

Review for Exam 2 Material

Parameters vs Statistics

Probability vs Statistics

Chapter 6 Section 4- 6 Sampling Distributions

Sampling Distribution – distribution of values a **sample statistic** takes in repeated sampling.

Sampling distribution of Sample Proportion:

- NOT Binomial
- Mean= p
- Standard Deviation = $\sqrt{\frac{p(1-p)}{n}}$
- Sampling Distribution of Proportions are approximately Normal if:
 - $np \geq 15$
 - $n(1-p) \geq 15$

Sampling Distribution of X-bar:

- has the same mean as original population
- has smaller standard deviation than original population
- (CLT) for any shape population, shape of distribution of X-bar goes towards Normal as n increases
- $\bar{X} \sim N\left(\mu, \frac{\sigma}{\sqrt{n}}\right)$

For Categorical Data:	For Quantitative Data:
Population Dist'n	Population Dist'n
Data Dist'n	Data Dist'n
Sampling Dist'n	Sampling Dist'n

Chapter 7

Confidence Intervals for population proportion

Finding the z value for a confidence interval for proportion.

$$\text{estimator} \pm z * \text{est.of .stderr}$$

CI for p:

$$\hat{p} \pm z \sqrt{\hat{p}(1-\hat{p})/n}$$

Assumptions:

Interpretation:

Sample Size Computation:

Confidence Intervals for population mean

Finding the t value for a confidence interval for the mean.

CI for μ : $\bar{x} \pm t \frac{s}{\sqrt{n}}$

When can you use the z score instead?

Assumptions:

Interpretation:

Sample Size Computation:

Finding n –

- margin of error = $z \frac{s}{\sqrt{n}}$
- solve for n

Confidence Intervals in General

Interpretation –

- CI is a statement about a PARAMETER, not about statistic or individuals.
- “Probability” applies BEFORE we take data. After we use the word “confidence”.

Behavior –

- as confidence level increases – CI bigger
- as n increases – CI smaller

Significance Tests for p:

- Assumptions
- H_0 , H_a
- Test Statistic
- p-value="corner" area
- Conclusions – small p-value supports H_a