**Directions:**

1. Demand for fish. For this problem, use the dataset “fish.dta”. The data was used in Graddy (1995) and Angrist, Graddy and Imbens (2000). It was obtained from a single dealer of whiting at the Fulton fish market. He supplied his inventory sheets for the period of December 1991 through May 1992. The market is open Monday through Friday.
   1. Consider the following demand equation:

Run this regression using ordinary least squares with the command “reg” and report the estimated coefficient, standard error, and *p*-value on price. Interpret the coefficient on price. Why would we be concerned that the estimated coefficient on price is not a consistent estimate of the causal effect of price on the demand for whiting?

* 1. Why would we want to include day of the week indicators in the regression? Why would we want to include a time trend in the regression?
  2. Consider using *wave2*, the average over the past two days of the observed maximum wave height for the day, as an instrument for the price of whiting. Explain why this might be a valid instrument. Why is this “strange”?
  3. Run the first stage regression using ordinary least squares (OLS):

Is *wave2* a strong instrument? What is the F statistic on the excludability of the instrument from the first stage?

* 1. Report the IV estimate of the effect of price on quantity using *wave2* as an instrumental variable. How does this compare to the OLS estimate of the association between price and quantity? (is it the same, larger, smaller?). Provide an intuitive explanation of why your OLS estimate is different from your IV estimate.
  2. Report the estimated own-price demand elasticity of whiting using *wave2* as the instrument.
  3. Consider using *speed3,* the maximum wind speed from three days earlier, as the instrument for price instead of *wave2.* Using only *speed3* run the 1st-stage regression. Is *speed3* a strong instrument (using the *F-*test)?
  4. Summarize this exercise in a professional-looking table like the one I shared in dropbox with all the same columns and rows, labeled correctly, but using the two different instruments (*wave2* in column 2 and *speed3* in column 3).
  5. Discuss why your IV estimates in columns (2) and (3) differed from one another. How does this shed light on our discussion of the local average treatment effect (LATE) parameter?