**Chapter 8: Confidence Interval Estimation**

1. **Concept of Confidence Interval**

A **point estimate** is a single number.

A **confidence interval** provides additional information about the variability of the estimate.

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**General Formula for all confidence intervals is: Point Estimate ± (Critical Value)\*(Standard Error)**

* **Point Estimate** is the sample statistic estimating the population parameter of interest.  
   **Table

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* **Critical Value** is a table value based on the sampling distribution of the point estimate and the desired confidence level.   
  **Confidence level** **()** is confident the interval will contain the unknown population parameter (less than 100%).
* **Standard Error** is the standard deviation of the point estimate.

1. **Confidence Intervals**

Diagram

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1. **Confidence Intervals for the Population Mean μ**
2. **when Population Standard Deviation σ is Known.**

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1. **when Population Standard Deviation σ is Unknown.**

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1. **Confidence Intervals for the Population Proportion π.**

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1. **Determining the Required Sample Size.**

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1. **For the Mean**

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1. **For the Proportion**

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