

# Introduction to R Markdown

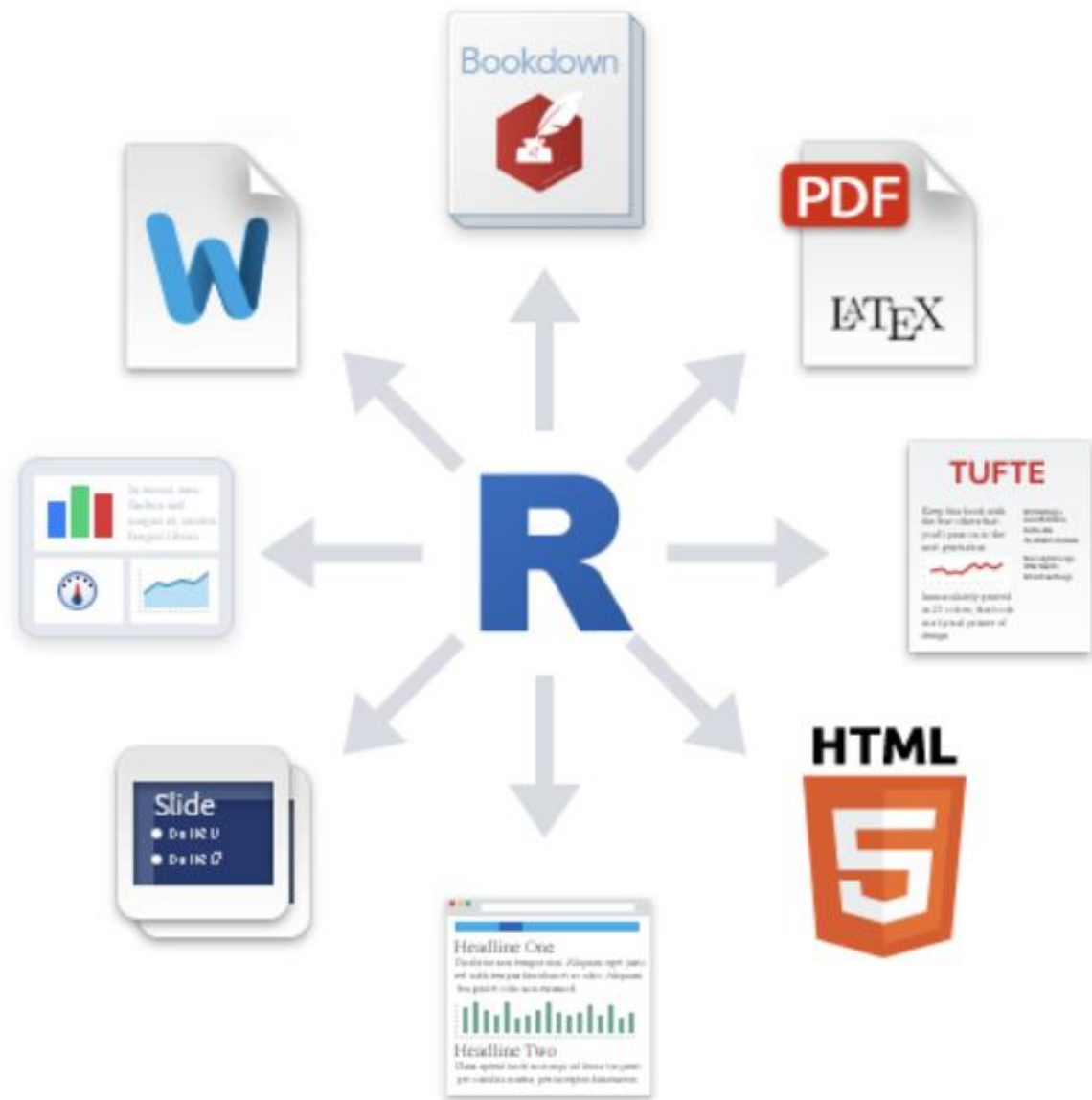
Samantha Estrada PhD

ORSSP Research Design & Data Analysis Lab Consultant  
University of Texas at Tyler

November 18, 2022

# What is R Markdown?

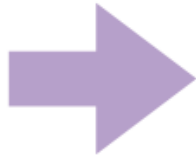
- R is a free, open-source software program for statistical analysis.
  - Download: <https://www.r-project.org>
- RStudio is a free, open-source IDE (integrated development environment) for R. (You must install R before you can install RStudio.)
  - Download: <https://posit.co/download/rstudio-desktop/>
- R Markdown is a file format for making dynamic documents with R. R Markdown is a format for writing reproducible, dynamic reports with R. Use it to embed R code and results into slideshows, pdfs, html documents, Word files and more.



