

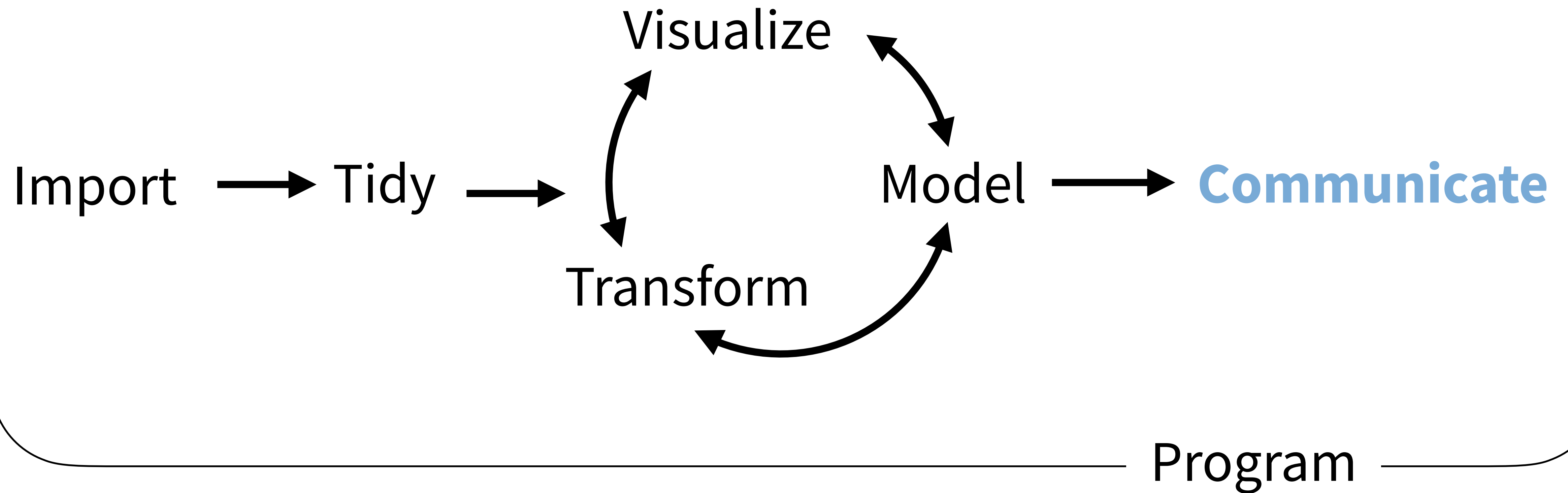
Report Reproducibly with



Navigate to the main page of the class: **<https://astamm.github.io/data-science-with-r/>**.

Download **05-Report-Exercises.qmd** and **05-Report-Parameters.qmd** from the outline table and open them.

(Applied) Data Science



Quarto



Quarto

Plain text file with 3 types of content:

```
publish.yml x 05-Report-Dashboard.Rmd x 05-Report-Dashboard.qmd x 04-Model-Exercises.qmd x
Render on Save ABC Render Run
Source Visual Outline
1 ---
2 title: "Models"
3 format:
4   html:
5     eval: true
6     code-tools:
7       source: repo
8 ---
9
10 ```{r setup}
11 #| include: false
12 library(tidyverse)
13 library(modelr)
14 library(broom)
15
16 # Import wages here
17 library(readxl)
18 wages <- read_excel("wages.xlsx", na = "NA")
19
20 # Fall back in case you cannot load wages
21 # wages <- heights |>
22 #   filter(income > 0) |>
23 #   mutate(
24 #     marital = as.character(marital),
25 #     sex = as.character(sex)
26 #   )
27 ```
28
29 ## Your Turn 1
30
31 * Change the working directory to the folder where `wages.xlsx` is located and
32 this file is saved.
33 * Then import `wages.xlsx` as wages and *copy the code to your setup chunk*.
34 * Be sure to set `NA:` to `NA`.
35 * Switch the `eval` option in the YAML header to `true`.
36
37 ## Your Turn 2
38
39 - Fit the model
40
41 $$
```

A YAML header
surrounded by

Code chunks
surrounded by
```\n```\n

Text in  
markdown

# How it works



# knitr

# pandoc



# Logistics

1

**knitr** runs the document in a fresh R session, which means you need to load the libraries that the document uses *in the document*



# Logistics

1

Knitr runs the document in a fresh R session, which means you need to load the libraries that the document uses *in the document*

2

Objects made in one code chunk will be available to code in later code chunks.

# KNITR IS MULTI-LINGUAL!

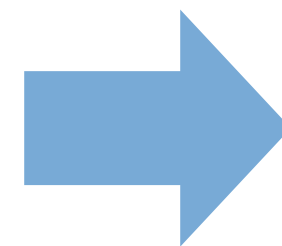
- SAS
- PYTHON
- MORE

# engine

python

To embed non R code, change the chunk label from r to the language to use.

