Communicating and Documenting Your Analysis with R Markdown

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DATA SCIENTIST AND EDUCATOR
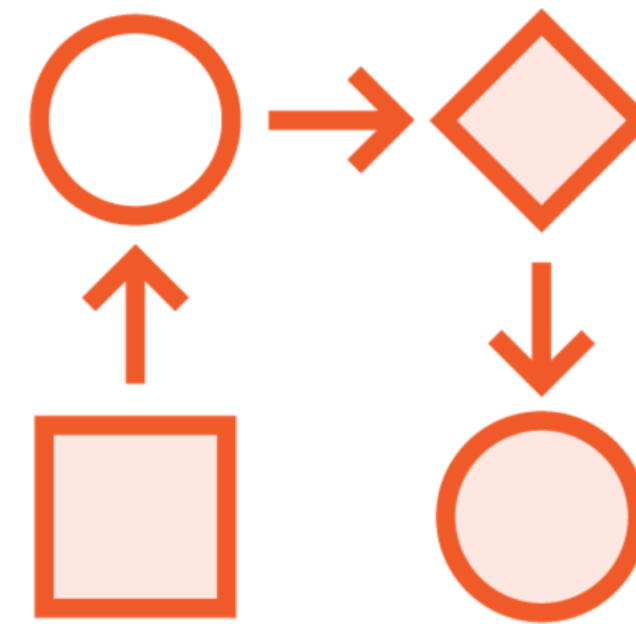
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The Two Roles of an R Markdown File

Record of code

Like a script file,
import files, analyze data,
write files

Instructions for an output file
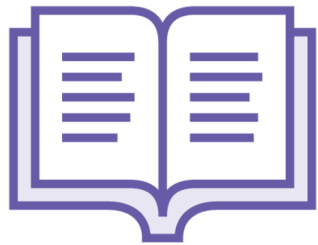
Additional text,
how output should
be included

Overview
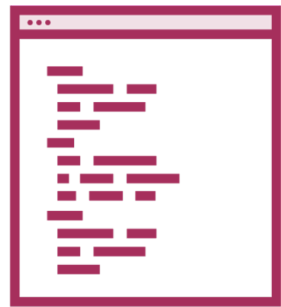
Goal: Produce a PDF sales report

You'll learn:

- Structure of R Markdown

- Working with code

- Header and text blocks

- Controlling output

- Updating and sharing

What Is an R Markdown File?

Text

Code

Output

In a single document

Create an R Markdown document

Recognize:

- Header

- Code chunks

- Text Blocks

Knitting an R Markdown Document

R Markdown, .Rmd

Header, code, and text

Markdown, .md

Header, code, text, and output

HTML, .html

Rendered code, text and output

Three Components of an R Markdown Document

--- ---	```` ```{r} ```` ```` ``` ````	**Anything else**
Header	**Code Chunks**	**Text Blocks**

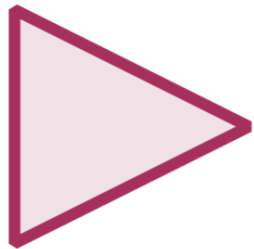# Working with Code in R Markdown

Code Chunks in R Markdown

Add with Insert menu, or
Mac: Cmd + Option + I
Windows: Ctrl + Alt + I

Send a line to Console
Mac: Cmd + Enter
Windows: Ctrl + Enter

Run all lines, hit play button, or
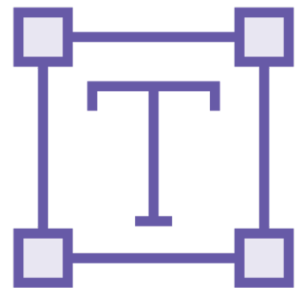Mac: Cmd + Shift + Enter
Windows: Ctrl + Shift + Enter

Run menu: Restart R and Run All Chunks

Working with Text in R Markdown

Text Blocks in R Markdown

Anything that isn't in the header or code chunks, treated as Markdown

Headers
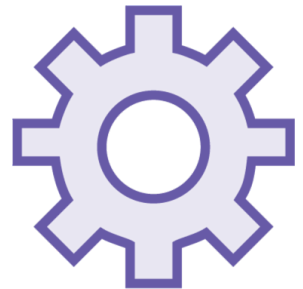*italics*, **bold**, `monospaced`

