

Creating Slide Decks using R Markdown

RLadies - Baltimore

McKinzie Garrison

Sept 18, 2019

Benefits

- Fast slide deck creation.
- Reproducible work.
- Reuseable.

Setup and installation

Packages:

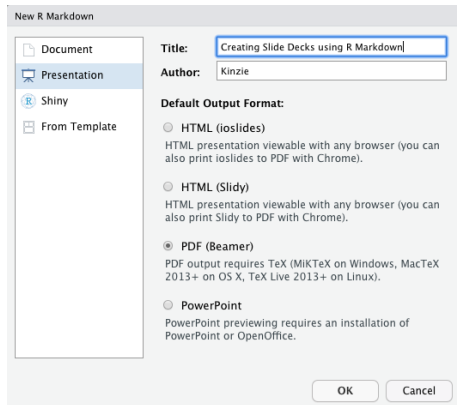
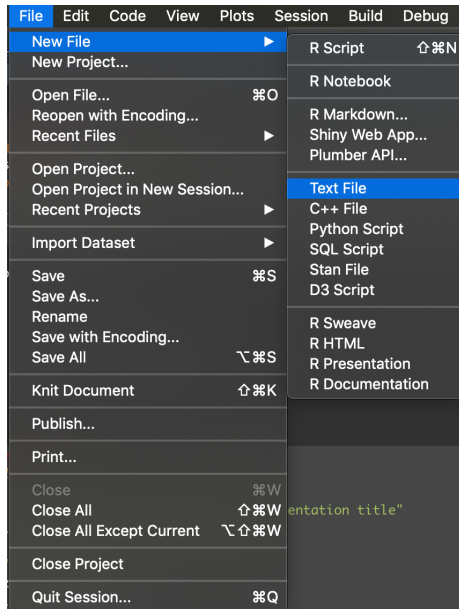
- rmarkdown
- tinytex
 - PDF output; anything missing in LaTeX.
- pandoc
 - command line installation

```
if(!require(pacman)){  
  install.packages('pacman')  
  library(pacman)  
}  
p_load(rmarkdown, tinytex)
```

Types of presentation outputs

- ioslides
- slidy
- powerpoint
- .Rpres
- beamer

Creating a slide deck with beamer output



Default Rmarkdown text

```
1 ---
2 title: "Creating Slide Decks using R Markdown"
3 author: "Kinzie"
4 date: "9/13/2019"
5 output: beamer_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 formatting syntax for authoring HTML, PDF, and MS Word documents.
15 For more details on using R Markdown see <http://rmarkdown.rstudio.com>.
16
17 When you click the Knit button a document will be generated that includes both content as well as the output of any
18 embedded R code chunks within the document.
19
20 ## Slide with Bullets
21
22 - Bullet 1
23 - Bullet 2
24 - Bullet 3
```

YAML metadata

Format setup

```
1 ---
2 title: "Creating Slide Decks using R Markdown"
3 subtitle: "RLadies - Baltimore"
4 author: "McKinzie Garrison"
5 date: "Sept 18, 2019"
6 output:
7   beamer_presentation:
8     theme: 'Madrid'
9     colortheme: 'dolphin'
10    fonttheme: 'structurebold'
11    slide_level: 1
12
13 ---
```

- Title slide
- Desired output format
- Formatting suboptions

slide_level suboption for beamer presentations

Example: slide_level: 2

```
1 ---
2 title: "Creating Slide Decks using R Markdown"
3 author: "Kinzie"
4 date: "9/13/2019"
5 output:
6   beamer_presentation:
7     slide_level: 2
8 ---
9
10 # New Slide Header
11
12 ## Slide Header Subsection
13
14 ### Another subsection
15 - Bullet 1
16 - Bullet 2
17 - Bullet 3
```

New Slide Header

Slide Header Subsection

Another subsection

- ▶ Test information
- ▶ Bullet 1
- ▶ Bullet 2
- ▶ Bullet 3

slide_level: 1

```
1  ---
2  title: "Creating Slide Decks using R
3  subtitle: "RLadies - Baltimore"
4  author: "McKinzie Garrison"
5  date: "Sept 18, 2019"
6  output:
7    beamer_presentation:
8      theme: "Madrid"
9      colortheme: "dolphin"
10     fonttheme: "structurebold"
11     slide_level: 1
12  ---
13
14  # New Slide Header
15
16  ## Slide Header Subsection
17
18  ### Another subsection
19  - Bullet 1
20  - Bullet 2
21  - Bullet 3
```

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New Slide Header

Slide Header Subsection

Another subsection

- Bullet 1
- Bullet 2
- Bullet 3

Suboptions specific for the specified output format

- `?rmarkdown::beamer_presentation`

Documentation

Convert to a Beamer presentation

Description

Format for converting from R Markdown to a Beamer presentation.

Usage

```
beamer_presentation(toc = FALSE, slide_level = NULL,  
  incremental = FALSE, fig_width = 10, fig_height = 7,  
  fig_crop = TRUE, fig_caption = TRUE, dev = "pdf",  
  df_print = "default", theme = "default", colortheme = "default",  
  fonttheme = "default", highlight = "default", template = "default",  
  keep_tex = FALSE, latex_engine = "pdflatex",  
  citation_package = c("none", "natbib", "biblatex"),  
  self_contained = TRUE, includes = NULL, md_extensions = NULL,  
  pandoc_args = NULL)
```

Using LaTeX packages

preamble.tex

```
1 \usepackage{multicol}
2 \newcommand{\btwocol}{\begin{multicols}{2}}
3 \newcommand{\etwocol}{\end{multicols}}
```

```
1 ---
2 title: "Creating Slide Decks using R Markdown"
3 subtitle: "RLadies - Baltimore"
4 author: "McKinzie Garrison"
5 date: "Sept 18, 2019"
6 output:
7   beamer_presentation:
8     theme: 'Madrid'
9     colortheme: 'dolphin'
10    fonttheme: 'structurebold'
11    slide_level: 1
12    highlight: 'tango'
13    includes:
14      in_header: preamble.tex
15 ---
```

Invoking the LaTeX packages in the .Rmd file

```
# Using LaTeX packages

## preamble.tex

\btwocol
{width=50%}



\etwocol
```

Markdown syntax - Reference Guide

Help

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Markdown Quick Reference

Roxygen Quick Reference

Diagnostics

Markdown Quick Reference

R Markdown is an easy-to-write plain text format for [R Markdown](#) to learn more.

