Advanced RMarkdown

Going Deeper with R

Advanced Markdown Text Formatting

Links

This is a [link to the Rest for the Rest of Us website](http://rfortherestofus.com/)

`This is a [link to the Rest for the Rest of Us website](http://rfortherestofus.com/)`

Images

`![](images/kid-screaming.gif)`

Block quotes

> Four score and seven years ago our fathers brought forth on this continent, a new nation, conceived in Liberty, and dedicated to the proposition that all men are created equal.

```
> Four score and seven years ago our fathers brought forth on this continent, a
new nation, conceived in Liberty, and dedicated to the proposition that all men
are created equal.
```

Footnotes

^[This is a footnote]

remedy

LEARN MORE ABOUT REMEDY

R for the Rest of Us

My Turn

Working in my RMarkdown report created in the data visualization section, I'll do the following:

1. Add a link

2. Add an image

3. Add a block quote

4. Add a footnote

Your Turn

- Add the Oregon Department of Education logo to the top of your report. You can find it at https://github.com/rfortherestofus/going-deeper/raw/master/slides/images/ode-logo.jpg

- Add the following text (make sure you include the link, which points to https://www.oregon.gov/ode/pages/default.aspx):

This is a report for the Oregon Department of Education on diversity in Oregon school districts.

Your Turn (continued)

- Add the following text as a block quote:

  > The Oregon Department of Education fosters equity and excellence for every learner through collaboration with educators, partners, and communities.

- Add a link to the source for mission statement above (https://www.oregon.gov/ode/about-us/Pages/default.aspx) as a footnote.

Tables

Don't Use the Default

Data Frame Printing

```
---
title: "Snazzy Report"
output:
  html_document:
    df_print: tibble
---
```

```
## # A tibble: 53,940 x 10
##    carat cut       color clarity depth table price     x     y     z
##    <dbl> <ord>     <ord> <ord>   <dbl> <dbl> <int> <dbl> <dbl> <dbl>
##  1 0.23  Ideal     E     SI2      61.5    55   326  3.95  3.98  2.43
##  2 0.21  Premium   E     SI1      59.8    61   326  3.89  3.84  2.31
##  3 0.23  Good      E     VS1      56.9    65   327  4.05  4.07  2.31
##  4 0.290 Premium   I     VS2      62.4    58   334  4.2   4.23  2.63
##  5 0.31  Good      J     SI2      63.3    58   335  4.34  4.35  2.75
##  6 0.24  Very Good J     VVS2     62.8    57   336  3.94  3.96  2.48
##  7 0.24  Very Good I     VVS1     62.3    57   336  3.95  3.98  2.47
##  8 0.26  Very Good H     SI1      61.9    55   337  4.07  4.11  2.53
##  9 0.22  Fair      E     VS2      65.1    61   337  3.87  3.78  2.49
## 10 0.23  Very Good H     VS1      59.4    61   338  4     4.05  2.39
## # ... with 53,930 more rows
```

Data Frame Printing

```
---
title: "Snazzy Report"
output:
  html_document:
    df_print: kable
---
```

Sepal Length	Sepal Width	Petal Length	Petal Width	Species
5.1	3.5	1.4	0.2	setosa
4.9	3.0	1.4	0.2	setosa
4.7	3.2	1.3	0.2	setosa
4.6	3.1	1.5	0.2	setosa
5.0	3.6	1.4	0.2	setosa
5.4	3.9	1.7	0.4	setosa

Data Frame Printing

```
---
title: "Snazzy Report"
output:
  html_document:
    df_print: paged
---
```

	mpg <dbl>	cyl <dbl>	disp <dbl>	hp <dbl>	drat <dbl>	wt <dbl>	qsec <dbl>	vs <dbl>	am <dbl>
Mazda RX4	21.0	6	160.0	110	3.90	2.620	16.46	0	1
Mazda RX4 Wag	21.0	6	160.0	110	3.90	2.875	17.02	0	1
Datsun 710	22.8	4	108.0	93	3.85	2.320	18.61	1	1
Hornet 4 Drive	21.4	6	258.0	110	3.08	3.215	19.44	1	0
Hornet Sportabout	18.7	8	360.0	175	3.15	3.440	17.02	0	0

