Warm up

Introduce yourself to your neighbor. Tell them

* your name

* your job

* 2 to 3 interesting things about yourself

RStudio IDE
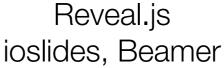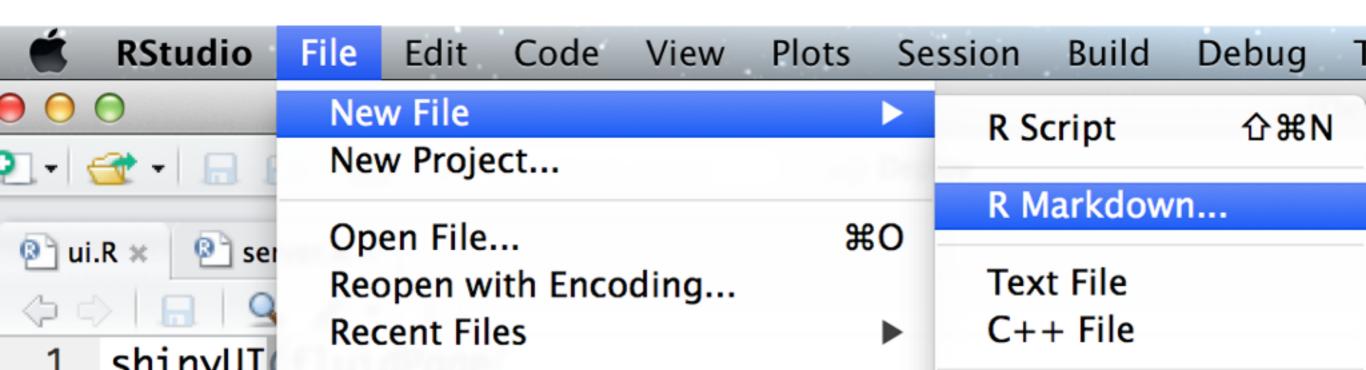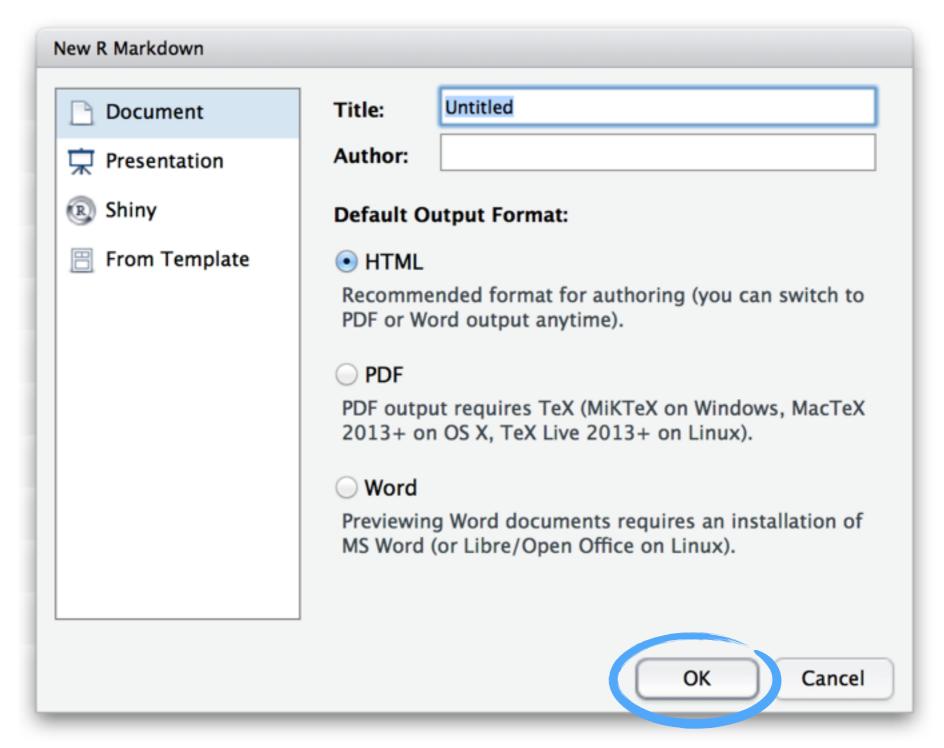# text editor
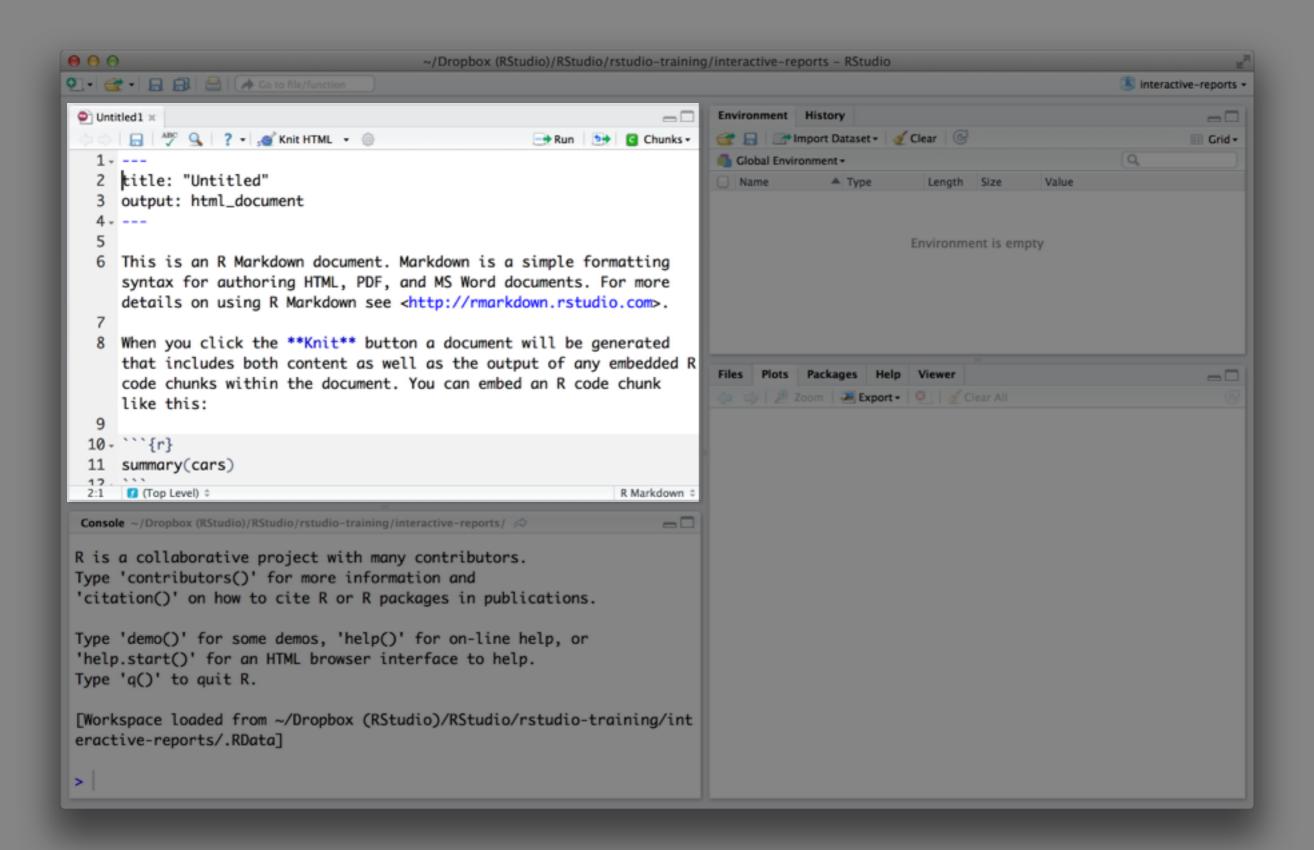
RStudio text editor

