

Intro to R Markdown

UCI Data Science Initiative

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Topics

1. Intro to R Markdown
2. Basic Syntax and Formatting
3. Intro to knitr
4. Advanced Formatting
5. Interactive Markdown Documents

Some Resources for R

- [R Markdown Cheat Sheet](#)
- [R Markdown Tutorial](#)
- [Data Carpentry Lessons for R](#)
- [dplyr Tutorial](#)
- [Advanced R \(by Hadley Wickham\)](#)
- [R for Data Science \(by Golemund and Wickham\)](#)

Intro to R Markdown

- **R Markdown** is an implementation of the *Markdown* markup language
- Markdown is a versatile tool that makes it easy to make readable scientific documents in a variety of formats
- R markdown is actively developed and supported by the RStudio team, which means:
 - RStudio has many tools and features to make R Markdown flexible and easy to use
 - New R Markdown features and packages are frequently released

Intro to R Markdown

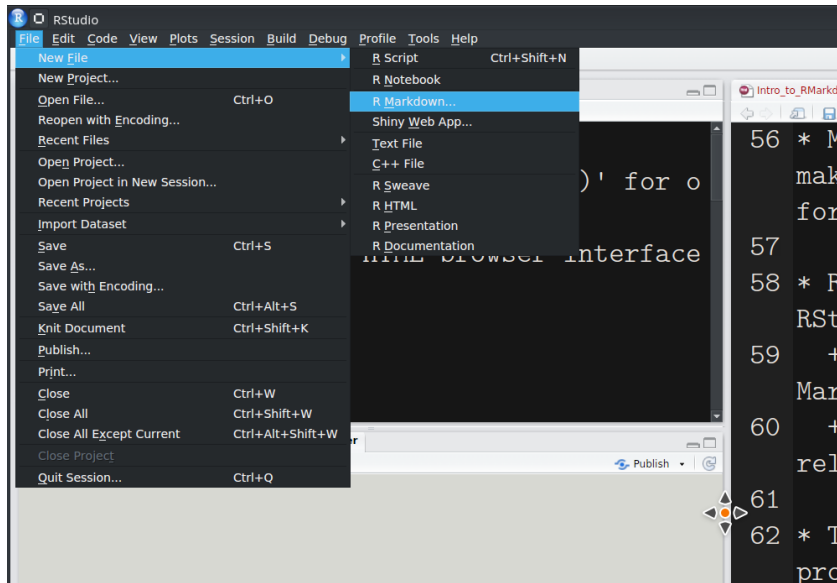
- **R For Data Science** on the intent of R Markdown:

R Markdown files are designed to be used in three ways:

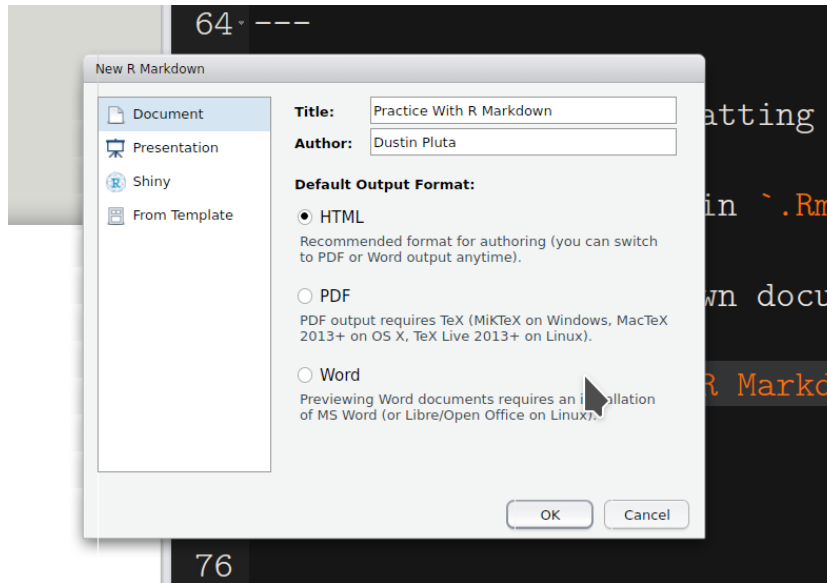
1. *For communicating to decision makers, who want to focus on the conclusions, not the code behind the analysis.*
2. *For collaborating with other data scientists (including future you!), who are interested in both your conclusions, and how you reached them (i.e. the code).*
3. *As an environment in which to do data science, as a modern day lab notebook where you can capture not only what you did, but also what you were thinking.*

Getting Started with R Markdown

- R Markdown files end in .Rmd
- Create a new R markdown document in RStudio:
 - File > New File > R Markdown...

