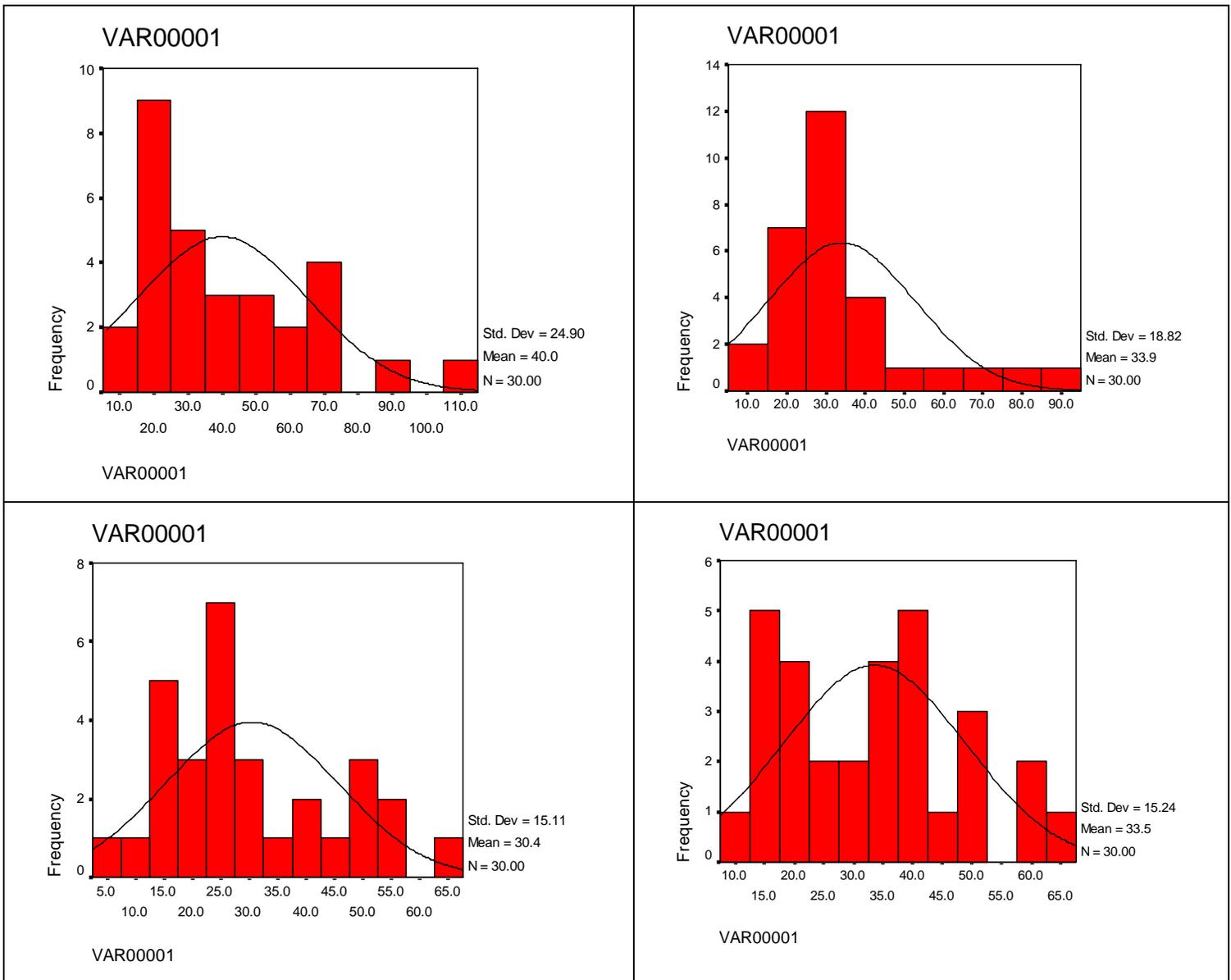


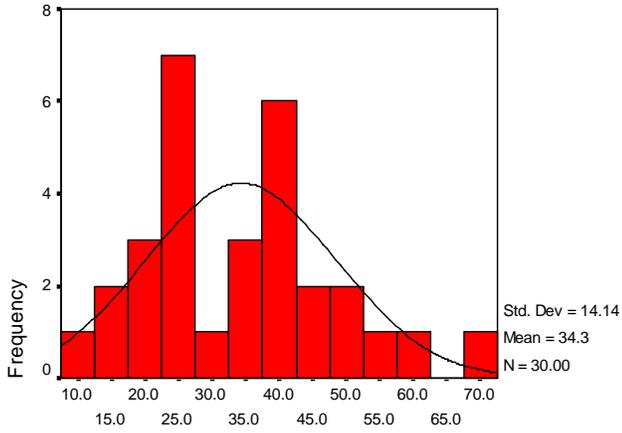
Sample Size Exercise

Data were collected from a group of 300 patients. From these 300 data points, 30 were selected at random and their histograms plotted. This process was repeated 9 more times to give a total of 10 independent samples of 30 data points. The histogram and mean of each sample are provided below. The mean and histogram of the entire 300 patient population is also provided below. After reviewing these, answer the questions below.

