Section 7.1 — Introduction to the Central Limit Theorem

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Outline

Sampling Distributions

Central Limit Theorem (CLT)

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Definition

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Definition (Sampling Distribution of Sample Means)

The sampling distribution of sample means is the distribution of all values of the sample mean (or the distribution of $\bar{x}$) when all possible samples of the same size n are taken from the population.

Example

Assume there are three children with ages 3,4 and 6

Central Limit Theorem (CLT)

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- $\mu_{\bar{x}} = \mu$
- $\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$

Example

According to a report in the *Portland Press Herald*, the mean price of heating oil in Maine in December 2010 was $2.98 per gallon. If 100 samples of 37 heating oil prices were collected from around Maine during that time, what would you expect to be the mean of the sampling distribution of the sample means?