

rmarkdown :: CHEAT SHEET

What is rmarkdown?



.Rmd files • Develop your code and ideas side-by-side in a single document. Run code as individual chunks or as an entire document.

Dynamic Documents • Knit together plots, tables, and results with narrative text. Render to a variety of formats like HTML, PDF, MS Word, or MS Powerpoint.

Reproducible Research • Upload, link to, or attach your report to share. Anyone can read or run your code to reproduce your work.

Workflow

- 1 Open a **new .Rmd file** in the RStudio IDE by going to *File > New File > R Markdown*.
- 2 **Embed code** in chunks. Run code by line, by chunk, or all at once.
- 3 **Write text** and add tables, figures, images, and citations. Format with Markdown syntax or the RStudio Visual Markdown Editor.
- 4 **Set output format(s) and options** in the YAML header. Customize themes or add parameters to execute or add interactivity with Shiny.
- 5 **Save and render** the whole document. Knit periodically to preview your work as you write.
- 6 **Share your work!**

Embed Code with knitr

CODE CHUNKS

Surround code chunks with ````{r}` and ````` or use the Insert Code Chunk button. Add a chunk label and/or chunk options inside the curly braces after `r`.

```
```{r chunk-label, include=FALSE}
summary(mtcars)
```
```

SET GLOBAL OPTIONS

Set options for the entire document in the first chunk.

```
```{r include=FALSE}
knitr::opts_chunk$set(message = FALSE)
```
```

INLINE CODE

Insert ``r <code>`` into text sections. Code is evaluated at render and results appear as text.

"Built with ``r getRversion()``" --> "Built with 4.1.0"

SOURCE EDITOR

1. New File

2. Embed Code

3. Write Text

4. Set Output Format(s) and Options

5. Save and Render

6. Share

Callouts: set preview location, insert code chunk, go to code chunk, run code chunk(s), show outline, modify chunk options, run all previous chunks, run current chunk.

VISUAL EDITOR

Callouts: insert citations, style options, add/edit attributes.

RENDERED OUTPUT

Callouts: file path to output document, find in document, publish to rpubs.com, shinyapps.io, RStudio Connect, reload document.

Insert Citations

Create citations from a bibliography file, a Zotero library, or from DOI references.

BUILD YOUR BIBLIOGRAPHY

- Add BibTeX or CSL bibliographies to the YAML header.
title: "My Document"
bibliography: references.bib
link-citations: TRUE
- If Zotero is installed locally, your main library will automatically be available.
- Add citations by DOI by searching "from DOI" in the **Insert Citation** dialog.

INSERT CITATIONS

- Access the **Insert Citations** dialog in the Visual Editor by clicking the @ symbol in the toolbar or by clicking **Insert > Citation**.
- Add citations with markdown syntax by typing `[@cite]` or `@cite`.

Insert Tables

Output data frames as tables using `kable(data, caption)`.

```
```{r}
data <- faithful[1:4,]
knitr::kable(data,
 caption = "Table with kable")
```
```

| eruptions | waiting |
|-----------|---------|
| 3.600 | 79 |
| 1.800 | 54 |
| 3.333 | 74 |
| 2.283 | 62 |

Other table packages include **flextable**, **gt**, and **kableExtra**.

Write with Markdown

The syntax on the left renders as the output on the right.

Plain text.

End a line with two spaces to start a new paragraph.

Also end with a backslash to make a new line.

italics and **bold**

superscript^2/subscript~2~

~~strikethrough~~

escaped: * _ \\

endash: --, emdash: ---

Header 1

Header 2

...

Header 6

- unordered list

- item 2
- item 2a (indent 1 tab)
- item 2b

1. ordered list

2. item 2
- item 2a (indent 1 tab)
- item 2b

<link url>

[This is a link.](link url)

[This is another link][id].

At the end of the document:

[id]: link url

![Caption](image.png)
or ![Caption][id2]

At the end of the document:

[id2]: image.png

`verbatim code`

...

multiple lines
of verbatim code

> block quotes

equation: $e^{i\pi} + 1 = 0$

equation block:

$$E = mc^2$$

horizontal rule:

horizontal rule:

| Right | Left | Default | Center |
|-------|------|---------|--------|
| 12 | 12 | 12 | 12 |
| 123 | 123 | 123 | 123 |
| 1 | 1 | 1 | 1 |

Plain text.