1-5 of 32 rows | 1-10 of 12 columns   Previous **1** 2 3 4 5 6 7 Next
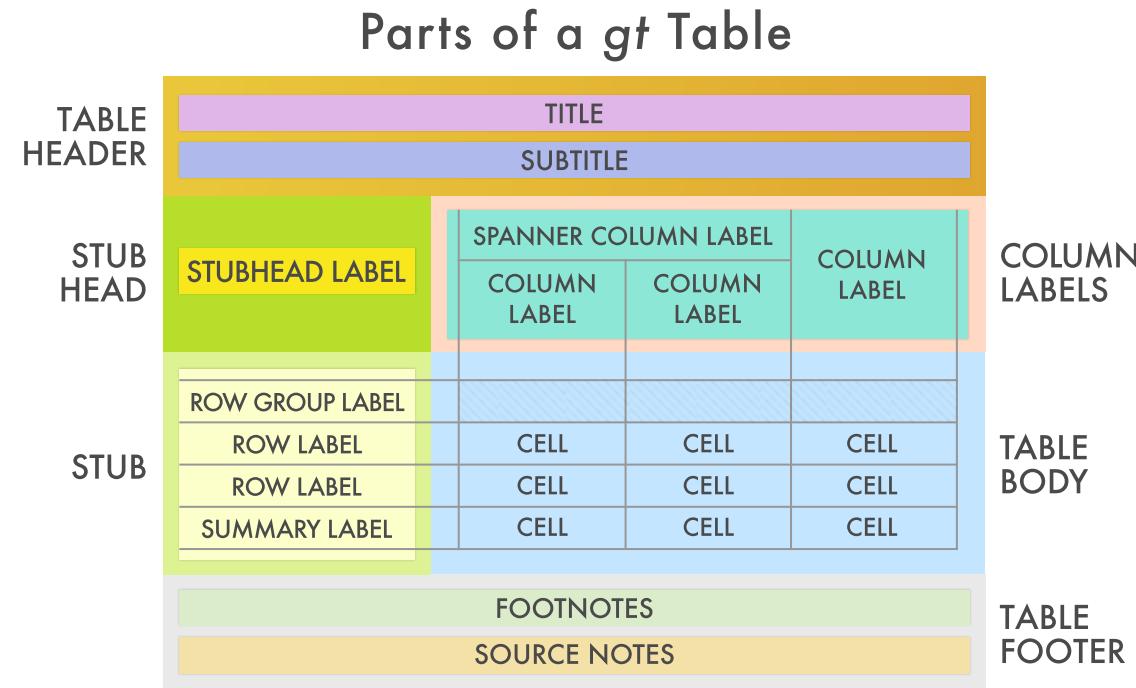
Table Packages

Parts of a *gt* Table

TABLE HEADER	TITLE			
	SUBTITLE			
STUB HEAD	STUBHEAD LABEL	SPANNER COLUMN LABEL		COLUMN LABEL
		COLUMN LABEL	COLUMN LABEL	
STUB	ROW GROUP LABEL			
	ROW LABEL	CELL	CELL	CELL
	ROW LABEL	CELL	CELL	CELL
	SUMMARY LABEL	CELL	CELL	CELL
TABLE FOOTER	FOOTNOTES			
	SOURCE NOTES			

Labels: TABLE HEADER, STUB HEAD, STUB, COLUMN LABELS, TABLE BODY, TABLE FOOTER

LEARN MORE ABOUT GT

kable + kableExtra

Table 3.5: Graduates of Ontario French-language RN programs: First-attempt pass rates by program and language of exam

Ontario RN university, program, collaborative partner, and language of instruction	Exam written in:	2015 Writes	2015 Pass Rate	2016 Writes	2016 Pass Rate	2017 Writes	2017 Pass Rate	2018 Writes	2018 Pass Rate
Laurentian University Full (French)	French	1	0.0%	0	—	2	0.0%	0	—
	English	18	55.6%	19	78.9%	40	62.5%	54	74.1%
	Total	19	52.6%	19	78.9%	42	59.5%	54	74.1%
University of Ottawa Full with La Cité collégiale (French)	French	29	41.4%	13	38.5%	7	57.1%	3	33.3%
	English	20	80.0%	56	80.4%	49	83.7%	62	83.9%
	Total	49	57.1%	69	72.5%	56	80.4%	65	81.5%
University of Ottawa Specified for RPN with La Cité collégiale (French)	French	7	0.0%	2	50.0%	4	25.0%	2	50.0%
	English	2	50.0%	1	0.0%	5	80.0%	1	0.0%
	Total	9	11.1%	3	33.3%	9	55.6%	3	33.3%
University of Ottawa Compressed (English and French)	French	9	44.4%	1	0.0%	1	0.0%	0	—
	English	25	88.0%	27	100.0%	0	—	0	—
	Total	34	76.5%	28	96.4%	1	0.0%	0	—
University of Ottawa Compressed (French)*	French			0	—	1	0.0%	0	—
	English			1	100.0%	8	87.5%	8	87.5%
	Total			1	100.0%	9	77.8%	8	87.5%
Grand Total	French	46	34.8%	16	37.5%	15	33.3%	5	40.0%
	English	65	75.4%	104	84.6%	102	75.5%	125	79.2%
	Total	111	58.6%	120	78.3%	117	70.1%	130	77.7%

* In 2016, CNO split the University of Ottawa Compressed (English and French) program into two programs: University of Ottawa Compressed (English) and University of Ottawa Compressed (French). Now CNO will only use the original combined program for applicants who graduated when the original combined program was still in effect.

