

Manuscripts in Rmarkdown

https://stirlingcodingclub.github.io/Manuscripts_in_Rmarkdown/Rmarkdown_notes.html

Brad Duthie

23 October 2019

Objectives for learning Rmarkdown

1. Understand the features of Rmarkdown and why using it to write scientific documents may be useful

Objectives for learning Rmarkdown

1. Understand the features of Rmarkdown and why using it to write scientific documents may be useful
2. Create an Rmarkdown file and assemble it into an HTML, PDF, or DOCX document using knitr in Rstudio

Objectives for learning Rmarkdown

1. Understand the features of Rmarkdown and why using it to write scientific documents may be useful
2. Create an Rmarkdown file and assemble it into an HTML, PDF, or DOCX document using knitr in Rstudio
3. Apply basic integration of R code into Rmarkdown to analyse data and plot results in output

Objectives for learning Rmarkdown

1. Understand the features of Rmarkdown and why using it to write scientific documents may be useful
2. Create an Rmarkdown file and assemble it into an HTML, PDF, or DOCX document using knitr in Rstudio
3. Apply basic integration of R code into Rmarkdown to analyse data and plot results in output
4. Be able to navigate to the [accompanying Rmarkdown notes](#) and make use of them for additional tools

Objectives for learning Rmarkdown

1. Understand the features of Rmarkdown and why using it to write scientific documents may be useful
2. Create an Rmarkdown file and assemble it into an HTML, PDF, or DOCX document using knitr in Rstudio
3. Apply basic integration of R code into Rmarkdown to analyse data and plot results in output
4. Be able to navigate to the [accompanying Rmarkdown notes](#) and make use of them for additional tools
5. Continue asking questions and sharing tips in the Rmarkdown repository [issues page](#) on GitHub

Where did Rmarkdown come from?

Microsoft Word (1983)	L ^A T _E X(1980)
<ul style="list-style-type: none">- Used in the life sciences- What you see is what you get- Proprietary software- Low learning curve- No analysis integration	<ul style="list-style-type: none">- Used in maths and physics- Edit files in plain text (code)- Free software- High learning curve- No analysis integration

Where did Rmarkdown come from?

Microsoft Word (1983)	L ^A T _E X(1980)
<ul style="list-style-type: none">- Used in the life sciences- What you see is what you get- Proprietary software- Low learning curve- No analysis integration	<ul style="list-style-type: none">- Used in maths and physics- Edit files in plain text (code)- Free software- High learning curve- No analysis integration

Rmarkdown (2012) is free software with a **relatively low learning curve** in which authors write in plain text and can easily integrate R analyses, citations, and tables or figures.

Sample writing in code with Rmarkdown

From the Introduction:

Bumpus published a paper and all of the data that he had collected [Bumpus1898]. These data are now a classic data set in biology, and have been analysed multiple times [e.g., Johnston1972].

Sample writing in code with Rmarkdown

From the Introduction:

Bumpus published a paper and all of the data that he had collected [`@Bumpus1898`]. These data are now a classic data set in biology, and have been analysed multiple times [`e.g., @Johnston1972`].

Bumpus published a paper and all of the data that he had collected (Bumpus 1898). These data are now a classic data set in biology, and have been analysed multiple times (e.g., Johnston, Niles, and Rohwer 1972).

Sample writing in code with Rmarkdown

From the Results:

Bumpus' data included `'r sum(dat$surv == "alive")'` sparrows that lived and `'r sum(dat$surv == "dead")'` sparrows that died. The mean total length of living sparrows was `'r round(live, digits = 2)'` mm, and the mean total length of dead sparrows was `'r round(dead, digits = 2)'` mm.

Sample writing in code with Rmarkdown

From the Results:

```
Bumpus' data included 'r sum(dat$surv == "alive")'  
sparrows that lived and 'r sum(dat$surv == "dead")'  
sparrows that died. The mean total length of living  
sparrows was 'r round(live, digits = 2)' mm, and the  
mean total length of dead sparrows was  
'r round(dead, digits = 2)' mm.
```

Bumpus' data included 72 sparrows that lived and 64 sparrows that died. The mean total length of living sparrows was 158.71 mm, and the mean total length of dead sparrows was 160.48 mm.

Complex figures and tables directly in Rmarkdown

sex	surv	totlen	wingext	wgt	head	humer	femur
male	alive	154	241	24.5	31.2	0.687	0.668
male	alive	160	252	26.9	30.8	0.736	0.709
male	alive	155	243	26.9	30.6	0.733	0.704
male	alive	154	245	24.3	31.7	0.741	0.688
male	alive	156	247	24.1	31.5	0.715	0.706
male	alive	161	253	26.5	31.8	0.780	0.743
male	alive	157	251	24.6	31.1	0.741	0.736
male	alive	159	247	24.2	31.4	0.728	0.718
male	alive	158	247	23.6	29.8	0.703	0.673
male	alive	158	252	26.2	32.0	0.749	0.739
male	alive	160	252	26.2	32.0	0.741	0.723
male	alive	162	253	24.8	32.3	0.766	0.752

Why is Rmarkdown worth learning?