End a line with two spaces to start a new paragraph.

Also end with a backslash to make a new line.

italics and **bold**

superscript²/subscript₂

~~strikethrough~~

escaped: * _ \

endash: –, emdash: —

Header 1
Header 2

...
Header 6

• unordered list

• item 2
• item 2a (indent 1 tab)
• item 2b

1. ordered list

2. item 2
• item 2a (indent 1 tab)
• item 2b

<http://www.rstudio.com/>

This is a link.

This is another link.



Caption.

verbatim code

multiple lines
of verbatim code

block quotes

block quotes

equation: $e^{i\pi} + 1 = 0$

equation block:

$$E = mc^2$$

horizontal rule:

horizontal rule:

| Right | Left | Default | Center |
|-------|------|---------|--------|
| 12 | 12 | 12 | 12 |
| 123 | 123 | 123 | 123 |
| 1 | 1 | 1 | 1 |

HTML Tabsets
Results {tabset}
Plots text
text

Tables
more text

Results

Plots **Tables**

text





Set Output Formats and their Options in YAML

Use the document's YAML header to set an **output format** and customize it with **output options**.

```
---
title: "My Document"
author: "Author Name"
output:
  html_document:
    toc: TRUE
---
```

Indent format 2 characters,
indent options 4 characters

| OUTPUT FORMAT | CREATES |
|--|------------------------------|
| html_document | .html |
| pdf_document* | .pdf |
| word_document | Microsoft Word (.docx) |
| powerpoint_presentation | Microsoft Powerpoint (.pptx) |
| odt_document | OpenDocument Text |
| rtf_document | Rich Text Format |
| md_document | Markdown |
| github_document | Markdown for Github |
| ioslides_presentation | ioslides HTML slides |
| slidy_presentation | Slidy HTML slides |
| beamer_presentation* | Beamer slides |
| * Requires LaTeX, use <code>tinytex::install_tinytex()</code> | |
| Also see <code>flexdashboard</code> , <code>bookdown</code> , <code>distill</code> , and <code>blogdown</code> . | |

| IMPORTANT OPTIONS | DESCRIPTION | HTML | PDF | MS Word | MS PPT |
|---------------------|--|------|-----|---------|--------|
| anchor_sections | Show section anchors on mouse hover (TRUE or FALSE) | X | | | |
| citation_package | The LaTeX package to process citations ("default", "natbib", "biblatex") | | X | | |
| code_download | Give readers an option to download the .Rmd source code (TRUE or FALSE) | X | | | |
| code_folding | Let readers to toggle the display of R code ("none", "hide", or "show") | X | | | |
| css | CSS or SCSS file to use to style document (e.g. "style.css") | X | | | |
| dev | Graphics device to use for figure output (e.g. "png", "pdf") | X | X | | |
| df_print | Method for printing data frames ("default", "kable", "tibble", "paged") | X | X | X | X |
| fig_caption | Should figures be rendered with captions (TRUE or FALSE) | X | X | X | X |
| highlight | Syntax highlighting ("tango", "pygments", "kate", "zenburn", "textmate") | X | X | X | |
| includes | File of content to place in doc ("in_header", "before_body", "after_body") | X | X | | |
| keep_md | Keep the Markdown .md file generated by knitting (TRUE or FALSE) | X | X | X | X |
| keep_tex | Keep the intermediate TEX file used to convert to PDF (TRUE or FALSE) | X | | | |
| latex_engine | LaTeX engine for producing PDF output ("pdflatex", "xelatex", or "lualatex") | X | | | |
| reference_docx/_doc | docx/pptx file containing styles to copy in the output (e.g. "file.docx", "file.pptx") | | X | X | |
| theme | Theme options (see Bootswatch and Custom Themes below) | X | | | |
| toc | Add a table of contents at start of document (TRUE or FALSE) | X | X | X | X |
| toc_depth | The lowest level of headings to add to table of contents (e.g. 2, 3) | X | X | X | X |
| toc_float | Float the table of contents to the left of the main document content (TRUE or FALSE) | X | | | |

Use `?<output format>` to see all of a format's options, e.g. `?html_document`

Render

When you render a document, rmarkdown:

1. Runs the code and embeds results and text into an .md file with knitr.
2. Converts the .md file into the output format with Pandoc.



