Slides in R Markdown

Taught from slides that I made in R markdown…

Mik Black

30 May 2019

(R) Markdown May in almost over!

- Just making sure that you've seen these links:

  https://rmarkdown.rstudio.com/index.html

  https://rmarkdown.rstudio.com/lesson-1.html

- This is a great guide to using R Markdown within the R Studio environment.

- This is also awesome:

  https://bookdown.org/yihui/rmarkdown/presentations.html

- Today we're going to use R Markdown to make some presentation slides (just like these ones).

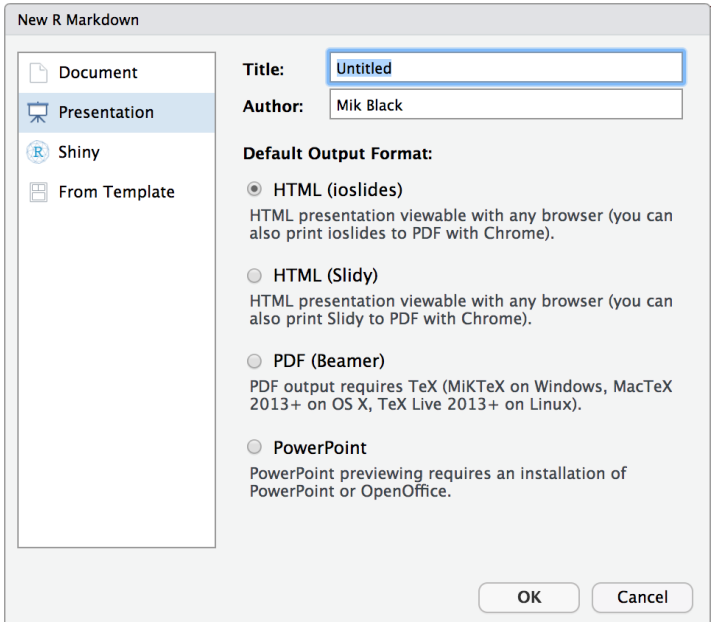
Slides in R markdown

- R Studio makes it easy to produce slides using R Markdown.
- R Markdown renders to four presentation formats:
    - beamer presentation - PDF presentations with beamer
    - ioslides_presentation - HTML presentations with ioslides
    - slidy_presentation - HTML presentations with slidy
    - powerpoint_presentation - PowerPoint presentation
    - revealjs::revealjs_presentation - HTML presentations with reveal.js
- We will focus on the `ioslides_presentation`.

From: https://rmarkdown.rstudio.com/lesson-11.html

New presentation

- File menu:
  - New File -> Rmarkdown…
- Select “Presentation” and click “OK”



Your new document

- Following the steps on the previous slide will produce a new R Markdown *presentation*, complete with some example text and code.
- It should look suspiciously familiar…
- What is the difference between this and a R Markdown *document*?

YAML header

R Markdown document:

```
---
title: "Untitled"
author: "Mik Black"
date: "28/05/2019"
output: html_document
---
```

R Markdown presentation:

```
---
title: "Untitled"
author: "Mik Black"
date: "28/05/2019"
output: ioslides_presentation
---
```

Let’s see what is in the example slides

Slide 1 (title slide): code

```
---
title: "Untitled"
author: "Mik Black"
date: "28/05/2019"
output: ioslides_presentation
---
```

Slide 2: code

```
## R Markdown

This is an R Markdown presentation. Markdown is a simple formatting
syntax for authoring HTML, PDF, and MS Word documents. For more
details on using R Markdown see <http://rmarkdown.rstudio.com>.

When you click the **Knit** button a document will be generated
that includes both content as well as the output of any embedded
R code chunks within the document.
```

R Markdown

This is an R Markdown presentation. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document.