1. Learning is a relatively low additional time investment if already invested in R

Why is Rmarkdown worth learning?

1. Learning is a relatively low additional time investment if already invested in R
2. Produces high quality [HTML](#), [PDF](#), and [DOCX](#) documents with the push of a button from an [Rmd file](#) in Rstudio

Why is Rmarkdown worth learning?

1. Learning is a relatively low additional time investment if already invested in R
2. Produces high quality [HTML](#), [PDF](#), and [DOCX](#) documents with the push of a button from an [Rmd file](#) in Rstudio
3. Removes the need to format citations manually (with BibTeX)

Why is Rmarkdown worth learning?

1. Learning is a relatively low additional time investment if already invested in R
2. Produces high quality [HTML](#), [PDF](#), and [DOCX](#) documents with the push of a button from an [Rmd file](#) in Rstudio
3. Removes the need to format citations manually (with BibTeX)
4. Allows users to insert images and equations seamlessly

Why is Rmarkdown worth learning?

1. Learning is a relatively low additional time investment if already invested in R
2. Produces high quality [HTML](#), [PDF](#), and [DOCX](#) documents with the push of a button from an [Rmd file](#) in Rstudio
3. Removes the need to format citations manually (with BibTeX)
4. Allows users to insert images and equations seamlessly
5. Can be used to write slide presentations (in PDF, HTML, PPTX, or Rshiny)

Why is Rmarkdown worth learning?

1. Learning is a relatively low additional time investment if already invested in R
 2. Produces high quality [HTML](#), [PDF](#), and [DOCX](#) documents with the push of a button from an [Rmd file](#) in Rstudio
 3. Removes the need to format citations manually (with BibTeX)
 4. Allows users to insert images and equations seamlessly
 5. Can be used to write slide presentations (in PDF, HTML, PPTX, or Rshiny)
 6. **Complete integration of data analysis and manuscript**
(no copy-pasting when values or figures change)
-

Why is Rmarkdown worth learning?

1. Learning is a relatively low additional time investment if already invested in R
 2. Produces high quality [HTML](#), [PDF](#), and [DOCX](#) documents with the push of a button from an [Rmd file](#) in Rstudio
 3. Removes the need to format citations manually (with BibTeX)
 4. Allows users to insert images and equations seamlessly
 5. Can be used to write slide presentations (in PDF, HTML, PPTX, or Rshiny)
 6. **Complete integration of data analysis and manuscript**
(no copy-pasting when values or figures change)
-

You do not need to learn everything at once for Rmarkdown to be useful. If you get stuck or cannot figure out how to do something, you can just knit a DOCX and work from there.

Create a new Rmarkdown document

In Rstudio: File → New File → R Markdown...

Create a new Rmarkdown document

In Rstudio: File → New File → R Markdown...

title: "Untitled"

author: "Brad Duthie"

date: "17 November 2018"

output: html_document

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

Copy and paste an abstract, then knit

```
---  
title: "High sparrow body length decreases survival"  
author: "Brad Duthie"  
date: "17 November 2018"  
output: html_document  
---
```

Abstract

=====

Writing documents in Rmarkdown using Rstudio can
make scientific workflow more efficient, and here

Copy and paste an abstract, then knit

```
---
title: "High sparrow body length decreases survival"
author: "Brad Duthie"
date: "17 November 2018"
output: html_document
---
```

Abstract

=====

Writing documents in Rmarkdown using Rstudio can make scientific workflow more efficient, and here

Now find the 'Knit' button on the toolbar



Notes and what to do next

Example [manuscript](#) available on GitHub, and how to write it to create a manuscript quality [PDF](#), [HTML](#), or [DOCX](#).

https://stirlingcodingclub.github.io/Manuscripts_in_Rmarkdown/Rmarkdown_notes.html

See the notes above for a full walkthrough on how to write a manuscript in Rmarkdown.

Literature cited

- Bumpus, Hermon C. 1898. "Eleventh lecture. The elimination of the unfit as illustrated by the introduced sparrow, *Passer domesticus*. (A fourth contribution to the study of variation)." *Biological Lectures: Woods Hole Marine Biological Laboratory*, 209–25.
- Johnston, R F, D M Niles, and S A Rohwer. 1972. "Hermon Bumpus and natural selection in the House Sparrow *Passer domesticus*." *Evolution* 26: 20–31.