Chapter 7: Sampling Distributions

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| Key Vocabulary: | sampling distribution |
| parameter | unbiased |
| statistic | central limit theorem |
| sampling variability | law of large numbers |

7.1 What is a Sampling Distribution (pp. 414-428)

1. Explain the difference between a *parameter* and a *statistic*?

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1. What is *sampling variability*?
2. Explain the difference between $\overline{x}$ and $μ$, and between *p* and $phat$?
3. What is meant by the *sampling distribution* of a statistic?

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1. When is a statistic considered *unbiased*?
2. How is the size of a sample related to the *spread* of the sampling distribution?

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7.2 Sample Proportions (pp. 432-439)

1. In an SRS of size *n*, what is true about the sampling distribution of $\hat{p}$ when the sample size *n* increases?
2. In an SRS of size *n*, what is the mean of the sampling distribution of $\hat{p}$?
3. In an SRS of size *n*, what is the standard deviation of the sampling distribution of $\hat{p}$?
4. What happens to the standard deviation of $\hat{p}$as the sample size *n* increases?
5. When does the formula (copy it here from page 436) apply to the standard deviation of $\hat{p}$ ?
6. When the sample size *n* is large, the sampling distribution of $\hat{p}$is approximately normal. What test can you use to determine if the sample is large enough to assume that the sampling distribution is approximately normal?

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7.3 Sample Means (pp. 442-454)

1. What symbols are used to represent the mean and standard deviation of the sampling distribution of $\overline{x}$?
2. What is the mean of the sampling distribution of $\overline{x}$, if $\overline{x}$is the mean of an SRS of size *n* drawn from a large population with mean $μ$and standard deviation $σ$?
3. What is the standard deviation of the sampling distribution of $\overline{x}$, if $\overline{x}$ is the mean of an SRS of size *n* drawn from a large population with mean $μ$and standard deviation $σ$?
4. To cut the standard deviation of $\overline{x}$ in half, you must take a sample \_\_\_\_\_ times as large.
5. When should you use $σ/\sqrt{n}$ to calculate the standard deviation of $\overline{x}$?
6. If the population distribution is Normal, what can be said about the sampling distribution of $\overline{x}$? Does sample size matter?

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1. What does the **Central Limit Theorem** say about the shape of the sampling distribution of $\overline{x}$, no matter what shape the population distribution has?
2. How large does a sample need to be to use the CLT if the distribution of the population is not normal?