

Publish Code - From R Markdown to HTML with knitr

In the previous tutorials we've learned about the R Markdown format and how to create a report using R Markdown in R Studio. In this tutorial, we will render or **knit** an R Markdown document to a web friendly, **html** format using the R **knitr** package. **knitr** can be used to convert R Markdown files to many different formats including: **HTML**, **PDF**, github markdown (**.md**) and more.

Learning Objectives

At the end of this lesson, you will:

- Be able to produce ('knit') an HTML file from a R Markdown file.
- Know how to modify chunk options to change what is rendered and not rendered on the output HTML file.

What you need

You will need the most current version of **R** and, preferably, **RStudio** loaded on your computer to complete this tutorial. You will also need an R Markdown document that contains a **YAML** header, code chunks and markdown segments.

Download Lesson data

Install R Packages

- **knitr**: `install.packages("knitr")`
- **rmarkdown**: `install.packages("rmarkdown")`

What Is knitr?

knitr is the R package that we use to convert an R Markdown document into another, more user friendly format like **html** or **pdf**.

The **knitr** package allows us to:

- Publish & share preliminary results with collaborators.
- Create professional reports that document our workflow and results directly from our code, reducing the risk of accidental copy and paste or transcription errors.
- Document our workflow to facilitate reproducibility.
- Efficiently change code outputs (figures, files) given changes in the data, methods, etc.

The **knitr** package was designed to be a transparent engine for dynamic report generation with R
– Yihui Xi – **knitr** package creator

When To Knit: Knitting is a useful exercise throughout your scientific workflow. It allows you to see what your outputs look like and also to test that your code runs without errors. The time required to knit depends on the length and complexity of the script and the size of your data. `{: .notice}`

How to Knit

```
<a href="{ site.baseurl }/images/course-materials/earth-analytics/week-1/intro-knitr-rmd/KnitButton-s
 R Markdown (left) and the resultant HTML (right) after knitting.
</figcaption>
```

When knitting is complete, the HTML file produced will automatically open.

Notice that information from the YAML header (title, author, date) is printed at the top of the HTML document. Then the HTML shows the text, code, and results of the code that you included in the RMD document.

Challenge Activity

Add the code below to your `.Rmd` document. Then knit to `.html` format.

```
# load the ggplot2 library for plotting
library(ggplot2)

# download data from figshare
# note that we are downloading the data into your working directory (earth-analytics)
download.file(url = "https://ndownloader.figshare.com/files/7010681",
              destfile = "data/boulder-precip.csv")

# import data
boulder_precip <- read.csv(file="data/boulder-precip.csv")

# view first few rows of the data
head(boulder_precip)

# when we download the data we create a dataframe
# view each column of the data frame using it's name (or header)
boulder_precip$DATE

# view the precip column
boulder_precip$PRECIP
```

```
# q plot stands for quick plot. Let's use it to plot our data
qplot(x=boulder_precip$DATE,
      y=boulder_precip$PRECIP)
```

When you knit your .Rmd file to pdf, the plot you produce should look like the one below. Not so pretty, eh? Don't worry - we will learn more about plotting in a later tutorial!

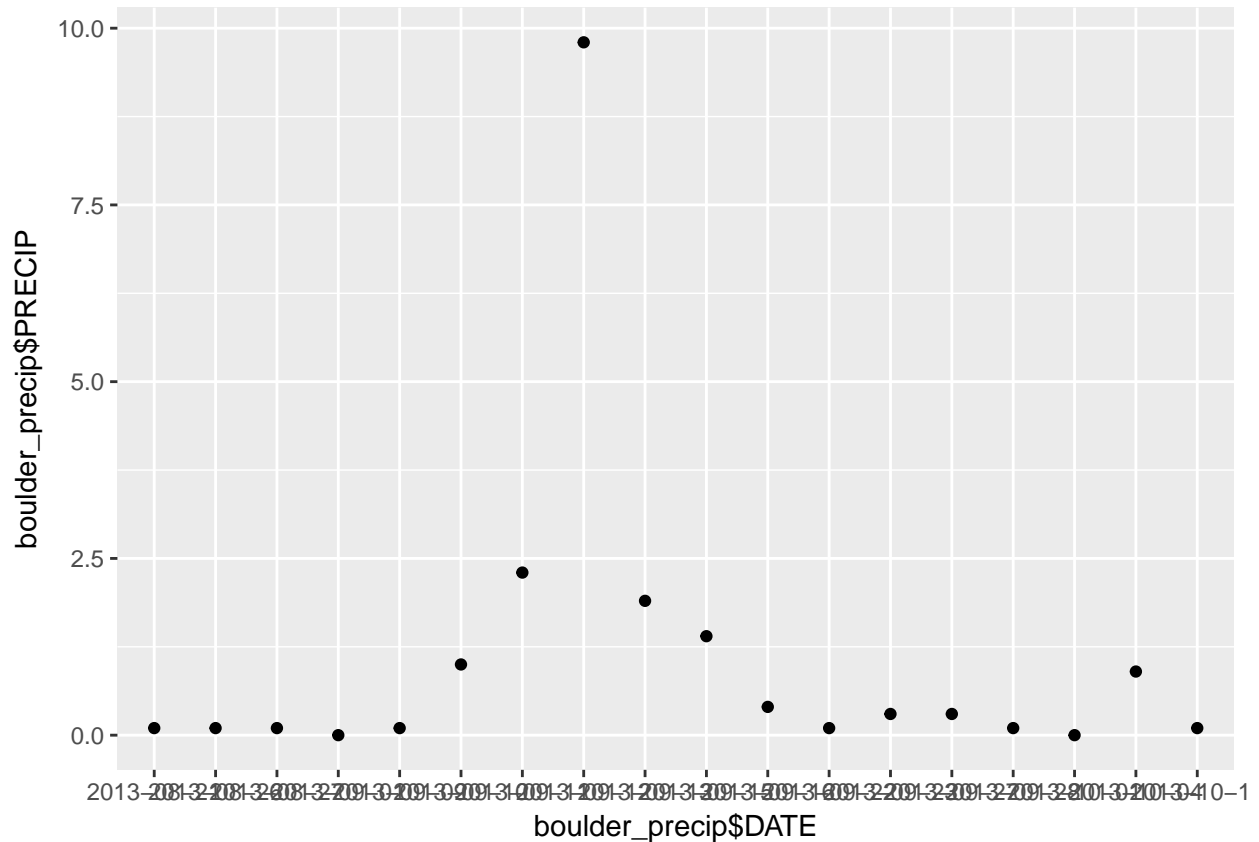


Figure 1: Precipitation over time

Where is the file?

In the steps above, we downloaded a file. However, where did that file go on your computer? Let's find it before we go any further.

```
# what is the working directory?
getwd()

[1] "/Users/lewa8222/Documents/earth-analytics"

# set working dir as a variable
my.dir <- getwd()

# what files are in that working directory?
list.files(my.dir, recursive= TRUE)
```

Is the boulder-precip.csv file there?

****Data Tip:**** If you are a frequent user of LaTeX, you might find this video from the creator of knitr informational. It introduces R Markdown & knitr in conjunction with LaTeX and other formats. `{: .notice .warning}`