

431 Assignment 4 Grading Rubric

Thomas E. Love and 431 Staff

Assignment was due at noon 2017-10-20

We are grading questions 1-6 and 8-11, for a total of 145 points.

Question 1 (10 points)

- 10 points awarded for **correct working URL**, **author names**, **full title**, and **source of the News Story**.
- Lose 2 points for each missing item listed in bold.

Question 2. (10 points)

- 10 points awarded for **correct working URL** for abstract, **author names**, **full title**, **journal name** of the Complete Study.
- Lose 2 point for each missing item listed in bold.

Question 3 (10 points)

Full 10 points awarded requires:

- Probability statement relating to gut feeling
- Calculate odds related to gut feeling
- Motivation/explanation of gut feeling
- Complete sentences with correct spelling and grammar
- Lose 2 points for each missing piece

Question 4 (20 points)

Full 20 points awarded requires response to EACH item below in complete sentences with correct spelling and grammar, using quotations or paraphrasing the complete study:

1. Was the study a clinical study in humans?
 2. Was the outcome of the study something directly related to human health like longer life or less disease?
Was the outcome something you care about, such as living longer or feeling better
 3. Was the study a randomized, controlled trial (RCT)?
 4. Was it a large study - at least hundreds of patients?
 5. Did the treatment have a major impact on the outcome?
 6. Did predictions hold up in at least two separate groups of people?
- Lose 4 points, at least, for each missing numbered item
 - Lose at least 4 points overall for not constructing responses in complete sentences

Question 5 (10 points)

- For full credit, provide **odds** and **probability** using Bayes' Rule, responding with **complete sentences with correct spelling and grammar**.
- Lose 4 points for each missing item in bold, down to a minimum of 0.

Question 6 (10 points)

The student should reach a logical conclusion and summarize his/her reaction on whether or not this approach was accurate for assessing their initial gut feeling vs. their final conclusion after reading the article/study. No right or wrong answer, but using both logic and complete sentences are necessary. 10 points for good effort here. Give 7 or less if they don't manage to do all of these pieces.

Note to TAs

Please summarize the performance on Questions 1-6 in the **HW-Notes** section for anyone scoring below 50/70 on those Questions.

Question 7 (do not grade)

We're not grading question 7 in 2017, just question 8.

If question 7 is not done, please mark that in the HW-Comments section, and Dr. Love will subtract 10 points from the total score.

Question 8 (45 points)

- a. What is the outcome under study? [5 points]
 - 4 points for identifying that the outcome is the medullary blood vessel surface
 - 1 point for writing the units (square mm per cubic mm)
- b. What are the (in this case, two) treatment/exposure groups? [5 POINTS]
 - 5 points for identifying that the treatment groups were "control" or "histamine shock."
 - 2 points for any reasonable attempt if a good supporting statement is written
- c. Were the data collected using matched / paired samples or independent samples? [5 POINTS]
 - 5 points for identifying that these are independent samples
 - 2 points for any reasonable attempt if a good supporting statement is written
- d. Are the data a random sample from the population(s) of interest? Or is there at least a reasonable argument for generalizing from the sample to the population(s)? [5 POINTS]
 - 2 points for writing that this is a random sample
 - 3 points for making a reasonable argument supporting the choice of sample
 - 3 points/5 for a reasonable but incorrect attempt if a good supporting statement is written
- e. What is the significance level (or, the confidence level) we require here? [5 POINTS]
 - 5 points for using either 5% significance level, or, 95% confidence level
 - No partial credit.
- f. Are we doing one-tailed or two-tailed testing/confidence interval generation? [5 POINTS]
 - 5 points for identifying this as a two-sided approach.
 - 2 points for a reasonable attempt if a good supporting statement is written
- g. If we have paired samples, did pairing help (to reduce nuisance variation)?

- h. If we have paired samples, what does the distribution of sample paired differences tell us about which inferential procedure to use?
 - Ignore this. Just give no credit on i if they chose g and h instead, or if they answered g, h and i.
- i. If we have independent samples, what does the distribution of each individual sample tell us about which inferential procedure to use? [10 POINTS]
 - 10 points for a correct answer
 - 7 points for a reasonable attempt if a good supporting statement is written
- j. Final Question [5 points]
 - 5 pts: A write up that there is a statistically significant change, with a reasonable justification i.e. CI does not include zero and/or description of appropriate p value.
 - 2 pts: Any reasonable attempt

Note to TAs

Please summarize the performance on Question 8 in the **HW-Notes** section for anyone scoring below 40/50 on the Question.

Question 9 (10 points)

- 10 points for a correct 99% CI [about (-9.94,-0.69)] using a two-sample t-test, and clear sentences used to explain the answer.
- 5 points for a wrong answer, but good effort shown and a clear written description.
- 0 points for a wrong answer and no written description of the methods attempted.

Question 10 (10 points)

- 10 points for an power calculation showing $\delta=1.063$, $sd=1.5$, $power=.90$, and $sig.level=0.01$ and 61 measurements in each arm, 122 total, correct estimate of cost (\$18,300), and clear sentences used to explain the answer.
- 5 points for a wrong answer, but good effort shown and a clear written description.
- 0 points for a wrong answer and no written description of the methods attempted.

Question 11 (10 points)

- 10 points for an power calculation showing $\delta=1.063$, $sd=1.5$, $power=.90$, and $sig.level=0.05$ and 43 measurements in each arm, 86 total, correct estimate of cost (\$12,900), and clear sentences used to explain the answer.
- 10 points could also be awarded if the student starts with the budget and works backwards to determine that we could afford about 50 measurements in each group, and then provides an accompanying power calculation. Again, clear sentences must be used to explain the answer.
- 5 points for a wrong answer, but good effort shown and a clear written description.
- 0 points for a wrong answer and no written description of the methods attempted.

Note to TAs

Please summarize the performance on Questions 9-11 in the **HW-Notes** section for anyone scoring below 20/30 on Questions 9-11.

Elements for the Class Roster that TEL has provided

The roster is available now in the same folder as the other rosters.

Column	Explanation
Name, ID, etc.	Student Identifying Information
HW4-Comments	Space for comments (late, great topic for Q 1-6 or the student skipped Q 7)
HW4-Q1	Question 1 results (0-10 points)
HW4-Q2	Question 2 results (0-10 points)
HW4-Q3	Question 3 results (0-10 points)
HW4-Q4	Question 4 results (0-20 points)
HW4-Q5	Question 5 results (0-10 points)
HW4-Q6	Question 6 results (0-10 points)
HW4-Q8	Question 8 results (0-50 points)
HW4-Q9	Question 9 results (0-10 points)
HW4-10	Question 10 results (0-10 points)
HW4-11	Question 11 results (0-10 points)
HW4-Score	Total Score on Assignment 4 (Maximum 150 points)
HW4-Notes	Notes from TAs to Students on their work