A dedicated pane for composing various types of documents

File > New File > ...

To open a basic R markdown document select "R Markdown" and then click OK in the pop up

New R Markdown

Document

Presentation

Shiny

From Template

Title: Untitled

Author:

Default Output Format:

● HTML

Recommended format for authoring (you can switch to PDF or Word output anytime).

○ PDF

PDF output requires TeX (MiKTeX on Windows, MacTeX 2013+ on OS X, TeX Live 2013+ on Linux).

○ Word

Previewing Word documents requires an installation of MS Word (or Libre/Open Office on Linux).

OK   Cancel

~/Dropbox (RStudio)/RStudio/rstudio-training/interactive-reports – RStudio

interactive-reports ▾

Go to file/function

Untitled1 ✕

Knit HTML ▾   Run   Chunks ▾

```
1  ---
2  title: "Untitled"
3  output: html_document
4  ---
5
6  This is an R Markdown document. Markdown is a simple formatting
   syntax for authoring HTML, PDF, and MS Word documents. For more
   details on using R Markdown see <http://rmarkdown.rstudio.com>.
7
8  When you click the **Knit** button a document will be generated
   that includes both content as well as the output of any embedded R
   code chunks within the document. You can embed an R code chunk
   like this:
9
10 ```{r}
11 summary(cars)
12 ```
```

2:1   (Top Level) ↕   R Markdown ↕

Environment   History

Import Dataset ▾   Clear   Grid ▾

Global Environment ▾

Name   ▲ Type   Length   Size   Value

Environment is empty

Files   Plots   Packages   Help   Viewer

Zoom   Export ▾   Clear All

Console ~/Dropbox (RStudio)/RStudio/rstudio-training/interactive-reports/

```
R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

[Workspace loaded from ~/Dropbox (RStudio)/RStudio/rstudio-training/int
eractive-reports/.RData]

>
```

Your turn

Do you remember what you said to your neighbor?

Open a .Rmd file. Erase everything in it. Then write down:

* your name

* your job

* 2 to 3 interesting things about yourself

Garrett Grolemund

Master Instructor

I wrote the lubridate R package

I'm the author of _Hands On Programming with R_.

I like to play the ukulele (but I'm not very good at it).

(Pandoc)
Markdown

Markdown

A simple way to write HTML.

Mostly plain english (like an email)

```
# Say Hello

To my little
friend, markdown.


Markdown is

* _easy_ to use

* __simple__

* fun?
```