Include values inline: `r object_name`

Controlling Options in the R Markdown Header
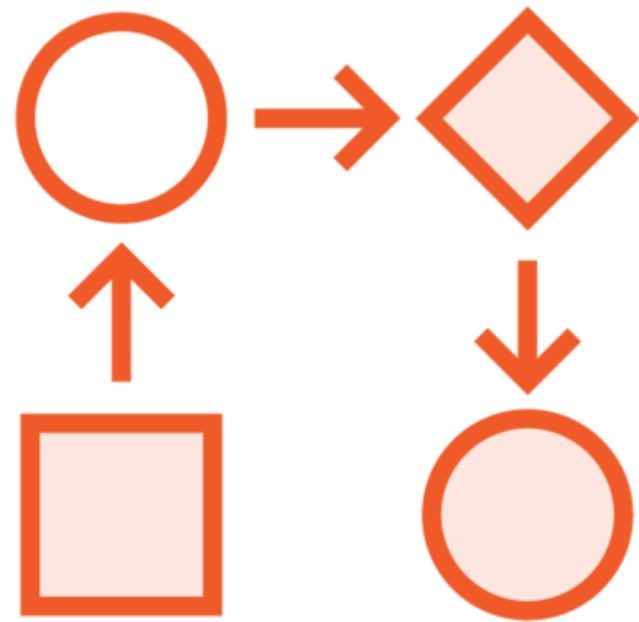
R Markdown Header

Options stored as YAML

Edit directly, or use Output Options

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

Diagnosing Errors in R Markdown Documents

Two processes

R Markdown to Markdown,
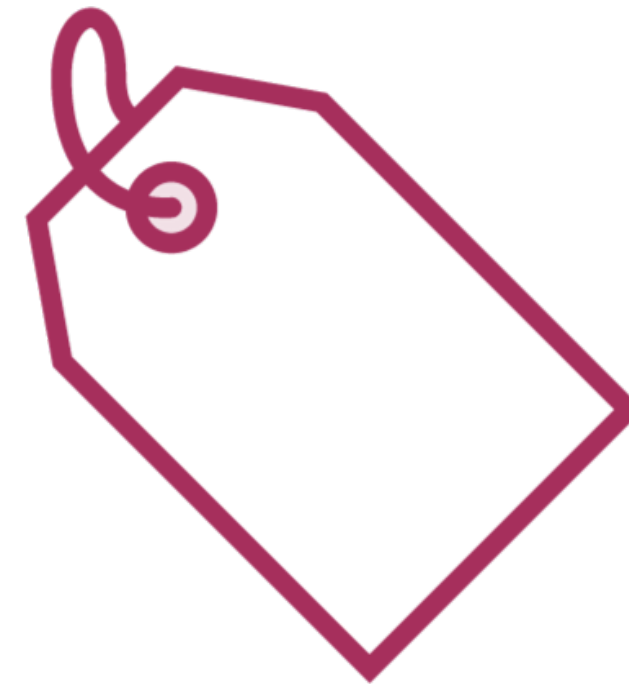Markdown to output format

Errors

Harder to track down

Diagnosing Errors in R Markdown Documents

Check code

Restart R, and Run All Chunks

Name chunks

Check Output in R Markdown tab

Controlling the Appearance of the Output with Chunk Options

```{r        include = FALSE


```

Chunk Options

Option name = option value

Common Chunk Options

include = FALSE
Include nothing

echo = FALSE
No code

results = "hide"
No results

message = FALSE
No messages

fig.height, fig.width
Figure dimensions

Output Formats for R Markdown Documents

HTML

Web-based
Interactive components

PDF

Control over print
appearance
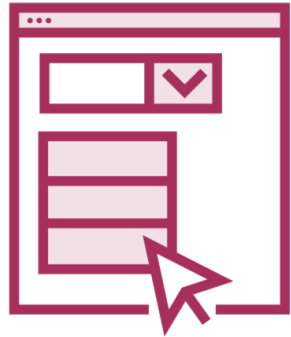
To Knit to a PDF Document
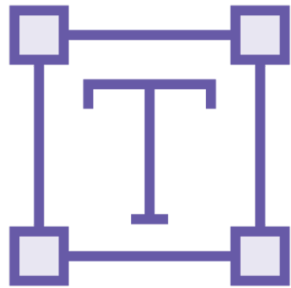
Change header

