for Data Science”:
“When you *knit* the document, R Markdown sends the .rmd file to **knitr** to which executes all of the code chunks and creates a new Markdown (.rmd) document. That includes the code and its output. The Markdown file generated by **knitr** is then processed by **pandoc**, which is responsible for creating the finished file.”
- This allows the creation of a variety of document outputs.

3. Markdown

Next, write your report in plain text. Use markdown syntax to describe how to format text in the final report.

Bas

syntax

becomes

Plain text
End a line with two spaces to start a new paragraph.
italics and `_italics_`
****bold**** and `__bold__`
superscript^{^2^}
~~~strikethrough~~~  
`[link](www.rstudio.com)`

# Header 1  
## Header 2  
### Header 3  
#### Header 4  
##### Header 5  
##### Header 6

endash: --  
emdash: ---  
ellipsis: ...  
inline equation:  $A = \pi * r^{2}$   
image: `!(path/to/smallorb.png)`

horizontal rule (or slide break):  
\*\*\*

Plain text  
End a line with two spaces to start a new paragraph.  
*italics* and *italics*  
**bold** and **bold**  
superscript<sup>2</sup>  
~~strikethrough~~  
[link](#)

# Header 1

## Header 2

### Header 3

#### Header 4

##### Header 5

###### Header 6

endash: –  
emdash: —  
ellipsis: …  
inline equation:  $A = \pi * r^2$

image: 

horizontal rule (or slide break):

# Basic Markdown Formatting:

## ► Text Formatting

*\*italic\** OR `_italic_`

**\*\*bold\*\*** OR `__bold__`

``code``

Superscript `^2^` and subscript `~2~`

Horizontal Rule, or Slide Break `***`

> Block Quote

# Basic Markdown Formatting (contd):

## ► Headings

# First Level Header

## Second Level Header

### Third Level header

# Basic Markdown Formatting (contd):

## ► Bulleted Lists

- \* Bulleted list item 1
- \* Item 2
  - \* Item 2a
  - \* Item 2b

## ► Numbered Lists

1. Numbered list item 1
1. Item 2 (The numbers will be generated automatically when you output the file)

# Basic Markdown Formatting (contd):

## ► Links and Images

Link: `<http://example.com>`

`[Linked Phrase] (http://example.com)`

`![Optional caption text] (path/to/img.png)`

## To add an image:

- ▶ It must be saved as a .jpg or .png
- ▶ The best way is to group all images in a folder, to be put in a directory, the directory to which RStudio has access.
- ▶ Use this format: ![Alt text] (path from directory to image)
- ▶ So my output of my sassy! Gina picture is : ![Alt text] (\Users\Gina Carol\Desktop\GG-Profile Pic Red.jpg)

# Let's Practice! (from R4DS)

- Create a new notebook using *File > New File > R Notebook*. Read the instructions. Practice running the chunks. Verify that you can modify the code, re-run it, and see modified output.
