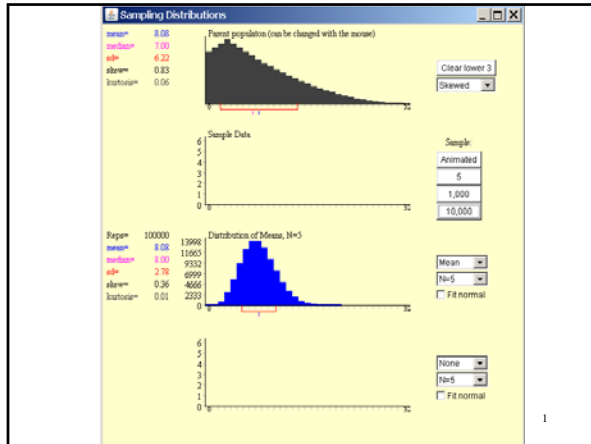


Stat 104 – Lecture 20



Population

- Shape: Skewed right.
- Center:
 - Mean, $\mu = 8.08$
- Spread:
 - Standard Deviation, $\sigma = 6.22$

2

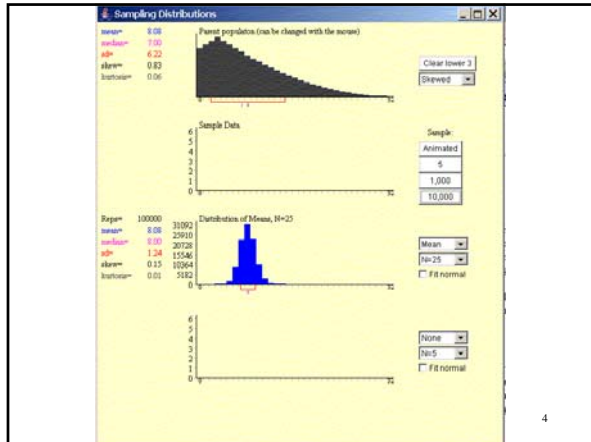
Distribution of the Sample Mean, \bar{y}

- $n = 5$
- Shape: Approximately normal
- Center: Mean, $\mu = 8.08$
- Spread: Standard Deviation,

$$SD(\bar{y}) = \frac{\sigma}{\sqrt{n}} = \frac{6.22}{\sqrt{5}} = 2.78$$

3

Stat 104 – Lecture 20



Population

- Shape: Skewed right
- Center:
 - Mean, $\mu = 8.08$
- Spread:
 - Standard Deviation, $\sigma = 6.22$

5

Distribution of the Sample Mean, \bar{y}

- $n = 25$
- Shape: Approximately normal
- Center: Mean, $\mu = 8.08$
- Spread: Standard Deviation,

$$SD(\bar{y}) = \frac{\sigma}{\sqrt{n}} = \frac{6.22}{\sqrt{25}} = 1.24$$

6

Stat 104 – Lecture 20

Central Limit Theorem

- When selecting random samples from a population with a distribution that is not normal, the distribution of the sample mean, \bar{y} , will be approximately normally distributed.

7

Central Limit Theorem

- The larger the sample, the closer the distribution of the sample mean, \bar{y} , is to being a normal model.

8

Summary

- Sampling from a population that **does not** follow a Normal Model.
- Distribution of the sample mean, \bar{y}
 - Shape: Approximately normal
 - Center: μ
 - Spread: $SD(\bar{y}) = \frac{\sigma}{\sqrt{n}}$

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Stat 104 – Lecture 20

Summary

- Sampling from a population that **does** follow a Normal Model.
- Distribution of the sample mean, \bar{y}
 - Shape: Normal
 - Center: μ
 - Spread: $SD(\bar{y}) = \frac{\sigma}{\sqrt{n}}$

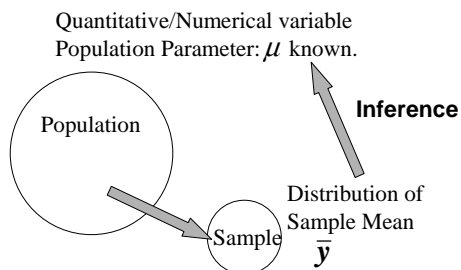
10

Conditions

- Random sampling condition
 - Samples must be selected at random from the population.

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Sampling Distributions



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