```
Some python code,
```{python}  
x = 'hello, python  
world!'  
print(x)  
print(x.split(' '))  
```
```



Some python code:

```
x = 'hello, python world!'
print(x)
print(x.split(' '))
```

```
hello, python world!
['hello,', 'python', 'world!']
```

# Reticulate

## ON THIS PAGE

[What is Quarto?](#)

[What is {reticulate}?](#)

[Using R and Python together](#)

[How does it work?](#)

[The final output](#)

[Additional resources](#)

## Combining R and Python with {reticulate} and Quarto

Sometimes you might need to use R. Sometimes you might need to use Python. Sometimes you need to use both at the same time. This blog post shows you how to combine R and Python code using {reticulate} and output the results using Quarto.

JANUARY 6, 2023

The R versus Python debate has been going on for as long as both languages have existed. I'm not one to take sides - I think you need to use the best tool for the job. Sometimes R will be better. Sometimes Python will be better. But what happens if you need both languages in the same workflow? Do you need to choose? No, is the simple answer. You can use both. This blog post will show you how you can combine R and Python code in the same analysis using {reticulate} and output the results using Quarto.

## What is Quarto? ⇔

[Quarto](#) is an open-source scientific and technical publishing system that lets you combine narrative text with code to create reproducible and elegantly formatted output. If you're familiar with R Markdown, Quarto might sound somewhat similar - you can think of Quarto as next generation of R Markdown. The great thing about Quarto is that it doesn't just support code written in R - it supports other languages, including Python!

Quarto documents have two main sections: (i) the YAML header, where we specify document-wide properties such as the output format, and (ii) the content, which can include text, images, code, and more. For the example in this blog post, I'm going to output the code and results from the analysis to revealjs slides so my YAML header looks like this:

### Use Python with R with reticulate : : CHEAT SHEET

The `reticulate` package lets you use Python and R together seamlessly in R code, in R Markdown documents, and in the RStudio IDE.

#### Python in R Markdown

(Optional) Build Python env to use.

```
1 {r setup, include = FALSE}
2 library(reticulate)
3 use_virtualenv("r-reticulate")
4 py_install("seaborn", envname = "frrl-proj")
5 use_virtualenv("frrl-proj")
6
7
8 {python echo = FALSE}
9 import seaborn as sns
10 frrl = sns.load_dataset("frrl")
11
12
13 {python}
14 fl = subset(pyfrrl, region == "parietal")
15
16
17 {python}
18 import matplotlib as mpl
19 sns.lmplot("timepoint", "signal", data=r.fl)
20 mpl.pyplot.show()
21
```

Add `knitr::knit_engine$set(python = reticulate::eng_python)` to the setup chunk to set up the reticulate Python engine (not required for `knitr >= 1.18`).

Suggest the Python environment to use, in your setup chunk.

Begin Python chunks with `{python}`. Chunk options like `echo`, `include`, etc. all work as expected.

Use the `py` object to access objects created in Python chunks from R chunks.

Python chunks all execute within a single Python session so you have access to all objects created in previous chunks.

Use the `r` object to access objects created in R chunks from Python chunks.

Output displays below chunk, including matplotlib plots.

#### Object Conversion

Tip: To index Python objects begin at 0, use integers, e.g. `0L`.

Reticulate provides automatic built-in conversion between Python and R for many Python types.

| R                      | Python            |
|------------------------|-------------------|
| Single-element vector  | Scalar            |
| Multi-element vector   | List              |
| List of multiple types | Tuple             |
| Named list             | Dict              |
| Matrix/array           | NumPy ndarray     |
| Data Frame             | Pandas DataFrame  |
| Function               | Python function   |
| NULL, TRUE, FALSE      | None, True, False |

Or, if you like, you can convert manually with `py_to_r(x)` Convert a Python object to an R object. Also `r_to_py`, `py_to_r(x)`

`tuple(..., convert = FALSE)` Create a Python tuple. tuple("a", "b", "c")

`dict(..., convert = FALSE)` Create a Python dictionary object. Also `py_dict` to make a dictionary that uses Python objects as keys. dict(foo = "bar", index = 42L)

`np.array(data, dtype = NULL, order = "C")` Create NumPy arrays. np.array(c(1,4), dtype = "float17")

`array.reshape(x, dim, order = c("C", "F"))` Reshape a Python array. x <- 1:4; array\_reshape(x, c(2, 2))

`py_func(object)` Wrap an R function in a Python function with the same signature. `py_func(xor)`

`py_main_thread_func(object)` Create a function that will always be called on the main thread.

`iterate(..., convert = FALSE)` Apply an R function to each value of a Python iterator or return the values as an R vector, draining the iterator as you go. Also `iter_next` and `as_iterator`. `iterate(iter, print)`

`py_iterator(in, completed = NULL)` Create a Python iterator from an R function. `seq_gen <- function(x){0 <- x; function(){0 <- 1; r()}py_iterator(seq_gen)}`

`py_iterator(in, completed = NULL)` Create a Python iterator from an R function. `seq_gen <- function(x){0 <- x; function(){0 <- 1; r()}py_iterator(seq_gen)}`

#### Python in R code

Call Python from R in three ways:

##### IMPORT PYTHON MODULES

Use `import()` to import any Python module. Access the attributes of a module with `$`.

