

Grant MacEwan College

Stat 252 – Winter 2008
Lab Exam – April 8, 2008

Name:	
Student ID:	

Instructions:

- This is a 1 hour 50 minute exam.
- Print your name and student id on the heading of this page.
- Only the labmanual can be used during the exam, no calculator, text book, etc.
- Copy and paste your results from SPSS into a word document, add your comments, and print the word document, and hand it in. If you prefer to pencil in your comments after printing, feel free to do so.
- No other programs than SPSS and Word should be used and opened during the exam.
- Cheating is lame and may have some unpleasant consequences.
- When conducting a statistical test state the assumptions, and how you would check if they are met.

Good luck!

The data set you will be analyzing is pulse.sav in the subdirectory

Q:\\staff\\artsci\\burok\\handouts\\stat252labs

Students in an introductory statistics course participated in a simple experiment. Each student recorded his or her height, weight, gender, smoking preference, usual activity level, and resting pulse. Then they all flipped coins, and those whose coins came up heads ran in place for one minute. Then the entire class recorded their pulses once more.

Name	Count	Description
Pulse1	92	First pulse rate
Pulse2	92	Second pulse rate
Ran	92	1 = ran in place 2 = did not run in place
Smokes	92	1 = smokes regularly 2 = does not smoke regularly
Sex	92	1 = male 2 = female
Height	92	Height in inches
Weight	92	Weight in pounds
Activity	92	Usual level of physical activity: 1 = slight 2 = moderate 3 = a lot
pulsediff	92	pulse2-pulse1

1. We should expect that the mean/median pulse increases for students who run in place for a minute, and that for students who only watch others run in place the mean/median pulse remains unchanged.

Does the data provide sufficient evidence, that our expectations are met?

Work through the following steps to give an answer. Hint: There are two questions, you should split the file for (b) and (c).

- (a) Are parametric or non parametric tests appropriate? Justify your answer by providing one or more appropriate graphs and your argument.
- (b) Test if the (mean/median) pulse increases for students, if they run in place for a minute.
- (c) Give a confidence interval for the mean change in pulse for students who watch others run in place for one minute.
- (d) Are the results consistent with the expectations stated above? Explain.

2. Does the usual level of activity(slight/moderate/a lot) have a significant influence on the increase of the pulse for students running for a minute in place?
 - (a) Conduct appropriate parametric AND non parametric tests to answer this question, and check if the answers you obtain are consistent. (You have to do 2 tests one parametric one non parametric.)
 - (b) Choose one of the tests from (a) and follow up with a multiple comparison. Only report the diagram summarizing the result, and interpret.
3. Your goal is to built a model for predicting the pulse of students after they ran 1 minute in place. The variables we will consider as predictors are pulse1, weight, and height.
 - (a) Give the multiple linear regression model relating response variable pulse2 with predictors pulse1, weight, and height in a a first-order model.
 - (b) Obtain scattergrams, to check if the model you gave in (a) seems to be appropriate. Comment.
 - (c) Estimate the regression function, $\hat{y}$. Interpret the intercept and one of the slopes in the context of the question. Is the interpretation of the intercept meaningful?
 - (d) Report R_a^2 , and interpret it. Does it indicate that the model is useful?
 - (e) Report test statistic and P-value for the test that pulse1 has a significant influence on pulse2 within this model. Interpret the result. (You don't have to do a complete test.)
 - (f) Check with a residual analysis if the assumptions for the model are met.