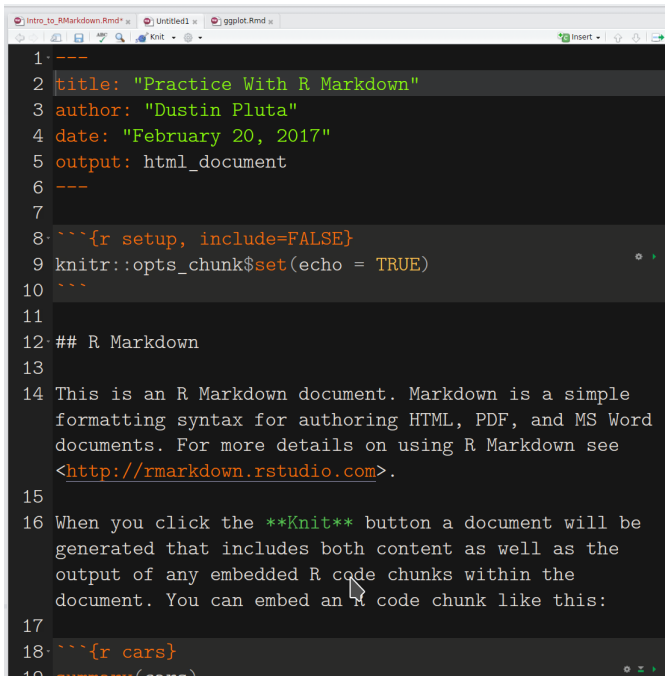


Getting Started with R Markdown



Getting Started with R Markdown

- The default R Markdown template gives some examples of basic R Markdown features



```
1 ---
2 title: "Practice With R Markdown"
3 author: "Dustin Pluta"
4 date: "February 20, 2017"
5 output: html_document
6 ---
7
8 ```{r setup, include=FALSE}
9 knitr::opts_chunk$set(echo = TRUE)
10 ```
11
12 ## R Markdown
13
14 This is an R Markdown document. Markdown is a simple
15 formatting syntax for authoring HTML, PDF, and MS Word
16 documents. For more details on using R Markdown see
17 <http://rmarkdown.rstudio.com>.
18
19 When you click the Knit button a document will be
20 generated that includes both content as well as the
21 output of any embedded R code chunks within the
22 document. You can embed an R code chunk like this:
23
24 ```{r cars}
25 summary(cars)
```

Getting Started with R Markdown

```
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21 output of any embedded R code chunks within the
22 document. You can embed an R code chunk like this:
23
24 ```{r cars}
```

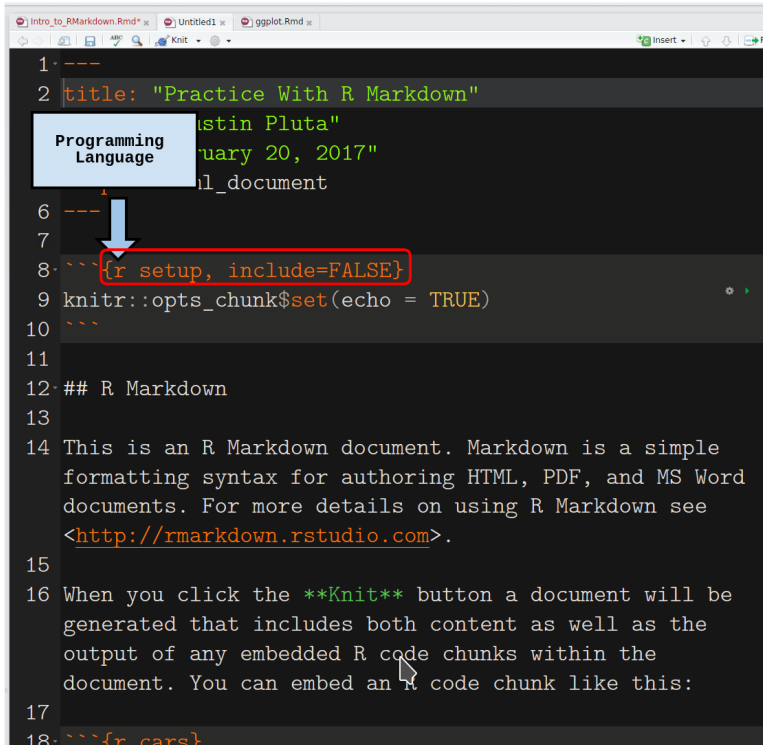
YAML Header:
Allows you to specify
document options and
information for Title,
Author, Date, Output
Format