Source: Sharla Gelfand

LEARN MORE ABOUT KABLEEXTRA

formattable

id	name	age	grade	test1_score	test2_score	final_score	registered
1	Bob	28	C	8.9	9.1	9.00 (rank: 06)	✔ Yes
2	Ashley	27	A	9.5	9.1	9.30 (rank: 03)	✘ No
3	James	30	A	9.6	9.2	9.40 (rank: 02)	✔ Yes
4	David	28	C	8.9	9.1	9.00 (rank: 06)	✘ No
5	Jenny	29	B	9.1	8.9	9.00 (rank: 06)	✔ Yes
6	Hans	29	B	9.3	8.5	8.90 (rank: 08)	✔ Yes
7	Leo	27	B	9.3	9.2	9.25 (rank: 04)	✔ Yes
8	John	27	A	9.9	9.3	9.60 (rank: 01)	✘ No
9	Emily	31	C	8.5	9.1	8.80 (rank: 09)	✘ No
10	Lee	30	C	8.6	8.8	8.70 (rank: 10)	✘ No

LEARN MORE ABOUT FORMATTABLE

DT

```
library(DT)
datatable(iris)
```

Show 10 ⬍ entries   Search: [   ]

	Sepal.Length ⬍	Sepal.Width ⬍	Petal.Length ⬍	Petal.Width ⬍	Species ⬍
1	5.1	3.5	1.4	0.2	setosa
2	4.9	3	1.4	0.2	setosa
3	4.7	3.2	1.3	0.2	setosa
4	4.6	3.1	1.5	0.2	setosa
5	5	3.6	1.4	0.2	setosa
6	5.4	3.9	1.7	0.4	setosa
7	4.6	3.4	1.4	0.3	setosa
8	5	3.4	1.5	0.2	setosa
9	4.4	2.9	1.4	0.2	setosa
10	4.9	3.1	1.5	0.1	setosa

Showing 1 to 10 of 150 entries   Previous 1 2 3 4 5 … 15 Next

LEARN MORE ABOUT DT

R for the Rest of Us

reactable

2019 Women's World Cup Predictions
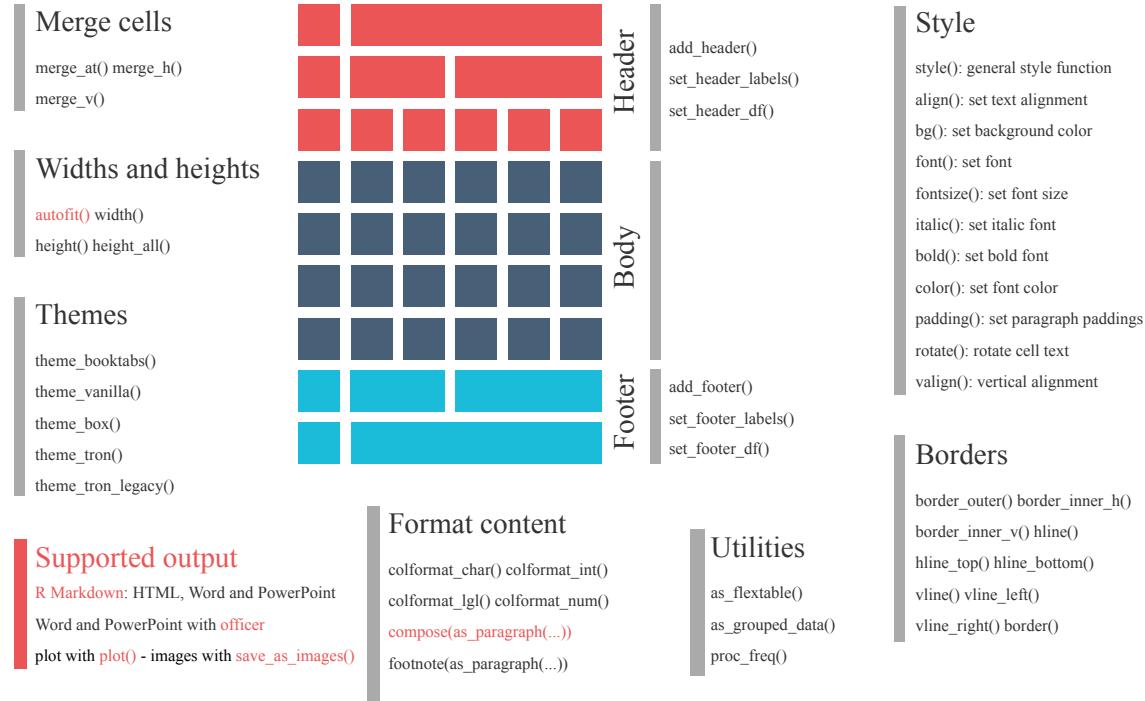
Soccer Power Index (SPI) ratings and chances of advancing for every team