→

Say Hello

To my little friend, markdown.
Markdown is
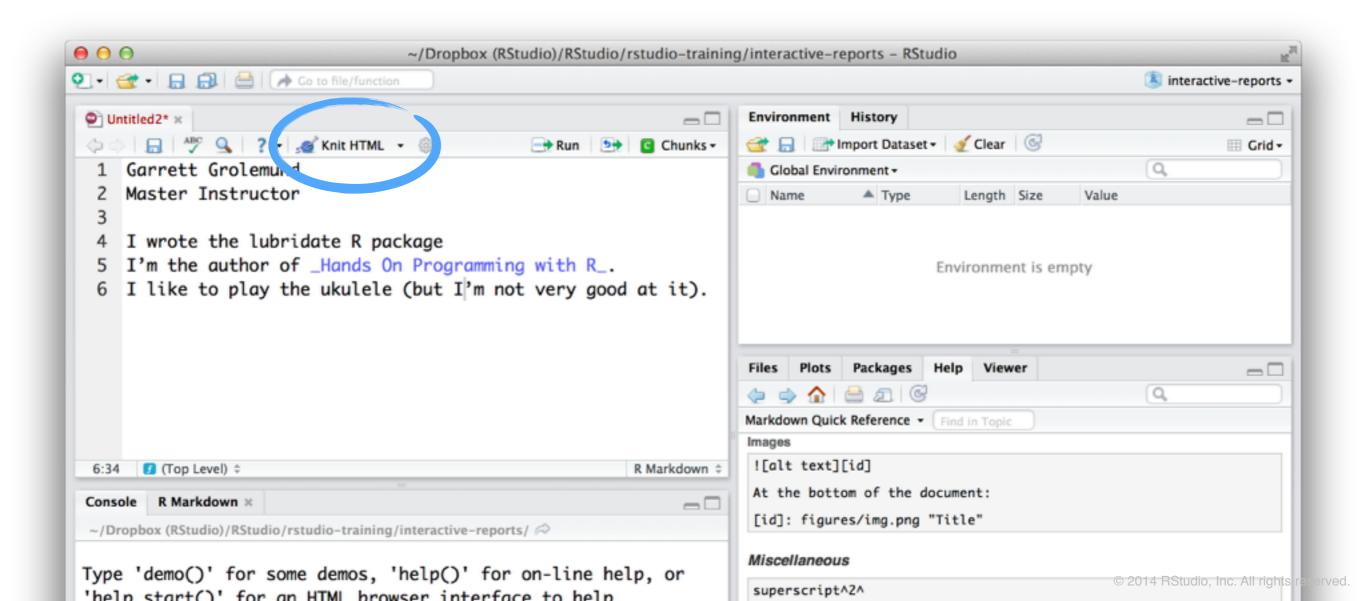
- *easy to use*
- **simple**
- fun?

To compile markdown into HTML, click the "Knit HTML" button.

Note your file must have the extension .md or .Rmd

Basics

Use # to create headers.

Multiple #'s create lower level headers.

```
# Header 1

## Header 2

### Header 3

#### Header 4

##### Header 5

###### Header 6
```
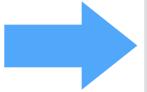
Header 1

Header 2

Header 3

Header 4

Header 5

Header 6

Basics
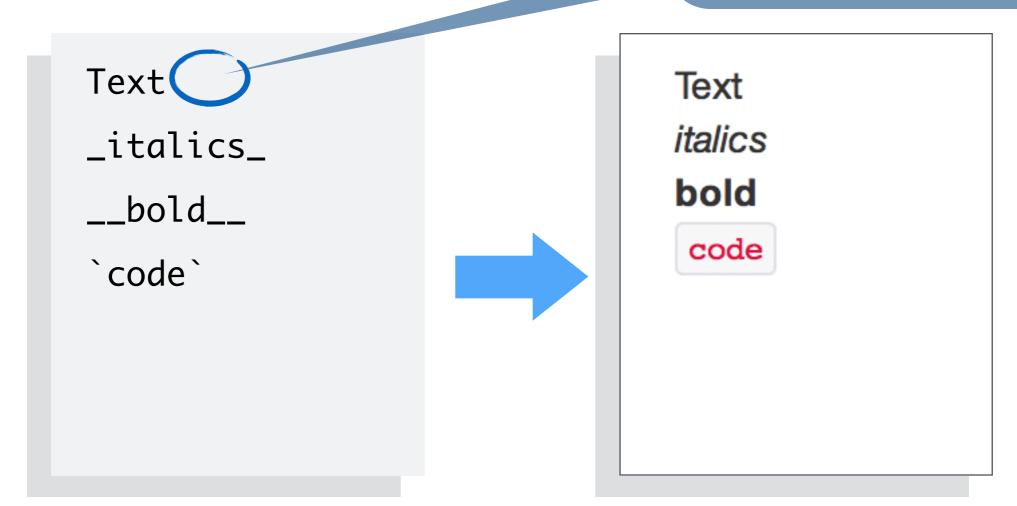
Text is rendered as plain text.
Surround words with underscores (_) to make italics.
Use two underscores (_ _) to make bold.
Use back tics to make code.

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

```
Text

_italics_

__bold__

`code`
```

