Presenting in R Studio

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Machine Learning 2

Objectives

1. Review required software and packages
2. Discuss rMarkdown and various templates
3. Basic coding examples
4. Additional Resources

Software Required

- R Console
- RStudio Desktop (basic version)
  - https://www.rstudio.com/products/rstudio/download/
- "Knitr" (pronounced "neater") package
  - install.packages("knitr")
- "Rmarkdown" package
  - install.packages("rmarkdown")

What is R Markdown??

Markdown was created by John Gruber in 2004 as a **text-to-HTML** conversion tool for developers.

"It allows you to write using an **easy-to-read, easy-to-write plain text format**, then convert it to structurally valid XHTML (or HTML)."

WOULD YOU RATHER?

HTML	Markdown

```html
<h1>Initiating Plugins</h1>
<p>Initiate <code>pluginName</code> on your
container using jQuery as follows:</p>
<code>
$(function() { $('#container').pluginName(); });
</code>
<p><em>Using our container's ID, we can initiate
<code>pluginName</code> with the jQuery method
<code>.pluginName()</code></em></p>
```

```markdown
# Initiating Plugins
Initiate `pluginName` on your container using jQuery
as follows:
`$(function() { $('#container').pluginName(); });`


*Using our container's ID, we can initiate
`pluginName` with the jQuery method
`.pluginName()`.*
```
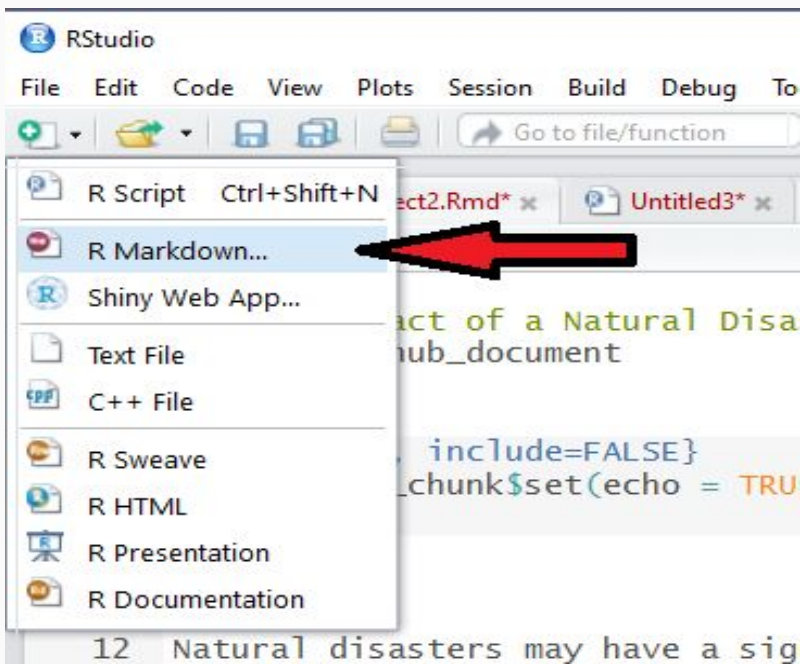
Universal Markdown Input and Output

Writing with Markdown

```
Writing with [Markdown](1) is *quick and
easy*. And reading Markdown is just as nice!

* It's just plain text.
* No need to use the mouse.
* Few rules to remember.

[1]: http://support.wordpress.com/markdown/
```

Word count: 32

Writing with **Markdown**

Writing with **Markdown** is *quick and easy*. And reading Markdown is just as nice!
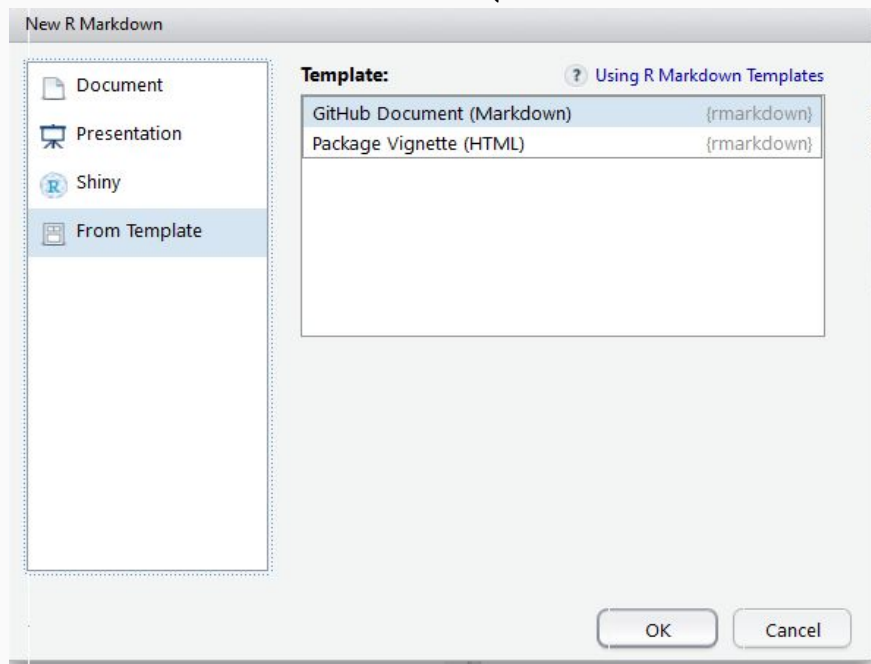
- It's just plain text.
- No need to use the mouse.
- Few rules to remember.

