Regression: OLS

Instructions

1). Read the slides that are uploaded for this unit. Work through the slides and answer the questions as they appear.

2). Read pages 1–50 of the chapter included in this unit. (If you don't understand all of it, that's ok. Focus on understanding the intuition behind OLS.)

3). Complete the following exercises below.

Here is a link to practice some basic matrix algebra. Feel free to reference your slides and notes as you answer these questions. I would suggest taking out a sheet of paper to write out the matrices and perform the math by hand.

a). Complete five addition and subtraction of matrices exercises. Ideally, complete ten exercises to develop better intuition around this process.

b). Complete five multiplication exercises (scroll down on the page and click on "Matrix multiplication calculator"). Ideally, complete ten exercises to develop better intuition around this process.

c). Complete five scalar multiplication exercises (scroll down on the page and click on "Matrix multiplication calculator"). Ideally, complete ten exercises to develop better intuition around this process.

4). Answer the following questions below in your own words. Your answers should describe the concepts in your own words: not a regurgitation of what the slides and materials provide.

Q1). What is a vector?

Q2). What is a matrix?

Q3). What is regression?

Q4). We have the following equation: $Y = \beta_0 + X\beta + \varepsilon$.

A). What does "Y" mean?

B). What does "β_0" mean?

C). What does "ε" mean?

D). What does "$X\beta$" mean?

Q5). What is ordinary least-squares regression?