Intro to Econometric Theory
Heinz School, Carnegie Mellon University
90-906, Spring 2003-4

Homework #3

Consider the hospital cost data described on the datasets page of the course website. Suppose we are interested in understanding the costs of hospital care in California. We are going to model these data with the following CNLRM:

$$\text{cost}_i = \beta_1 + \beta_2 \text{days}_i + \beta_3 \text{visits}_i + \epsilon_i$$

Analysis of these data appears in the file hwk3.lst available on the homework page of the course website. The analysis was generated with SAS from the program hwk3.sas also available on the course website.

1. Interpret β_2.
2. Interpret $\hat{\beta}_2$.
3. Interpret 207.82
4. Form a 95% confidence interval for the marginal cost of an outpatient visit.
5. Test, at the 1% confidence level, the hypothesis that the marginal cost of an inpatient day is one fifth the marginal cost of an outpatient visit.
6. What is $X'X$? (hint: first prove that $X'X = (N-1)\hat{V}(X) + N\overline{XX}'$)
7. When there is a constant in the model, what do the first row and the first column of $X'X$ contain?