The Sampling Distribution

SPEAKER: MICHAEL J. MAHOMETA, Ph.D.

We'll be starting a new discussion - one that

revolves around the idea of inference.

When it comes to data, we have two types: population data and sample data.

Now in this time of Big

0:00 / 8:38

1.0x

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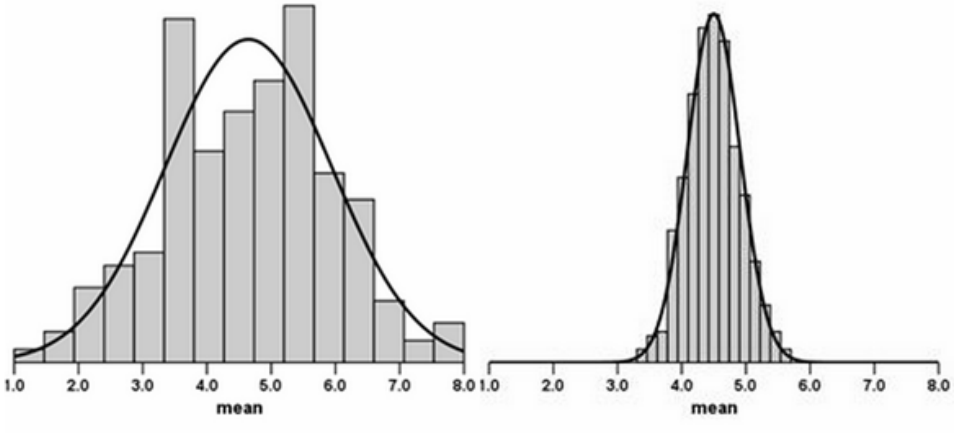
Comprehension Check

1. Below are two sampling distributions showing the average library fines owed by patrons of the Chicago public library system. They are drawn from the same population.



(1/1 point)

1a. Which distribution shows means calculated from larger sized samples?

- Distribution A
- Distribution B ✔

(1/1 point)

1b. What is the likely average library fine owed by a Chicago Public Library patron?

- Between $3 and $6
- About $4.50 ✔
- About $5.25
- We cannot tell from these distributions.

(1/1 point)

1c. What can be said about the variability in the sample means for both these distributions?

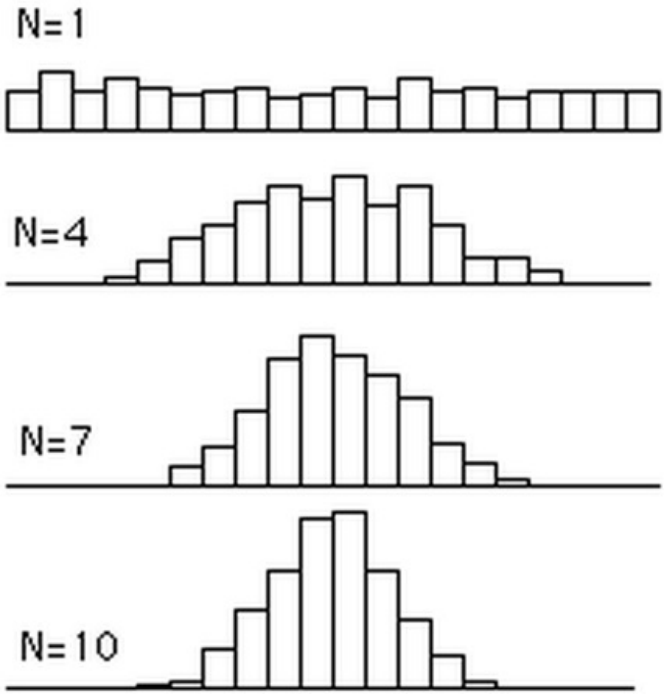
- The sample means in Distribution A are more realistic; they show the true variability in the population.
- The sample means in Distribution B are more similar to each other, resulting in a tighter cluster of values. ✔
- There is no difference in variability between the means in Distribution A and Distribution B because all the samples are drawn from the sample population.

(1/1 point)

1d. If we were to repeat the survey using **larger** sample sizes than either of those in Distribution A and Distribution B, what would you predict to be the shape of the new distribution?

- Bell-shaped, but taller and more narrow that the other distributions. ✔
- Bell-shaped, but wider and shorter than the other distributions.
- The shape would not change, but the value of the mean would probably change.

2. Below are four distributions of sample means drawn from the same population. The distributions differ by the size of the samples, which is noted by the value of N.



(1/1 point)

2a. Which sample size resulted in the tightest clustering of values around the "true" population mean?

- 1
- 4
- 7
- 10 ✔

(1/1 point)

2b. Which sample size resulted in the lowest variability in sample means?

- 1
- 4
- 7

- [x] 10 ✔

(1/1 point)

2c. What happens to the shape of the sampling distribution as the sample size increases from 1 to 10?

- [ ] It becomes less normal.
- [x] It becomes more normal (bell-shaped). ✔
- [ ] It becomes more uniform.
- [ ] It does not change.

(1/1 point)

2d. How many of the sample means, when N=10, fall within 1 standard deviation of the true population mean?

- [ ] About 50%
- [x] About 68% ✔
- [ ] About 95%
- [ ] About 99%