Your RMarkdown Thesis

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Your Markdown Thesis - Advantages

- Combine code & text
- Widely used plain-text format
- Output to multiple formats
- Easily tracked with `git`
- Works with many software tools

Your Markdown Thesis - Disadvantages

- Disadvantages
  - Can be a pain to edit collaboratively
  - "Some" learning curve

Overall Benefits

- Final product is reproducible
- You are **awesome**
- Can be easily shared, modified & updated

Getting Started

Start a New RMarkdown File

- Or open our file. . . see GIF here
  - Navigate to the repository for this workshop
  - Fork the repository see video
  - Start a project from Version Control

  - Link to ThesisIsCode
  - Open the file in `thesis/myThesis_Revised.Rmd`

How Do We Write?

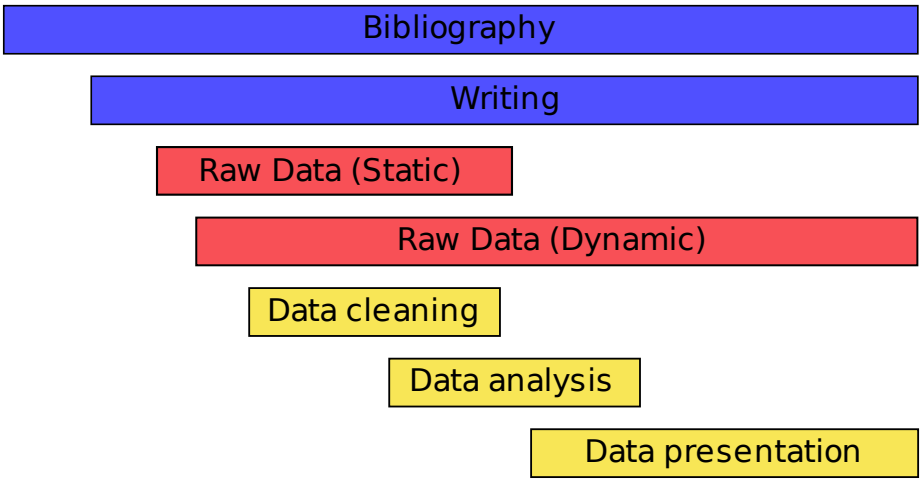

Figure 1: Process of writing papers, bibliography takes the entire life of the paper, writing as well, raw data is used early on, then data cleaning, data analysis and data presentation work.

Main Elements

- Folders!
  - Figures (raw, finished); Code; Data (input/output); Save Google Sheet to file.

image ref

Main Elements

- YAML header (metadata for the document)
- Markdown formatting
- Fenced code blocks (using backticks)
- Data import
- Analysis
- Conclusions

Main Elements - YAML

- YAML Ain't Markup Language
- Tells Pandoc how to render the finished file.

```
---
title: Some title
author: Simon Goring
---
```

YAML - Continues

- Any tags are accepted (`date`, `abstract`, `keywords`)

```
---
title: Some title
author:
- Simon Goring
- Socorro Dominguez
abstract: >
  I can move stuff to a new line.
---
```

YAML - Continues pt 2

- Any tags are accepted (`date`, `abstract`, `keywords`)

```
---
title: Some title
author:
- Simon Goring
- Socorro Dominguez
abstract: >
  I can move stuff to a new line.
---
```

Format specific options for html, pdf, Word, &cetera.

Main Elements - Markdown

- How you actually apply styles/links &cetera
- Good Markdown Resources:

  - RMarkdown the Definitive Guide
  - GitHub Markdown Guide

Main Elements - Code Blocks

- This is the R part of RMarkdown. R executes the code and places it inline into the text.

Then `knit` the Document

```
Rscript -e "rmarkdown::render('filename.Rmd')"
```

Or, with `bash` (Mac & Linux) you can build on save.

Let's all Gaze in Wonder

- We can knit to PDF, HTML, DOCX (and other formats)
- Options depend on options in the `yaml` header (in part)
- RMarkdown `render`:
  - Runs each R code block
  - Creates a raw Markdown file
  - Replaces code with code results (knits)
  - Converts file format to desired output with Pandoc

Main Elements - Data Import

- Lets load in our file in `thesis/data/input`:

How Does it Look?

- Are there errors we can fix?
- We need to check our assumptions
- Formalize them with `assertthat()`

Using Assertions

Why Use Assertions?

- We want to make sure our text follows from our analysis.
- But are there?

Writing Assertions

```
assertthat::assert_that(sum(!is.na(table$README)) < 12, msg="There are more readme's than a
```

- If the assertion fails then the code doesn't `knit` and you have an informative error message telling you why.

Summary

- You've created a thesis chapter.