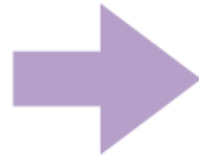
# 1 Workflow

- How to make a report:

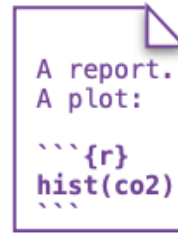
**i. Open** - Open a file that uses the .Rmd extension.



**ii. Write** - Write content with the easy to use R Markdown syntax



**iii. Embed** - Embed R code that creates output to include in the report



**iv. Render** - Replace R code with its output and transform the report into a slideshow, pdf, html or ms Word file.



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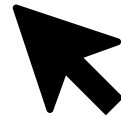
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File Edit Code View Plots Session Build Debug Profile To

- New File >
- New Project...
- Open File... ⌘ O
- Open File in New Column...
- Reopen with Encoding...
- Recent Files >
- Open Project...
- Open Project in New Session...
- Recent Projects >
- Import Dataset >
- Save ⌘ S
- Save As...
- Rename
- Save with Encoding...
- Save All ⌘⇧ S
- Knit Document ⌘⇧ K
- Publish...
- Print...
- Close ⌘ W
- Close All ⌘⇧ W
- Close All Except Current ⌘⇧⇧ W
- Close Project

- R Script ⌘⇧ N
- Quarto Document...
- Quarto Presentation...
- R Notebook
- R Markdown...**
- Shiny Web App...
- Plumber API...
- C File
- C++ File
- Header File
- Markdown File
- HTML File
- CSS File
- JavaScript File
- D3 Script
- Python Script
- Shell Script
- SQL Script
- Stan File
- Text File
- R Sweave
- R HTML
- R Documentation...



# 2

## Open RMD File

New R Markdown

Document  
Presentation  
Shiny  
From Template

**Title:** Untitled

**Author:** Samantha Estrada PhD

**Date:** 2022-11-13

Use current date when rendering document


**Default Output Format:**

HTML  
Recommended format for authoring (you can switch to PDF or Word output anytime).

PDF  
PDF output requires TeX (MiKTeX on Windows, MacTeX 2013+ on OS X, TeX Live 2013+ on Linux).

Word  
Previewing Word documents requires an installation of MS Word (or Libre/Open Office on Linux).

Create Empty Document      OK      Cancel

- Open File Start by saving a text file with the extension .Rmd, or open an RStudio Rmd template
- In the menu bar, click File  New File  R Markdown...
- A window will open. Select the class of output you would like to make with your .Rmd file
- Select the specific type of output to make with the radio buttons (you can change this later)
- Click OK

# 2

## Open RMD File

New R Markdown

Document

**Presentation**

Shiny

From Template

**Title:**

**Author:**

**Date:**

Use current date when rendering document


**Default Output Format:**

**HTML (ioslides)**  
HTML presentation viewable with any browser (you can also print ioslides to PDF with Chrome).

**HTML (Slidy)**  
HTML presentation viewable with any browser (you can also print Slidy to PDF with Chrome).

**PDF (Beamer)**  
PDF output requires TeX (MiKTeX on Windows, MacTeX 2013+ on OS X, TeX Live 2013+ on Linux).

**PowerPoint**  
PowerPoint previewing requires an installation of PowerPoint or OpenOffice.

- Open File Start by saving a text file with the extension .Rmd, or open an RStudio Rmd template
- In the menu bar, click File  New File  R Markdown...
- A window will open. Select the class of output you would like to make with your .Rmd file
- Select the specific type of output to make with the radio buttons (you can change this later)
- Click OK

# 3 YAML

```
---  
title: "Untitled"  
author: "Samantha Estrada PhD"  
date: "2022-10-30"  
output: pdf_document  
toc: yes  
---
```

- YAML stands for Yet Another Markup Language
- Several options
  - Title
  - Subtitle
  - Author
  - Date
  - Output
  - Table of contents
  - Among others!



```
---  
title: "My docu"  
subtitle: "What a |document!"  
output:  
  html_document:  
    toc: true  
    toc_depth: 2  
---
```

---

title: "Final Data Project Instructions"

subtitle: "PSYC 2354: Fall 2022"

author: "Samantha Estrada PhD"

output: html\_document

bibliography: /Users/sestrada/OneDrive - The University of Texas at  
Tyler/Teaching GD/PSYC

2354/PSYC2354BIB.bib

csl: /Users/sestrada/OneDrive - The University of Texas at Tyler/Teaching  
GD/PSYC 6341/PPT/apa.csl

---

# Rmarkdown Titles

```
# 1st level heading
```

```
This is some text between the 1st level
```

```
## 2nd level heading
```

```
This is some more text.
```

```
### 3rd level heading
```

## **1st level heading**

This is some text between the 1st level

### **2nd level heading**

This is some more text.

