



# R Markdown Reference Guide

Learn more about R Markdown at [rmarkdown.rstudio.com](http://rmarkdown.rstudio.com)

Learn more about Interactive Docs at [shiny.rstudio.com/articles](http://shiny.rstudio.com/articles)

Contents:

1. Markdown Syntax
2. Knitr chunk options
3. Pandoc options

## Syntax

Plain text

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

*\*italics\** and `_italics_`

**\*\*bold\*\*** and `__bold__`

superscript<sup>^2</sup>

~~~~strikethrough~~~~

[link](www.rstudio.com)

# Header 1

## Header 2

### Header 3

#### Header 4

##### Header 5

##### Header 6

endash: --

emdash: ---

ellipsis: ...

inline equation:  $A = \pi * r^2$

image: 

horizontal rule (or slide break):

\*\*\*

> block quote

\* unordered list

- \* item 2
  - + sub-item 1
  - + sub-item 2

1. ordered list

2. item 2
  - + sub-item 1
  - + sub-item 2

| Table Header | Second Header |
|--------------|---------------|
| Table Cell   | Cell 2        |
| Cell 3       | Cell 4        |

## Becomes

Plain text

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

*italics* and *italics*

**bold** and **bold**

superscript<sup>2</sup>

~~strikethrough~~

[link](#)

# Header 1

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| Syntax | Becomes |
|--------|---------|
|--------|---------|

Make a code chunk with three back ticks followed by an `r` in braces. End the chunk with three back ticks:

```
```{r}
paste("Hello", "World!")
```
```

Make a code chunk with three back ticks followed by an `r` in braces. End the chunk with three back ticks:

```
paste("Hello", "World!")

## [1] "Hello World!"
```

Place code inline with a single back ticks. The first back tick must be followed by an `R`, like this ``r paste("Hello", "World!")``.

Place code inline with a single back ticks. The first back tick must be followed by an `R`, like this Hello World!.

Add chunk options within braces. For example, ``echo=FALSE`` will prevent source code from being displayed:

```
```{r eval=TRUE, echo=FALSE}
paste("Hello", "World!")
```
```

Add chunk options within braces. For example, `echo=FALSE` will prevent source code from being displayed:

