HW3-G1-ChaseDeanHarward

Chase Dean Harward

9/22/2020

library(wooldridge)  
library(dplyr)

##   
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':  
##   
## filter, lag

## The following objects are masked from 'package:base':  
##   
## intersect, setdiff, setequal, union

# Question 1

Q1 <- data.frame(family = 1:10, monthly\_house\_expend = c(300, 440, 350, 1100, 640, 480, 450, 700, 670, 530))  
  
Q1

## family monthly\_house\_expend  
## 1 1 300  
## 2 2 440  
## 3 3 350  
## 4 4 1100  
## 5 5 640  
## 6 6 480  
## 7 7 450  
## 8 8 700  
## 9 9 670  
## 10 10 530

## (i)

mean(Q1$monthly\_house\_expend)

## [1] 566

## (ii)

median(Q1$monthly\_house\_expend)

## [1] 505

## (iii)

Q1iii <- mutate(Q1, new\_expend = monthly\_house\_expend / 100)  
mean(Q1iii$new\_expend)

## [1] 5.66

median(Q1iii$new\_expend)

## [1] 5.05

## (iv)

iv <- Q1   
iv[8,2] <- iv[8,2] + 200  
mean(iv$monthly\_house\_expend)

## [1] 586

median(iv$monthly\_house\_expend)

## [1] 505

# Question 2

The CEO is correct. The stock return did not increase by 3%. It did increase from 15% to 18%, which is a difference of 3%. The CEO is right because the stock return did increase by 20%. 15% increased by 20% is 18%

# Question 3

## (i)

salary <- function(exper){  
   
 exp(10.6 + (.027 \* exper))  
   
}  
  
salary(0)

## [1] 40134.84

salary(5)

## [1] 45935.8

## (ii)

percent\_salary <- function(exper){  
 (0.027 \* 100) \*exper  
}  
percent\_salary(5)

## [1] 13.5

13.5% increase

## (iii)

((salary(5)-salary(0))) / salary(0) \* 100

## [1] 14.45368

So there was an exact increase of ~14.454% here, while in part (ii) the approximate increase was 13.5%. This is ~1% difference between the two.

# Question 4

## (i)

pnorm(6, 5, 2)

## [1] 0.6914625

## (ii)

1-pnorm(4,5,2)

## [1] 0.6914625

## (iii)

pnorm(4,5,2)+(1-pnorm(6,5,2))

## [1] 0.6170751

# Question 5

CDF <- function(x){  
   
 3\*x^2 - 2\*x^3  
  
}  
  
1-CDF(0.6)

## [1] 0.352

35.2% probability

# Question 6

Mean

52.3 \* 1000

## [1] 52300

Standard Deviation

14.6 \* 1000

## [1] 14600