Getting Started with R Markdown

```
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2 title: "Practice With R Markdown"
3 author: "Dustin Pluta"
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22 document. You can embed an R code chunk like this:
23
24 ```{r cars}
```

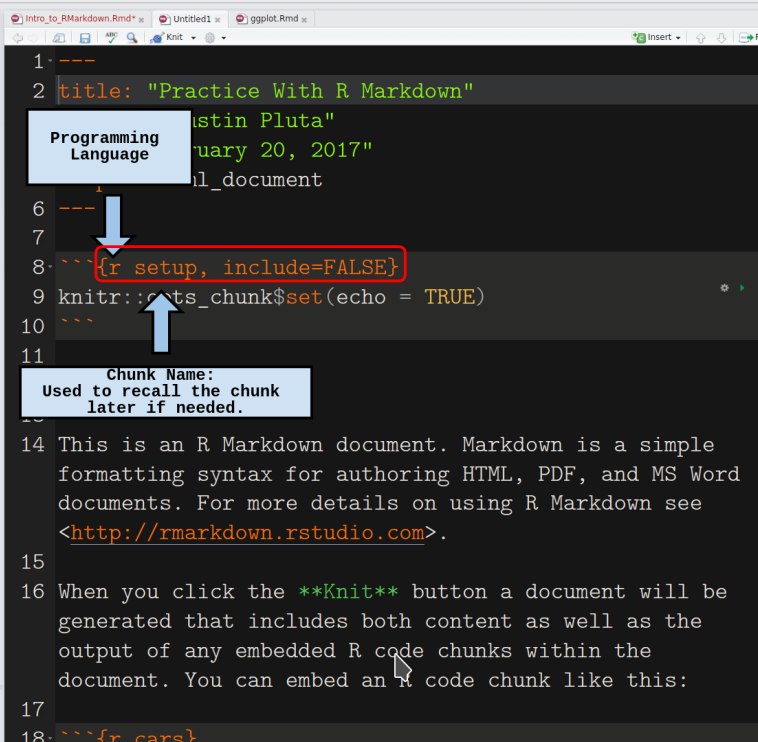
R Code Chunk:
Include R Code to be
displayed and/or
evaluated.

Getting Started with R Markdown



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5 output: "html_document"
6 ----
7
8 ```{r setup, include=FALSE}
9 knitr::opts_chunk$set(echo = TRUE)
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20 generated that includes both content as well as the
21 output of any embedded R code chunks within the
22 document. You can embed an R code chunk like this:
23
24 ```{r cars}
```

Getting Started with R Markdown



The screenshot shows an RStudio window with an R Markdown document titled 'Intro_to_RMarkdown.Rmd'. The document content is as follows:

