Branding and Packaging Reports with R Markdown

Jake Thompson, PhD
University of Kansas
Accessible Teaching, Learning, and Assessment Systems

2020-01-30 • rstudio::conf(2020)

bit.ly/ratlas-rstudioconf

wjakethompson.com
Noelle Pablo
Assistant Psychometrician
University of Kansas, ATLAS
[@noelle_pablo](https://twitter.com/noelle_pablo)
[@noellepablo](https://github.com/noellepablo)

Jeff Hoover
Graduate Research Assistant
University of Kansas, ATLAS
[@JeffreyCHoover](https://twitter.com/JeffreyCHoover)
[@JeffreyCHoover](https://github.com/JeffreyCHoover)

Reports with R Markdown

- Reproducible
- Dynamic
- Multiple output formats
Bayesian Psychometrics for Diagnostic Assessments: A Proof of Concept
Research Report #19-01
November 2019

Contents

Executive Summary 2
Implications for the Field 3
1 Purpose of the Report 4
2 Defining the Bayesian Model 4
   2.1 Prior Specification for Attribute-Level Effects  5
   2.2 Prior Specification for Item-Level Effects  7
   2.3 Prior Specification for Class-Level Parameters  8
3 The Bayesian Framework in Practice 8
   3.1 Measures  9
   3.2 Simulated Data  9
   3.3 Model Estimation  12
   3.4 Evaluating Model Fit  17
4 Discussion 24
References 26

List of Tables

1 True Item Parameters  11
2 Number of Simulated Students Assigned to Each Testlet Combination  12
3 Diagnostic Statistics for the No-U-Turn Sampler  16
Step 1: Find your brand

I think that Comic Sans always screams FUN!
Step 1: Find your brand

I think that Comic Sans always screams FUN!
Step 2: Build a template

How to draw an owl

1. [Drawing of a circle]

2. [Drawing of an owl]

bit.ly/ratlas-rstudioconf
Building a Word Template


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

```{r}
### R Markdown

This is an R Markdown document. 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. You can embed an R code chunk like this:

```{r}
summary(cars)
```
Building a Word Template


2. Knit your document.

An MS Word Template
Jake Thompson
2020-01-30

R Markdown
This is an R Markdown document. 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. You can embed an R code chunk like this:

```r
summary(cars)
```

<table>
<thead>
<tr>
<th></th>
<th>speed</th>
<th>dist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>4.0</td>
<td>2.00</td>
</tr>
<tr>
<td>1st Qu.</td>
<td>12.0</td>
<td>1st Qu.: 26.00</td>
</tr>
<tr>
<td>Median</td>
<td>15.0</td>
<td>Median : 36.00</td>
</tr>
<tr>
<td>Mean</td>
<td>15.4</td>
<td>Mean : 42.98</td>
</tr>
<tr>
<td>3rd Qu.</td>
<td>19.0</td>
<td>3rd Qu.: 56.00</td>
</tr>
<tr>
<td>Max.</td>
<td>25.0</td>
<td>Max : 120.00</td>
</tr>
</tbody>
</table>

Including Plot
Building a Word Template

2. Knit your document.
3. Style and save your word document.
Building a Word Template


2. Knit your document.

3. Style and save your word document.

4. Define your template in your YAML.
Resources!

- **Branding and Automating with R Markdown** - Daniel Hadley
- **Happy Collaboration with Rmd to docx** - Richard Layton
Step 3: Polish

- Custom \{ggplot2\} themes
  - \{hrbrthemes\} - Bob Rudis
  - \{Rtistic\} - Emily Riederer
  - \{bbplot\} - BBC

- Default \{knitr\} chunks
  - \{knitr\} options guide
What Next?

Copy and paste into each project

- Templates
- `{ggplot2}` themes
- Other settings

Wrap it up in an R package!

- Always have the right version
- Easy to distribute
- Documentation included

bit.ly/ratlas-rstudioconf
Use Case: ratlas

• Templates for reports
• Convenient project templates
• `{ggplot2}` themes
• Vignettes!

bit.ly/ratlas-rstudioconf
Package Structure

ratlas
|-- DESCRIPTION
|-- inst
|   |-- rmarkdown
|   |-- rstudio
|-- man
|-- NAMESPACE
|-- R
|-- README.md
|-- tests
|-- vignettes

bit.ly/ratlas-rstudioconf
topicguide_docx <- function(...) {
  template <- system.file("rmarkdown", "templates", "topicguide", "template.docx")
  base <- bookdown::word_document2(reference_docx = template, ...)

  base$knitr$opts_chunk$echo <- FALSE
  base$knitr$opts_chunk$fig.asp <- 0.618

  base
}
inst/rstudio/

ratlas
|-- inst
| |-- rstudio
|    |-- templates
|    |   |-- project
|    |   |   |-- topicguide.dcf
|    |   |-- topicguide_resources
|    |       |-- index.Rmd
|    |       |-- references.bib

bit.ly/ratlas-rstudioconf
Making it easy
Making it easy

New Project Wizard

Create Project

New Directory
Start a project in a brand new working directory

Existing Directory
Associate a project with an existing working directory

Version Control
Checkout a project from a version control repository
Making it easy
Making it easy

---

```r
title: "Topic Guide Title"
date: "r format(Sys.Date(), '%B %Y')"
output: ratlas::topicguide.docx
bibliography: ["bib/refs.bib", "bib/packages.bib"]
biblio-style: apalike2
csl: csl/apa.csl
link-citations: yes
---
```

```r
\{r setup, include=FALSE}
needed_packages <- c("ratlas", "knitr", "english")
load_packages <- function(x) {
```

[bit.ly/ratlas-rstudioconf]
Other Examples!

- **sorensonimpact**
  - Sorenson Impact Center
  - Jonathan Zadra, Daniel Hadley, & Gwendolyn Reynolds

- **thesisdown**
  - Reed College (with many forks)
  - Chester Ismay

- **rticles**
  - Journal LaTeX templates
Thank you!

bit.ly/ratlas-rstudioconf
@wjakethompson
wjakethompson.com