Text
italics
bold
`code`

Basics

Use asterisks 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
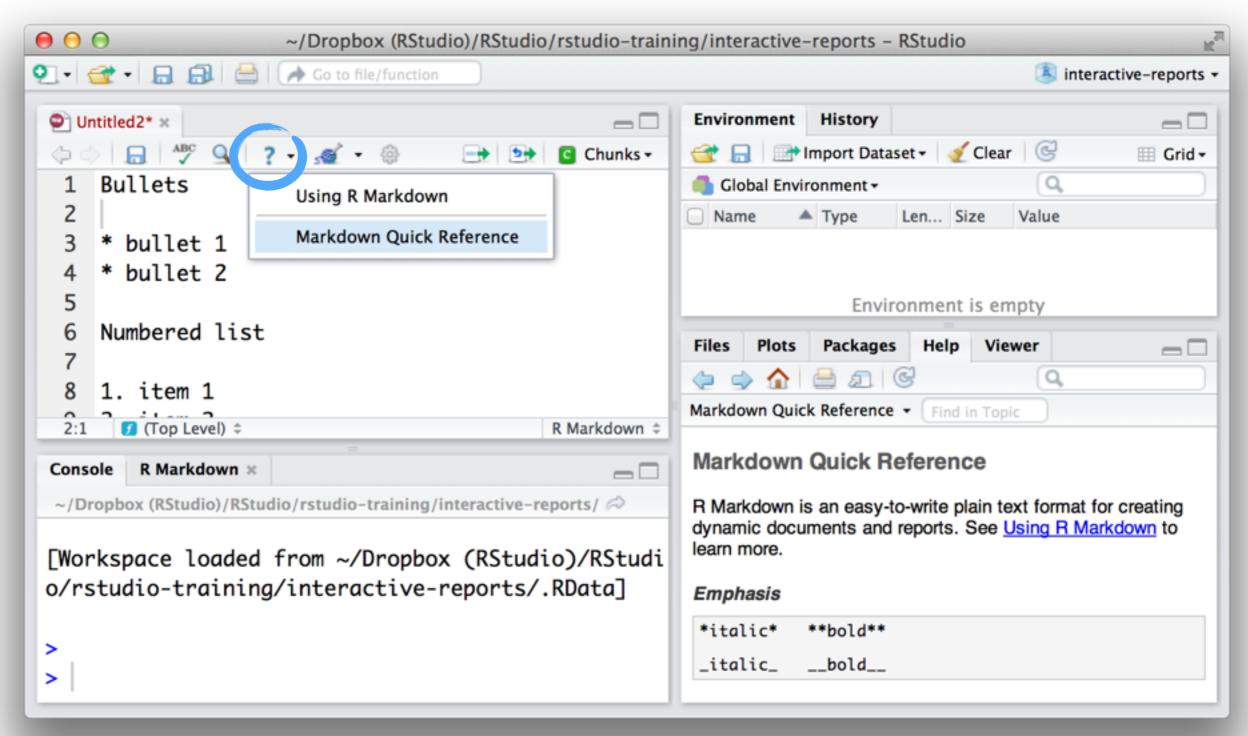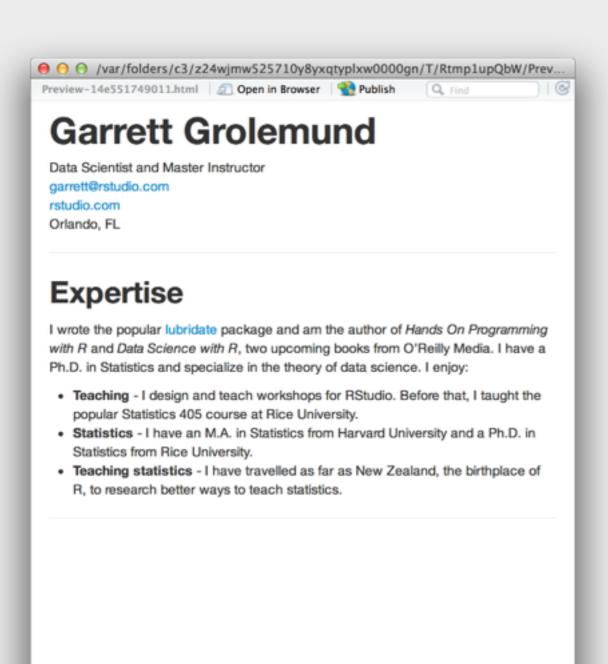
Numbered list

1. item 1
2. item 2

Markdown guide

Your turn

Turn your text into an HTML resume. Use:

1. headings

2. italics and bold

3. a list

4. hyperlinks (challenge)

5. horizontal rules (challenge)

Open the RStudio markdown guide if you need help.

`05:00`

Garrett Grolemund

Data Scientist and Master Instructor

garrett@rstudio.com

[rstudio.com](www.rstudio.com)

Orlando, FL

****

Expertise

I wrote the popular [lubridate](http://www.r-statistics.com/2012/03/do-more-with-dates-and-times-in-r-with-lubridate-1-1-0/) package and am the author of _Hands On Programming with R_ and _Data Science with R_, two upcoming books from O'Reilly Media. I have a Ph.D. in Statistics and specialize in the theory of data science. I enjoy:

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****

Header

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Orlando, FL

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****

italics

Garrett Grolemund

Data Scientist and Master Instructor

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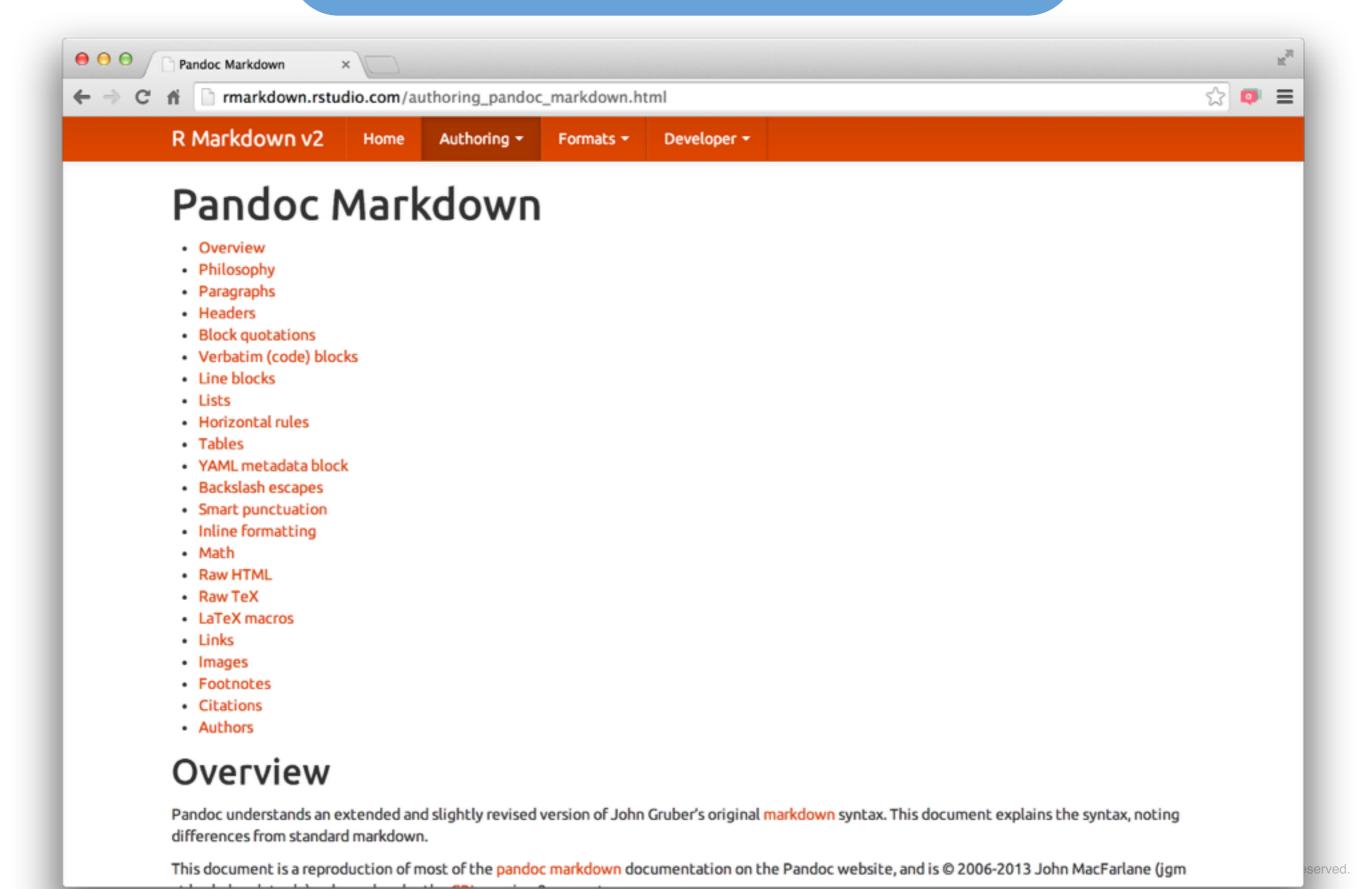[rstudio.com](www.rstudio.com)