1. If all of these samples of 30 come from the same population, why are their means all different and why do none of them match the actual mean of the population of 35.9?
2. Could we actually use one of these samples as an estimate of the population mean? Why or why not?

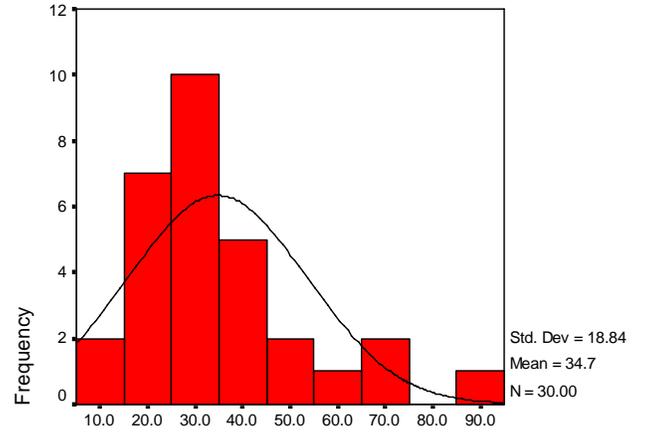


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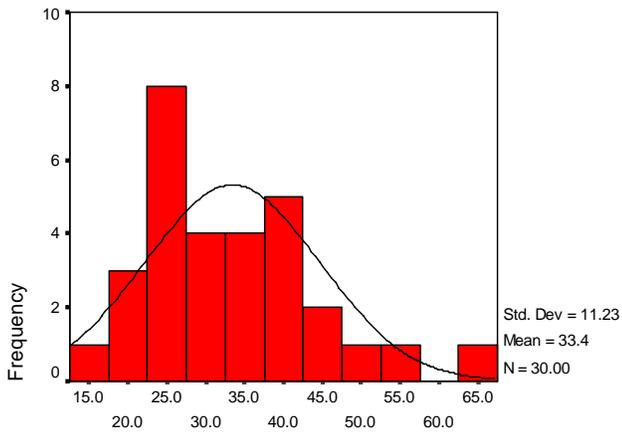
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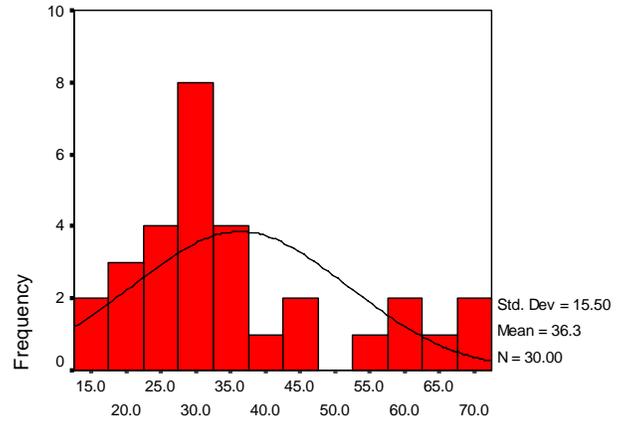
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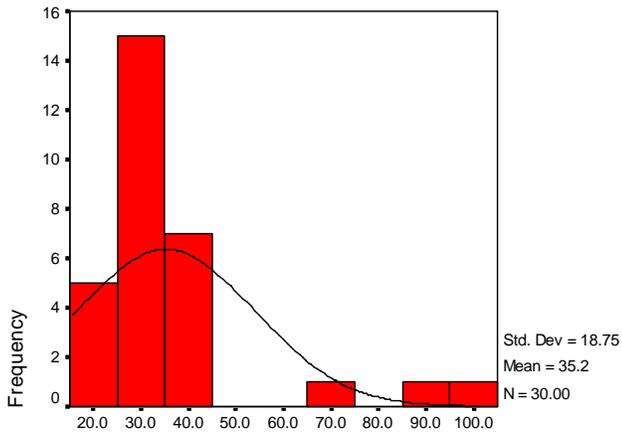
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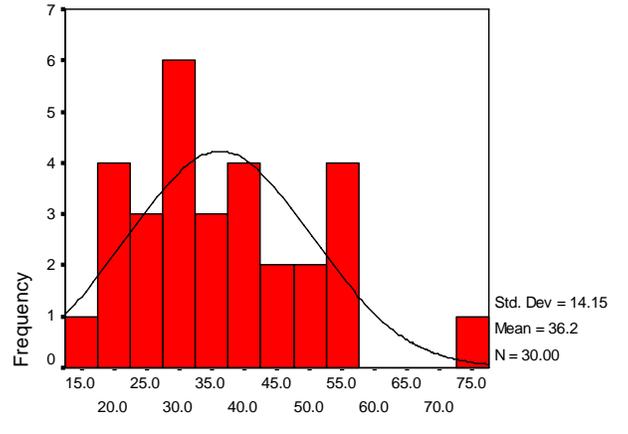
