

# R Markdown

- one giant leap towards reproducible research



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# Previously...

This PC > Documents > R\_Users\_Workshop > lunchtime\_sessions > Rmarkdown



^		
	Name	Type
✦	data	File folder
✦	docs	File folder
✦	figs	File folder
✦	lectures	File folder
✦	scripts	File folder
✦	tables	File folder
✦	 all_together_now	RMD File

# Today...

[https://github.com/bapalmer/lunchtime\\_sessions](https://github.com/bapalmer/lunchtime_sessions)

bapalmer / lunchtime\_sessions

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Short 1 hour introductions to R-related topics such as creating R projects, using GitHub through RStudio and more

Edit

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🕒 1 commit

🔗 1 branch

🏷 0 releases

👤 1 contributor

📄 MIT

Branch: master ▾

New pull request

Create new file

Upload files

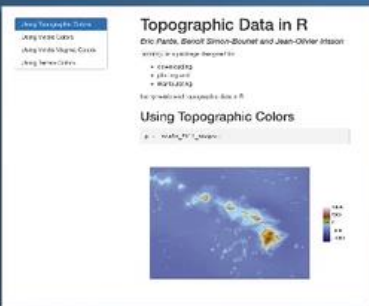
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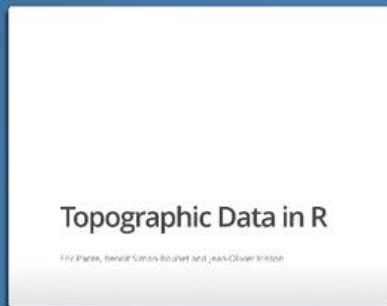
# R Markdown

- R Markdown combines the code you wrote, the output produced and you own comments
- You can view it as a digital lab notebook, where you are both recording what you're doing, and what you were thinking while you were doing it!
- R Markdown outputs can take many forms
  - Word documents, PDFs, slideshows etc.
- Once created the .Rmd file get sent to knitr, which executes the chunks of code and creates a new markdown document
  - this is then processed by pandoc which creates the finished file
    - knitr and pandoc are external websites

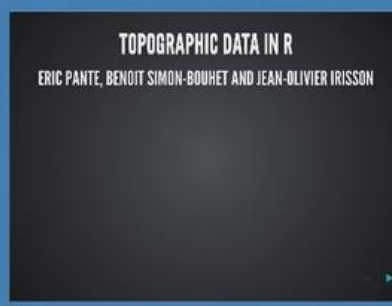
# What has R Markdown ever done for us?