- Create a new R Markdown document with *File > New File > R Markdown...* Knit it by clicking the appropriate button. Knit it by using the appropriate keyboard short cut (**Cmd/Ctrl-Shift-K**). Verify that you can modify the input and see the output update.
- Compare and contrast the R notebook and R markdown files you created above. How are the outputs similar? How are they different? How are the inputs similar? How are they different? What happens if you copy the YAML header from one to the other?
- Create one new R Markdown document for each of the three built-in formats: HTML, PDF and Word. Knit each of the three documents. How does the output differ? How does the input differ? (You may need to install LaTeX in order to build the PDF output – RStudio will prompt you if this is necessary.)

# Let's Practice! (from R4DS)

- Practice what you've learned by creating a brief CV. The title should be your name, and you should include headings for (at least) education or employment. Each of the sections should include a bulleted list of jobs/degrees. Highlight the year in bold.
- Using the R Markdown quick reference, figure out how to:
  - ▶ Add a footnote.
  - ▶ Add a horizontal rule.
  - ▶ Add a block quote.

# BookDown

<https://bookdown.org/yihui/rmarkdown/html-document.html>

# Bookdown

- ▶ Combines R Markdown and Pandoc, for a variety of file outputs.
- ▶ Outputs a set of .rmd files, and each file is a chapter.
- ▶ Can embed interactive content, such as HTML and Shiny apps.
  - If you're outputting as HTML, it will embed the content
  - If you output as another style, it will convert that content to a screenshot.
- ▶ Can also choose to use Gitbook style

<https://www.youtube.com/watch?v=dVqVscgwSpw>



soleo and yihui Add now.json and Dockerfile for buildin...



4e34630 on Oct 22, 2018



73 commits

|                                                                                                    |                                                                                              |             |
|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-------------|
|  .gitignore         | more files and dirs to ignore ( <a href="#">close</a> <a href="#">rstudio/bookdown#129</a> ) | 4 years ago |
|  .travis.yml        | increase Pandoc version                                                                      | 3 years ago |
|  01-intro.Rmd       | delete accidental changes                                                                    | 4 years ago |
|  02-literature.Rmd  | remove bookdown::preview_chapter                                                             | 5 years ago |
|  03-method.Rmd      | remove bookdown::preview_chapter                                                             | 5 years ago |
|  04-application.Rmd | remove bookdown::preview_chapter                                                             | 5 years ago |
