

REPEATED MEASURES HOMEWORK**Hwk #3 due 5/12/09**

1. (3 points). Do problem 8.3 in the text
2. (4 points). Do problem 8.5 in the text

For the next problem use the data set `hers_subset_nodm.dta`, available on the course web site. This is a subset of the data from the Heart and Estrogen/Progestin Study (HERS - Hulley, *et al*, 1998, *JAMA*), containing only those women with no diabetes at baseline and a few of the variables. HERS was a randomized hormone replacement study coordinated out of UCSF (and a precursor to WHI) for prevention of heart attacks among post-menopausal women with existing heart disease. We are going to be interested in whether exercise seems to be related to glucose (see Section 4.1 of the text). The variables are described in the variables window, but you may need to expand it to see the descriptions.

Reminder: Please electronically cut and paste output and graphs into a Word document for printing and submission. The `Courier` font preserves the Stata alignment, if that is important.

3. (6 points)
 - a. Reproduce the values in Table 4.1 by restricting the analysis to visit 0 (baseline).
 - b. Now repeat the analysis in a., but using the data from all the visits and accommodating the correlation. How do the results compare? Suggest reasons for the differences.
 - c. Build a model incorporating predictors as in Table 4.2 of the text. (You have average drinks per week, but not the variable `drinkany`).
 - d. Graph the residuals to check for gross model violations. Provide a brief discussion of what you find.

Hwk #4 due 5/19/09 to Olivia

4. (4 points) Selby *et al* (NEJM, 1996, p.1888 - posted on course web site) looked at variation in angiography rates across Kaiser hospitals and then subsequently related those rates to risk of death from heart disease in patients who had suffered myocardial infarctions. Consider the analysis of angiography rates using data at the patient level. What is the distributional family you would use? Link function? Correlation structure? Would you prefer a mixed model or generalized estimating equations approach? Briefly state why.

5. (3 points) Using the HERS data, fit a model with the outcome of whether or not someone is on hypertension medication (htnmeds). Use predictors of age, BMI and exercise >3 times per week (exercise). Provide interpretations of each of the coefficients.
6. (6 points) We analyzed the mouse weight data in lab and noticed there was curvature in the plots of log weight versus time. Perhaps the model should allow group-specific and/or mouse-specific curvature terms as well. Fit a model allowing these effects (hints: `i.group*day2` and `mouse: day day2`) and see if they are needed in the model. Do they materially affect the results?