```
1 library(reticulate)
2 py_install("seaborn")
3 use_virtualenv("r-reticulate")
4
5 sns <- import("seaborn")
6
7 frrl <- sns.load_dataset("frrl")
8 dim(frrl)
9
10 # creates tips
11 source_python("python.py")
12 dim(tips)
13
14 # creates tips in main
15 py_run_file("python.py")
16 dim(pytips)
17
18 py_run_string("print(tips.shape)")
19
```

`import(module, as = NULL, convert = TRUE, delay_load = FALSE)` Import a Python module. If `convert = TRUE`, Python objects are converted to their equivalent R types. Also `import_from_path`. `import("pandas")`

`import_main(convert = TRUE)` Import the main module, where Python executes code by default. `import_main()`

`import_builtins(convert = TRUE)` Import Python's built-in functions. `import_builtins()`

##### SOURCE PYTHON FILES

Use `source_python()` to source a Python script and make the Python functions and objects it creates available in the calling R environment.

```
source_python(file, envir = parent.frame(), convert = TRUE) Run a Python script, assigning objects to a specified R environment. source_python("file.py")
```

##### RUN PYTHON CODE

Execute Python code into the main Python module with `py_run_file()` or `py_run_string()`.

- `py_run_string(code, local = FALSE, convert = TRUE)` Run Python code (passed as a string) in the main module. `py_run_string("x = 10"); py$x`
- `py_run_file(file, local = FALSE, convert = TRUE)` Run Python file in the main module. `py_run_file("script.py")`
- `py_eval(code, convert = TRUE)` Run a Python expression, return the result. Also `py_call`, `py_eval("1 + 1")`

Access the results, and anything else in Python's main module, with `py`.

- `py` An R object that contains the Python main module and the results stored there. `py$x`

#### Helpers

`py_capture_output(expr, type = c("stdout", "stderr"))` Capture and return Python output. Also `py_suppress_warnings`, `py_capture_output("x")`

`py_get_attr(x, name, silent = FALSE)` Get an attribute of a Python object. Also `py_set_attr`, `py_has_attr`, and `py_list_attributes`. `py_get_attr(x)`

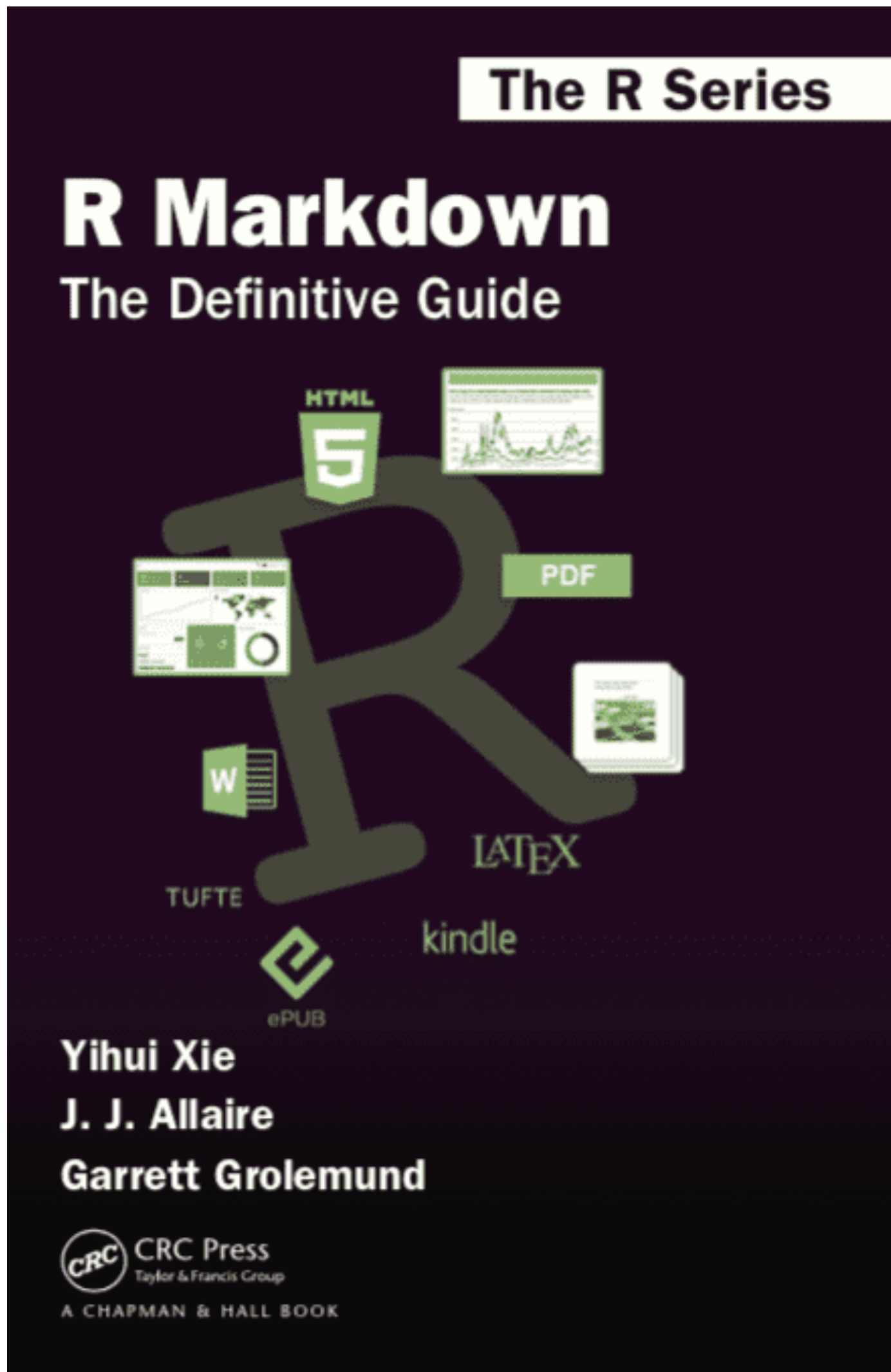
`py_help(object)` Open the documentation page for a Python object. `py_help(sns)`

`py_last_error()` Get the last Python error encountered. Also `py_clear_last_error` to clear the last error. `py_last_error()`

`py_save_object(object, filename, pickle = "pickle")` Save and load Python objects with pickle. Also `py_load_object`, `py_save_objects`, `py_pickle()`

`with_data(expr, as = NULL, ...)` Evaluate an expression within a Python context manager. `py <- import_builtins(); with(py$open("output.txt", "w") %>% file$write("Hello, there!"))`

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- Advanced >

## Guide

Comprehensive guide to using Quarto. If you are just starting out, you may want to explore the [tutorials](#) to learn the basics.

### Authoring

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Using R

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Using Observable

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### Interactivity

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VS Code

Neovim

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Visual Editor

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Creating a Blog

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Website Listings

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MS Word

Typst

Markdown

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Scale up your work with

[bookdown.org/yihui/rmarkdown/](https://bookdown.org/yihui/rmarkdown/)

**ONLINE, FREE**

# Markdown