Save, then **Knit** to preview the document output. The resulting HTML/PDF/MS Word/etc. document will be created and saved in the same directory as the .Rmd file.

Use `rmarkdown::render()` to render/knit in the R console. See `?render` for available options.

Share

Publish on RStudio Connect

to share R Markdown documents securely, schedule automatic updates, and interact with parameters in real time. rstudio.com/products/connect/



More Header Options

PARAMETERS

Parameterize your documents to reuse with new inputs (e.g., data, values, etc.).

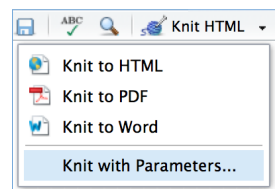
1. **Add parameters** in the header as sub-values of params.

```
---
params:
  state: "hawaii"
---
```

2. **Call parameters** in code using `params$<name>`.

```
```{r}
data <- df[, params$state]
summary(data)
```
```

3. **Set parameters** with Knit with Parameters or the params argument of `render()`.



REUSABLE TEMPLATES

1. **Create a new package** with a `inst/rmarkdown/templates` directory.
 2. **Add a folder** containing **template.yaml** (below) and **skeleton.Rmd** (template contents).
- ```

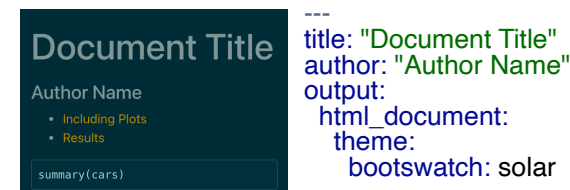
name: "My Template"

```
3. **Install** the package to access template by going to **File > New R Markdown > From Template**.

### BOOTSWATCH THEMES

Customize HTML documents with Bootswatch themes from the **bslib** package using the theme output option.

Use `bslib::bootswatch_themes()` to list available themes.



### CUSTOM THEMES

Customize individual HTML elements using bslib variables. Use `?bs_theme` to see more variables.

```

output:
 html_document:
 theme:
 bg: "#121212"
 fg: "#E4E4E4"
 base_font:
 google: "Prompt"

```

More on **bslib** at [pkgs.rstudio.com/bslib/](https://pkgs.rstudio.com/bslib/).

### STYLING WITH CSS AND SCSS

Add CSS and SCSS to your document by adding a path to a file with the **css** option in the YAML header.

```

title: "My Document"
author: "Author Name"
output:
 html_document:
 css: "style.css"

```

Apply CSS styling by writing HTML tags directly or:

- Use markdown to apply style attributes inline.

**Bracketed Span**  
A `[green]{.my-color}` word.

A **green** word.

**Fenced Div**  
`:: {.my-color}`  
All of these words  
are green.

All of these words  
are green.

- Use the Visual Editor. Go to **Format > Div/Span** and add CSS styling directly with Edit Attributes.

`.my-css-tag`

This is a div with some text in it.

### INTERACTIVITY

Turn your report into an interactive Shiny document in 4 steps:

1. Add **runtime: shiny** to the YAML header.
2. Call Shiny input functions to embed input objects.
3. Call Shiny render functions to embed reactive output.
4. Render with `rmarkdown::run()` or click **Run Document** in RStudio IDE.

```

output: html_document
runtime: shiny

```

```
```{r, echo = FALSE}
numericInput("n",
  "How many cars?", 5)

renderTable({
  head(cars, input$n)
})
```

How many cars?		
	5	
	speed	dist
1	4.00	2.00
2	4.00	10.00
3	7.00	4.00
4	7.00	22.00
5	8.00	16.00

Also see Shiny Prerendered for better performance. rmarkdown.rstudio.com/authoring_shiny_prerendered

Embed a complete app into your document with `shiny::shinyAppDir()`. More at bookdown.org/yihui/rmarkdown/shiny-embedded.html.