Using the **R Code** and **Git Example** Environments with **knitr**

Alan's Modifications and Notes

February 20, 2014

1 Introduction

This is a test of the **R Code** and **Git Example** environments. By the way, this document was last compiled Thursday, February 20, 2014 - 13:52:44.

1.1 Simple Arithmetic

R Code 1.1

```
1 + 1
```

```
[1] 2
```

1.2 Generate Random Data

R Code 1.2

```
set.seed(13)
x <- rnorm(100)
```

Find the standard deviation of `x`.

R Code 1.3

```
sd(x)  # standard deviation
```

```
[1] 0.9508
```

Note that **R Code** 1.2 and 1.3 are hyperlinked! The standard deviation of `x` is computed in **R Code** 1.3 and is 0.9508.

1.3 Graphs and Environments

R Code 1.4

```
set.seed(41)
junk <- rnorm(10000)
MEAN <- mean(junk)
MEAN

[1] 0.006227
```

The mean of the junk is 0.0062. Note: It seems that an error is thrown if a code chunk with a graph and `rcode` is executed at the same time. Work around is as shown below. That is, hide the figure when showing the code...then show the figure with a separate code chunk. Note that Figure 1 is hyperlinked!

R Code 1.5

```
library(ggplot2)
ggplot(data = mtcars) + geom_density(aes(x = mpg), fill = "pink") + theme_bw() +
    labs(x = "miles per gallon", y = "", title = "$\\alpha + \\beta = \\delta$")
```

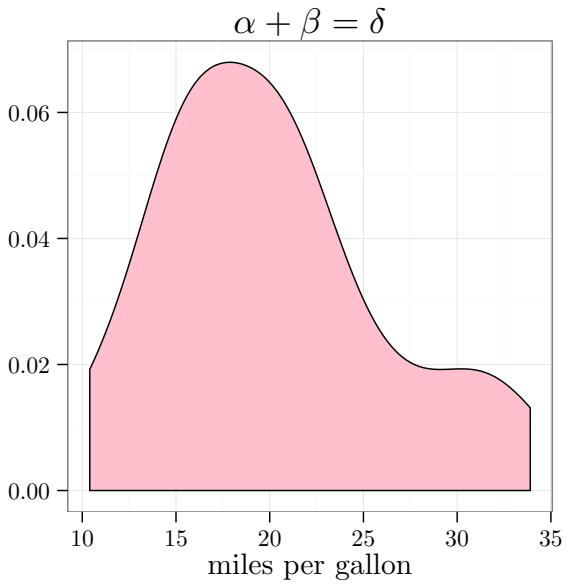


Figure 1: This is where you explain your graph

2 Git Stuff

When working with OSX, one may want to change `engine = 'sh'` to `engine = 'bash'`.
Git Example 2.1

```
git config --list

credential.helper=osxkeychain
user.email=kryzanekam@email.appstate.edu
user.name=Andrew Kryzanek
filter.media.clean=git-media-clean %f
filter.media.smudge=git-media-smudge %f
credential.helper=cache
color.ui=true
core.repositoryformatversion=0
core.filemode=true
core.bare=false
core.logallrefupdates=true
core.ignorecase=true
core.precomposeunicode=false
remote.origin.url=https://github.com/andrewkryzanek/STT4870.git
remote.origin.fetch=+refs/heads/*:refs/remotes/origin/*
branch.master.remote=origin
branch.master.merge=refs/heads/master
remote.upstream.url=https://github.com/alanarnholt/STT4870.git
remote.upstream.fetch=+refs/heads/*:refs/remotes/upstream/*
remote.parent.url=https://github.com/alanarnholt/STT4870.git
remote.parent.fetch=+refs/heads/*:refs/remotes/parent/*
```

Look at **R Code** 1.1 on page 1 to add $1 + 1$ and get the answer 2. The output from **Git Example** 2.1 shows how my machine is configured. **Git Example** 2.2 shows the log.
Git Example 2.2