TEAM	GROUP	Team Rating			Chance of Finishing Group Stage In ...			Knockout Stage Chances				
		SPI	OFF.	DEF.	1ST PLACE	2ND PLACE	3RD PLACE	MAKE ROUND OF 16	MAKE QTR-FINALS	MAKE SEMIFINALS	MAKE FINAL	WIN WORLD CUP
🇺🇸 USA 6 pts.	F	98.3	5.5	0.6	83%	17%	–	✓	78%	47%	35%	24%
🇫🇷 France 6 pts.	A	96.3	4.3	0.5	>99%	<1%	<1%	✓	78%	42%	30%	19%
🇩🇪 Germany 6 pts.	B	93.8	4.0	0.7	98%	2%	–	✓	89%	48%	28%	12%
🇨🇦 Canada 6 pts.	E	93.5	3.7	0.6	39%	61%	–	✓	59%	36%	20%	9%
🏴 England 6 pts.	D	91.9	3.5	0.6	71%	29%	–	✓	69%	43%	16%	8%
🇳🇱 Netherlands 6 pts.	E	92.7	3.9	0.7	61%	39%	–	✓	59%	37%	19%	8%
🇦🇺 Australia 3 pts.	C	92.8	4.2	0.9	13%	54%	34%	>99%	54%	26%	10%	5%

LEARN MORE ABOUT REACTABLE

R for the Rest of Us

flextable

Merge cells
merge_at() merge_h()
merge_v()

Widths and heights
autofit() width()
height() height_all()

Themes
theme_booktabs()
theme_vanilla()
theme_box()
theme_tron()
theme_tron_legacy()

Header
add_header()
set_header_labels()
set_header_df()

Body

Footer
add_footer()
set_footer_labels()
set_footer_df()

Format content
colformat_char() colformat_int()
colformat_lgl() colformat_num()
compose(as_paragraph(...))
footnote(as_paragraph(...))

Utilities
as_flextable()
as_grouped_data()
proc_freq()

Style
style(): general style function
align(): set text alignment
bg(): set background color
font(): set font
fontsize(): set font size
italic(): set italic font
bold(): set bold font
color(): set font color
padding(): set paragraph paddings
rotate(): rotate cell text
valign(): vertical alignment

Borders
border_outer() border_inner_h()
border_inner_v() hline()
hline_top() hline_bottom()
vline() vline_left()
vline_right() border()

LEARN MORE ABOUT FLEXTABLE

R for the Rest of Us

My Turn

I'll demonstrate making an effective table using gt

Your Turn

Do the following:

1. Change the default data frame printing method to use kable

2. Choose one of the table packages and make an attractive table that shows the top 10 districts with the highest percentage of Hispanic/Latino students (hint: use the `slice_max()` function to get the top 10 and the `fmt_percent()` function if you're using `gt` or the `percent()` function otherwise to display the percentage of Hispanic/Latino students in each)

Advanced YAML

Table of Contents

```
---
title: "Snazzy Report"
output:
  html_document:
    toc: TRUE
    toc_depth: 2
    toc_float: TRUE
---
```

Table of Contents

```
---
title: "Snazzy Report"
output:
  html_document:
    toc: TRUE
    toc_depth: 2
    toc_float: TRUE
---
```

Table of Contents

```
---
title: "Snazzy Report"
output:
  html_document:
    toc: TRUE
    toc_depth: 2
    toc_float: TRUE
---
```

Figure Options

```
---
title: "Snazzy Report"
output:
  html_document:
    fig_width: 7
    fig_height: 6
    fig_caption: TRUE
---
```

Figure Options

```yaml
---
title: "Snazzy Report"
output:
  html_document:
    fig_width: 7
    fig_height: 6
    fig_caption: TRUE
---
```

Figure Options

```
---
title: "Snazzy Report"
output:
  html_document:
    fig_width: 7
    fig_height: 6
    fig_caption: TRUE
---
```

