Econometrics-Damodar N. Gujarati / Chapter 1

Furkan Zengin

16 08 2021

```r
install.packages('remotes')


remotes::install_github("brunoruas2/gujarati",force = TRUE)

library(gujarati)

attach(Table1_1)

library(tidyverse)

plot(Table1_1$Y1,Table1_1$X1,xlab="Number of eggs produced (millions)",
     ylab="Price of eggs per dozen (in cent")


View(Table1_2)

library(ggplot2)
ggplot(Table1_2, aes(Table1_2$C.1, Table1_2$I)) + geom_point()
+facet_wrap(~Table1_2$FIRM)+ theme(legend.position = "none",
        panel.grid = element_blank(),
        axis.title = element_blank(),
        axis.text = element_blank(),
        axis.ticks = element_blank(),
        panel.background = element_blank())

attach(Table1_3)


view(Table1_3)

ggplot(Table1_3, aes(YEAR, USA)) + geom_point()

attach(Table2_10)

view(Table2_10)

# using fix(), change the name and class of variables

MODEL1=lm(MATH~AVGI)
summary(MODEL1)

plot(AVGI,MATH)
abline(MODEL1,col="darkred",lwd=3)
```

$$Math = \beta_0 + \beta_1 AverageIncome + u_i$$

```
attach(Table2_8)

view(Table2_8)
fix(Table2_8)

MODEL2 = lm(Table2_8$TOTALEXP ~ Table2_8$FOODEXP)
summary(MODEL2)

plot(Table2_8$FOODEXP,Table2_8$TOTALEXP,xlab="Food Expenditure",
    ylab="Total Expenditure")
abline(MODEL2,col="darkred",lwd=3)
```

$$TotalExp = \beta_0 + \beta_1 FoodExp + u_i$$

FORMULAS

$$\hat{\beta}_1 =$$

$$= \frac{\sum_i (x_i - \overline{x})(y_i - \overline{y})}{\sum_i (x_i - \overline{x})}$$

$$= \frac{\sum_i (x_i - \overline{x})(y_i - \overline{y})/(n-1)}{\sum_i (x_i - \overline{x})/(n-1)}$$

$$= \frac{\hat{\text{Cov}}(x, y)}{\hat{\text{Var}}(x)}$$

$$\hat{\beta}_1 = \frac{\hat{\text{Cov}}(x, y)}{\hat{\text{Var}}(x)}$$

$$\hat{\beta}_1 = \frac{\hat{\text{Cov}}(\tilde{x}_1, y)}{\hat{\text{Var}}(\tilde{x}_1)}$$

$$R^2 = \frac{\sum_i (\hat{y}_i - \overline{y})^2}{\sum_i (y_i - \overline{y})^2} = 1 - \frac{\sum_i (y_i - \hat{y}_i)^2}{\sum_i (y_i - \overline{y})^2}$$

[1] Latex expressions are taken from :

---

1. https://github.com/tatanik501/EC421S20/blob/master/notes/03-review/03-review.Rmd
(https://github.com/tatanik501/EC421S20/blob/master/notes/03-review/03-review.Rmd)↩