Test #3 Concepts (Ch. 5-8) Sp 13

Using Inverse Normal (the value of the random variable when probability is known)
- Draw a picture
- Use correct notation
- Use calculator to find
- Set up for using when only the std. normal probability can be found
  - Converting back to the value of the random variable x – x = mean + z(std dev)
    - Std deviation is std error when CLT applies

Binomial Distribution

- The 4 assumptions of binomial
  - 2 possible outcomes
  - fixed # of trials
  - constant probability for success
  - each is trial is independent

  } You need to be able to identify a binomial by recognizing these characteristics.
- Normal Approximation to Binomial
  - Continuity Correction
  - Mean & Std. Deviation for approximation
  - Finding Probabilities using ~N(np, √npq)
- Sampling Distribution of the Binomial Distribution [For CI & Hypothesis Testing]
  - Point Estimate for population proportion (p ≈ by p-hat)
  - Mean & Standard Deviation (Different than 6.4 since linear f(n) of x)
- Confidence Intervals for True Population Proportion (1 Sample)
  - Using sample data
  - Knowing how to find the Critical Value (calculator – inverse normal)
  - Finding E by formula & using to compute interval
  - Using the calculator to find the interval
- Confidence Intervals for Difference in Pop. Proportions (2 Sample)
  - Using sample data
  - Knowing how to find the Critical Value (calculator – inverse normal)
  - Finding E by formula & using to compute interval
  - Using the calculator to find the interval
  - Inferences based upon the confidence intervals
    - ✓ Recall: Positive, Negative or Both are points of reference

Chi-Squared Distribution

- Confidence intervals for Standard Deviations/Variances
  - The critical values are Chi-Squared Values (look up in table only)
    - ✓ There are **TWO** values that are positive & non-symmetric based upon df & $1-\alpha/2$ **or** df & $\alpha/2$
  - The interval **does not** have a margin of error
    - ✓ The interval the sample statistic ± margin of error

Normal Distribution

- Sample Mean & Standard Deviation Using Data
- Probabilities Under Normal Distribution (1 observation)
- Probabilities of Average (Sample of size n)
  - Central Limit Theorem
- Confidence Intervals
  - Estimating the Population Mean when σ is known
    - ✓ Using sample data or sample statistics
    - ✓ Knowing how to find the Critical Value (calculator – inverse normal)
    - ✓ Finding E by formula & using to compute interval
    - ✓ Using the calculator to find the interval
    - ✓ Inferences based upon the confidence intervals
  - Estimating the Population Mean when σ is unknown
    - ✓ Using sample data or sample statistics
    - ✓ Knowing how to find the Critical Value (calculator – inverse t)
    - ✓ Finding E by formula & using to compute interval
    - ✓ Using the calculator to find the interval
    - ✓ Inferences based upon the confidence intervals
  - Estimating the Difference of Population Means

    When σ is known
    - ✓ Using sample data or sample statistics
    - ✓ Knowing how to find the Critical Value (calculator – inverse normal)
    - ✓ Finding E by formula & using to compute interval
    - ✓ Using the calculator to find the interval
    - ✓ Inferences based upon the confidence intervals

    When σ is unknown
    - ✓ Using sample data or sample statistics
    - ✓ Knowing how to find the Critical Value (calculator – inverse t)
    - ✓ Finding E by formula & using to compute interval
    - ✓ Using the calculator to find the interval
    - ✓ Inferences based upon the confidence intervals

Hypothesis Testing

- Writing hypotheses H_0 & H_A (null contains equality)
- How to tell the "tail of the test" (look at alternative)
- How to properly place significance
- How to write a traditional test statistic based on sample data & null assumption
- How to make a traditional test decision based on CV & TS (using a diagram to show)
- Writing a conclusion with 3 main features

Notes:

You will be provided a z, t & Chi-Squared table

You should write down notes on:

How to use your calculator

Especially to find probability normalcdf & tcdf vs. critical values invNorm & INVT

How to find margins of error for proportions & means (sigma known vs unknown)

How to tell when to use a z or a t for means

A reminder of sample statistics notation vs population parameter notation

Test statistics for 1 sample means (sigma known vs unknown) & proportions