Orlando, FL

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bold

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****

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****

Expertise

list

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****

Hyperlinks

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

```
This is a

[link](www.git.com).
```

This is a link.

Garrett Grolemund

Data Scientist and Master Instructor

garrett@rstudio.com

[rstudio.com](www.rstudio.com)   ⬅ **Hyperlink**

Orlando, FL

****

Expertise

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****

Horizontal Rule

Use three or more asterisks to make a horizontal rule (a horizontal dividing line).

```
****

Section 1

****

Section 2

****
```


Section 1

Section 2

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[rstudio.com](www.rstudio.com)

Orlando, FL

**** ⬅ **Horizontal Rule**

Expertise

I wrote the popular [lubridate](http://www.r-statistics.com/2012/03/do-more-with-dates-and-times-in-r-with-lubridate-1-1-0/) package and am the author of _Hands On Programming with R_ and _Data Science with R_, two upcoming books from O'Reilly Media. I have a Ph.D. in Statistics and specialize in the theory of data science. I enjoy:

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****

rmarkdown.rstudio.com

Pandoc Markdown ×

rmarkdown.rstudio.com/authoring_pandoc_markdown.html

R Markdown v2   Home   Authoring ▾   Formats ▾   Developer ▾

Pandoc Markdown

- Overview
- Philosophy
- Paragraphs
- Headers
- Block quotations
- Verbatim (code) blocks
- Line blocks
- Lists
- Horizontal rules
- Tables
- YAML metadata block
- Backslash escapes
- Smart punctuation
- Inline formatting
- Math
- Raw HTML
- Raw TeX
- LaTeX macros
- Links
- Images
- Footnotes
- Citations
- Authors

Overview

Pandoc understands an extended and slightly revised version of John Gruber's original markdown syntax. This document explains the syntax, noting differences from standard markdown.

This document is a reproduction of most of the pandoc markdown documentation on the Pandoc website, and is © 2006-2013 John MacFarlane (jgm

Embed Code

babynames

Popularity of baby names in USA since 1880. From SSA.

1,792,091 records

Five variables: year, sex, name, n, and prop.
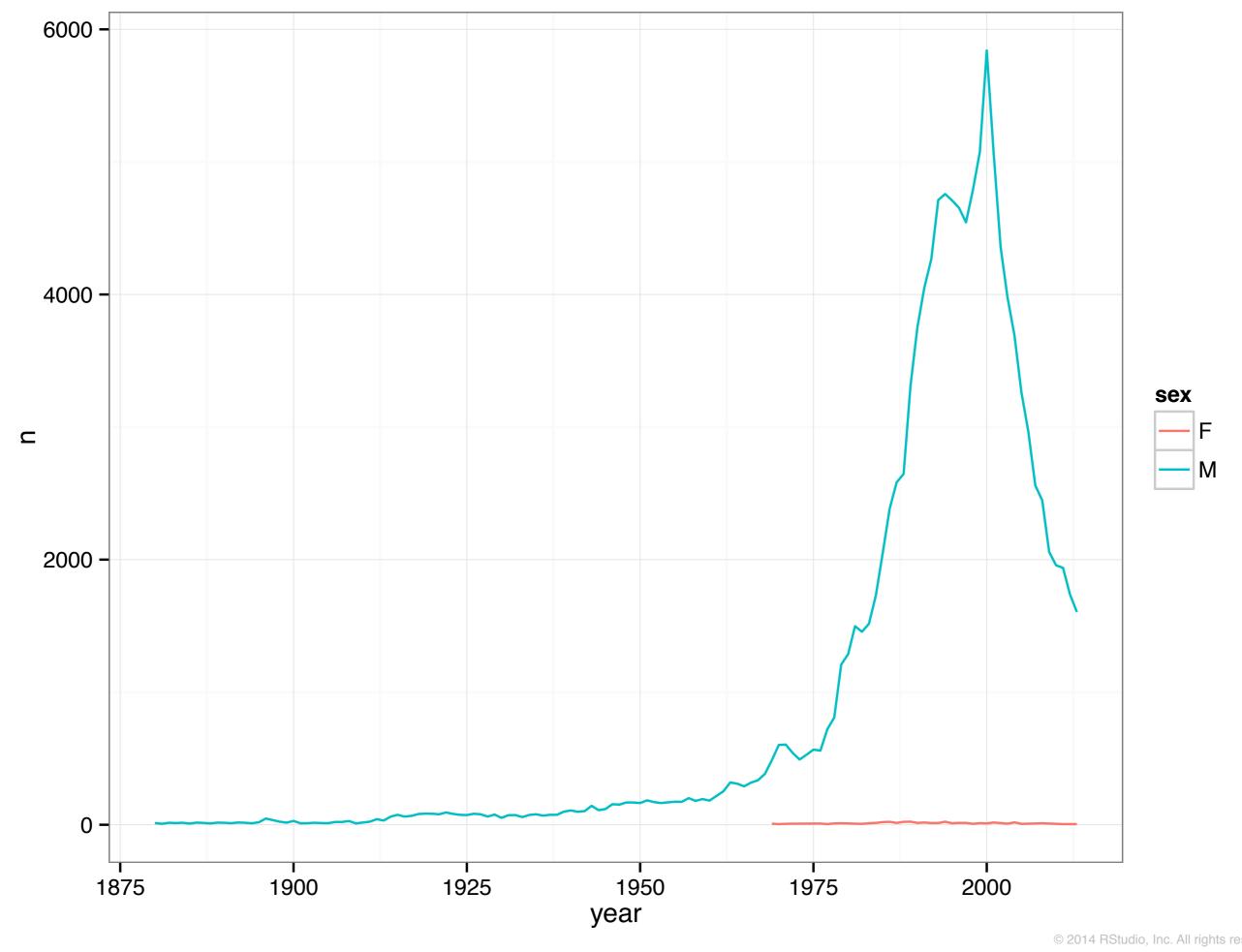
```
# devtools::install_github("babynames", "hadley")

library(babynames)
```

