# HW13

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# 3/24/2019

#1

president <- c("Obama:2009-2007", "Bush:2001-2009", "Clinton:1993-2001",

"Bush:1989-1993", "Reagan:1981-1989")

a <- strsplit(president,":")

b <- lapply(presidentlist, FUN = toupper)

select\_first <- function(i,x) {

return(x[[i]][1])

}

lapply(1:5,b, FUN = select\_first)

#2

mtcars

n <- nrow(mtcars)

slope\_coefficient <- lm(mtcars$mpg~mtcars$wt)

regression.omitting=function(i,vecY,vecX){

return(coef(lm(vecY[-i]~vecX[-i])))

}

Y=mtcars$mpg

X=mtcars$wt

my.vec.regression=sapply(1:n,Y,X,FUN=regression.omitting)

my.vec.regression

my.vec.slope <- my.vec.regression[2,]

sqrt((n-1)/n \*sum((my.vec.slope-mean(my.vec.slope))^2))

summary(lm(mtcars$mpg~mtcars$wt))

OUTCOMES:

> presidentlist <- strsplit(president,":")

> lapply(presidentlist, FUN = toupper)

[[1]]

[1] "OBAMA" "2009-2007"

[[2]]

[1] "BUSH" "2001-2009"

[[3]]

[1] "CLINTON" "1993-2001"

[[4]]

[1] "BUSH" "1989-1993"

[[5]]

[1] "REAGAN" "1981-1989"

> lapply(1:5,b, FUN = select\_first)

[[1]]

[1] "OBAMA"

[[2]]

[1] "BUSH"

[[3]]

[1] "CLINTON"

[[4]]

[1] "BUSH"

[[5]]

[1] "REAGAN"

> my.vec.regression

[,1] [,2] [,3] [,4] [,5]

(Intercept) 37.514151 37.350287 37.569820 37.24295 37.286596

vecX[-i] -5.392484 -5.355465 -5.411444 -5.34437 -5.342918

[,6] [,7] [,8] [,9] [,10]

(Intercept) 37.288665 37.256829 37.138112 37.191622 37.282924

vecX[-i] -5.338606 -5.296348 -5.340525 -5.338974 -5.346799

[,11] [,12] [,13] [,14] [,15]

(Intercept) 37.293207 37.34130 37.283852 37.226648 37.552613

vecX[-i] -5.335933 -5.37085 -5.343567 -5.307205 -5.441352

[,16] [,17] [,18] [,19] [,20]

(Intercept) 37.828723 38.746334 36.243623 36.879502 35.99921

vecX[-i] -5.538824 -5.869829 -5.092229 -5.237619 -5.01375

[,21] [,22] [,23] [,24] [,25]

(Intercept) 37.595240 37.28030 37.314587 37.153768 37.380040

vecX[-i] -5.414158 -5.31307 -5.316199 -5.268452 -5.399026

[,26] [,27] [,28] [,29] [,30]

(Intercept) 37.218688 37.260917 36.987243 37.455713 37.515615

vecX[-i] -5.327612 -5.338535 -5.265278 -5.351938 -5.388034

[,31] [,32]

(Intercept) 37.261901 37.369103

vecX[-i] -5.304974 -5.360202

> sqrt((n-1)/n \*sum((my.vec.slope-mean(my.vec.slope))^2))

[1] 0.7263368

Call:

lm(formula = mtcars$mpg ~ mtcars$wt)

Residuals:

Min 1Q Median 3Q Max

-4.5432 -2.3647 -0.1252 1.4096 6.8727

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) 37.2851 1.8776 19.858 < 2e-16 \*\*\*

mtcars$wt -5.3445 0.5591 -9.559 1.29e-10 \*\*\*

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Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 3.046 on 30 degrees of freedom

Multiple R-squared: 0.7528, Adjusted R-squared: 0.7446

F-statistic: 91.38 on 1 and 30 DF, p-value: 1.294e-10