

Problem Set #2

Sonoma State University
Economics 317- Introduction to Econometrics

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C1.1 Use the data set Wage1.dta to answer the following questions.

For the regression equation $\text{wage} = \beta_0 + \beta_1 \text{Education} + U$

- (i) Describe the expected effects of education on wages (i.e., what is the expected sign of β_1).
- (ii) Run the above regression. Are your results consistent with your expected effects in (i)?
- (iii) Show graphically the regression equation. Describe your results.
- (iv) Use the R^2 and F-test to test for overall significance of the estimate regression. Explain each.
- (v) Use the three methods covered in class to test the coefficient on education for statistical significance. Be sure to formally state your hypothesis, use a 5% level of significance. Provide an explanation for each.
- (vi) Construct a 95% confidence interval around the estimated coefficient β_1 . Explain.

C1.2 Use the data set Bwght.dta to answer the following questions.

For the regression equation $\text{Birth weight} = \beta_0 + \beta_1 \text{Cigarettes} + U$

- (i) Describe the expected effects of cigarettes on birth weight (i.e., what is the expected sign of β_1).
- (ii) Run the above regression. Are your results consistent with your expected effects in (i)?
- (iii) Show graphically the regression equation. Describe your results.
- (iv) Use the R^2 and F-test to test for overall significance of the estimate regression. Explain each.
- (v) Use the three methods covered in class to test the coefficient on cigarettes for statistical significance. Be sure to formally state your hypothesis, use a 5% level of significance. Provide an explanation for each.
- (vi) Construct a 95% confidence interval around the estimated coefficient β_1 . Explain.

C1.3 Use the data set Meap01.dta to answer the following questions.

For the regression equation $\text{Math Pass (Math4)} = \beta_0 + \beta_1 \text{Expenditures Per Pupil} + U$

- (i) Describe the expected effects of per pupil expenditures on the percentage of people who score satisfactorily on the mathematics test (i.e., what is the expected sign of β_1).
- (ii) Run the above regression. Are your results consistent with your expected effects in (i)?
- (iii) Show graphically the regression equation. Describe your results.
- (iv) Use the R^2 and F-test to test for overall significance of the estimate regression. Explain each.
- (v) Use the three methods covered in class to test the coefficient on per pupil expenditures for statistical significance. Be sure to formally state your hypothesis, use a 5% level of significance. Provide an explanation for each.
- (vi) Construct a 95% confidence interval around the estimated coefficient β_1 . Explain.