Warm up

Load the `babynames` package, and graph the history of your name.

```r
# devtools::install_github("babynames", "hadley")
library(babynames)
library(ggplot2)

garrett <- subset(babynames, name == "Garrett")
qplot(year, n, data = garrett, geom ="line",
    color = sex) + theme_bw()
```

`02:00`

Garrett Grolemund

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Orlando, FL

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What's in a name?

Here is a graph of the number of people named Garrett.

My name was more popular than ever in 2000. So far, 125065 people have been named Garrett.

Code chunks

Insert a chunk of R code with
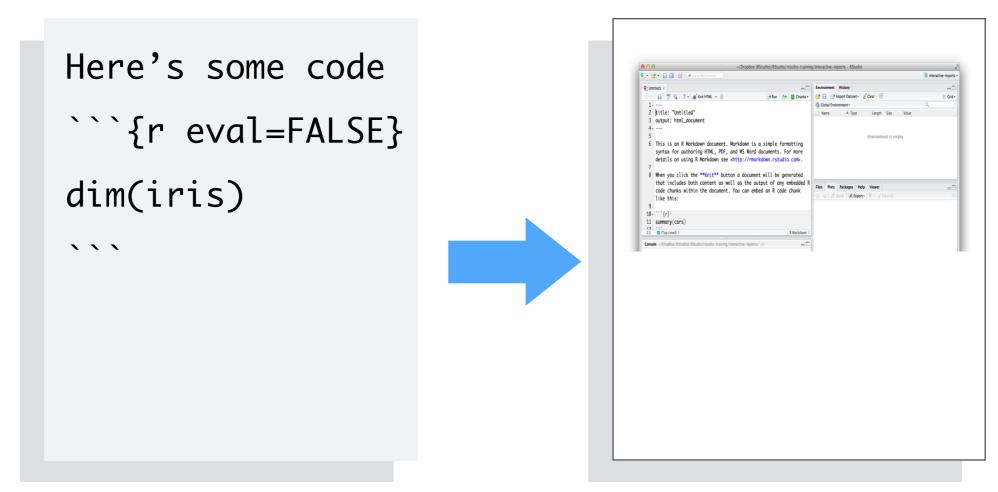
```
```{r}
# some code


```
```

When you compile, R markdown will run the code and include its results. R markdown will also remove the ```{r} and ```.

eval

Change the display by adding arguments in the brackets after `r`.

`eval = FALSE` prevents the code from being run.

```
Here's some code
```{r eval=FALSE}
dim(iris)
```
```

echo

echo = FALSE displays the results, but not the code.

```
Here's a plot
```{r echo=FALSE}
hist(iris[[2]])
```
```

Here's a plot

Histogram of iris[[2]]

This is very useful for plots

inline code

Place code in a sentence with `` `r    #code` ``. R Markdown will replace the code with its results.

Two plus two
equals `` `r 2 + 2` ``.

Your turn

Add a third section that describes your name.


```
library(babynames)
library(ggplot2)
garrett$year[which.max(garrett$n)]
sum(garrett$n)
```

…

What's in a name?

Here is a graph of the number of people named Garrett.

````
```{r echo=FALSE, fig.height=3, fig.width=5}
library(babynames)
library(ggplot2)

garrett <- subset(babynames, name == "Garrett")
qplot(year, n, data = garrett, geom ="line", color = sex) +
theme_bw()
```
````

My name was more popular than ever in `r garrett $year[which.max(garrett$n)]`. So far, `r sum(garrett$n)` people have been named Garrett.

...

What's in a name?

