Chapter 2 - The Simple Regression Model

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10/02/2022

Exercise 2.2

Upload data base

```
library(wooldridge)
library(dplyr)

data2<-wooldridge::ceosal2

attach(data2)

View(data2)
```

The data set in CEOSAL2.RAW contains information on chief executive officers for U.S. corporations. The variable salary is annual compensation, in thousands of dollars, and ceoten is prior number of years as company CEO.

(i) Find the average salary and the average tenure in the sample.

```
ave_sal<-round(mean(salary),2)

ave_sal
```

```
## [1] 865.86
```

```
ave_ten<-round(mean(ceoten))

ave_ten
```

```
## [1] 8
```

The average salary is $ $865.86 $ and average tenure is 8.

(ii) How many CEOs are in their first year as CEO (that is, ceoten 5 0)? What is the longest tenure as a CEO?

```
qt_ceos<-data2 %>%
       filter(ceoten == 0) %>%
       summarise(qt=n())

qt_ceos
```

```
##   qt
## 1  5
```

```
summary(ceoten)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   0.000   3.000   6.000   7.955  11.000  37.000
```

Only 5 Ceos are in first year employed.

The longest period of one person as a CEO is 37 years.

(iii) Estimate the simple regression model

$$log(salary) = \beta_0 + \beta_1 ceoten + \varepsilon$$

and report your results in the usual form. What is the (approximate) predicted percentage increase in salary given one more year as a CEO?

```
library(lmreg)

lm1<-lm(log(salary)~ceoten, data2)

summary(lm1)
```

```
##
## Call:
## lm(formula = log(salary) ~ ceoten, data = data2)
##
## Residuals:
##       Min       1Q   Median       3Q      Max
## -2.15314 -0.38319 -0.02251  0.44439  1.94337
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) 6.505498   0.067991  95.682   <2e-16 ***
## ceoten      0.009724   0.006364   1.528    0.128
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6038 on 175 degrees of freedom
## Multiple R-squared:  0.01316,    Adjusted R-squared:  0.007523
## F-statistic: 2.334 on 1 and 175 DF,  p-value: 0.1284
```

The percentual variation in log(salary) is equal to $100 \times 0.009 = 0.9$.

The intercept β_0 is equal to 6.5.