Chapter 4 - Inference

Thalles Quinaglia Liduares

13/03/2022

Exercise 4.4

Upload packages

```
library(lmreg)
library(wooldridge)
```

Upload database

```
data<-wooldridge::bwght

#dim(data)
```

In Example 4.9, the restricted version of the model can be estimated using all 1,388 observations in the sample. Compute the R-squared from the regression of bwght on cigs, parity, and faminc using all observations. Compare this to the R-squared reported for the restricted model in Example 4.9.

```
lm1<-lm(bwght~cigs+parity+faminc, data)

summary(lm1)
```

```
##
## Call:
## lm(formula = bwght ~ cigs + parity + faminc, data = data)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -95.034 -11.650   0.804  13.088 151.008
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 114.21435    1.46930  77.734  < 2e-16 ***
## cigs         -0.47715    0.09152  -5.214 2.13e-07 ***
## parity        1.61637    0.60395   2.676 0.007532 **
## faminc        0.09792    0.02919   3.355 0.000815 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 20.02 on 1384 degrees of freedom
## Multiple R-squared:  0.0348, Adjusted R-squared:  0.03271
## F-statistic: 16.63 on 3 and 1384 DF,  p-value: 1.28e-10
```

The estimated equation is expressed as follows

$$\widehat{bwght} = 114.21 - 0.47cigs + 1.61parity + 0.09faminc$$

The R-Squared is equal to 3.4%. Hence, the variability in `bwght` is only 3.4% explaneid by the exogenous variables of the model.