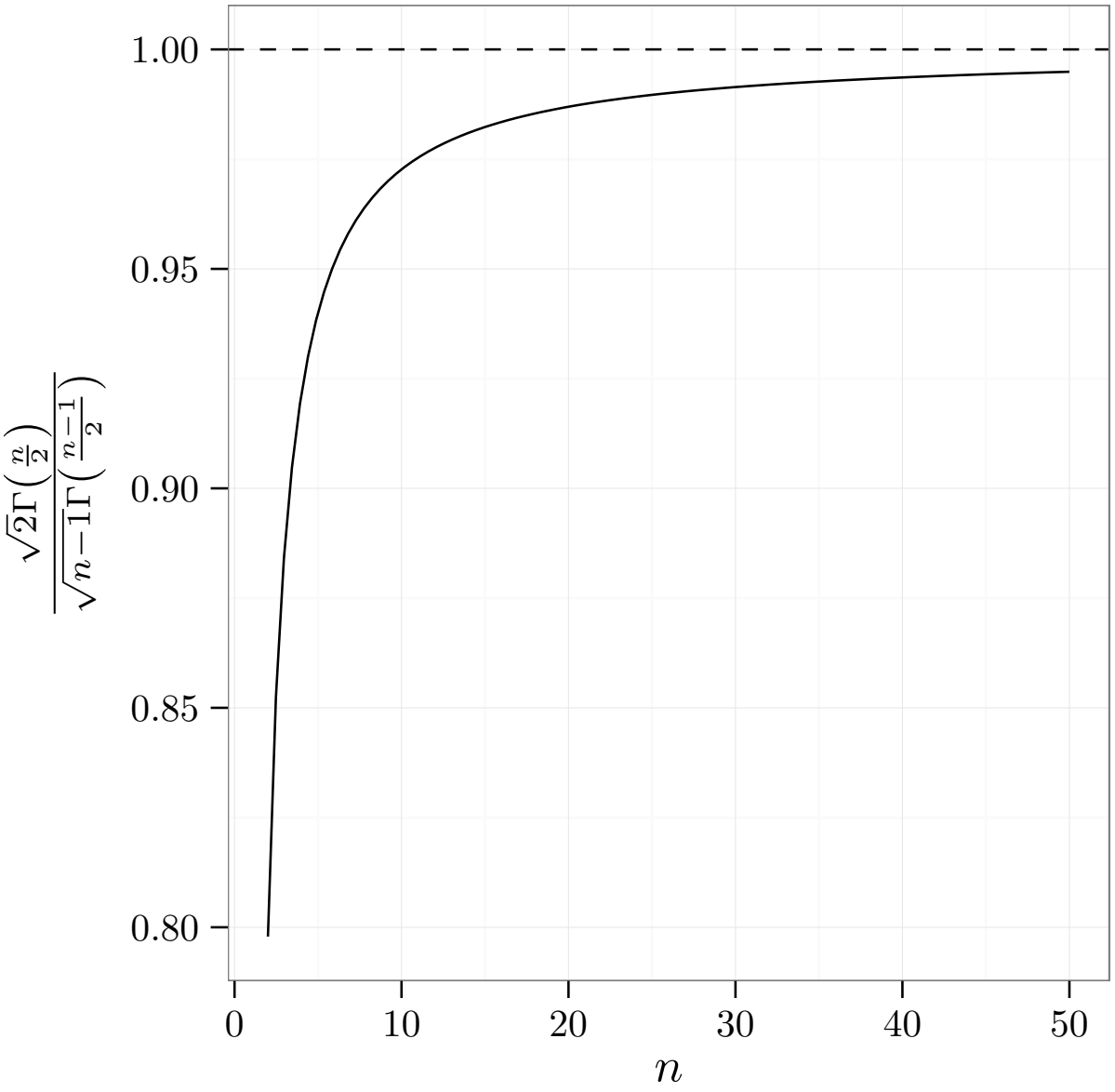
```
git log --pretty=oneline -3

c78b3c3c1af2bf50344f8e9a5e47ec3dce07cb48 add trial script
a43ffa99923336503c112e389622417155c89f3d changed when last compiled
99813d1e561f05e48feb0a58766297e89ad7d2b4 run from windows machine
```

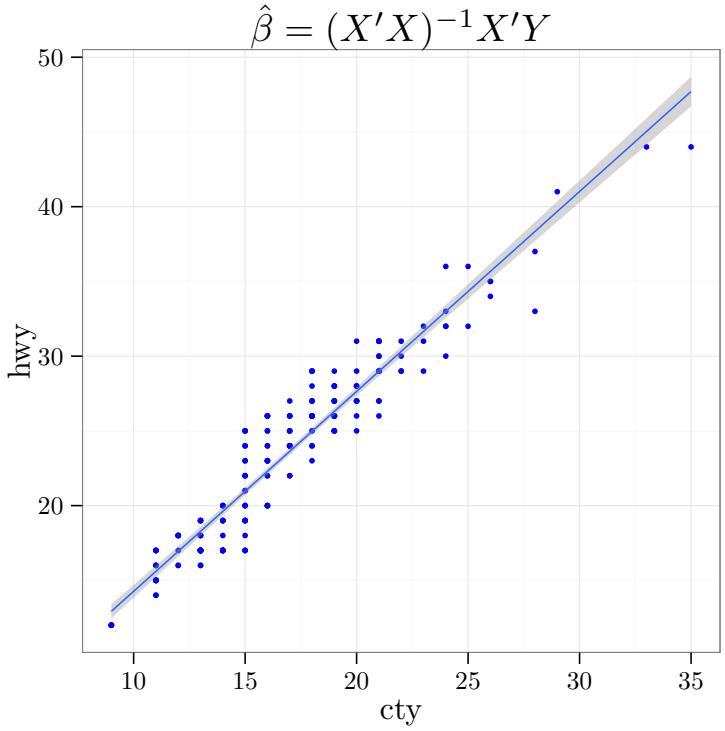
3 Using LaTeX in Graphs

How about some more LaTeX in a `ggplot2` graph.

R Code 3.1

```
f <- function(x){sqrt(2/(x - 1))*gamma(x/2)/gamma((x - 1)/2)}
library(ggplot2)
p <- ggplot(data.frame(x = c(2, 50)), aes(x = x))
p + stat_function(fun = f) +
  labs(x = "$n$", y = "$\\frac{\\sqrt{2}\\Gamma\\left(\\frac{n}{2}\\right)}
       {\\sqrt{n-1}\\Gamma\\left(\\frac{n-1}{2}\\right)}$\n") +
  theme_bw() +
  geom_hline(yintercept = 1, lty = "dashed")
```





- R version 3.0.2 (2013-09-25), `x86_64-apple-darwin10.8.0`
- Locale: `en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8`
- Base packages: base, datasets, graphics, grDevices, methods, stats, utils
- Other packages: filehash 2.2-2, ggplot2 0.9.3.1, knitr 1.5, tikzDevice 0.7.0
- Loaded via a namespace (and not attached): codetools 0.2-8, colorspace 1.2-4, dichromat 2.0-0, digest 0.6.3, evaluate 0.5.1, formatR 0.10, grid 3.0.2, gtable 0.1.2, highr 0.3, labeling 0.2, MASS 7.3-29, munsell 0.4.2, plyr 1.8, proto 0.3-10, RColorBrewer 1.0-5, reshape2 1.2.2, scales 0.2.3, stringr 0.6.2, tools 3.0.2