



rmarkdown :: Cheatsheet

What is rmarkdown?

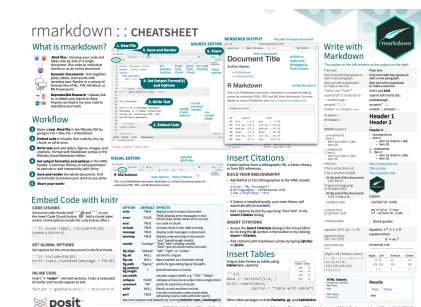
- **.Rmd files:** Develop your code and ideas side-by-side in a single document. Run code as individual chunks or as an entire document.
- **Dynamic Documents:** Knit together plots, tables, and results with narrative text. Render to a variety of formats like HTML, PDF, MS Word, or MS PowerPoint.
- **Reproducible 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!**



Download PDF



Translations (PDF)

- Dutch
- German
- Italian
- Japanese
- Korean
- Spanish
- Turkish
- Vietnamese

Source Editor

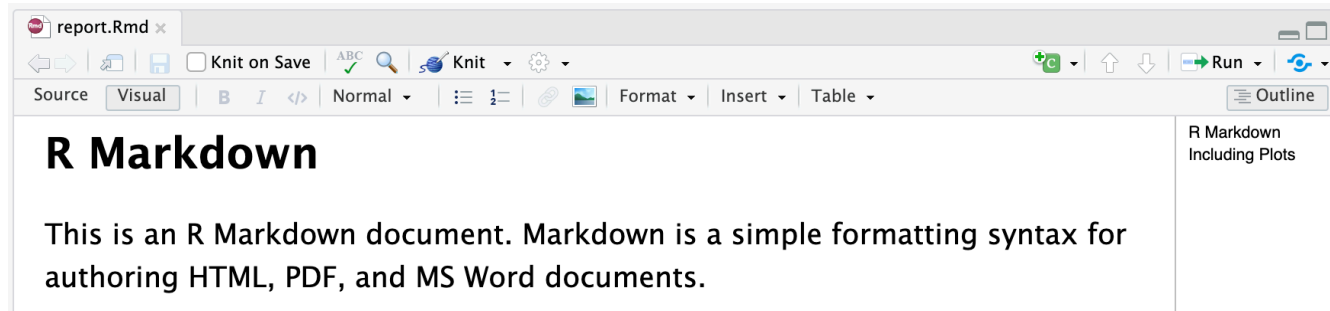
The screenshot displays the RStudio Source Editor interface. The top toolbar includes icons for file operations, a search bar, and a 'Knit' button. The editor window shows the source code of 'report.Rmd' in the 'Source' tab. The code is as follows:

```
1 ---
2 title: "Document Title"
3 author: "Author Name"
4 output:
5   html_document:
6     toc: true
7 ---
8
9 ```{r setup, include=FALSE}
10 knitr::opts_chunk$set(echo = TRUE)
11 ```
12
13 ## R Markdown
14
15 This is an R Markdown document.
16 Markdown is a simple formatting
17 syntax for authoring HTML, PDF,
18 and MS Word documents.
19
20 ```{r cars}
21 summary(cars)
22 ```
```

On the right side of the editor, there is an 'Outline' tab showing the document structure: 'R Markdown Including Plots'. The status bar at the bottom indicates the current line is 1:1 and the document title is 'Document Title'. Below the editor, the 'Console' tab is active, showing the message: 'Output created: report.html'.

Expand to read about the features in the Source Editor

Visual Editor



Expand to read about the features in the Visual Editor

Rendered Output

report.html

Open in Browser

Find

Publish



Document Title

Author Name

- [R Markdown](#)
- [Including Plots](#)

R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents.

```
summary(cars)
```

```
##      speed      dist
##  Min.   : 4.0    Min.   : 2.00
## 1st Qu.:12.0    1st Qu.: 26.00
## Median :15.0    Median : 36.00
## Mean   :15.4    Mean   : 42.98
## 3rd Qu.:19.0    3rd Qu.: 56.00
## Max.   :25.0    Max.   :120.00
```

Expand to read about the features in the Rendered Output Window

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}
```
```

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.

The markdown text

Built with ``r getRversion()``

will render as “Built with 4.4.0” in the output file.

Chunk Options

Table of chunk options. The first column is the option name, the second column is the option's default value, the third column describes what the option does.

| Option | Default | Effects |
|----------------------|--------------------|---|
| <code>echo</code> | <code>TRUE</code> | display code in output document |
| <code>error</code> | <code>FALSE</code> | TRUE (display error messages in doc), FALSE (stop render when error occurs) |
| <code>eval</code> | <code>TRUE</code> | run code in chunk |
| <code>include</code> | <code>TRUE</code> | include chunk in doc after running |
| <code>message</code> | <code>TRUE</code> | display code messages in document |
| <code>warning</code> | <code>TRUE</code> | display code warnings in document |

| Option | Default | Effects |
|--|-----------|--|
| <code>results</code> | "markup" | "asis" (pass through results), "hide" (don't display results), "hold" (put all results below all code) |
| <code>fig.align</code> | "default" | "left", "right", or "center" |
| <code>fig.alt</code> | NULL | alt text for a figure |
| <code>fig.cap</code> | NULL | figure caption as a character string |
| <code>fig.path</code> | "figure/" | prefix for generating file paths |
| <code>fig.width</code> & <code>fig.height</code> | 7 | plot dimensions in inches |
| <code>out.width</code> | | rescales output width, e.g. "75%", "300px" |
| <code>collapse</code> | FALSE | collapse all sources & output into a single block |
| <code>comment</code> | "##" | prefix for each line of results |
| <code>child</code> | NULL | file(s) to knit and then include |
| <code>pur1</code> | TRUE | include or exclude a code chunk when extracting source code with <code>knitr::pur1()</code> |

See more options and defaults by running `str(knitr::opts_chunk$get())`.

