STAT253 – Probability and Statistics Course
STAT2053 – Introduction to Probability and Statistics Course

Marmara University, Istanbul, Turkey
May 18, 2020

Homework 2

In this homework, you are required to construct the sampling distribution (of size n = 10) from a population (with population mean, μ=4.4 and standard deviation, σ=2.15). In order to simulate the sampling distribution of $\bar{x}$, we have selected 50 samples (of size n = 10) with replacement from the population (with mean, μ=4.4 and standard deviation, σ=2.15), and have calculated the corresponding sample means. Sample means (for the 50 samples) are given as ***R*** dataset in the course webpage.

a.) Construct a relative frequency histogram for these 50 values of $\bar{x}$. What is the shape of this distribution?

b.) Find the mean and standard deviation of the 50 values of $\bar{x}$.

c.) Compare the values calculated in part a to the theoretical mean μ and the theoretical standard deviation $\sigma/\sqrt{n}$ for the sampling distribution of $\bar{x}$. How close do the values calculated from the 50 measurements come to the theoretical values?

Deliveries:

1. The ***R code*** you developed (*RStudio*). For each question, you need to plot the data according to your needs.
2. A ***report*** that includes the answers to the questions above.

This is an individual homework for students. Collaboration and cooperation between students are not allowed.

Due date is May 22, 2020, until 23:59.

Please post your deliveries by your *TurnItIn* account.

Ask any unclear matter to the lecturer. Good luck…

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