Install LaTeX

Changing Output Format

Change using dropdown on Knit button

Or, edit output option in header directly

PDF output requires LaTeX, get with tinytex::install_tinytex()
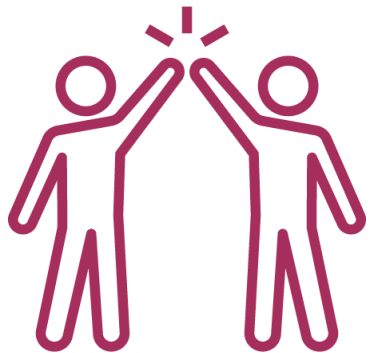Only needs to be done once

Updating and Sharing Your Work

Sharing the Project Directory

Compress the project directory and email it

Share the directory on the cloud, or in version control

Anyone with the project can recreate report

Wrapping Up

Three Ways to Run R Code
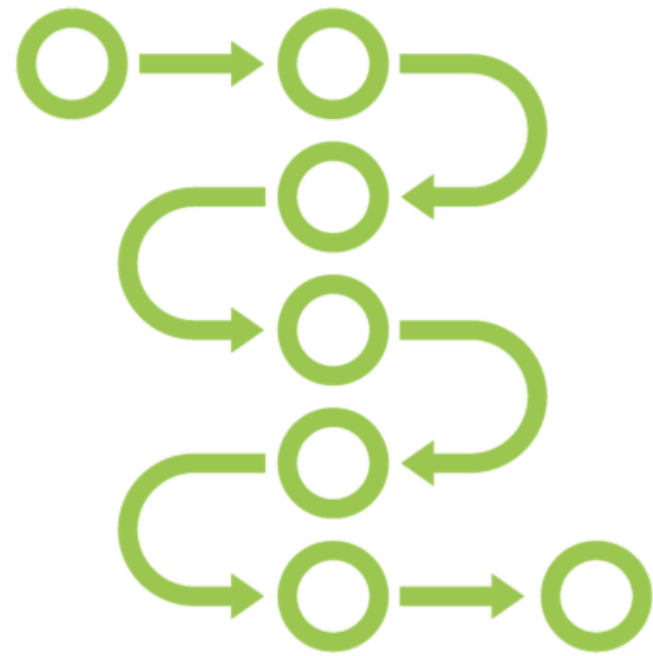
Console

One off operations
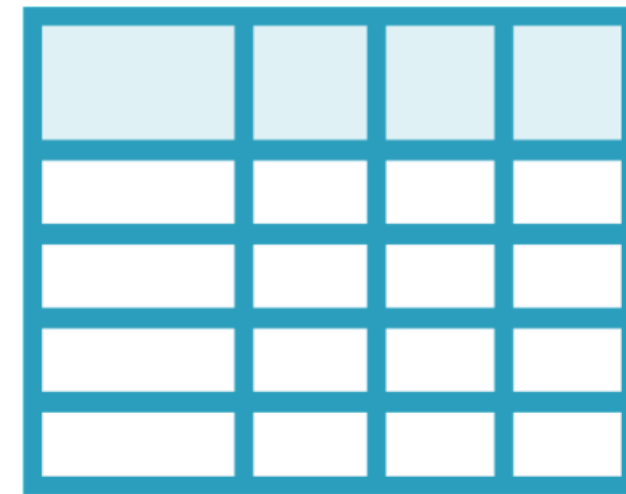Testing code

R Script

Keep code for the
future

R Markdown

Integrate with text

Fundamental Components of R Code

Functions

Objects

RStudio Tools

Console
Run code

Source Editor
Compose code

Environment
Examine objects

Files
Manipulate files

Plots
Examine plots

Help
View documentation

Habits for Reproducible Work

Restart R often and rerun code

Use RStudio projects

Use relative file paths

Congratulations,
you've built your first R
analytics solution!