Parameters
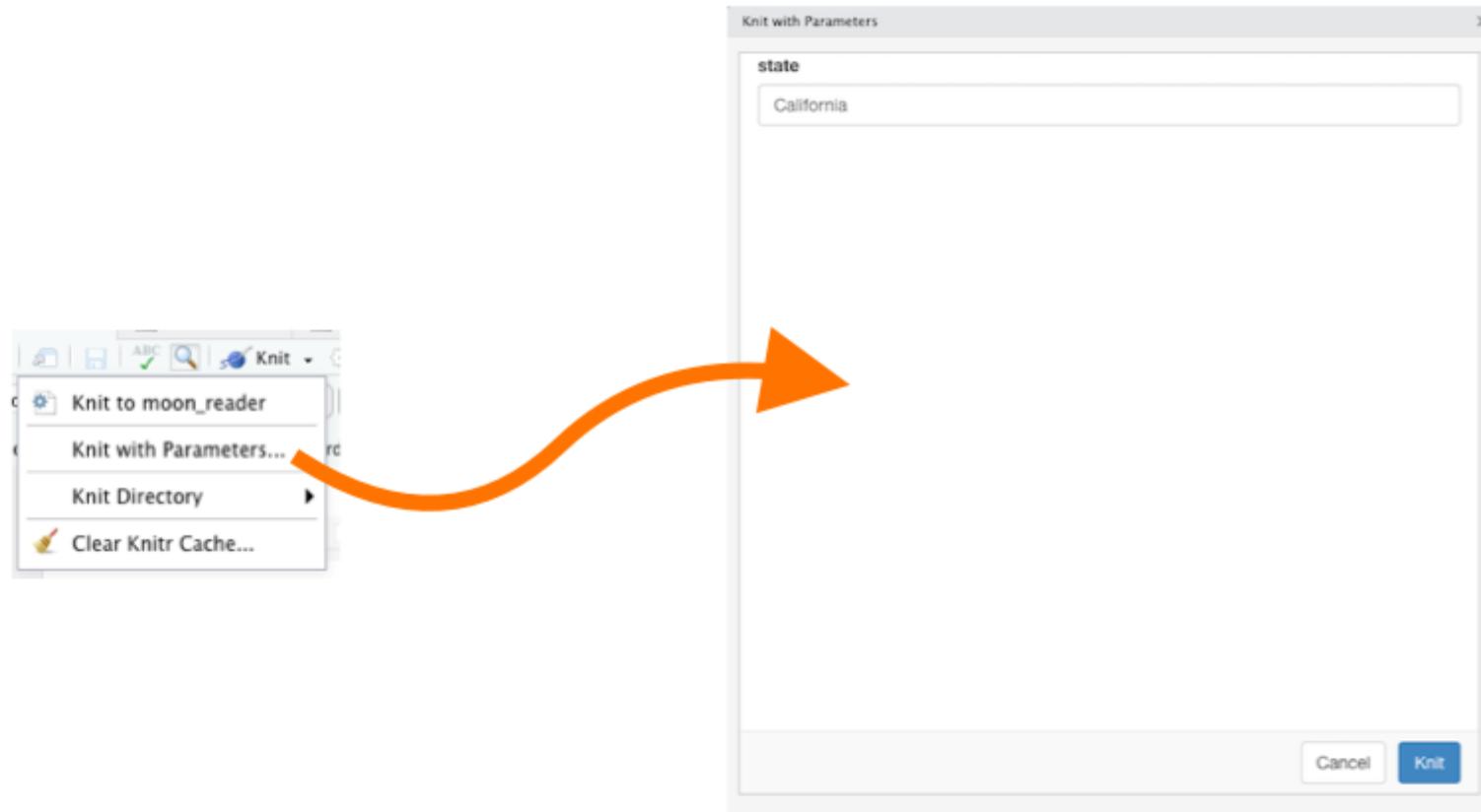
```
---
title: "Snazzy Report"
output: html_document
  params:
    state: "California"
---
```
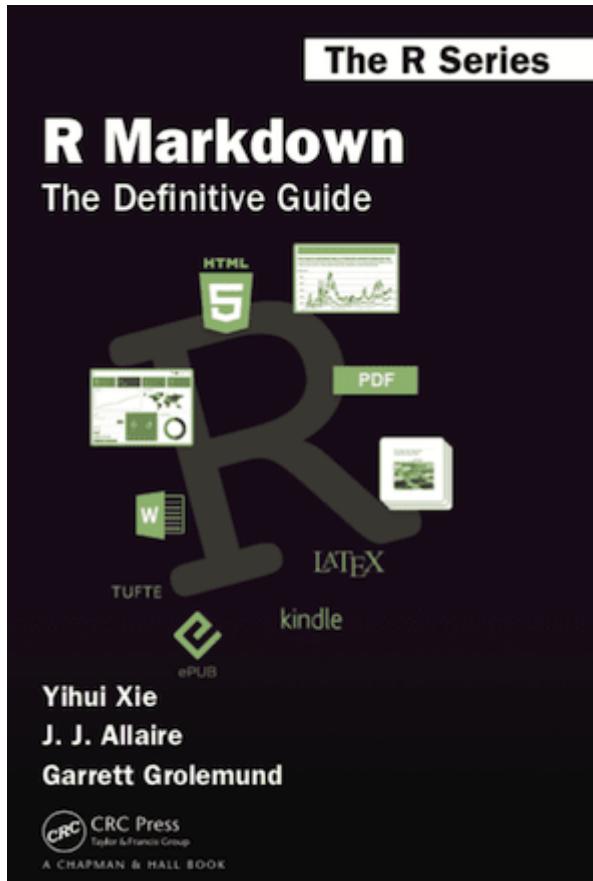
Parameters