```
1 ---
2 title: "Practice With R Markdown"
3 author: "Justin Pluta"
4 date: "February 20, 2017"
5 output: "html_document"
6 ---
7
8 ```{r setup, include=FALSE}
9 knitr::opts_chunk$set(echo = TRUE)
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20 generated that includes both content as well as the
21 output of any embedded R code chunks within the
22 document. You can embed an R code chunk like this:
23
24 ```{r cars}
```

Annotations on the image include:

- A blue box labeled "Programming Language" with an arrow pointing to the `{r}` in the chunk header on line 8.
- A red box around the `include=FALSE` part of the chunk header on line 8.
- A blue box labeled "Chunk Name:" with the text "Used to recall the chunk later if needed." and an arrow pointing to the `cars` in the chunk header on line 18.

Getting Started with R Markdown

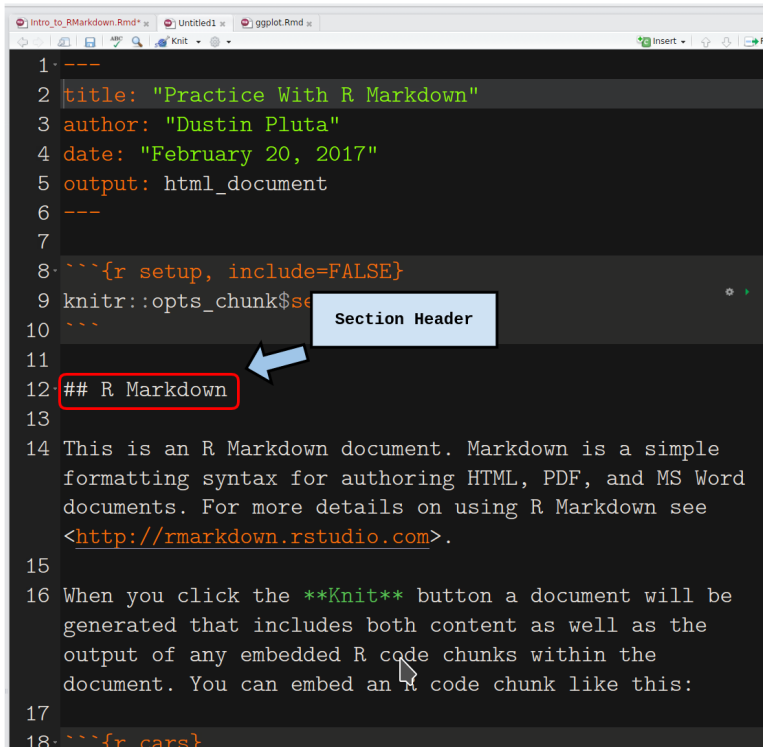
The screenshot shows an R Markdown document in RStudio. The document content is as follows:

```
1 ---
2 title: "Practice With R Markdown"
3 author: "Justin Pluta"
4 date: "February 20, 2017"
5 output: "html_document"
6 ---
7
8 ```{r setup, include=FALSE}
9 knitr::opts_chunk$set(echo = TRUE)
10 ```
11
12
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22 document. You can embed an R code chunk like this:
23
24 ```{r cars}
```

Annotations in the image:

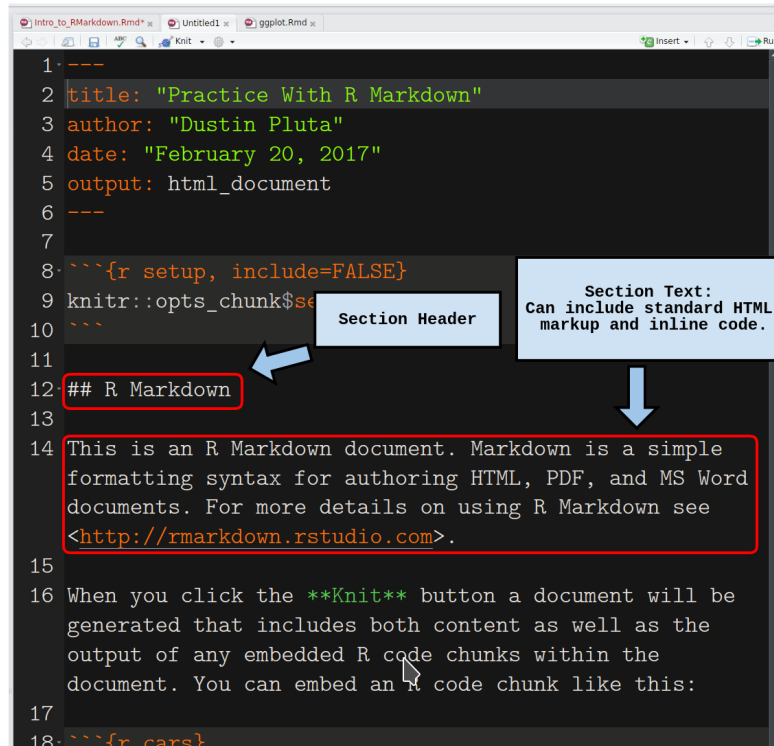
- A box labeled "Programming Language" with an arrow pointing to the `{r}` in the chunk header.
- A box labeled "Chunk Name:" with the text "Used to recall the chunk later if needed." and an arrow pointing to the `setup` in the chunk header.
- A box labeled "Chunk Options:" with the text "Can be set to choose whether the code block is displayed and evaluated." and an arrow pointing to the `include=FALSE` in the chunk header.

Getting Started with R Markdown



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9 knitr::opts_chunk$set(
10   ```
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22 document. You can embed an R code chunk like this:
23
24 ```{r cars}
```