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 = "Tables with kable")
```
```

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

Write With Markdown

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

Table of markdown syntax and rendered examples. The syntax in the first column renders to the output in the second column.

Markdown Syntax

Rendered Output

Plain text.

Plain text.

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

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

Also end a line with a backslash\
to make a new line.

Also end a line with a backslash
to make a new line.

italics and ****bold****

italics and **bold**

superscript²/subscript₂

superscript²/subscript₂

~~strike through~~

~~strike through~~

escaped: * _ \\

escaped: * _ \

en dash: --, em dash: ---

en dash: –, em dash: —

Header 1

Header 1

Header 2

Header 2

...

...

Header 6

Header 6

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

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

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

1. ordered list
2. item 2
 - item 2a
 - item 2b

<link url>

<https://posit.co/>

[This is a link.](link url)

This is a link.

[This is another link.][id].

This is another link.

At the end of the document:

[id]: link url

![Caption](image.png)

or

![Caption](id2)

At the end of the document include:

[id2]: image.png



R Markdown logo

`verbatim code`

verbatim code

```

multiple lines  
of verbatim code

```

multiple lines
of verbatim code

> block quotes

block quotes

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

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

equation block:
 $E = mc^2$

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
```

Table: Caption text, example rendered table

Caption text, example rendered table.

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

HTML Tabsets

```
## Results {.tabset}
### Plots
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**. Indent format 2 characters, indent options 4 characters.

```
---
title: "My Document"
author: "Author Name"
output:
  html_document:
    toc: true
    toc-location: left
---
```

Output Format Table

Table of output formats. The output format in the first column creates the file type in the second column.

| Output Format | Creates |
|---------------------------|------------------------------|
| html_document | .html |
| pdf_document ¹ | .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 |

| Output Format | Creates |
|---|----------------------|
| <code>ioslides_presentations</code> | ioslides HTML slides |
| <code>slidy_presentation</code> | Slidy HTML slides |
| <code>beamer_presentation</code> ² | Beamer slides |

Also see **flexdashboard**, **bookdown**, **distill**, and **blogdown**.

Output Options Table

Table of output options. The first column is the option name, the second column is the description and possible values, and then remaining columns show what file types each option can be applied to.

| Important Options | Description | HTML | PDF | MS Word | MS PPT |
|-------------------------------|---|------|-----|---------|--------|
| <code>anchor_sections</code> | Show section anchors on mouse hover (TRUE or FALSE) | X | | | |
| <code>citation_package</code> | The LaTeX package to process citations (“default”, “natbib”, biblatex) | | | | |
| <code>code_download</code> | Give readers an option to download the .Rmd source code (TRUE or FALSE) | X | | | |
| <code>code_folding</code> | Let readers toggle the display of R code (“none”, “hide”, or “show”) | X | | | |
| <code>css</code> | CSS or SCSS file to use to style the document (e.g. “style.css”) | X | | | |
| <code>dev</code> | Graphics device to use for figure output (e.g. “png”, “pdf”) | X | X | | |

| Important Options | Description | HTML | PDF | MS | MS |
|---------------------|--|------|-----|------|-----|
| | | | | Word | PPT |
| 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 |

| Important Options | Description | HTML | PDF | MS | MS |
|-------------------|--|------|-----|------|-----|
| | | | | Word | PPT |
| 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`

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 an `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**.

Bootstrap Themes

Customize HTML documents with Bootstrap themes from the **bslib** package using the theme output option. Use `bslib::bootstrap_themes()` to list available themes.

```
---  
title: "My Document"  
author: "Author Name"  
output:  
  html_document:  
    theme:  
      bootstrap: solar  
---
```

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 <https://pkgs.rstudio.com/bslib/>.

Styling With CSS and SCSS

Add CSS and SCSS to your documents 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.` will render as “A **green** word.”
 - Fenced Div

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

will render as

All of these words

are green.

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

Interactivity

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

1. Add `runtime: shiny` to the YAML header.

```
---  
output: html_document  
runtime: shiny  
---
```

2. Call Shiny input functions to embed input objects.
3. Call Shiny output functions to embed reactive output.

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

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

4. Render with `rmarkdown::run()` or click **Run Document** in RStudio IDE.

Also see Shiny Prerendered for better performance.

https://rmarkdown.rstudio.com/authoring_shiny_prerendered.

Embed a complete Shiny app into your document with `shiny::shinyAppDir()`. More at

<https://bookdown.org/yihui/rmarkdown/shiny-embedded.html>.

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 Posit Connect to share R Markdown documents securely, schedule automatic updates, and interact with parameters in real-time. <https://posit.co/products/enterprise/connect/>.

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Learn more at rmarkdown.rstudio.com.

Updated: 2024-05.

```
packageVersion("rmarkdown")
```

```
[1] '2.27'
```

Footnotes

1. PDFs and Beamer slides require LaTeX, use `tinytex::install_tinytex()`. ↩
2. PDFs and Beamer slides require LaTeX, use `tinytex::install_tinytex()`. ↩

