Problem Set #2

POSC 3410 – Quantitative Methods in Political Science

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This homework assignment will refer to the `1-create-hypothetical-university.R` script I wrote and made available on my GitHub page.[1] This script simulates democratic thermometer ratings from a hypothetical 20,000-student university in which $\mu = 58$ and $\sigma = 24.8$. Simulated data are drawn from a **beta distribution**, are bound between 0 and 100, and are rounded to integers. Answer the following questions in about two to three sentences each.

1. Run the `histogram(DTR)` command. Describe what you see. Your answer should describe the distribution of this data as if you were talking about an actual university like your own.
2. What is the population mean from your simulation? You must run the `set.seed(8675309)` command before simulating the data.
3. Get five random samples of ten respondents from this population. In my script, this random sample is assigned to an object called **fiveoften** (or: "five (random samples) of ten (units)". Get the mean thermometer rating from these five random samples. Run that random sample a few times as you see fit. What sample means are you getting? What do you see vis-a-vis the population mean? Why is that the case?
4. Get a million samples of ten respondents from this population and get the mean thermometer rating from these million random samples. What do you see vis-a-vis the population mean and the sample mean from the last question? Why is that the case?
5. Get one sample of 1,000 respondents and 1,000 samples of 1,000 respondents. What do those sample means look like relative to the population mean? Why?

[1] **https://github.com/svmiller/hypothetical-university-dtr**