#### **3rd level heading**

# Bullet Points

```
*  Lorem ipsum dolor sit amet.  
  *  sed do eiusmod tempor incididunt.  
    *  Ut enim ad minim veniam.  
      *  Et dolore magna aliqua.|
```

- Lorem ipsum dolor sit amet.
  - sed do eiusmod tempor incididunt.
    - \* Ut enim ad minim veniam.
      - Et dolore magna aliqua.

# Bold and Italics

```
#### Bold and Italics
```

- \* To bold text use double asterisks **like this**
- \* To italic text use one asterik *like this*

## Bold and Italics

- To bold text use double asterisks **like this**
- To italic text use one asterik *like this*

# Code Chunks: echo = FALSE

```
`` `{r cars, echo=FALSE}  
# echo=FALSE, message=FALSE}  
summary(cars)  
sd(cars$speed)  
`` `
```

```
##           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
```

```
## [1] 5.287644
```

## Code Chunks: echo = TRUE

```
```{r cars2, echo=TRUE}  
# I calculate correlation next  
cor(cars)  
```
```

```
# I calculate correlation next  
cor(cars)
```

```
##           speed      dist  
## speed 1.0000000 0.8068949  
## dist  0.8068949 1.0000000
```

## Inline code

```
```{r cars3, echo=FALSE}  
sd.speed = sd(cars$speed)  
```
```

```
* The standard deviation of speed is `r sd.speed`
```

```
* The standard deviation of speed is `r round(sd.speed,2)`
```

- The standard deviation of speed is 5.2876444
- The standard deviation of speed is 5.29



