### Introduction to R Markdown

W. Joel Schneider

Markdown is a really simple way to format documents.

# This is a Level 1 header

This is a regular paragraph. Extra spaces between words are eliminated. Even though this sentence is broken across many lines, it is grouped with the text above it.

Put an empty line between paragraphs.[[1]](#footnote-1)

## This is a Level 2 header

### Guess which level header this is!

# Formatting text

*This is italicized.*

**This is bolded.**

~~Strikethrough~~

Superscript2

This is for blockquotes. It can go on for many lines.

Text enclosed in three backquotes (```) will appear in a monospace type. It will appear exactly   
as  
 you   
 type it,  
without the typical formatting.  
  
For example,  
\*normally this would be italicized.\*

# Lists

Let's make an unordered list

* First bullet point
* Second bullet point
  + Indented bullet point (4 spaces!)
  + Another indented bullet point
    - Further indentation (8 spaces!)

Let's make an ordered list

1. My first topic
2. My second topic
   * Subtopic
   * Another subtopic

# Links

[This is a link to my homepage.](http://my.ilstu.edu/~wjschne/)

# Images



# Equations using $\LaTeX$

# Simple Tables

|  |  |  |
| --- | --- | --- |
| Column Left | Column Center | Column Right |
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |

# Combining R and Markdown

## R code chunks

EvenNumbersUnder100<-seq(2,98,2)

This code chunk will run but it will not appear in the document.

This code chunk will appear in the document but it will not run.

Y<-tan(pi/4)

## Inline R code

You can refer to calculations in your text. For example, the cosine of radians is -1. In fact, you can refer to any R object (e.g., the mean and standard deviation of a variable.)

## Let's make a pretty plots with R:

par(family = "serif")  
x <- 0:20  
y <- dpois(x,lambda = 3)  
plot(y~x,type="b",col="royalblue2",lty=3,pch=19,main=expression("Poisson Distribution "\*(lambda == 3)),xlab="Sample Space",ylab="Probability",bty="n",las=1)

## APA Formatted tables!

if (!'htmlTable' %in% installed.packages()) install.packages('htmlTable')  
library(htmlTable)  
n<-1000 #Sample size  
g<-rnorm(n) #Normal variate  
s1<-g+rnorm(n) #Correlated variate  
s2<-g+rnorm(n) #Correlated variate  
d<-cbind(g,s1,s2) #Bind columns into a matrix  
dcor<-txtRound(cor(d),2) #Correlation matrix (rounded to 2 digits)  
dcor[lower.tri(dcor,diag=TRUE)]<-NA #Remove lower triangle  
options(table\_counter=TRUE) #Table counter  
htmlTable(dcor,caption="Correlation Matrix",css.cell = "padding-left:2em;padding-right:2em;")

Table 1: Correlation Matrix

g

s1

s2

g

0.69

0.71

s1

0.52

s2

# Citations

As explained [here](http://rmarkdown.rstudio.com/authoring_bibliographies_and_citations.html), if you use the bibliography tag, you can insert citations with the @ symbol and the citation's unique ID. A variety of citation file formats are supported and a huge number of citation styles are [available](https://zotero.org/styles). I am using the [BibTeX file format](http://www.bibtex.org/) with the [APA (6th Edition) citation style](https://zotero.org/styles/apa).

For example, here are some recent papers of mine (Kahn & Schneider, 2013; Schneider, 2013a). In this paper, Schneider (2013b, pp. 186–187) 1says a bunch of stuff.

Tools like these make managing references much, much easier than doing it all by hand. The references below appear like magic, all perfectly formatted.

1. Graves, J. A. Better Methods Will Be Needed To Project Incomes To Estimate Eligibility For Subsidies In Health Insurance Exchanges. *Health Aff. (Millwood)* **31**, 1613–1622 (2012).

1. Footnote. [↑](#footnote-ref-1)