ECON306 – Quiz 4 – Homework Assignment

2014 · 6 · 7

Name: _____ PSU ID: _____

There are 15 questions worth 4 points each for a total of 60 points. You must answer all questions using whichever software you want, and submit your answers together with the rest of the quiz on the day of the quiz. It is acceptable to consult with other students, but each student should run their own regressions and submit their own individual report.

Download the dataset regarding the "*Economic Value of a Year of Education*" available following this link. The dataset contains cross-sectional data for approximately 3,000 individuals for the following variables:

$$\begin{aligned} \text{ahe}_i &= \text{average hourly wage for the } i^{\text{th}} \text{ individual} \\ \text{yrseduc}_i &= \text{years of schooling for the } i^{\text{th}} \text{ individual} \\ \text{a\_sex}_i &= \text{gender of the } i^{\text{th}} \text{ (1 for male, 2 for female)} \\ \text{a\_age}_i &= \text{age of the } i^{\text{th}} \text{ individual} \end{aligned}$$

1. Plot an histogram of the distribution of hourly wages.

2. Create a new *categorical* variable deg_i that takes the value 0 for individuals who did not finish high school (less than 12 years of schooling), the value 1 for who finished high school but not college (at least 12 and less than 16 years of schooling), and the value 2 for individuals who completed college (at least 16 years of schooling).
3. What proportion of individuals falls into each of these categories?
4. What is the average hourly wage for individuals in each of these categories?
5. Make a box-plot showing the distribution of hourly wages for these different categories of individuals. What can you tell from this box-plot?

6. What is the proportion of females in the sample?
7. What is the average hourly wage for males and females?
8. Make a box-plot showing the distribution of hourly wages for males and females. What can you tell from this box-plot?

9. Plot a scaterplot of years of schooling vs. hourly wages.
10. Use OLS to estimate the following model. You must report both the estimated coefficients and the corresponding standard errors.

$$\text{ahe}_i = \beta_0 + \beta_1 \text{yrseduc}_i + \beta_2 \text{a\_sex}_i + \beta_3 \text{a\_age}_i + \varepsilon_i$$

11. With 95% confidence, which regressors have a statistically significant effect on hourly wages? [justify your answer]

12. What is the value of the *adjusted* $\bar{R}^2$ coefficient? What does this number tell you for this particular model?

13. What is the estimated average effect of years of schooling on hourly wages?

14. According to the estimated model, what would be the average hourly wage of a 30 years old female who completed a 2-years master degree after finishing college?

15. According to the estimated model, what is the average effect over hourly wages of attending college?