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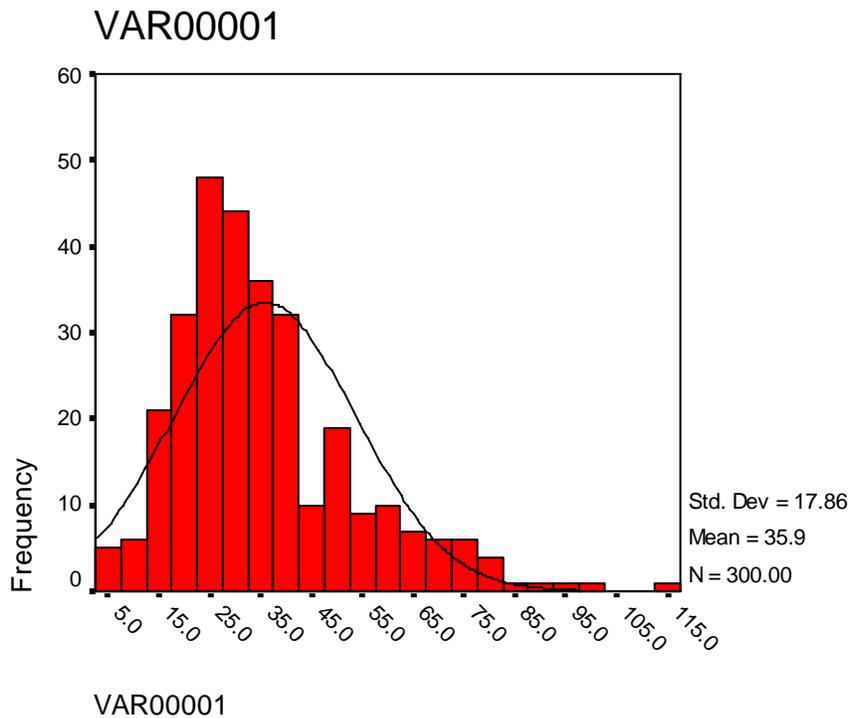
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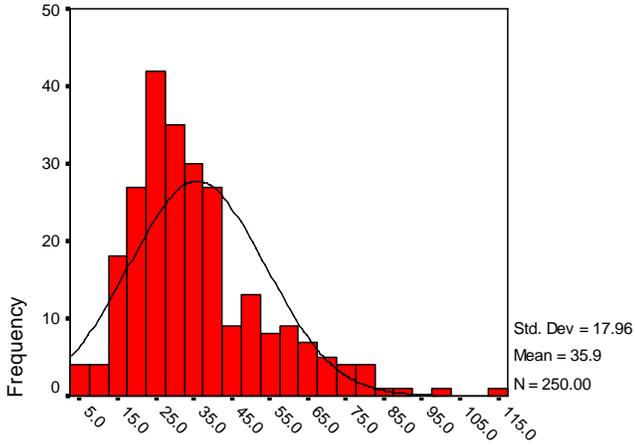
Histogram and Mean of all 300 patients.



Compare the histogram of all 300 patients with the histogram and means of the samples of differing sizes below, then answer the following questions?

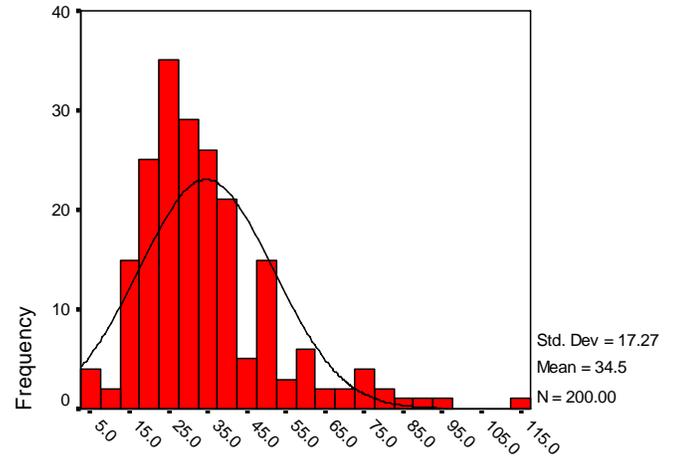
3. Which sample most accurately portrays the actual population data set?
4. Why is this so?
5. The sample of $N = 50$ has a sample mean of 35.5 which is closer to the actual mean of 35.9 than is the sample of $N = 200$ which has a sample mean of 34.5. Why is this so? Which one is the better sample?

