

# R Markdown Cheat Sheet

learn more at [rmarkdown.rstudio.com](http://rmarkdown.rstudio.com)



## .Rmd files

An R Markdown (.Rmd) file is a record of your research. It contains the code that a scientist needs to reproduce your work along with the narration that a reader needs to understand your work.

## Reproducible Research

At the click of a button, or the type of a command, you can rerun the code in an R Markdown file to reproduce your work and export the results as a finished report.

## Dynamic Documents

You can choose to export the finished report as a html, pdf, MS Word, ODT, RTF, or markdown document; or as a html or pdf based slide show.

## Workflow

**1 Open a new .Rmd file** at File ► New File ► R Markdown. Use the wizard that opens to pre-populate the file with a template

**2 Write document** by editing template

**3 Knit document to create report** Use knit button or `render()` to knit

**4 Preview Output** in IDE window

**5 Publish** (optional) to web or server

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

## .Rmd structure

### YAML Header

Optional section of render (e.g. pandoc) options written as key:value pairs (YAML).

- At start of file
- Between lines of ---

### Text

Narration formatted with markdown, mixed with:

### Code chunks

Chunks of embedded code. Each chunk:

- Begins with `{r}`
- ends with `}````

R Markdown will run the code and append the results to the doc.

It will use the location of the .Rmd file as the **working directory**

The screenshot shows the RStudio interface with several annotations. On the left, the 'New R Markdown' dialog is open. The main editor shows a .Rmd file with a YAML header, text, and a code chunk. Annotations point to various features: 'Open in window', 'Save', 'Spell Check', 'Find and replace', 'Publish', 'Show outline', 'Set preview location', 'Insert code chunk', 'Go to code chunk', 'Run code chunk(s)', 'Modify chunk options', 'Run all previous chunks', and 'Run current chunk'. The bottom pane shows the console with the command `render("report.Rmd", output_file = "report.html")`.

## render()

Use `rmarkdown::render()` to render/knit at cmd line. Important args:

- input** - file to render
- output\_format**
- output\_options** - List of render options (as in YAML)
- output\_file**
- output\_dir**
- params** - list of params to use
- envir** - environment to evaluate code chunks in
- encoding** - of input file

```
---
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 |

Embed a complete app into your document with `shiny::shinyAppDir()`

\* Your report will be rendered as a Shiny app, which means you must choose an html output format, like **html\_document**, and serve it with an active R Session.

## Embed code with knitr syntax

### Inline code

Insert with ``r <code>``. Results appear as text without code.

Built with  
`r getRversion()`

Built with 3.2.3

### Code chunks

One or more lines surrounded with `{r}` and `}````. Place chunk options within curly braces, after `r`. Insert with

```
{r echo=TRUE}
getRversion()
```

```
getRversion()
## [1] '3.2.3'
```

### Global options

Set with `knitr::opts_chunk$set()`, e.g.

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

### Important chunk options

**cache** - cache results for future knits (default = FALSE)

**cache.path** - directory to save cached results in (default = "cache/")

**child** - file(s) to knit and then include (default = NULL)

**collapse** - collapse all output into single block (default = FALSE)

**comment** - prefix for each line of results (default = '##')

**dependson** - chunk dependencies for caching (default = NULL)

**echo** - Display code in output document (default = TRUE)

**engine** - code language used in chunk (default = 'R')

**error** - Display error messages in doc (TRUE) or stop render when errors occur (FALSE) (default = FALSE)

**eval** - Run code in chunk (default = TRUE)

**fig.align** - 'left', 'right', or 'center' (default = 'default')

**fig.cap** - figure caption as character string (default = NULL)

**fig.height, fig.width** - Dimensions of plots in inches

**highlight** - highlight source code (default = TRUE)

**include** - Include chunk in doc after running (default = TRUE)

**message** - display code messages in document (default = TRUE)

**results** (default = 'markup')  
'asis' - passthrough results  
'hide' - do not display results  
'hold' - put all results below all code

**tidy** - tidy code for display (default = FALSE)

**warning** - display code warnings in document (default = TRUE)

Options not listed above: `R.options`, `aniopts`, `autodep`, `background`, `cache.comments`, `cache.lazy`, `cache.rebuild`, `cache.vars`, `dev`, `dev.args`, `dpi`, `engine.opts`, `engine.path`, `fig.asp`, `fig.env`, `fig.ext`, `fig.keep`, `fig.lp`, `fig.path`, `fig.pos`, `fig.process`, `fig.retina`, `fig.scap`, `fig.show`, `fig.showtext`, `fig.subcap`, `interval`, `out.extra`, `out.height`, `out.width`, `prompt`, `purl`, `ref.label`, `render`, `size`, `split`, `tidy.opts`

## Parameters

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

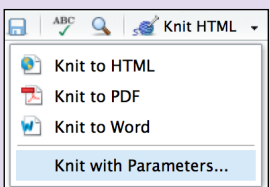
- 1 Add parameters**  
Create and set parameters in the header as sub-values of **params**

```
---
params:
  n: 100
  d: !r Sys.Date()
---
```

- 2 Call parameters**  
Call parameter values in code as **params\$<name>**

```
Today's date
is `r params$d`
```

- 3 Set parameters**  
Set values with **Knit with parameters** or the **params** argument of `render()`:



```
render("doc.Rmd",
  params = list(n = 1, d = as.Date("2015-01-01")))
```