Here is a graph of the number of people named Garrett.

````{r echo=FALSE, fig.height=3, fig.width=5}
library(babynames)
library(ggplot2)

garrett <- subset(babynames, name == "Garrett")
qplot(year, n, data = garrett, geom ="line", color = sex) +
theme_bw()
````
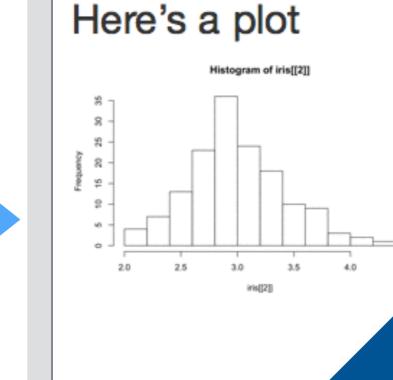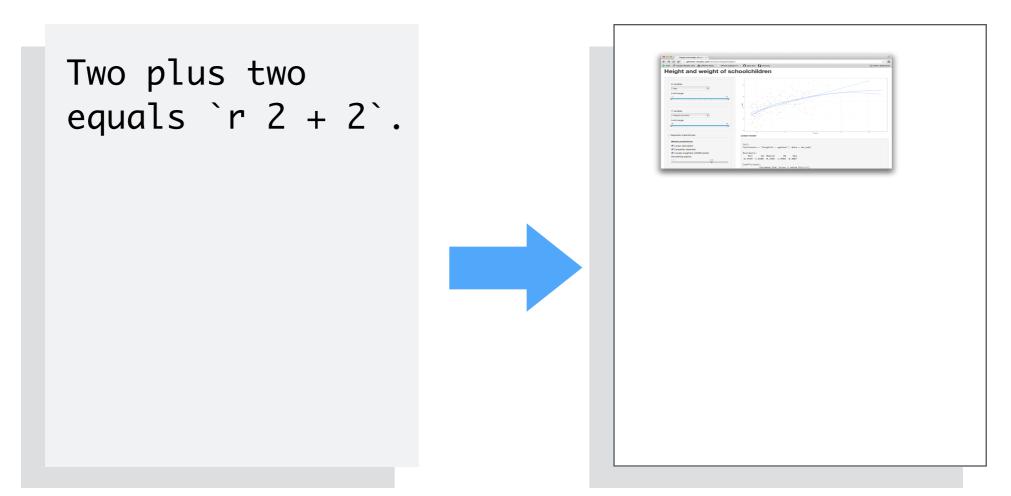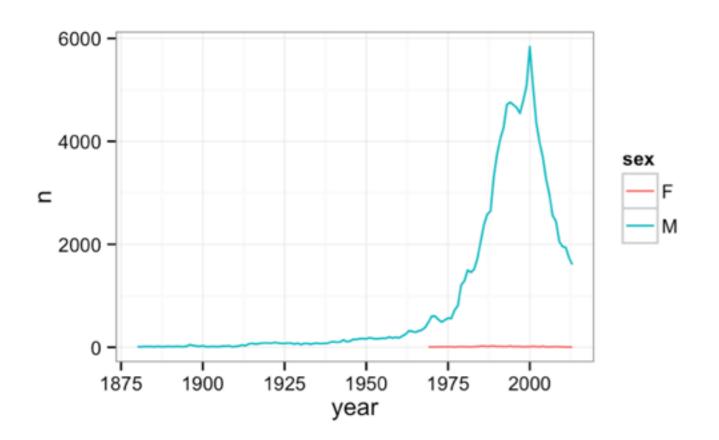
Code chunk embeds plot

My name was more popular than ever in `r garrett $year[which.max(garrett$n)]`. So far, `r sum(garrett$n)` people have been named Garrett.

...

What's in a name?

Here is a graph of the number of people named Garrett.

````{r echo=FALSE, fig.height=3, fig.width=5}
library(babynames)
library(ggplot2)

garrett <- subset(babynames, name == "Garrett")
qplot(year, n, data = garrett, geom ="line", color = sex) +
theme_bw()
````

inline code

My name was more popular than ever in `r garrett $year[which.max(garrett$n)]`. So far, `r sum(garrett$n)` people have been named Garrett.
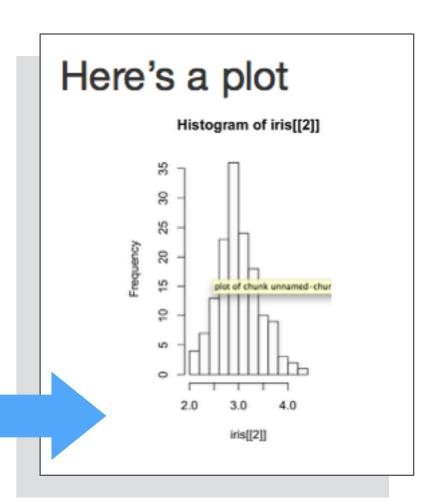
fig.width, fig.height

Specify the dimension of plots (in inches) with `fig.width` and `fig.height`.