Getting Started with R Markdown



The screenshot shows an RStudio window with a file named 'Intro_to_RMarkdown.Rmd'. The code editor displays the following R Markdown document structure:

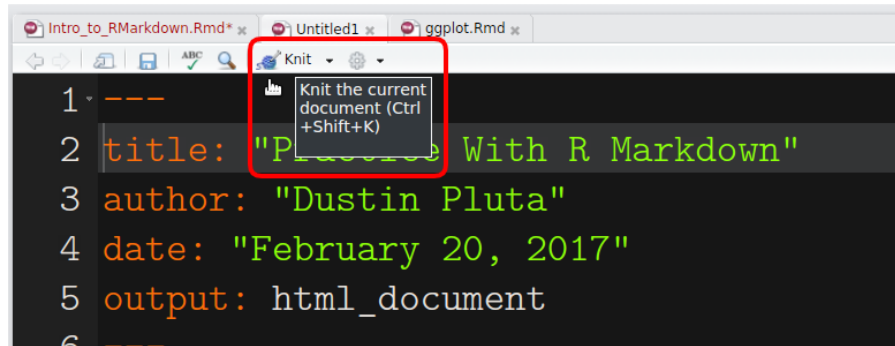
```
1. ---
2. title: "Practice With R Markdown"
3. author: "Dustin Pluta"
4. date: "February 20, 2017"
5. output: html_document
6. ---
7.
8. ```{r setup, include=FALSE}
9. knitr::opts_chunk$set(
10.   ```
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20. generated that includes both content as well as the
21. output of any embedded R code chunks within the
22. document. You can embed an R code chunk like this:
23.
24. ```{r cars}
```

Annotations on the slide include:

- A blue box labeled "Section Header" with an arrow pointing to the line `## R Markdown`.
- A blue box labeled "Section Text: Can include standard HTML markup and inline code." with an arrow pointing to the paragraph starting with "This is an R Markdown document..."
- A red box highlights the line `## R Markdown`.
- A red box highlights the paragraph starting with "This is an R Markdown document..."

Getting Started with R Markdown

- Compile or "knit" the R Markdown document to the desired format (either html, pdf, or Word document)



Getting Started with R Markdown

Practice With R Markdown

Dustin Pluta

February 20, 2017

R Markdown

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>.

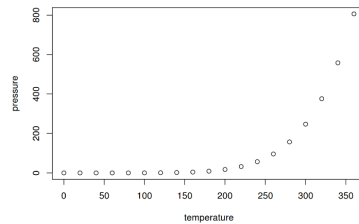
When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
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    : 42.90
##  3rd Qu.:19.0   3rd Qu.: 56.00
##  Max.   :25.0   Max.    :120.00
```

Including Plots

You can also embed plots, for example:



Getting Started with R Markdown

- Let's modify the plot to include a title, and make the points blue.

```
21
22 ## Including Plots
23
24 You can also embed plots, for example:
25
26 ```{r pressure, echo=FALSE}
27 plot(pressure, main="Plot Title", col="blue", pch=23,
28       bg="blue")
29 ```
```

Getting Started with R Markdown

```
plot(pressure, main = "Plot Title", pch = 23, col = "blue", bg = "blue")
```



Thanks!

Slides created via the R package [xaringan](#).