html



ioslides



reveal.js



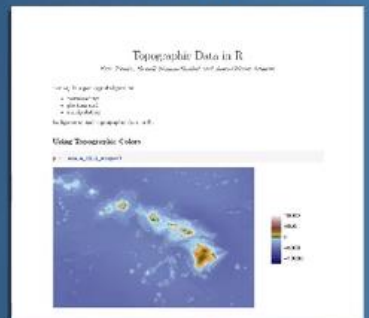
rtf



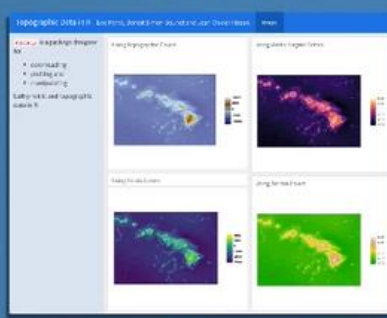
tufte handout



book



pdf



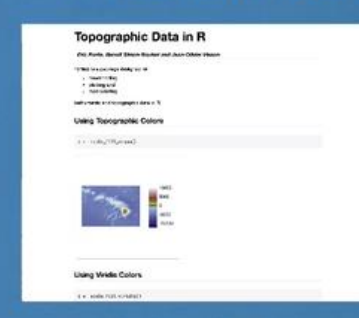
dashboard



slidy



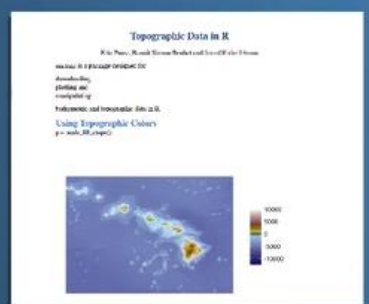
markdown



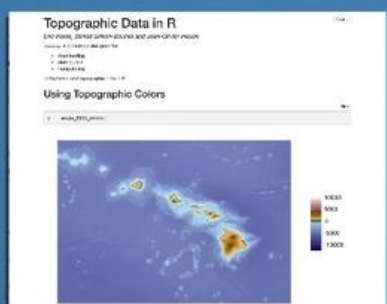
package vignette



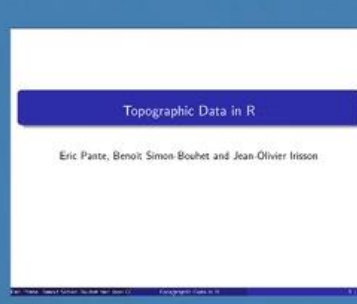
website



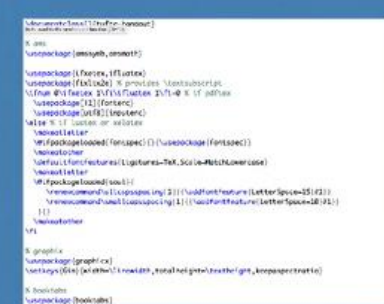
Word



notebook



beamer



latex




custom template





shiny app


# R Markdown

New R Markdown

 Document

 Presentation

 Shiny

 From Template

**Title:**

**Author:**

**Default Output Format:**

☒ **HTML**  
Recommended format for authoring (you can switch to PDF or Word output anytime).

☐ **PDF**  
PDF output requires TeX (MiKTeX on Windows, MacTeX 2013+ on OS X, TeX Live 2013+ on Linux).

☐ **Word**  
Previewing Word documents requires an installation of MS Word (or Libre/Open Office on Linux).

OK

Cancel

# R Markdown

YAML header

```
---  
title: "Diamond sizes"  
date: 2016-08-25  
output: html_document  
---
```

Chunks of code

```
```{r setup, include = FALSE}  
library(ggplot2)  
library(dplyr)  
smaller <- diamonds %>%  
filter(carat <= 2.5)  
```
```

Plain text with data  
outputs from R code

```
We have data about `r nrow(diamonds)`  
diamonds. Only  
`r nrow(diamonds) - nrow(smaller)` are  
larger than  
2.5 carats. The distribution of the  
remainder is shown below:
```

Chunks of code

```
```{r, echo = FALSE}  
smaller %>%  
ggplot(aes(carat)) +  
geom_freqpoly(binwidth = 0.01)  
```
```

# In the future researchers will be...

- Writing their research papers in R Markdown
  - Some are doing it already
- rarticles package



# Introduction to R Markdown

- We're now going to look at a R Markdown file that provides some of the tips and tricks you'll need yourselves
  - Code chunks
  - Formatting
  - Tables
  - Figures etc.
- Open the R Markdown file `Rmarkdown_intro.rmd`
- Open the R Markdown file `code_chunks.rmd`

# R Markdown workflows

- Open the R project in the Rmarkdown folder
  - try your hand at building an R Markdown file
  - play around with directly writing code
  - use the source command to load the R scripts
- Open the R Markdown file `putting_the_pieces_together.rmd`

# R Markdown workflows

Tips:

- Ensure each notebook has a descriptive title
- If you reach a research dead end, don't delete it
  - Write a note about it. It may be useful later
- Don't modify errors in the data file directly
  - Correct it within the cleaning script
- At the end of each day run a clean knit of the note book
  - If there's an error message, correct it while its still fresh in your mind
- If you want your code to be reproducible in the long run, you'll need to keep a rigorous track of the package versions
  - Consider using the **packrat** package to help with this
- For an deeper dive into R Markdown visit
  - <https://bookdown.org/yihui/rmarkdown/>