HH/HLST 2300 6.0: Statistical Methods in Health Studies

**The exam consists of 10 questions in total.**

The HLST 2300 Final Exam is an open book exam to be completed individually. There is no collaboration permitted under any circumstances – this is considered cheating. You are not to discuss or share the questions or potential answers with anyone, including other students in this course – this is considered cheating.

HLST 2300 Final Exam posted Monday Apr. 12 at 8:30 AM EST.

HLST 2300 Final Exam due Monday Apr. 12 at 8:30 PM EST.

While students have twelve hours to complete their exams, the exam is designed to be completed in three hours. Students must complete and upload their finished exam to eClass between when the exam questions are posted and when the exam is due.

Late submissions will incur a penalty of 10% deducted per 30-minute interval.

Exams submitted more than 1 hour late will receive a zero.

Therefore, any attempts must be submitted by April 12, 2021, 9:30 PM EST

* Questions involving a data file must be answered using SPSS
* HLST 2300 rounding rules apply unless otherwise stated
* Methods used in HLST 2300 must be demonstrated to receive full marks – show your work using methods taught
* Screenshots of hand-written work and SPSS must be of high resolution and be pasted upright (not sideways) so that they can be easily read and graded
* Answers to questions must directly follow the question asked – do not change the order of the questions
* If you fail to include the SPSS output instructed of you, you will receive zero for any subsequent questions that rely on that output
* Include only the SPSS output that specifically answers the question asked of you
* Upload your completed exam with the proper naming convention: LASTNAME\_FIRSTNAME\_WTExam. The submission file type has been set up in eClass such that the only accepted file type is PDF.

A researcher has collected data for 425 patients admitted to hospitals in City ABC as a result of suffering a stroke (Excel file: 2300WTFinalexam.xls). The data includes the unique patient identifier, age (years), sex (female = 1; male = 2), blood pressure (hypertension = 1; hypotension = 2; normal = 3), smoking status (smoker = 1; non-smoker = 0) recorded at three time points (pre-admission, 30-day post-discharge, 1-yr post-discharge), Rankin score (no symptoms = 0; no significant disability = 1; slight disability = 2; moderate disability = 3; moderately severe disability = 4; severe disability = 5) recorded at two time points (at admission and at discharge), stroke drug administered (drugs A plus R = 1; drugs A plus S = 2; drug A = 3), rehabilitation type (combination = 1; inpatient = 2; outpatient = 3), cost of care (thousands of dollars), hospital size (large = 1; medium = 2; small = 3), and care outcome (no improvement = 1; slight improvement = 2; moderate improvement = 3; significant improvement = 4).

Before proceeding with any analysis, be sure to:

* Ensure that variables are of correct measure (nominal, ordinal, scale). Remember to also do this for any newly created variables
* Add labels to all categorical variables (remember to also do this for any newly created categorical variables)

For each of the following questions, you do not need to justify the test you chose to use, however, be sure to copy and paste the relevant SPSS output table(s) and show any calculations that are not included in the SPSS output (e.g. effect sizes, Bonferroni corrected p-values) when reporting results.

1. Is there a positive correlation between Rankin scores at admission and cost of care?
2. Are there significant differences in age among the blood pressure categories?
3. Among females, is there a significant improvement in Rankin scores at discharge compared to at admission?
4. Is there an association between stroke drug administered and rehabilitation type?
5. Is average age among stroke patients significantly different than 65 years?
6. Are there significant changes in smoking status recorded at the three time points?
7. Are there significant differences in care outcome among patients administered different stroke drugs?
8. Among patients aged 70-79 years, is there sufficient evidence to indicate that the proportion with hypertension, hypotension and normal blood pressure is different than the national proportions of 70%, 5% and 25%, respectively for the same age group?
9. Run a regression to predict cost of care with the following predictors: age, rehabilitation type (reference category: combination) and hospital size (reference category: medium). Answer the following questions:
10. Is this model useful in predicting cost of care?
11. How much variation in cost of care can be explained by our predictor variables? Report only results fit to the population.
12. Interpret the b coefficient, standardized coefficient, p-value and CI for age.
13. State the regression equation and use it to predict the cost of care of a 65-year-old receiving outpatient rehabilitation in a medium sized hospital. Show your work.
14. Run a regression to predict smoking status 1-yr post-discharge with age and Rankin score at discharge (reference category: no symptoms) as predictors. Answer the following questions:
15. Is there any evidence that the regression model is useful to predict smoking status 1-yr post-discharge compared to the baseline model?
16. Interpret the b coefficient, OR, p-value and CI for the Rankin score at discharge of severe disability.
17. State the regression equation and use it to predict the odds of smoking 1-yr post discharge in a 72-yr-old stroke patient with no symptoms at discharge. Show your work.

**School of Health Policy and Management**

**Assignment Attachment Form**

**Student Name:**

**Student Number:**

**Course Code:**

**Assignment Title:**

**Due Date:**

**Tutorial Leader (if applicable):**

**Please check each box after reading, to acknowledge agreement with each statement.**

☐ I have read and understand the Senate Policy on Academic Honesty found on website at the following [York Secretariat website on Academic Honesty](http://www.yorku.ca/secretariat/policies/document.php?document=69).

☐ I have read and understood the assignment submission described in the course outline (syllabus)

☐ I have read and understood the criteria used for assessment in this assignment

☐ I have read and understood and followed the referencing guidelines required for assignments submitted at York University

☐ This assignment is entirely my own work, except where I have given documented references to work of others

☐ This assignment or substantial parts of it has not previously been submitted for assessment in any formal course of study, unless acknowledged in the assignment and previously agreed to by my Tutorial Leader and Course Director

☐ I understand that this assignment may undergo electronic detection for plagiarism and a copy of the assignment may be retained on the database and used to make comparisons with other assignments in the future

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_