Slide 3: code

```
## Slide with Bullets

- Bullet 1
- Bullet 2
- Bullet 3
```

Slide with Bullets

- Bullet 1
- Bullet 2
- Bullet 3

Slide 4: code

````
## Slide with R Output

```{r cars, echo = TRUE}
summary(cars)
```
````

Slide with R Output

```
summary(cars)
```

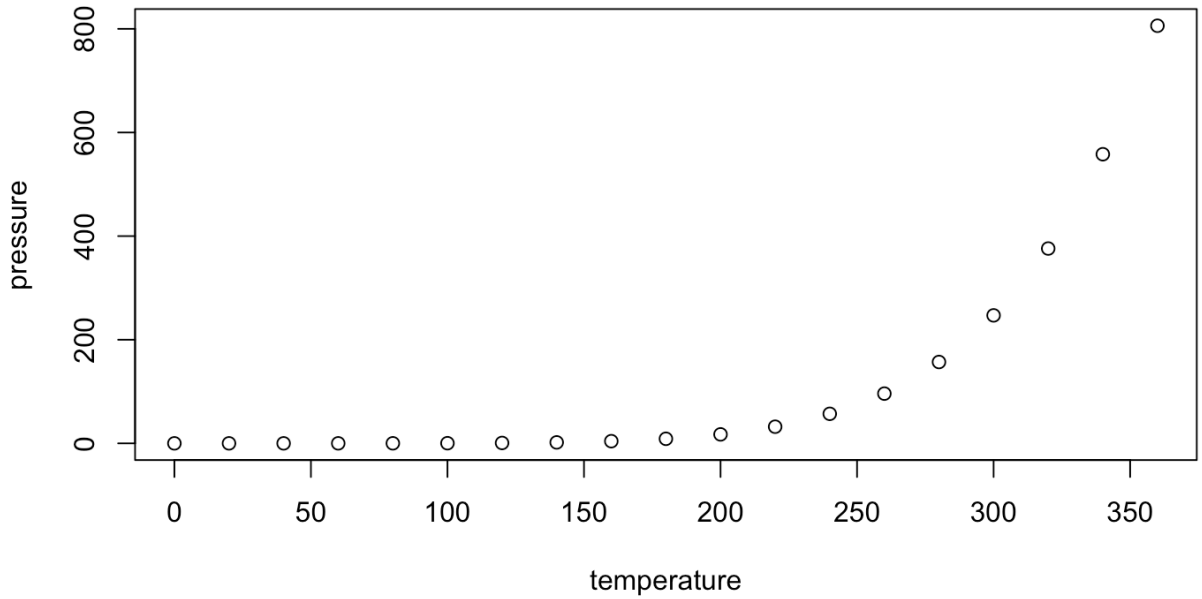
```
##      speed           dist       
##  Min.   : 4.0   Min.   :  2.00  
##  1st Qu.:12.0   1st Qu.: 26.00  
##  Median :15.0   Median : 36.00  
##  Mean   :15.4   Mean   : 42.98  
##  3rd Qu.:19.0   3rd Qu.: 56.00  
##  Max.   :25.0   Max.   :120.00
```

Slide 5: code

````
## Slide with Plot

```{r pressure}
plot(pressure)
```
````

Slide with Plot



Echoing code

- Note that code is not displayed by default
- This can be specified per code chunk:

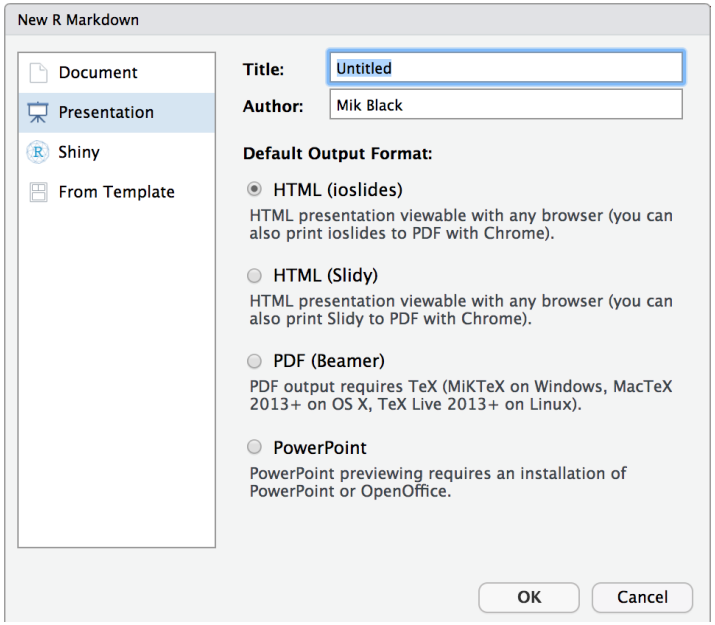
````
```{r cars, echo = TRUE}
summary(cars)
```
````

