A Sample R Markdown Template

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The objective of this document's template is to demonstrate some basics of the combination of R and markdown and how they can be knitted together using the knitr package (via the RStudio IDE) to produce beautiful docs/reports.

The options mentioned in the header of this Rmarkdown file (with an extension of .Rmd) above for a pdf document can be modified as well as supplemented by options for other document formats.(Please see the "Output Options" section of RStudio's reference site at <http://rmarkdown.rstudio.com/> for more information.) **Did you notice that this thing was in bold and that the previous thing was a web link?**

# Lists

## Numbered list

Material for this document has been heavily borrowed from several documents.(Notice how a numbered list is being created below.)

1. Markdown cheatsheet at <http://warpedvisions.org/projects/markdown-cheat-sheet.md>.
2. R markdown reference from R Studio's site at <http://rmarkdown.rstudio.com/>
3. <http://rmarkdown.rstudio.com/authoring_basics.html>
   * Item 3a
   * Item 3b
4. Source 4

## Bulleted (unordered) list

As previously mentioned, the objectives of this document are two fold.

* Learn the basics of markdown
* Learn how R code and output can be interspersed with markdown to create reports/documents.
* Another one
  + Item 3a
  + Item 3b
* And yet another one

# How can headers be defined?

The header used above can be created using a different approach, using a single *hashtag* (wasn't that in *italics*?) to the left of the title of the header.

# Header 1

## Header 2

### Header 3

#### Header 4

##### Header 5

# Images

You can insert images in the document as well. For instance, if you have an image of a real apple in your working directory, then you can insert it in the document in the following manner.



This is a picture of a honey crisp apple

If you wanted to show an images from a website, then that can also be done.

# Tables

|  |  |  |
| --- | --- | --- |
| Header | Header | Right |
| Cell | Cell | $10 |
| Cell | Cell | $20 |

* Outer pipes on tables are optional (if you are not concerned with aesthetics, just drop)
* Colon used for alignment (right versus left)

# HTML Tags

You can use html tags as well in markdown documents. For example, you could've used an <img> tag to insert images. Super basics of html can be [found here](http://bryanhadaway.com/super-basic-html-guide/)

# Equation

Standard deviation,

# Blockquotes

A friend once said:

It's always better to give than to receive.

# Manual Line Breaks

**End a line with two or more spaces**

For  
example, this  
line looks insanely  
chopped.

# Miscellaneous

superscript2

~~strikethrough~~

# Let's talk about mixing R code with markdown

## Getting to know your dataset

Number of rows and columns (in that sequence)

dim(iris)

## [1] 150 5

Number of rows

nrow(iris)

## [1] 150

Number of columns

ncol(iris)

## [1] 5

Names of variables

names(iris) # colnames(iris) also gives that information

## [1] "Sepal.Length" "Sepal.Width" "Petal.Length" "Petal.Width"   
## [5] "Species"

First 6 rows

head(iris)

## Sepal.Length Sepal.Width Petal.Length Petal.Width Species  
## 1 5.1 3.5 1.4 0.2 setosa  
## 2 4.9 3.0 1.4 0.2 setosa  
## 3 4.7 3.2 1.3 0.2 setosa  
## 4 4.6 3.1 1.5 0.2 setosa  
## 5 5.0 3.6 1.4 0.2 setosa  
## 6 5.4 3.9 1.7 0.4 setosa

First 2 rows

head(iris,2) # alternately, can use iris[1:2,]

## Sepal.Length Sepal.Width Petal.Length Petal.Width Species  
## 1 5.1 3.5 1.4 0.2 setosa  
## 2 4.9 3.0 1.4 0.2 setosa

Last 6 rows

tail(iris) # Number of rows can be controlled, see earlier example involving the head command

## Sepal.Length Sepal.Width Petal.Length Petal.Width Species  
## 145 6.7 3.3 5.7 2.5 virginica  
## 146 6.7 3.0 5.2 2.3 virginica  
## 147 6.3 2.5 5.0 1.9 virginica  
## 148 6.5 3.0 5.2 2.0 virginica  
## 149 6.2 3.4 5.4 2.3 virginica  
## 150 5.9 3.0 5.1 1.8 virginica

First row

iris[1,]

## Sepal.Length Sepal.Width Petal.Length Petal.Width Species  
## 1 5.1 3.5 1.4 0.2 setosa

First row, first column

iris[1,1]

## [1] 5.1

Name of third column

names(iris)[3]

## [1] "Petal.Length"

3 entries from third column

head(iris[3],3) # alternately, can use iris[1:3,3]

## Petal.Length  
## 1 1.4  
## 2 1.4  
## 3 1.3

Structure of the dataframe (dataset)

str(iris)

## 'data.frame': 150 obs. of 5 variables:  
## $ Sepal.Length: num 5.1 4.9 4.7 4.6 5 5.4 4.6 5 4.4 4.9 ...  
## $ Sepal.Width : num 3.5 3 3.2 3.1 3.6 3.9 3.4 3.4 2.9 3.1 ...  
## $ Petal.Length: num 1.4 1.4 1.3 1.5 1.4 1.7 1.4 1.5 1.4 1.5 ...  
## $ Petal.Width : num 0.2 0.2 0.2 0.2 0.2 0.4 0.3 0.2 0.2 0.1 ...  
## $ Species : Factor w/ 3 levels "setosa","versicolor",..: 1 1 1 1 1 1 1 1 1 1 ...

Summary of the dataframe

summary(iris) # for factor/categorical variables, this gives a count of all categories

## Sepal.Length Sepal.Width Petal.Length Petal.Width   
## Min. :4.300 Min. :2.000 Min. :1.000 Min. :0.100   
## 1st Qu.:5.100 1st Qu.:2.800 1st Qu.:1.600 1st Qu.:0.300   
## Median :5.800 Median :3.000 Median :4.350 Median :1.300   
## Mean :5.843 Mean :3.057 Mean :3.758 Mean :1.199   
## 3rd Qu.:6.400 3rd Qu.:3.300 3rd Qu.:5.100 3rd Qu.:1.800   
## Max. :7.900 Max. :4.400 Max. :6.900 Max. :2.500   
## Species   
## setosa :50   
## versicolor:50   
## virginica :50   
##   
##   
##

Create a dataframe

Person=c("A","B","C","D","E")  
Age=c(15,20,25,30,35)  
page=data.frame(Person,Age)  
mean(Age) # gives the mean of the variable Age, prior to the creation of the dataset

## [1] 25

Age="" # (resetting that)  
mean(Age) # Haha

## Warning in mean.default(Age): argument is not numeric or logical: returning  
## NA

## [1] NA

mean(page$Age)

## [1] 25

mean(page[,2])

## [1] 25

summary(page)

## Person Age   
## A:1 Min. :15   
## B:1 1st Qu.:20   
## C:1 Median :25   
## D:1 Mean :25   
## E:1 3rd Qu.:30   
## Max. :35