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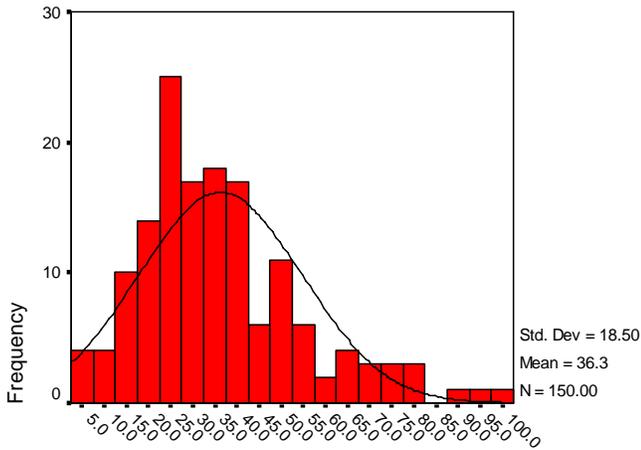
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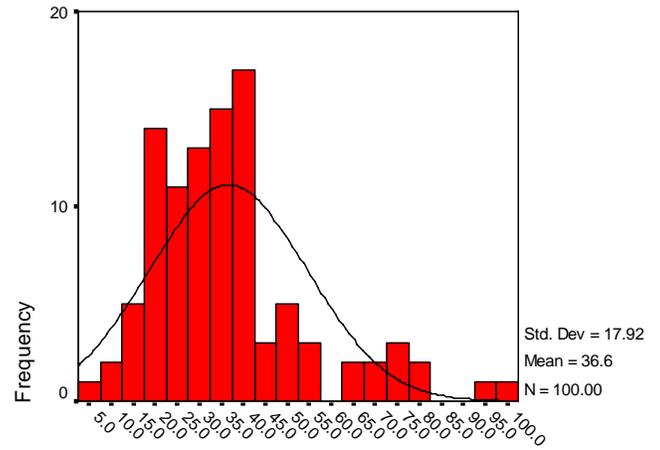
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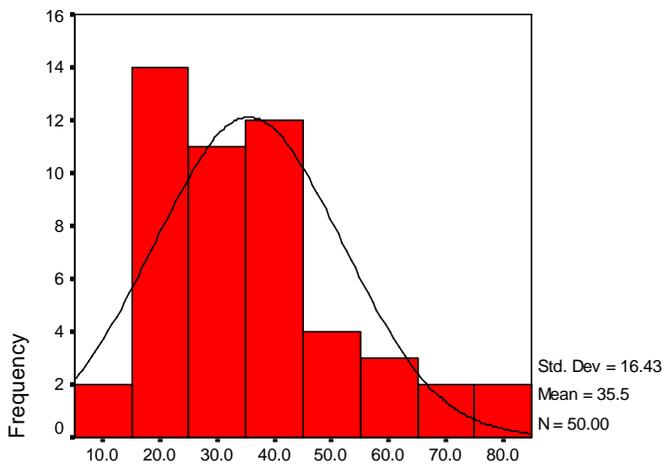
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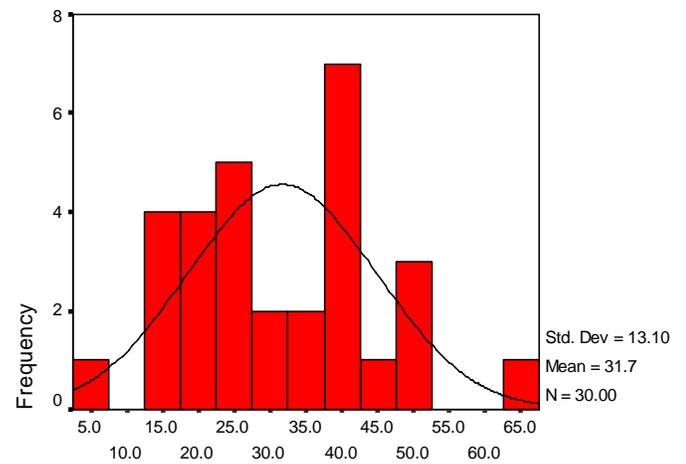
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