

BST 542 Sampling Theory and Survey Design in Public Health
Homework 3
Due Tuesday, March 5, 2019

Note that the points total 30, but the assignment is worth 10 points. Your homework score will be recorded as your score out of 30, divided by 3.

1. (11 Points: 2,3,3,3) Researchers are interested in the proportion of drivers in the city who use their cell phone by holding it with their hands while driving (i.e., not using a blue-tooth, or hands-free device). Investigators chose a busy intersection, and observed every sixth car that passed going a particular direction. It was suggested that they look at *every* car and record whether the driver was using the cell phone, but often cars went by too fast and they could misidentify some drivers. So, the plan was to dispatch two investigators, one of whom counted the cars and chose every sixth car and the other looked carefully to see whether the driver was talking on the cell phone. They did this for two hours and observed 300 drivers.

- (a) What kind of a sample is this?
- (b) Is it a reasonable sampling plan for determining the rate of cell phone usage while driving at that intersection at that time?
- (c) Is this a reasonable plan for determining the rate of cell phone usage while driving for the city as a whole?
- (d) Can you describe a better sampling plan? Explain.

2. (9 Points: 3,3,3) Do Problem 4.3 in the textbook. This problem begins “Foresters want to estimate ...” Do not do part (d).

3. (10 Points) Do Problem 5.7 in the textbook. The problem begins “The new candy Green ...”. Be sure to estimate the total number of cases and the average number sold per store.