```
publish.yml x 05-Report-Dashboard.Rmd x 05-Report-Dashboard.qmd x 04-Model-Exercises.qmd x
Render on Save ABC Render Run
Source Visual Outline
1 ---
2 title: "Models"
3 format:
4 html:
5 eval: true
6 code-tools:
7 source: repo
8 ---
9
10 ```{r setup}
11 #| include: false
12 library(tidyverse)
13 library(modelr)
14 library(broom)
15
16 # Import wages here
17 library(readxl)
18 wages <- read_excel("wages.xlsx", na = "NA")
19
20 # Fall back in case you cannot load wages
21 # wages <- heights |>
22 # filter(income > 0) |>
23 # mutate(
24 # marital = as.character(marital),
25 # sex = as.character(sex)
26 #)
27 ```
28
29 ## Your Turn 1
30
31 * Change the working directory to the folder where `wages.xlsx` is located and
32 this file is saved.
33 * Then import `wages.xlsx` as wages and *copy the code to your setup chunk*.
34 * Be sure to set `NA:` to `NA`.
35 * Switch the `eval` option in the YAML header to `true`.
36
37 ## Your Turn 2
38
39 - Fit the model
40
41 $$
```

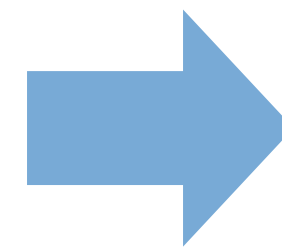
Text in  
markdown

# Headers

Use # to create headers.

Multiple #'s create lower level headers.

```
Header 1
Header 2
Header 3
Header 4
Header 5
Header 6
```



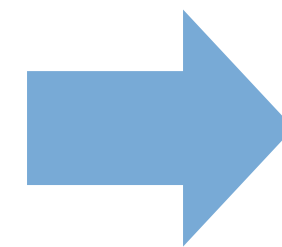
**Header 1**  
**Header 2**  
**Header 3**  
**Header 4**  
**Header 5**  
**Header 6**

# Text

Add two spaces at the end of a line to start a new line

Text is rendered as plain text. Surround text with `_`, `**`, or ``` to format it.

```
Text
italics
bold
`code`
```



```
Text
italics
bold
code
```



# Lists

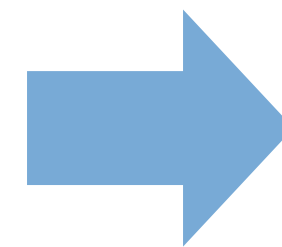
Use asterisks or dashes to make bullet points.  
Use numbers to make numbered lists.

Bullets

- \* bullet 1
- \* bullet 2

Numbered list

1. item 1
2. item 2



Bullets

- bullet 1
- bullet 2

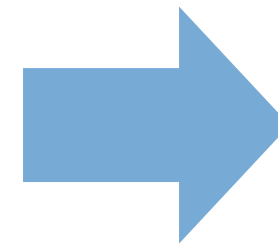
Numbered list

1. item 1
2. item 2

# Hyperlinks

Use brackets to denote a link.  
Place the URL in parentheses.

This is a  
`[link](www.git.com)`.



This is a [link](#).

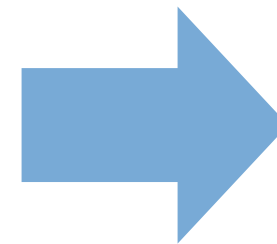
# Images

Use a link preceded by an ! to insert an image.

*The link text should be a URL (if the image is hosted online), or a file path (if the image is saved as a file)*

