

How to make your own work reproducible: R Markdown

Andrew Caines, Dept. Theoretical & Applied Linguistics

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Overview

- define R Markdown

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- using R Markdown

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- relevance to Replication

What is R Markdown?

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- **transparent formatting**: wysiwyg
- **embedded computation**: share with collaborators, reviewers, colleagues, students, critics

What is R Markdown?

*... integrating source code, statistical output, and text in R Markdown is **a model of reproducibility**.*

Such transparency facilitates comprehension, defensibility, and further research or testing.

R Markdown helps to bring the vision for reproducibility in statistical analysis articulated by Gentleman & Temple Lang [2004] to reality.

- Udwin & Baumer 2015, 'R Markdown', arXiv.org

What is R Markdown?

This vision — in which the barriers to verify another's statistical computations from start to finish are low — is the intellectual descendant of Claerbout [1994], Buckheit & Donoho [1995], and began with Knuth [1984], the creator of TEX.

Moreover, R Markdown is dynamic: each time the document is rendered, the commands therein are run anew. If data are altered or different data are called in advance of rendering, then the output is dependent and calculated accordingly.

- Udwin & Baumer 2015, 'R Markdown', arXiv.org

How to use R Markdown

installation

- `install.packages('rmarkdown')`

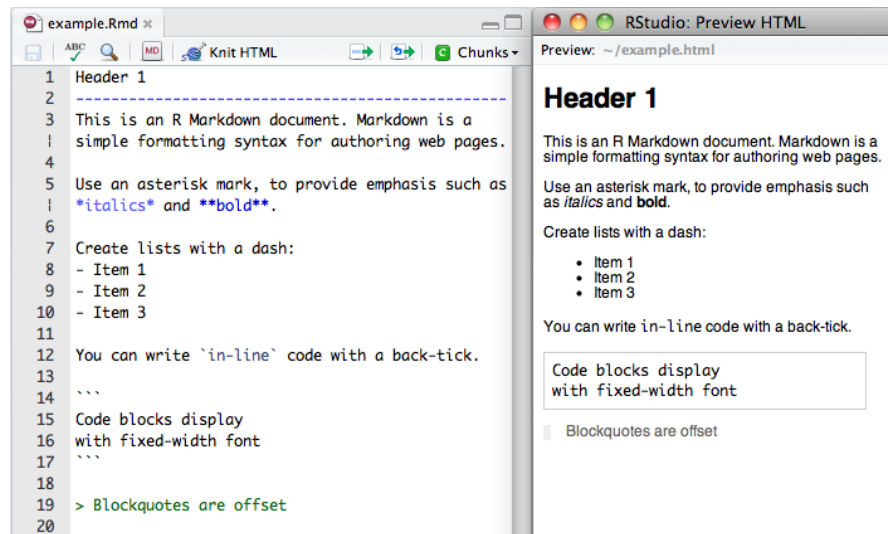
How to use R Markdown

installation

- `install.packages('rmarkdown')`
- `library(rmarkdown)`

How to use R Markdown

simple syntax, human-readable, transparent formatting



The screenshot displays the RStudio interface with two panes. The left pane shows the R Markdown source file 'example.Rmd' with line numbers 1 through 20. The right pane shows the HTML preview of the document.

Source File (example.Rmd):

```
1 Header 1
2 -----
3 This is an R Markdown document. Markdown is a
4 | simple formatting syntax for authoring web pages.
5
6 Use an asterisk mark, to provide emphasis such as
7 | italics and bold.
8
9 Create lists with a dash:
10 - Item 1
11 - Item 2
12 - Item 3
13
14 You can write `in-line` code with a back-tick.
15
16 Code blocks display
17 with fixed-width font
18
19 > Blockquotes are offset
20
```

HTML Preview:

Header 1

This is an R Markdown document. Markdown is a simple formatting syntax for authoring web pages.

Use an asterisk mark, to provide emphasis such as *italics* and **bold**.

Create lists with a dash:

- Item 1
- Item 2
- Item 3

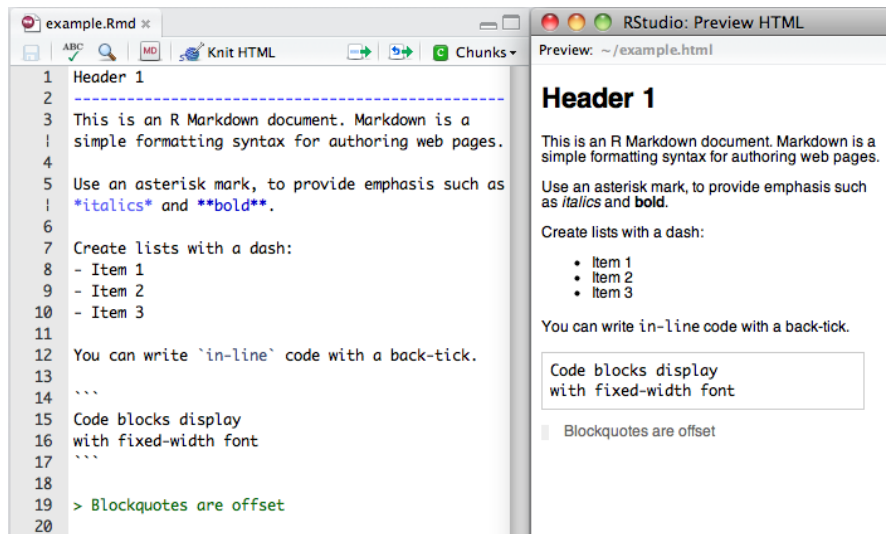
You can write in-line code with a back-tick.

```
Code blocks display
with fixed-width font
```

Blockquotes are offset

How to use R Markdown

embedded computation



The screenshot displays the RStudio interface with two main panes. The left pane shows the source R Markdown file 'example.Rmd' with line numbers 1 through 20. The right pane shows the rendered HTML preview of the document.

Source File (example.Rmd):

```
1 Header 1
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Preview (RStudio: Preview HTML):

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Use an asterisk mark, to provide emphasis such as *italics* and **bold**.

Create lists with a dash:

- Item 1
- Item 2
- Item 3

You can write in-line code with a back-tick.

```
Code blocks display
with fixed-width font
```

Blockquotes are offset

R Markdown and Reproducibility

- paper packages

End