Homework\_5.R

Gebruiker

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library(TeachingDemos)  
txtStart("Homework assignment 5.txt")

## Output being copied to text file,  
## use txtStop to end

# Homework Assignment 5  
# Name: Borná Djavdan   
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# Exercise 2  
load("~/Study/Semester 3/Econometrics for ECO/R Files/R Data/hprice2.RData")  
attach(data)  
# c  
Reg1<-lm(lprice~lnox)  
summary(Reg1)

##   
## Call:  
## lm(formula = lprice ~ lnox)  
##   
## Residuals:  
## Min 1Q Median 3Q Max   
## -1.17062 -0.19368 -0.02582 0.18385 1.09366   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 11.70719 0.13243 88.40 <2e-16 \*\*\*  
## lnox -1.04314 0.07767 -13.43 <2e-16 \*\*\*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 0.3516 on 504 degrees of freedom  
## Multiple R-squared: 0.2636, Adjusted R-squared: 0.2621   
## F-statistic: 180.4 on 1 and 504 DF, p-value: < 2.2e-16

nobs(Reg1)

## [1] 506

Reg2<-lm(lprice~lnox+rooms)  
summary(Reg2)

##   
## Call:  
## lm(formula = lprice ~ lnox + rooms)  
##   
## Residuals:  
## Min 1Q Median 3Q Max   
## -1.06485 -0.12331 0.00782 0.14471 1.38770   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 9.23374 0.18774 49.18 <2e-16 \*\*\*  
## lnox -0.71767 0.06634 -10.82 <2e-16 \*\*\*  
## rooms 0.30592 0.01902 16.09 <2e-16 \*\*\*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 0.286 on 503 degrees of freedom  
## Multiple R-squared: 0.5137, Adjusted R-squared: 0.5118   
## F-statistic: 265.7 on 2 and 503 DF, p-value: < 2.2e-16

nobs(Reg2)

## [1] 506

# e  
lm(rooms~lnox)

##   
## Call:  
## lm(formula = rooms ~ lnox)  
##   
## Coefficients:  
## (Intercept) lnox   
## 8.085 -1.064

detach(data)  
  
# Exercise 3  
load("~/Study/Semester 3/Econometrics for ECO/R Files/R Data/discrim.RData")  
attach(data)  
  
# a  
mean(na.omit(prpblck))

## [1] 0.1134864

mean(na.omit(prppov))

## [1] 0.07129732

mean(na.omit(income))

## [1] 47053.78

sd(na.omit(prpblck))

## [1] 0.1824165

sd(na.omit(prppov))

## [1] 0.06743866

sd(na.omit(income))

## [1] 13179.29

# b  
OLS\_reg1 <- lm(lpsoda~prpblck+lincome+prppov)  
summary(OLS\_reg1)

##   
## Call:  
## lm(formula = lpsoda ~ prpblck + lincome + prppov)  
##   
## Residuals:  
## Min 1Q Median 3Q Max   
## -0.32218 -0.04648 0.00651 0.04272 0.35622   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) -1.46333 0.29371 -4.982 9.4e-07 \*\*\*  
## prpblck 0.07281 0.03068 2.373 0.0181 \*   
## lincome 0.13696 0.02676 5.119 4.8e-07 \*\*\*  
## prppov 0.38036 0.13279 2.864 0.0044 \*\*   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 0.08137 on 397 degrees of freedom  
## (9 observations deleted due to missingness)  
## Multiple R-squared: 0.08696, Adjusted R-squared: 0.08006   
## F-statistic: 12.6 on 3 and 397 DF, p-value: 6.917e-08

length(OLS\_reg1$fitted.values)

## [1] 401

# Gives Error I was not able to solve: t.test(lpsoda, prpblck, data, conf.level = 0.95)  
  
# c   
cor(lincome,prppov, use="na.or.complete")

## [1] -0.838467

# d  
regr<-lm(lpsoda~prpblck+lincome+prppov+lhseval)  
summary(regr)

##   
## Call:  
## lm(formula = lpsoda ~ prpblck + lincome + prppov + lhseval)  
##   
## Residuals:  
## Min 1Q Median 3Q Max   
## -0.30652 -0.04380 0.00701 0.04332 0.35272   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) -0.84151 0.29243 -2.878 0.004224 \*\*   
## prpblck 0.09755 0.02926 3.334 0.000937 \*\*\*  
## lincome -0.05299 0.03753 -1.412 0.158707   
## prppov 0.05212 0.13450 0.388 0.698570   
## lhseval 0.12131 0.01768 6.860 2.67e-11 \*\*\*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 0.07702 on 396 degrees of freedom  
## (9 observations deleted due to missingness)  
## Multiple R-squared: 0.1839, Adjusted R-squared: 0.1757   
## F-statistic: 22.31 on 4 and 396 DF, p-value: < 2.2e-16

nobs(regr)

## [1] 401

# e  
  
library("carData")  
library("car")  
H0<-c("lincome=0","prppov=0")  
linearHypothesis(regr,H0)

## Linear hypothesis test  
##   
## Hypothesis:  
## lincome = 0  
## prppov = 0  
##   
## Model 1: restricted model  
## Model 2: lpsoda ~ prpblck + lincome + prppov + lhseval  
##   
## Res.Df RSS Df Sum of Sq F Pr(>F)   
## 1 398 2.3911   
## 2 396 2.3493 2 0.041797 3.5227 0.03045 \*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

detach(data)  
txtStop()