```
## [1] "Hello World!"
```

Learn more about chunk options at <http://yihui.name/knitr/options>

## Chunk options

| option                 | default value | description                                                                                                                                                                                                                                                                                             |
|------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Code evaluation</b> |               |                                                                                                                                                                                                                                                                                                         |
| <b>child</b>           | NULL          | A character vector of filenames. Knitr will knit the files and place them into the main document.                                                                                                                                                                                                       |
| <b>code</b>            | NULL          | Set to R code. Knitr will replace the code in the chunk with the code in the code option.                                                                                                                                                                                                               |
| <b>engine</b>          | 'R'           | Knitr will evaluate the chunk in the named language, e.g. <code>engine = 'python'</code> . Run <code>names(knitr::knit_engines\$get())</code> to see supported languages.                                                                                                                               |
| <b>eval</b>            | TRUE          | If <b>FALSE</b> , knitr will not run the code in the code chunk.                                                                                                                                                                                                                                        |
| <b>include</b>         | TRUE          | If <b>FALSE</b> , knitr will run the chunk but not include the chunk in the final document.                                                                                                                                                                                                             |
| <b>purl</b>            | TRUE          | If <b>FALSE</b> , knitr will not include the chunk when running <code>purl()</code> to extract the source code.                                                                                                                                                                                         |
| <b>Results</b>         |               |                                                                                                                                                                                                                                                                                                         |
| <b>collapse</b>        | FALSE         | If <b>TRUE</b> , knitr will collapse all the source and output blocks created by the chunk into a single block.                                                                                                                                                                                         |
| <b>echo</b>            | TRUE          | If <b>FALSE</b> , knitr will not display the code in the code chunk above it's results in the final document.                                                                                                                                                                                           |
| <b>results</b>         | 'markup'      | If <b>'hide'</b> , knitr will not display the code's results in the final document. If <b>'hold'</b> , knitr will delay displaying all output pieces until the end of the chunk. If <b>'asis'</b> , knitr will pass through results without reformatting them (useful if results return raw HTML, etc.) |
| <b>error</b>           | TRUE          | If <b>FALSE</b> , knitr will not display any error messages generated by the code.                                                                                                                                                                                                                      |
| <b>message</b>         | TRUE          | If <b>FALSE</b> , knitr will not display any messages generated by the code.                                                                                                                                                                                                                            |
| <b>warning</b>         | TRUE          | If <b>FALSE</b> , knitr will not display any warning messages generated by the code.                                                                                                                                                                                                                    |
| <b>Code Decoration</b> |               |                                                                                                                                                                                                                                                                                                         |
| <b>comment</b>         | '##'          | A character string. Knitr will append the string to the start of each line of results in the final document.                                                                                                                                                                                            |
| <b>highlight</b>       | TRUE          | If <b>TRUE</b> , knitr will highlight the source code in the final output.                                                                                                                                                                                                                              |
| <b>prompt</b>          | FALSE         | If <b>TRUE</b> , knitr will add <code>&gt;</code> to the start of each line of code displayed in the final document.                                                                                                                                                                                    |