CREATE AN R MARKDOWN DOCUMENT

STEP 1: OPEN NEW R MARKDOWN FILE IN RSTUDIO

STEP 2: SELECT A TEMPLATE (USE GITHUB FOR NOW)

CREATE AN R MARKDOWN DOCUMENT

STEP 3: USE THE GITHUB TEMPLATE TO GET STARTED

- **This is typically how an R Markdown template will look. Example code is already provided for you.**
- **Parameters are portrayed by the purple boxes. This is the "knitr" syntax for controlling the output of a code chunk.**
- **More knitr syntax in the next slide**

Convert Markdown to "Github" output. (Output can be changed)

Publish to RPubs and create a link

include - Include chunk in doc after running (default = TRUE)

"##" before a phrase makes it a title

"Code Chunk"
```{r Title}
```end of "code chunk"

**echo** - Display code in output document (default = TRUE)

Editor code shown:

```
1   ---
2   title: "Git Hub"
3   output: github_document
4   ---
5
6   ```{r setup  include=FALSE}
7   knitr::opts_chunk$set(echo = TRUE)
8   ```
9
10  ## GitHub Documents
11
12  This is an R Markdown format used for publishing markdown documents to GitHub. When
    you click the **Knit** button all R code chunks are run and a markdown file (.md)
    suitable for publishing to GitHub is generated.
13
14  ## Including Code
15
16  You can include R code in the document as follows:
17
18  ```{r cars}
19  summary(cars)
20  ```
21
22  ## Including Plots
23
24  You can also embed plots, for example:
25
26  ```{r pressure, echo=FALSE}
27  plot(pressure)
28
```

6:28   Chunk 1: setup

R Markdown

CHEAT SHEET FOR KNITR SYNTAX
(LINK TO FULL CHEAT SHEET ON THE LAST SLIDE)

Embed code with knitr syntax

Inline code
Insert with `` `r <code>` ``. Results appear as text without code.

```
Built with
`r getRversion()`
```
➜ `Built with 3.2.3`

Code chunks
One or more lines surrounded with ` ```{r} ` and ` ``` `. Place chunk options within curly braces, after r. Insert with 📋

```
```{r echo=TRUE}
getRversion()
```
```
➜
```
getRversion()

[1] '3.2.3'
```

Global options
Set with knitr::**opts_chunk$set()**, e.g.

```
```{r include=FALSE}
knitr::opts_chunk$set(echo = TRUE)
```
```

Important chunk options

cache - cache results for future knits (default = FALSE)

cache.path - directory to save cached results in (default = "cache/")

child - file(s) to knit and then include (default = NULL)

collapse - collapse all output into single block (default = FALSE)

comment - prefix for each line of results (default = '##')

dependson - chunk dependencies for caching (default = NULL)

echo - Display code in output document (default = TRUE)

engine - code language used in chunk (default = 'R')

error - Display error messages in doc (TRUE) or stop render when errors occur (FALSE) (default = FALSE)

eval - Run code in chunk (default = TRUE)

fig.align - 'left', 'right', or 'center' (default = 'default')

fig.cap - figure caption as character string (default = NULL)

fig.height, fig.width - Dimensions of plots in inches

highlight - highlight source code (default = TRUE)

include - Include chunk in doc after running (default = TRUE)

message - display code messages in document (default = TRUE)

results (default = 'markup')
'asis' - passthrough results
'hide' - do not display results
'hold' - put all results below all code

tidy - tidy code for display (default = FALSE)

warning - display code warnings in document (default = TRUE)

Options not listed above: R.options, aniopts, autodep, background, cache.comments, cache.lazy, cache.rebuild, cache.vars, dev, dev.args, dpi, engine.opts, engine.path, fig.asp, fig.env, fig.ext, fig.keep, fig.lp, fig.path, fig.pos, fig.process, fig.retina, fig.scap, fig.show, fig.showtext, fig.subcap, interval, out.extra, out.height, out.width, prompt, purl, ref.label, render, size, split, tidy.opts

R Markdown Additional Resources

- R Pubs
  - www.rpubs.com
- R Markdown Examples:
  - http://rmarkdown.rstudio.com/gallery.html
- Quick Reference Guide:
  - https://en.support.wordpress.com/markdown-quick-reference/
- Full Cheat Sheet for R Markdown
  - https://www.rstudio.com/wp-content/uploads/2015/02/rmarkdown-cheatsheet.pdf