STA 304H1F-1003H Fall 2019
Assignment 2-Question 2

Question 2. (12 marks)

Suppose that a city has 90000 dwelling units, of which 35000 are houses, 45000 are apartments, and 10000 are condominiums. We want to estimate the overall proportion (p) of households in which energy conservation is practiced, with a bound on the error of estimation equal 0.1. The cost for obtaining an observation is $ 9 for houses, 10$ for appartment, and 16 $ for condominiums. Suppose that from an earlier study, we know that 47% of house dwellers, 23% of appartment dwellers, and 3% of condominum residents practice energy conservation.

(a) (4 marks) Using a proportional allocation, find the strata sample sizes, n_1, n_2, and n_3, and the sample size n.

(b) (4 marks) Using a optimal allocation, find the strata sample sizes, n_1, n_2, and n_3, and the sample size n.

(a) (4 marks) Using a Neyman allocation, find the strata sample sizes, n_1, n_2, and n_3, and the sample size n.