# Plots

```
```{r pressure, echo=FALSE, fig.cap="Cool graph"}  
plot(cars)  
```
```

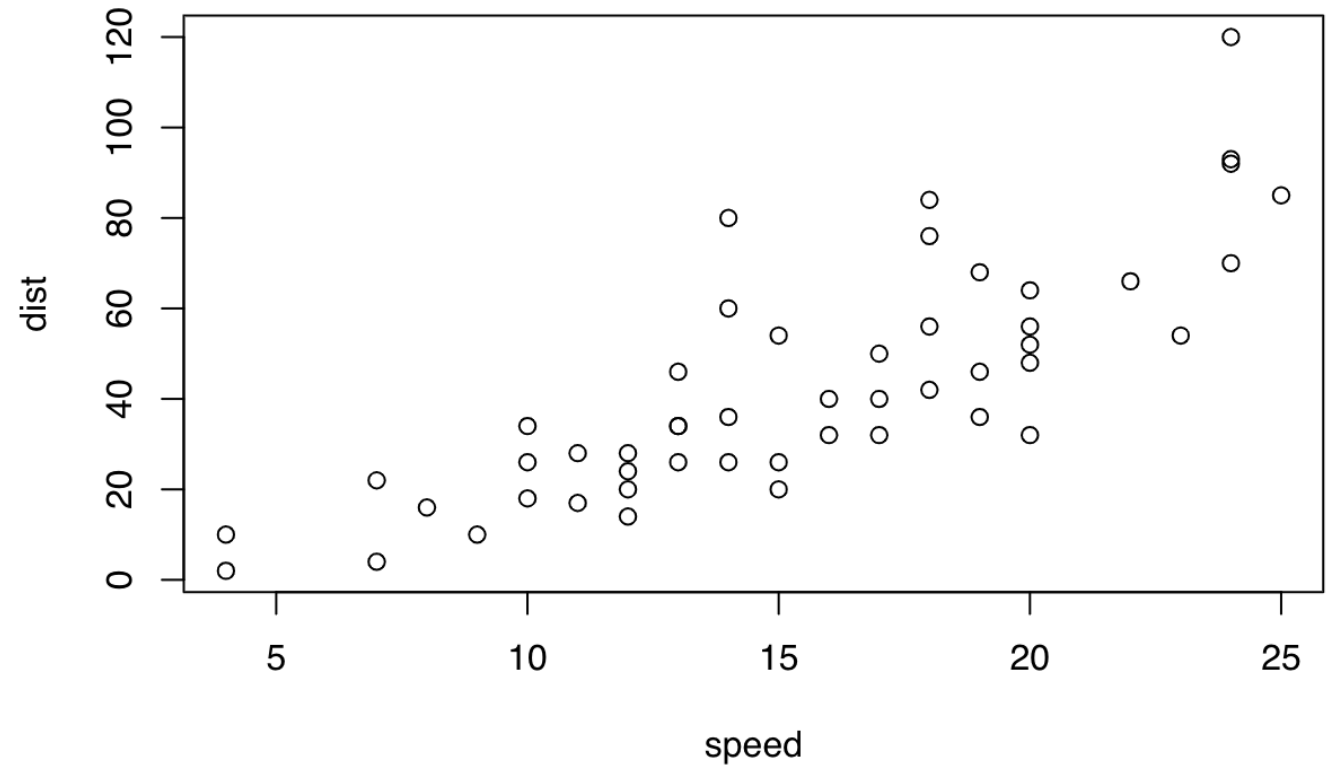


Figure 1: Cool graph

# Images

```
```{r catpic2, fig.cap="Cute cat pic", out.width = '40%', fig.align =  
'center'}  
knitr::include_graphics("/Users/sestrada/Desktop/catpic.png")  
```
```