Additional Options

My Turn

I'll do the following:

1. Add a table of contents

2. Adjust default figure height, width, and captions

3. Add a parameter to the YAML and use it in the body of my report

4. Knit to make sure everything works

Your Turn

1. Add a table of contents and make it floating

2. Adjust default figure height, width, and captions

3. Add a parameter to the YAML and use it in the body of your report to dynamically create a table of the top 10 districts by various race/ethnicity categories.

Inline R Code

Inline R code

These two bits of text look identical, right?

In 2019, there were 854 German speakers in California.

In 2019, there were 854 German speakers in California.

Inline R code

They're not identical!

In 2019, there were 854 German speakers in California.

```
In 2019, there were `r california_german_speakers` German speakers in California.
```

Inline R code

In 2019, there were `` `r california_german_speakers` `` German speakers in California.

My Turn

I'll add a line to my report that uses inline R code

Your Turn

Add a line to your report that uses inline R code

Making Your Reports Shine: Word Edition

Making Your Reports Shine: Word Edition

```
---
title: "Snazzy Report"
output:
    word_document:
      reference_docx: my-word-template.docx
---
```

👍 .docx   .dotx 👎

My Turn

I'll do the following:

1. Use a reference document to change the look and feel of my reports that are knitted to Word

Your Turn

Use a reference document to change the look and feel of your report when knitted to Word

Making Your Reports Shine: HTML Edition

My Turn

I'll convert my report to distill format

Your Turn

Change the theme of your report by adding a theme option to your YAML. Use any of the following options: "cerulean", "cosmo", "flatly", "journal", "lumen", "paper", "readable", "sandstone", "simplex", "spacelab", "united", and "yeti"

Making Your Reports Shine: PDF Edition

Making Your Reports Shine: PDF Edition

Jeff Littlejohn
@jefflittlejohn

Potential cause of death: troubleshooting Latex errors
from knitting rmarkdown. #rstats

Making Your Reports Shine: PDF Edition

Making Your Reports Shine: PDF Edition

Matt Cowgill
@MattCowgill
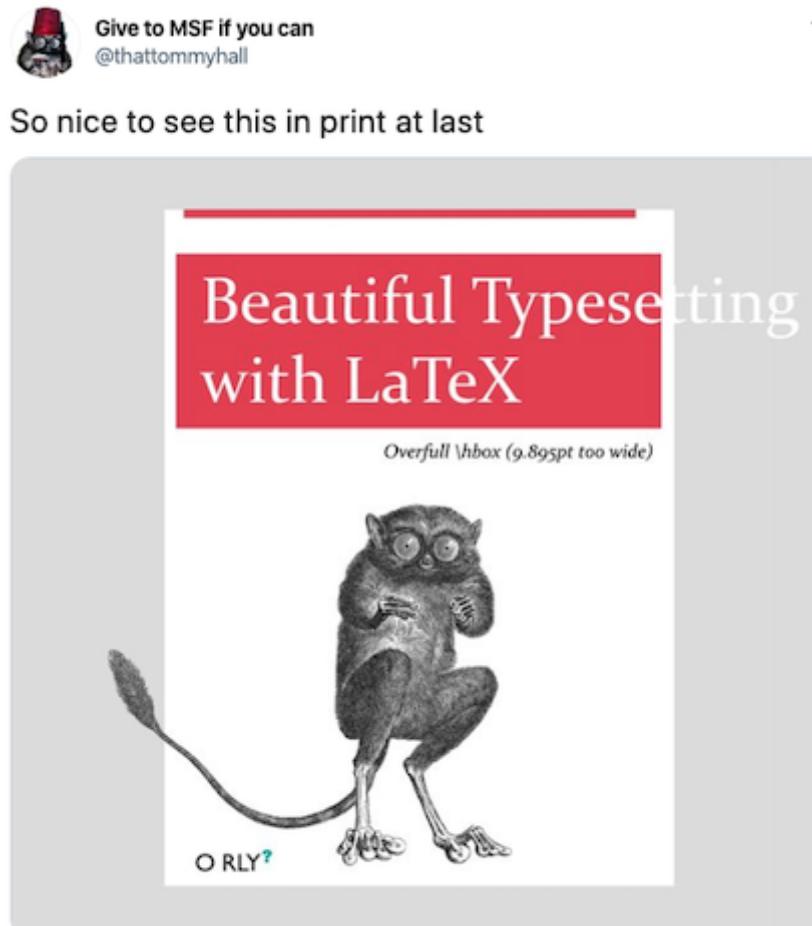
making tables in LaTeX is enough to make me take back every bad thing I ever said about Microsoft Office

