Cheatography

Chapter 7: Sampling and Sampling Distributions Cheat Sheet

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Definitions

Element: The entity on which data are collected	Population: A collection of all the elements of interest
Sample: A subset of the population	Sampled population: The population from which the sample is collected
Frame: a list of elements that the sample will be collected from	

Sampling from an Infinite Population

Populations generated by an ongoing process are referred to as Infinite Populations: parts being manufactured, transactions occurring at a bank, calls at a technical help desk, customers entering a store	Each element selected must come from the population of interest, Each element is selected independently.

Sampling Distribution of

Expected value of $\bar{x}$: E($\bar{x}$) = u	Standard Deviation of $\bar{x}$:
Finite Population: $\sigma\bar{x} = \sqrt{N-n/(N-1)}\ (\sigma/\sqrt{n})$	Infinite Population: $\sigma\bar{x} = \sigma/\sqrt{n}$
Z-value at the upper endpoint of interval=largest value-u/$\sigma\bar{x}$	Area under the curve to the left of the upper endpoint=largest value-u/$\sigma\bar{x}$ on the z table
Z-value at the lower endpoint of the interval=smallest value-u/$\sigma\bar{x}$	Area under the curve to the left of the lower endpoint=smallest value-u/$\sigma\bar{x}$ on the z table
Probability=area under curve to left of upper endpoint-area under curve to left of lower endpoint	When selecting a different sample number, expected value remains the same. When the sample size is increased the standard error is decreased.

Sampling from a Finite Population

Finite Populations are often defined by lists: Organization Member Roster, Credit Card Account Numbers, Inventory Product Numbers	A simple random sample of size n from a finite population of size N: a sample selected such that each possible sample of size n has the same probability of being selected

Point Estimation

Point Estimation is a form of statistical inference.	We use the data from the sample to compute a value of a sample statistic that serves as an estimate of a population parameter.
$\bar{x}$ is the point estimator of the population mean	s is the point estimator of the population standard deviation
$\bar{p}$ is the point estimator of the population proportion	$\bar{x}=(\sum xi\ )$/n
$s=\sqrt{\sum(xi-☐☐)}$^2/n-1	$\bar{p}$=x/n

Sampling Distribution of

Expected value of ☐ ☐=E($\bar{p}$)=p	Standard Deviation of $\bar{p}$;
Finite Population: $\sigma\bar{p} = \sqrt{N-n/(N-1)}(\ \sqrt{p(1-p/n)}$	Infinite Population: $\sigma\bar{p} = \sqrt{p(1-p/n}$
Z-value at the upper endpoint of the interval=largest value-p/ $\sigma\bar{p}$	Area under the curve to the left of the upper endpoint equals z value of largest value-p/ $\sigma\bar{p}$
Z-value at the lower endpoint of the interval=smallest value-p/ $\sigma\bar{p}$	Area under the curve to the left of the lower endpoint=z=value of mallest value-p/ $\sigma\bar{p}$
Probability=area under curve to left of upper endpoint-area under curve to left of lower endpoin	