Homework Assignment 3

Deadline: March 20, midnight

Source: Stock and Watson, 4th Edition, Exercise 5.3

Data description: You can find the data description here.

Questions

a. Run a regression of `birthweight` on `age`. Interpret the coefficient on age. Is the coefficients statistically significant?

b. Estimate the mean and the standard error of birth weight for (i) mother who smoked during the pregnancy and (ii) mother who did not smoke during the pregnancy.

c. Estimate the difference between (i) and (ii). Construct a 95% confidence interval for the difference in the average `birthweight` for smoking and nonsmoking mothers.

d. Run a regression of `birthweight` on on the binary variable `smoker` explain how the estimated intercept, slope related to your previous answers. How about the standard error of $\hat{\beta}_1$?

Header for the R script

Start a new R script, copy/paste the header below and save it to `Dropbox\EC282\Assignment3` or a similar path that you created for this homework assignment. Run the R script and make sure that you have the data `df1` in your environment. Conduct the analysis below the header.

```
###############################################################################
# list the packages we need and loads them, installs them automatically if we don't have them
# add any package that you need to the list
need <- c('glue', 'dplyr','readxl',  'ggplot2','tidyr','AER','scales','mvtnorm',
          'stargazer','httr', 'repmis')

have <- need %in% rownames(installed.packages())
if(any(!have)) install.packages(need[!have])
invisible(lapply(need, library, character.only=T))

# Save the R script to the assignment 1 folder before this
# To set up the working directory
getwd()
setwd(getwd()) #change getwd() here is you need to set a different working directory


#this clears the workspace
rm(list = ls())
#this sets the random number generator seed to my birthday for replication

options(scipen=999)
###############################################################################
#get the data url
df1.url <- 'https://www.dropbox.com/s/z8r6hc0r4ytt4f8/birthweight_smoking.xlsx?dl=1'
#download the data
GET(df1.url, write_disk(tdf <- tempfile(fileext = ".xlsx")))
#check if it worked
df1 <- read_excel(tdf) %>%
  mutate(birthweight = birthweight + rnorm(length(birthweight)) * 50)
```

```
head(df1)

#CONDUCT THE ANALYSIS BELOW
```