9:21 PM · Apr 11, 2020 · Twitter Web App

Making Your Reports Shine: PDF Edition

Making Your Reports Shine: PDF Edition

Making Your Reports Shine: PDF Edition

```
---
title: "Snazzy Report"
output:
  pagedown::html_paged:
    toc: TRUE
    number_sections: FALSE
---
```

Making Your Reports Shine: PDF Edition

```
---
title: "Snazzy Report"
knit: pagedown::chrome_print
output:
  pagedown::html_paged:
    toc: TRUE
    number_sections: FALSE
---
```

Making Your Reports Shine: PDF Edition

Use the `chrome_print()` function from `pagedown` to turn any HTML document into a PDF.

```r
library(pagedown)

chrome_print("slides.html")
```

My Turn

I'll convert my report to `pagedown`

Your Turn

Convert your report to `pagedown`

Presentations

Presentations: Powerpoint

Presentations: `xaringan`
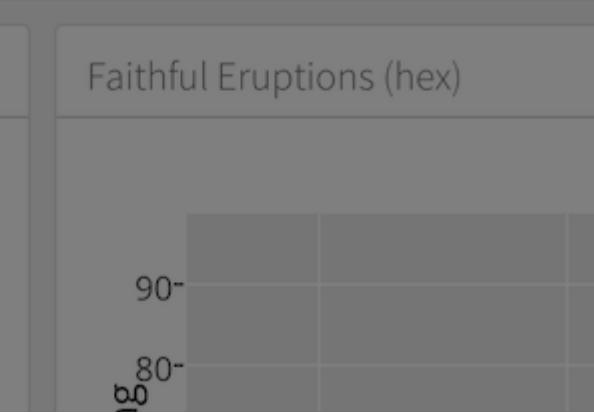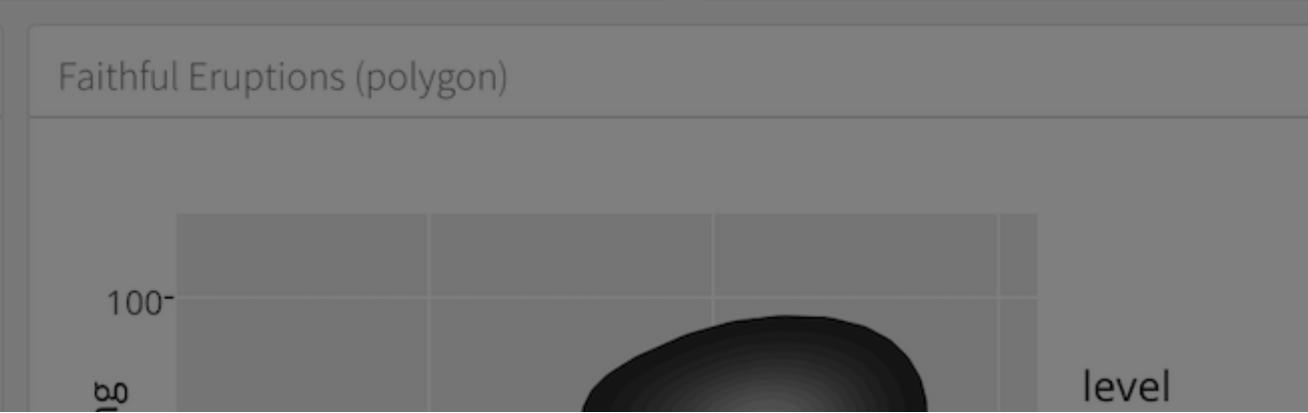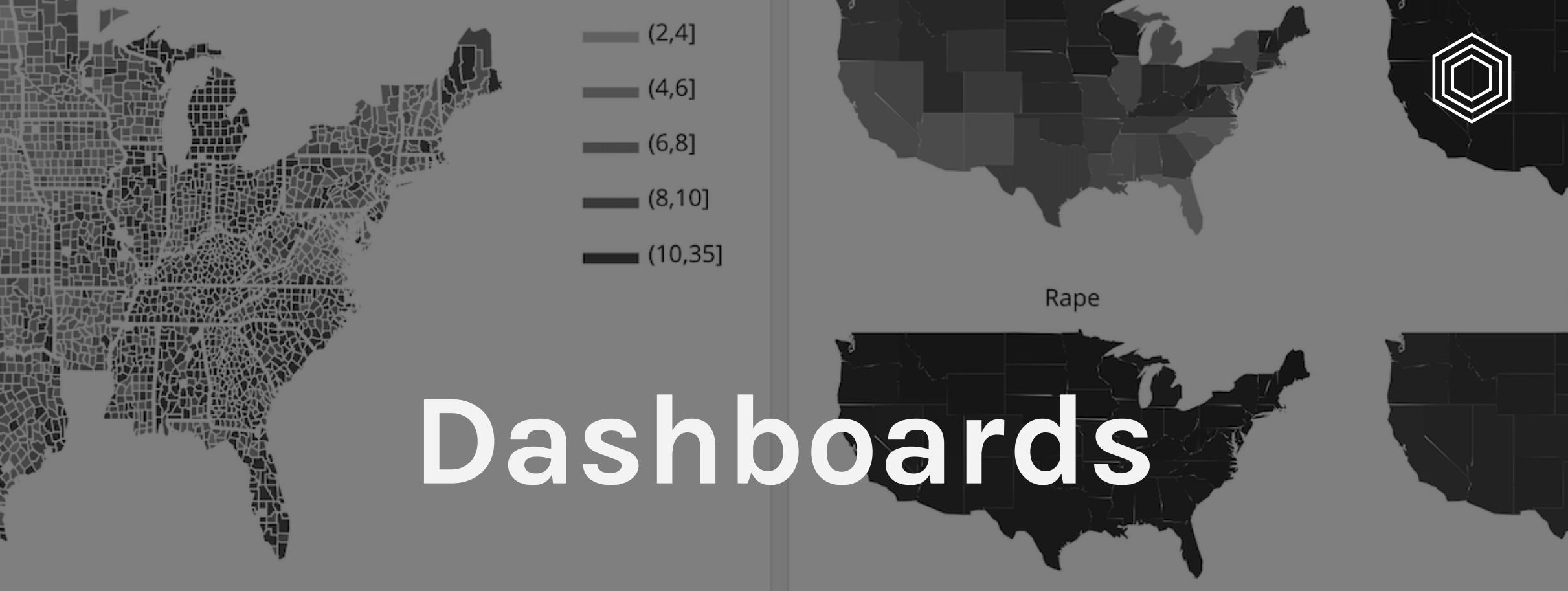
My Turn