Emphasis

italic ****bold****

italic **__bold__**

Headers

Header 1

Header 2

Header 3

Lists

Unordered List

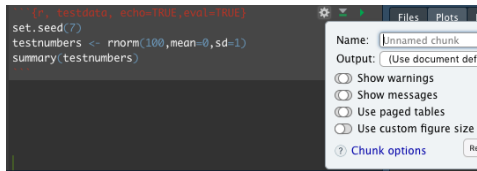
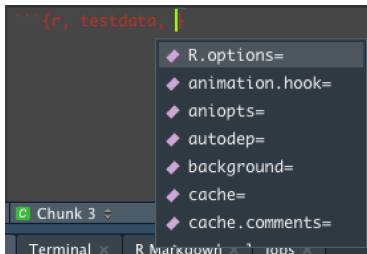
- * Item 1
- * Item 2
 - + Item 2a
 - + Item 2b

Ordered List

1. Item 1
2. Item 2

Embedding code chunks

```
```{r optionalname}  
code here
```
```



```
set.seed(7)  
testnumbers <- rnorm(100, mean=0, sd=1)  
summary(testnumbers)
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.  
## -1.7859 -0.5587   0.1056   0.1387  0.7200   2.7168
```

Embedding code chunks

```
```{r, testdata, echo=TRUE,eval=TRUE,comment=''}  
set.seed(7)
testnumbers <- rnorm(100,mean=0,sd=1)
summary(testnumbers)
```
```

```
set.seed(7)  
testnumbers <- rnorm(100,mean=0,sd=1)  
summary(testnumbers)
```

| Min. | 1st Qu. | Median | Mean | 3rd Qu. | Max. |
|---------|---------|--------|--------|---------|--------|
| -1.7859 | -0.5587 | 0.1056 | 0.1387 | 0.7200 | 2.7168 |

Inline code

```
`r function()`
```

```
set.seed(7)  
testnumbers <- rnorm(100,mean=0,sd=1)
```

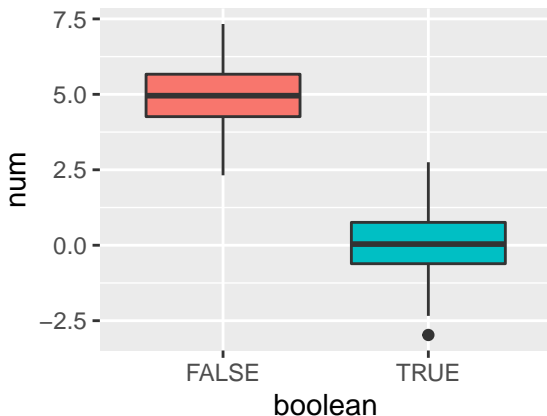
```
**Mean of testnumbers:** `r mean(testnumbers)`  
  
**Standard deviation of testnumbers:** `r sd(testnumbers)`
```

Mean of testnumbers: 0.1386966

Standard deviation of testnumbers: 0.958807

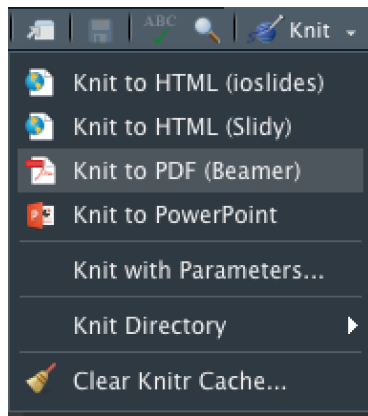
Producing plots

```
library(ggplot2)
boolean <- factor(rep(c('TRUE', 'FALSE'), each=200))
num <- c(rnorm(200), rnorm(200, mean=5))
dat <- data.frame(boolean, num)
ggplot(dat,
  aes(x = boolean, y = num, fill= boolean))+geom_boxplot()+guides(fill=FALSE)
```



Render the markdown file

- `render("filename.Rmd", "beamer_presentation")`
- Mac: Cmd + Shift + K
- Windows: Ctrl + Shift + K



Caching & Global Chunk Options

Individual code chunks:

```
```{r, codechunkname, cache=TRUE, eval=FALSE}  
default: cache = FALSE
computation
```
```

Global control of code chunks:

```
```{r, global}  
knitr::opts_chunk$set(cache = TRUE)
```
```

Conclusion

Slide deck creation using Rmarkdown

- Install tinytex, rmarkdown, pandoc
- Output format (ie - beamer)
- YAML metadata
- Content:
 - Embedded code
 - Plots
 - Other information
- Render
- Caching

References and help

General Markdown Help

<https://www.rstudio.com/resources/cheatsheets/>
<https://bookdown.org/yihui/rmarkdown/>

Specific Output Format Help

`?rmarkdown::beamer_presentation`
https://rmarkdown.rstudio.com/articles_beamer.html

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