STA130 Fall 2019 - T0107

Week 5 – Hypothesis Testing

(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-Fall-2019

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FRONT OF CLASSROOM					
1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24

Agenda

- Vocabulary
- Presentation Skills
- Group discussion
- Group presentations (5 minutes each)
- Ticket out the door

Vocabulary

- Type I error
  - Probability of a false positive (type I error) = alpha.
  - Alpha typically chosen to be 5% (95% Confidence intervals) because we have a low tolerance for this type of error in research!
- Type II error
  - Unfortunately, in practice we don't know if we've committed one of these types of errors.
  - In future statistics courses, you'll learn about ways to control the chance of making of making one of these types of errors.
- Comparing two group means/ proportions
- Two sample test
- One sample test
- Approximate Permutation test

Example: Somebody is convicted of murder

- Null hypothesis?
- Alternative hypothesis?
- How could a type I error occur in this example?
- How could a type II error occur in this example?

- Other examples?

Oral presentation skills

- Group Discussion: What makes a good oral presentation?

Oral presentation skills

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

Oral presentation skills

- **THE 4 C'S:** Calm; Confident; Clear; Concise
- ***Tips for giving a great oral presentation: Content***
  - What is the main message you want to get across?
  - Create an (organized) outline of your presentation
  - Define terms early
  - Make clear transitions between parts of your presentation
  - Make your data/ figures meaningful
  - Summarize
- ***Tips for giving a great oral presentation: Delivery***
  - Be confident, make eye contact and avoid reading
  - Avoid filler words – "ummm", "like", "you know"
  - Speak slowly and it's ok to pause (and breathe!)
  - Remember to enunciate all the parts of each word
  - Practice! Practice! Practice!

Group Presentation

- Prepare a 5-minute presentation summarizing one of the following research findings (next slide)
- Students will be randomly chosen to evaluate other groups
- Like a written summary, your presentation should include the following components:
  - Contextualize the problem
  - Summarize the methods. E.g. State hypotheses; define the test statistic; etc.
  - Summarize your findings
  - Conclusion
  - Limitations (optional, but good practice). E.g. sample size, study design issues, etc.

Research findings

- TBA

Research findings

- TBA

Research findings

- TBA

STA130 Oral Presentation Evaluation Rubric

Presenter(s): _____

Evaluator: _____   Group #: _____   Grade: _____

Please record the names of any students who do not speak or are unable to answer questions (if relevant):

_____

<table>
<tr><td colspan="2"></td><th>Excellent (10)</th><th>Good (8)</th><th>Adequate (6)</th><th>Poor (<5)</th></tr>
<tr><td rowspan="4">Content</td><td>Content Clarity (10%)</td><td>Appropriate amount of explanation/details provided, presentation effectively achieved its objectives.</td><td>Sufficient explanation and details, presentation achieved most of its objectives.</td><td>Too little/much detail, some variables/concepts not explained. Presentation achieved some objectives.</td><td>Insufficient or too many unnecessary details, the presentation was confusing with no clear objectives.</td></tr>
<tr><td>Vocabulary (10%)</td><td>Accurate use of statistical terms and phrases, appropriate use of terms given the audience.</td><td>Good use of statistical terms and phrases, mostly appropriate language for the audience.</td><td>Demonstrated effort to incorporate statistical terms and phrases, but some were used inaccurately or not appropriate to the audience.</td><td>Completely inaccurate use of statistical terms and phrases. Vocabulary inappropriate for the intended audience.</td></tr>
<tr><td>Statistical methods (10%)</td><td>Choice of methods is logical and appropriate for the research question(s); analyses are complete and thoughtful; diverse and creative use of multiple appropriate statistical approaches.</td><td>The choice of methods is appropriate and logical to the research question(s); some non-essential analyses are missing or there are minor errors in analytical approach.</td><td>The choice of methods is somewhat appropriate, may not be entirely logical or best choice for answering the research question(s); some analyses are missing or incorrectly conducted.</td><td>The choice of methods is inappropriate for the research question(s); essential analyses are missing.</td></tr>
<tr><td>Conclusion (10%)</td><td>There is a clear and accurate conclusion presented; appropriate for the audience.</td><td>A conclusion is present, mostly accurate, and generally appropriate for the audience.</td><td>The conclusion is weak or not supported. Conclusion somewhat unsuitable for the audience.</td><td>The conclusion is missing or inaccurate. Conclusion unsuitable for the audience.</td></tr>
<tr><td rowspan="5">Delivery</td><td>Preparedness (10%)</td><td>Extremely prepared and rehearsed. Professional and polished.</td><td>Mostly prepared and rehearsed with some dependence on written notes.</td><td>The presenter was not well prepared or rehearsed and usually reading from notes.</td><td>Evident lack of preparation and rehearsal. Complete dependence on notes.</td></tr>
<tr><td>Speech clarity (10%)</td><td>Words were articulated clearly and distinctly, and very easy to understand.</td><td>Words were articulated clearly and distinctly most of the time, easy to understand.</td><td>Clear attempts to enunciate, with some occasional mumbling, but mostly understandable.</td><td>A lot of word slurring or mumbling, barely understandable.</td></tr>
<tr><td>Structure (10%)</td><td>Well organized, follows a logical structure.</td><td>The organization follows some logical structure.</td><td>Some structure, but difficult to follow.</td><td>There is no structure, very difficult to follow.</td></tr>
<tr><td>Transitional Phrases (10%)</td><td>Effective and appropriate use of words and phrases to enhance the flow and signal transitions.</td><td>Good use of words and phrases to control the flow and signal transitions. Sometimes transitions were inappropriately used.</td><td>Some use of transitional words and phrases, sometimes used inappropriately; e.g. overuse of words/phrases, wrong choice of word, etc.)</td><td>Lack of transitions and a poor flow between sentences/ideas.</td></tr>
<tr><td>Presentation Skills (10%)</td><td>Presenters had regular eye contact, held the audience's attention, engaging. Good speaking volume, body language, and pace.</td><td>Presenters had somewhat regular eye contact or eye contact with some of the audience. Mostly engaging with suitable volume. Some fidgeting.</td><td>1+ presenters had sporadic eye contact or eye contact with 1 or 2 audience members. Not engaging. Could be heard by only some of the audience. Distracting body language.</td><td>Minimal (or no) eye contact. The audience was never engaged. 1+ presenters did not speak clearly. Presenter was very difficult to hear.</td></tr>
<tr><td colspan="2">Ability to answer question(s) (10%)</td><td>Answered all questions knowledgeably.</td><td>Answered most questions knowledgeably, or with minor errors.</td><td>Unable to answer most questions knowledgeably/ correctly.</td><td>Unable to answer any questions correctly.</td></tr>
<tr><td colspan="2">WOW Factor</td><td colspan="4">Overall an excellent and <i>particularly</i> impressive presentation. List specifics below, if applicable:</td></tr>
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