

Unit 7 – Introduction to Inference (3.5 Weeks)

Enduring Understandings

- Students will understand the underpinnings of statistical inference. [C2d]
- Inference is based upon chance. [C2d]
- Confidence intervals are effective tools for estimation. [C2d]
- Tests of significance and confidence intervals drive decision making in our world. [C2d]
- Error analysis is a critical component of significance testing. [C2d]

C2d: The course provides instruction in each of the following four broad conceptual themes outlined in the Course Description with appropriate emphasis on statistical inferences.

Essential Questions

- What is inference?
- How can decisions be based on chance?
- To what extent should decisions be based on chance?
- How can we determine the mean of a population with a “small” sample?
- When are tests of significance and confidence intervals used?
- How can one prepare for errors from significance tests?

Knowledge and Skills

- Check assumptions for confidence intervals and significance tests
- Find confidence intervals
- Conduct significance tests
- Type I, Type II errors, and Power
- Find the probability of Type I errors
- Understand the relationship between the probabilities of Type I and Type II errors

Sample Assessments/Activities

- Class activity to determine which students had ESP (extra sensory perception). Students work in pairs setting up an experiment to determine if their partner has ESP. Data is then analyzed through conducting a significance test as well as a discussion of significance level and probability of Type I and Type II errors. [C2d, C4]

C4: The course teaches students how to communicate methods, results, and interpretations using the vocabulary of statistics.