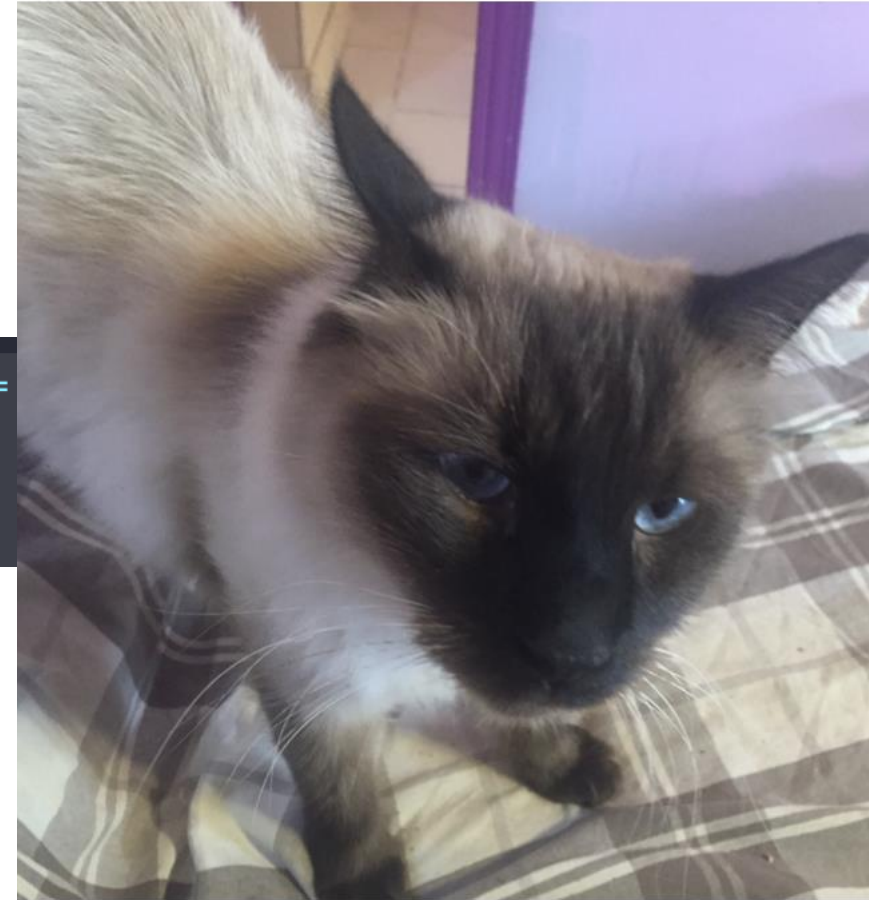


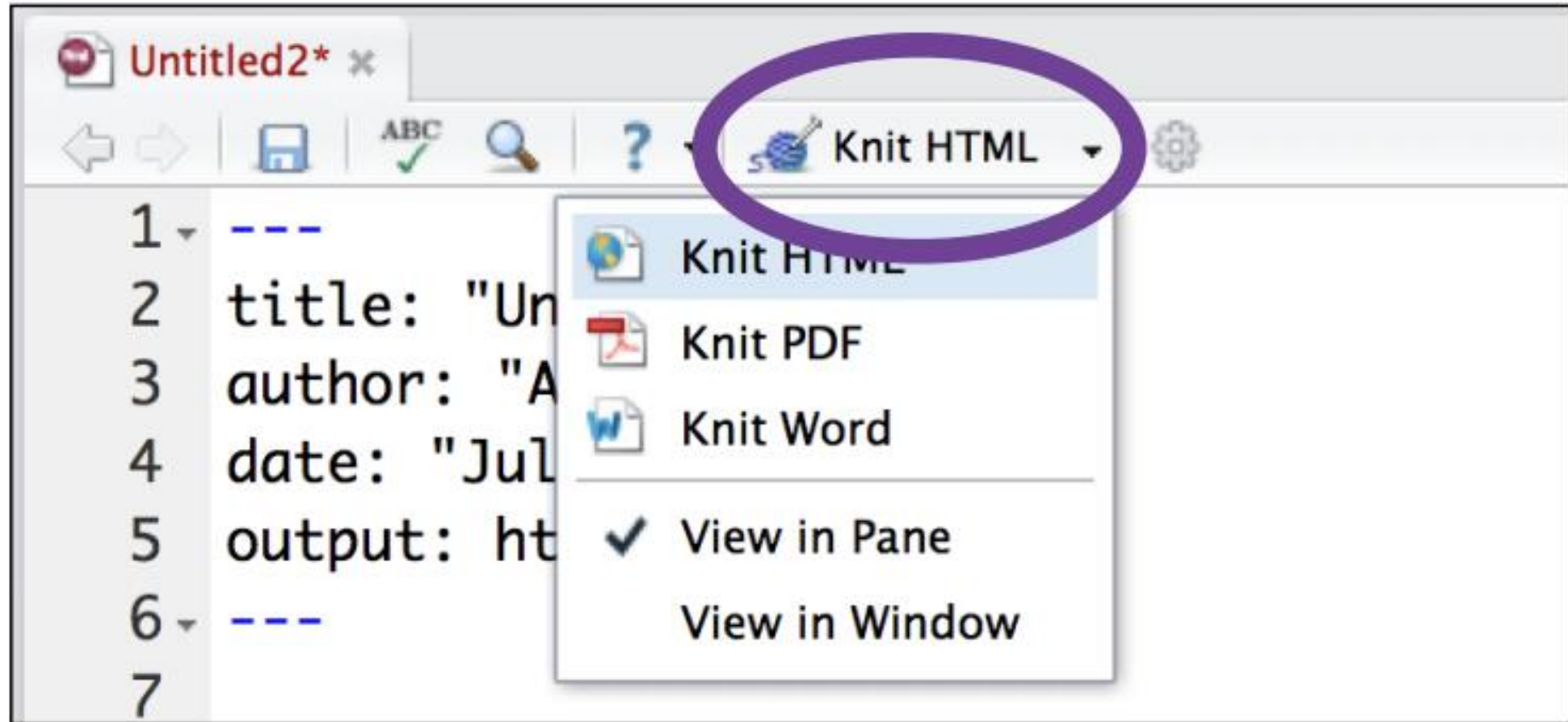
Figure 2: Cute cat pic

# Videos

```
```{r, echo=FALSE}  
vembder::embed_url("https://youtu.be/IJ5AC4k22kI")  
```
```



# Rendering



# R Markdown Resources

- RMarkdown: The Definitive Guide: <https://bookdown.org/yihui/rmarkdown/>
- R Markdown Sheet Cheat: <https://www.rstudio.com/wp-content/uploads/2015/02/rmarkdown-cheatsheet.pdf>
- Basic tables help: [https://www.tablesgenerator.com/markdown\\_tables](https://www.tablesgenerator.com/markdown_tables)
- More sophisticated tables: <https://bookdown.org/yihui/rmarkdown-cookbook/kable.html>

# ORSSP Resources

- Research Design & Data Analysis Lab: <https://www.uttyler.edu/research/ors-research-design-data-analysis-lab/>
- Schedule a consultant appointment with me: <https://www.uttyler.edu/research/ors-research-design-data-analysis-lab/consultants/>
- Check out Lab Resources (including recording of this webinar): <https://www.uttyler.edu/research/ors-research-design-data-analysis-lab/resources/>