1 Function Approximation Warmup

1.1 Exploring and downloading the data

```
rm(list=ls())           # Clear the workspace
set.seed(20866)
library(ggplot2)
library(sandwich)
library(car)
library(xtable)
library(aod)
library(systemfit)

## Loading required package:  Matrix
## Loading required package:  lmtest
## Loading required package:  zoo
##
## Attaching package:  'zoo'
##
## The following objects are masked from 'package:base':
##
##    as.Date, as.Date.numeric

library(MASS)
library(stargazer)

##
## Please cite as:
##
##  Hlavac, Marek (2014).  stargazer:  LaTeX code and ASCII text for
well-formatted regression and summary statistics tables.
##  R package version 5.1.  http://CRAN.R-project.org/package=stargazer

setwd("/Users/Tony/Downloads")

data <- read.csv("cps_00003.csv")
datamatrix <- as.matrix(read.csv("cps_00003.csv"))
datamatrix <- datamatrix[,-5:-8]
datamatrix <- datamatrix[,-2:-3]

AdjInc <- c(rep(NA, nrow(datamatrix)))

datamatrix <- cbind(datamatrix, AdjInc)

incomeadjust <- function(data.m = datamatrix){
```

```
  for (i in 1:nrow(datamatrix)){

    year <- as.numeric(datamatrix[i,1])
    income <- as.numeric(datamatrix[i,9])

    if (year == 2004){

      AdjustedIncome <- income * 1.25
      datamatrix[i,10] = round(AdjustedIncome)

    }

    if (year == 2014){

      AdjustedIncome <- income
      datamatrix[i,10] = round(AdjustedIncome)

    }


  }

  return(datamatrix[i,10])
  print(head(datamatrix, n=5))
  print(tail(datamatrix, n=5))

}

incomeadjust(datamatrix)

## AdjInc
##  10300
```

1.2 Make a new variable that is log wage income in your data

```
AdjustedIncomeCol <- incomeadjust(datamatrix)

logVarCol <- c(rep(NA, nrow(datamatrix)))
newVarCols <- cbind(AdjustedIncomeCol, logVarCol)

logvarf <- function(m.columns = newVarCols){

  for (i in 1:nrow(newVarCols)){
```

```
    rowIncomeLog <- log(newVarCols[i,1])
    newVarCols[i,2] = rowIncomeLog

  }

  print(head(newVarCols, n=5))
  print(tail(newVarCols, n=5))

}

logvarf(newVarCols)
```

```
##      AdjustedIncomeCol logVarCol
## [1,]             10300  9.239899
## [2,]             10300  9.239899
## [3,]             10300  9.239899
## [4,]             10300  9.239899
## [5,]             10300  9.239899
##           AdjustedIncomeCol logVarCol
## [352652,]             10300  9.239899
## [352653,]             10300  9.239899
## [352654,]             10300  9.239899
## [352655,]             10300  9.239899
## [352656,]             10300  9.239899
```