|  05-summary.Rmd     | remove bookdown::preview_chapter                                                             | 5 years ago |
|  06-references.Rmd  | put the chapter title on its own line                                                        | 3 years ago |
|  DESCRIPTION        | <a href="#">fix #18</a> : specify Type: Book to make sure that packrat does n...             | 3 years ago |
|  Dockerfile        | Add now.json and Dockerfile for building HTML book and d...                                  | 2 years ago |

# References:

- ▶ [https://rmarkdown.rstudio.com/articles\\_intro.html](https://rmarkdown.rstudio.com/articles_intro.html)
- ▶ <https://bookdown.org/yihui/rmarkdown/powerpoint-presentation.html><https://rpubs.com/RatherBit/90926ml>
- ▶ <https://r4ds.had.co.nz/>
- ▶ [https://rmarkdown.rstudio.com/authoring\\_basics.html](https://rmarkdown.rstudio.com/authoring_basics.html)

# Resources

All of the major R Studio Books are free, and online. You can buy a hardcopy, but they're there for you to use.

R for Data Science: <http://r4ds.had.co.nz/>

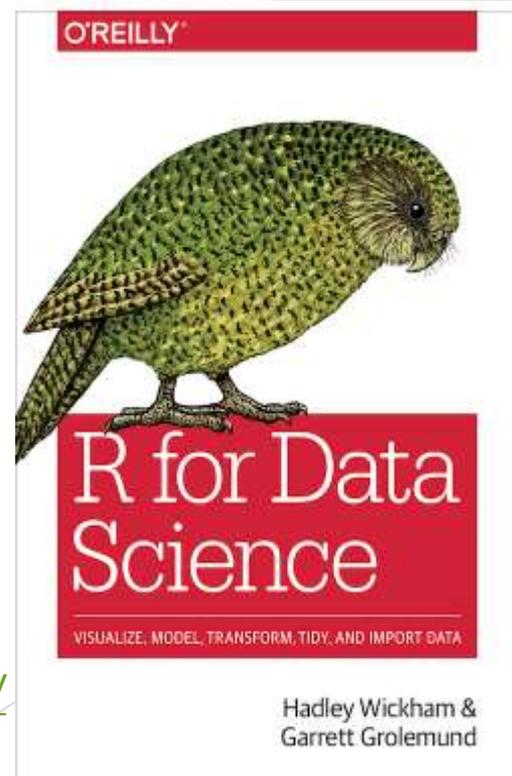
Introduction to Data Science:  
<https://leanpub.com/datasciencebook>

Advanced R: <http://adv-r.had.co.nz/>

ggplot2: <https://github.com/hadley/ggplot2-book>

R Markdown – The Definitive Guide:  
<https://bookdown.org/yihui/rmarkdown/>

Text Mining With R: <https://www.tidytextmining.com/>



# Resources

## R Conferences



useR! 2020  
The R User Conference  
July 7-10, 2020  
St. Louis, MO, USA



# Resources

## Ways to Learn R



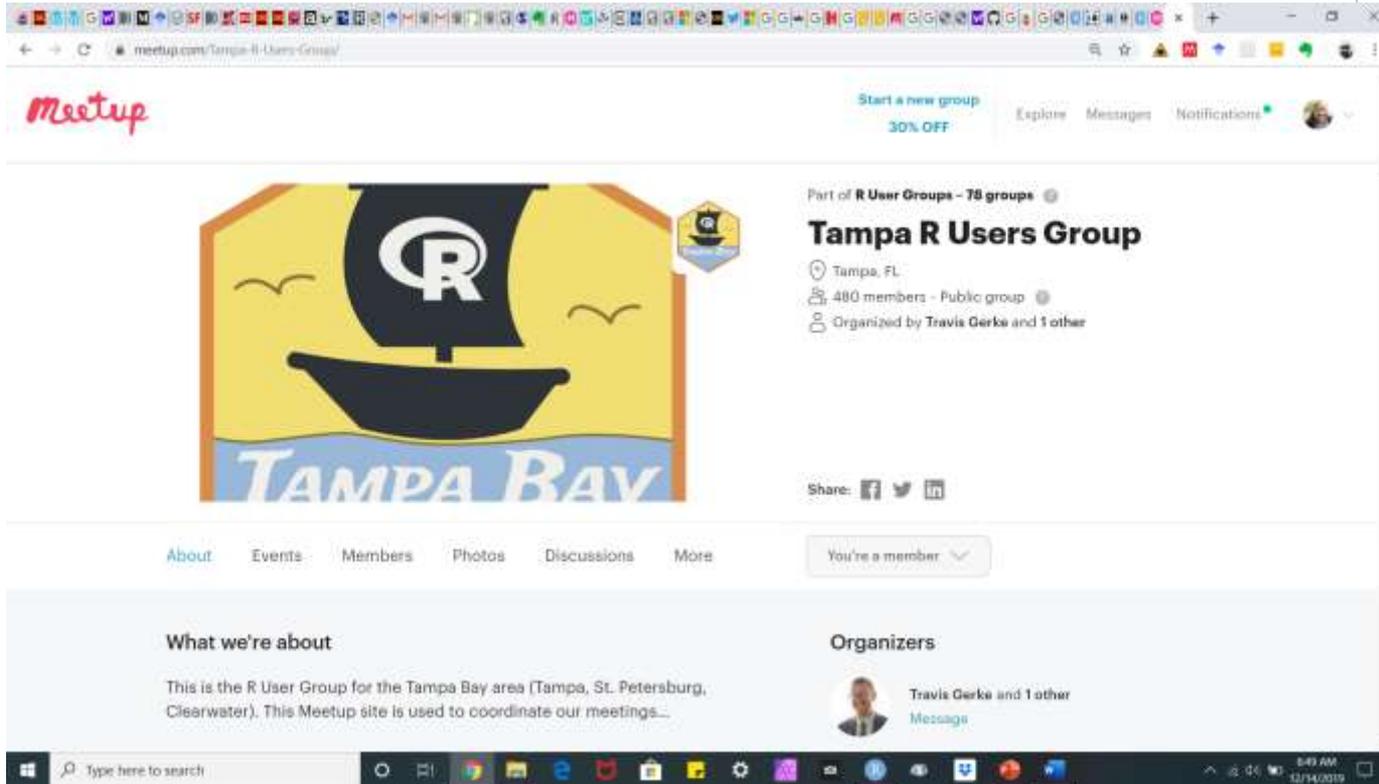
<https://www.rfordatasci.com/>



<https://rladies.org/>

# Resources

## Ways to Learn R

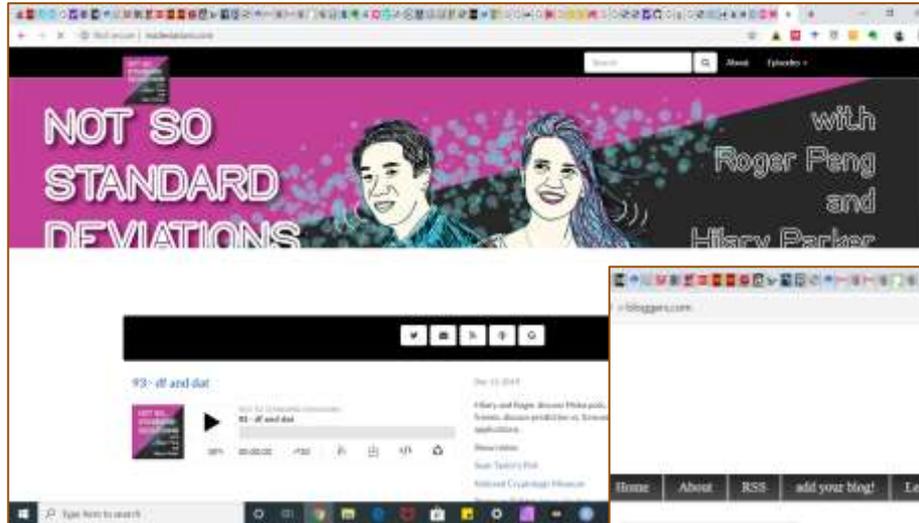


The screenshot shows a web browser window displaying the Meetup page for the Tampa R Users Group. The browser's address bar shows the URL `meetup.com/Tampa-R-Users-Group/`. The Meetup logo is in the top left corner. The group's main image features a stylized sailboat with a large 'R' on its sail, set against a yellow background with a blue banner at the bottom that reads 'TAMPA BAY'. To the right of the image, the group name 'Tampa R Users Group' is displayed, along with its location (Tampa, FL), member count (480 members), and organizer information (Travis Gerke and 1 other). Below the group name, there are social media sharing icons for Facebook, Twitter, and LinkedIn. A navigation bar at the bottom of the group page includes links for 'About', 'Events', 'Members', 'Photos', 'Discussions', and 'More'. A 'What we're about' section contains the text: 'This is the R User Group for the Tampa Bay area (Tampa, St. Petersburg, Clearwater). This Meetup site is used to coordinate our meetings...'. An 'Organizers' section lists 'Travis Gerke and 1 other' with a 'Message' button. The Windows taskbar at the bottom shows the search bar and various application icons, with the system tray displaying the time as 9:49 AM on 12/14/2019.