| <b>strip.white</b>     | TRUE          | If <b>TRUE</b> , knitr will remove white spaces that appear at the beginning or end of a code chunk.                                                                                                                                                                                                    |
| <b>tidy</b>            | FALSE         | If <b>TRUE</b> , knitr will tidy code chunks for display with the <code>tidy_source()</code> function in the <code>formatR</code> package.                                                                                                                                                              |



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| Templates             | Basic YAML                 | Template options      | Latex options               | Interactive Docs      |
|-----------------------|----------------------------|-----------------------|-----------------------------|-----------------------|
| html_document         | ---                        | ---                   | ---                         | ---                   |
| pdf_document          | title: "A Web Doc"         | title: "Chapters"     | title: "My PDF"             | title: "Slides"       |
| word_document         | author: "John Doe"         | output:               | output: pdf_document        | output:               |
| md_document           | date: "May 1, 2015"        | <b>html_document:</b> | <b>fontsize: 11pt</b>       | slidy_presentation:   |
| ioslides_presentation | <b>output: md_document</b> | <b>toc: true</b>      | <b>geometry: margin=1in</b> | incremental: true     |
| slidy_presentation    | ---                        | <b>toc_depth: 2</b>   | ---                         | <b>runtime: shiny</b> |
| beamer_presentation   | ---                        | ---                   | ---                         | ---                   |

## Syntax for slide formats (ioslides, slidy, beamer)

# Dividing slides 1

Pandoc will start a new slide at each first level header

## Header 2

... as well as each second level header

\*\*\*

You can start a new slide with a horizontal rule`\*\*\*` if you do not want a header.

## Bullets

Render bullets with

- a dash
- another dash

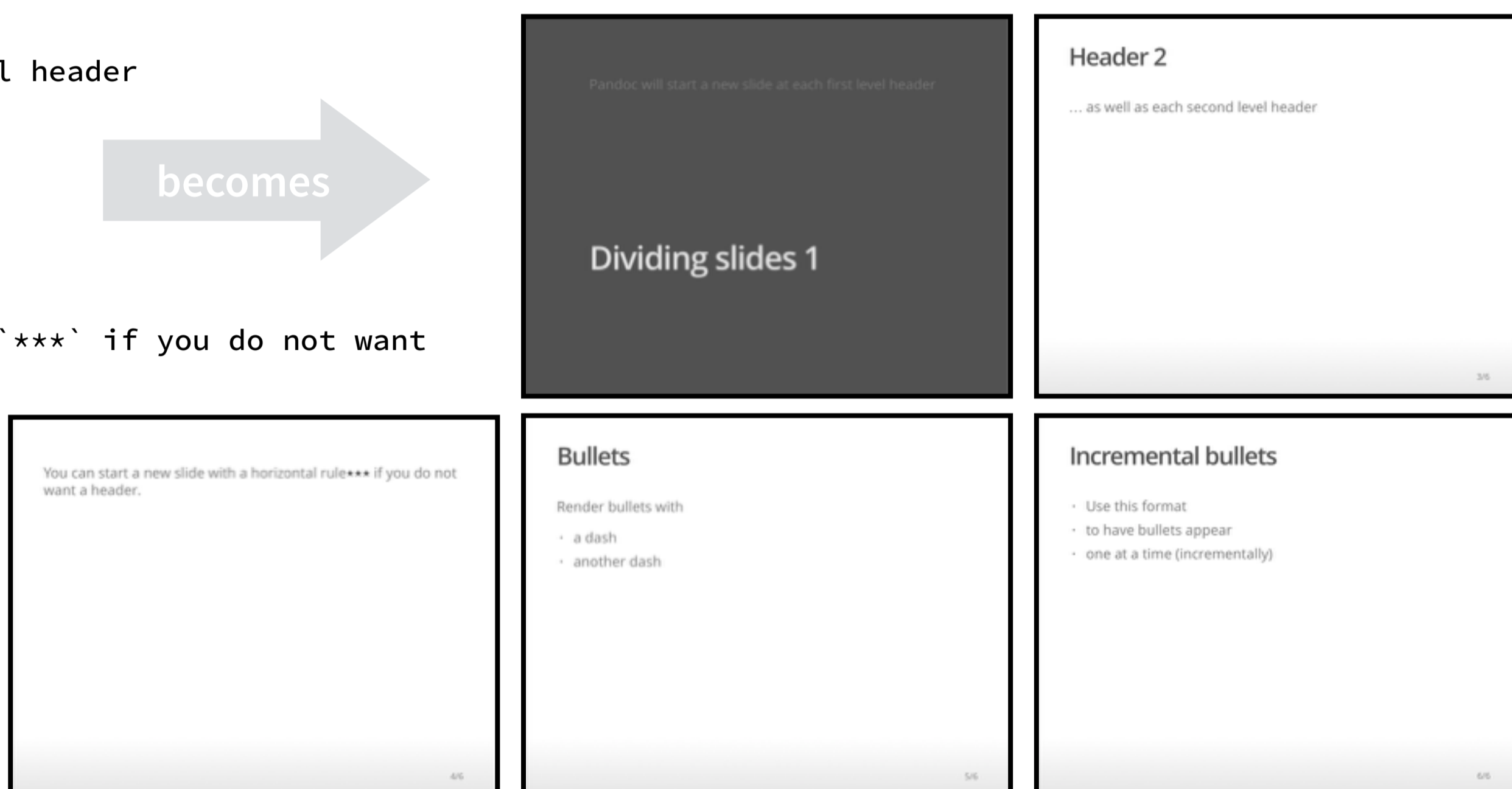
## Incremental bullets

>- Use this format

>- to have bullets appear

>- one at a time (incrementally)

becomes



## Slide display modes

Press a key below during presentation to enter display mode. Press **esc** to exit display mode.

### ioslides

- f** - enable fullscreen mode
- w** - toggle widescreen mode
- o** - enable overview mode
- h** - enable code highlight mode
- p** - show presenter notes

### slidy

- C** - show table of contents
- F** - toggle display of the footer
- A** - toggle display of current vs all slides
- S** - make fonts smaller
- B** - make fonts bigger

## Top level options to customize LaTeX (pdf) output

| option                                 | description                                                                               |
|----------------------------------------|-------------------------------------------------------------------------------------------|
| lang                                   | Document language code                                                                    |
| fontsize                               | Font size (e.g. 10pt, 11pt, 12 pt)                                                        |
| documentclass                          | Latex document class (e.g. article)                                                       |
| classoption                            | Option for document class (e.g. oneside); may be repeated                                 |
| geometry                               | Options for geometry class (e.g. margin=1in); may be repeated                             |
| mainfont, sansfont, monofont, mathfont | Document fonts (works only with xelatex and lualatex, see the latex_engine option)        |
| linkcolor, urlcolor, citecolor         | Color for internal, external, and citation links (red, green, magenta, cyan, blue, black) |



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| option         | html | pdf | word | md | ioslides | slidy | beamer | description                                                                                                                                                 |
|----------------|------|-----|------|----|----------|-------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| colortheme     |      |     |      |    |          |       | X      | Beamer color theme to use (e.g., <code>colortheme: "dolphin"</code> ).                                                                                      |
| css            | X    |     |      |    | X        | X     |        | Filepath to CSS style to use to style document (e.g., <code>css: styles.css</code> ).                                                                       |
| duration       |      |     |      |    |          | X     |        | Add a countdown timer (in minutes) to footer of slides (e.g., <code>duration: 45</code> ).                                                                  |
| fig_caption    | X    | X   | X    |    | X        | X     | X      | Should figures be rendered with captions?                                                                                                                   |
| fig_crop       |      | X   |      |    |          |       | X      | Should <code>pdfcrop</code> utility be automatically applied to figures (when available)?                                                                   |
| fig_height     | X    | X   | X    | X  | X        | X     | X      | Default figure height (in inches) for document.                                                                                                             |
| fig_retina     | X    |     |      | X  | X        | X     |        | Scaling to perform for retina displays (e.g., <code>fig_retina: 2</code> ).                                                                                 |
| fig_width      | X    | X   | X    | X  | X        | X     | X      | Default figure width (in inches) for document.                                                                                                              |
| font_adjustmen |      |     |      |    |          | X     |        | Increase or decrease font size for entire presentation (e.g., <code>font_adjustment: -1</code> ).                                                           |
