STA130 Winter 2020

(Materials used in this presentation are provided by the U of T Statistical Sciences Department.

This presentation was prepared by Vivian Ngo.)

Github.com/vivianngo97/STA130-Winter-2020

viv.ngo@mail.utoronto.ca

Agenda

- Recap on self-reflection
- Icebreaker
- Vocabulary
- Group discussion
- Oral Presentation Examples
- Oral Presentations Preparation
- Oral Presentations

Self reflection recap

- Will the course continue to be programming-heavy?
- Do I need to know R code/syntax for tests? I usually refer to the slides to do the assignments.
- What is the difference between “=” and “<-“ in R?
- When do we use pipe “%>%”?
- How can we write a better paragraph? Can we have more in depth examples?
- Can we have more detailed feedback for the writing activity?

Self reflection recap

- The time constraint on the writing activity is stressful
- The tutorials are longer than typical tutorials of one hour
- The tutorials are too short to cover everything
- It’s hard to understand error messages in RStudio
- I would like more practice/tutorials in R Studio
- I like the interactive component
- I think there is not enough time to go over personal questions
- I like talking with my classmates in tutorial
- I think we spend too much/too little time on vocabulary
- I hope we can have more group discussions
- I like talking with new people when we get into new groups

Self reflection recap

- I hope to meet a nice mentor through the mentorship program
- I hope to join clubs and be more social at school
- I hope to meet more senior students in my program
- I want to know more about what statistics can lead into
- I want to know what statistics classes will be like in upper years
- I want to learn more about the career center
- I want to be more involved in the community

Ice breaker!

Vocabulary

- hypothesis testing
- null hypothesis
- alternative hypothesis
- P-value
- statistically significant
- significance level
- observed value
- sample
- population
- inference
  probability
- strength of evidence (e.g. strong, moderate, or weak, or no evidence)
- sampling distribution
- “at least as extreme”/ “as extreme or more extreme”
- generalize
- assumption
- Simulation statistic
- meaningful difference
- random
- loop
- simulation
  parameter
- statistic
- test statistic

Group Discussion

- For Question 1, what would you expect to happen your p-value if you used 10 simulations versus 10,000 simulations? Explain.
- Approximately 10% of the general population is left-handed. Suppose that the university is conducting a study to see if this percentage is the same among their students. This would help inform classroom renovations to ensure sufficient left-handed (and right-handed) seating. Suppose 500 students are randomly selected and asked whether or not they are left-handed. Suppose that 63 of these 500 students respond that they are left-handed. Say you used R to estimate the sampling distribution of the test statistic under the assumption that the prevalence of left-handedness among University of Toronto students matches the general population and you computed the p-value of the above hypothesis test based on this sampling distribution.

Group Discussion

- Which of the following statements is/are valid description of the P-value you computed?
- i. The probability that the proportion of U of T students who are left-handed matches the general population.
- ii. The probability that the proportion of U of T students who are left-handed does not match the general population.
- iii. The probability of obtaining a number of left-handed students in a sample of 500 students at least as extreme as the result in this study.
- iv. The probability of obtaining a number of left-handed students in a sample of 500 students at least as extreme as the result in this study, if the prevalence of left-handedness among all U of T students matches the general population.

Group Discussion

- What makes a good oral presentation?

Oral Presentation Examples

- https://www.youtube.com/watch?v=V8eLdbKXGzk

Oral Presentation Examples

- THE 4 C'S: Calm; Confident; Clear; Concise

- Tips for giving a great oral presentation: *Content*
  - 1. What is the main message you want to get across?
  - 2. Create an (organized) outline of your presentation
  - 3. Define terms early
  - 4. Make clear transitions between parts of your presentation
  - 5. Make your data/ figures meaningful
  - 6. Summarize

Oral Presentation Examples

- Tips for giving a great oral presentation: *Delivery*
  - 1. Be confident, make eye contact and avoid reading
  - 2. Avoid filler words – “ummm”, “like”, “you know”
  - 3. Speak slowly and it’s ok to pause (and breathe!)
  - 4. Remember to enunciate all the parts of each word
  - 5. Practice! Practice! Practice!

Oral Presentations Preparation

- In groups of 3-4:
- Prepare a **5-minute presentation** summarizing one of your major research findings from Question 2. You can pretend you've been asked by the Chair of the Dept of Statistical Sciences to present your work at the next faculty meeting.
- **Submit a draft outline**, one per group, on Quercus (for my reference)
- Your oral presentation, like a written summary, should include the following components:
  - Contextualize the problem
  - Summarize the methods. E.g. State hypotheses; define the test statistic; etc.
  - Summarize their findings
  - Conclusion
  - Limitations (optional, but good practice). E.g. sample size, study design issues, etc.

Oral Presentations!