Economics 311 — Fall 2017
Daily Problem #6 — September 18

Two different problems because we may or may not have already covered the first one on Friday.

1. Suppose that a first-year student that you know is considering taking Econ 201 in the spring and wants to know how likely it is that she will do well. Given that the regressions we discussed in class last week were run using a sample that included only students who completed Econ 201, what issues of selection bias might be present in applying that model to her as a prospective enrollee? Which way do you think they might bias her predicted grade?

2. Studenmund's equation (17.5) in the online statistics chapter asserts that the sampling distribution of $\bar{X}$ (the calculated average of a sample of N independent observations) has the properties that the mean of $\bar{X}$ is μ and the standard deviation of $\bar{X}$ is $\frac{\sigma}{\sqrt{N}}$, where μ and σ are the mean and standard deviation of the population from which the sample is drawn.

a. Why is it desirable that the mean (or expected value) of $\bar{X}$ is μ?

b. What does the standard deviation of $\bar{X}$ measure? Why would it be desirable for it to be as small as possible?

c. What happens to the standard deviation of $\bar{X}$ as our sample gets larger? Why? Why is the assumption that the N observations are independent of one another important for this question?