- Or you can define it globally at the top of the file:

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

Let's make a presentation…

- File menu:
  - New File -> Rmarkdown…
- Select "Presentation" and click "OK"



…and customise it

- Give it a proper title
- Click “Knit” to generate the output
- Click the “Open in Browser” button (at the top of the output page) to open the slides in a web browser.
- Try adding some content - perhaps a slide containing a boxplot:

```
boxplot( cars$speed )
```

Inserting an image

- The following code will add an image to the slide (note, this isn't R code, it's Markdown, so doesn't sit in a code chunk):

```
![some text](figures/img.png)
```

some text

How I do it

- Simple HTML code can also be used:

```
<center>
<img src="figures/otago_logo.jpg" width="400">
</center>
```

And here is the newer cooler way…

- `knitr` now includes a built-in function for this:

````
```{r, out.width = "400px", fig.align="center"}
knitr::include_graphics("figures/otago_logo.jpg")
```
````

Random tricks!

Like - what's with that grey slide?

- If you use a single hashtag for the slide title, you get a grey-background "transition slide"

```
# Random tricks!
```

- Note that most of my "random tricks" are directly from:

  https://bookdown.org/yihui/rmarkdown/presentations.html

Math formulae

- LaTeX commands can be used to insert equations.
- Code

```
$\pi(\theta|X) = \frac{f(X|\tha)\pi(\theta)}
                      {\int{f(X|\tha)\pi(\theta)d\theta}}$
```

- Output:

$$\pi(\theta|X) = \frac{f(X|\theta)\pi(\theta)}{\int f(X|\theta)\pi(\theta)d\theta}$$

Size changes

- You can display the presentation using a wider form factor using the widescreen option. You can specify that smaller text be used with the smaller option. For example:

```
---
output:
  ioslides_presentation:
    widescreen: true
    smaller: true
---
```

- You can also enable the “smaller” option on a slide-by-slide basis by adding the .smaller attribute to the slide header:

```
## Title {.smaller}
```

Smaller text slide

- The text on this slide is smaller
- You could use this if you need to squeeze some more words in…

Incremental bullets

- You can render bullets incrementally by adding the incremental option:

```
---
output:
  ioslides_presentation:
    incremental: true
---
```

- If you want to render bullets incrementally for some slides but not others you can (ab)use this syntax for blockquotes:

```
> - Eat eggs
> - Drink coffee
```

Two column layout

````
<div class="columns-2">

```{r, out.width = "300px"}
knitr::include_graphics("figures/otago_logo.jpg")
```


- Bullet 1
- Bullet 2
- Bullet 3

</div>
````

- Bullet 1

Text colour

You can color content using base color classes red, blue, green, yellow, and gray (or variations of them, e.g., red2, red3, blue2, blue3, etc.). For example:

```
<div class="red2">
This text is red
</div>
```

This text is red

Pretty tables

```
library(dplyr)
summary(cars) %>% knitr::kable()
```

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

In summary

- Making cool looking presentations using R Markdown is super easy.
- There are MANY ways to tweak your slides
  - see links at the start of this document
  - lots of other online resources
- Advantages:
  - analyses are built-in and reproducible
  - outputs are automatically integrated into the document
  - fits seemlesly into an R-centric workflow
  - text-based document makes version control with Git easy

Let’s try it!