# Resources

<http://nssdeviations.com/>



<https://www.r-bloggers.com/>

# Resources

**Data Transformation Cheat Sheet**  
dplyr provides a grammar for manipulating tables in R. This cheat sheet will guide you through the grammar, reminding you how to select, filter, arrange, mutate, summarise, group, and join data frames and tibbles. (Previous version) Updated January 17.

**DOWNLOAD**

**Sparklyr Cheat Sheet**  
Sparklyr provides an R interface to Apache Spark, a fast and general engine for processing Big Data. With sparklyr, you can connect to a local or remote Spark session, use dplyr to manipulate data in Spark, and run Spark's built-in machine learning algorithms. Updated January 17.

**DOWNLOAD**

**Functions Cheat Sheet**  
purrr makes it easy to work with lists and functions. This cheat sheet will remind you how to manipulate lists with purrr as well as how to iterate functions iteratively to each element of a list or vector. The back of the book explains how to work with list-columns. With list columns, you can use a simple data frame to organize any collection of objects in R. Updated September 17.

**DOWNLOAD**

**Import Cheat Sheet**  
readr cheat sheet reminds you how to read in flat files with readr (tidyverse.org), work with the results as tibbles, and reshape messy data with tidyr. Use tidyr to reshape your tables into tidy data, the data format that works the most seamlessly with R and the tidyverse. Updated January 17.

**DOWNLOAD**

<https://rstudio.com/resources/cheatsheets/>

# Resources

## UseR! Videos

The screenshot displays the YouTube channel page for the R Consortium. The channel banner features the R Consortium logo and the text: "Supporting the R Community, the R Foundation and organizations developing, maintaining and distributing R software." The channel has 4.83K subscribers and a red "SUBSCRIBE" button.

The video list shows several "Lightning Talks" from the UseR! 2019 Toulouse conference, all uploaded 3 months ago:

- Lightning Talk 3 - Spatial & ... (367 views)
- Lightning Talk 4 - Forecasting - Eran Raviv (646 views)
- Lightning Talk 7 - Methods ... (303 views)
- Lightning Talk 8 - Models & ... (342 views)
- Lightning Talk 6 - Shiny & ... (310 views)

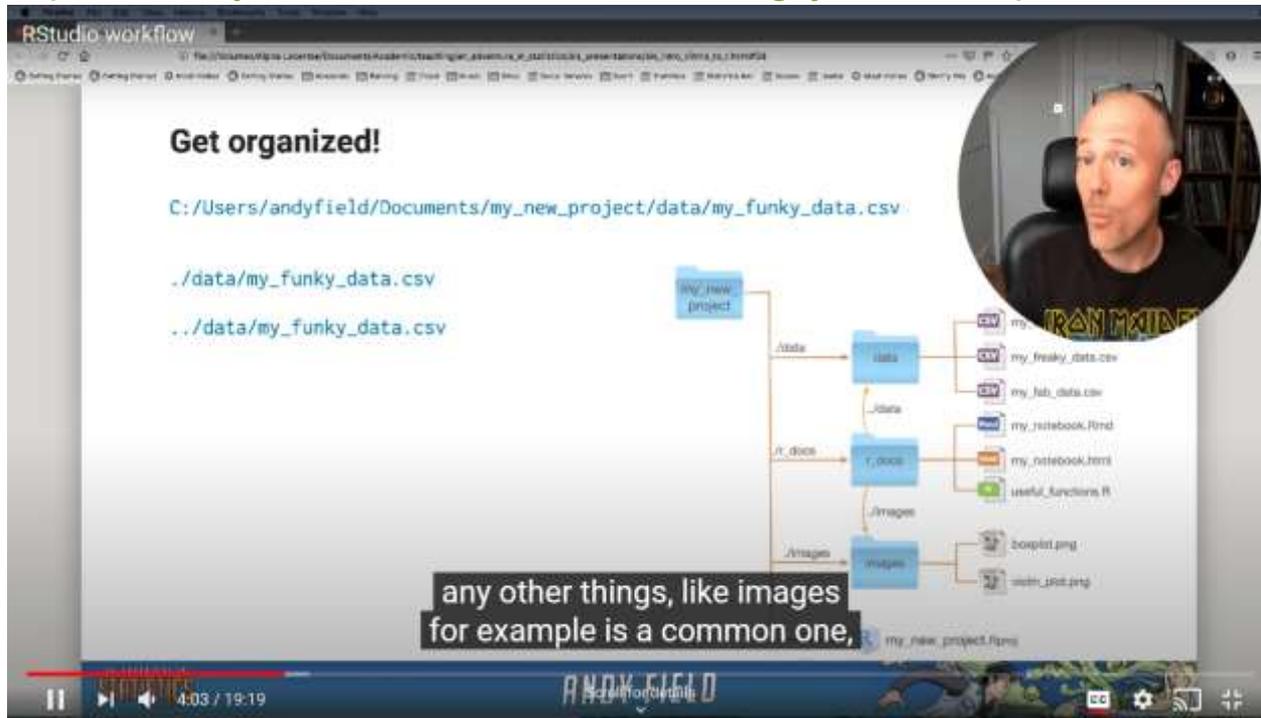
The Windows taskbar at the bottom shows the system time as 7:29 AM on 12/14/2019.

# Resources

## Andy Field

YouTube Channel:

<https://www.youtube.com/channel/UCakigkjm3vBzEHpFzECDXQQ>



The screenshot shows an RStudio workflow window with the title "Get organized!". The main content area displays the following text:

