PublPol 303D **Winter 2022**

Problem Set II

Due: 7.00pm, Friday January 14th, 2022

For both the empirical part and the theoretical part submit the answers in a document. Be concise but also clear what numbers you are reporting, and answer in full sentences. You should also hand in supporting code, but all the answers should be in a pdf or word file.

Use the nls_2021.txt data. There are 895 observations on eight variables in this data set, in order, **luwe** (log weekly wage), **educ** (years of education), **exper** (years of experience), **age** (age in years), **fed** (father's education in years), **med** (mothers education in years), **kww** (a test score), and **iq** (an iq score). **exper** here is a constructed variable, equal to **age** minus **educ** minus six, so it is really potential experience. Today we only use the log weekly wage and education variables.

1. Construct a histogram of the education variable. What do you notice? Does this distribution look like a normal distribution? What are the most likely values for years of education?

2. Compare the average of the logarithm of earnings for people with exactly twelve years of education and people with exactly 16 years of education. Is the difference statistically significant?

3. Construct a scatter plot of log earnings vs years of schooling. What can we learn from this plot?

4. Construct a binned-scatter plot of log earnings vs years of schooling. What can we learn from this plot? Contrast with the scatter plot from the question above.

5. Regress the logarithm of earnings on years of education. Report the estimates and the standard error.

6. Based on the regression estimates, what is the effect of going from 12 years of education to 16 years of education? How does that compare to the estimates in (2)? Can we

reject that the true population coefficient of the effect of education on log earnings is zero?

7. Write up a half page report on the effect of the education on earnings. Reflect on potential problems with the linear regression estimates.