```

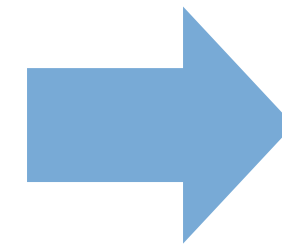
The RStudio logo.
```



# Equations

Write equations with latex math commands and surround them in \$'s.

According to  
Einstein,  
`$E=mc^{2}$`



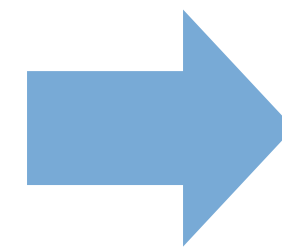
According to  
Einstein,  $E = mc^2$

# Equation blocks

Use two \$'s to make centered equation blocks.

According to  
Einstein,

$$E=mc^2$$



According to  
Einstein,


$$E = mc^2$$

# Markdown

## Dictionary of formatting cues.

### Pandoc's Markdown

Write with syntax on the left to create effect on right (after render)

| Plain text<br>End a line with two spaces to start a new paragraph.<br>*italics* and **bold**<br>`verbatim code`<br>sub/superscript <sup>2</sup> ~ <sub>2</sub><br>~strikethrough~<br>escaped: \^ \_ \\<br>endash: --, emdash: ---<br>equation: SA = \pi*r^A{2}\$<br>equation block:<br><br>\$\$E = mc^2\$\$<br><br>> block quote<br><br># Header1 {#anchor}<br><br>## Header 2 {#css_id}<br><br>### Header 3 {,css_class}<br><br>#### Header 4<br><br>##### Header 5<br><br>##### Header 6<br><br><!--Text comment--><br><br>\textbf{Text ignored in HTML}<br><em>HTML ignored in pdfs</em><br><br><http://www.rstudio.com><br>[link](www.rstudio.com)<br>Jump to [Header 1](#anchor)<br>image:<br><br>![(Caption)](smallorb.png)<br><br>* unordered list<br>+ sub-item 1<br>+ sub-item 2<br>- sub-sub-item 1<br><br>* item 2<br><br>Continued (indent 4 spaces)<br><br>1. ordered list<br>2. item 2<br>i) sub-item 1<br>A. sub-sub-item 1<br><br>(@) A list whose numbering continues after<br><br>(@) an interruption<br><br>Term 1<br><br>: Definition 1<br><br>  Right   Left   Default   Center  <br> ----- ----- ----- ----- <br>  12   12   12   12  <br>  123   123   123   123  <br>  1   1   1   1  <br><br>- slide bullet 1<br>- slide bullet 2<br><br>(>- to have bullets appear on click)<br><br>horizontal rule/slide break:<br><br>***<br><br>A footnote [^1]<br><br>[^1]: Here is the footnote. | Plain text<br>End a line with two spaces to start a new paragraph.<br><i>italics</i> and <b>bold</b><br>`verbatim code`<br>sub/superscript <sup>2</sup><br>sub/superscript <sub>2</sub><br>strikethrough<br>escaped: ^ _ \<br>endash: --, emdash: ---<br>equation: A = \pi * r^2<br>equation block:<br><br>E = mc^2<br><br> > block quote<br><br>Header1<br>Header 2<br>Header 3<br>Header 4<br>Header 5<br>Header 6<br><i>HTML ignored in pdfs</i><br><a href="http://www.rstudio.com">http://www.rstudio.com</a><br>link<br>Jump to Header 1<br>image:<br><br>Caption<br><ul style="list-style-type: none"><li>unordered list<ul style="list-style-type: none"><li>sub-item 1</li><li>sub-item 2<ul style="list-style-type: none"><li>sub-sub-item 1</li></ul></li></ul></li><li>item 2</li></ul><br>Continued (indent 4 spaces)<br><ol style="list-style-type: none"><li>ordered list</li><li>item 2<ol style="list-style-type: none"><li>sub-item 1</li><li>A. sub-sub-item 1</li></ol></li></ol><br>continues after<br><ol style="list-style-type: none"><li>an interruption</li></ol><br>Term 1<br>Definition 1<br><table border="1"><thead><tr><th>Right</th><th>Left</th><th>Default</th><th>Center</th></tr></thead><tbody><tr><td>12</td><td>12</td><td>12</td><td>12</td></tr><tr><td>123</td><td>123</td><td>123</td><td>123</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td></tr></tbody></table><br>- slide bullet 1<br>- slide bullet 2<br><br>(>- to have bullets appear on click)<br><br>horizontal rule/slide break:<br><br>***<br><br>A footnote [^1]<br><br>1. Here is the footnote.↩ | Right   | Left   | Default | Center | 12 | 12 | 12 | 12 | 123 | 123 | 123 | 123 | 1 | 1 | 1 | 1 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------|---------|--------|----|----|----|----|-----|-----|-----|-----|---|---|---|---|
| Right                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Left                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Default | Center |         |        |    |    |    |    |     |     |     |     |   |   |   |   |
| 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 12      | 12     |         |        |    |    |    |    |     |     |     |     |   |   |   |   |
| 123                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 123                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 123     | 123    |         |        |    |    |    |    |     |     |     |     |   |   |   |   |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1       | 1      |         |        |    |    |    |    |     |     |     |     |   |   |   |   |

### Pandoc's Markdown

Write with syntax on the left to create effect on right (after render)

#### Set render options with YAML

When you render, R Markdown  
1. runs the R code, embeds results and text into .md file with knitr  
2. then converts the .md file into the finished format with pandoc

Set a document's default output format in the YAML header:

