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Section 1C

9.8
This is sampling distribution of means because she takes several samples and calculate the distribution of their means

9.10
We should expect the sample mean to be $60,000, assume we have an unbiased sample. The sample mean is an unbiased estimator of the population mean.
SE=$30,000/√(400) = $1,500

9.16
A is the original distribution of all 638 cars because it is the least normal and widest.
B, C, D are samples of 10 cars, 5 cars and 2 cars respectively. This is because the larger the sample size, the narrower and more normal is the sampling distribution.

9.18
A.
μ=22.8, sigma=3.2, x=23.2, s=2.4
B.
μ is a parameter because it is based on the entire population
C.
Conditions are not satisfied because the sample size is 4, which is less than 25. Also the population distribution is not normal, so the sampling distribution might not be normal.

9.20
A.
We are 95% confident that the population mean is between 17148 and 19944
B.
We cannot reject a population mean of $18000 because it is included in the interval

9.30
A.
N=100 so df=100-1=99
According to T-table, t=1.984
If we use t=1.96, then
SE=(1.5/√100)=0.15
The Margin of Error is calculated as:
Upper bound=1.85+1.96*0.15=2.144
lower bound=1.85-1.96*0.15=1.556
So a 90% CI is (1.556, 2.144)

B.
The Margin of Error is calculated as:
Upper bound=1.85+1.645*0.15=2.097
lower bound=1.85-1.645*0.15=1.603
So the 90% CI is (1.603, 2.097)

C. The 95% CI is wider since it has higher confidence level.

9.34
A.Narrower
B.Wider (The denominator increases so SE decreases)
C.Narrower

9.41
H0: μ=200
Ha: μ>200
We have a one sample t-test, we have a large sample and the population is more than 10 times greater than sample size. So conditions are met and a = 0.05
We have t=1.44 and p=0.079, which is greater than 0.05. So we cannot reject H0. There is not enough evidence that the mean is significantly greater than 200.

9.42
H0: μ=25
Ha: μ>25
We have a one-sample t-test. The sample size is large and population is more than 10 times greater than sample size. So conditions are met.
a=0.05
We have t=3 and P=0.002, which is less than 0.05. So we can reject Ha. There is significant evidence that the mean BMI is greater than 25.

9.52
It cannot be interpreted because there is not a population. Also there's not random sampling.

9.54
A. Independent because the two groups are measured separately
B. Independent since there is no dependency between the two groups.