

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)

  }

}

top <- head(datamatrix, n=5)
bottom<- tail(datamatrix, n=5)

sample <- rbind(top,bottom)
return(sample)

}

incomeadjust(datamatrix)

```

	YEAR	REGION	AGE	SEX	RACE	EDUC	EMPSTAT	HRSWORK	INCWAGE	AdjInc
##	2004	11	59	2	100	91	10	2	60000	75000
##	2004	11	49	1	100	73	10	20	32000	40000
##	2004	11	19	1	100	73	30	0	0	0
##	2004	11	42	2	100	111	10	40	30000	37500
##	2004	11	42	1	100	73	10	40	0	0
## [352652,]	2014	42	36	2	100	91	21	0	55300	55300
## [352653,]	2014	42	13	2	816	1	0	0	9999999	9999999
## [352654,]	2014	42	11	1	816	1	0	0	9999999	9999999
## [352655,]	2014	42	47	1	807	73	32	0	35000	35000
## [352656,]	2014	42	21	2	807	81	10	19	10300	10300

To find the CPI, I used the Bureau of Labor Statistics CPI Inflation Cal-

culator, which told me that a dollar in 2004 has the same buying power as 1.25 in 2014. Therefore, to adjust 2004 income to its 2014 equivalent, I wrote a function that multiplied all 2004 income

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

```
sample <- incomeadjust(datamatrix)
logVar <- c(rep(NA, nrow(sample)))
sample <- cbind(sample, logVar)

logVarf <- function(data.m = sample){
  for (i in 1:nrow(sample)){
    rowIncomeLog <- log(sample[i,10])
    sample[i,11] <- round(rowIncomeLog)
  }

  ## return(datamatrix) Commenting out so it doesn't actually return this
  print(sample)
}

logVarf(sample)
```

##	YEAR	REGION	AGE	SEX	RACE	EDUC	EMPSTAT	HRSWORK	INCWAGE	AdjInc
##	2004	11	59	2	100	91	10	2	60000	75000
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## [352655,]	2014	42	47	1	807	73	32	0	35000	35000
## [352656,]	2014	42	21	2	807	81	10	19	10300	10300
##	logVar									
##		11								
##		11								
##		-Inf								
##		11								
##		-Inf								

##	[352652,]	11
##	[352653,]	16
##	[352654,]	16
##	[352655,]	10
##	[352656,]	9

**1.3 Construct "potential experience", which will be "Age
- years of schooling - 5"**