Separate multiple arguments with commas.
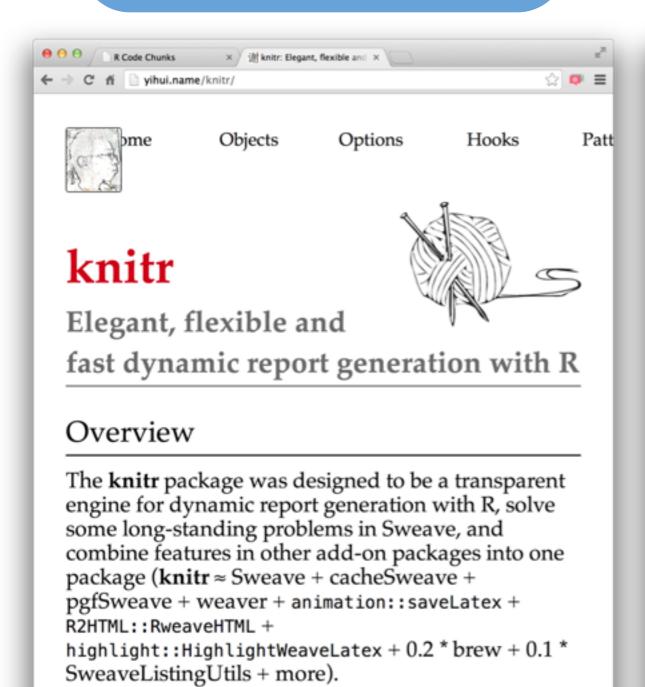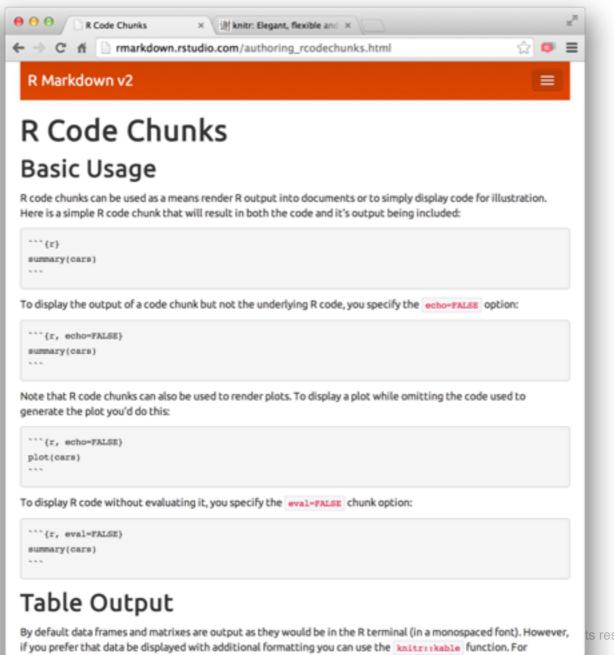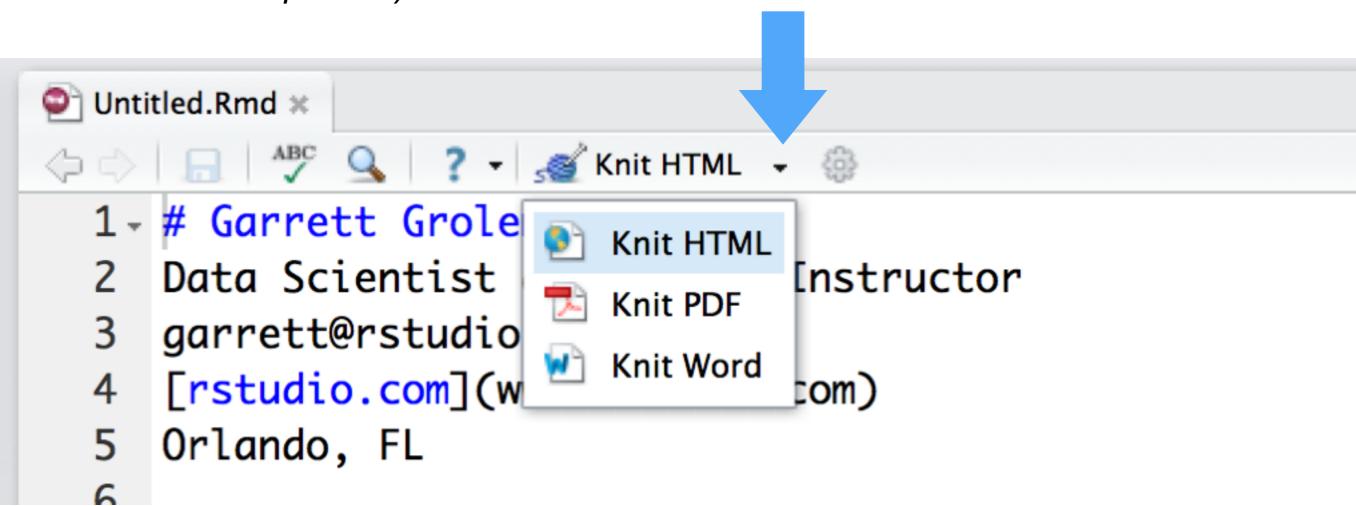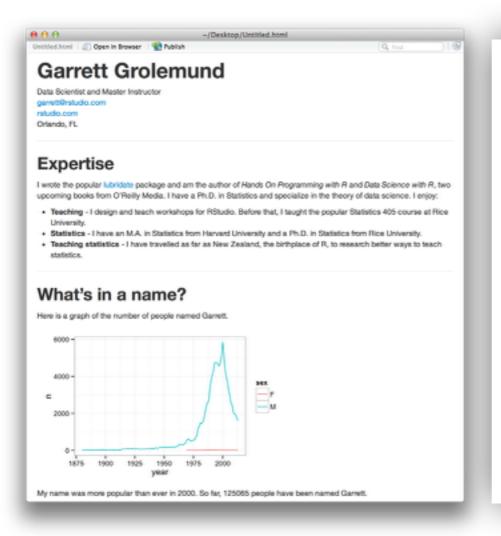
```
Here's a plot
```{r echo=FALSE, fig.width=1, fig.height=2}
hist(iris[[2]])
```
```

Here's a plot

Histogram of iris[[2]]

For more on chunk options

yihui.name/knitr/

rmarkdown.rstudio.com

Multiple output formats

R Markdown can generate three preset file formats from a .Rmd file
- HTML
- PDF *(Must have latex installed on your computer)*
- MS Word *(Must have Word installed on your computer)*

HTML

PDF

* requires tex

MS Word

* requires "Word"

Slide shows

Build slide presentations from a .Rmd
(each *** denotes a new slide).

Slide shows

Build slide presentations from a .Rmd
(each *** denotes a new slide).

ioslides
(HTML)

Beamer
(PDF)