```

output: html_document
Body

```

output value creates

|                       |                                  |
|-----------------------|----------------------------------|
| html_document         | html                             |
| pdf_document          | pdf (requires Tex)               |
| word_document         | Microsoft Word (.docx)           |
| odt_document          | OpenDocument Text                |
| rtf_document          | Rich Text Format                 |
| md_document           | Markdown                         |
| github_document       | Github compatible markdown       |
| ioslides_presentation | ioslides HTML slides             |
| slidy_presentation    | slidy HTML slides                |
| beamer_presentation   | Beamer pdf slides (requires Tex) |

Customize output with sub-options (listed to the right):

```

output: html_document
code_folding: hide
toc_float: TRUE
Body

```

html tabsets

Use tabset class to place sub-headers into tabs

```
Tabset [tabset, tabset-fade, tabset-pills]
Tab 1
text 1
Tab 2
text 2
End tabset
```

#### Create a Reusable Template

1. Create a new package with a inst/rmarkdown/templates directory  
2. In the directory, place a folder that contains: **template.yaml** (see below)  
**skeleton.Rmd** (contents of the template)  
any supporting files  
3. Install the package  
4. Access template in wizard at File ► New File ► R Markdown template.yaml

#### Table Suggestions

Several functions format R data into tables

| Table with stargazer |         |       |
|----------------------|---------|-------|
| eruptions            | waiting |       |
| 1                    | 3.662   | 79.00 |
| 2                    | 1.80    | 54.00 |
| 3                    | 3.23    | 74.00 |
| 4                    | 2.28    | 62.00 |

#### Citations and Bibliographies

Create citations with bib, bibtex, copac, enl, json, .medline, .mods, .ris, .wos, and .xml files

- Set bibliography file and CSL 1.0 Style file (optional) in the YAML header
- Use citation keys in text
- Render. Bibliography will be added to end of document

```

bibliography: refs.bib
csl: style.csl

Smith cited [smith04].
[[r|results="asis"]
@smith04
Smith cited without author [smith04].
[smith04] cited in line.
Smith cited (Joe Smith 2004).
Smith cited without author (2004).
Joe Smith (2004) cited in line.
```

ON BACK OF RMARKDOWN CHEAT SHEET



# IDE Reference

Go to Help > Markdown Quick Reference

The screenshot shows the RStudio Cloud web interface. The top navigation bar includes 'Welcome-To-The-Tidyverse / ASA-BLS-May-2019' and the user 'Garrett Grolemond'. The main menu bar contains 'File', 'Edit', 'Code', 'View', 'Plots', 'Session', 'Build', 'Debug', 'Profile', 'Tools', and 'Help'. The 'Help' menu is open, listing options such as 'R Help', 'About RStudio', 'RStudio Docs', 'RStudio Community Forum', 'RStudio Support', 'Cheatsheets', 'Keyboard Shortcuts Help', 'Markdown Quick Reference' (highlighted), 'Roxygen Quick Reference', and 'Diagnostics'. A red arrow points from the text 'OPENS HERE' to the 'Markdown Quick Reference' menu item. The 'Markdown Quick Reference' panel is open in the bottom right, showing the title 'Markdown Quick Reference' and introductory text: 'R Markdown is an easy-to-write plain text format for creating dynamic documents and reports. See [Using R Markdown](#) to learn more.' Below this, there are sections for 'Emphasis' and 'Headers' with examples of their syntax.

# Code

```
publish.yml x 05-Report-Dashboard.Rmd x 05-Report-Dashboard.qmd x 04-Model-Exercises.qmd x
Render on Save Render Run
Source Visual Outline
1 ---
2 title: "Models"
3 format:
4 html:
5 eval: true
6 code-tools:
7 source: repo
8 ---
9
10 ```{r setup}
11 #| include: false
12 library(tidyverse)
13 library(modelr)
14 library(broom)
15
16 # Import wages here
17 library(readxl)
18 wages <- read_excel("wages.xlsx", na = "NA")
19
20 # Fall back in case you cannot load wages
21 # wages <- heights |>
22 # filter(income > 0) |>
23 # mutate(
24 # marital = as.character(marital),
25 # sex = as.character(sex)
26 #)
27 ```
28
29 ## Your Turn 1
30
31 * Change the working directory to the folder where `wages.xlsx` is located and
32 this file is saved.
33 * Then import `wages.xlsx` as wages and *copy the code to your setup chunk*.
34 * Be sure to set `NA:` to `NA`.
35 * Switch the `eval` option in the YAML header to `true`.
36
37 ## Your Turn 2
38
39 - Fit the model
40
41 $$
```

Code chunks  
surrounded by  
``,``,``



# Code chunks

Insert a chunk of R code with