| fonttheme      |      |     |      |    |          |       | X      | Beamer font theme to use (e.g., <code>fonttheme: "structurebold"</code> ).                                                                                  |
| footer         |      |     |      |    |          | X     |        | Text to add to footer of each slide (e.g., <code>footer: "Copyright (c) 2014 RStudio"</code> ).                                                             |
| highlight      | X    | X   |      |    |          | X     | X      | Syntax highlighting style (e.g. "tango", "pygments", "kate", "zenburn", and                                                                                 |
| includes       | X    | X   |      | X  | X        | X     | X      | See below                                                                                                                                                   |
| -in_header     | X    | X   |      |    | X        | X     | X      | File of content to place in document header (e.g., <code>in_header: header.html</code> ).                                                                   |
| -before_body   | X    | X   |      |    | X        | X     | X      | File of content to place before document body (e.g., <code>before_body:</code>                                                                              |
| -after_body    | X    | X   |      |    | X        | X     | X      | File of content to place after document body (e.g., <code>after_body: doc_suffix.html</code> ).                                                             |
| incremental    |      |     |      |    | X        | X     | X      | Should bullets appear one at a time (on presenter mouse clicks)?                                                                                            |
| keep_md        | X    |     |      |    | X        | X     |        | Save a copy of .md file that contains knitr output (in addition to the .Rmd and HTML files)?                                                                |
| keep_tex       |      | X   |      |    |          |       | X      | Save a copy of .tex file that contains knitr output (in addition to the .Rmd and PDF files)?                                                                |
| latex_engine   |      | X   |      |    |          |       |        | Engine to render latex. Should be one of "pdflatex", "xelatex", and "lua <sup>l</sup> atex".                                                                |
| lib_dir        | X    |     |      |    | X        | X     |        | Directory of dependency files to use (Bootstrap, MathJax, etc.) (e.g., <code>lib_dir: libs</code> ).                                                        |
| logo           |      |     |      |    | X        |       |        | File path to a logo (at least 128 x 128) to add to presentation (e.g., <code>logo: logo.png</code> ).                                                       |
| mathjax        | X    |     |      |    | X        | X     |        | Set to <code>local</code> or a URL to use a local/URL version of MathJax to render equations                                                                |
| number_section | X    | X   |      |    |          |       |        | Add section numbering to headers (e.g., <code>number_sections: true</code> ).                                                                               |
| pandoc_args    | X    | X   | X    | X  | X        | X     | X      | Arguments to pass to Pandoc (e.g., <code>pandoc_args: ["--title-prefix", "Foo"]</code> ).                                                                   |
| preserve_yaml  |      |     |      | X  |          |       |        | Preserve YAML front matter in final document?                                                                                                               |
| reference_docx |      |     | X    |    |          |       |        | A .docx file whose styles should be copied to use (e.g., <code>reference_docx:</code>                                                                       |
| self_contained | X    |     |      |    | X        | X     |        | Embed dependencies into the doc? Set to <code>false</code> to keep dependencies in external files.                                                          |
| slide_level    |      |     |      |    |          |       | X      | The lowest heading level that defines individual slides (e.g., <code>slide_level: 2</code> ).                                                               |
| smaller        |      |     |      |    | X        |       |        | Use the smaller font size in the presentation?                                                                                                              |
| smart          | X    |     |      |    | X        | X     |        | Convert straight quotes to curly, dashes to em-dashes, ... to ellipses, and so on?                                                                          |
| template       | X    | X   |      |    |          | X     | X      | Pandoc template to use when rendering file (e.g., <code>template:</code>                                                                                    |
| theme          | X    |     |      |    |          |       | X      | Bootswatch or Beamer theme to use for page. Valid bootswatch themes include "cerulean", "journal", "flatly", "readable", "spacelab", "united", and "cosmo". |
| toc            | X    | X   |      | X  |          |       | X      | Add a table of contents at start of document? (e.g., <code>toc: true</code> ).                                                                              |
| toc_depth      | X    | X   |      | X  |          |       |        | The lowest level of headings to add to table of contents (e.g., <code>toc_depth: 2</code> ).                                                                |
| transition     |      |     |      |    | X        |       |        | Speed of slide transitions should be "slower", "faster" or a number in seconds.                                                                             |
| variant        |      |     |      | X  |          |       |        | The flavor of markdown to use; one of "markdown", "markdown_strict", "markdown_github", "markdown_mmd", and "markdown_phpextra"                             |
| widescreen     |      |     |      |    | X        |       |        | Display presentation in widescreen format?                                                                                                                  |