**MSDS 6379**

**Lab 2: Weighted Sample Designs**

**Objectives:**

* Introduce the student to weighted sample designs.
* Allow the student to understand the advantages of weighted vs. no non-weighted sample designs

You are a consultant and you are asked to analyze residents' responses to the question: "How much should your town spend on education per pupil." You are asked to do this for two neighboring towns. You decide to take samples of residents using email. The local internet provider has given you data about email access by district in the towns (see districts sheet in lab2Dat.xlsx file). You collect data for 25 residents in each town based on a random sample across all residents (see samples sheet in lab2Dat.xlsx file). Complete the Exercises below. Please label your answers clearly and give concise and thorough explanations where appropriate. Submit your answers below in this MS Word document.

**Exercise1**: Calculate the mean and standard deviation of the sample responses for each town.

**Exercise2**: Comment on whether these are good estimates of the means for the towns.

**Exercise3**: Use another way to calculate an estimate of the population means that corrects for selection bias and explain why you chose this method.

**Exercise4**: Calculate the means for data from an in-person survey done last year (see faceSurvey sheet in lab2Dat.xlsm file). Explain why you do not have to calculate a weighted sample.

**Exercise5**: Compare the means you calculated in the samples to the data from the in-person survey done last year.

**Exercise6**: Create histograms using your samples (Hint: You will have to define histogram ranges). Compare the histograms for the two towns.

**Exercise7**: Create histograms using the in-person data from last year.

**Exercise8**: Compare the sample and the in-person survey histograms for the two towns. Is your sample or the in-person survey a better estimate of the population means? Explain.

**Submit Answers Below**