```
```{r}  
# some code  
```
```

When you render the report, Quarto will run the code and include its results.

Quarto will also remove the ````{r}` and `````.

# Code chunks

Insert a chunk of R code with

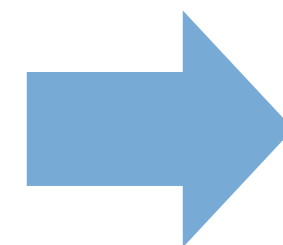
```
` `` {r}
some code
` ``
```



# chunk options

By default, Quarto includes both the code and its results

```
Here's some code
```\r}  
dim(iris)  
```
```



Here's some code

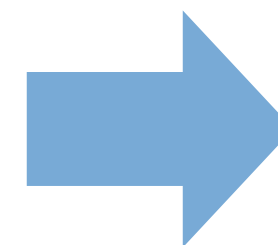
```
dim(iris)
```

```
[1] 150 5
```

# echo

Add options in the chunk by starting the line with ``#|``.  
**echo: false** hides the code.

```
Here's some code
```{r}  
#| echo: false  
dim(iris)  
```
```



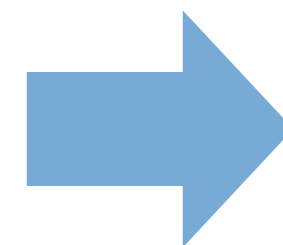
```
Here's some code
[1] 150 5
```

Very useful  
for plots

# eval

**eval: false** prevents the code from being run. As a result, no results will be displayed with the code.

```
Here's some code
```${r}  
#| eval: false  
dim(iris)  
```
```



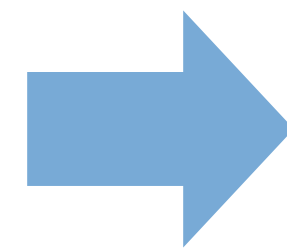
```
Here's some code

dim(iris)
```

# include

**include: false** runs the code, but prevents both the code and the results from appearing (e.g. to setup).

```
Here's some code
```${r}  
#| include: false  
dim(iris)  
```\n
```

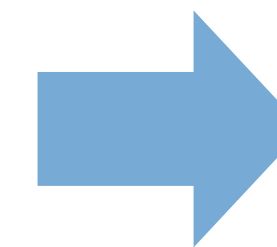


Here's some code

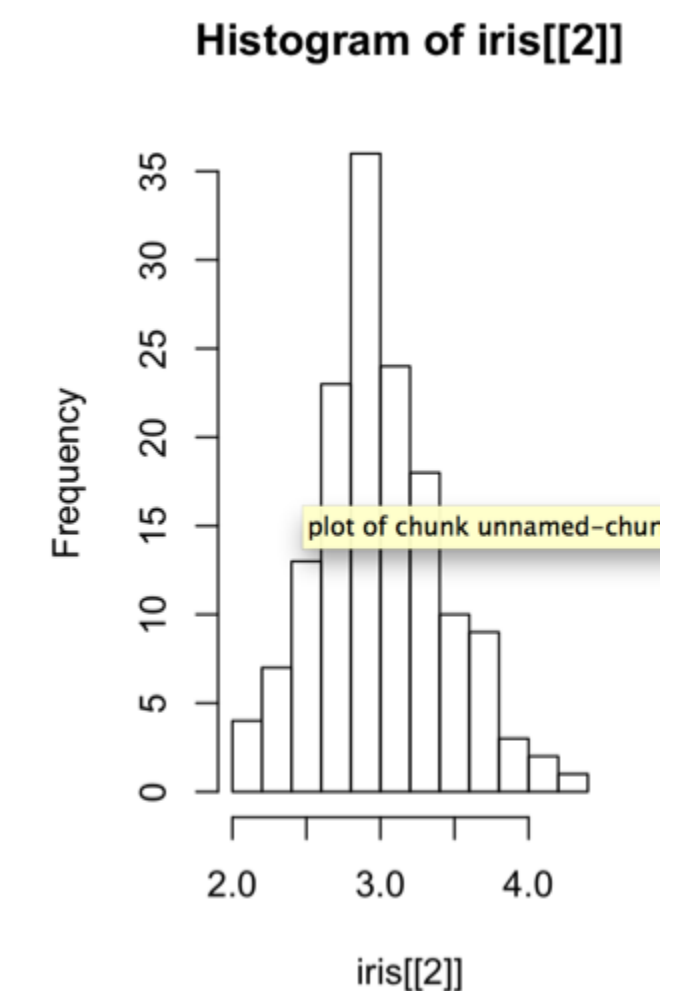
# fig-height, fig-width

Specify the dimension of plots (in inches) with fig-width and fig-height. Separate multiple arguments with commas.

```
Here's a plot
```{r}
#| echo: false
#| fig-width: 3
#| fig-height: 5
hist(iris[[2]])
```
```



Here's a plot



# Pop Quiz

Do you notice the TODOs in  
**05-Report-Exercises.qmd**?

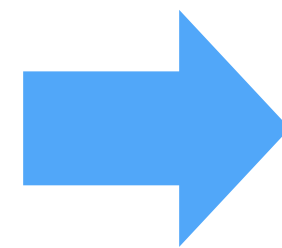
Do you notice the long **setup** chunk?



# Inline code

Place code in a sentence with ``r <code>``.  
Quarto will replace the code with its results.