```
C:/Users/andyfield/Documents/my_new_project/data/my_funky_data.csv
```

```
./data/my_funky_data.csv
```

```
../data/my_funky_data.csv
```

To the right of the text is a circular video inset showing a man (Andy Field) speaking. Below the text is a file tree diagram illustrating the directory structure:

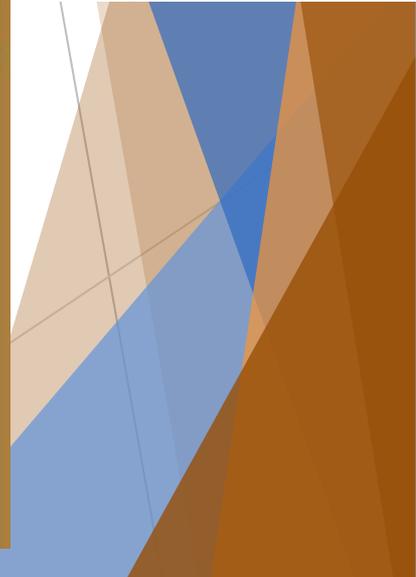
- my\_new\_project
  - data
    - my\_funky\_data.csv
    - my\_freaky\_data.csv
    - my\_fab\_data.csv
  - it\_does
    - my\_notebook.Rmd
    - my\_notebook.html
    - useful\_functions.R
  - images
    - boxplot.png
    - with\_plot.png

A text box at the bottom of the screenshot contains the text: "any other things, like images for example is a common one,". The video player interface at the bottom shows a progress bar at 4:03 / 19:19 and the channel name "ANDY FIELD".

# Resources

## Adventures in Social Work Research!

<https://aiswr78645859.wpcostaging.com/>



# Thank you!

**Contact:**

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