I'll convert my report to `xaringan`

Your Turn

Convert your report to PowerPoint or xaringan and knit it to slides. You'll need to make some adjustments to your formatting to make it work (e.g. adding --- for new slides).

Dashboards
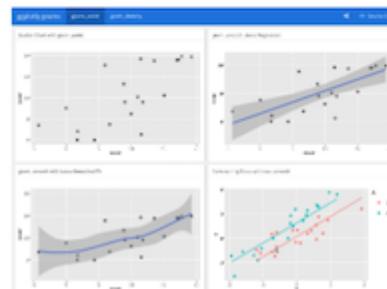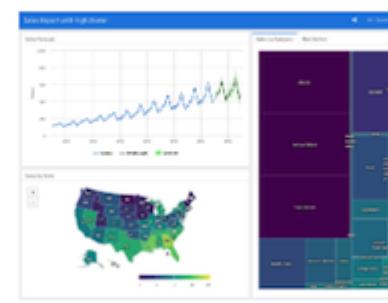
Dashboards

My Turn

I'll convert my report to a dashboard

Your Turn

Convert your report to a dashboard

Other Formats

bookdown

How I Use R

David Keyes // R for the Rest of Us

1 Introduction

Since 2018, I've been teaching people to use R through my company, R for the Rest of Us. It's an incredibly rewarding experience to see people learn to use this powerful piece of software, but it can also be frustrating.

One of the hardest parts of learning R (or any language) is taking knowledge from exercises and applying it to an actual project you're working on. Concepts that make sense in the classroom suddenly become muddled when you're back at your desk trying to use R to write a report.

One of the biggest challenges I've had as a teacher is helping people in this stage right after they learn some fundamental R skills. After I teach folks R fundamentals through my online courses, workshops, or custom training sessions, I struggle to find resources for them to help them apply their new knowledge to their daily work.

There are many great learning resources at the beginner stage and some incredible tutorials to master complex tasks in R. But, drawing from a concept in urban planning, there are far fewer resources in the middle.

Websites

Websites

My Turn

I'll convert my report to `bookdown`

Your Turn

Convert your report to `bookdown`