```
Today is
`r Sys.Date()`.
```



```
Today is 2015-04-16.
```

# Inline code

Code whose results are inserted into the text.

```
Today is `r Sys.Date()`.
```

Surround  
with ``r``

Code to run. Only the  
result will be included.

# Your Turn 1

In `05-Report-Exercises.qmd`:

1. Replace every Garrett with your name
2. Replace every TODO with inline R code
3. Check that the setup chunk is not included with the output
4. Ensure that only the output of the plot chunk is shown (not the code)
5. Knit the document



05:00

# YAML

```
publish.yml x 05-Report-Dashboard.Rmd x 05-Report-Dashboard.qmd x 04-Model-Exercises.qmd x
Render on Save Render Run
Source Visual Outline
1 ---
2 title: "Models"
3 format:
4 html:
5 eval: true
6 code-tools:
7 source: repo
8 ---
9
10 ```{r setup}
11 #| include: false
12 library(tidyverse)
13 library(modelr)
14 library(broom)
15
16 # Import wages here
17 library(readxl)
18 wages <- read_excel("wages.xlsx", na = "NA")
19
20 # Fall back in case you cannot load wages
21 # wages <- heights |>
22 # filter(income > 0) |>
23 # mutate(
24 # marital = as.character(marital),
25 # sex = as.character(sex)
26 #)
27 ```
28
29 ## Your Turn 1
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31 * Change the working directory to the folder where `wages.xlsx` is located and
32 this file is saved.
33 * Then import `wages.xlsx` as wages and *copy the code to your setup chunk*.
34 * Be sure to set `NA:` to `NA`.
35 * Switch the `eval` option in the YAML header to `true`.
36
37 ## Your Turn 2
38
39 - Fit the model
40
41 $$
5:15 Models Copilot: No completions available. Quarto
```

A YAML header surrounded by

---

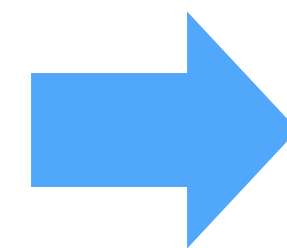
# YAML

A section of key:value pairs  
separated by dashed lines ———

```

title: "Untitled"
author: "RStudio"
date: "February 4, 2015"
format: html

Text of document
```



# Untitled

*RStudio*

*February 4, 2015*

Text of document

# format

## The format: field sets the format of the final report

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Quarto 1.6 released! [Download](#) | [Read More](#)

Guide > Documents > All Formats

### All Formats

#### Overview

Pandoc supports a huge array of output formats, all of which can be used with Quarto. To use any Pandoc format just use the `format` option or the `--to` command line option.

For example, here's some YAML that specifies the use of the `html` format as well as a couple of format options:

```

title: "My Document"
format:
 html:
 toc: true
 code-fold: true

```

Alternatively you can specify the use of a format on the command line:

```
Terminal
quarto render document.qmd --to html
```

See below for a list of all output formats by type along with links to their reference documentation.

#### Documents

On this page

- Overview
- Documents
- Presentations
- Markdown
- Wikis
- More Formats

Edit this page  
Report an issue

quarto

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# Parameters



# Your Turn 2

Open `05-Report-Parameters.qmd`.

Render the document.

Change the name property in the YAML header and re-render document. What happened?

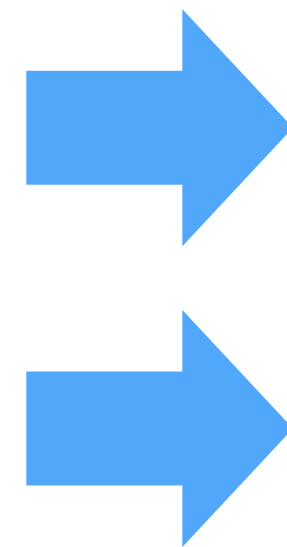
02:00



# Parameters

A list of values that you can call in R code chunks

**params list  
elements and  
values**



```

title: "Untitled"
format: html
params:
 filename: "data.csv"
 symbol: "FB"

```

**colon**

**New line.  
Indented two  
spaces**

# Using Parameters

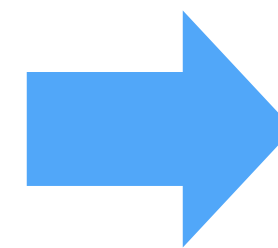
Call parameter values as elements of the params list, **params\$num**

```

params:
 num: 42

The value of the
parameter is
`r params$num`, e.g.

`` `{r}
params$num
````
```



The value of the
parameter is 42, e.g.

```
params$num
```

```
## [1] 42
```

42

quarto::quarto_render() + for

```
names <- c("Alice", "Bob", "Cathy")
for (nm in names) {
  quarto::quarto_render(
    input = "05_Report/05-Report-Parameters.qmd",
    output_file = glue::glue("05_Report/05-Report-
{name}.html"),
    execute_params = list(name = nm)
  )
}
```



Demo

Report Reproducibly with

