Unit 3 – Populations and Samples
Homework #5 (Unit 3 – Populations and Sampling)

Due: Tuesday October 13, 2015
Last submission date for credit: Monday October 19, 2015

1. **Exercise #1 gives you practice in distinguishing between target population and sampling frame.** **Tip – See again, course notes pp 8-9.**

For each of the following situations, define the target population, and how you might obtain a sample. What will be your sampled population? How does this differ from the target population?

a. A city engineer wants to estimate the average weekly water consumption for single family dwelling units in the city.

b. A physician wants to estimate the average length of time from initial diagnosis with ovarian cancer to death.

2. **Exercise #2 gives you practice in working with the idea that bias can (and often does!) occur in sampling. A nice url on this topic is available from StatTrek AP tutorials.**

http://stattrek.com/AP-Statistics-2/Survey-Sampling-Bias.aspx?Tutorial=AP

Which of the following estimates are likely to be biased? Why? Is the bias positive or negative? Why? *(note: Positive bias means a consistent likelihood of overestimating, negative bias is underestimating).*

a. You estimate the average number of bank customers waiting for service whenever the bank is open by counting the number of customers whenever you go to the bank.

b. You estimate the proportion of 7-12 year old children using helmets when they ride bikes by asking parents if their child wears a helmet when the child is brought to the physician's office for a "well" visit.

c. A highway patrolman parks next to a highway and records speeds on his radar to estimate the percentage of people exceeding the speed limit on that highway.