Stat_641_Homework_2

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5.8: Consider a population that has a normal distribution with mean $\mu = 36$, standard deviation $\sigma = 8$.

a) The sampling distribution of X for samples of size 200 will have what mean, standard error, and shape?

answer: The sampling distribution will be a normal distribution with the center around the mean value of 36 and the standard error of $\sigma/sqrt(n)$ i.e 8/sqrt(200) = 0.5656854

b) Use R to draw a random sample of size 200 from this population. Conduct EDA on your sample.

c) Compute the bootstrap distribution for your sample, and note the bootstrap mean and standard error.

d) Compare the bootstrap distribution to the theoretical sampling distribution by creating a table like Table 5.2.

e) Repeat for sample sizes of n=50 and n=10.Carefully describe your observations about the effects of sample size on the bootstrap distri- bution.